

# 2023

## User manual for ML2000 3D-Score



Megalink AS  
V23.20



# User manual for ML2000

## 3D-Score

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## 1 General

Before you start to use your target system, please read these instructions carefully to enjoy optimum performance and a longer service life. Keep this manual in a safe place for further reference. The availability of particular products may vary by region. Please check with your sales representative.

### 1.1 Safety, warranty and notices

#### 1.1.1 Notice

Megalink AS reserves the right to make changes or improvements to this document and/or any of the products described in this document without prior notice.

The contents of this document are provided "as is". Megalink AS assumes no responsibility for any errors that may appear in this document, nor does it make expressed or implied warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Megalink AS shall not be liable for incidental or consequential damages in connection with, or arising out of the use of this document and/or of the products described in this document.

#### 1.1.2 Safety information

1. Read and understand the instructions carefully. Save the instructions for further reference
2. Observe all warnings and instructions marked on the product.
3. Unplug the product from the wall outlet and power supplies before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this product near water or when you are wet. Only the target unit can be placed in places exposed to light rain, as long as the target connection box is mounted in the dry place with appropriate grounding.
5. Do not place parts of this product on an unstable stand. The product may fall, causing serious injury or damage to the product. Extra precaution must be taken during installation and/or maintenance to avoid the product or parts of the product to fall.
6. Openings in the power supplies are provided for ventilation. To ensure reliable operations of the product and to protect it from overheating, these openings must not be blocked or covered.
7. This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your sales representative or local power company.
8. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
9. Make sure that you don't exceed the fuse rating or the cord ampere reading for power outlets and/or extension cords.
10. Never push objects of any kind into this product through cabinet openings as they may touch dangerous voltage points or other risks.
11. Refer all servicing or repair to qualified service personnel.
12. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - When the power cord or plug is damaged or frayed
  - If liquid has been spilled into the product
  - If the product has been exposed to rain or water (all products except the target units)
  - If the product does not operate normally when the operating instructions are followed.

- If the product is damaged from being dropped, in particular if power supply cabinets has been damaged.
  - If the product exhibits a distinct change in performance, indicating a need for service
13. Use only power supply and power cord which is of the same type as the one originally included with the product
  14. Respect local security regulations when using this product. Use appropriate protection for ears and eyes.
  15. Keep away from the equipment during shooting. Observe that security zones often need to be increased when using electronic targets due to increased risk of ricochets. Serious personal injury or death may be the result if persons are located between the shooter and the back stop behind the target.

### **1.1.3 Warranty**

#### **1.1.3.1 Warranty extent**

Megalink AS warrants that this product shall be free from defects in material and workmanship for a duration of 1 (one) year, which begins on the date of purchase by the customer. Extended warranty periods can have been granted in the contract. The customer may also have other rights which vary from place to place.

#### **1.1.3.2 Conditions**

1. This warranty is not applicable for damage caused by change, adaptation or unauthorized repair of the product.
2. This warranty is not applicable if the serial number and/or type description of the product has been changed, deleted or made unreadable
3. The warranty doesn't cover the following points:
  - Regular maintenance
  - Repair or exchange of parts due to normal wear
  - Other use of the product than the one described in the manual.
  - Cost for transport, travel or living for on-site service and all transport cost and risk which are directly or indirectly related to the warranty.
  - Unsuitable or improper installation or use of software
  - Repair made by personnel not authorized by Megalink AS
  - Accidents, lightning, water, fire, insufficient ventilation or other circumstances which are not in the power of Megalink AS
4. This warranty doesn't restrict the national right of the user, nor the rights of the user due to the contract made with the Megalink AS sales representative.

#### **1.1.3.3 Repair or replacement**

If Megalink AS receives, during the applicable warranty, a defect in any product, Megalink AS shall either repair or replace the defective product, at Megalink AS option. Megalink AS shall have no obligation to repair, replace or refund until the customer returns the defective Product to Megalink AS.

Any replacement product may be either new or like-new, provided that it has functionality at least equal to that of the Product being replaced.

### **1.1.4 Copyright and trademarks**

Copyright © 2018 by Megalink AS. All rights reserved.

Megalink and ML2000 are trademarks of Megalink AS.

Other product or company names mentioned herein may be trademarks and/or trade names of their respective owners.

## 2 About Megalink 3D-Score

### 2.1 Key technical data

- Optical detection with no paper or rubber band
- Integrated adjustable LED illumination
- Detection area: 180x180mm
- Bullet speed measurement
- Cross-fire support. Detect and remove shots fired at the wrong target
- Designed for 10 meter air or 10-50 meter rifle
- May be used in shooting halls with normal light of different kinds. The target is robust on different light conditions in small and large shooting clubs
- Can be used outdoor with easy/inexpensive overhead protection



Megalink 3D-Score with target stand and bullet trap.

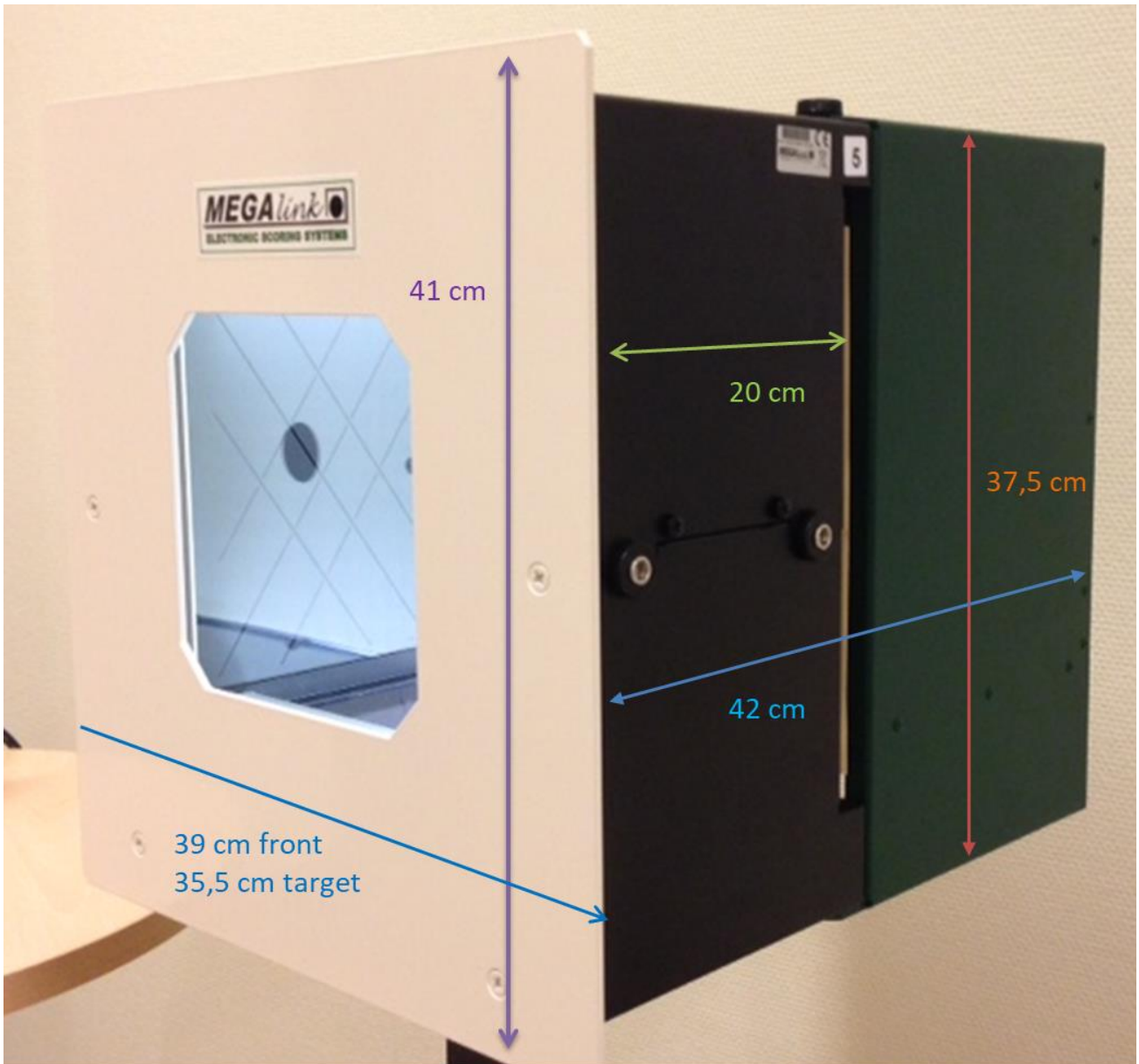
### 2.2 Outdoor use

- The target is designed to withstand moisture but should be protected against direct rain. Place it under a roof, in a shed or similar.
- The target should be placed so that it avoids direct sunlight.
- The target is an open optical target. The black aiming point is made by an optical illusion. Make sure that no light is entering the target from the rear side.
- If the aiming point is not total black this can be achieved by placing something black (plastic bag, tilted wooden plate or similar) behind the target. Alternatively, the “tunnel” through the target can be extended with a pipe.

### 2.3 Storage

- It is important to power off the targets when not in use.

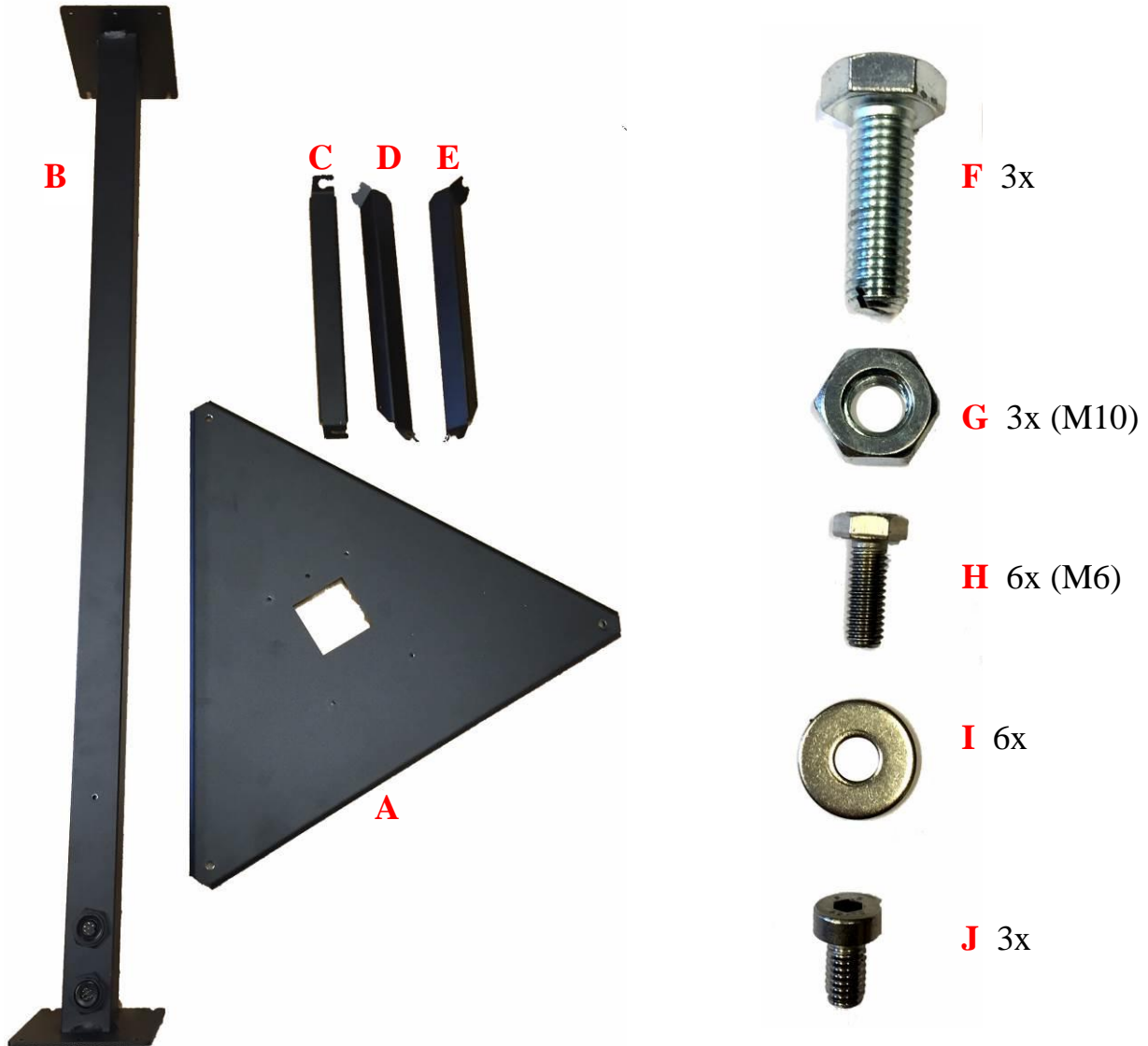
## 2.4 Measure



### 3 Assembly

#### 3.1 Assembly of the target stand

Parts:





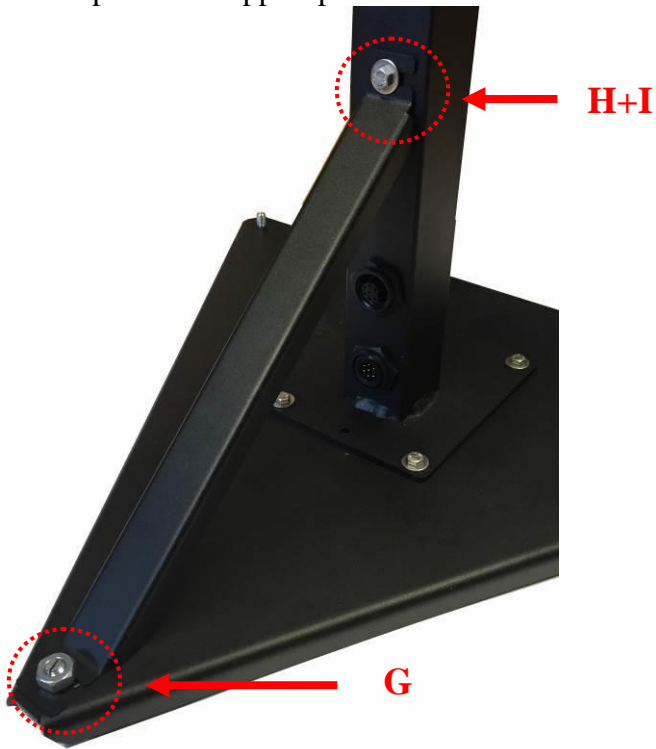
Insert a bolt **F** into each corner of **A**. Use a standard screw driver to make sure the bracket is standing horizontal on the surface.



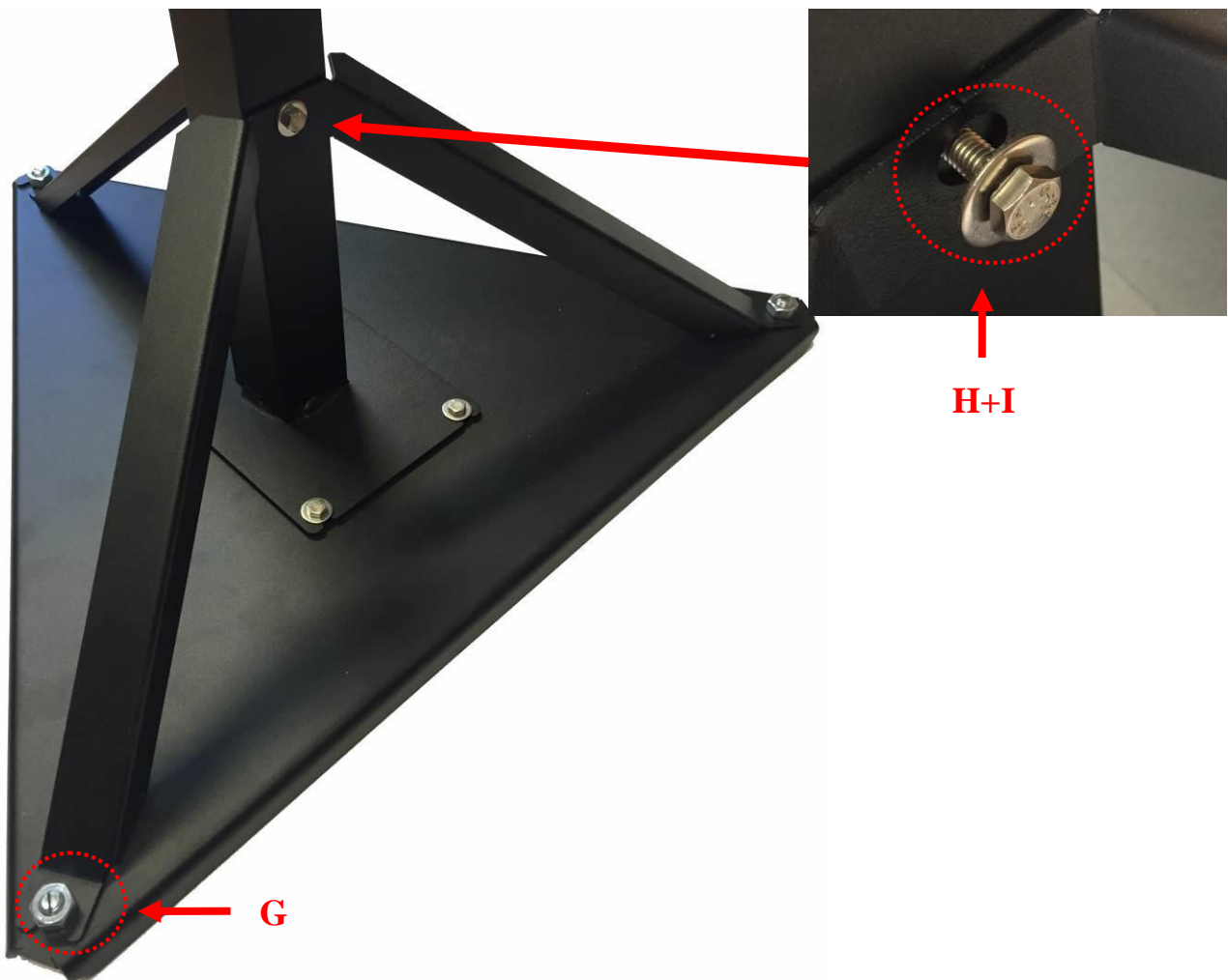
Use four bolts **H+I** to mount part **B** onto part **A**. The connector points must be facing the corner of **A**.



Mount part **C** to support part **B** and **A**.



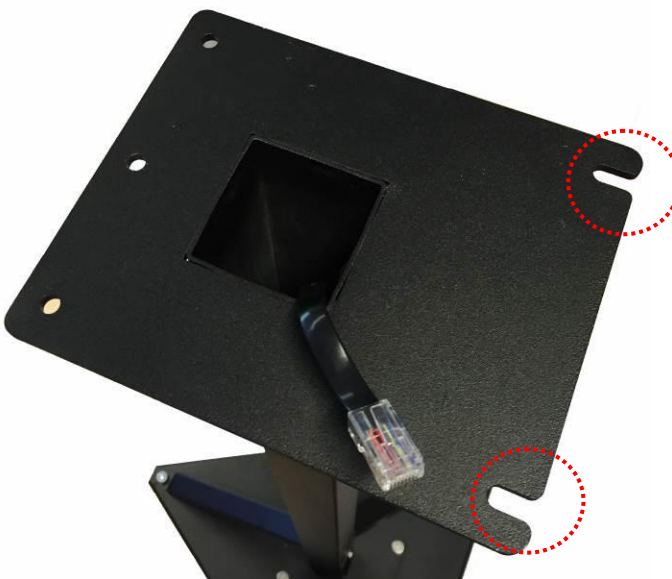
Mount part **D** and **E** to support part **B** and **A**.



Slightly insert two umbraco screws **J** into the bottom of the target.



Connect the RJ47 plug from the stand into the connector on the bottom of the target. Then slide the two umbraco screws into position on the stand.

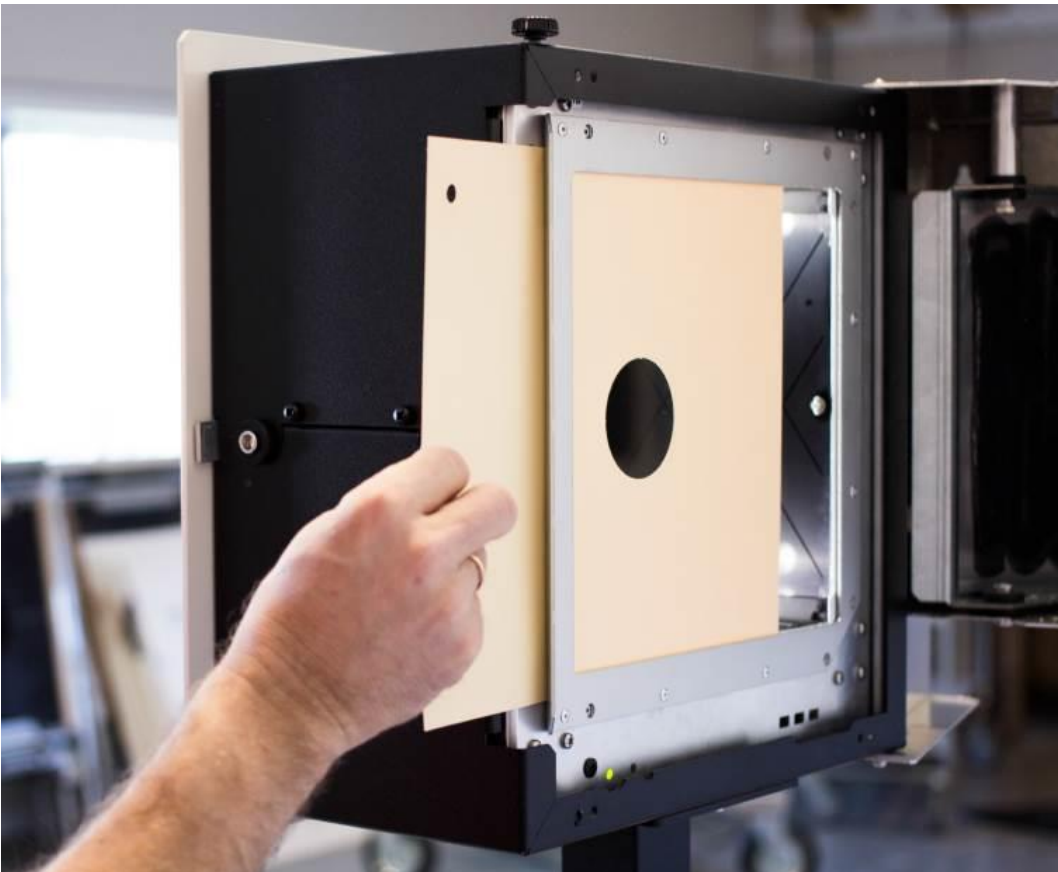


Use also the third umbraco screw **J** and fasten the target on top of the stand.



### **3.2 Inserting the aiming card**

The aiming card is easily inserted into the slot located on the back right on the target. The card will be held in place by fitting the two holes onto adapters mounted on the target.

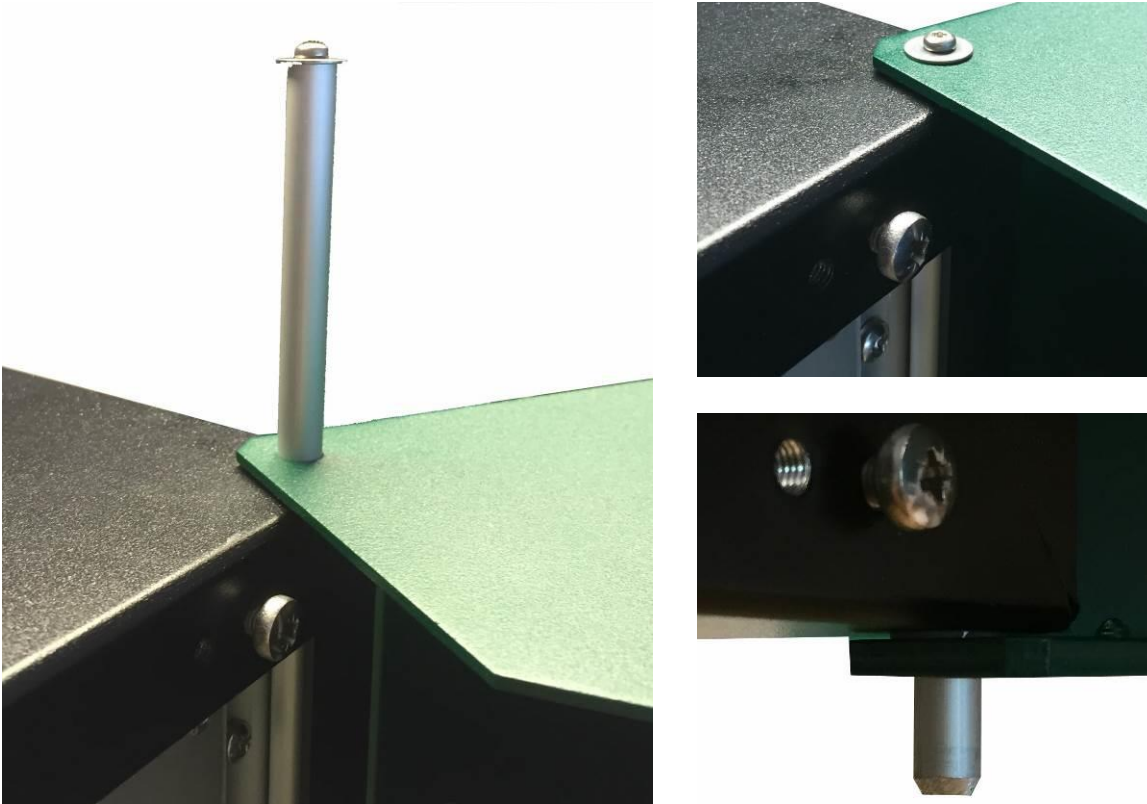


### 3.3 Mounting the bullet trap

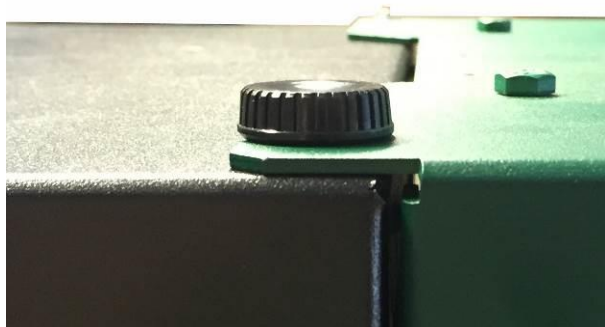
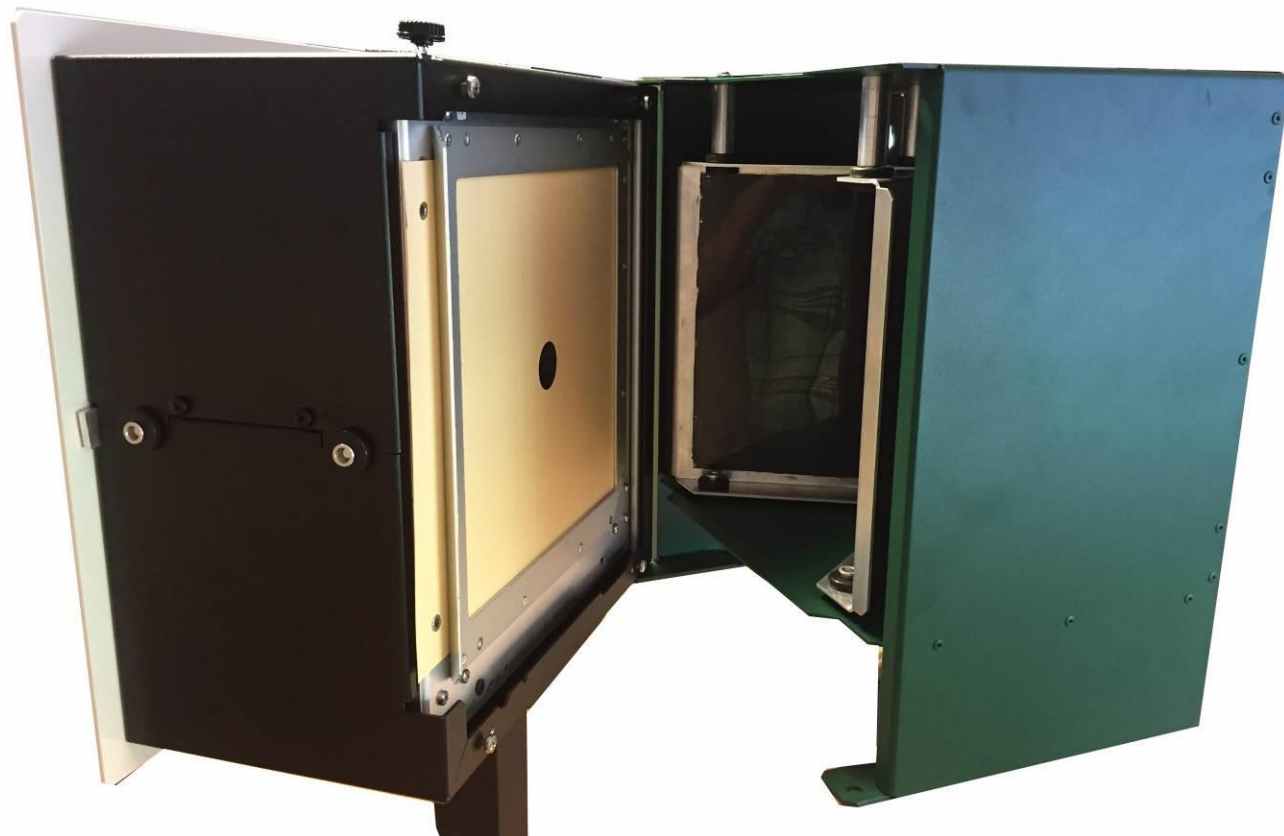
Loosen the screw on the top of the target.



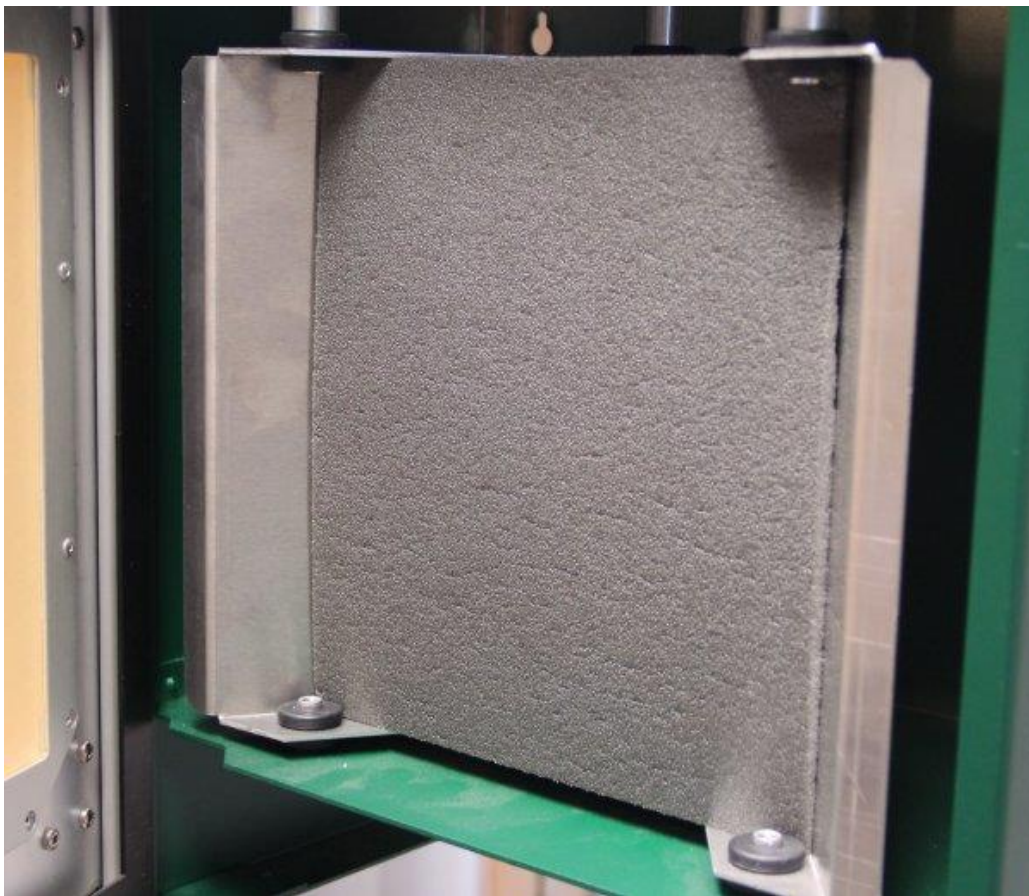
Use the metal stick to connect the bullet trap to the target. Make sure to push it all the way down so that the bullet trap is securely mounted to the target both on top and bottom.



Move the bullet trap towards the target and secure it with the top screw.



Mount the foam plate for protection.

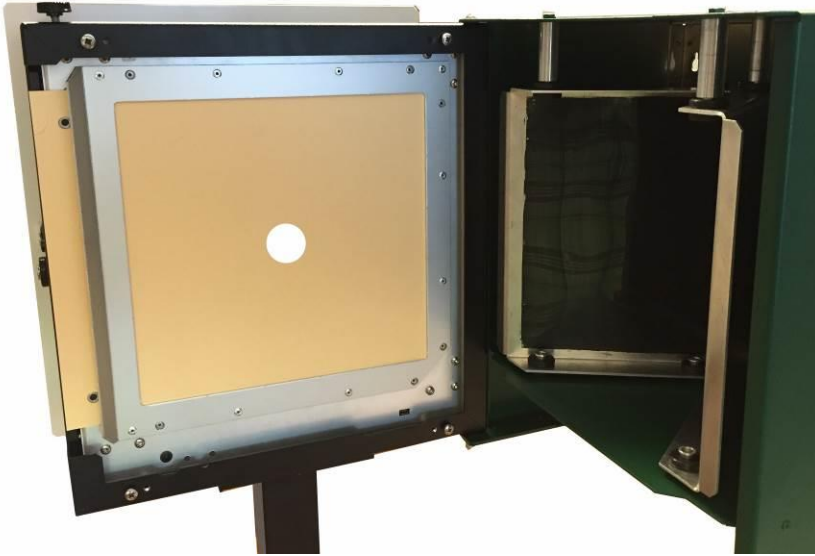


Mount the plastic cup on the bottom of the bullet trap.

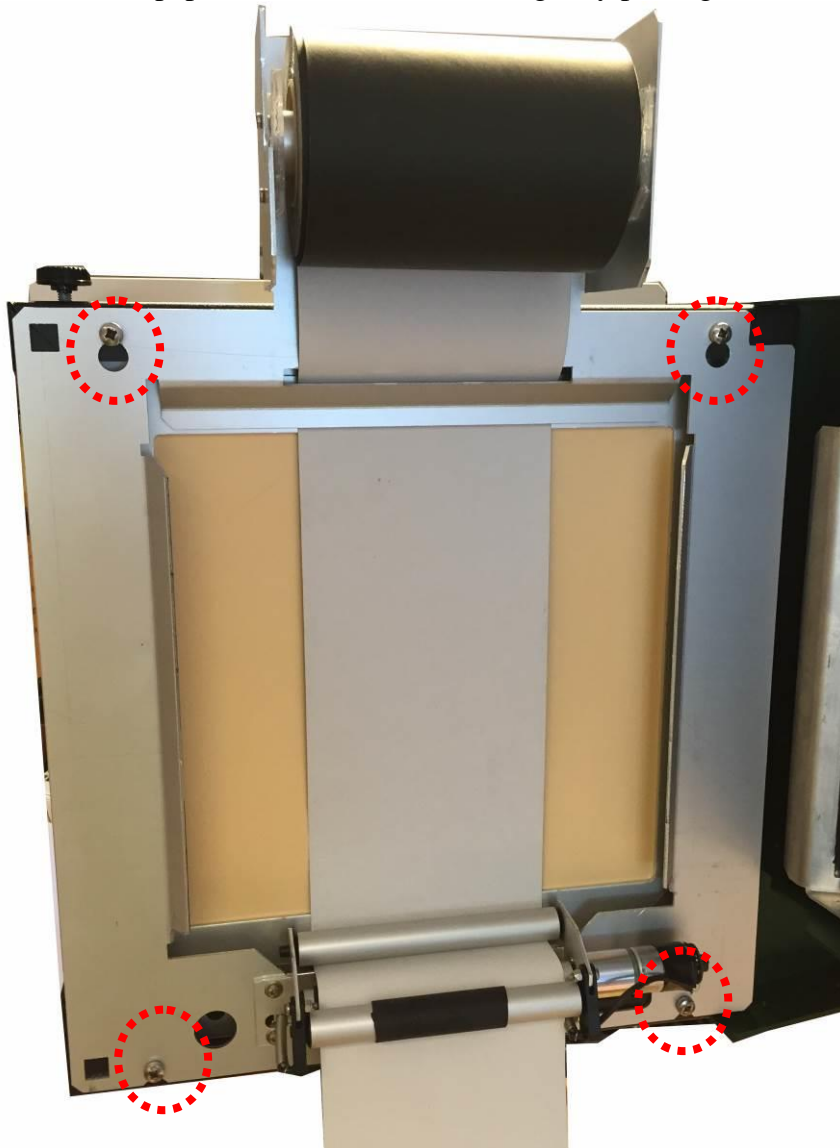


### ***3.4 Mounting the witness paper strip***

Pull back the bullet trap (if present).

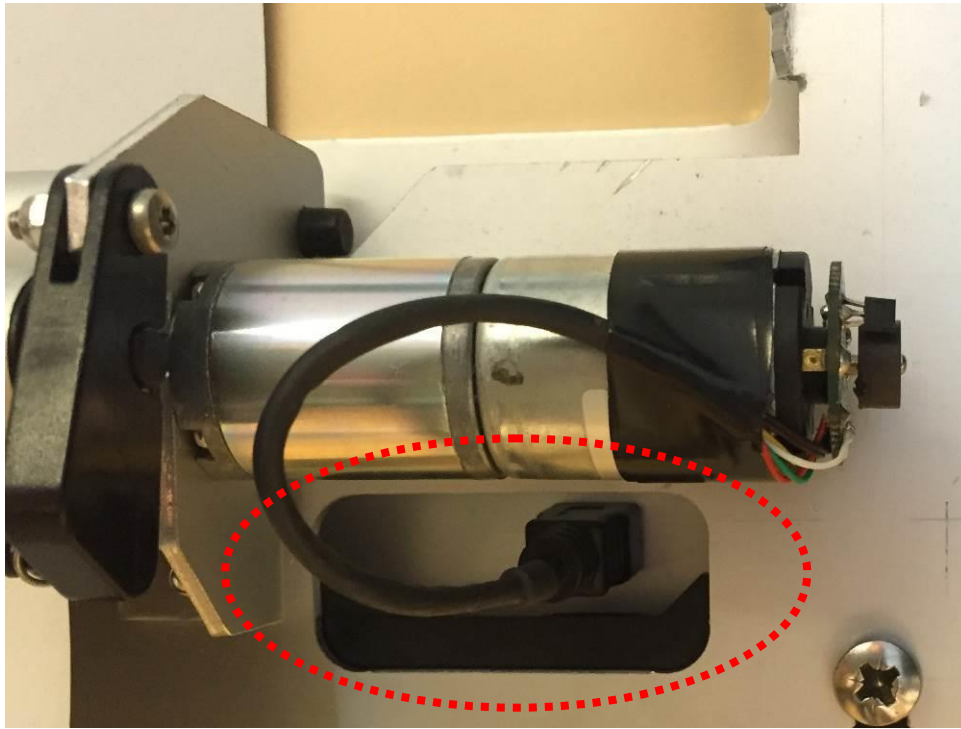


Mount the witness paper mechanism onto the target by placing the holes over the bolts on the target.



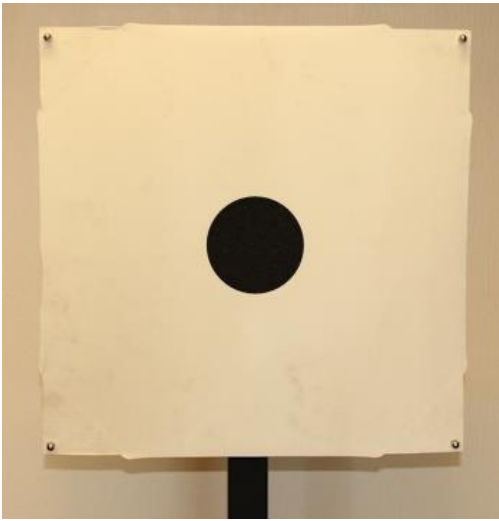
Connect the cable to the target.



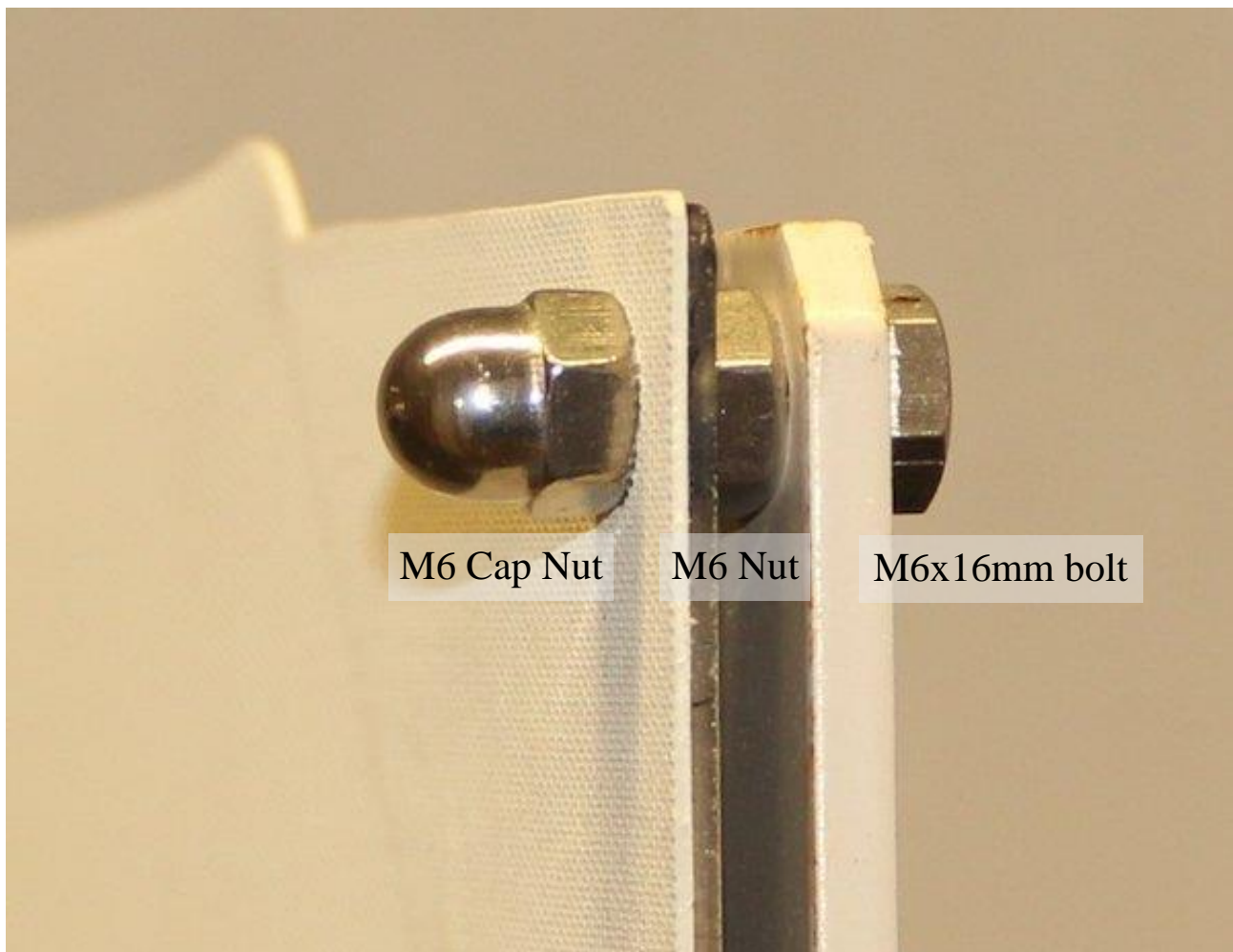


### 3.5 Mounting the 50m aiming face

Using on 50m the rubber aiming face must be assembled on front of the larger front plate. The rubber must not be in contact with the steel plate.



The plastic triangle is pushed on to the bolt on each corner and secured with the cap nuts.



### 3.6 Bracket for wall mounting or target lift

Use the four screws to mount the left and right bracket to the rear of the target. If the target should be used with a target lift make sure to also mount the suspension bar.



Left bracket:



Right bracket:

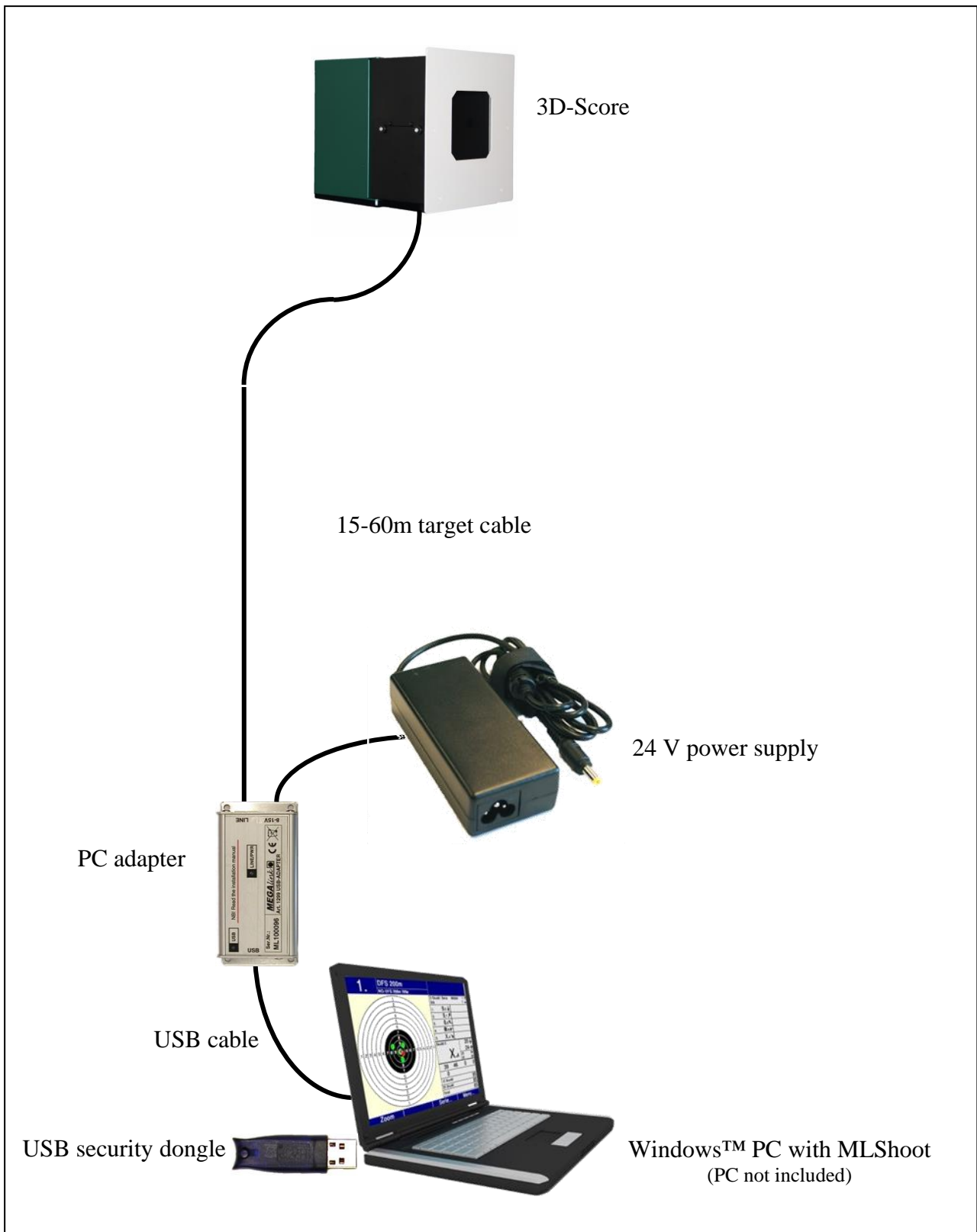


Mount the band from the target lift (optional):



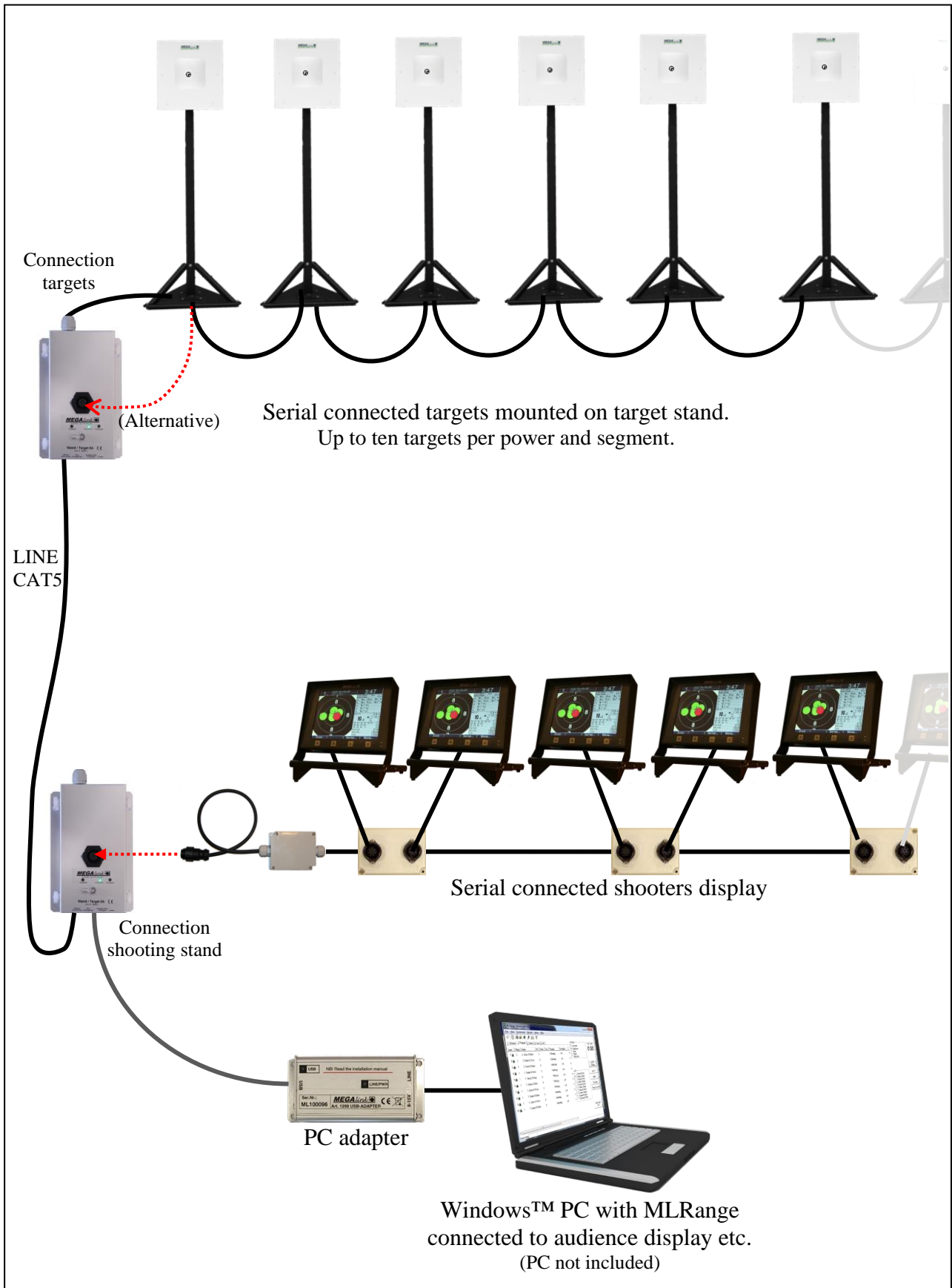
## 4 Cabling

### 4.1 PC based personal target

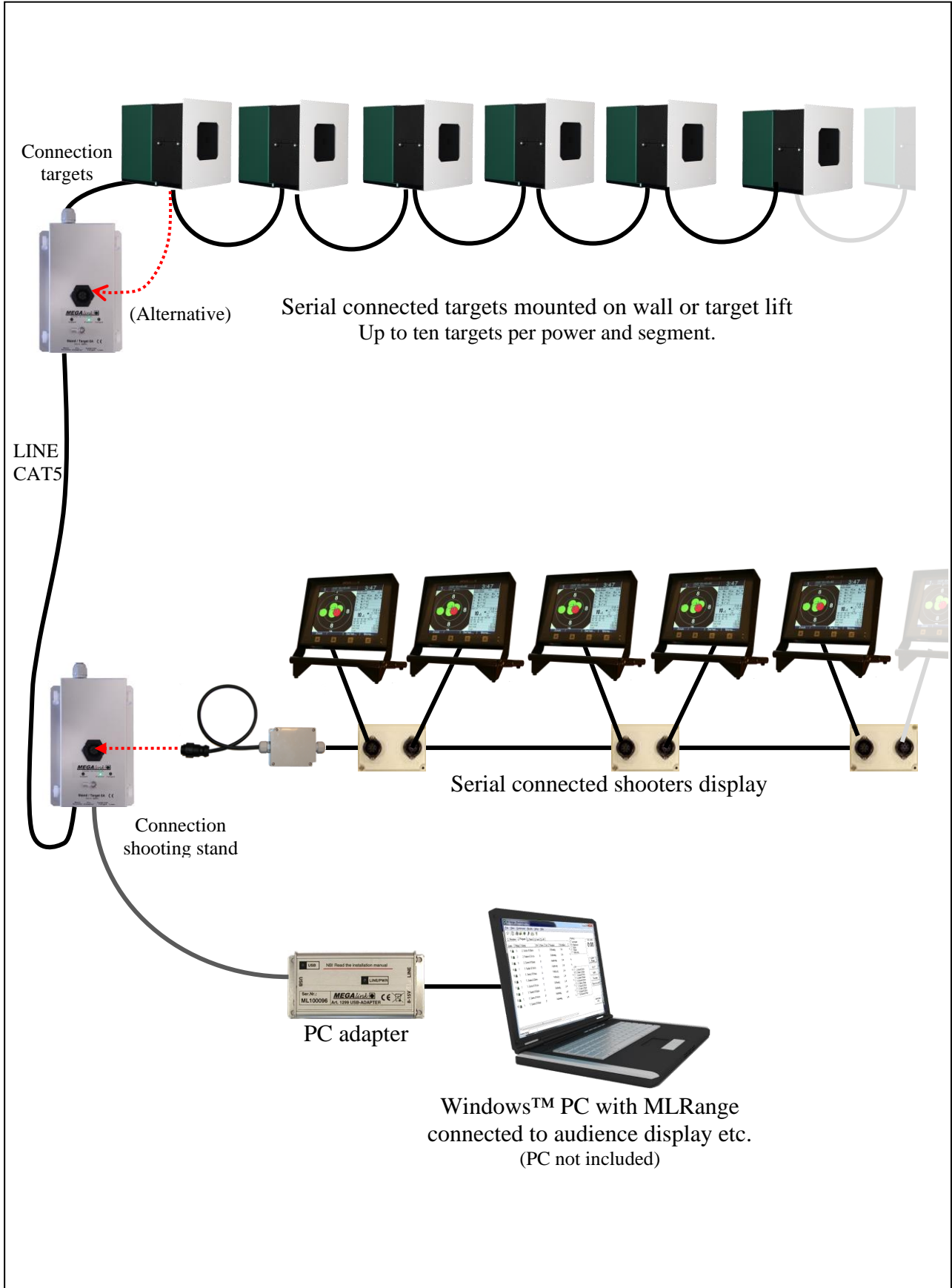


### 4.2 ML2000 system

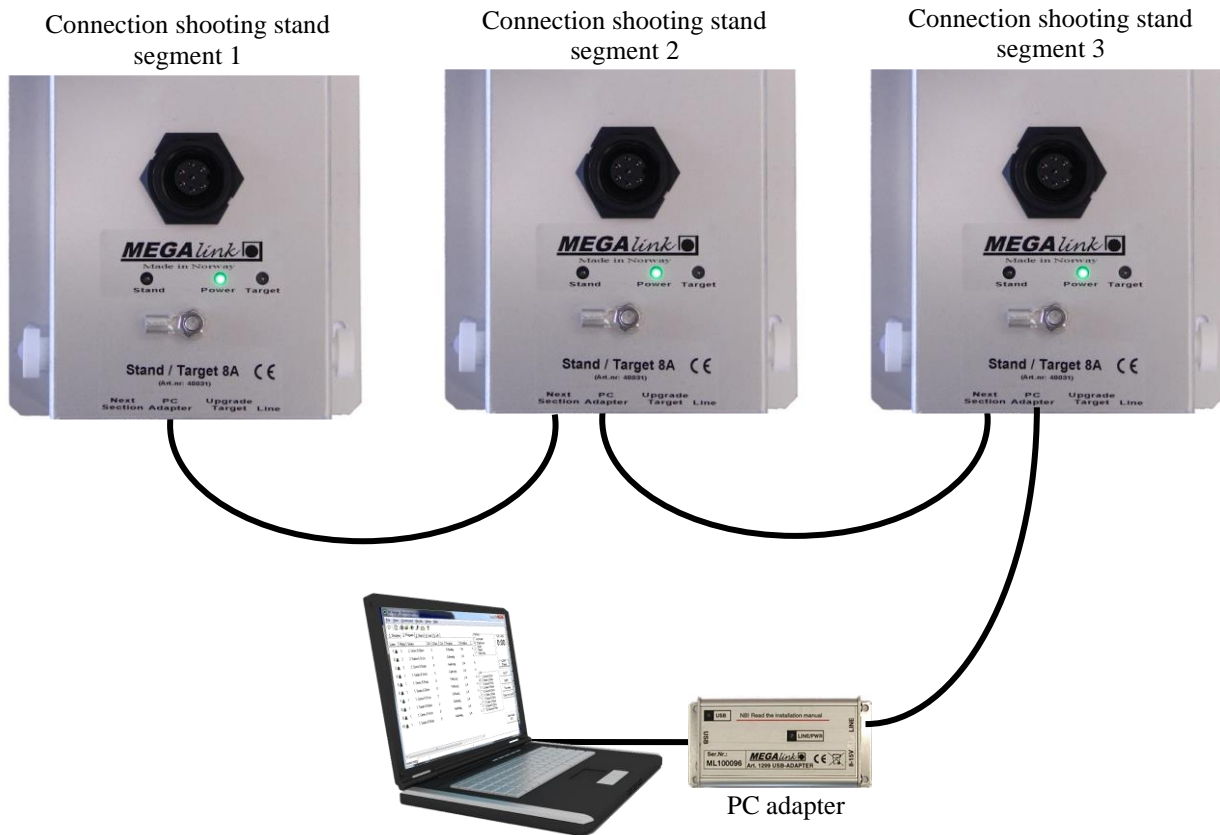
A



**B**



### 4.3 Connection of multiple segments to one computer via USB adapter



Windows™ PC with MLRange connected to audience display etc. (PC not included)

## 5 Key functions

### 5.1 Power indicator

A green LED on the back of the target will illuminate when the target has power.



### 5.2 Integrated illumination

The target has integrated adjustable LED illumination.

#### Adjusting from shooters monitor

Goto Menu → System setup → Adjust target illumination.

Use **Previous** and **Next** to select which target to adjust.

Press **Adjust** to set the value from 0 to 100 percent.

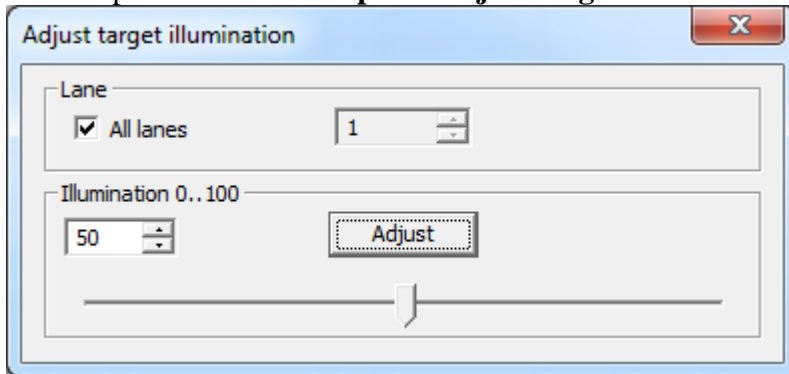
Press **OK** and **Finished** to return to main menu.



Please see the document *User Manual for ML2000 – Display Unit for additional information.*

### Adjusting from MLRange

In the top menu select **Setup** and **Adjust target illumination.**



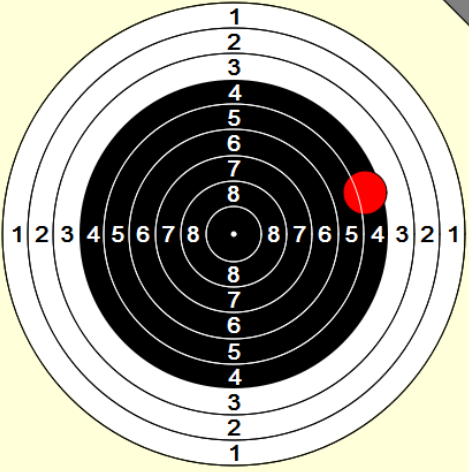
Select one or all lanes. Use the slider to select a value from 0 to 100 percent and press the **Adjust** button.

### 5.3 Bullet speed measurement

The target will automatically calculate the speed of the bullet. The speed is presented in meter per second on the connected monitor and in the MLRange score card dialog.

<b>1.</b>	Practice 20x10		
	ISSF 10m Rifle - Big		

	Sight Series	
	1. 5.6 →	
Shot 1:	4.0 ↑	
<b>5.6</b>	12.9 →	
	102.7 m/s	
0	0	0
0	0	0
0	0	0
Series	0	
Total	0	

Zoom	Next ser.	Series...	Menu...
------	-----------	-----------	---------

Shot plot with bullet speed info.

### 5.4 Cross-fire detection

Based on the angle of the path of the passing bullet the target will calculate from which position the bullet was fired. A warning will be shown if the shooters position is indicating a cross-fire situation.

The horizontal and vertical value will be presented in millimeters in the MLRange score card dialog.

*Example:*

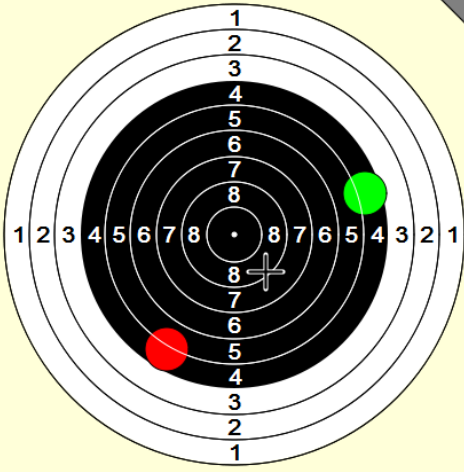
*Shot #2 has been fired from a position 327 centimeters to the right according to the target center.*

All details

	Shot from series	Quality	X	Y	R	Gun X	Gun Y
<input type="checkbox"/>	1: Sight	2:2	12.87	4.03	13.4862	419	477
<input type="checkbox"/>	2: Sight	2:2	-6.67	-11.36	13.1734	3274	1062

MLRange

1.
Practice 20x10
ISSF 10m Rifle - Big



Sight Series	Avg.	3.7 ↓
		3.1 →
1.	5.6	→
2.	5.7	↓
Shot 2:		
5.7		11.4 ↓
		6.7 ←
		99.4 m/s
		X0=327cm
0	0	0
0	0	0
0	0	0
Series		0
Total		0

Zoom
Next ser.
Series...
Menu...

Shooters display

## **6 Maintenance**

### **6.1 Cleaning**

Empty the bullet trap periodically.

A wet cloth can be used to remove dust from the inside of the target.

Unplug the product from the wall outlet and power supplies before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth or anti-static paper for cleaning.

### **6.2 Upgrading software**

Megalink is always working to improve our products. The software in the target can easily be upgraded. Please see the document *User Manual for ML2000 – Configuration and upgrading* for more info.

### **6.3 Storage**

It is important to power off the targets when not in use.