Ultra Beam
Dynamic Antenna Systems

MANUAL “STANDARD”

YAGI 2-3-4-6 ELEMENTS 6-20

Rev. 1.10

INTRODCTION

UltraBeam produced its first antenna in 2008.
Since then there has been a progressive and continuous improvement in the design and manufacture of antennas, below are listed the main innovations:

- **2008** dual-driver circuitry to optimize spacing (necessary on some models)
- **2009** VRS System to improve reliability compared to spring-belt retraction systems
- **2010** Engine mounts with direct connection to the elements for a complete mechanical seal
- **2013** UB1040 the greatest dynamic antenna in the world with 10 motorized antenna elements
- **2014** UB80 with motorized rotary dipole coils, continuous coverage from 3.5 to 3.8 MHz.

Some innovations have become an international reference, valued and used today successfully even from other brands.
Since one of the most important aspects of an antenna is certainly the assembly (only processing performed by the client) it has been paid particular attention to the technical and mounting procedures in order to make it simple, intuitive and fast, also for people less accustomed to manual labor.
Last but not least the realization of electrical Plug and Play wiring made by UltraBeam, made extremely simple even the antenna electric side, sometimes not easy to understand and often source of post installation problems.
The main stages of assembly of an UltraBeam antenna are in fact common to many models.
Simply reading this quick guide will allow you in a few minutes to acquire and memorize the necessary procedures so that you can make the assembly of your antenna so simple and clear but above all free from any doubt.
The only real difference between the different models is the length of the boom and the number of motor units installed on it, but as mentioned the procedures and assembly techniques remain unchanged. The major step to successfully install an UltraBream are only 5.
Once acquired assembly procedures. it will be sufficient to apply them to your model.

Step	Description
1	Boom assembly
2	Mounting brackets and motor unit on the boom
3	Preparation of telescopic elements
4	Elements Installation on motor unit
5	Electric Wiring

Contrary to what one might think, this guide will show the simplicity with which you can make a mechanical and electrical assembly of an UltraBeam

1) BOOM ASSEMBLY

UltraBeam uses for all models of antennas a square boom of section 60 x 60 x 3 mm.
Only on the heavier models employs sections of 80 x 80 x 3 mm or 4 mm.

The boom may have 1 to 4 junctions depending on the model
Only 2 elements yagi have no junctions since are constructed as a single element.

Assemble each single junction as shown in the photo sequence, Fig. 1-2-3-4-5

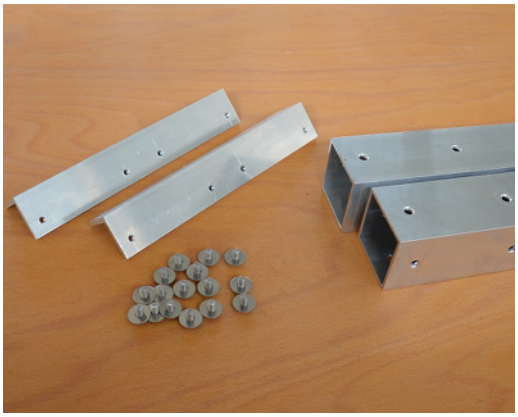


Fig.1

Fig.2

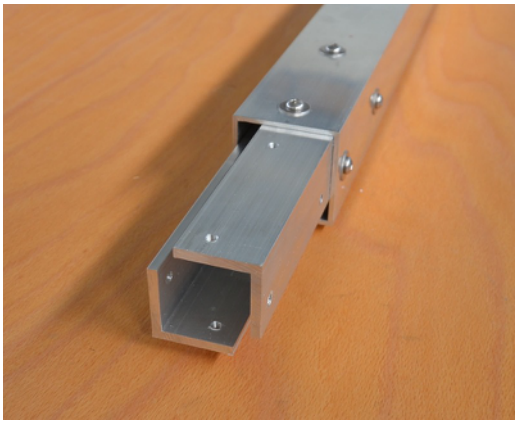


Fig.3

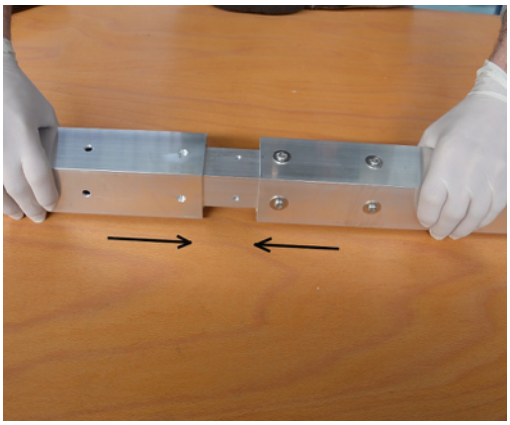


Fig.4

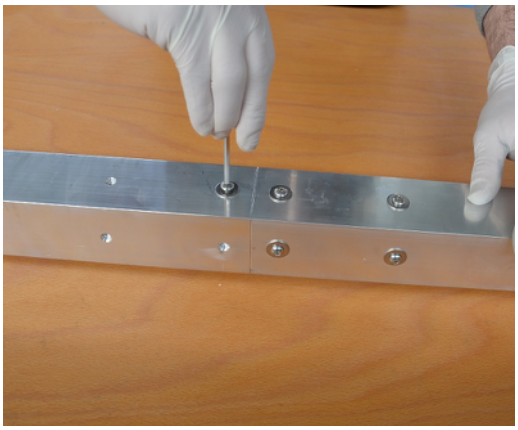


Fig.5

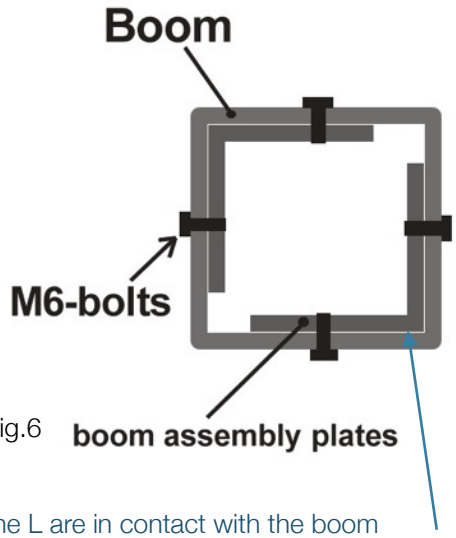


Fig.6

NOTE: before tightening the screws, make sure that both sides of the L are in contact with the boom

2) MOUNTING BRACKETS / MOTOR UNIT

The mounting of the engine mounts consists of 3 simple steps
Place the aluminum support on the boom and fix the same by means of the 4 M6 bolts and lower plates block (fig.1)
Before tightening the bolts check with a set square that the motor support is at 90 ° with respect to the boom, this will ensure a perfect parallelism between the elements.

Note: about the positioning of the motor unit on the boom you should refer to the antenna diagram (page 8) related to your model, however you need to know that the two external motor unit of the antenna (any model) will always place the boom ends with the cable facing towards the center (as shown in the photos) so no measure is to be verified.

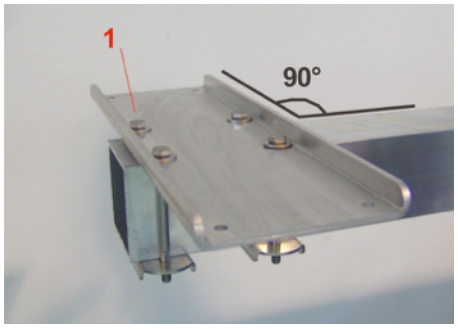


Fig.1

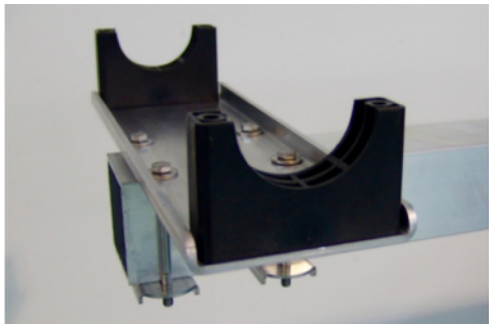


Fig.2

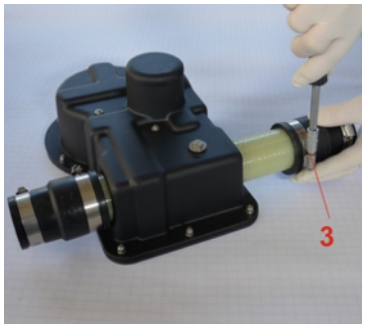


Fig.3

Place the lower ABS collars in correspondence of the outer holes of the support (fig.2)
Insert the rubber sleeves on the motor unit and tighten the internal clamp (fig. 3)
Place the motor unit on the support (Figure 4) and place the upper ABS collars (fig.5)
Insert the M6 x 110mm bolts and tighten.
Figure A shows the correct position of the motor unit with respect to the boom.

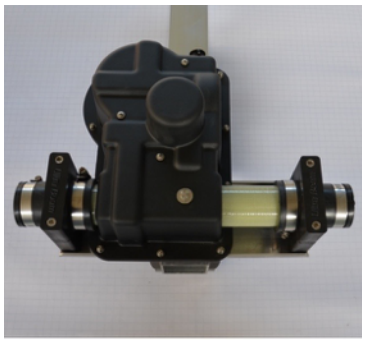


Fig.A

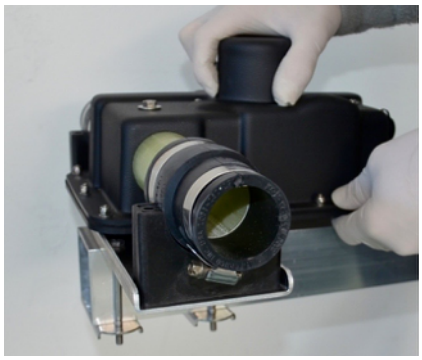


Fig.4

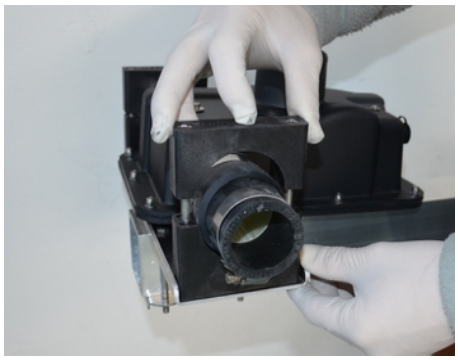


Fig.5

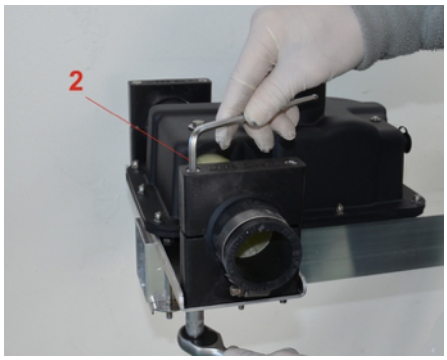


Fig.6

Nota: for tightening the screws, refer to the list below

BOLTS TIGHTENING

Passo	Description	Tightening Nm
M6	Screw bracket motor unit (1)	10
Endless screw	Screw rubber cap clamp (3)	6
M6	Bolt collars ABS (2)	8
M6	Boom junction screw	8

3) PREPARATION OF TELESCOPIC ELEMENT

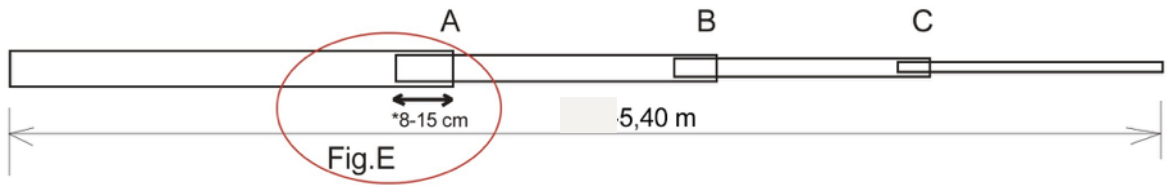


Fig.E

The glass fiber elements are formed by 4 elescopic sections, it will be sufficient to extend up to their maximum extension that every single conical junction can reach.
They have a size of about 5.4 m. the length can change depending on the model.

Open the element up to the maximum length, normally the internal section must remain inside the element that hosts it for a lenght between 8-15 cm. (fig.E) for this reason the maximum length reached by each individual element can be different from the other in the order of some cm, this is not a fault and it does not matter.

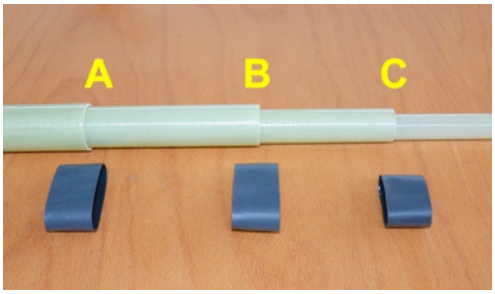


Fig.1

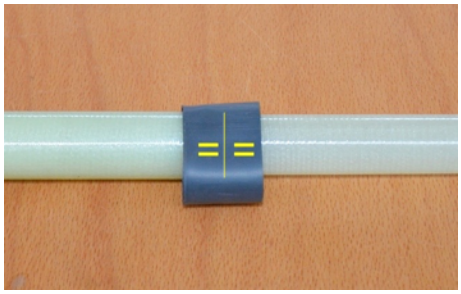


Fig.2


Fig.3

The three joints of the element are sealed by means of thermo-tightening with internal adhesive of appropriate diameter (Figure 1)
Place the sleeve exactly in the center of the junction (Figure 2)
Heat the sleeve with a heat gun until the same has not adhered completely to the element, the leakage of the adhesive to form a ring all around the edge will indicate that it has reached the correct temperature.

NOTE: excessive heat can damage the element

4) INSTALLATION OF ELEMENTS ON MOTOR UNIT

Loosen the outside of the rubber sleeve so that the element can slide up to where it can move, it will enter 10 cm. (Fig.1)
Tighten the rubber sleeve clamp (Figure 2) *
Repeat on opposite side.

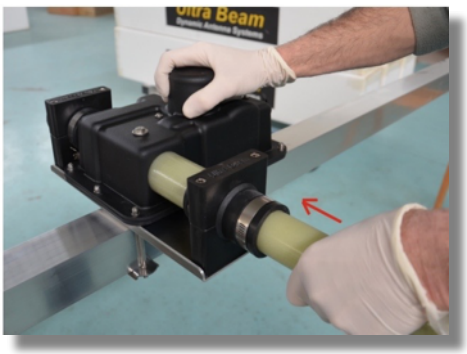


Fig.1

Fig.2

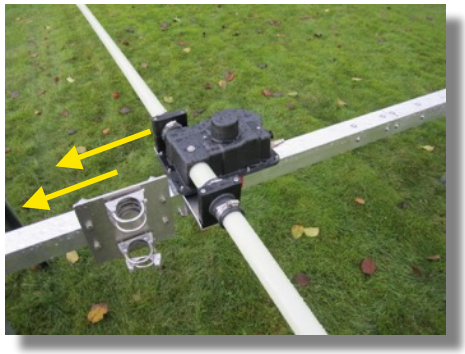
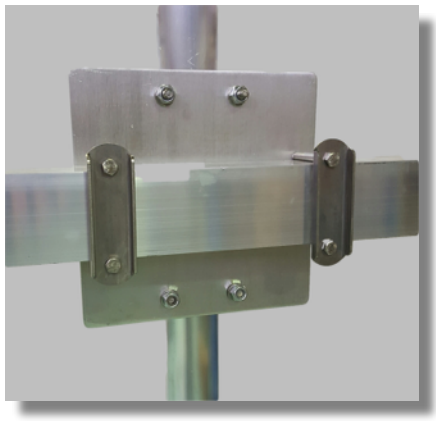


Fig.3

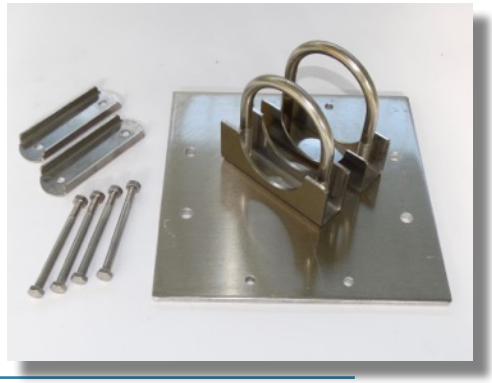
PIASTRA MAST/BOOM

All models are supplied with Ultrabeam Mast / aluminum boom plate.
Mast collars, boom brackets and bolts are made in stainless steel.
Each antenna model will have appropriate number and diameter of collars to match to the weight of the model.
On all antenna models with three motor units, the plates will always be fixed to the center boom, however, in cases where you need to increase the distance between the central element and the Mast, simply move the plate away from the motor (Fig.3) to achieve the necessary space for your set-up, this will be necessary only when you install the antenna on large sections wheeled tower.
On antenna models with 4 or more elements the position of the plate will be indicated directly on the boom.
In both cases you are free to move the specified location and if necessary can balance the antenna (only for repositioning more than 10 cm) by placing a small inner weight at the lighter boom end.



Diameter of mast collars supplied with antennas

U-Bolt Diameter mast mm.	50	60	65
2 elements 6-20 / 6-40 / UB20	V	/	/
3 elements 6-20 / UB50 / 4 El. DX	V	optional	/
UB640-VL1.3 / VL2.3	V	optional	/
4 elements 6-20	V	optional	optional
3 elements 6-40 / 4 elements 6-40	optional	V	optional
UB640-VL3.4 / UB40	optional	V	optional



Nota: Specify in the order if you need optional diameters.

BOOM TIE-ROPE

Most UltraBeam models does not need any tie rope, the square section boom on models with boom within 6 meters offer a very high stiffness and remain perfectly straight.
Only models with boom lengths over 9 meters provide a tie-beam on the boom.

Models that provide the tension rope:

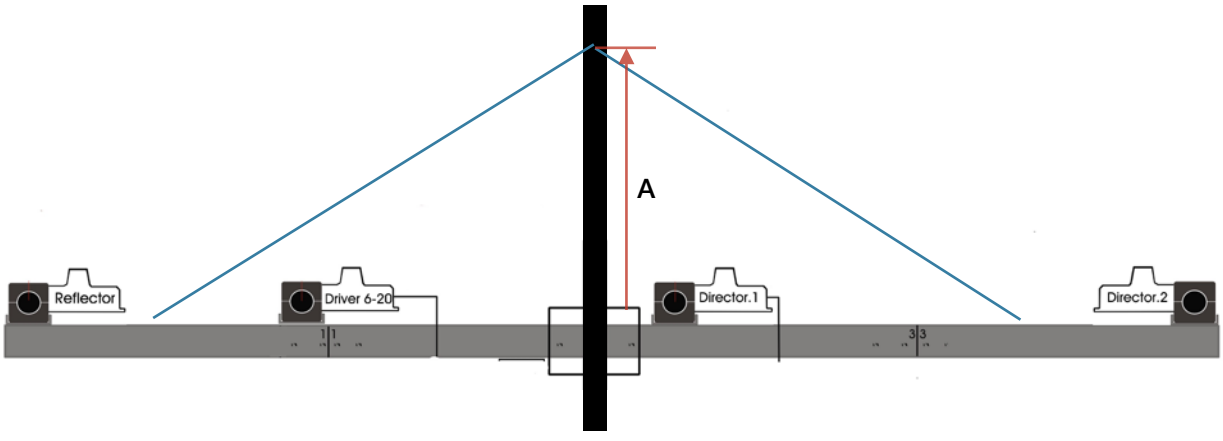
- UB640-VL3.4
- 4 ELEMENTI 6-20
- 4 ELEMENTI 6-40
- 6 ELEMENTI 6-20 DX

Fig.1

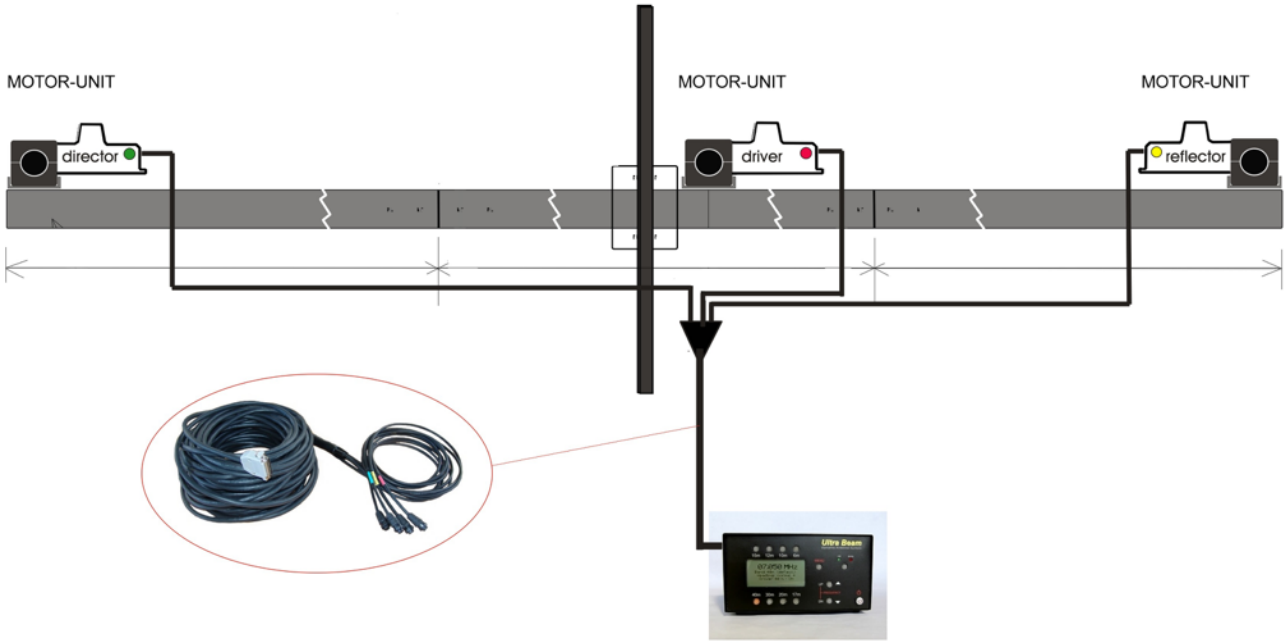
Fig.2

The models shown are provided with a complete kit of excellent MastrAnt ropes of suitable section for the model.
All strings and joints thimbles are made of stainless steel.
On the two outer sections of the boom holes are drilled on which you simply insert and tighten the through bolt with eyelet head (fig.1) which will be inserted in the appropriately closed rope with double stainless junction (fig.2)

The ropes are supplied with proper length and allow you to make your personal set-up "A"
The vertical measurement "A" between boom and mast to which the strings will be attached should be between 1.5 -2.5 m. The heavier the antenna, the greater will be the distance from the antenna boom.
For example on a 4 6-40 elements it should not be lower than 2 m.
In any case, regardless of the model you should never fix in the cable at distances "A" less than one meter.
This would bring an excessive load on the ropes and poor alignment of the boom.
With the ropes kit you get a junction for mast collars to tie the ropes, of course you can use your own fixture if already present on your mast.

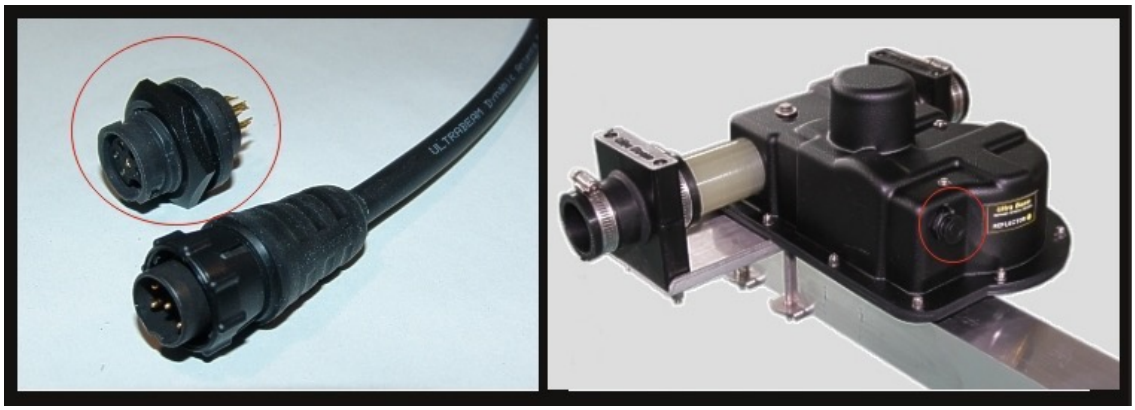


5) ELECTRICAL WIRING



The electrical wiring built and assembled by UltraBeam are the best solution for electric connection between the antenna and the electronic controller.
In these cases, the antenna motor units will be equipped with multi-pole female connectors.

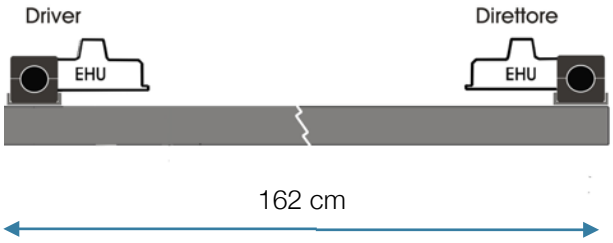
Simply plug in the connectors to the engine unit and the DB25 to the controller, no chance to operating errors and to guarantee high reliability over time.
Furthermore, the assembled wiring does not contain the junction points along the route, which is often cause of bad electrical contacts especially for external systems, each wire goes from the controller to the motor.



The multi-wire cables used in the construction of the wiring are build specifically on UltraBeam specifications
The water resistance and protection against UV rays make the wiring particularly suitable for outdoor use and offer increased reliability compared to common commercial cables
The connectors used are IP68 with gold contacts by Switchcraft Inc.

ANTENNA MODEL SCHEME

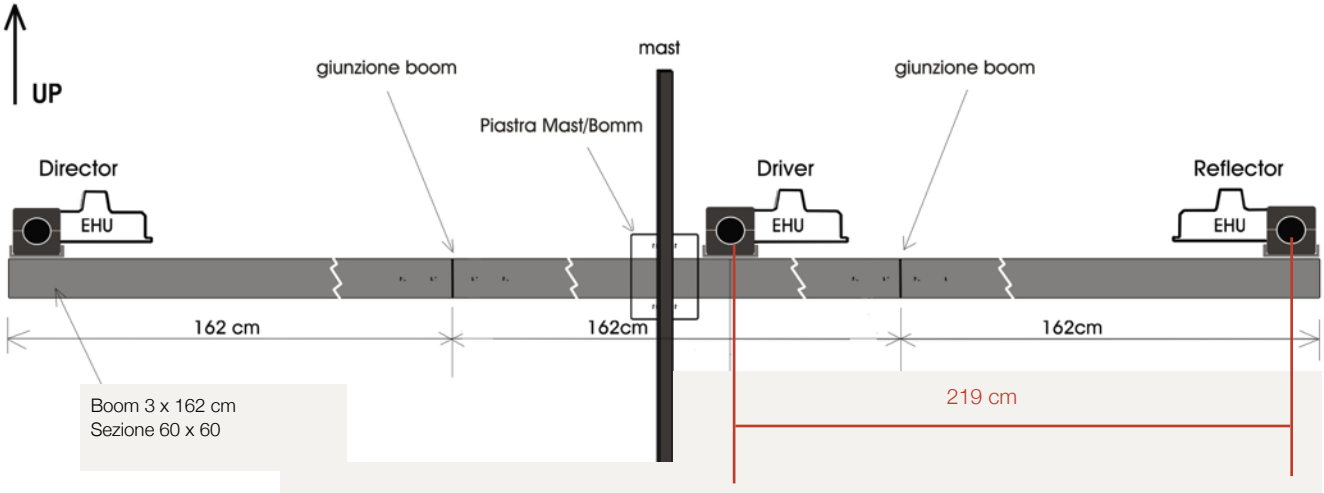
SCHEMA -Yagi 2 elements 6-20



Boom 1 x 162 cm
Sezione 60 x 60

SCHEMA - Yagi 3 elements 6-20

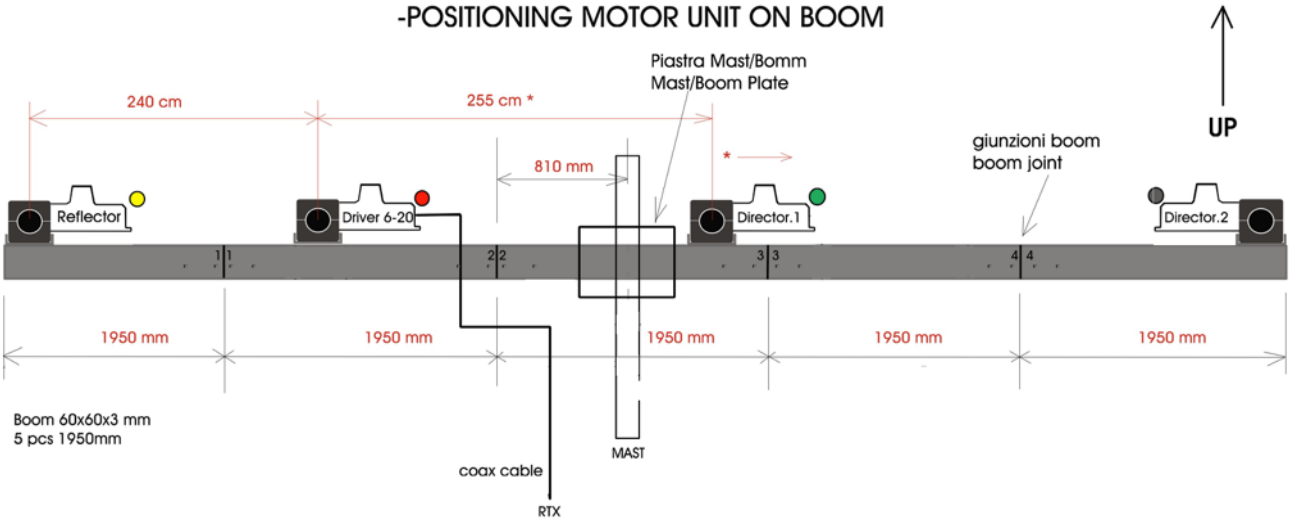
POSIZIONAMENTO MOTOR UNIT SU BOOM



Boom 3 x 162 cm
Sezione 60 x 60

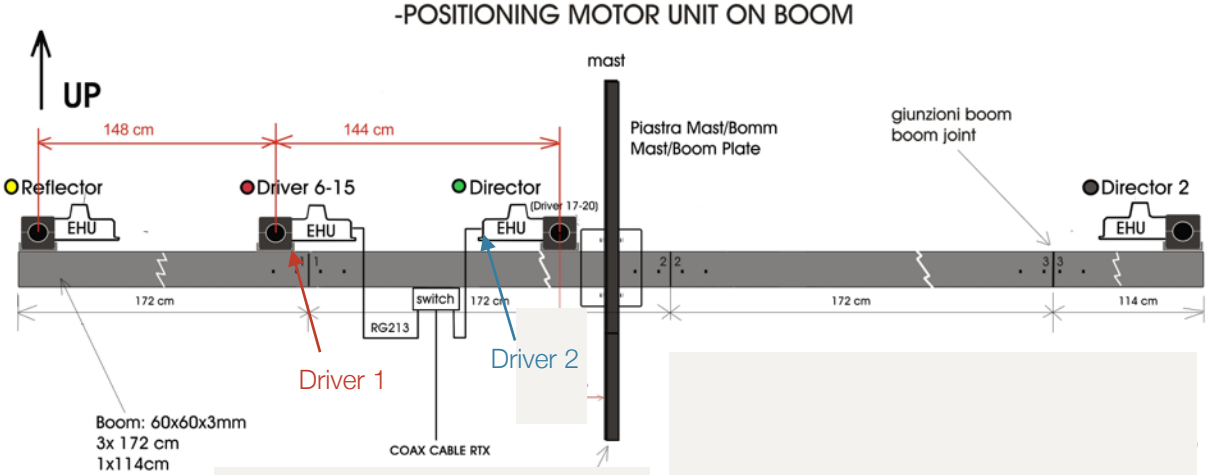
4 ELEMENTS YAGI 6-20

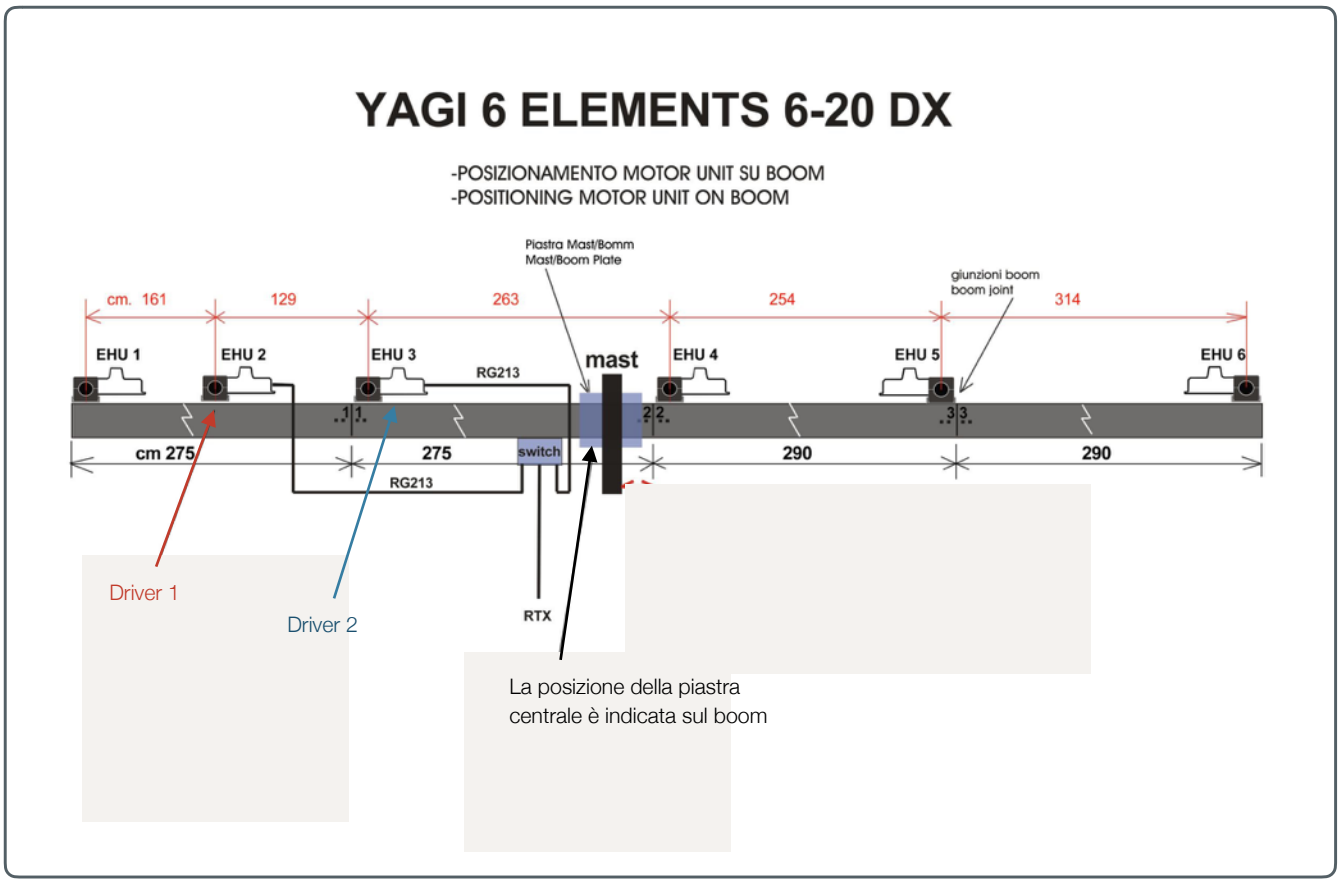
-POSIZIONAMENTO MOTOR UNIT SU BOOM
-POSITIONING MOTOR UNIT ON BOOM



4 ELEMENTS 6-20 DX

-POSIZIONAMENTO MOTOR UNIT SU BOOM
-POSITIONING MOTOR UNIT ON BOOM





CONCLUSIONS

A manual of a few pages can seem deceptively simplistic ... actually the use of only 8 pages to describe the assembly of 2-3-4 elements yagi 6-20 are proof of quality design and how extremely simple as well as intuitive is the assembly of a UltraBeam antenna.

Texts, images and graphics have been prepared to offer the user maximum ease of self learning and memorize.
In contrast with manual of many pages that can only confuse an OM that having never installed an antenna of this type could acquire too much informations and new procedures to him.
Reading new manuals waiting to receive your new antenna will allow you to perform a quick installation, safe and free of errors.
Therefore a careful reading is recommended in order to acquire the assembly methods which, as you may have seen, are really very intuitive.
Do work when your mind already knows what to do and provides a better end result in fewer time than a set-up in which you should consult the manual step by step for each individual operation.
Finally, and not least ...
Perform the antenna set-up exclusively as described in the manuals.
Avoid any variable and / or customization.
If you plan to do something that is not described in the manual, it means you should not do it !!!

Ultra Beam
Dynamic Antenna Systems

MANUAL

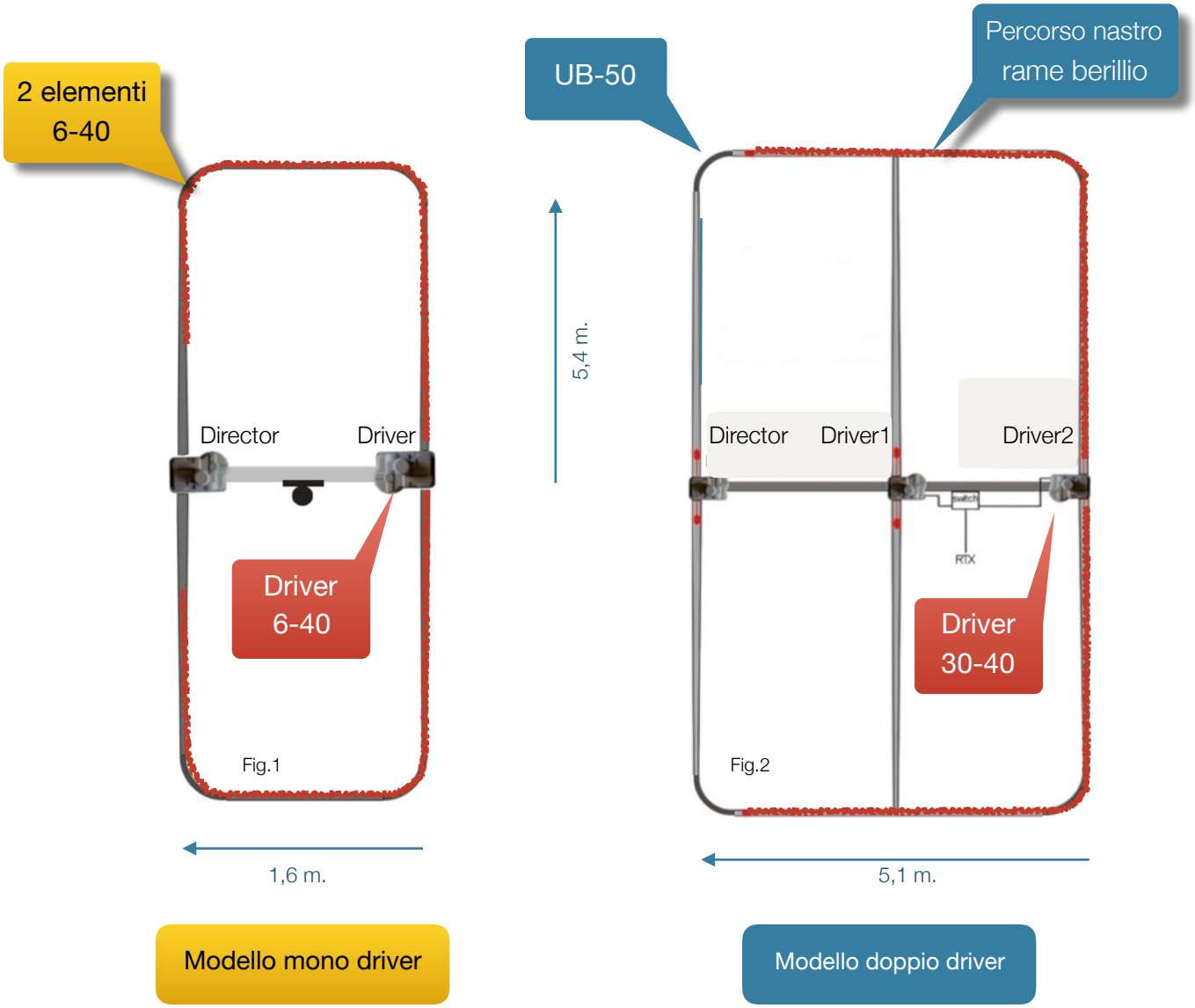
UB20 / UB40 / UB50 / 2 EL. 6-40

Rev. 1.10

INTRODUCTION

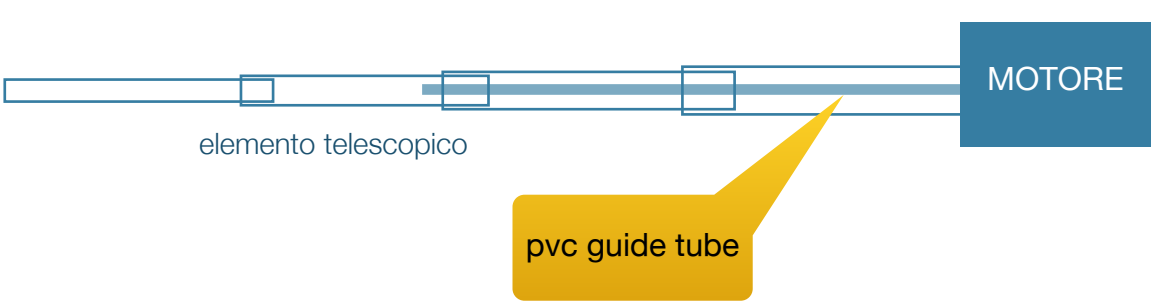
Some UltraBeam models work in 30 and 40 meters with folded elements, this allows you to work 30 and 40 meters with full-size elements in the same size 6-20 models.
This technique is applied on 2 and 3 element Yagi models.
On these two models curves are applied to the ends of the elements, joined together by fiber glass tubes, this creates a corridor in which the copper tape can scroll to reach the required length to resonate up to 40 meters.
Figures 1 and 2 show in red the path and the shape of a "C" that the folded dipole assumes when operating on 40 meters.

NOTE: This manual only refers to the installation of the curves, side elements and other specific parts of the models who work in 30 and 40 with folded elements.
For all other antenna assembly instructions refer to the manual "Standard"

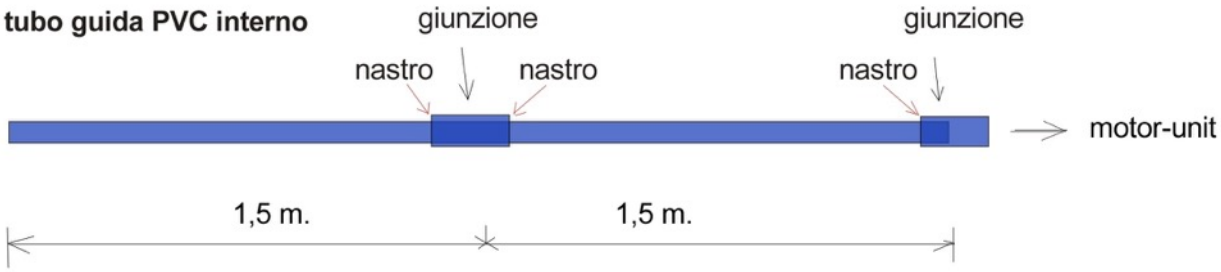


PVC GUIDE TUBES DRIVER 30-40

All UltraBeam models working in 30 and 40 meters with folded elements include the installation of internal guide pct tubes to the left and right elements connected to the motor unit.



The guide tube of folded elements is essential to allow the tape to slide within the curve and the side elements without bending.
The guide element is composed of two sections of PVC pipe (2 x 1500) total length 3 meters.
Connect the two sections with PVC joining and tape with common insulating tape.
Insert a second junction to one of the two ends, this will subsequently be used to connect the guide tube to the motor unit (Fig.1-2)



Insert the guide tube into the previously prepared element (Figure 3)

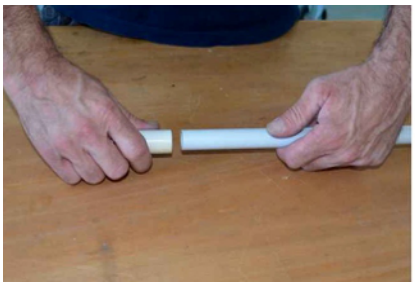


Fig.1

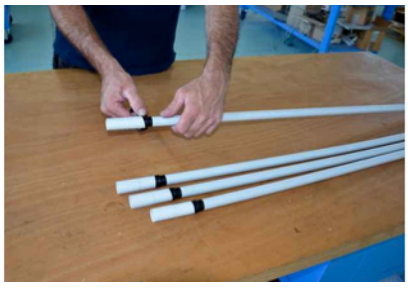


Fig.2

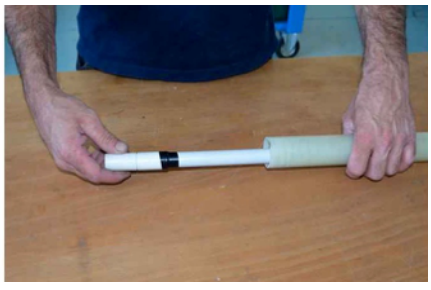


Fig.3

INSTALLATION OF ELEMENTS ON MOTOR UNIT

Before inserting the elements in the motor unit it is necessary to fix the PVC guide tube. During this operation it is necessary that the element remains aligned to the engine, if your set-up assembly does not allow this, it is absolutely needed the help of a second person to support the element during the insertion of the guide tube.
The inner PVC tube to be inserted to the engine contains a bi-adhesive applied during the construction phase that will keep the junction steady in time (fig.4)
Push the PVC pipe until it reaches its maximum insertion (Figure 1)
Place the element in the motor unit until it stops (Fig.2-3) and tighten the clamp of the rubber cap.

Fig.1

Fig.2

Fig.3

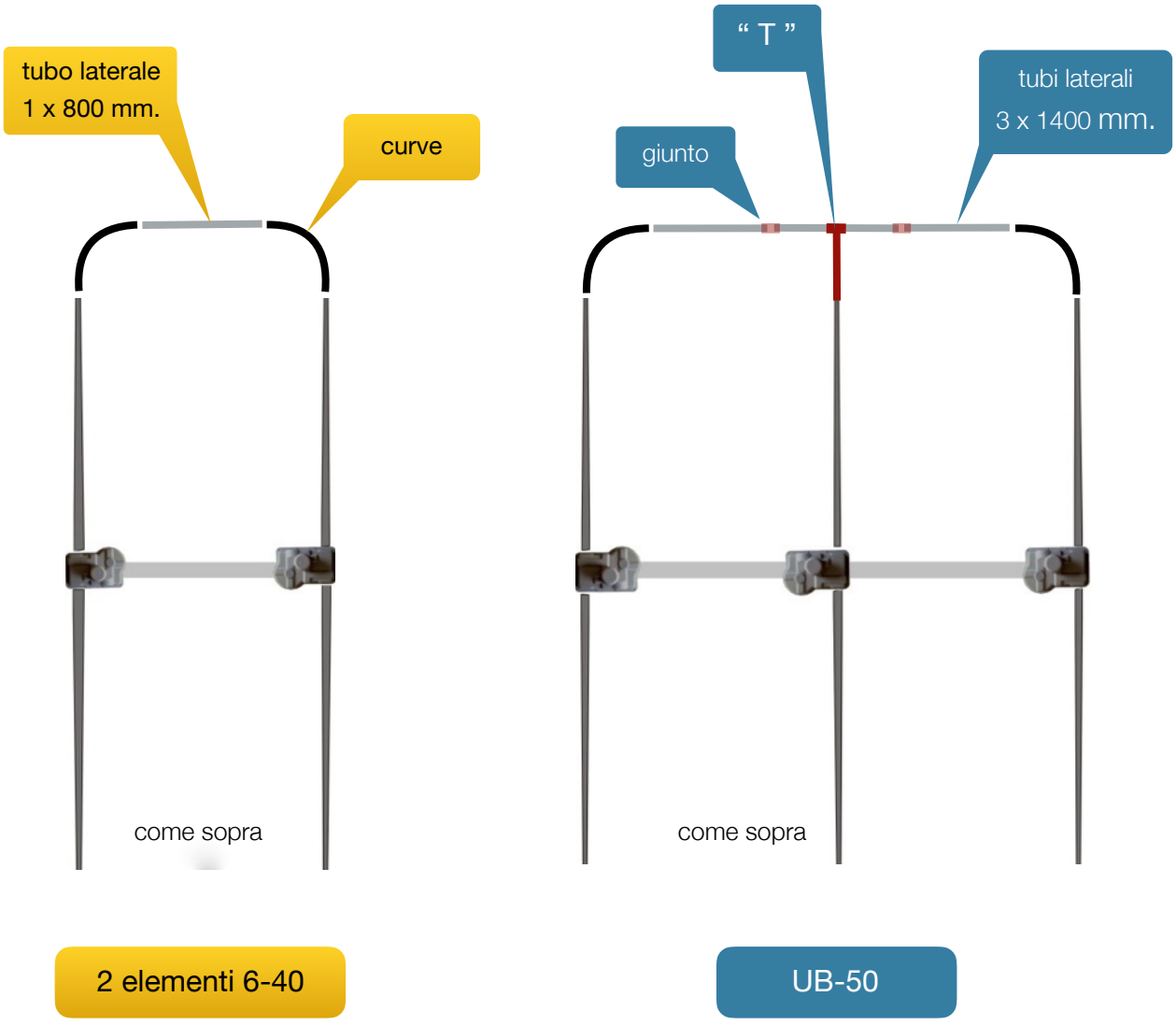
Important note:
you must carefully mounting the guide tubes.
In case of possible detachment of even a single tube, the copper tape will bend inevitably compromising the unit's motor functions.

Fig.4

NOTE:
The procedures relating to the installation of guide tubes are common to all models with folded elements.

- **2 EL. 6-40**
- **UB-20**
- **UB-40**
- **UB-50**

CURVES ASSEMBLY AND SIDE TUBES



Only after inserting all the elements to the motor units you can install the curves and the lateral elements.

For the side elements glass fiber tubes of diameter 20mm are employed
The 6-40 2 elements uses a single tube of 800 mm between a curve and the other.
The UB-50 employs three pipes of 1,400 mm. joined together by two fiber joints for a total length of 4200 mm.
In both cases, all the curves and tubes joints are fixed by means of thermo-tightening sheaths with high mechanical resistance with internal adhesive, which guarantee solid, permanent and waterproof junctions
On the UB50 a "T" mechanically connects the end of the central element to the side elements, in this way the weight of the entire lateral element will be distributed on all three elements.

2 ELEMENTS YAGI 6-40

To apply the thermo shrinking a heat gun is needed (1500-2000W)
The heating time varies depending on the outside temperature, and in any case the correct temperature is reached when the inner glue comes out, creating a ring all around the edges.
Insert the side tube and the ends of the elements in the curves up to the maximum insertion, (fig, 1) before heating the sheaths check that the side section is parallel to the boom, to avoid typical candy shape.
Move the sleeves exactly to the center of the splice and heat as described above. (Fig.2)

NOTE: Clean the joint surfaces of the tubes and curves before applying the sheath.
Avoid any twisting and movement of the joint until it is completely cool
The curves have drain holes, make sure they are facing down (picture 3)

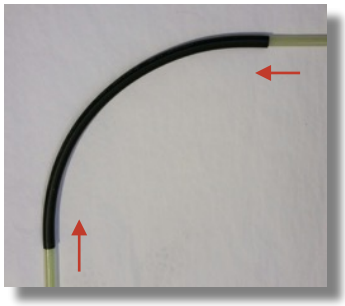


Fig.1

Fig.2

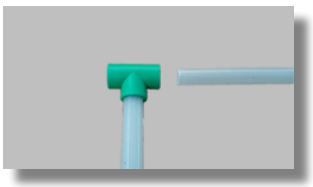
Fig.3

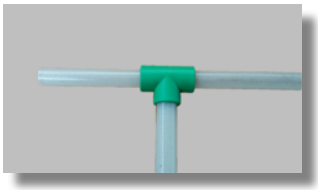
UB-50 YAGI

The procedures of the curves junctions are identical to the elements 2, only difference is the length of the side element that is longer and is formed by three segments, in addition to a T central support Fig.4

Fig.4

Before joining the three elements with joints you must insert the "T" shaped support.
Slide the T inside the element that will be placed at the center, no need to fix it, it will align to the central element of the antenna at the end of assembly





Combine the 1400 mm. pipes placing the 10 cm small tubes exactly at half junction (fig.4-5)
Slide the sleeves on joints and heat up to the correct temperature (Figure 6)
Drill a small 2-3 mm. hole on the same axis in the center in both junctions (fig.7)

NOTE: important to check that the holes are facing down before heating conduits that hold whole side element to the curves

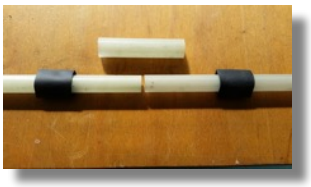


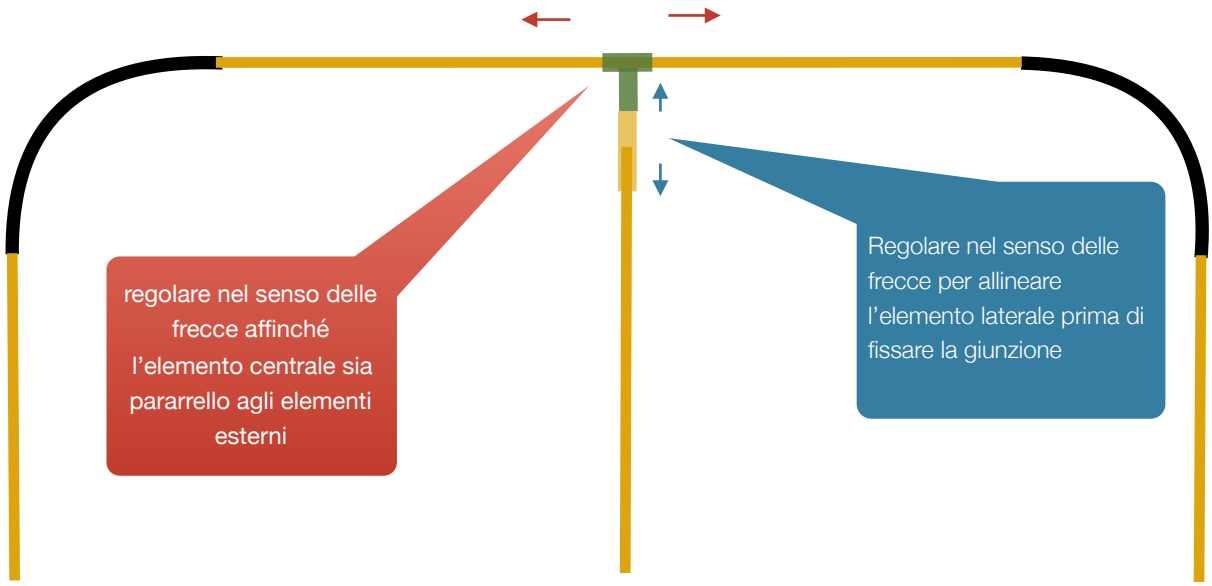
Fig.4


Fig.5


Fig.6


Fig.7

FIXING / ADJUSTMENT OF “T” SUPPORT

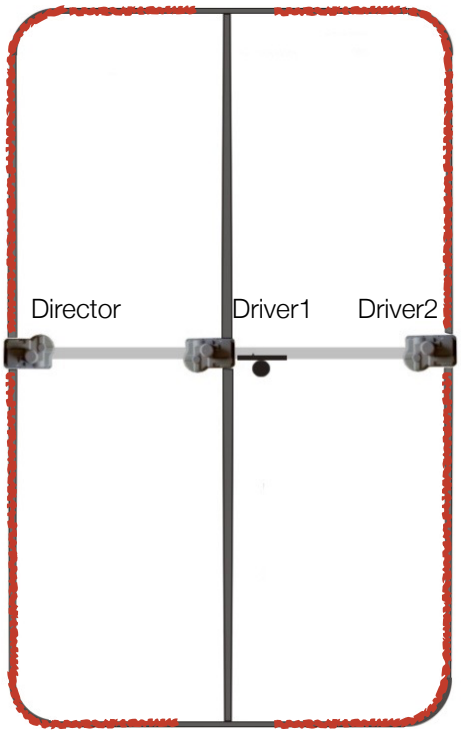


Insert the T shaped tube to the end of the antenna central element.
The tube has sufficient length to slide the element inside, this allows a telescopic adjustment in the direction of the arrows, useful to set the correct position of the T so that the whole side panel stays perfectly lined up (only aesthetic factor) any not perfect alignment will not compromise in any way the antenna operation.
Once the exact spot is found, apply the heat shrink sleeve to lock the T-tube to the end of the telescopic element.
Move laterally the T inserted into the side panel in the sense of <**arrows**> to adjust parallelism between the antenna elements, it is not necessary to lock the T element, you can also leave it free to slide, so it will always find its natural position.

UB20-MX / UB40-MX

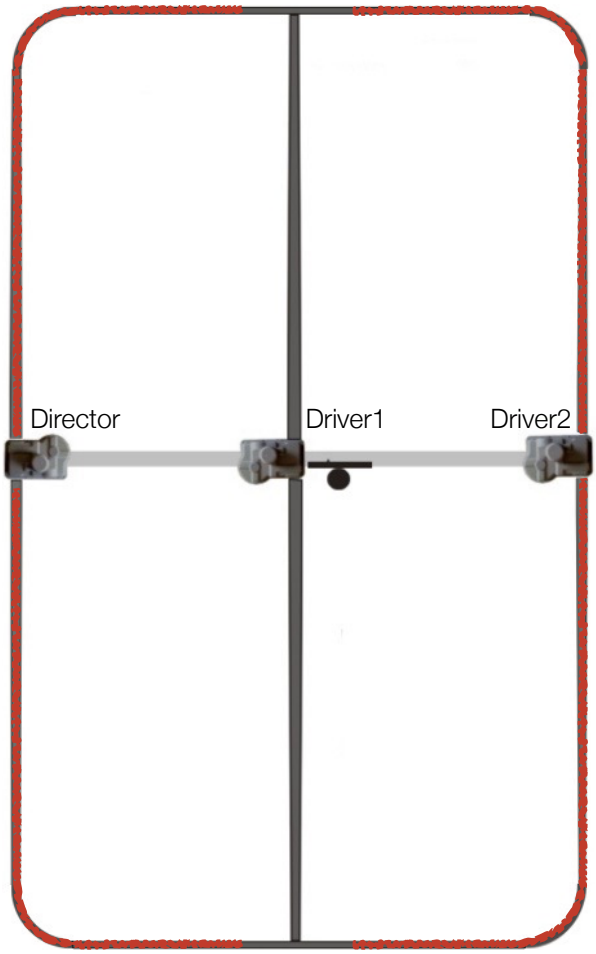
The models UB20 and UB40 differ from UB50 MX for the size of the elements and boom and why they work in a configuration 2 elements moxon on the lower frequency.
With regard to the assembly instructions of the curves and side elements, they are absolutely identical to those of UB50 described in this manual.
On these two models the PVC guide tubes will be installed on both the external antenna elements.
The figures show the copper tape path that allows the two antennas to act as a 2 elements moxon configuration on the lowest frequency at which the model works.

UB20-MX



2 elements moxon when work on 20 meter

UB40-MX



2 elements moxon when work on 40 meters

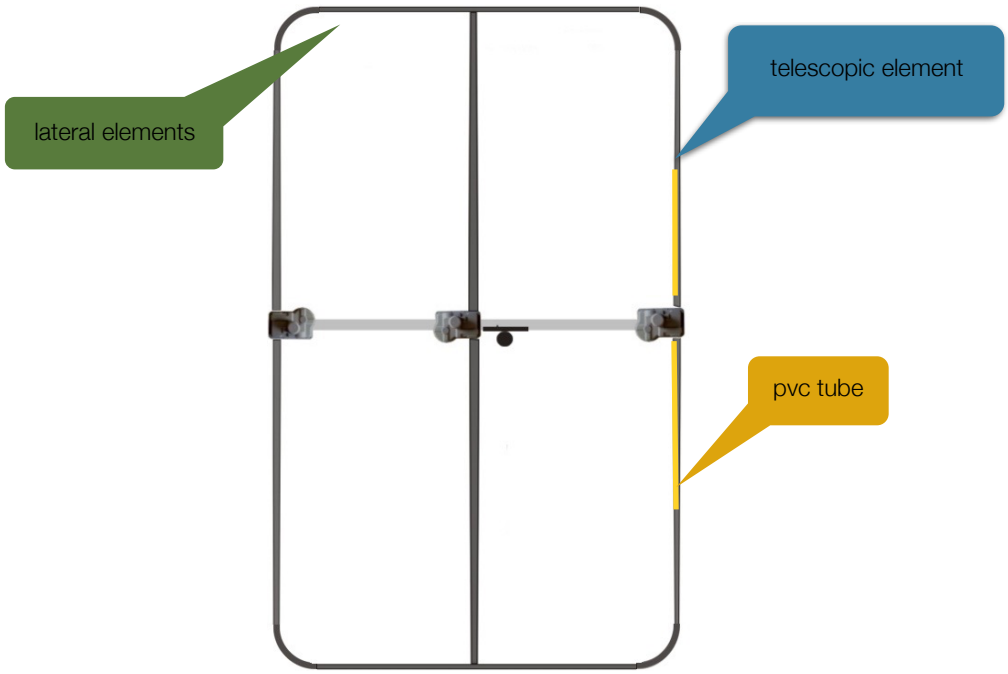
TELESCOPIC ELEMENTS

MODEL	LENGTH TELESCOPIC ELEMENTS
2 EL. 6-40	5,4 m.
UB20-MX	3,5 m.
UB40MX	7,4 m.
UB-50	5,4 m.

TUBI LATERALI / TUBI GUIDA

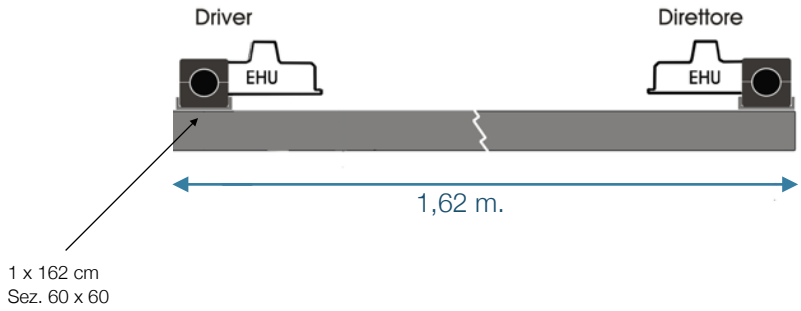
MODEL	LATERAL TUBES LENGTH	PVC TUBES LENGTH
2 EL. 6-40	1 x 0,8 m.	2 x 1,5 = 3 m.
UB20-MX	2 x 1,15 = 2,3 m.	1 x 1,5 m
UB40-MX	3 x 1,5 = 4,5 m.	2 x 1,5 = 3 m.
UB-50	3 x 1,4 = 4,2 m.	2 x 1,5 = 3 m.

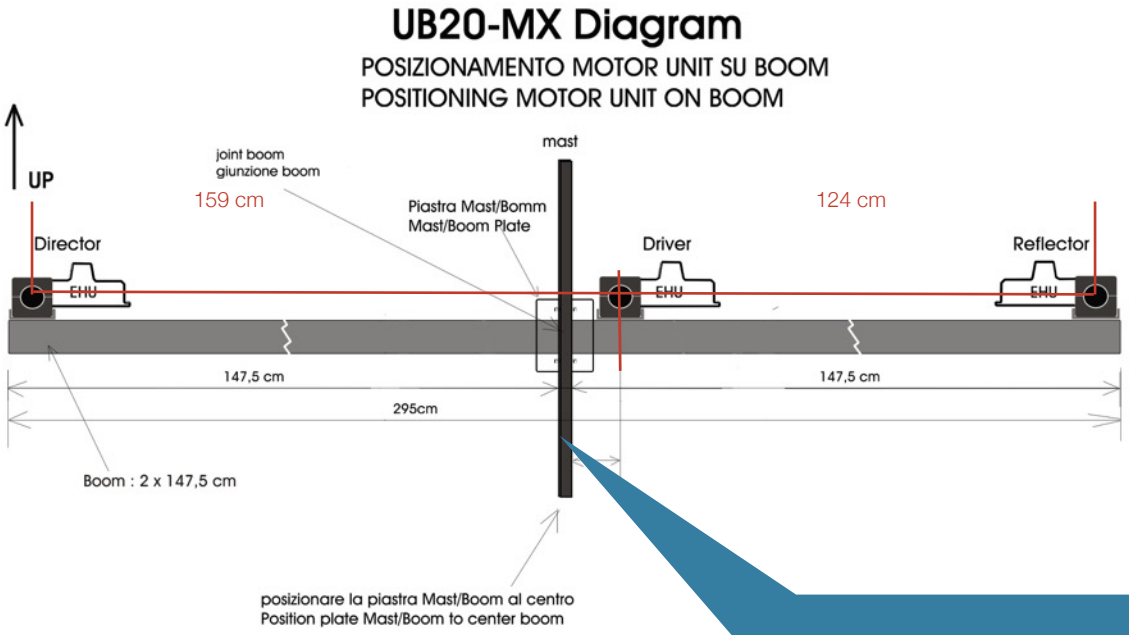
NOTA: le quantità indicate nella tabella si intendono per un solo lato antenna (pag.5)



ANTENNAS DIAGRAM

2 ELEMENTI 6-40



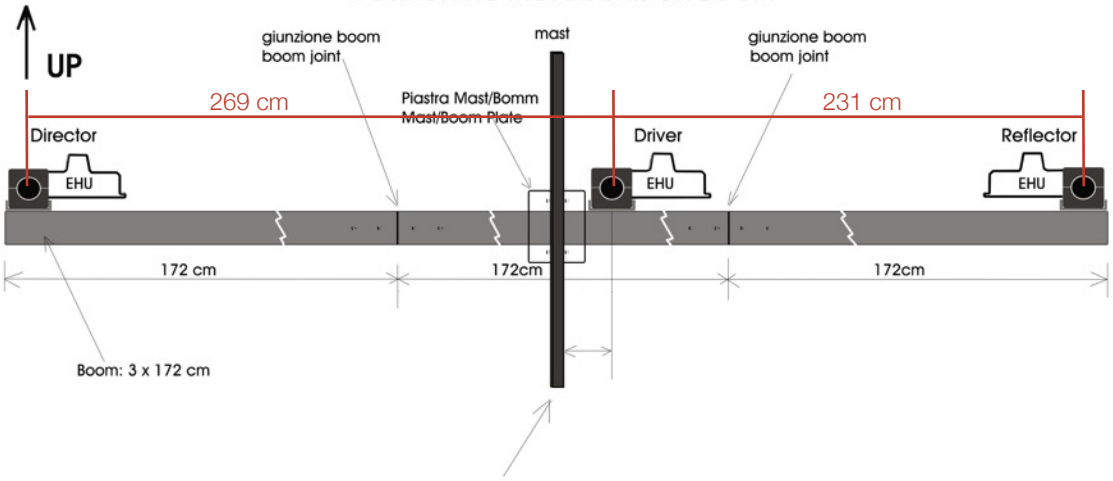


The position of the Mast / Boom plate in models with 3 elements is always at the center boom,
in cases where it is necessary you can move it toward the director,this will provide more space between
the central element and Mast

Description on page 6 of the Standard manual

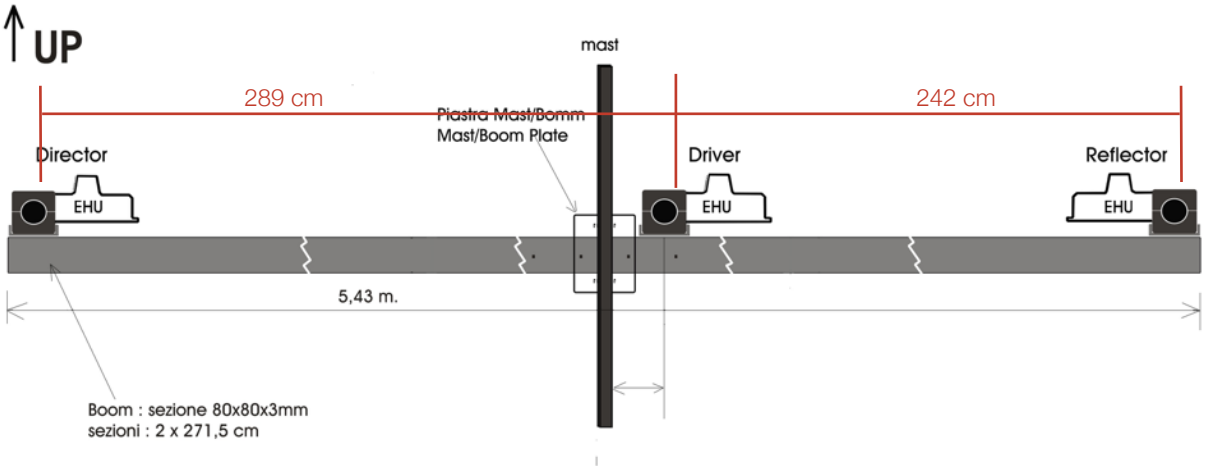
UB50

POSIZIONAMENTO MOTOR UNIT SU BOOM
POSITIONING MOTOR UNIT ON BOOM



Schema - UB40-MX

POSIZIONAMENTO UNITA' MOTORE SU BOOM



Nota :
UB20 - UB50 - UB40 are models with double driver, download the manual “Switch”

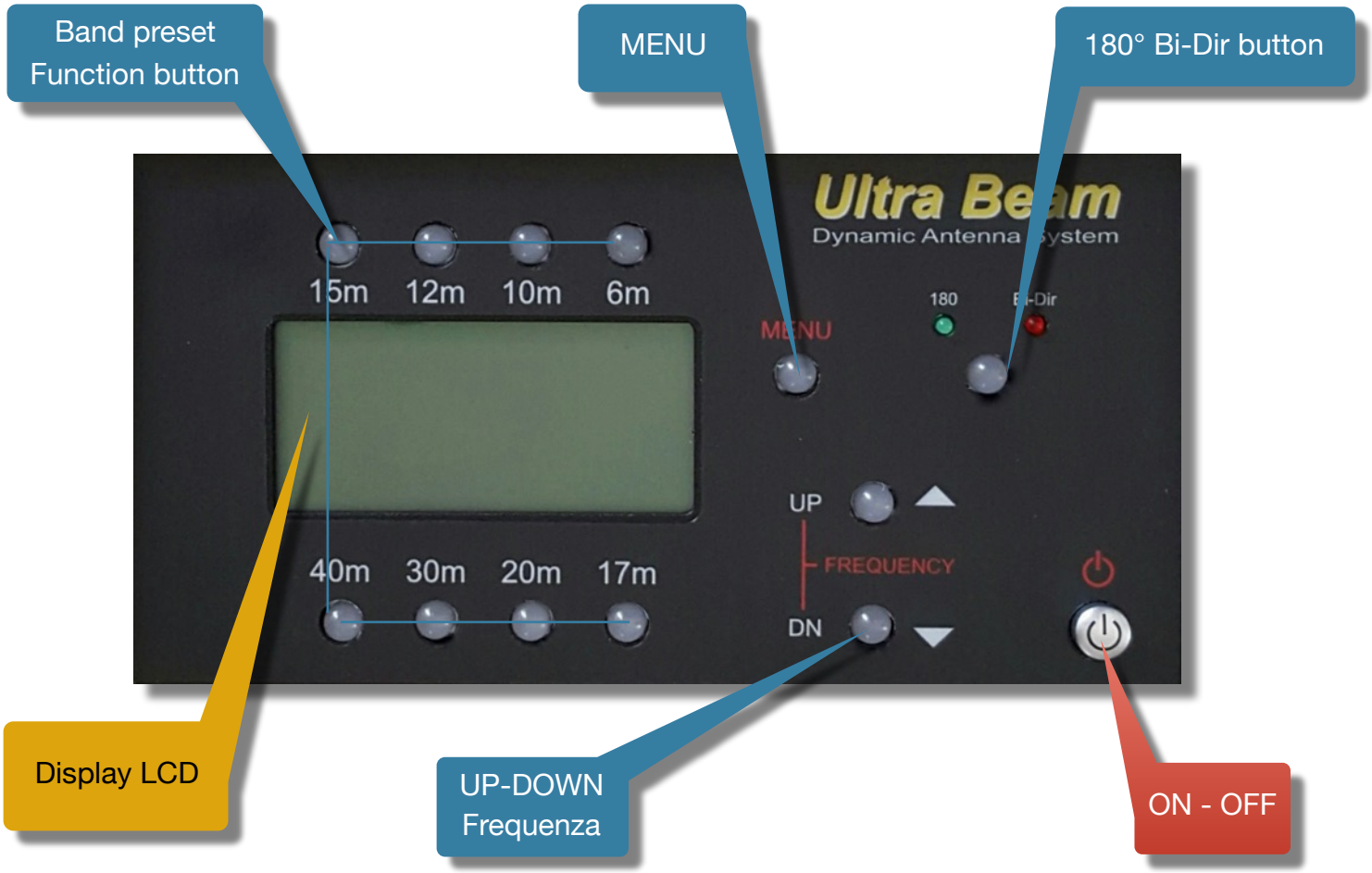
Ultra Beam
Dynamic Antenna Systems

MANUAL "**CONTROLLER**"

Rev. 1.10

INTRODUCTION

The motor units employ stepper motors (stepper)
The communication between the controller and the stepper motor is unidirectional and is through the electrical wiring
The controller (> talks) by sending pulses to the stepper motor so that the copper belt reach the correct length.
The engines (<listen) receiving the stepper pulse and move until the controller transmits them.
If the electrical connection between controller and motor is correct and stable they will move endlessly with precision equal to 2 ° / revolution, allowing the copper tape to always reach the lengths with millimeter precision.
Where you had a problem with the wiring, the controller would play anyway his job
exchanging frequency and band, but it is obvious that the motors will not move regularly.
Same thing in cases where you have a problem with the driver card that drive the motors.
Example: if a radio has burned finals it still go into transmission, but nothing will come to the antenna.
It 's important to realize this so that you understand well the logic of communication between controller and antenna in order to use your UltraBeam consciously and correctly.



INSTRUCTIONS USE

The electronic controller manages in an entirely automatic manner the length of the motorized elements in function of the selected frequency.

At first power on the controller will be in position "retracted ELEMENTS"

First, for a few seconds, will show the information about the model, firmware and serial number (Fig.1-2)

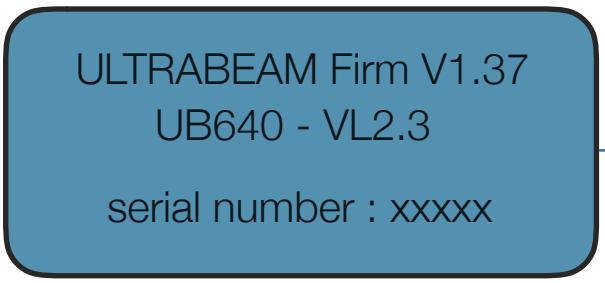


Fig.1

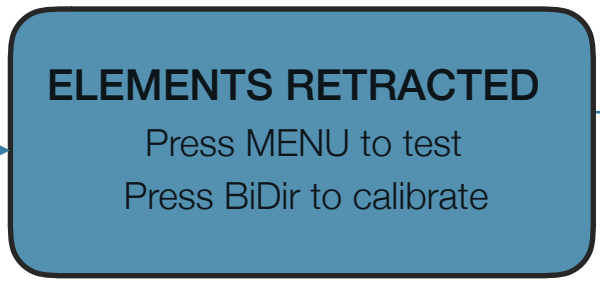


Fig.2

Selecting any of the band keys, the engine unit will slide the beryllium copper tape inside the fiber glass elements.

The elements will automatically stop only when they have reached the correct length that will resonate the antenna at the frequency indicated by the display (Figure 3)

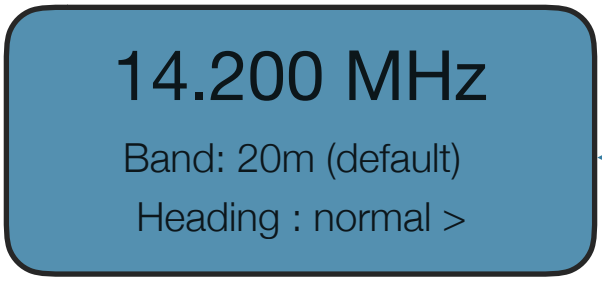
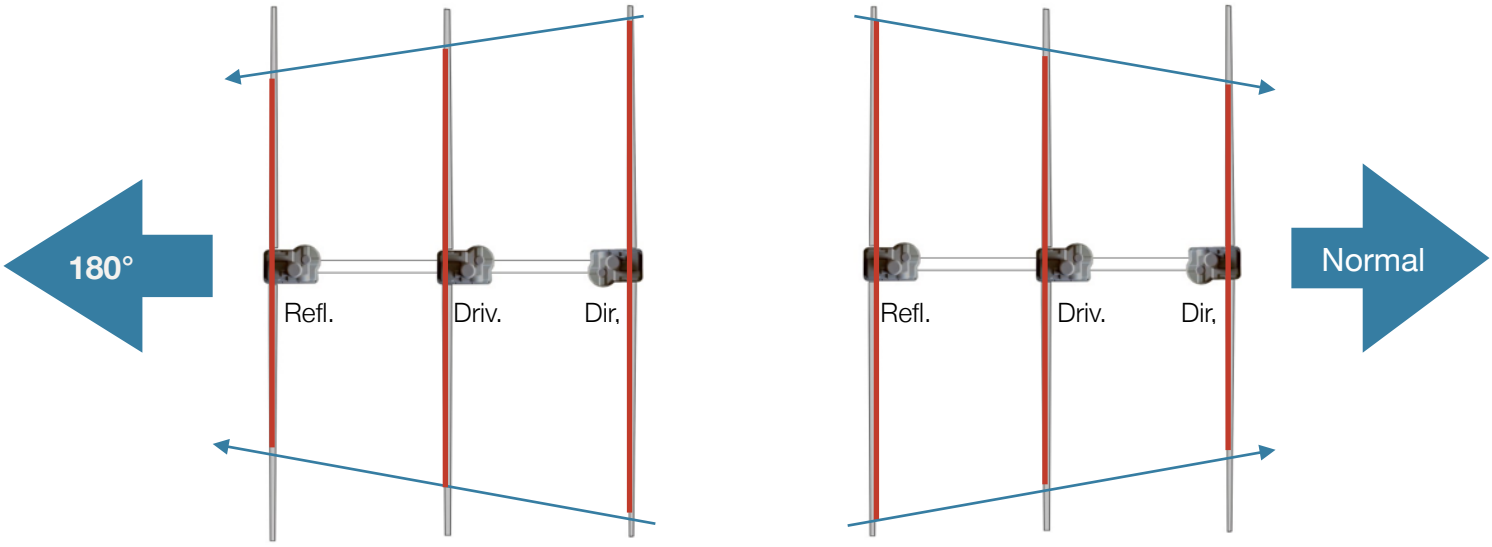


Fig.3

The controller employs backlit buttons that always show the status of the active function.
So if you're in 20 meter band the display will show the frequency in use and the band button will remain lit, flashes only to indicates that you are out of the amateur radio window.
During a band change the movement of the engines it will be indicated by three different warning:
1) Sound: A beep sounds during movement (you can adjust volume or mute)
2) Visual: the selected speed button will flash until all engines will not be stopped
3) Visual: a bar graph will appear in the display during movement.
The band preset buttons are used to change the band just like on radio
The UP-DN buttons are used instead to change the frequency within a band just like VFO radio with step of 25-50 kHz as a function of bandwidth.
These two functions allow you to quickly select the frequency in use
You need to remember that the Ultrabeam are still mono-band yagi with full-size elements as such offer a wide bandwidth (in function of frequency), therefore it will not be always essential that the frequency on the controller is identical to that of transmission, for this reason on many bands it will be enough to simply select a center band frequency.

FUNCTION 180°

One of the most important and popular features with respect to the more traditional antennas with fixed elements is the ability to electronically reverse the pointing antenna without making it physically rotate.
In fact the use of motorized elements allows to invert the lengths of reflector and director passive elements, who are known to add gain and yagi direction pointing (fig.4-5)
When the 180 ° button is selected, the Reflector and Director reverse their lengths taking the functions of each other, the driver performs only a correction to compensate for a small difference in spacing, this is equivalent to having physically rotated the antenna by 180 ° reversing the antenna pointing without having actually rotated.
The 180 ° function is very useful in typical cases in which it is necessary to verify if the best signal either via long or short path, with a traditional antenna should be too much time especially if once reached opposite pointing, we should go back, the electronic 180° needs just 2-3 seconds.



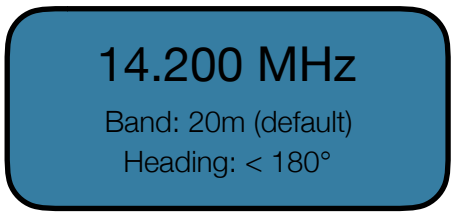


Fig. 4

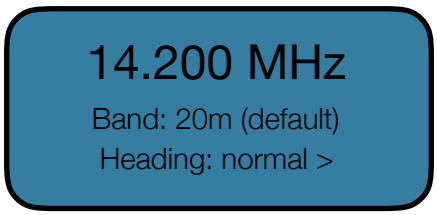


Fig.5

FUNZIONE Bi-Dir

The Bi-Dir function allows the antenna to work in a bi-directional configuration where both passive elements acts like a directors.
This makes the antenna behavior similar to a dipole but with a higher gain and F / F
When the 180 ° and Bi-Dir are active two LEDs (green / red) placed next to the button will light up.The display will still show one of three ways in use: **<Normal>** / **<180 °>** / **<Bi-Dir>**

TARATURA SWR

All controllers have in the CPU memory the correct measures according to the Yagi model in use so that the antenna can resonate and provide maximum gain at the frequency indicated by the display. These measurements are obtained with tests carried out on towers at heights (1/2 wave or +) and without the influence other antenna or conductive components which may affect the operation and impedance. However, each installation will inevitably present different characteristics from those of testing (height, interference from other antennas, length and quality of the coaxial line, etc., etc.).
So it is possible that your antenna after installation present a different impedance at feed point, and then a slightly higher value of SWR rather then 1.1.
In some cases you will have a 1.1 SWR value but on a different frequency from that indicated by controllers, this is caused by the same reasons described above, in both cases it will be possible to correct the impedance in a simple and fast way with the procedure described below.
It 's good to clarify that any SWR greater than 1.1 does not prejudge in any way the antenna gain, but since it is possible to make the correction of the elements so easily through the controller located in the station, it is advisable to do so.
The correction, where necessary, will be made only once, the antenna will resonate in the future always to the stored measurements.

The antenna impedance is given by the length of the driver and its interaction with the director.
Select on the controller a frequency identical to that of transmission (eg 14.200 MHz)
Select from the menu "Modify Elements", will appear all element lengths in millimeters.
Bring the transmitter on TX (rtty) and change the length of the driver (+/-) until you get the minimum SWR, if necessary also act on director, in any case never modify the reflector.
When you have reached the minimum SWR simply press MENU and save (Figure 6)

Repeat for the modes 180 ° and Bi-Dir
Remember: in the mode 180 ° passive elements Reflector and Director are reversed, so if you will need to correct the length of the Director, you must act on the reflector column, in each case modify the shorter element (fig.7)

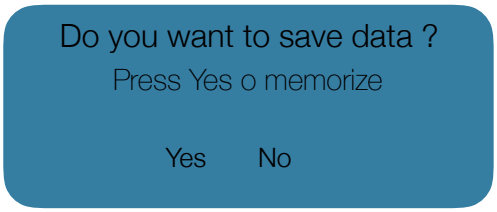


Fig.6

*NOTA: when the menu is activated the band buttons become function buttons

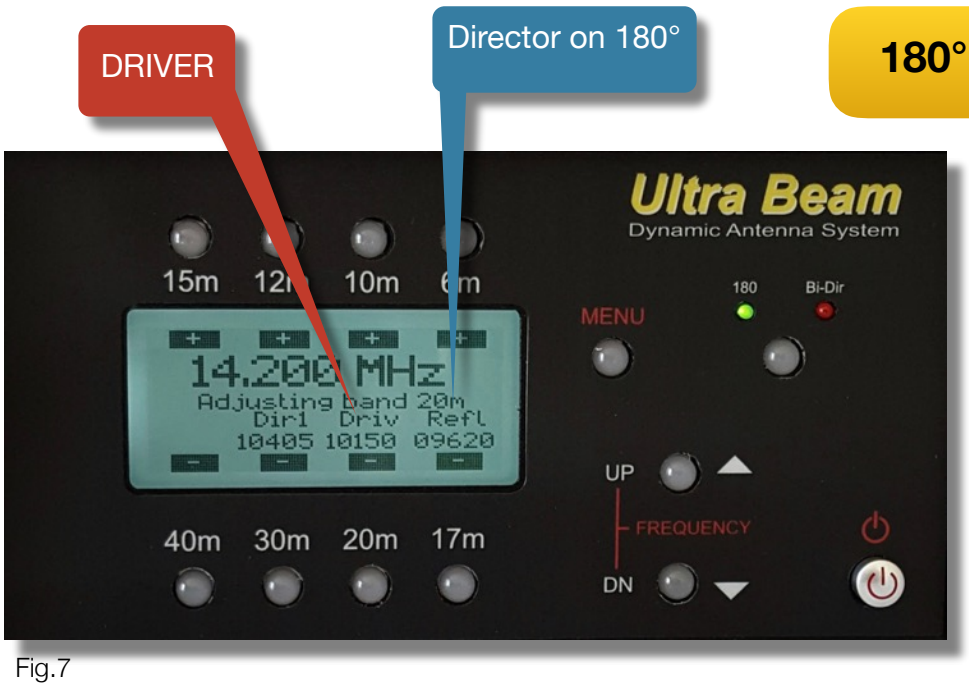


Fig.7

ANTENNA MODEL WITH DOUBLE DRIVER

Fig.8

In Fig.8 an example of display on the UB640-VL2-3, one of the many dual driver models.
In this case the antenna will be fed (through the coaxial switching) on the director that thanks to a internal balun will work as drivers in the 30 and 40 meters bands.
If you need to correct the value of SWR apply the steps on page 5
On these two bands the central driver used from 6 to 20 meters will not be connected to the coaxial line, automatically switched by electronic switches, and its length will be such as not to affect in any way the two elements for 30 and 40.

ELEMENTS HOMING (RETRACT)

Such function exists as inherent in the antenna, whose motor drives must necessarily be retracted for shipping and for the installation.
Having said that this function is not considered to be essential whenever you turn off the radio station, the controller can be switched off, leaving the antenna on last used frequency just as you do with the radio.
The next time you turn the antenna it will be ready to be used on the same frequency in which it is left.
However, this function can and should be used in cases where there are extreme weather conditions (strong wind). Retract the elements in these cases can prevent the tape to bent, in rare cases in which an element is broken.
In any case, you are free to retract the elements every time you want.
To retract the elements select MENU> Retract> Yes

NOTE: The antenna will also work with controller turned off as well as radio communication, The ON / OFF button only turns off the display and disables the selection keys.

CALIBRATE

This function should be used only in the rare cases in which one or more motor units lost step.
The accidental loss of step can be caused by several factors, including the most common:
1) problem with the electrical wiring (poor electrical contact between the controller and motor)
2) sudden loss of power to the controller during a band change
3) increased friction in the sliding of the copper tape
4) poor contact of the DB25 to the controller or a motor unit connector
5) controller supply problem (low voltage)
These are some typical examples for which you can lose step, the condition in which obviously the antenna will not resonate properly in any band, in these cases it will be sufficient to run a "Calibrate", this will bring all the motor units to close completely, regardless of their real position.
If it was an accidental problem simply select any band and the antenna will return to resonate.
Otherwise if after the calibration the antenna continue to not resonate, it will be mandatory do visual and technical inspections as described in Troubleshooting UltraBeam, in order to establish the causes.

http://www.ultrabeam.it/site/index.php?
option = com_phocadownload & view = file & id = 7% 3Atroubleshooting & Itemid = 55 & lang = it

RADIO INTERFACE

The controller can be interfaced to common radio Yaesu, Icom, Kenwoo, Flex, K3
The link will send the radio frequency in use to the controller, this will make the band change and frequency automatic without being necessary to intervene manually.
The controller already has in memory the radio set-up default (Figure 1), it will suffice to select the brand of your radio and connect the cable to the serial port on the controller and the radio.
In cases where you use a baud rate on the radio different from the default, it will be possible to modify it with the menu. (Fig, 2)
The radio communication can be set to two modes plus off mode (Figure 3)
1) Band and frequency change
2) only band change
3) off
To select the appropriate protocol to your radio,
MENU> Other> RTX comm set-up> Protocol RTX

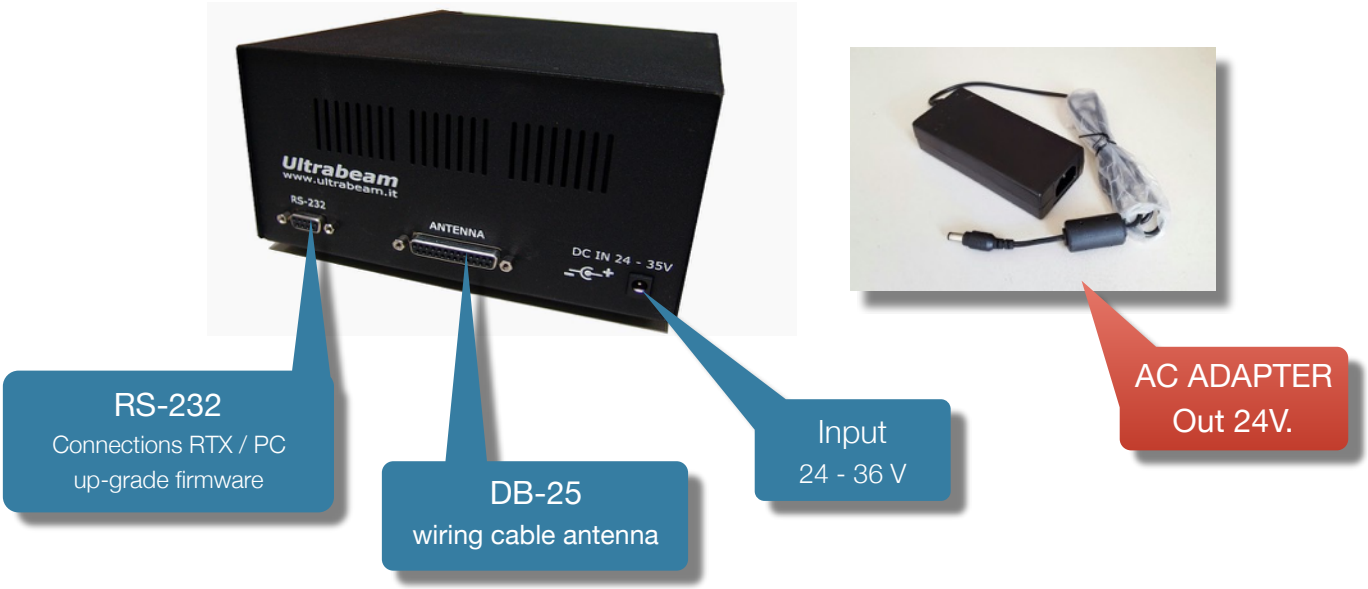
Fig.1

Fig.2

Fig.3

NOTE: If you have customized the communication parameters (Figure 2) they will remain in memory just exit with the menu button, if you select any of the cat again preset (figure 1) the customization will be lost, the preset buttons automatically set the default values when selected.

CONTROLLER REAR CONNECTIONS



IMPORTANT

-When You connect your controller to the motor unit of the antenna, all the units and controller must be in the retracted position.

-All the time that you need to disconnect the cable from the controller (DB25) BEFORE you must perform a "retract elements" from the menu.

-The Controller software works even if not connected to the antenna, which is why when you connects or disconnects the wiring (DB25) from the controller you must be certain that both drives (motors and controllers) are in the stowed position.

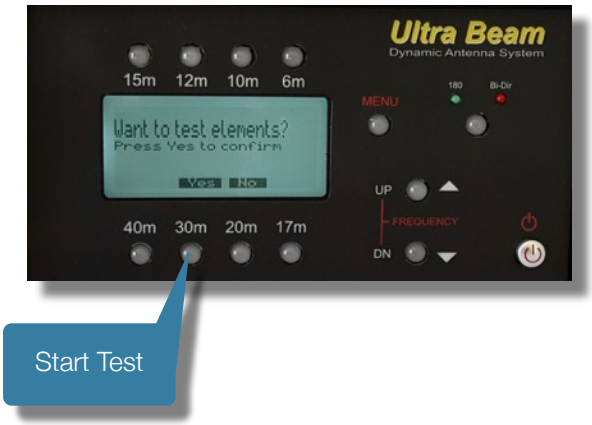
-Never Use the controller if the DB25 is not fixed with screws.

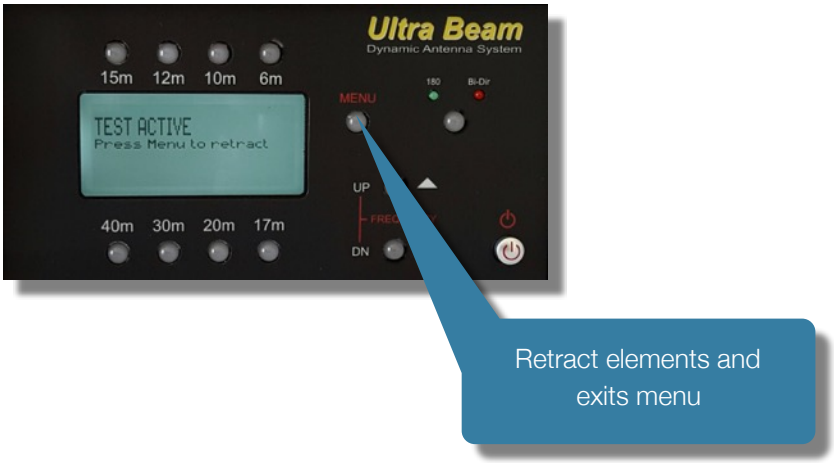
If you do not follow these important instructions you can lose synchronization between controller and antenna motor units, this does not allow the antenna to resonate and in some cases it could also cause permanent damage to the motor unit.

PREASSEMBLY INITIAL TEST

The Elements Test function is used exclusively before the antenna assembly
It allows rapid testing of the all parties in order to verify the proper functioning
of the three main components, **Controller, Wiring, Power Unit**
Selecting any band key you still get the testing but also by selecting the
6 meter band it would have a higher extraction of copper tape from the motor unit.
The test function is activated only when the controller is in the "elements retracted"
Before running the tests:
1) Connect all the motor units to the wiring connectors
2) Place the motor unit on the floor or on a table.
3) Connect the DB25 to the controller (secure it with screws)
4) Connect power supply to the controller
The display will show for a few seconds the firmware in use, antenna model and serial number of the unit
then will appear "Elements Retracted" and instructions for testing

TEST:
press MENU> and then confirm with yes, the motors will release the copper tape for a short lenght.
To retract the copper tape, press MENU





IMPORTANT NOTE:
UltraBeam always performs a final inspection of all parts before shipment, however,
we recommend to perform the Test before installing the antenna, this will allow you to verify that
all received components are working properly and that nothing has been damaged during
transport and avoid any unpleasant surprises after mounting.