



P L A Y B E T W E E N T H E L I N E S

**INSTALLATION GUIDE
(SINGLE & DOUBLE
VERSIONS)**

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I. IMPORTANT REMINDERS

→ Federal regulations are mandatory only for equipment intended to host official sports competitions. The table below is an excerpt from the regulations issued by the ITF.

It is important to distinguish between **mandatory rules**, which are required for organizing competitions, and **recommendations**, which aim to improve playing conditions depending on the competition level but are not compulsory.

→ It is the installer's responsibility to verify the quality and wind resistance of the fence structure.

→ **TWEENER® LED bars must be assembled with the TWEENER® power supply box.**

	SINGLE COURT	DOUBLE COURT
Court dimensions	23.77 x 8.23 m (78' x 27')	23.77 x 10.97 m (78' x 36')
Clearance areas	± 2 cm (0.8 ") behind each baseline of the court and ± 1 cm (0.4 ") on each side	
Line color	The lines must be of uniform color	
Fence	<u>Recommended</u> : height of 3 m (10') to avoid ball dispersion	
Minimum illumination level	300 lux (28 fc) for outdoor courts	
Uniformity coefficient of the illumination level	≥ 0.7 ($E_{\min} / E_{\text{moy}}$)	

Rules applicable to tennis courts dedicated to competitive play

II. RECOMMENDATIONS

It is recommended that at least two people be present to install the TWEENER® LED lighting solution.

REQUIRED TOOLS :

- 1 A meter spirit level
- 2 Ratchet wrenches : 13 mm / 0.5"
- 1 Ratchet wrench 0.25" drive with extension: 13 mm / 0.5"
- 1 PZ 2 screwdriver
- 1 Set of ratchet wrenches
- 1 Measuring tape
- 2 Stepladders / Platform / Scaffolding
- 1 Marker

OPTIONAL TOOLS :

- 1 Court floor protection
- 1 Pair of gloves per person
- 1 Chalk line: 40 m / 131'

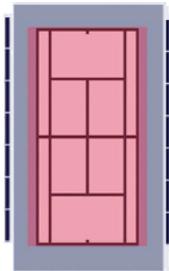


IT'S NOT RECOMMENDED TO USE ANY TYPE OF ELECTRIC OR BATTERY-POWERED MACHINES.



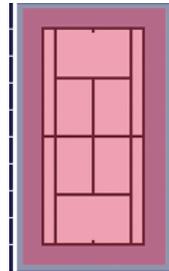
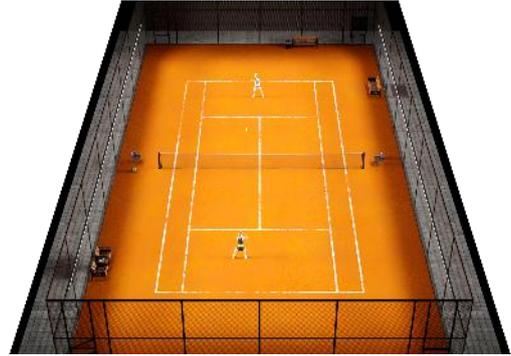
III. RENDERINGS AND COMPOSITION

EVOLUTION TWEENER



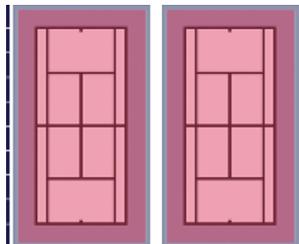
- 14 long bars of 3.8m (12.6') each
- 1 power supply unit
- Full mounting system

PREMIUM TWEENER



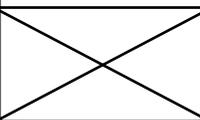
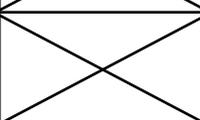
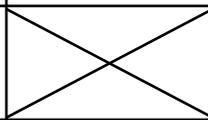
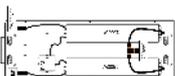
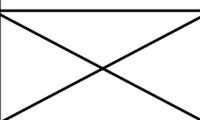
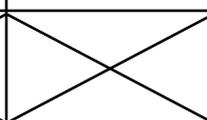
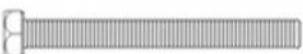
- 16 long bars of 3.8m (12.6') each
- 4 extension bars of 1.9m (6.3') each
- 2 power supply units
- Full mounting system

DOUBLE TWEENER



- 16 long bars of 3.8m (12.6') each
- 4 extension bars of 1.9m (6.3') each
- 2 power supply units
- Full mounting system

IV. LIST OF COMPONENTS

		TWEENER Evolution	TWEENER Premium	TWEENER Double
« A4 » Bar - 3,8m		7	8	8
« B4 » Bar - 3,8m		7	8	8
« A2 » Bar - 1,9m			2	2
« B2 » Bar - 1,9m			2	2
Simple power supply box		1	2	
Double power supply box				2
Junction plate		12	18	18
Mounting bracket		46	48	48
M8x16 Screw		122	160	160
M8x100-200 Screw		48	52	52
M8 Nut		170	212	212
M4x30 Screw		22	22	22
Electrical cable		2 x 16m (52.5')	2 x 5m (13') 2 x 16m (52.5')	2 x 5m (13') 2 x 16m (52.5')
End Cap		2	4	4
End of line plate		4	4	4

V. ASSEMBLY STEPS

A. Determine and mark the installation height of the mounting brackets

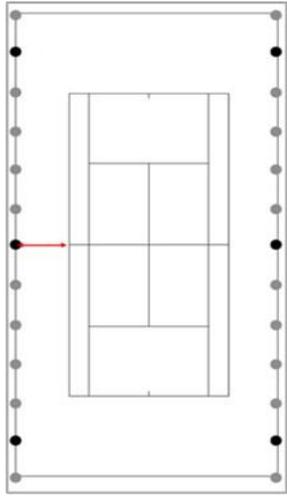
Required equipment : Measuring tape, stepladders (or platforms, or scaffolding), marker (or string).

The installation height of the system is determined in advance based on the lighting study and technical audit conducted by NLX. However, it's still possible to determine an installation height because it varies depending on the distance between the fence and the double line.

If you do not have an installation height, please contact us or refer to the following tables :

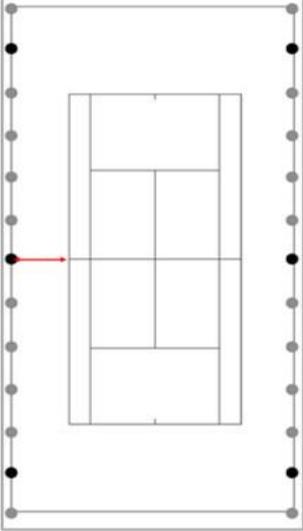
PREMIUM TWEENER – V8

For ground measurements (ITF PPA grid)

Distance <i>(between the fence and the double sideline)</i>	Optimal installation height	
	2.5m (10') <i>(36 x 17m court)</i> <i>(120' x 56' court)</i>	2.5m to 3m (8.2' to 10')
	3m (11.5') <i>(36 x 18m court)</i> <i>(120' x 60' court)</i>	
	3.5m (13') <i>(36 x 19m court)</i> <i>(120' x 62.5' court)</i>	
	4m (15') <i>(36 x 20m court)</i> <i>(120' x 66' court)</i>	2.5m to 2.9m (8.2 to 9.5')

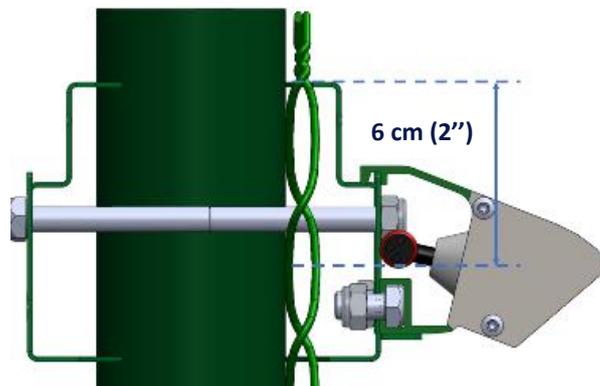
DOUBLE TWEENER – V8

For ground measurements (ITF PPA grid)

Distance <i>(between the fence and the double sideline)</i>	Optimal installation height	
	<p>3m (11.5') <i>(36 x 18m court)</i> <i>(120' x 60' court)</i></p>	<p>2.8m to 2.9m (9.2' to 9.5')</p> <p>Adjustments required : Change module tilt thanks to washers. <i>Please contact us for more informations.</i></p>

The height provided corresponds to the height of the TWEENER® at its center. To obtain the installation height of the mounting brackets, please add 6 cm (2'') to the provided height.

Using a marker or chalk line, mark this height on each pole. This mark will serve as a reference for correctly attaching the mounting brackets later.



ANY NON-COMPLIANT HEIGHT WILL RESULT IN NON-COMPLIANT RESULTS.

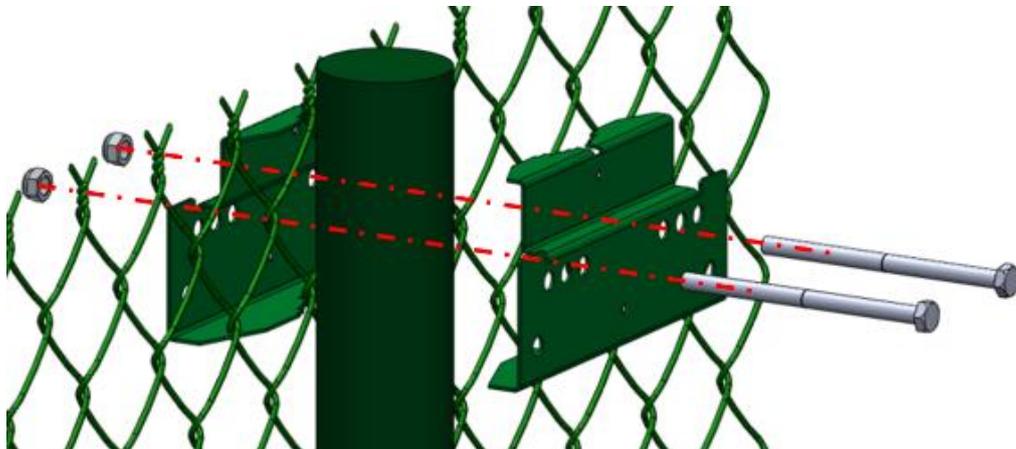
B. Secure and check the level of the mounting brackets

Required equipment : Mounting brackets, long M8 screws, M8 nuts, M4x30 screws, spirit level, ratchet wrenches, screwdriver.

→ Position and align the top of the mounting bracket with the mark made in the previous step.

→ Insert two long M8 screws into two of the six holes provided for this purpose, placing them as close as possible to the post in order to obtain the smallest possible center distance between the screws.

→ Then tighten using the M8 nuts.



THIS STEP IS VERY IMPORTANT BECAUSE INCORRECT MOUNTING BRACKETS POSITIONNING CAN AFFECT THE ANGLE OR HEIGHT OF THE LED TWEENER® BARS, AND THEREFORE THE LIGHTING AND FINAL UNIFORMITY OF THE FIELD.

→ To fix the mounting brackets, **IT IS NOT NECESSARY TO CUT THE FENCE.**

→ Fix the brackets **BY SANDWICHING THE FENCE AND THE POSTS.**

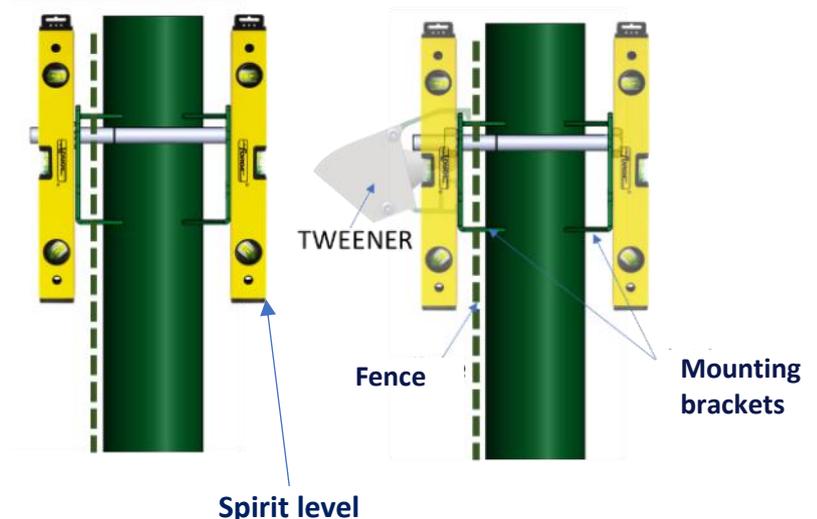
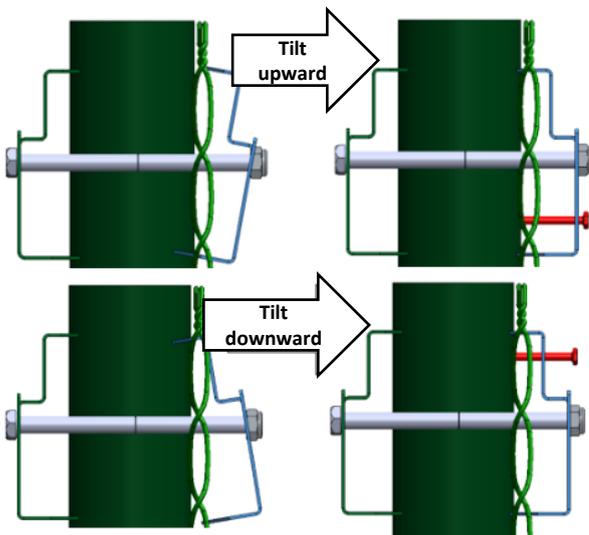
→ Ensure that **THE SCREW HEAD IS FACING OUTSIDE THE COURT.**

→ **DO NOT TIGHTEN THE SCREWS TOO MUCH** to avoid deforming the brackets.



→ If the mounting brackets is not vertical at 0°, use the **M4x30 screws** to correct the position.

→ There are two possible positions for correction: at the top and bottom of the mounting brackets.

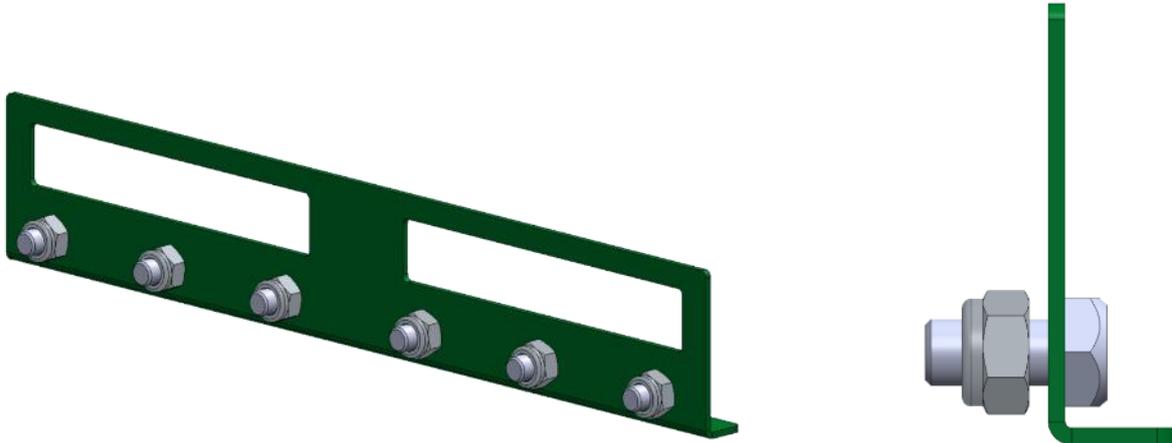


C. Pre-tighten the screws on the junction plates

Required materials : Junction plates, short M8 screws, M8 nuts.

→ Insert six screws and engage (by hand only) the six nuts in the junction plates

Note : *The screw head must be inside the “L”.*



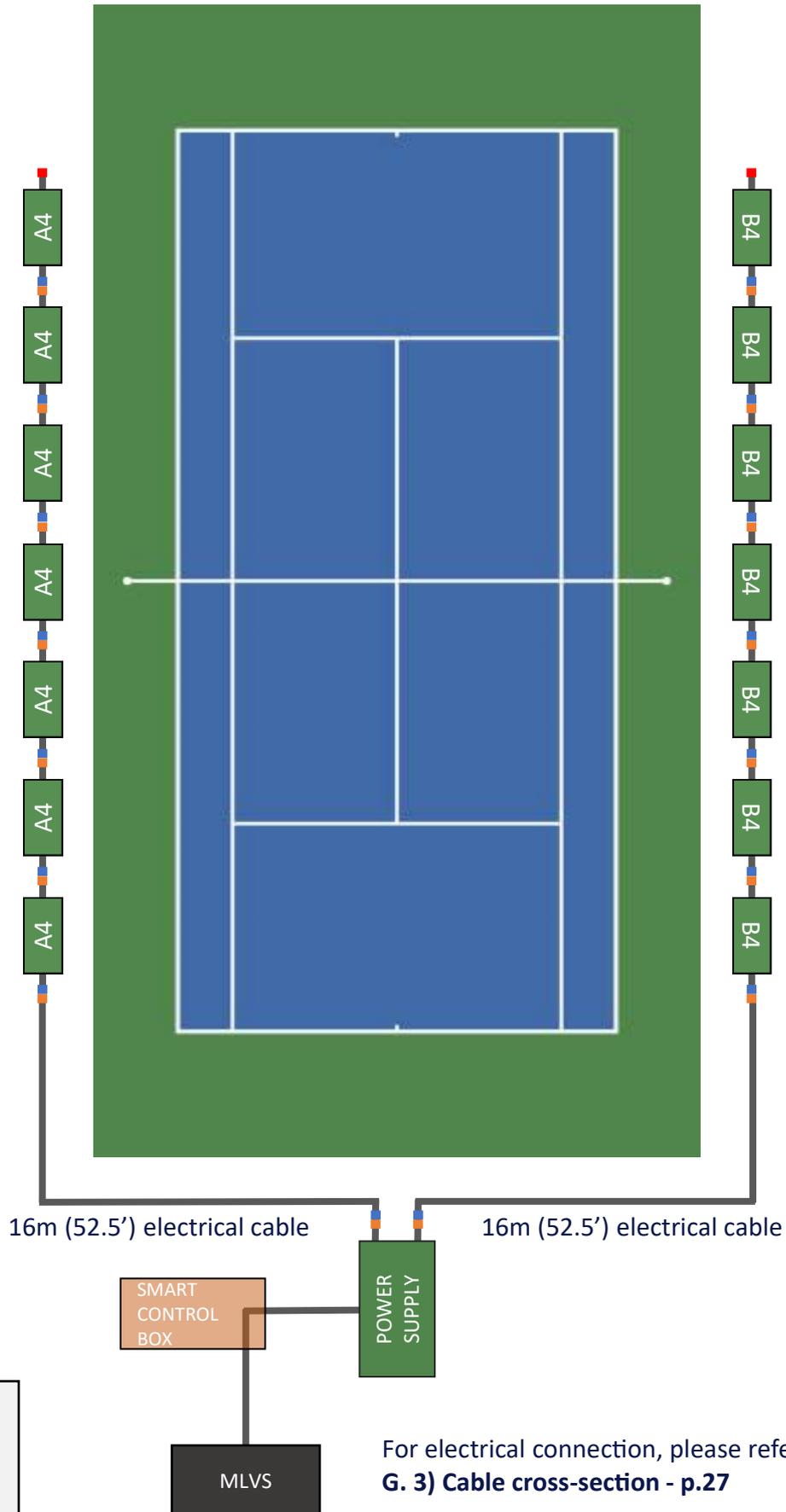
D. Prepare the layout of the system on the ground

Required equipment : A4/B4 bars, A2/B2 bars (*only for PREMIUM and DOUBLE TWEENER®*), junction plates, power supply boxes, electrical cables, end caps.

→ Depending on your type of TWEENER®, arrange the bars, power supply boxes, and electrical cables on the ground as shown in the diagrams on pages 13 to 15.

→ Place a junction plate between each bar.

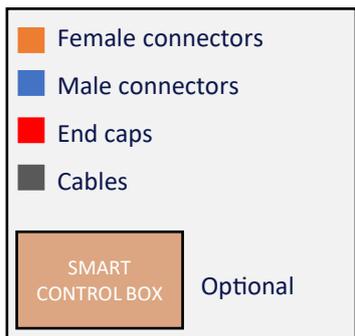
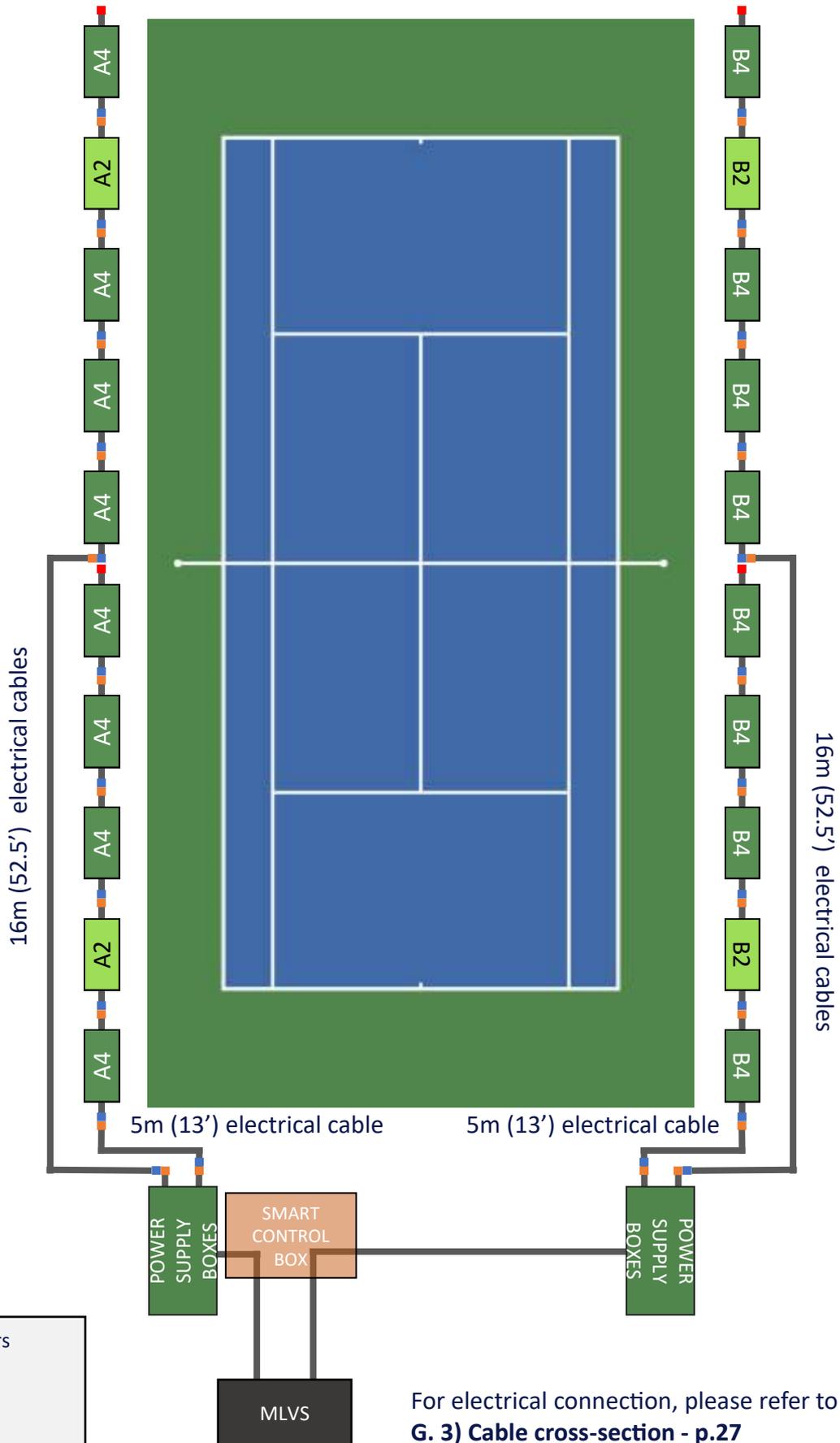
D. 1) EVOLUTION TWEENER layout



	Female connectors
	Male connectors
	End caps
	Cables
	Optional

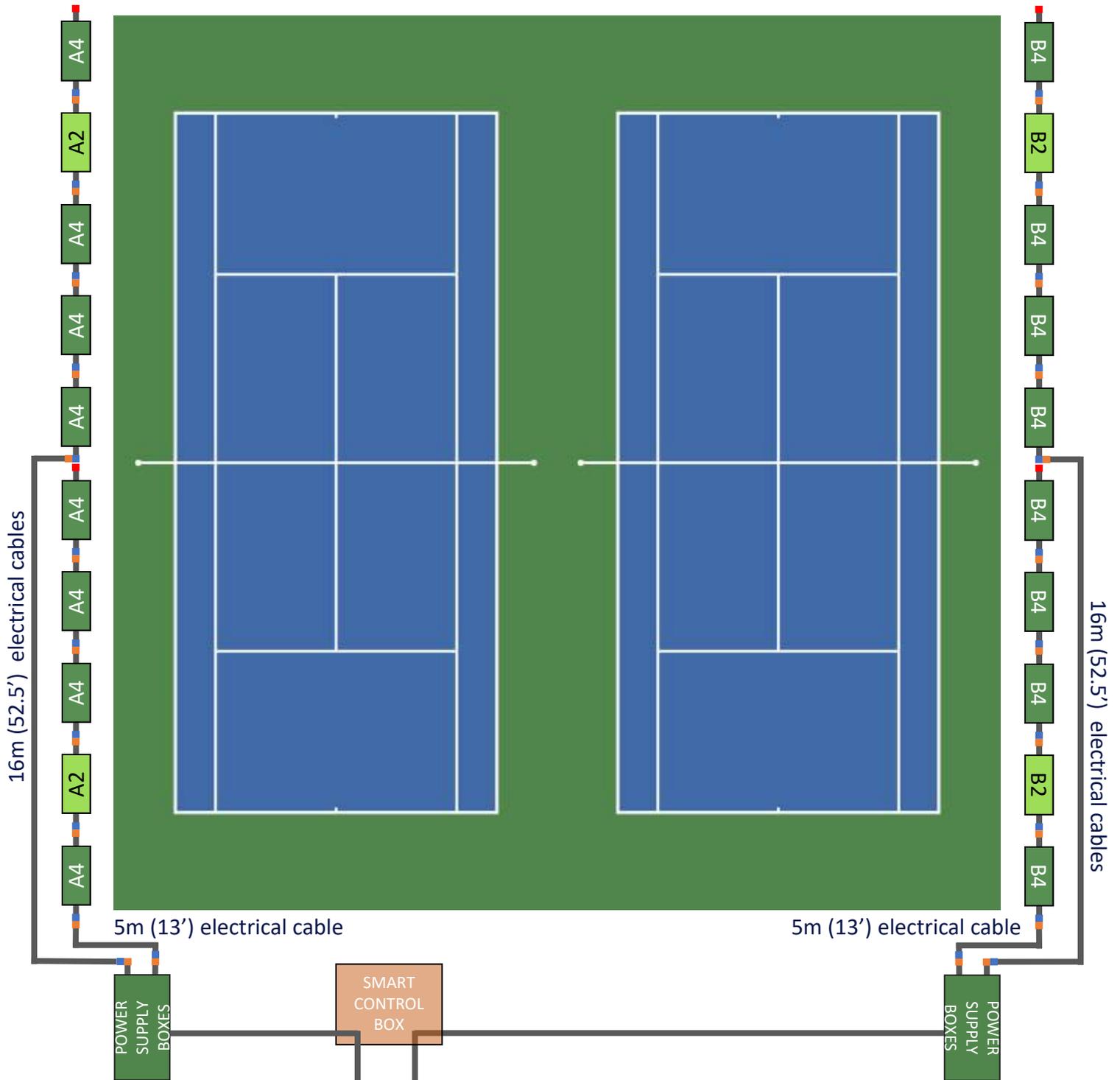
For electrical connection, please refer to the table:
G. 3) Cable cross-section - p.27

D. 2) PREMIUM TWEENER layout



For electrical connection, please refer to the table:
G. 3) Cable cross-section - p.27

D. 3) DOUBLE TWEENER layout

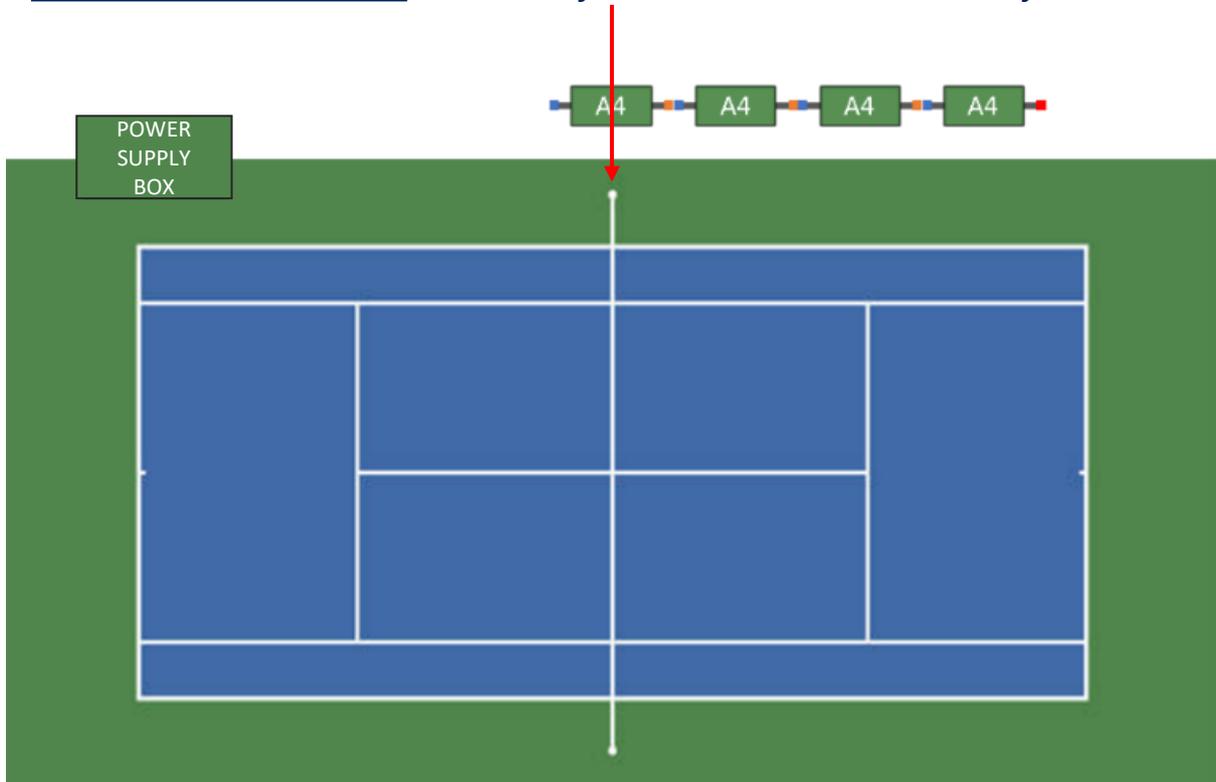


	Female connectors
	Male connectors
	End caps
	Cables
	Optional

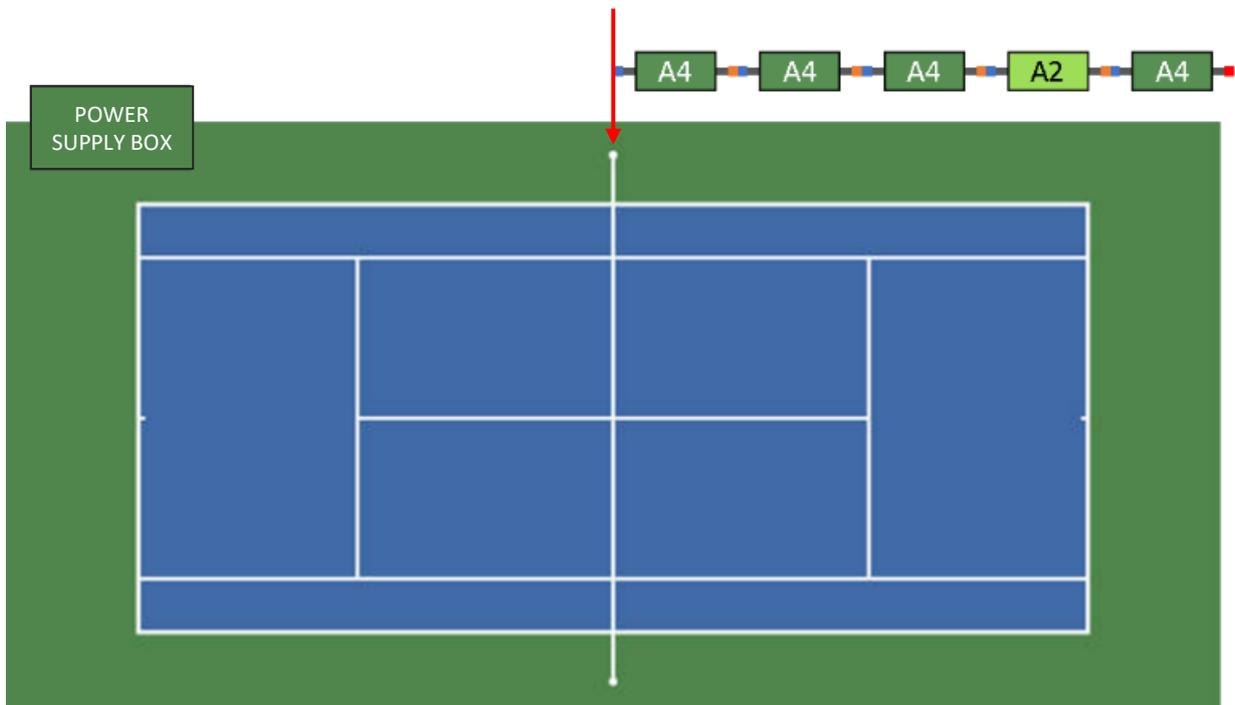
For electrical connection, please refer to the table:
G. 3) Cable cross-section - p.27

E. Install the bars on the first quarter of the court

EVOLUTION TWEENER® : Center the first bar in the exact middle of the court.



PREMIUM & DOUBLE TWEENER® : Place the first bar starting from the middle of the court.

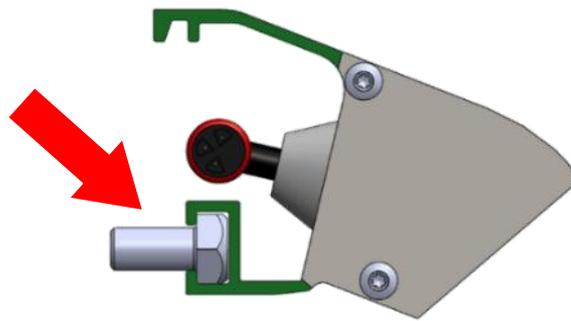


E. 1) Insert the short screws into the bars.

Required equipment : A4/B4 bars, A2/B2 bars (only for PREMIUM and DOUBLE TWEENER®), M8 short screws.

→ Insert two screws into the groove in the bars provided for this purpose (see diagram below).

Note : two screws per bar, as each bar is designed to be installed on at least one post. If the bar is installed on more posts, add two additional screws per post.

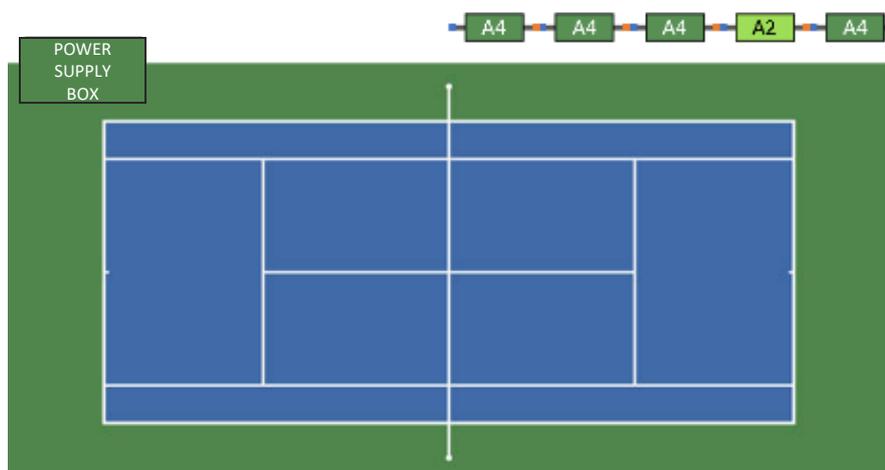


E. 2) Install the bars on the mounting brackets.

Required equipment : A4/B4 bars, A2/B2 bars (only for PREMIUM and DOUBLE TWEENER®), M8 nuts.

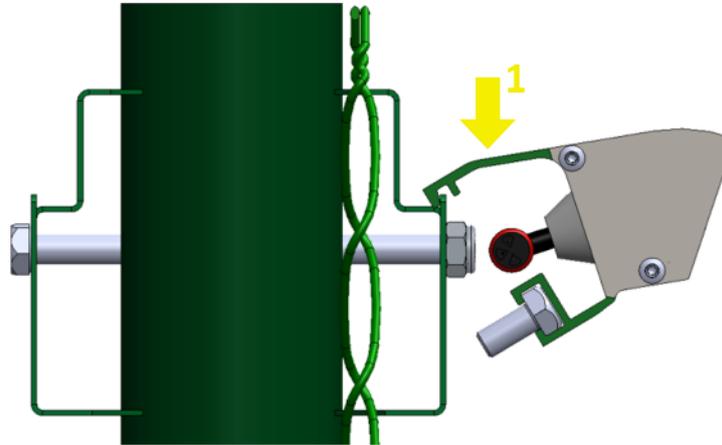


ALWAYS START THE INSTALLATION ON THE OPPOSITE QUARTER OF THE POWER SUPPLY BOX



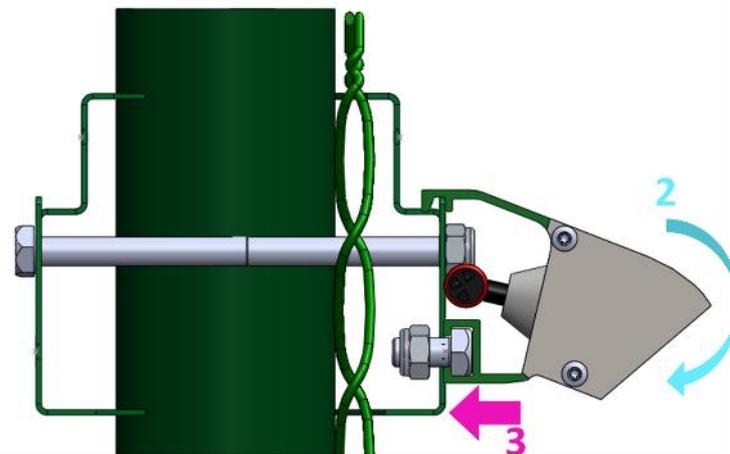
STEPS TO FOLLOW :

1) Place the profile on the TOP OF THE BRACKET.



2) Insert the screws into the holes located at the BOTTOM OF THE BRACKET.

3) Then tighten with the nuts.



FINAL RENDERING :

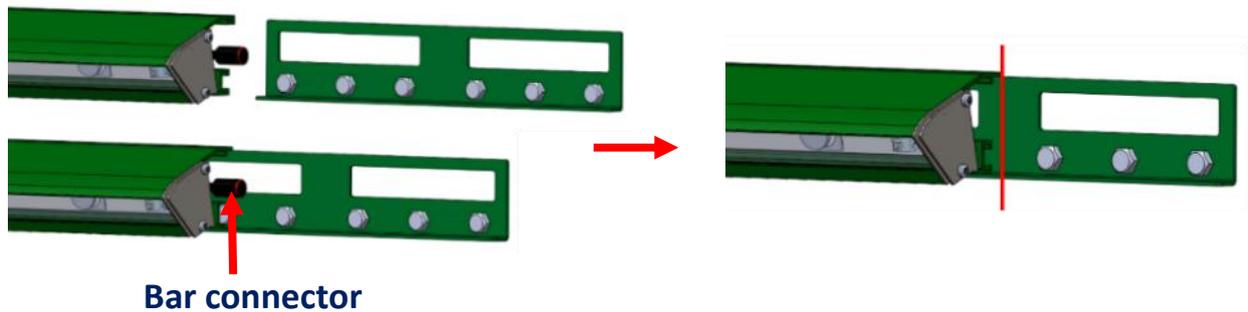


E. 3) Insert the junction plates

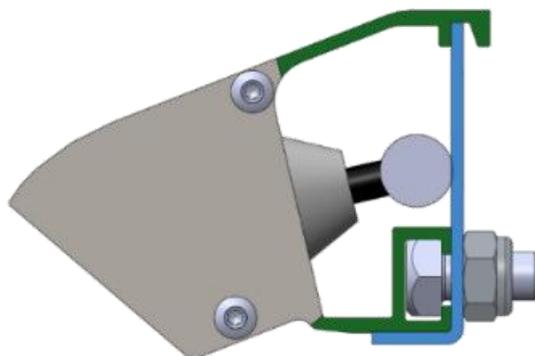
Required equipment : A4/B4 bars, A2/B2 bars, (only for PREMIUM and DOUBLE TWEENER®), junction plates, flat ratchet wrenches.

1) Slide the junction plate into the installed bar until it reaches the middle of the plate (i.e., three screws/nuts per bar).

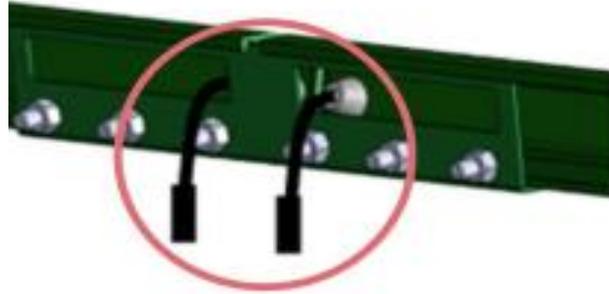
Note : Don't forget to pass the bar connector through the first hole in the junction plate.



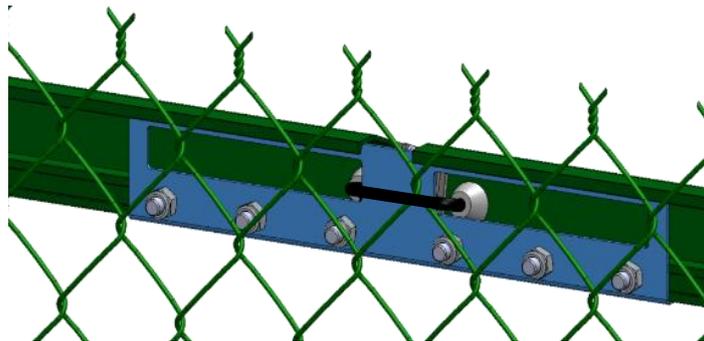
MAKE SURE TO PASS THE TOP OF THE JUNCTION PLATE THROUGH THE PROFILE



2) Add the next bar by sliding the junction plate into it, and pass the connector of the second bar through the second hole in the junction plate.

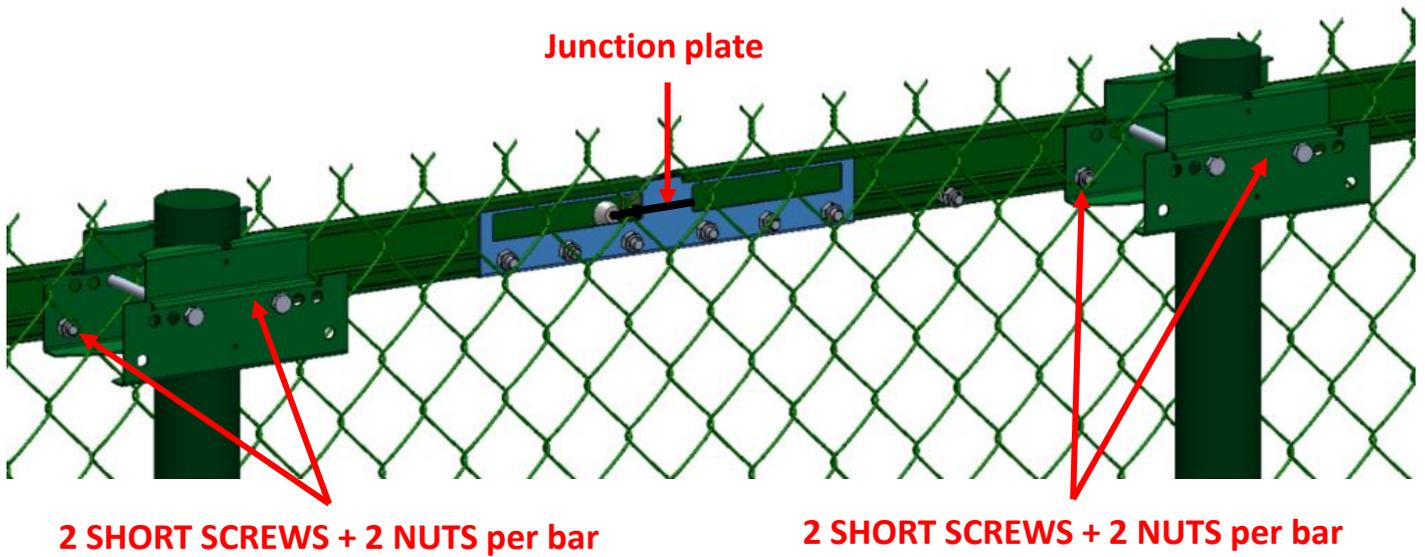


3) Connect the bars together and tighten the six nuts on the junction plate. Place the remaining cable in between the junction plate and the bar.

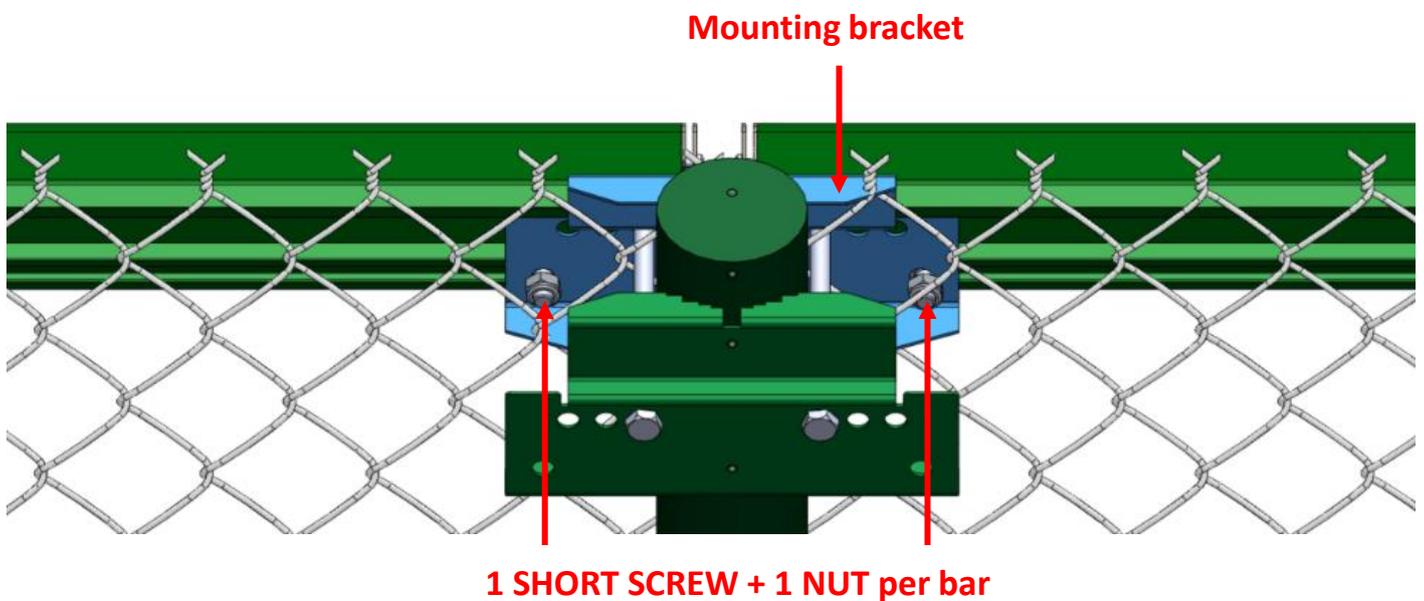


Note : During the installation, if one bar ends on a mounting bracket and the next bar also begins on the same bracket, it is not necessary to use a junction plate. In this case, there will be a fastening screw on each of the two bars. Then follow the procedure of CASE 2, described on the following page.

CASE 1 : Usage of a junction plate to connect two bars (No post available in the junction of the bars)



CASE 2 : Usage of the existing mounting bracket as the junction of two bars (Post available in the junction of the bars)



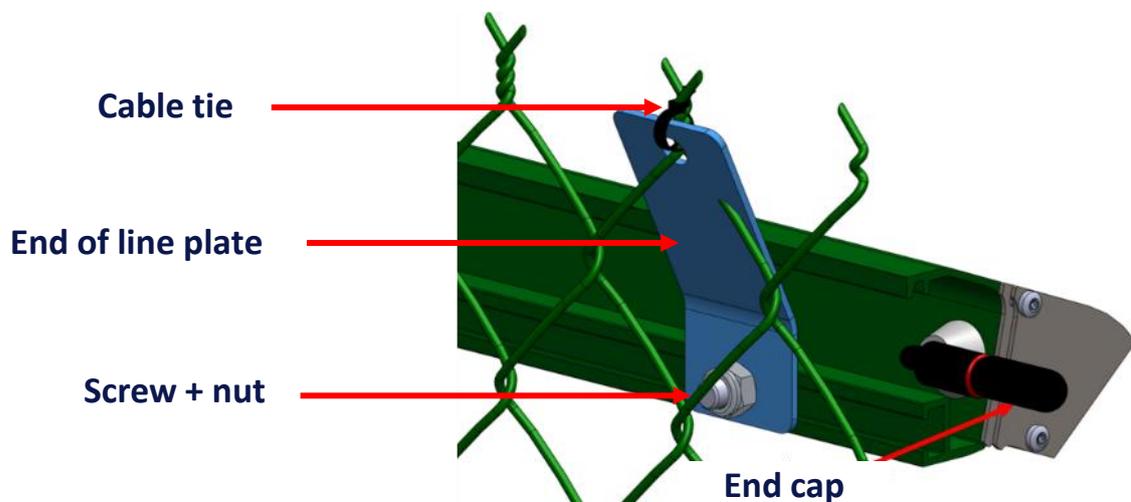
E. 4) Install the end caps and secure the end of the line

Required equipment : End caps, end of line plates.



ONCE THE FIRST QUARTER OF THE FIELD HAS BEEN INSTALLED, PLACE AND TIGHTEN THE END CAP ON THE LAST BAR.

→ Secure the end of line plates in the profile using an M8 screw and nut, then attach it to the mesh using a cable tie to ensure that it is level (horizontal).



F. Install the bars on the second quarter of the field

Required equipment : A4/B4 bars, A2/B2 bars (*only for PREMIUM and DOUBLE TWEENER®*), 16m (52.5') electrical cable, short M8 screws, M8 nuts, junction plates, ratchet wrenches, end caps, end of line plates.

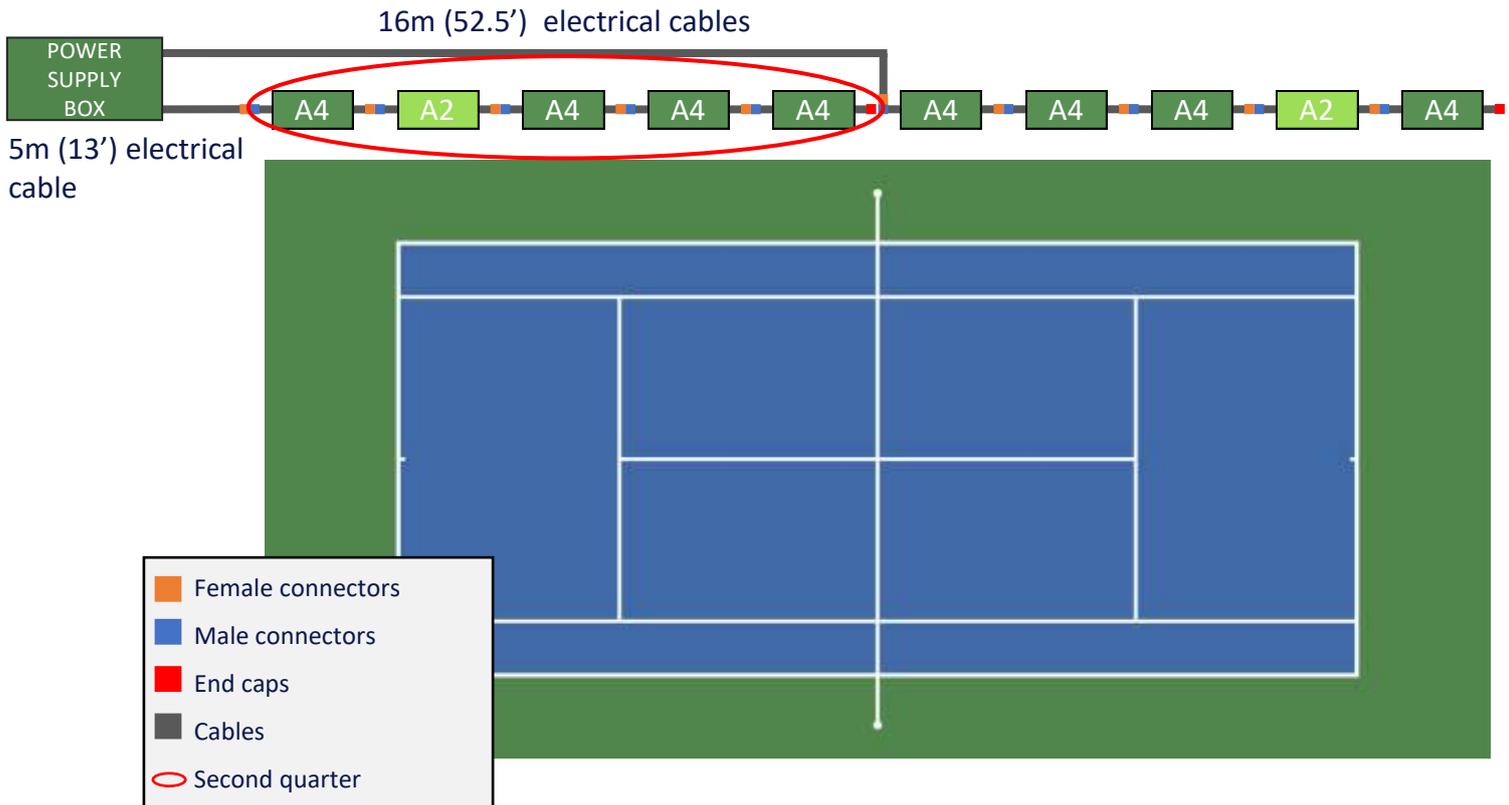
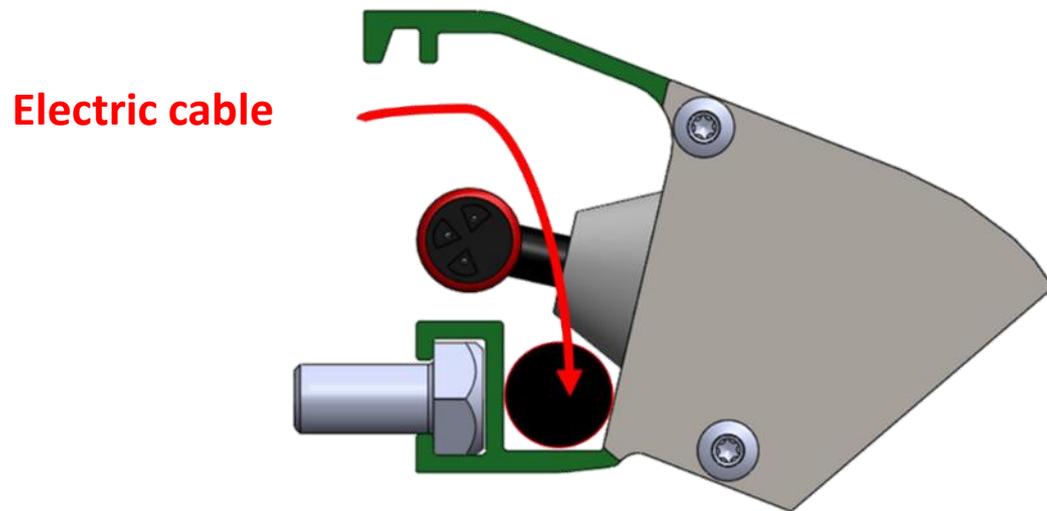


Diagram of the installation at the end of step F

- Connect the 16m (52.5') electrical cable to the first bar installed at the center of the court.
- Repeat the steps in “E. Install the bars on the first quarter of the court ” for the second quarter of the field :
 1. Insert the short screws into the bars
 2. Install the bars on the mounting brackets
 3. Insert the junction plates
 4. Install the end caps and end of line plates



DON'T FORGET TO PLACE THE 16M (52.5') ELECTRIC CABLE IN THE GROOVE OF THE PROFILE ALONG THE ENTIRE INSTALLATION.



**INSTALLATION OF THE FIRST HALF OF THE COURT COMPLETED !
REPEAT THE SAME STEPS ON THE SECOND HALF OF THE COURT.**

G. Install the power supply boxes

Required equipment : Power supply boxes, mounting brackets, long M8 screws, M8 nuts, screwdrivers, ratchet wrenches.

- Each power supply box is equipped with a removable cover.
- Two brackets are already pre-installed on the plate.

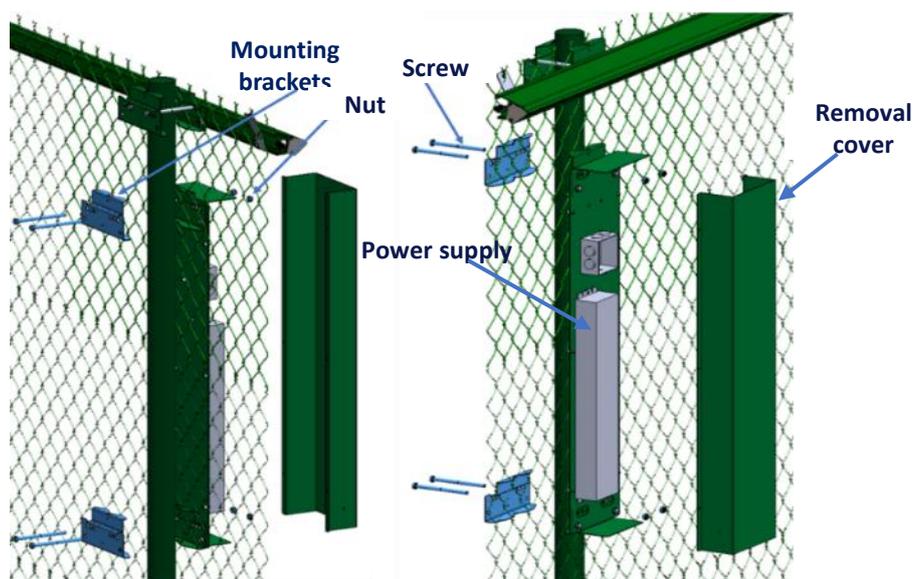
G.1) Mounting the power supply box on posts

Install a power supply box on each side of the court, **on the last post where the bars are mounting into**, following these steps :

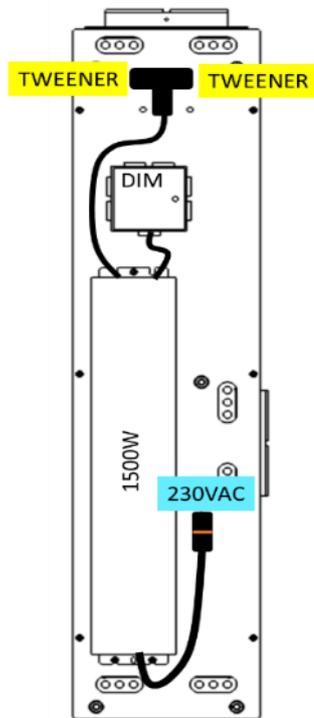
Note : For the *EVOLUTION TWEENER*, the power supply box is installed on the central post of one of the width of the court.

- 1) Remove the cover and set aside the M4 screws.
- 2) Check the proper tightening and the passage of the cable through the connector.
- 3) Position the power supply box 20 - 30cm (8'' – 12'') below the last bar of the line.
- 4) By adding two mounting brackets, attach the plate to the post using M8 screws and nuts.

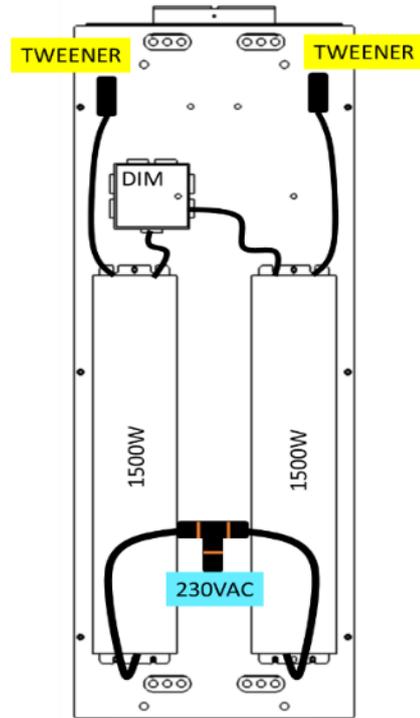
Note : Make sure that the screw heads are on the outside of the box.



G. 2) Connect the bars to the power supply box



Single power supply box plate

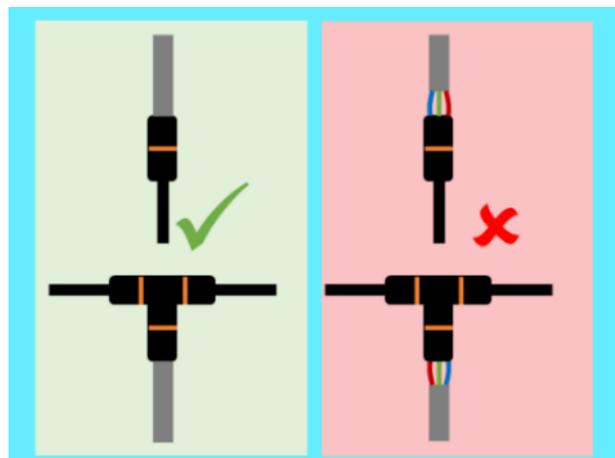


Double power supply box plate

1) Make the connection between the bars and the power supply box.



MAKE SURE TO SCREW THE CONNECTORS TOGETHER AFTER CONNECTION SO THAT EVERYTHING IS SECURELY LOCKED IN PLACE.



2) Connect the power supply box to the electrical network.



THE 230V AC ELECTRICAL CONNECTION MUST BE MADE BY A CERTIFIED AND QUALIFIED ELECTRICIAN.

G. 3) Electrical recommendations

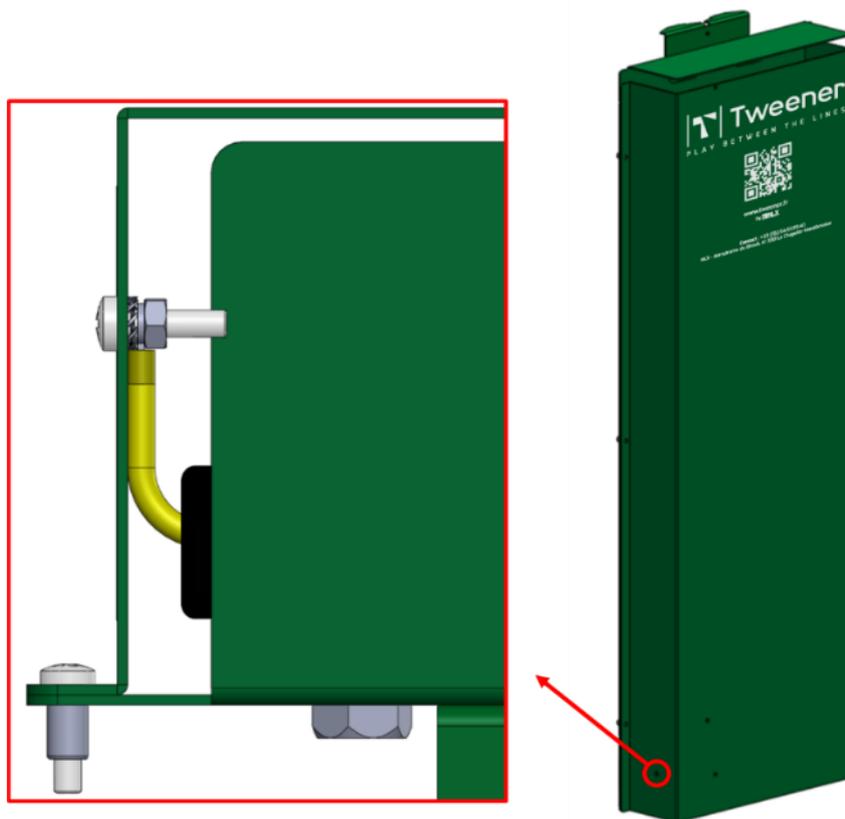
TWEENER EVOLUTION & SINGLE PREMIUM		CIRCUIT BREAKER	
		2 power lines <i>(1 per side of the court)</i>	1 power line <i>(1 for both sides of the court)</i>
		2 BREAKERS C – 16 <i>(1 per line)</i>	1 BREAKER D – 20 <i>(for the court)</i>
CABLE SECTION	2,5 mm² (12 – 14 AWG) <i>Flexible</i>	<i>< 60m (197') per line</i>	<i>< 30m (98.5')</i>
	4 mm² (10 – 12 AWG) <i>Rigid</i>	<i>60 < x < 100 m per line</i> <i>(197' < x < 328')</i>	<i>30 < x < 50 m</i> <i>(98.5' < x < 164')</i>

TWEENER DOUBLE		CIRCUIT BREAKER	
		2 power lines <i>(1 per side of the court)</i>	
		2 BREAKERS D – 20 <i>(1 per line)</i>	
CABLE SECTION	2,5 mm² (12 – 14 AWG) <i>Flexible</i>	<i>< 30m (98.5')</i>	
	4 mm² (10 – 12 AWG) <i>Rigid</i>	<i>30 < x < 50 m</i> <i>(98.5' < x < 164')</i>	

If the connection distance exceeds those described, please contact us.

G. 4) Connect the ground wire to the cover

- Place the lock washer between the ground wire eyelet and the cover.
- Insert the screw and nut and tighten.



- Using cable ties, secure the cables along the fence and posts to avoid having exposed cables.
- Close the cover using the M4 screws removed earlier.

INSTALLATION COMPLETE !



THE ELECTRICAL TEST MUST BE PERFORMED BY A QUALIFIED ELECTRICIAN, IN ACCORDANCE WITH THE SAFETY INSTRUCTIONS AND APPLICABLE STANDARDS

VI. CHECKLIST

1. Installation of the mounting brackets

- Determine and mark the installation height.
- Check the level of the mounting brackets.

2. Preparation of the TWEENER layout

- Place the bars on the ground.
- Insert M8 screws into the bars.
- Place the junction plates.
- Place the power supply boxes.

3. Installation

- Install the bars.
- Install the junction plates.
- Connect the bars.
- Fix the end caps.
- Fix the end of line plates.
- Install the power supply boxes.

4. Electrical connection

- Connect the bars to the power supply boxes.
- Connect the system to the electrical network.

NON COMPLIANT PRACTICES



DO NOT :

- **TURN ON THE TWEENER BEFORE THE END OF THE INSTALLATION**
- **CUT THE FENCE**
- **TIGHTEN TOO HARD THE SCREWS ON THE MOUNTING BRACKETS**
- **USE A DIFFERENT POWER SUPPLY BOX**
- **CUT THE ELECTRICAL CABLES**
- **USE A DOUBLE POWER SUPPLY BOX ON A SINGLE TWEENER (EVOLUTION OR PREMIUM)**



Tweener

PLAY BETWEEN THE LINES

CONTACT US

 @ TweenerbyNLX

 @ tweenertennis

 @ tweenerbyNLX

Mail : sales@10-s.com

Phone : 954-824-2001

Adress : 1400 NW 13th Avenue Pompano
Beach, FL 33069 UNITED STATES

