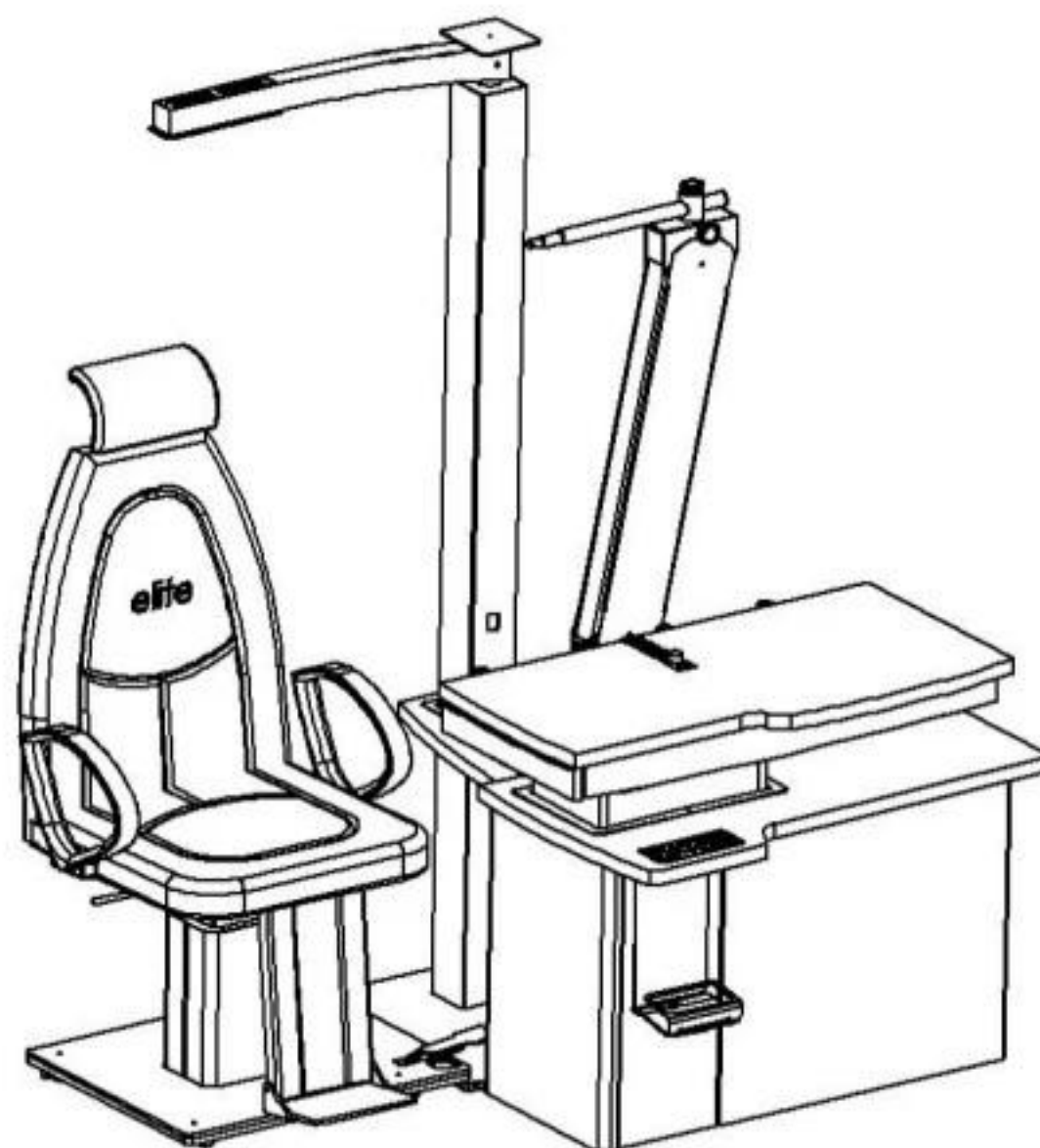




MILANO

Refraction Unit

User Manual

CE

1. Technical specification

Dimensions	Width	146 cm
	Depth	162 cm
Power supply voltage/frequency	220-240 V~ 50Hz	
Current absorbed	220-240 V~ max 1.4 A	
2 main fuses located in the fuse-holder on the back side of the column base	• 220-240 V~ version: T3.15A250V	
Chair lifting power	Max 150 kg.	
Overhead lamp bulb	LED ~12V Max 2x5 W	
Power supply voltage of instrument outlets	Depending on version type. Available version types:6 V and 6 V, 6 V and 12 V, 12 V and 6 V, 12 V and 12 V	
Maximum power supplied by instrument outlets	50 VA	
Instruments light intensity controlled by means of touch panel		
Overhead lamp light intensity controlled by means of touch panel		
Chin-rests mounting adaptors supplied		

Technical data may be subject to modification

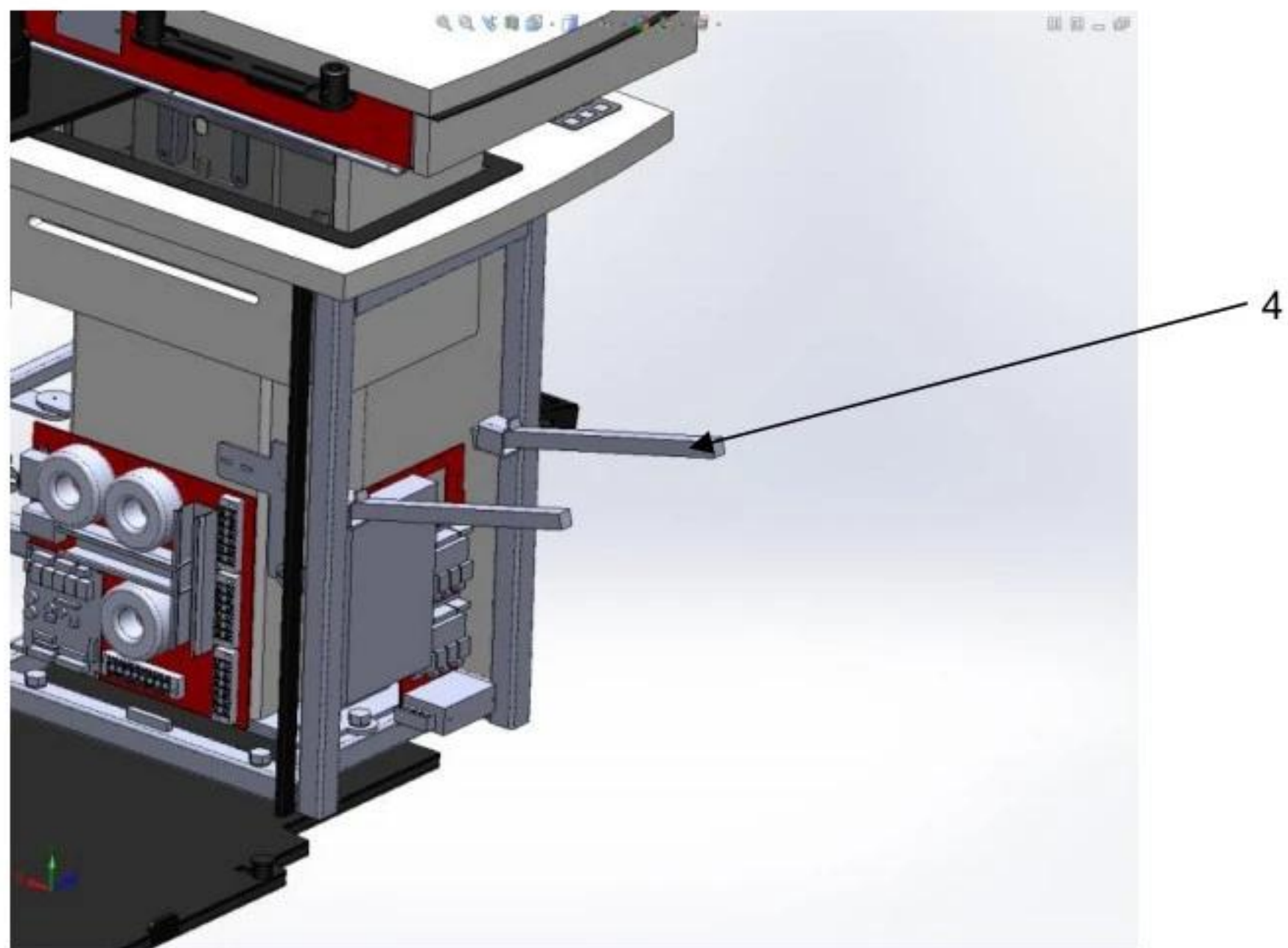
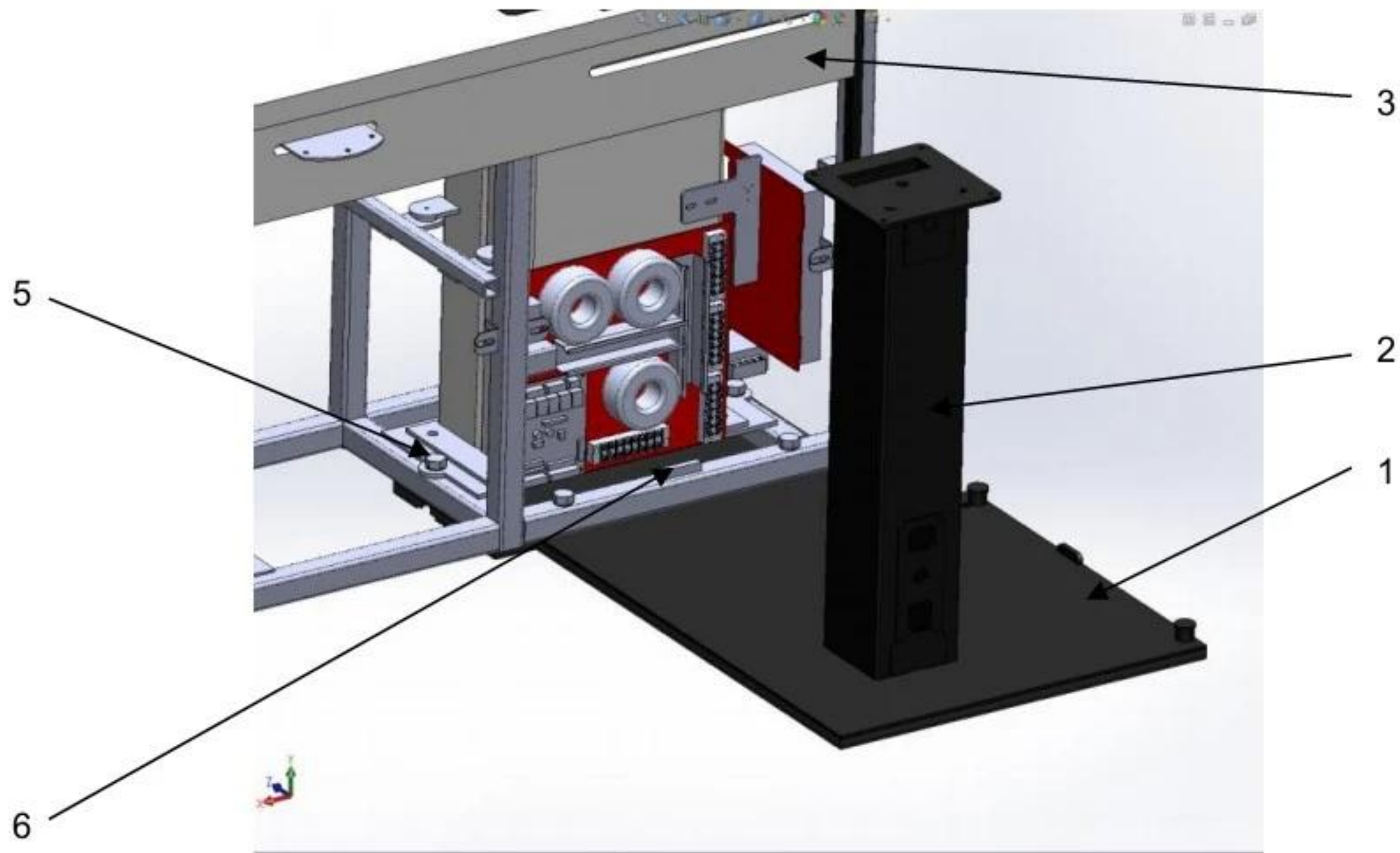
Safety precaution

1. This equipment must not be used in an area that is in danger of explosions and in the presence of flammable, explosive, or volatile solvent such as alcohol, benzene or similar chemicals.
2. Do not put or use this device in humid rooms. Humidity should be maintained between 50% and 80% for normal operation. Do not expose the device to water splashes, dripping water, or sprayed water.
3. Only person who has undergone proper training and instructions are authorized to install and maintain this equipment.
4. Do not force cable connections. If a cable does not connect easily, be sure that the connector (plug) is appropriate for the receptacle (socket). If you cause any damage to a cable connector(s) or receptacle(s), let the damage(s) be repaired by an authorized service technician.
5. Please do not pull on any cable. Always hold on to the plug when disconnecting cables.
6. Before every operation, visually check the equipment for exterior mechanical damage(s) and for proper function.
7. Do not cover any ventilation grids or slits. Immediately turn off and unplug any equipment that gives off smoke, sparks, strange noises, or odors.

2. Installation

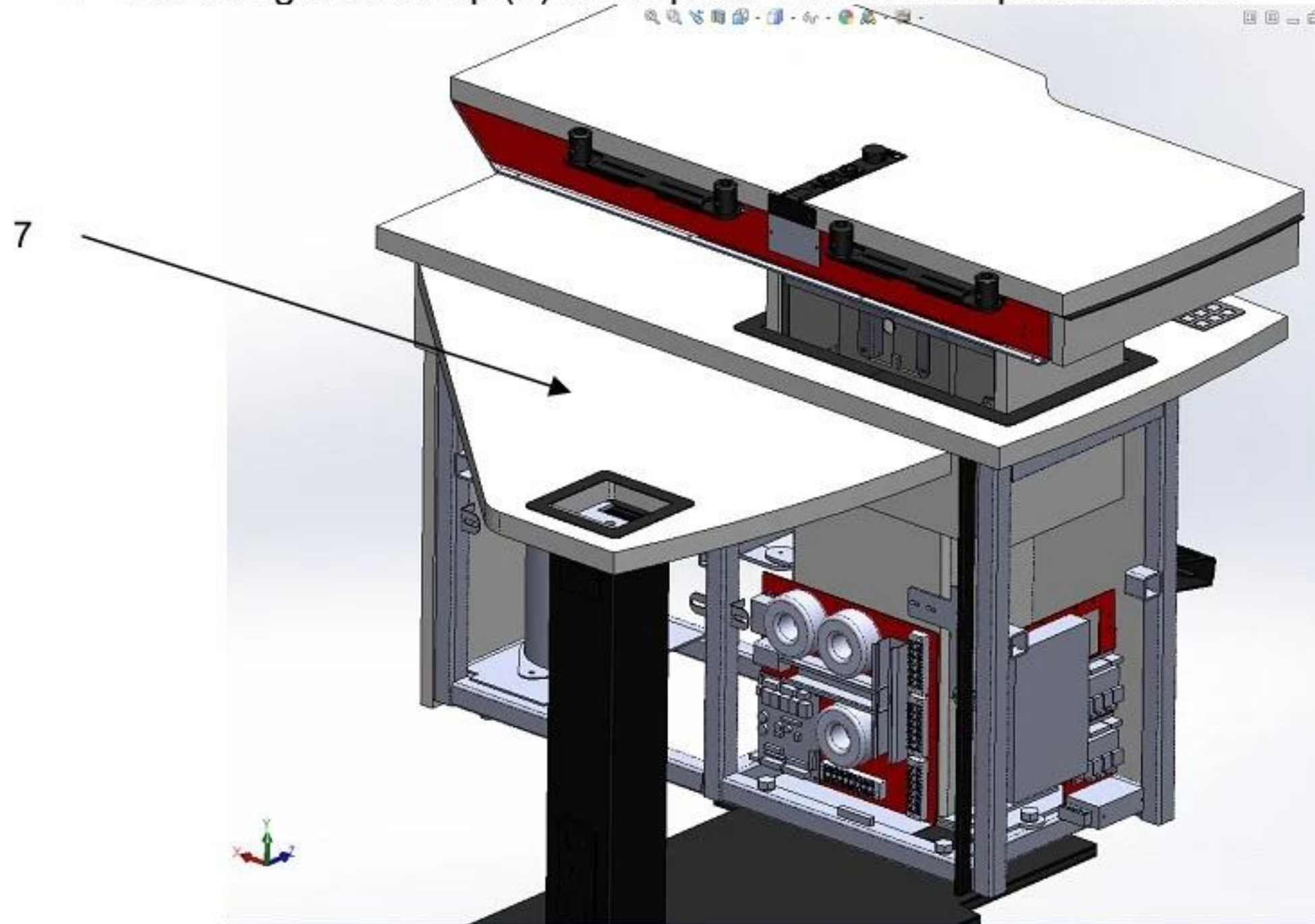
1. Attach main unit to the base plate.

Place base plate (1) with a lower column (2) to the desired place in the room.
Put main unit (3) on a base plate like shown in picture below.
Use supplied four strips (4) for a lifting of main unit.
Fasten main unit to base plate using 4 supplied bolts M12 (5).
Insert 8-way plug to the socket (6) on main unit frame. Connect ground wires.

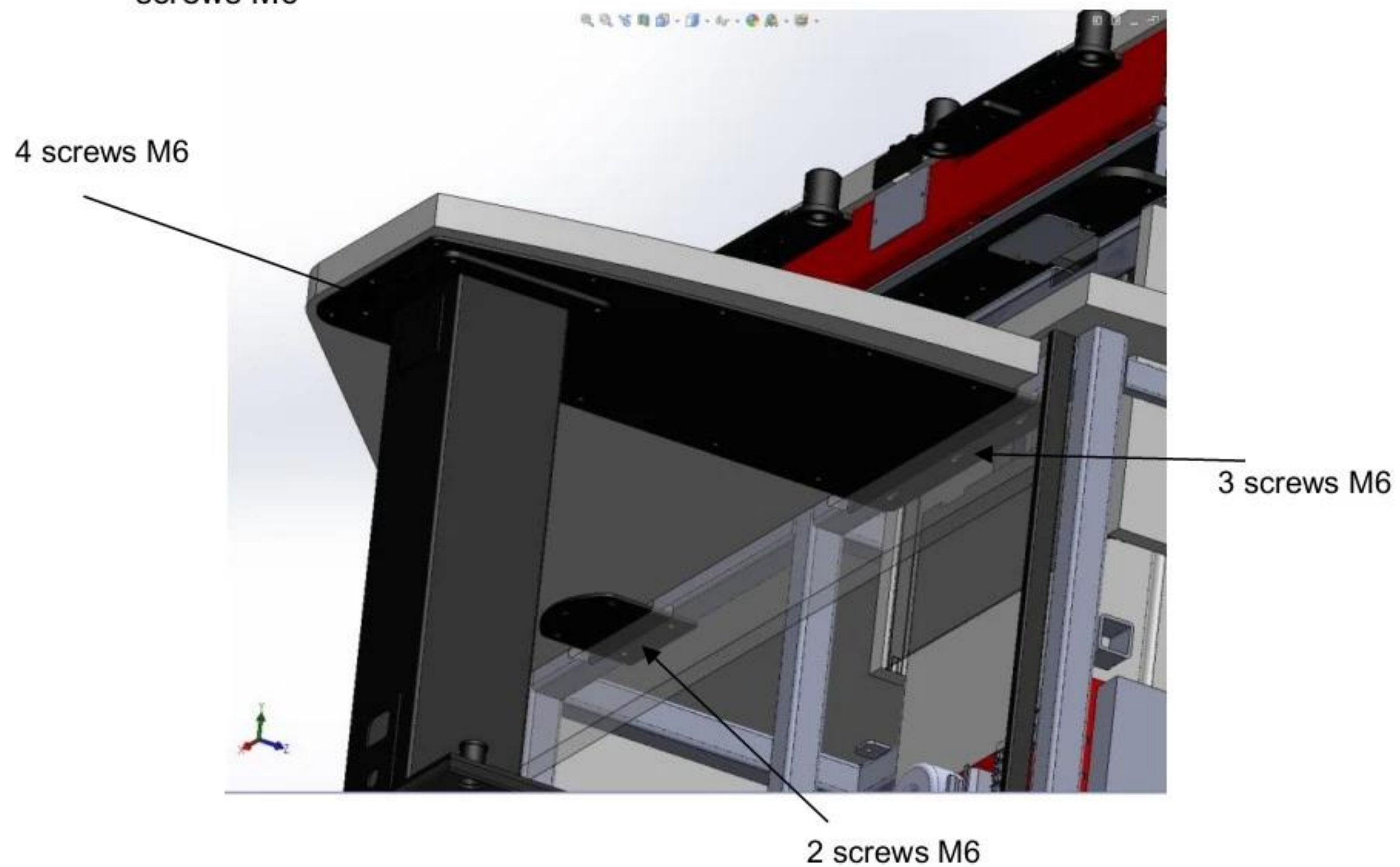


2. Attach triangle table top

- Put triangle table top (7) on its place as shown in picture below.

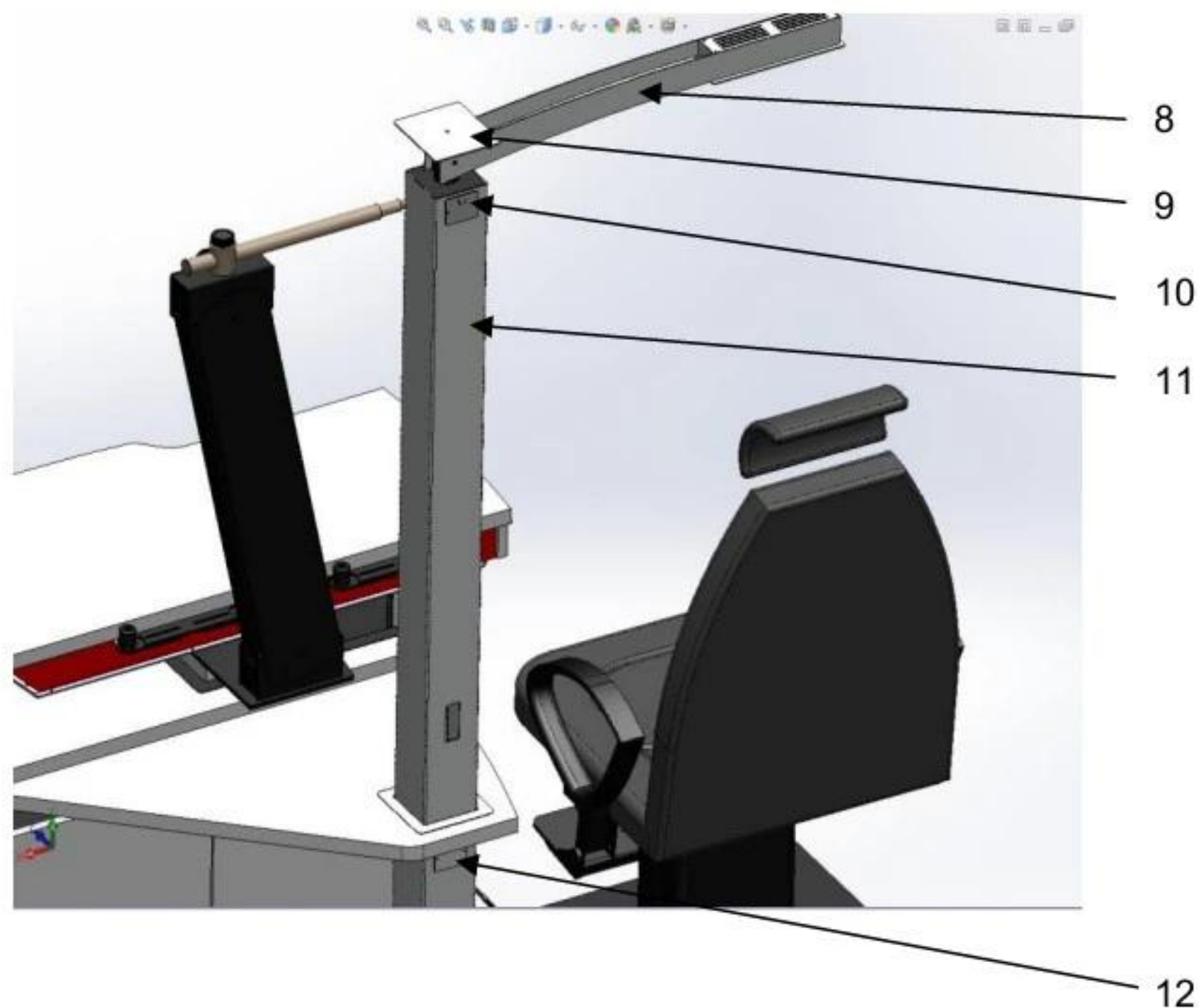


- Fasten triangle table top to the main unit and lower column using 9 supplied screws M6



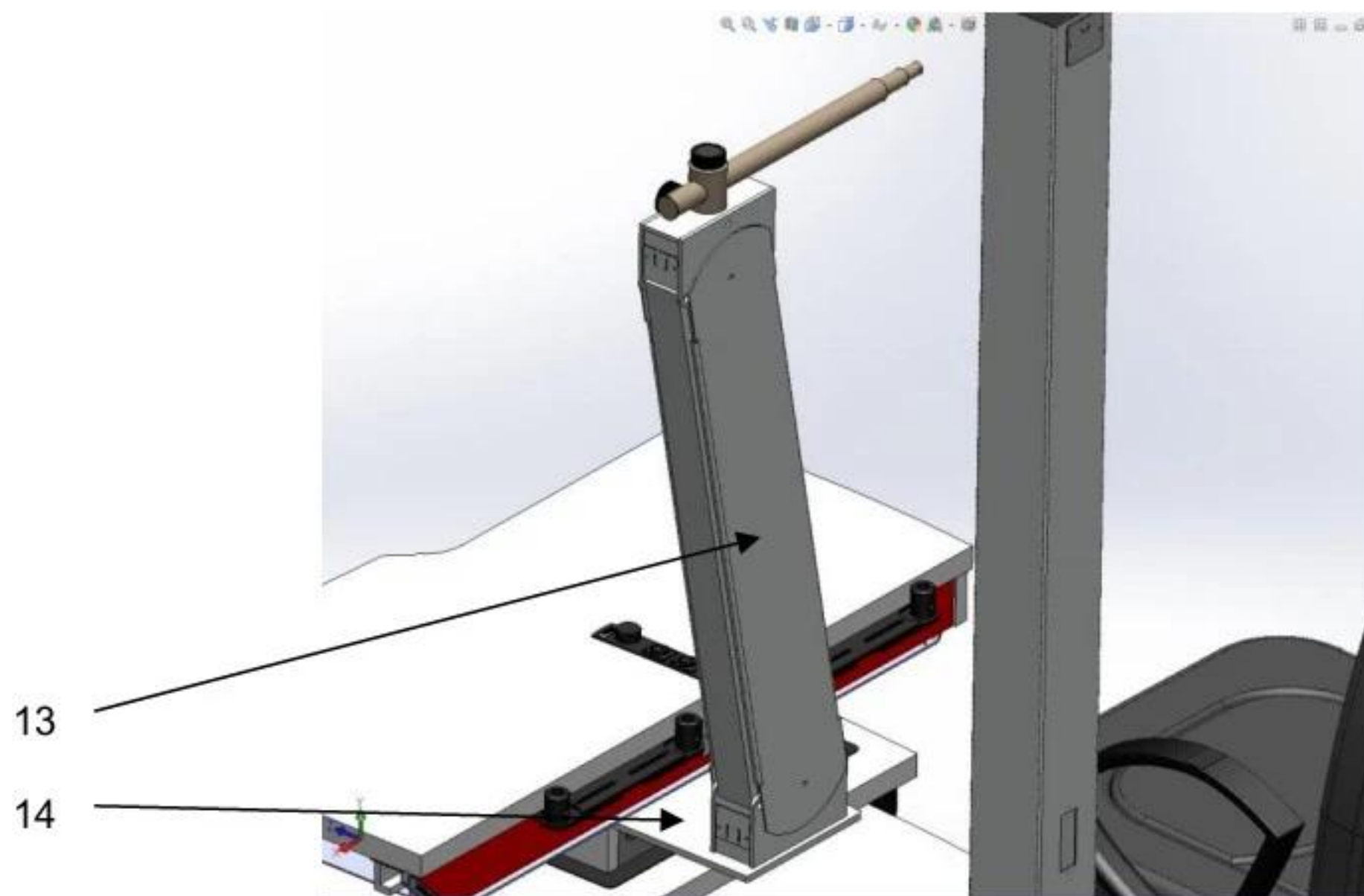
3. Assembling the column and overhead lamp

- Insert the chart projector's power cable into the hole (10) located on the upper back side of the column tube (11) (remove the plug from the cable, if present) and push it until it goes out from the other side of the tube
- The cable of overhead lamp is already inserted into the tube. Connect the cables coming from the lamp (8) with the corresponding cables inside the tube.
- Place the overhead lamp (8) on the tube (11). Connect the cables coming from the projector with the corresponding cables coming from the column base identified with the "projector" label (Pay attention to connect yellow/green cable with the yellow/green corresponding one. The other two couple of cables can be connected indifferently).
- Connect the cables coming from the lamp with the corresponding cables coming from the lower column (12) identified with the "LED" label.
- Place the tube in its seat.
- Tighten the tube by means of nut M10 inside the lower column.



4. Assembling phoropter arm

- Fasten phoropter arm support plate (14) to the base of elevating table top using 4 screws M8
- Put on the support plate and fasten phoropter arm (13) using two screws M10
- Connect cable of phoropter arm to the cable coming from elevating column of the table

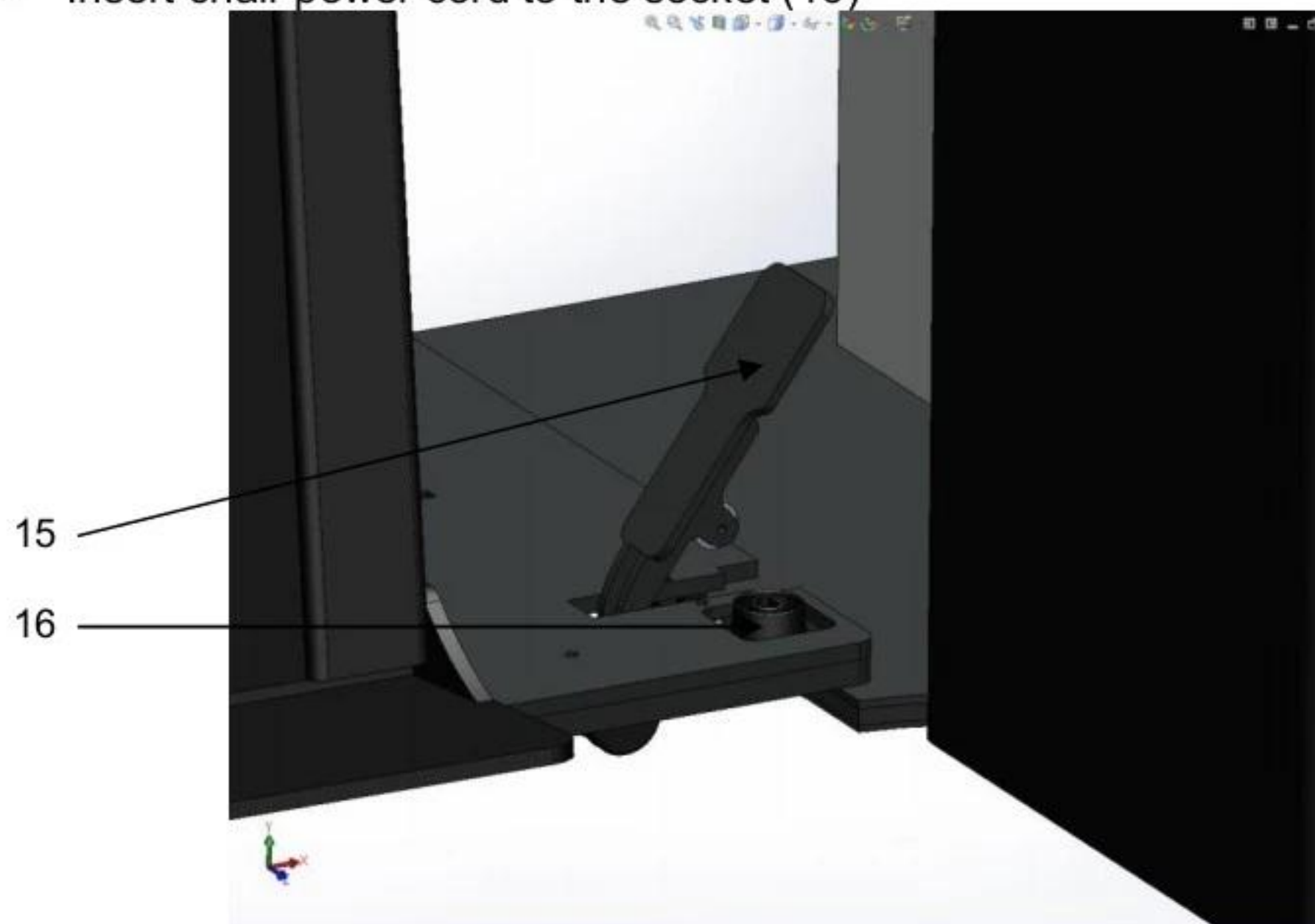


5. Assembling the patient chair

- Fasten chair to the chair column by means of the 4 supplied screws and washers.
- Fasten each arm rest for the chair by either two or three supplied M6 screws (depending on model).

*****All the screws for assembling the chair and arm rests are already screwed in to their holes in a bottom of the chair.

- Move chair assembly to its place and press handle (15) firmly down to fixate chair to the base plate.
- Insert chair power cord to the socket (16)



6. Installation of chart projector

Chart projector support plate (9) is located on top of the column tube. It is provided with:

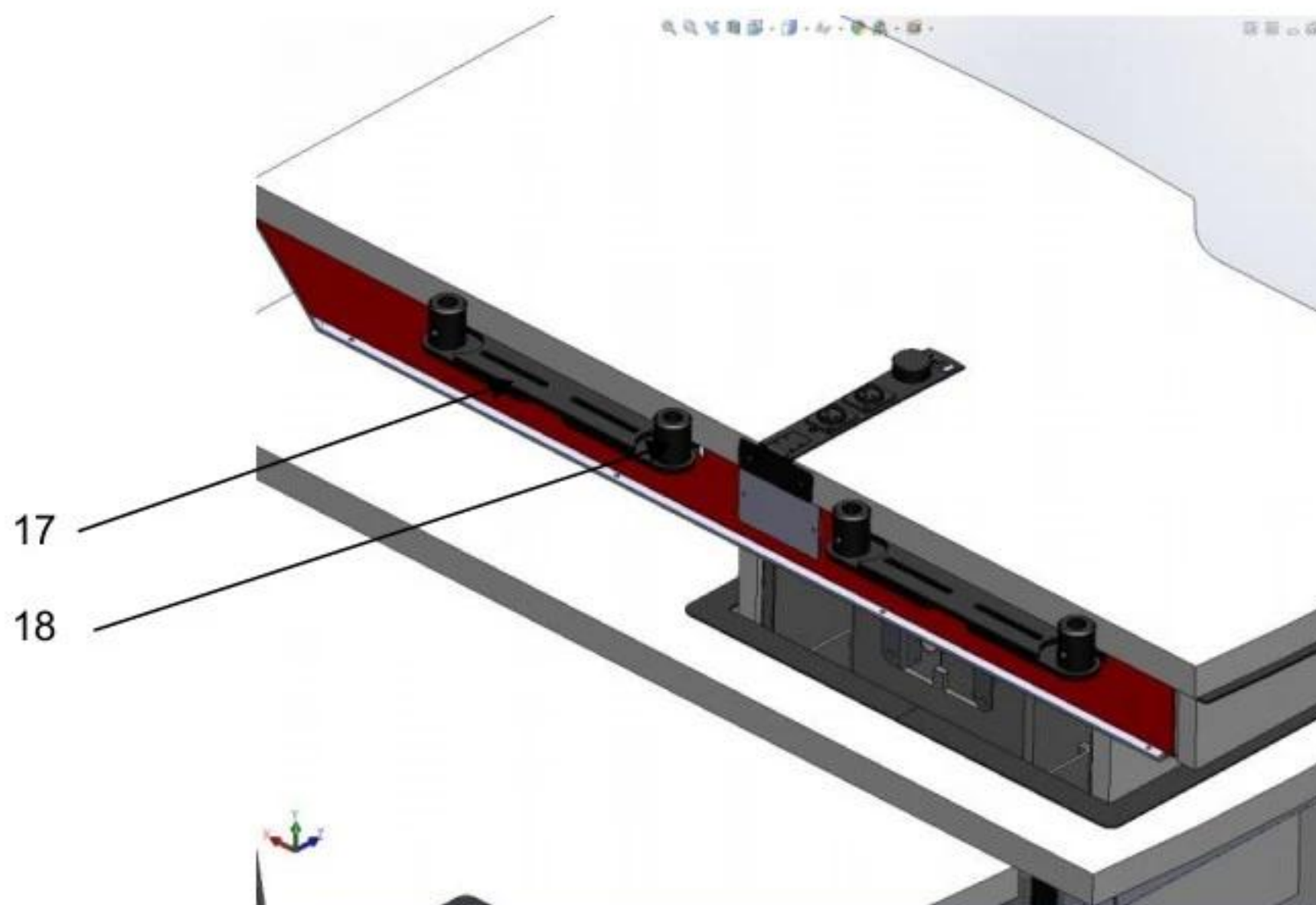
- 4 screw-holes at the border of each side (P1, P2, P3, P4) for mounting chart projector
- 2 screw-holes in the middle of the plate (TC and TD) for attaching the plate to the chart projector's column.

Depending on the type of projector, use either TC or TD screw-hole to attach the plate (either rotated or not rotated of 90°) to the chart projector's column and use either P1 and P2 or P3 and P4 to attach chart projector to the plate.

7. Installation of chin rest

Note: The refraction unit is supplied with the table top provided with a chin-rest support plate with two housings. This is suitable for mounting different types of chin-rests. To install some other types of chin-rests, it could be necessary to make some adaptations.

- Attach chin-rest support plate (17) in the desired place on the bottom side of table top by supplied four screws M6.
- Put the chin-rest in the support housings (18) and fix it by screwing the two 6x8 dowels in the related housings.



8. Installation of Instruments upon the table top

- Install the instruments upon the table top according to the instruction manual of the instrument themselves.

Attention: be sure that the instruments are well stable even during the movement of the table top.

- **LOW VOLTAGE INSTRUMENTS**

Mount the supplied connectors to the power supply cables of the instruments, connecting only the two diametrically opposite poles (central pole is not used). Insert the connectors into the instruments power supply outlets.

Attention: be sure that instruments to be supplied by the power supply outlets present on the table top have the same technical specifications as those indicated on the plate sited on the control box, i.e.: 50 VA maximum power, 6 V or 12 V power supply voltage (as specified on the plate).

- **MAIN VOLTAGE INSTRUMENTS**

Replace the plug of the instrument power cord with the supplied connector. Connect main phases to the two diametrically opposite poles (central pole could be used for ground cable). Insert the connector into the instrument power supply outlet on the sliding table top.

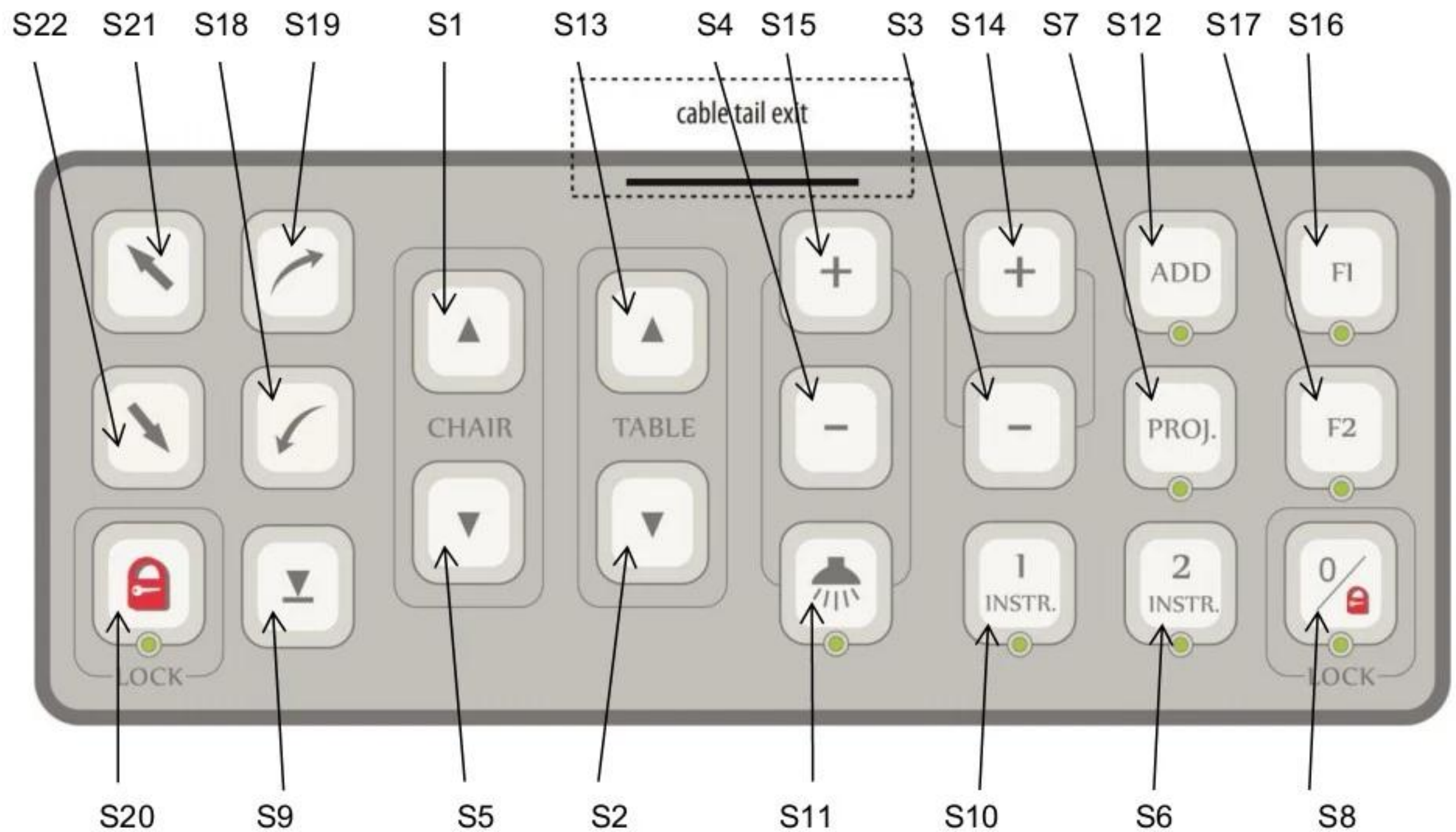
9. Main power supply connection

- Insert the main power cord into the related socket located on the back panel of the lower column.
- Insert the plug into a main power outlet.

Attention: be sure that local main voltage corresponds to voltage indicated on the plate sited on the back panel of the column base

3. Use

1. Buttons on control panel

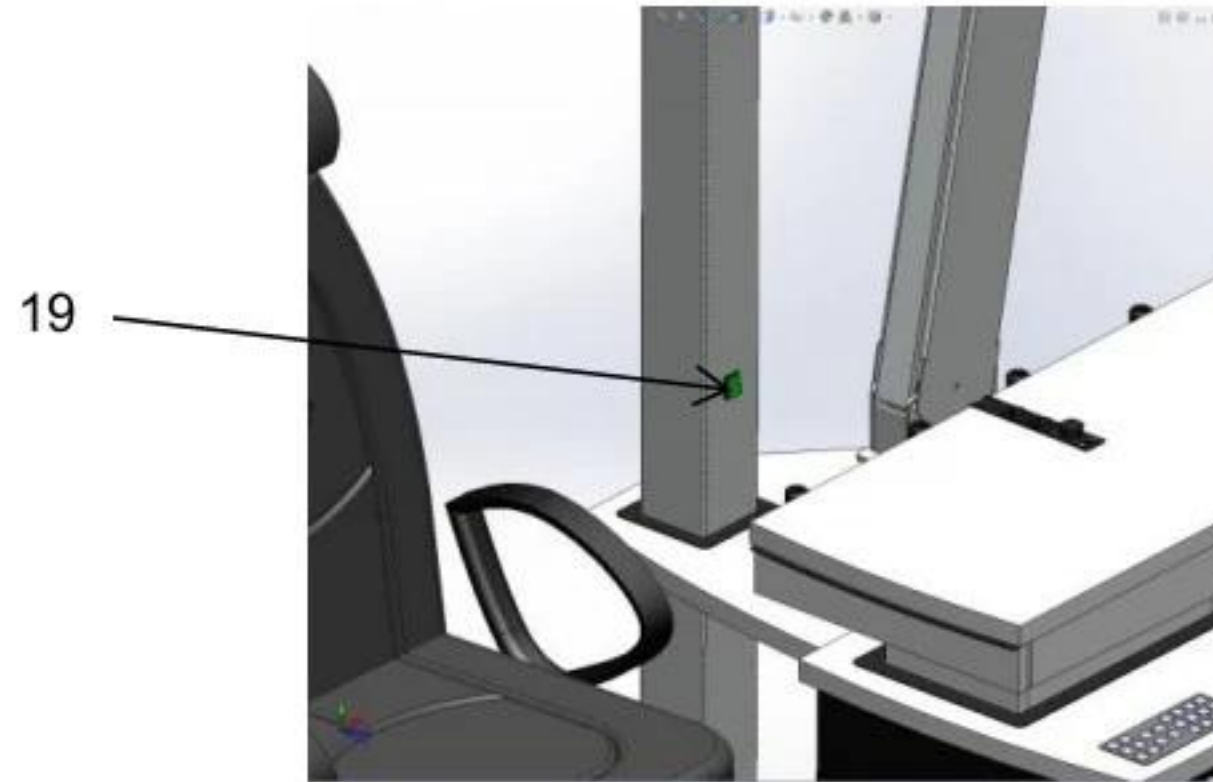


Meanings of buttons:

S1 – Chair Up	S12 – ADD ON/OFF
S2 – Table Down	S13 – Table Up
S3 – Instrument dimm decrease	S14 – Lamp dim increase
S4 – Lamp dimm decrease	S15 – Lamp dimm increase
S5 – Chair Down	S16 – F1
S6 – Instrument 2	S17 – F2
S8 – Zero Position	S18 – Chair forward
S9 – Chair to lowest position	S19 – Chair backwards
S10 – Instrument 1	S20 – Stop
S11 – Lamp ON/OFF	S21 – Phoropter WORK
	S22 – Phoropter REST

2. Switching on the unit

Turn the main power switch (19), sited on projector's column, to ON position.



3. Instrument table. Instrument in position 1

- To move instrument table to position 1 press and release button S10.
- Pressing and holding button S10 for more than 6 seconds turnings ON instrument 1. Instrument table doesn't move to position 1.
- To stop movement of the table press button S8 or S20. Table stops and LED in button S8 starts blinking. Press button S8 to move table to position 0.

4. Instrument table. Instrument in position 2

- To move instrument table to position 2 press and release button S6.
- Pressing and holding button S6 for more than 6 seconds turnings ON instrument 1. Instrument table doesn't move to position 2.
- To stop movement of the table press button S8 or S20. Table stops and LED in button S8 starts blinking. Press button S8 to move table to position 0.

5. Instrument table. Moving to position 0

- To move instrument table to position 0 press button S8.

6. Moving up/down the chair

- Act on the CHAIR Up/Down buttons S1 and S5 on the control panel.
- Press button S9 to move chair to lowest position.
- To stop automatic movement of the chair press one of buttons S1, S5 or S20.

7. Rotating the chair

- Loosen the chair rotation lock lever, sited on the external lateral side of the chair, to unlock rotation.
- Rotate the chair in the desired position within the allowed rotation range.
- Lock chair rotation by tightening the chair rotation lock lever.

8. Moving chair forward/backwards

- To move chair forward press button S18. Short click (less than 0.2 sec) of button S18 moves chair to the marginal forward position.
- To move chair backwards press button S19. Short click (less than 0.2 sec) of button S19 moves chair to the marginal backwards position.
- To stop automatic movement of the chair just press button S18 or S19 longer than 0.2sec. or press button S20.

9. Moving up/down the table

- Act on the TABLE Up/Down buttons S13 and S2 on the control panel.

10. Moving phoropter arm to WORK – REST positions

- To move phoropter arm to WORK position press button S21.
- To move phoropter arm to REST position press button S22.
- To stop automatic movement of phoropter arm just press button S20.

If instrument table top is in position 1 or 2, moving of phoropter arm to WORK position is impossible.

11. Switching on/off overhead light

- Act on "Lamp" button S11 on the control panel.
- Moving instrument table from position 0 to position 1 or 2 automatically turns overhead lamp OFF.

12. Overhead lamp light intensity control

Overhead lamp light intensity control can be controlled by buttons S4 and S15 on operation panel.

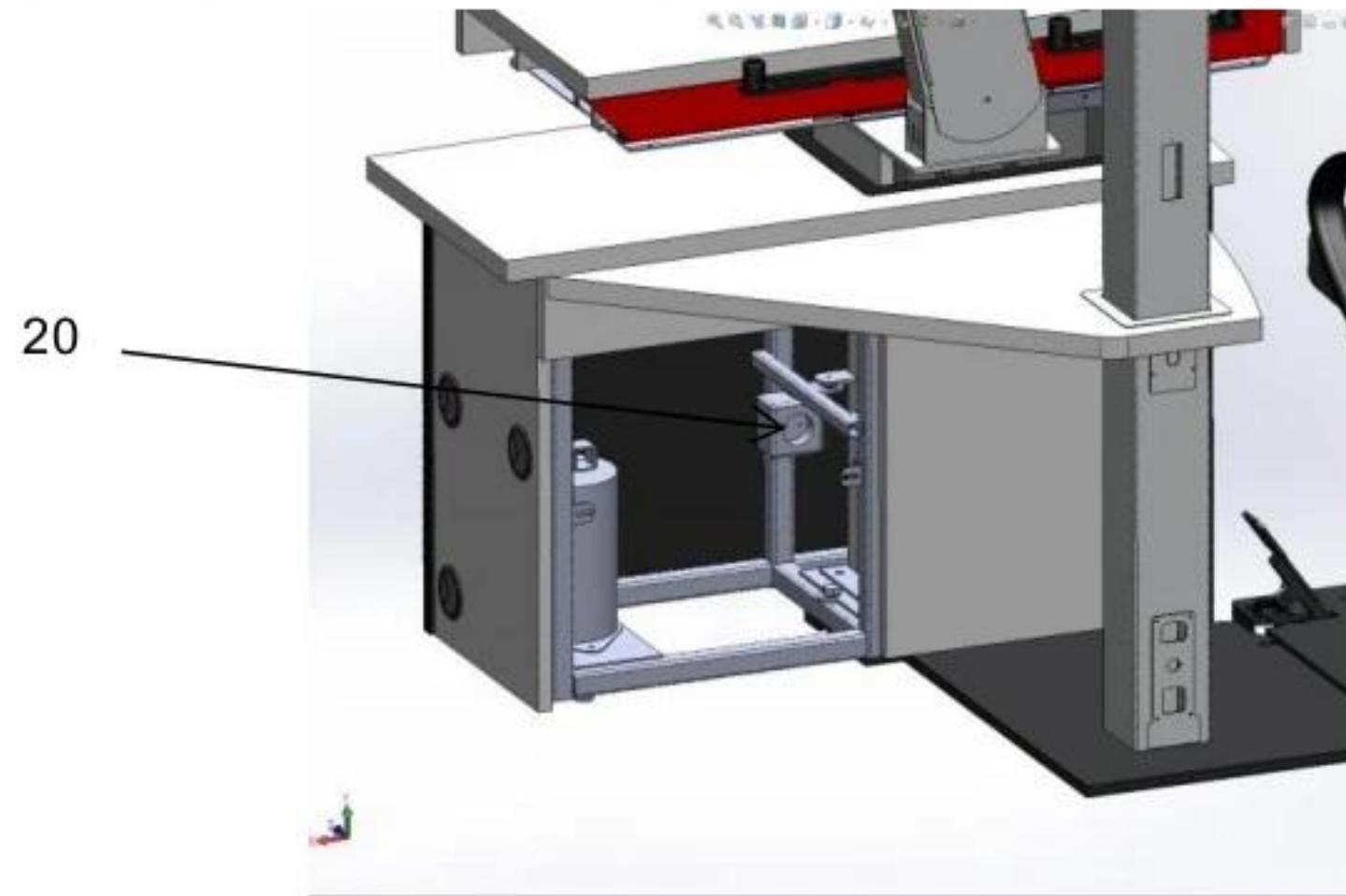
13. Switching on/off chart projector

Act on "Projector" button S7 on the control panel.

14. Switching on/off additional instrument

Act on "ADD" button S12 on the control panel.

230V outlet (20) for additional instrument is located inside the console of the unit



15. Instrument light intensity controlling

Instrument light intensity can be controlled either by buttons on control panel or by dimmer on table top.

To control from control panel: push button "+" S14 to increase light intensity and button "-" S3 to decrease it.

To control by dimmer on table top: rotate dimmer clockwise to increase light intensity and counterclockwise – to decrease it. During rotating, when light intensity reaches max or min value, specific sound is audible.

16. Switching off the unit

Turn the main power switch, sited under the table top of console, to OFF (0) position.

Remove the power cord plug from the main power socket if the unit going not to be used for a long period.

17. Selecting voltages for instruments on table top

DIP8 switch on Mainboard

sw1/1 – Instrument 1: OFF – Instrument 1 connected to Channel B
ON – Instrument 1 connected to Channel A

sw1/2 – Instrument 2: OFF – Instrument 2 connected to Channel B
ON – Instrument 2 connected to Channel A

sw1/3 – Foot control: OFF – chair, ON - table

sw1/4 – ON - Lamp auto off after 25min

sw1/5

sw1/6

sw1/7
sw1/8

4. Maintenance

Attention: before any maintenance operation, be sure turn the main power switch OFF (0) and take off the plug from the wall socket.

4.1. Replacing main protection fuses

Two main delayed fuses are sited in the fuse-holder located just under the main power supply socket on the back side of the chair.

Replace them only with fuses of same values as indicated on the label sited on the back side of the console.

4.3. Cleaning the unit

Attention: never use alcohol or any solvent to clean the unit, but use a damp cloth.

Clean the coated surfaces with a cloth moistened (never dripping wet). Please do not use any abrasive or aggressive cleaning supplies. Make sure that no moisture gets in between the keyboard keys. It is advisable to protect the instrument table against dust with a protective hood at the end of each working day, simply because open measuring and examining instruments are inherently sensitive to dust.

5. Labels

The label with CE mark and product electrical data is located on the rear side of the column base.