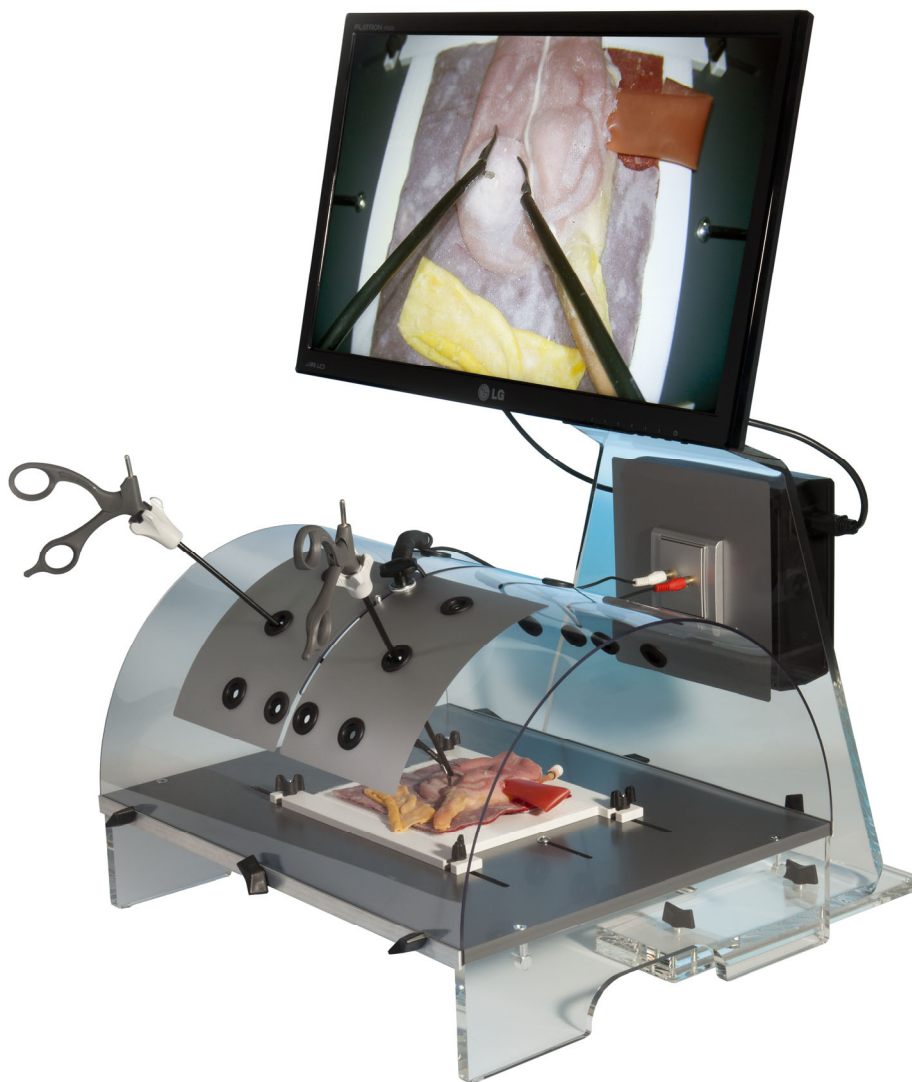


# Desktop Laparoscopic Trainers

## Abc-lap Full HD



**Operating Manual**  
**Warranty Sheet**

# Instructions for Use

## 1. Introduction

Thank you for purchasing the laparoscopic trainer Abc-lap. The laparoscopic trainer Abc-lap is intended for training of skills required for laparoscopic surgery.

## 2. Technical Specification

The laparoscopic trainer Abc-lap is composed of the laparoscopic torso and the display unit.

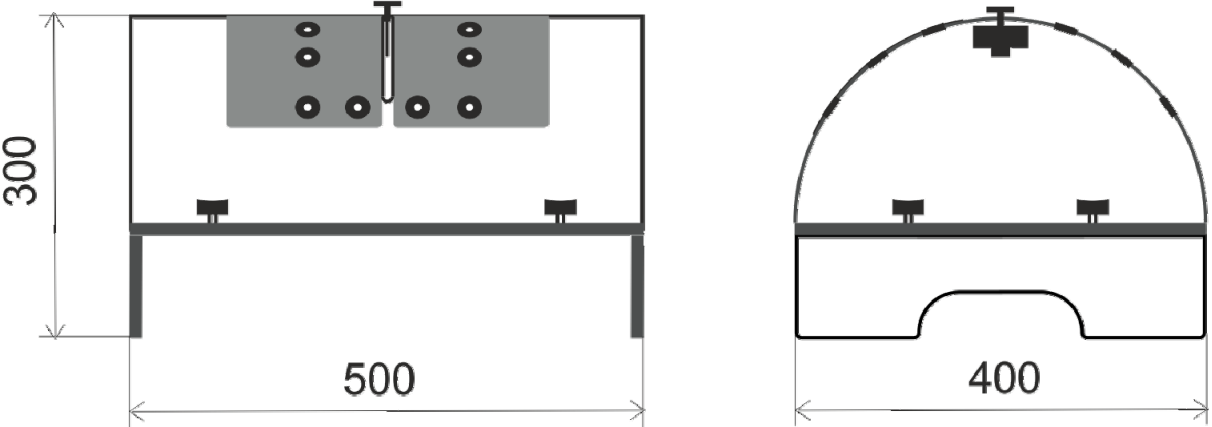
The laparoscopic torso consists of the simulator desktop with a fixation mechanism for training objects and the transparent top with a camera and ports for laparoscopic instruments.

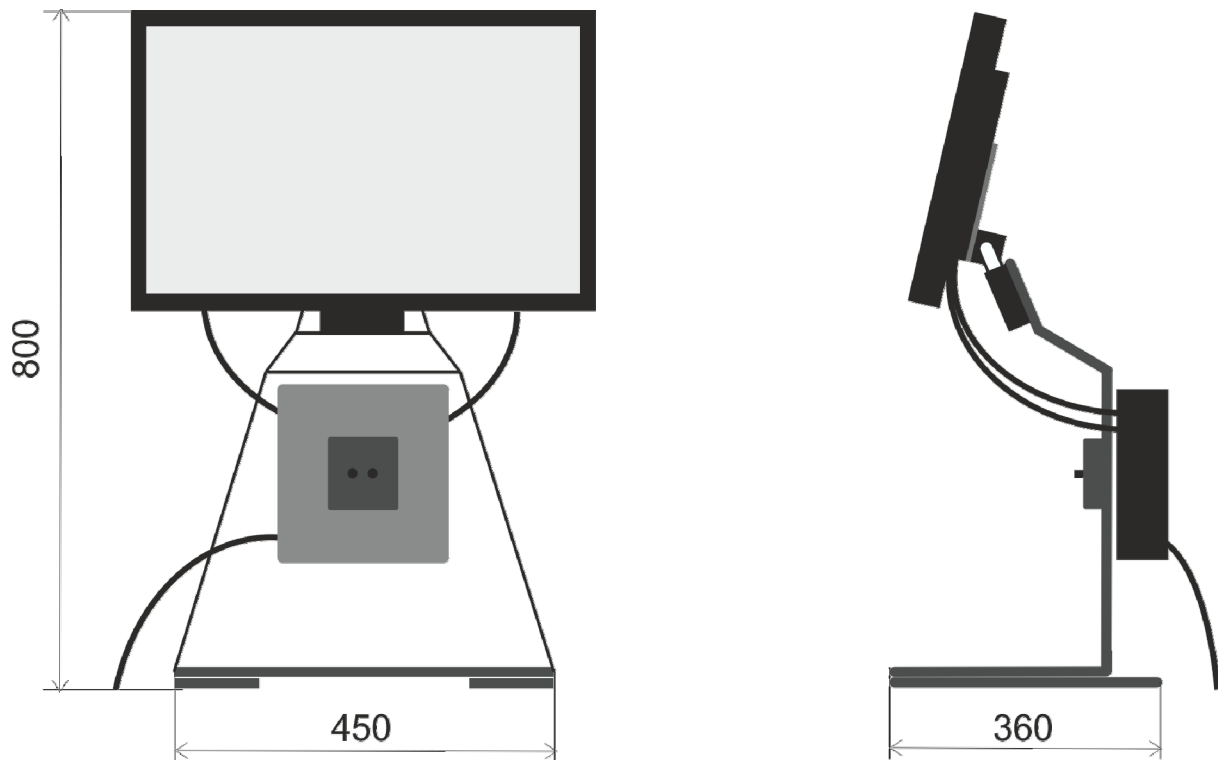
The display unit consists of the monitor stand with an LCD monitor fitted to the upper part. The mounting box located on the rear panel of the monitor stand contains the image processing electronics. The camera connects to the display unit by means of the connector box on the display unit front side.

### Weight

Laparoscopic torso: 6 kg                      Display unit: 9 kg

### Dimensions (mm)





<b>Power supply</b>	<b>100-240V/50-60Hz</b>
<b>Input</b>	<b>25W</b>
<b>Class of safety protection</b>	<b>II</b>
<b>Shielding degree</b>	<b>IP 20</b>
<b>Tolerable environment temperature</b>	<b>5-40°C</b>

### Meaning of Safety Symbols

 Symbol for fuse – indicates fuse boxes or the position of a fuse


### 3. Commissioning

The trainer is supplied partially assembled. To commission the trainer, you only need to fit the monitor to the monitor stand, to connect the monitor to the display unit, to connect the camera to the display unit, and to connect the trainer to the power supply. The monitor is fitted to the monitor stand by means of 2 provided fly screws M6. Connect the monitor to the display unit by means of the power cable 50 cm and the HDMI cable 50 cm which are supplied with the trainer. Use the power socket on the right side of the mounting box located on the display unit rear panel and the HDMI (1.6 Full HD Student) or HDMI 1 connector on the left side of the mounting box. The camera connects to the display unit via the connecting cable with 2 male cinch connectors, which connect to the female cinch connectors on the connector

box on the display unit front side. Colour marking of connectors must be respected. The red connector provides power supply (marked DC 12V OUT); the black connector conducts the video signal (marked VIDEO IN). The trainer connects to the power supply by means of a power cable 1.8 m which is supplied with the trainer. First, connect the cable to the trainer to the socket on the display unit left side, and then plug the reverse cable end to the 100-240V/50-60Hz power socket.

The initial installation and commissioning of the trainer is carried out by the dealer, who also performs an introduction to operation and use of the trainer. Thorough familiarization with the device operation and use is confirmed by certifying the warranty sheet by the dealer.

#### **4. Off/On Switch**

The main power switch on the display unit left side turns the trainer on and off. The monitor has its own power switch which is marked with the symbol .

#### **5. Practising with Trainer**

##### **Fixation of the Training Object**

To fixate the training object in the trainer, four bolts M6 with fly nuts are used, sliding in the parallel slots in the simulator desktop. You may change the position of bolts according to the size of the training object by sliding them in the slots. The trainer is supplied with a squared plexiglass tray. Four sucking discs with crocodile clips enable to fixate any kind of training material in the tray. The tray can be washed separately if needed.

##### **Camera Operating**

The trainer is equipped with a colour camera with a microlens with the focal lengths of 3,6 mm. The lens is connected to the camera via fine thread. To focus the object observed, turn the lens in the thread. Screwing the lens fully out is not recommended. It could lead to soiling of the sensor chip which is located directly under the lens. The fine thread may be damaged while mounting the lens back. The warranty does not cover such damage. Prevent lose of the spring delimiting the play in the lens thread. It is difficult to fixate the required level of focus without this spring.

Floating connection of the camera to the top of the trainer enables to change the vision angle by changing the position of the camera. To change the camera position, loosen the camera fixation nut M6 with the plastic rose and move the camera by sliding it in the slot in the perimeter of the trainer top. Once you have reached the required position, fixate the camera by tightening the nut.


### **Working with Uncovered/Covered Operating Field**

The trainer enables to adapt the training difficulty to the surgeon's skills. The ports for instruments are located symmetrically along both sides of the trainer top. On one side, the top is covered by non-transparent foil. If the simulator is facing the surgeon with the uncovered side, it is possible to perform the training of control of laparoscopic instruments under the direct eyesight. This is suitable for beginners. When the simulator is facing the surgeon with its side with the top covered by non-transparent foil, the operating field may only be controlled via the monitor display, exactly as in the actual laparoscopic operation.

### **6. Connecting of External Display (except 1.6 Full HD Student)**

Use the provided HDMI cable 1.8 m for connecting an external display or a beamer to the trainer. Connect one end of the cable to the connector HDMI 2 on the left side of the display unit and then connect the reverse cable end to the connector HDMI on the connector panel of the display. Select the appropriate video source in the user menu of the display.

### **7. Performance ASsessment Software (1.8 Full HD Professor)**

The Performance ASsessment Software (PASS) provides the trainee with objective feedback by means of eight metrics that are presented in form of tables and graphs. Please visit <http://lap-trainer.com/PASS.html> and download the software. For installation double-click on **setup.exe** and follow the instructions of MS Windows. When the installation is successfully completed you can connect your computer to the laparoscopic trainer by means of supplied USB cable. Use USB 2 or 3 connector (female) of your computer and the USB connector (male) on the left side of the imaging unit of the trainer. Both connectors are marked with symbol . After that please follow the instructions of the manual for PASS which is part of the download.

## **8. Trainer Maintenance**

When the trainer is not in use, protect it from any dust and soiling by applying a suitable cover. The trainer is to be cleaned by a dry cloth, or a cloth damped in clear water, or in a soap solution. Disconnect the trainer from the power supply prior to wet cleaning. Prevent the moisture entering the mounting box and the camera! This could lead to an electrical shock or cause a damage of the device. Never clean the trainer with alcoholic solutions. Parts of the trainer are made of plexiglass, which may be fractured by application of alcoholic solutions. The warranty does not cover any damage due to improper maintenance at variance with the operating manual. The trainer is protected by a type T 1.6 A fuse. The fuse position is indicated by relevant safety symbol. Prior to changing the fuse disconnect the device from the power supply.

## **9. Conclusion**

We wish you many trouble free hours of operation of your laparoscopic trainer Abc-lap. We hope it will facilitate gaining and improving of skills required in real laparoscopic surgery.

For further information, please visit us at [www.lap-trainer.com](http://www.lap-trainer.com).