yagi antenna

50LFA6M

Thank you for choosing EAntenna.

All our products are manufactured and developed with the best materials on the market, to offer the best qualities and guarantees to our customers.

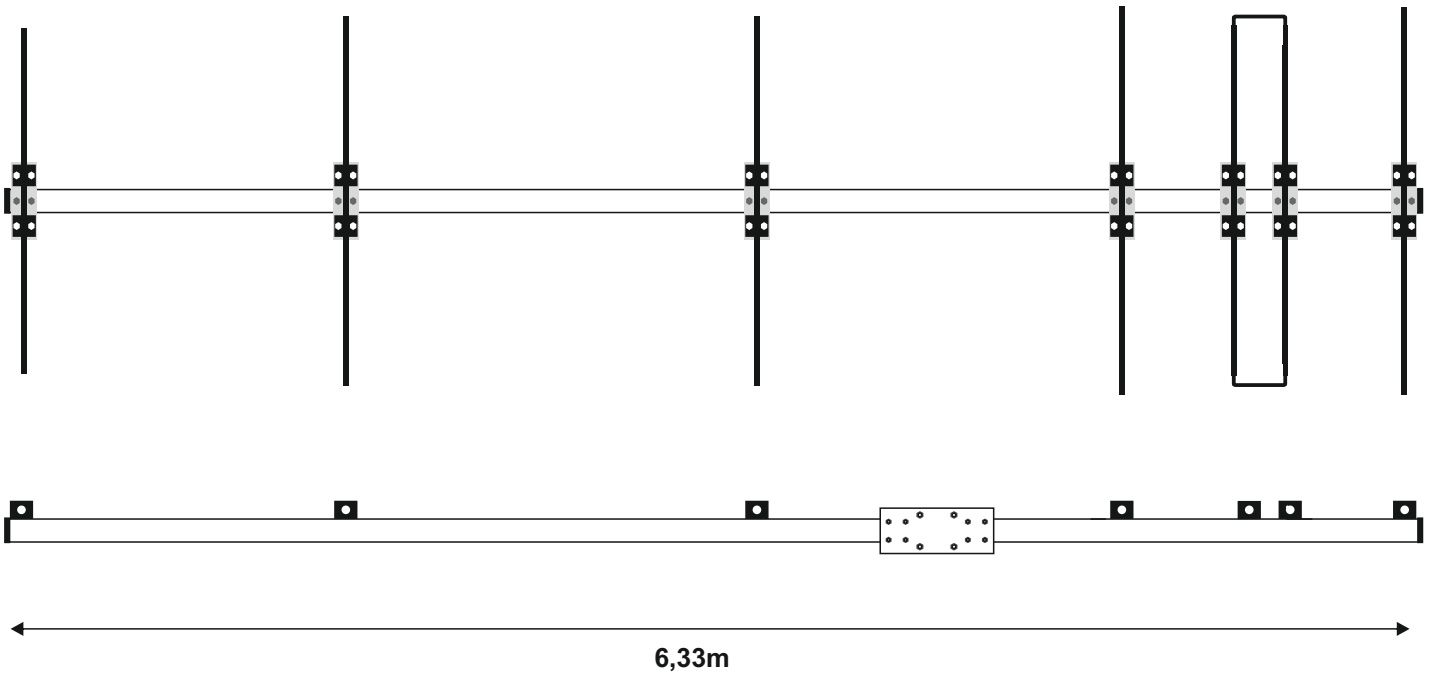
The LFA antennas have an input impedance of 50 Ohm in the antenna, so no coupling is necessary. The loop is at the same time a coupling system and director element and this presents many advantages when modeling.

The 'real' impedance of each LFA varies greatly. But, the impedance presented at the antenna entry point is always 50 Ohm. Therefore, there is no limitation on the results of any optimization tool achieved with a single input impedance, but it manages to change the width and length of the loop keeping the impedance at 50 Ohm. This feature is very important to ensure good performance, bandwidth and low SWR in the antenna.

This additional flexibility also allows more lateral lobes to be suppressed and a better front-to-back (F / B) ratio compared to traditional Yagis. With time it is possible to achieve an excellent balance between design, F/B, gain and bandwidth.

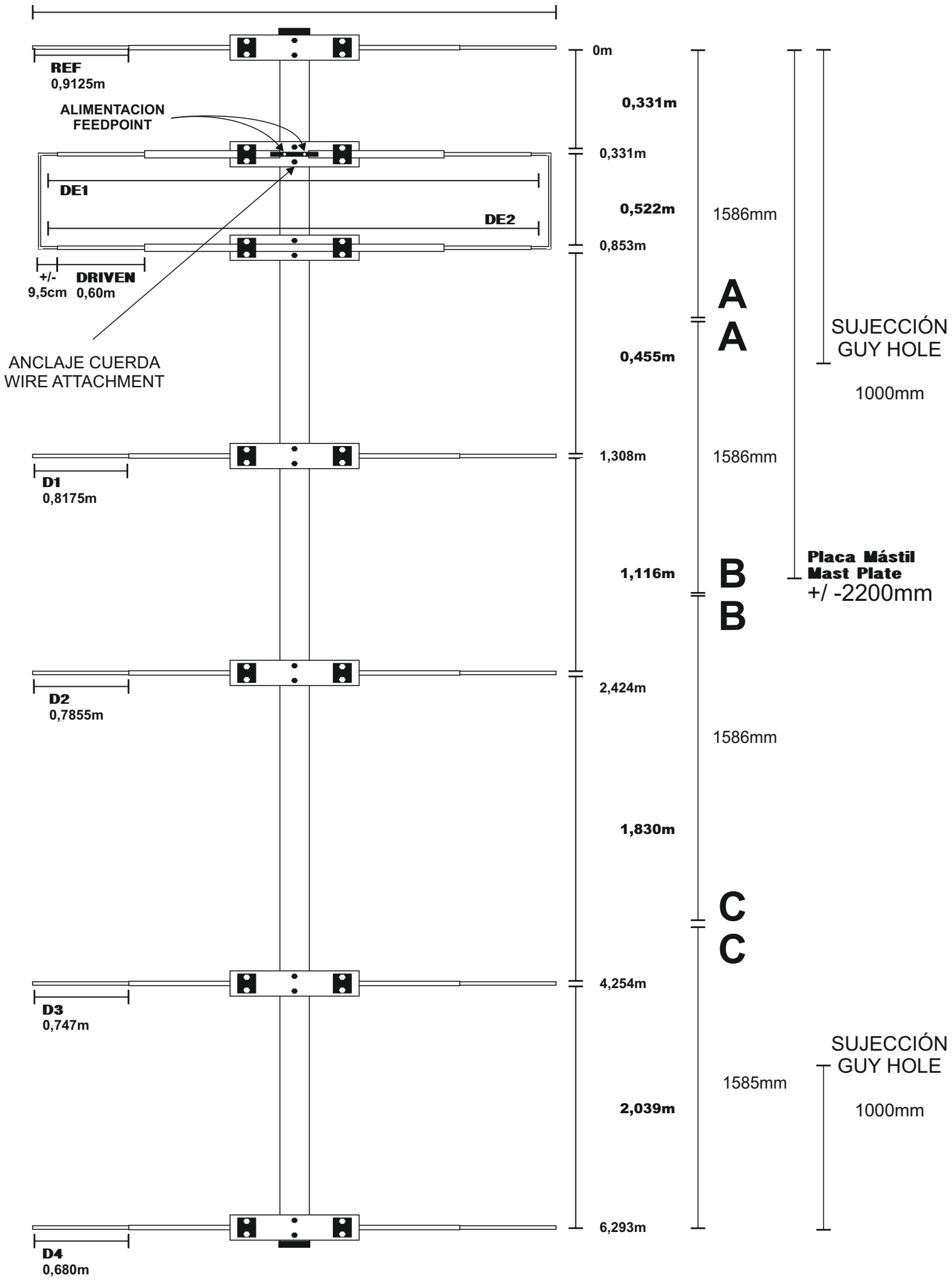
Additionally, the proximity of the loop and the antenna entry point make the LFA less susceptible to noise and static nearby. In addition, the low level of the LFA lateral lobes provides a winning formula for an antenna with super low noise!

We detail the materials used, for their best use and assembly. All the fittings are made of stainless steel and the aluminum is made of T6061 or T6063 alloy, known as Duralumin that offers the best conditions to be weatherproof, the force of the wind and the best conductivity. The plastics used, are Polyamide and offer the best hardness and durability for years and years.
We offer warranty on operation, and warranty on hardware, delivering the hardware kit with some additional pieces for possible losses or forced breaks. In addition, we offer Allen keys and fixed mounting elements.
In the following pages you can see detailed graphics of the parts.



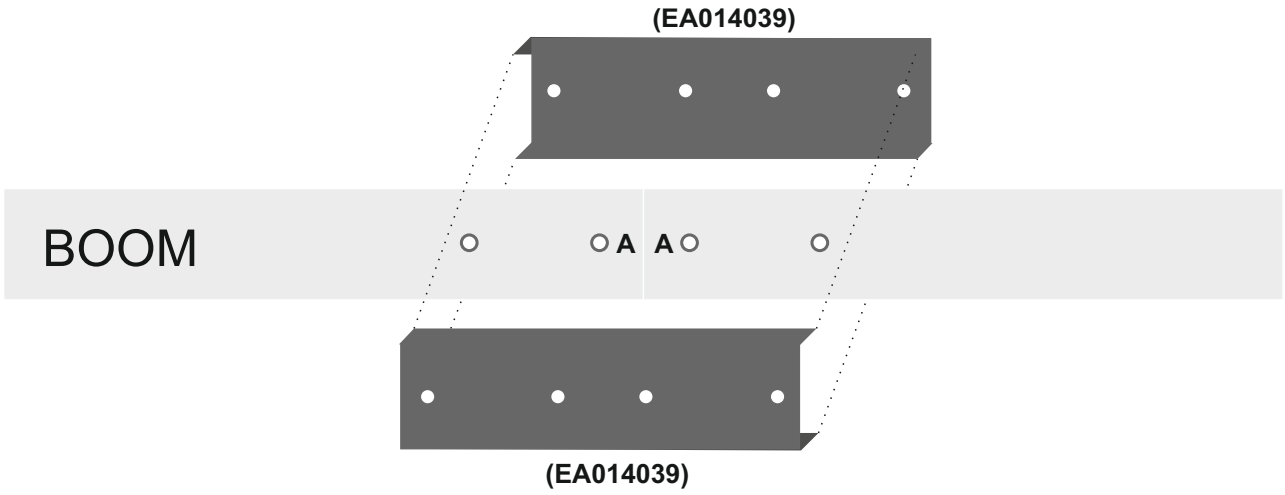
Peso: 8,2 Kg.
Max. Potencia: 5,0 kW

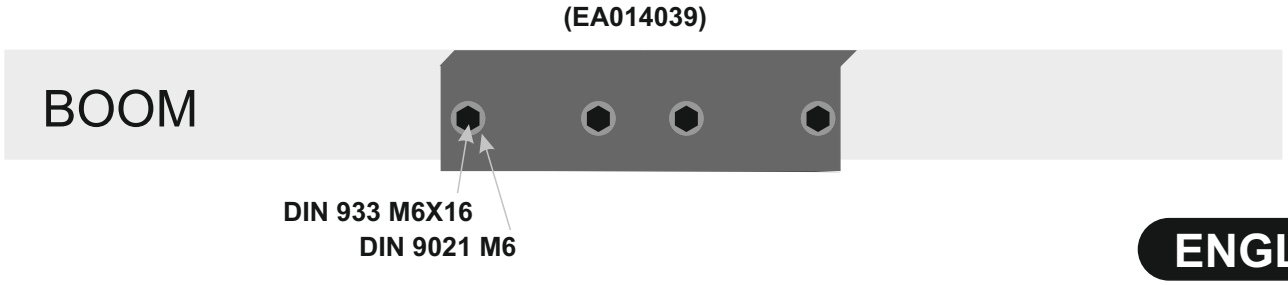
ENGLISH **ESPAÑOL**



ESPAÑOL

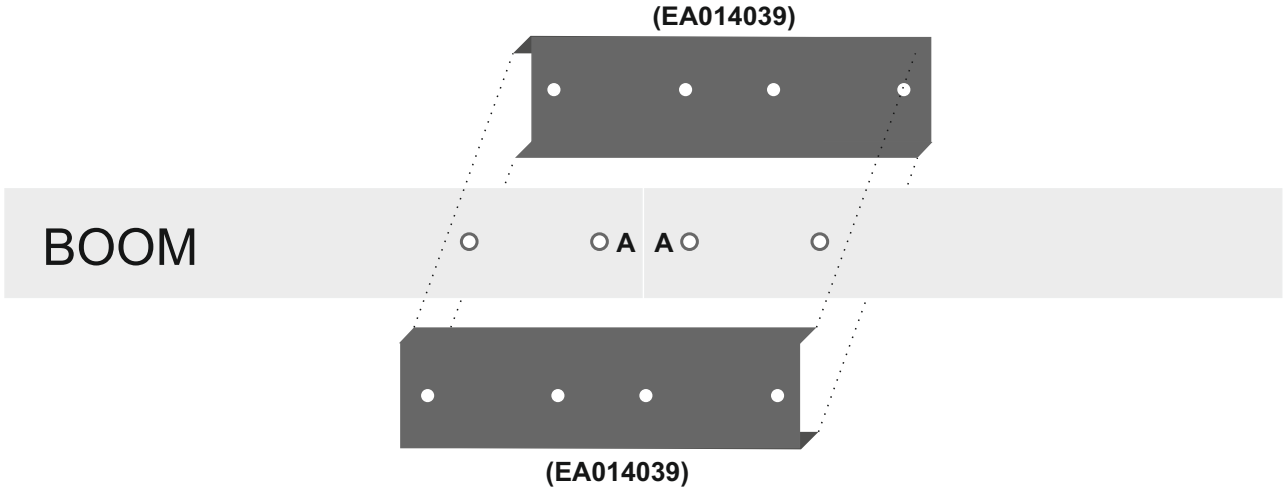
Para montar el BOOM, tiene que **hacer coincidir** frontalmente las **partes de boom** que **tienen la misma letra** (p.ej: A-A, B-B, C-C etc), y una vez hecho, las placas **(EA014039)** se **van fijando** con los tornillos **DIN 933 M6X16** y arandela **DIN 9021 M6**. **Se recomienda poner todas los tornillos y arandelas** antes de fijarla a tope **para no dañar ninguna rosca** del BOOM.

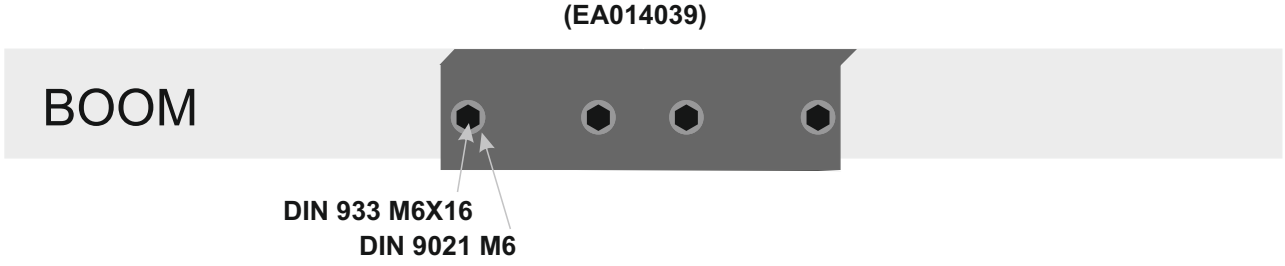




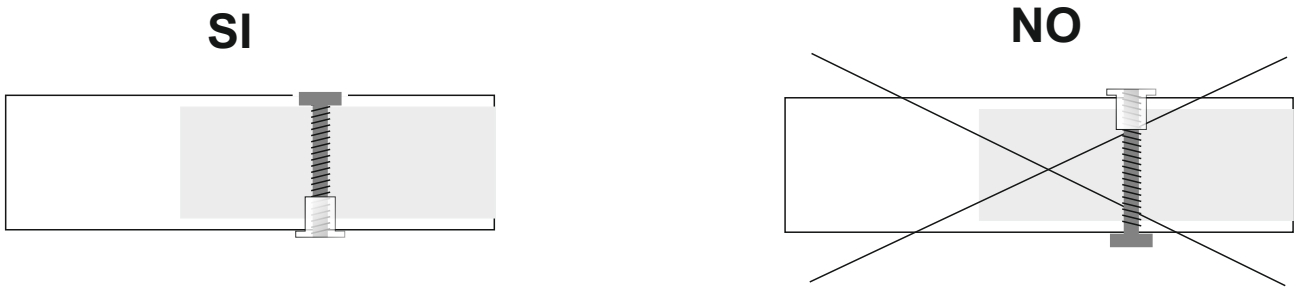
ENGLISH

To mount the BOOM, you have to **match frontally** boom parts **with the same letter** (eg: AA, BB, CC etc), and a Once done, the plates **(EA014039) go with fixing** screws **DIN 933 M6X16** and washer **DIN 9021 M6**. **It is recommended to put all the screws and washers** before fixing it **for not to damage any threads** of the BOOM.

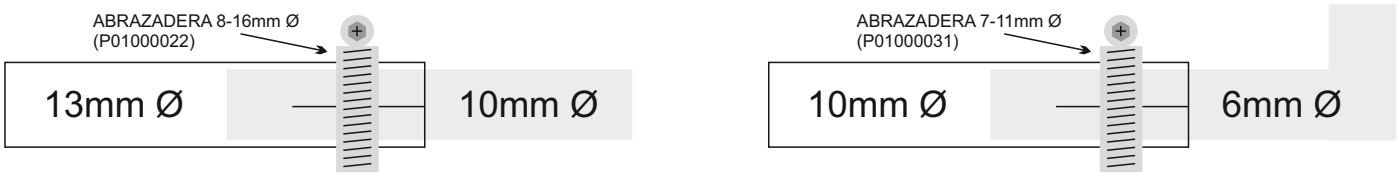




El primer paso de ensamblaje de los elementos es colocar en orden por diámetros según la pagina 2.
Una vez hecho esto tener en cuenta que en cada extremo de los elementos hay una parte de cada tubo que tiene los agujeros mar gruesos. Estos son los que van en el extremo hacia el extremo de la antena, ya que los agujeros anchos son donde entra la cabeza del tornillo DIN 7984 y presiona al tubo interior. Tener en cuenta que la **cabeza del tornillo** tiene que **quedar alojada dentro** del **hueco del elemento** y en la otra cara, el remache tiene que quedar insertado para atornillarse con la llave allen suministrada.
Mirar ejemplo debajo:

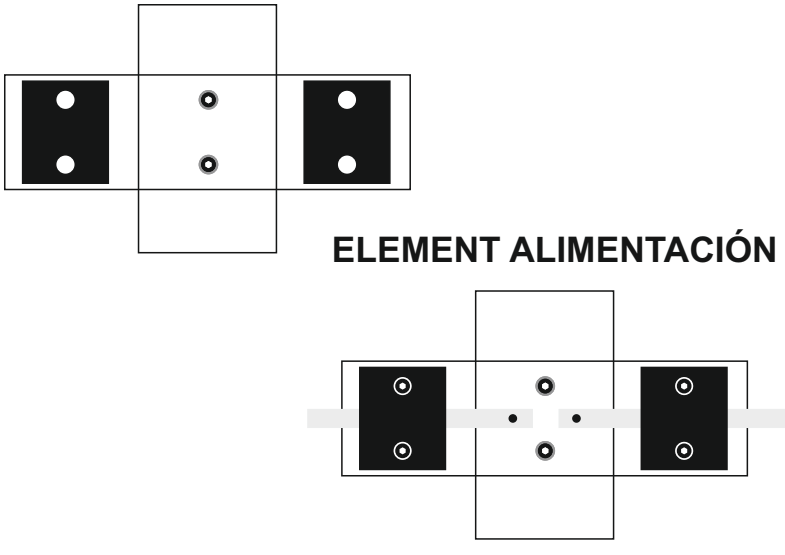


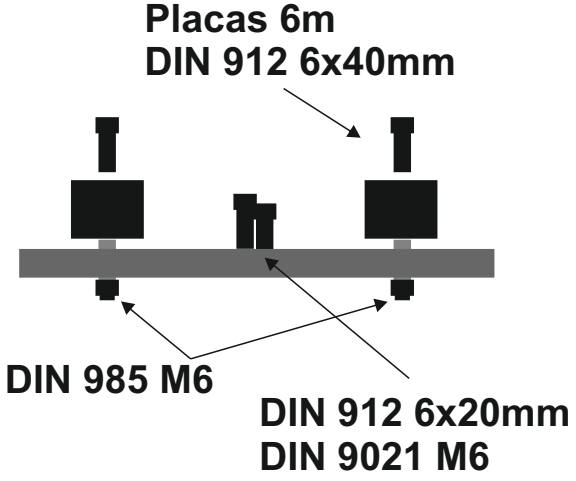
La fijación de los elementos del Rectangulo DE, es mediante abrazadera **Sin/Fin 8-16mm (P0100022)** de los elementos de 13 a 10mm y la **Sin/Fin 7-11mm (P0100031)** de 10 a 6 mm.



Las medidas de la pagina 2 están expresadas en medidas exteriores, o sea, midiendo desde cada extremo del tubo. Una vez que los elementos estén ensamblados correctamente, se procede a poner cada elemento en la placa al boom, con lo que seria el ultimo paso de montaje. Unir las placas al boom como se especifica debajo.

Una vez que tiene los elementos ensamblados, y el boom, es momento de **montar** los las placas al boom y después los elementos a la placa. Lo que **aconsejamos** es que se **empiece por el las placas al boom**, **si montara la antena de una pieza**. **Si** lo que **quiere** es subir los elementos, una vez el **boom puesto en el mástil**, aconsejamos poner los elementos a las placas para su mejor unión del conjunto “placa/elemento” al boom.
Para poner los elementos a la placa, tendría que introducir los **EAHYP013** por cada extremo en cada extremo del elemento de 13mm Ø, y con la ayuda de una cinta métrica marcar a la mitad (60cm), y una vez centrado, fijar con la otra parte del **(EAHYP013)** con los tornillos **DIN 912 M6X40**, como aparece en el dibujo inferior.

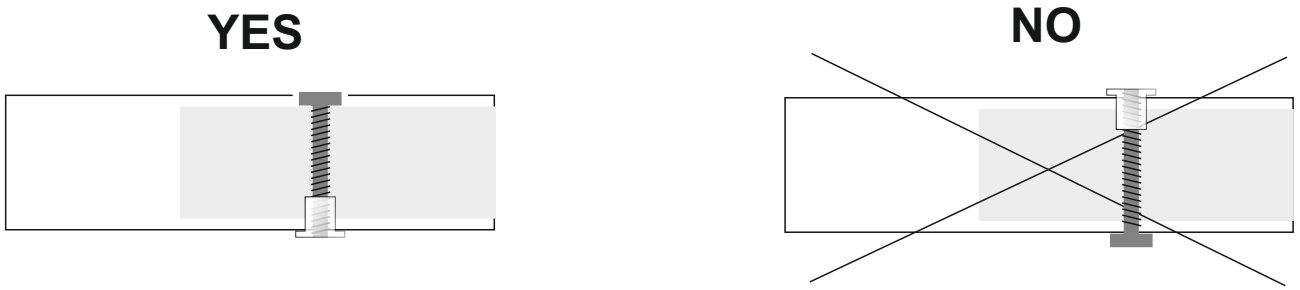




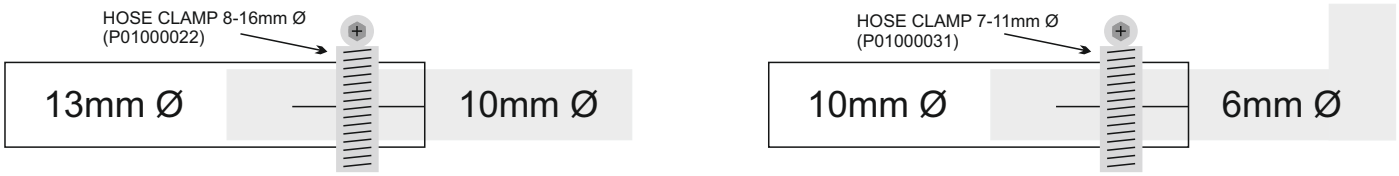
Para colocar cada placa al boom, se fija mediante los tornillos **DIN 912 M6X20** y arandela **DIN 9021 M6**. Esta placa debe de quedar bien firme para la colocación del elemento. El paso siguiente seria igual que los demás elementos, **pero teniendo en cuenta que los tornillos que utilizaremos son DIN 912 M6X40 y tuercas autoblocante DIN 985 M6 una vez que esté ensamblada toda la antena.**

ENGLISH

The first step of assembling the elements is to place in order by diameters according to page 2.
Once this is done keep in mind that at each end of the elements there is a part of each tube that has thick sea holes.
These are the ones that go at the end towards the end of the antenna, since the wide holes are where the head of the DIN 7984 screw enters. and press the inner tube. Bear in mind that the head of the screw has to be housed inside the hollow of the element and in the other face, the rivet has to be inserted to be screwed with the Allen key supplied.
See example below:



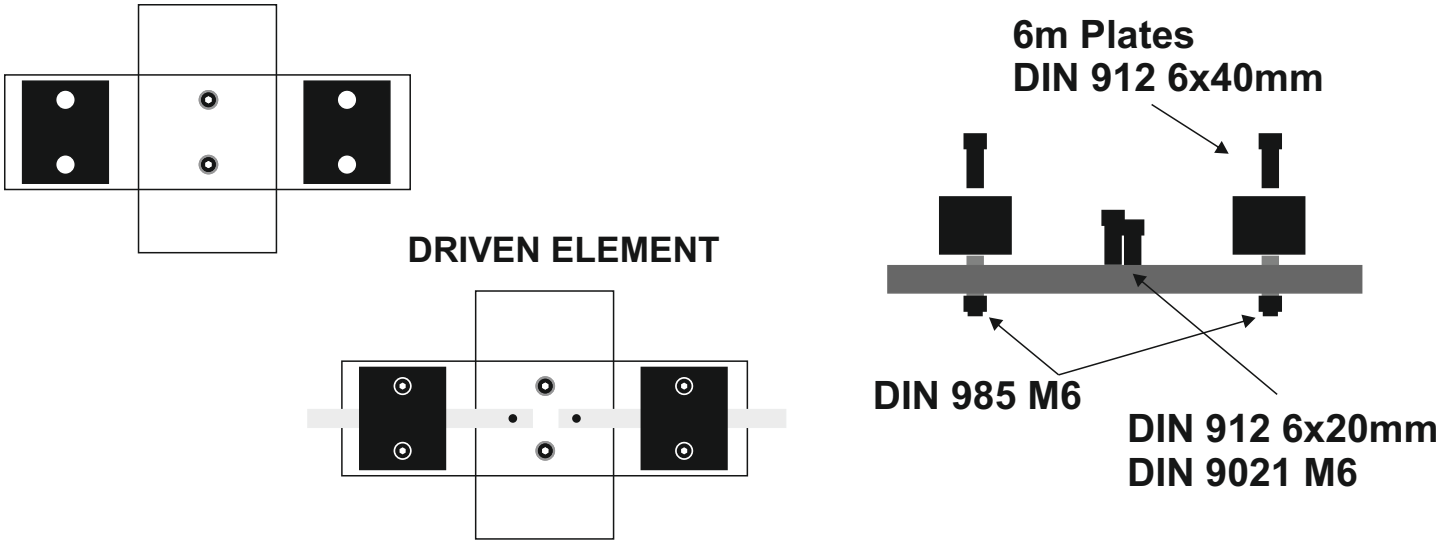
The fixing of the LOOP element, each element is using a Hose Clamp 8-16mm (P0100022) the 13 to 10mm diameter and 7-11mm (P0100031) to the 10 to 6 mm.



Measures page 2 are expressed in external lenght , ie, measuring from each end of the tube. Once elements are assembled correctly , proceed to put each item on the plate to the boom , which would be the last step assembly . Attach plates to boom as specified below .

Once you have the assembled elements , and boom, **it's time to mount the plates** to the boom and then the items to the plate. **We recommend** is that you **start with the plates to boom, if I mounted the antenna in one time**. If he wants to climb the elements cough, since once the boom on the mast , please add the elementos to the plates for better joint of whole " plate/element " to boom.

To put the elements to the plate, you would have to insert the **EAHYP013** through each end at each end of the 13mm Ø element, and with the help of a measuring tape mark in the middle (60cm), and once centered, fix with the other part of the **(EAHYP013)** with the screws **DIN 912 M6X40**, as shown in the lower drawing.



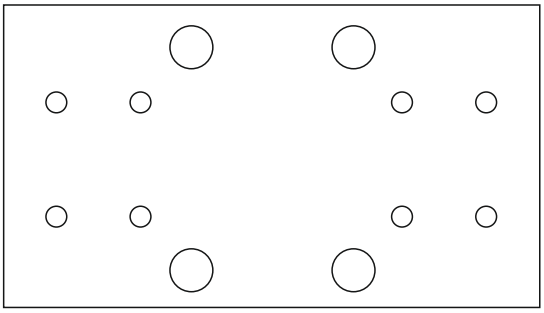
To place each plate to the boom, are fixed by screws **DIN 912 M6X20** and **DIN 9021 M6** washer. This plate must be very firm for positioning the element. The next step would be like the other elements, **but considering that the screws use are DIN 912 M6X40 and DIN 985 M6 self-locking nuts once it is all assembled antenna.**

PLACAS SUJECIÓN MÁSTIL

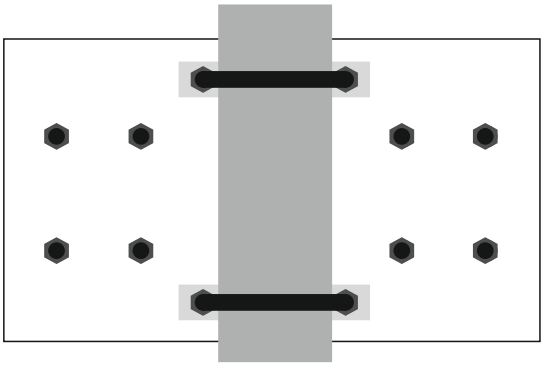
ESPAÑOL

La **placa** de sujeción **BOOM/MÁSTIL (EA013014)** de 250X100X6mm consta de **12 agujeros**; **4 gruesos** para los **abarcones redondos y 8 para** los **abarcones cuadrados** que sujetan el **BOOM**.
Los **4 agujeros de mayor grosor** tienen la función de que hagan la mayor fuerza sobre el mástil, mediante **abarcones redondos de M8.**
Los **abarcones redondos de M8 (P0500024)**, van **fijados** mediante arandela **DIN 9021 M8** y tuerca **DIN 934 M8** proporcionadas **en el mismo abarcón**, y **fijada** al mástil con la **Mordaza (P0500025).**
Detallamos dibujos para una mayor ilustración:

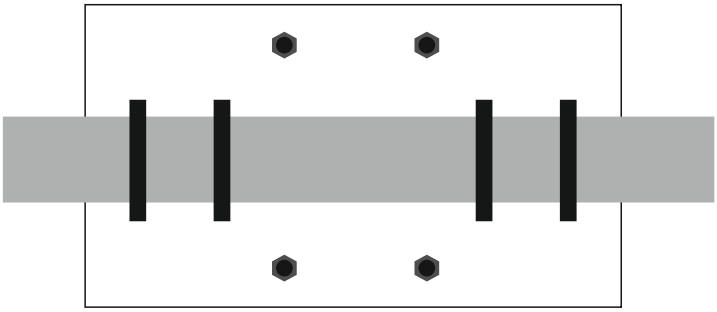
(EA013514)



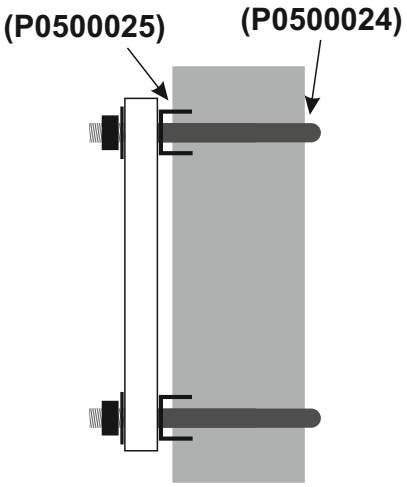
(EA013514)



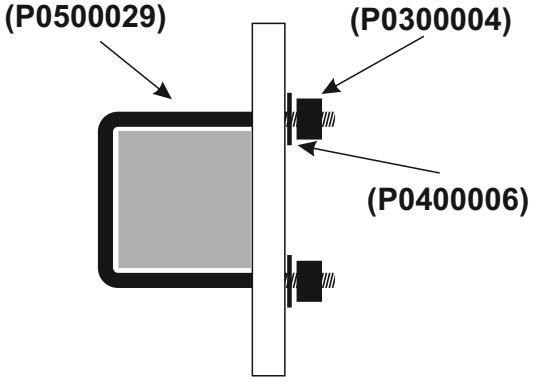
Vista frontal desde el mástil



Vista frontal desde el BOOM



Vista lateral desde el mástil

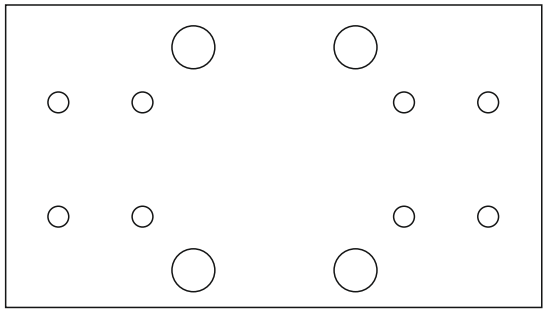


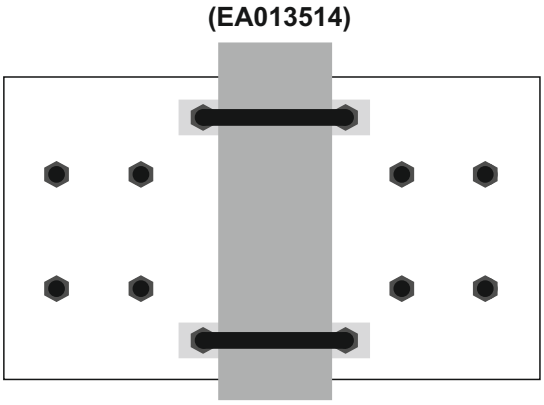
Vista laterall desde el BOOM

MAST TO BOOM PLATE ASSEMBLY

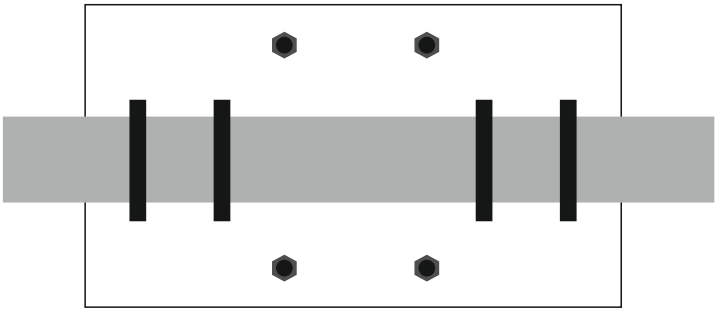
ENGLISH

The clamping plate **BOOM / MAST (EA013014)** 250X100X6mm consists of **12 holes**; **4 thick for round U-bolts** and **8 square U-bolts for securing the BOOM**.
The **4 holes are thicker** function that make the greatest force on the mast by means of M8 round U-bolts. **Round U-bolts M8 (P0500024)**, are secured by washer **DIN 9021 M8** and nut **DIN 934 M8** provided in the same U-bolt, and fixed to the mast with clamp **(P0500025)**.
Detailed drawings for further illustration:

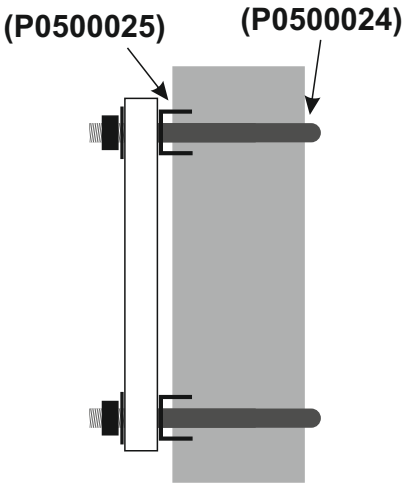




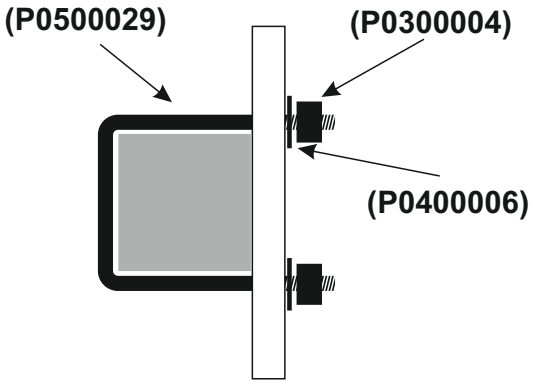
Front view from Mast



Front view from BOOM



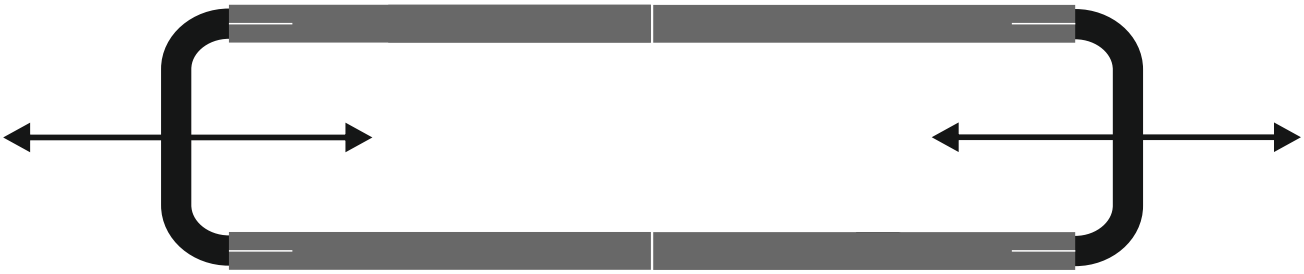
Side view from Mast



Side view from BOOM

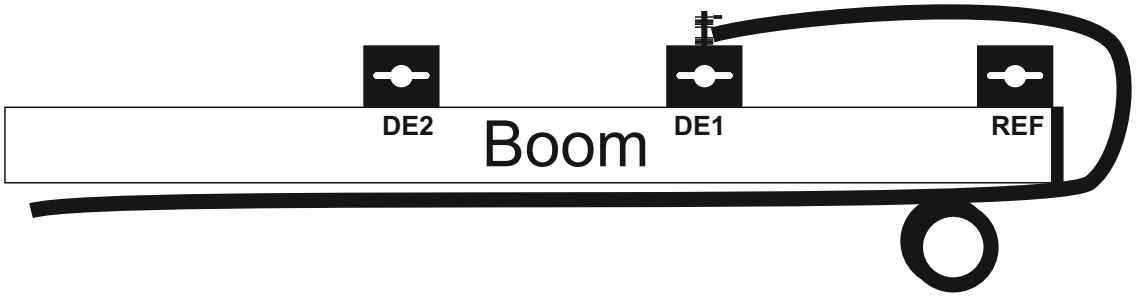
Ajuste del ROE/SWR:

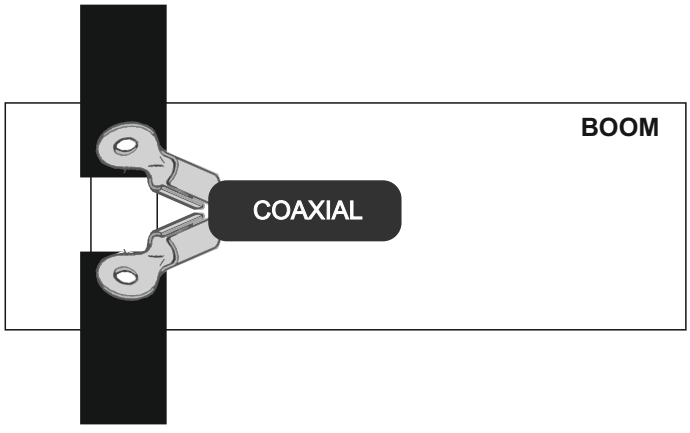
Una vez posicionada la antena con sus medidas, **quizás necesite algún retoque** para conseguir la **ROE/SWR deseada**. **Desplazando la pieza curva hacia adentro o hacia afuera varios milímetros**, es la forma de hacerlo. **Buscando** que el **centro de Frecuencia esté en 50,150 MHz**. con la menor ROE/SWR. La mejor opción es ajustarla con analizador de antenas o con la ayuda de un medidor de estacionarias, y estando la antena a 1 o 2 metros del suelo es suficiente para que lo conseguido en el ajuste, nos dé el mismo resultado estando a cualquier otra altura, ya puesto en la torre/mástil.

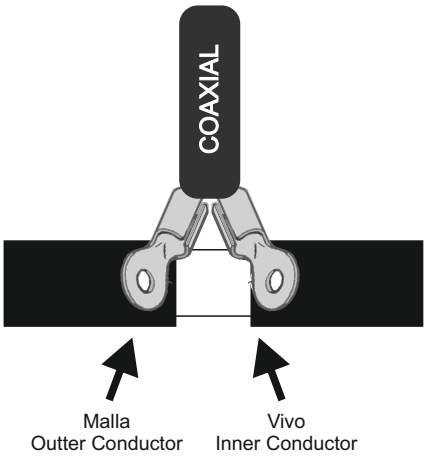


Alimentación mediante coaxial:

Después de varios ensayos, vemos que el balun de aluminio hace peor trabajo que un choque de coaxial.
Por esto, recomendamos hacer a escaso centímetros o metros de la alimentación, un choque del coaxial de bajada de 5 vueltas de 8 centímetros de diámetro y así el retorno de RF será mínimo o nulo.
En el dibujo aconsejamos que siempre el choque se haga por debajo de los elementos para que el coaxial no haga interaccion con los elementos.

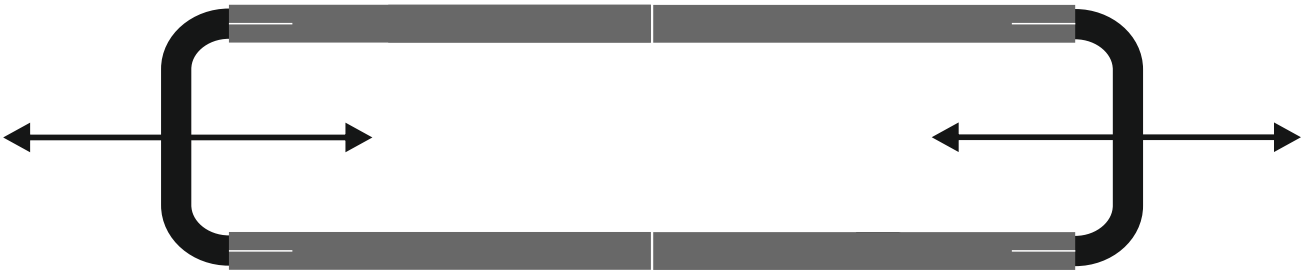






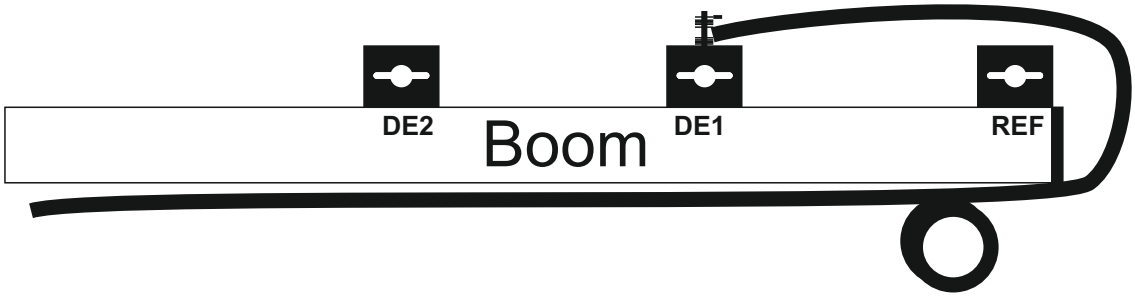
Adjusting SWR:

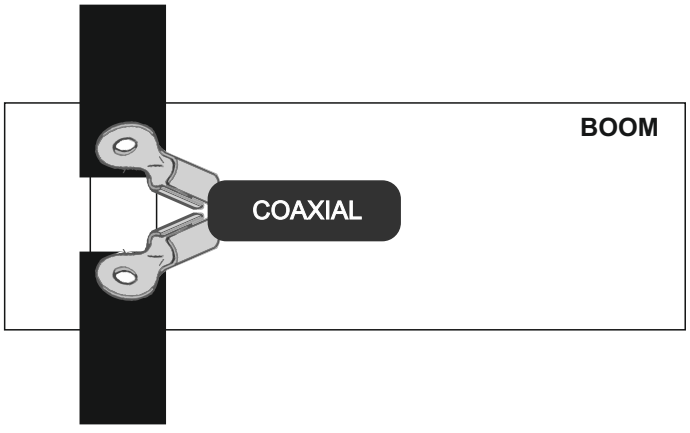
Once positioned the antenna with your measurements, **you may need some fine-tuning to get the SWR desired**. **Shifting the curve piece inward or outward several millimeters,** is the way to go. **Looking to the center frequency is 50,150 MHz** in the lower SWR. The best option is to adjust with analyzer or with the help of a swr meter and antenna 1 or 2 meters above the ground while it is sufficient to have achieved in the setting, give us the same results being any other height on the tower or mast.

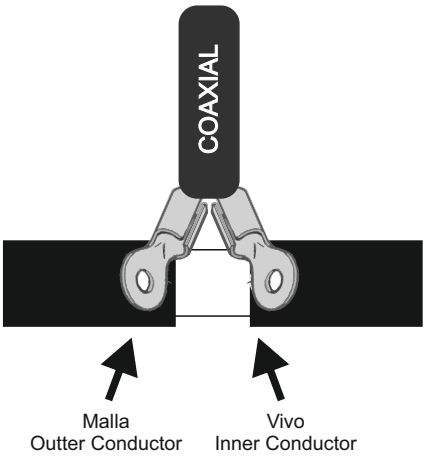


Coax cable feeding:

After several trials, we see that the balun aluminum makes it worse job than a coaxial choke. For this, we recommend 5 turns of 8 cm and thus the RF return will be minimal or absent.
In the drawing advise you to do the clash below the coaxial elements do not causes interaction with the elements.







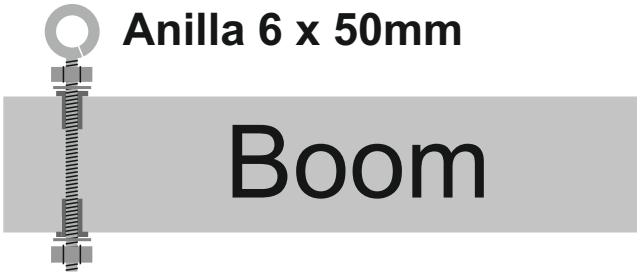
Anclaje para los vientos al Boom

Para una mayor resistencia al viento, esta antena incluye un sistema de anclajes para su mejor conservación ante la climatología.
La placa **(EA010007),** debe de estar al menos 50cm de separación sobre la placa que sujeta el boom, así podrá tener ángulo suficiente para hacer fuerza la tensión de las cuerdas, con lo que la función del este sistema pueda aplicarse.
El primer paso es colocar en el boom la Anilla M6x50mm con tuerca a cada lado de la rosca para hacer par de apriete por cada lado del boom (Paso 1)

Paso 1

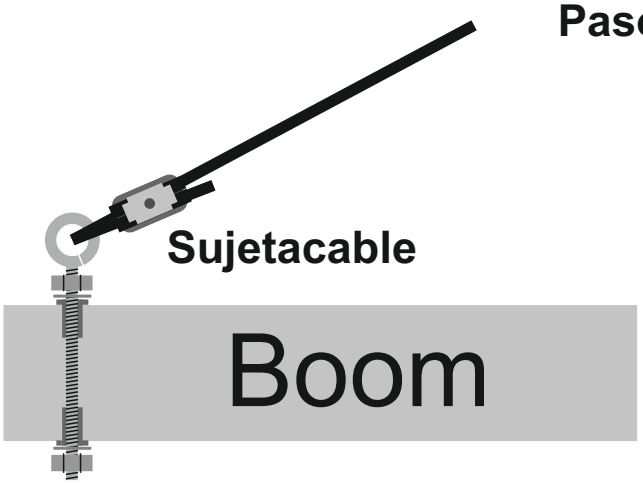
Una vez hecho el Paso 1, inserte la anilla roscando sobre los 2 remaches roscados que hay en el boom, para llegar al tope de la tuerca superior. Coloque la otra arandela y la tuerca con los dedos hasta llegar a lo maximo que pueda con la mano. Despues con una llave 10, apriete primero la tuerca que está más cerca de la anilla y despues la inferior.
Terminado esto, seguimos al Paso 3.

Paso 2



Pase la punta de la cuerda Mastrant P5 una o dos veces por el agujero de la anilla y fije el sujetacable firmemente con la mayor presión posible.
Una vez esté fijado, iremos al Paso 4 que es colocar la placa **EA010007,** que es donde se fijan los tensores de la cuerda.

Paso 3



Paso 4

Para poner el Tensor **(P1500003)**, antes tienes que tener fijada la placa **(EA010007)** con el abarcón **(P0500025)** y la morzada **(P0500022)**.
Una vez bien fijada, inserte el Tensor en el agujero y pase la cuerda Mastrant P5 por la anilla del tensor y tensando firmemente, apriete el sujetacable para fijar la cuerda.
Tener en cuenta que para tensar la cuerda, **previamente** tiene que **abrir toda la rosca de los tensores.**

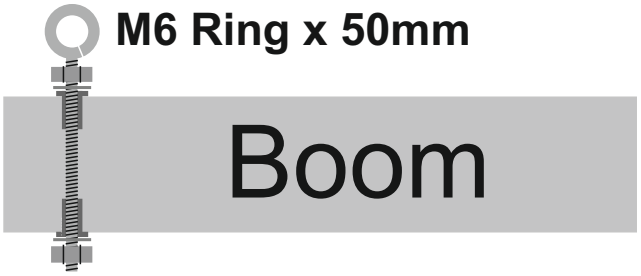
Guy joint in the Boom

Step 1

For increased wind resistance, this antenna includes an anchor system for better conservation before the Climatological.
The plate **(EA010007)**, must be at least 50cm apart on the plate that holds the boom, so you can have enough angle to make the tension force the ropes, so this system function can be applied.
The first step is to place the boom in the ring M6x50mm with nut on each side of the screw tightening torque to each side of the boom (Step 1)

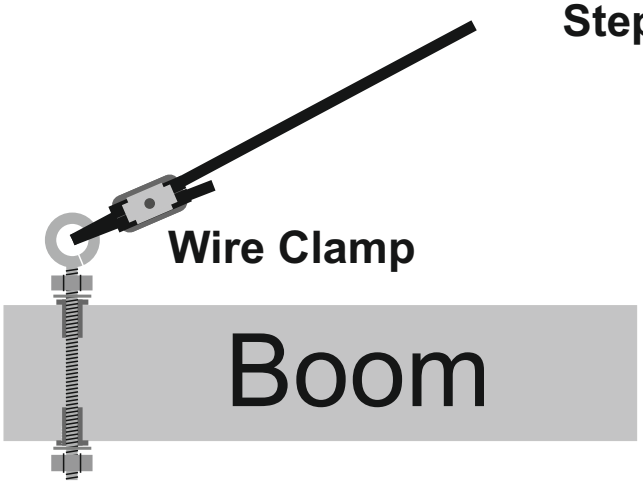
Once done Step 1, insert the ring by screwing on the 2 threaded studs that are in the boom to reach the top of the upper nut. Place the other washer and nut with your fingers to get the most you can with your hand. After a key 10, the first torque nut is nearer to the pin and then the bottom.
When it is finished, we continue to Step 3.

Step 2

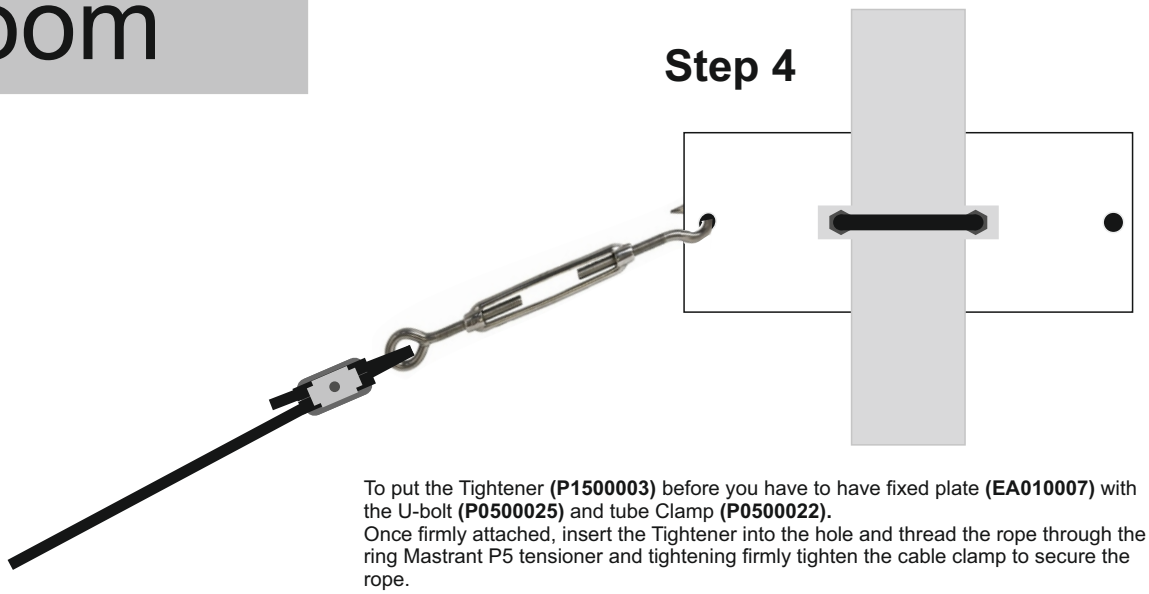


Pass the end of the rope Mastrant P5 once or twice through the hole in the ring and attach the cable clamp firmly with maximum pressure.
Once it is fixed, you go to Step 4 which is to place the **EA010007 plate**, where the tension of the string are fixed.

Step 3

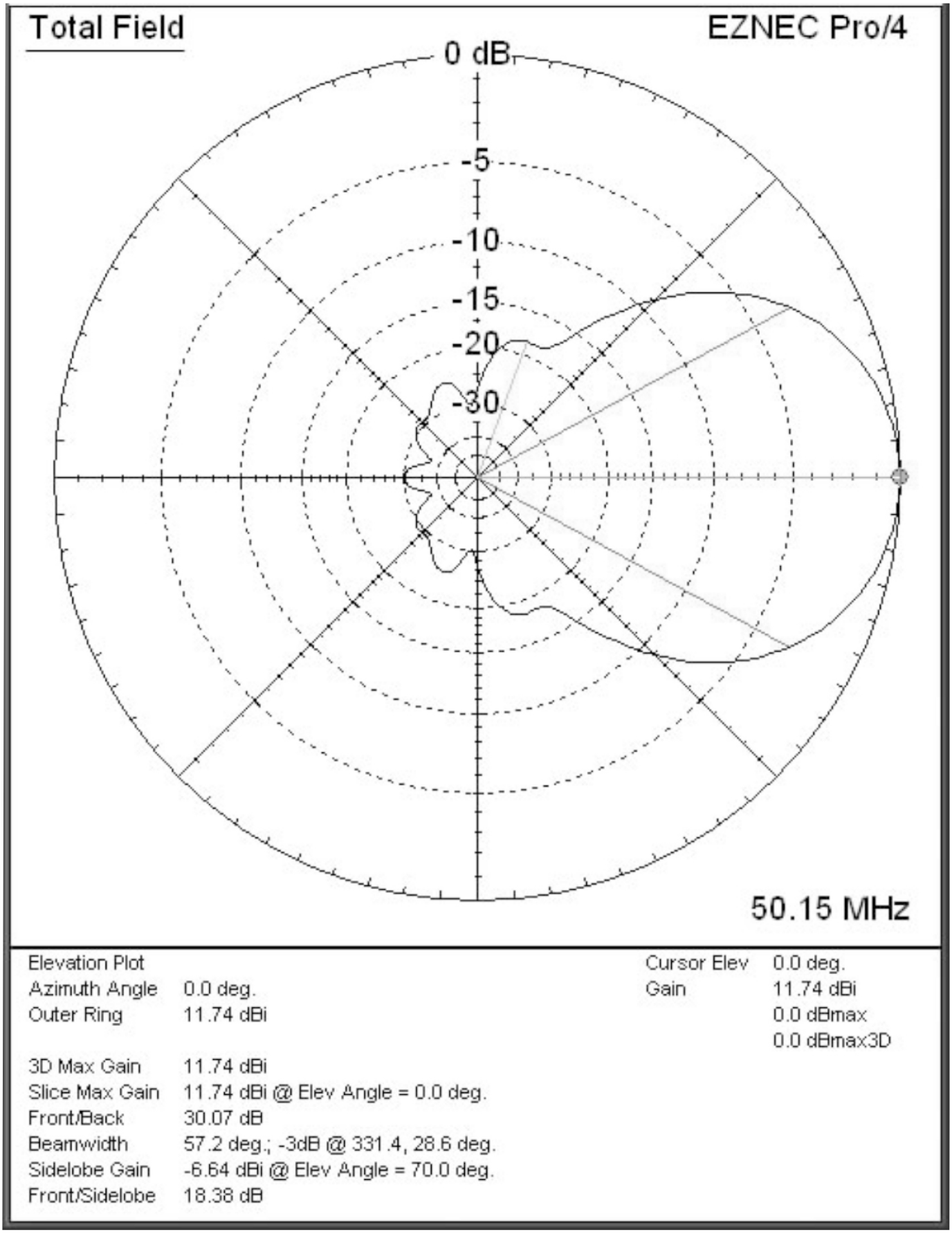


Step 4



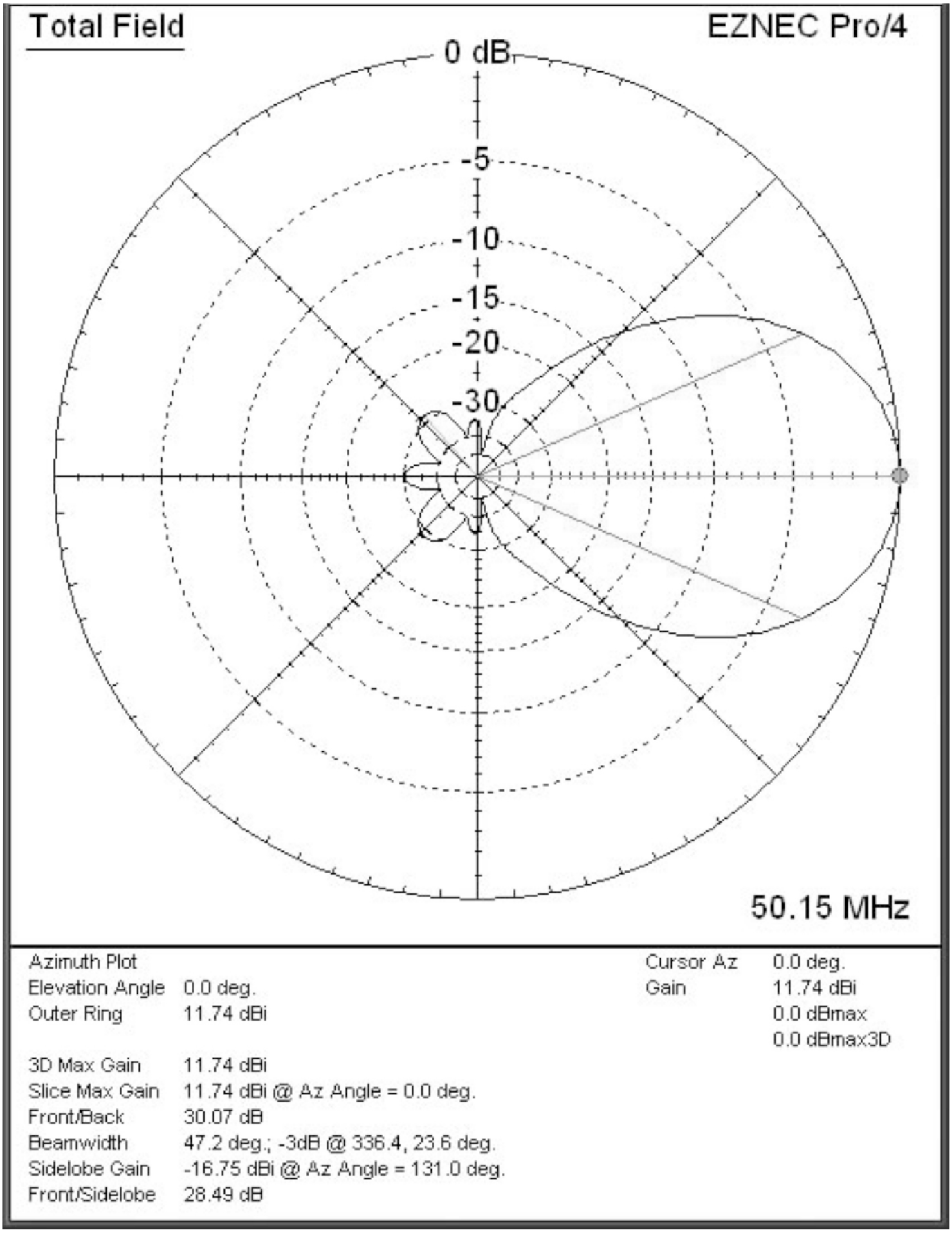
To put the Tightener **(P1500003)** before you have to have fixed plate **(EA010007)** with the U-bolt **(P0500025)** and tube Clamp **(P0500022).**
Once firmly attached, insert the Tightener into the hole and thread the rope through the ring Mastrant P5 tensioner and tightening firmly tighten the cable clamp to secure the rope.
Note that to tighten the rope previously have to open all the threads of the turnbuckles.

Plotter de Elevación



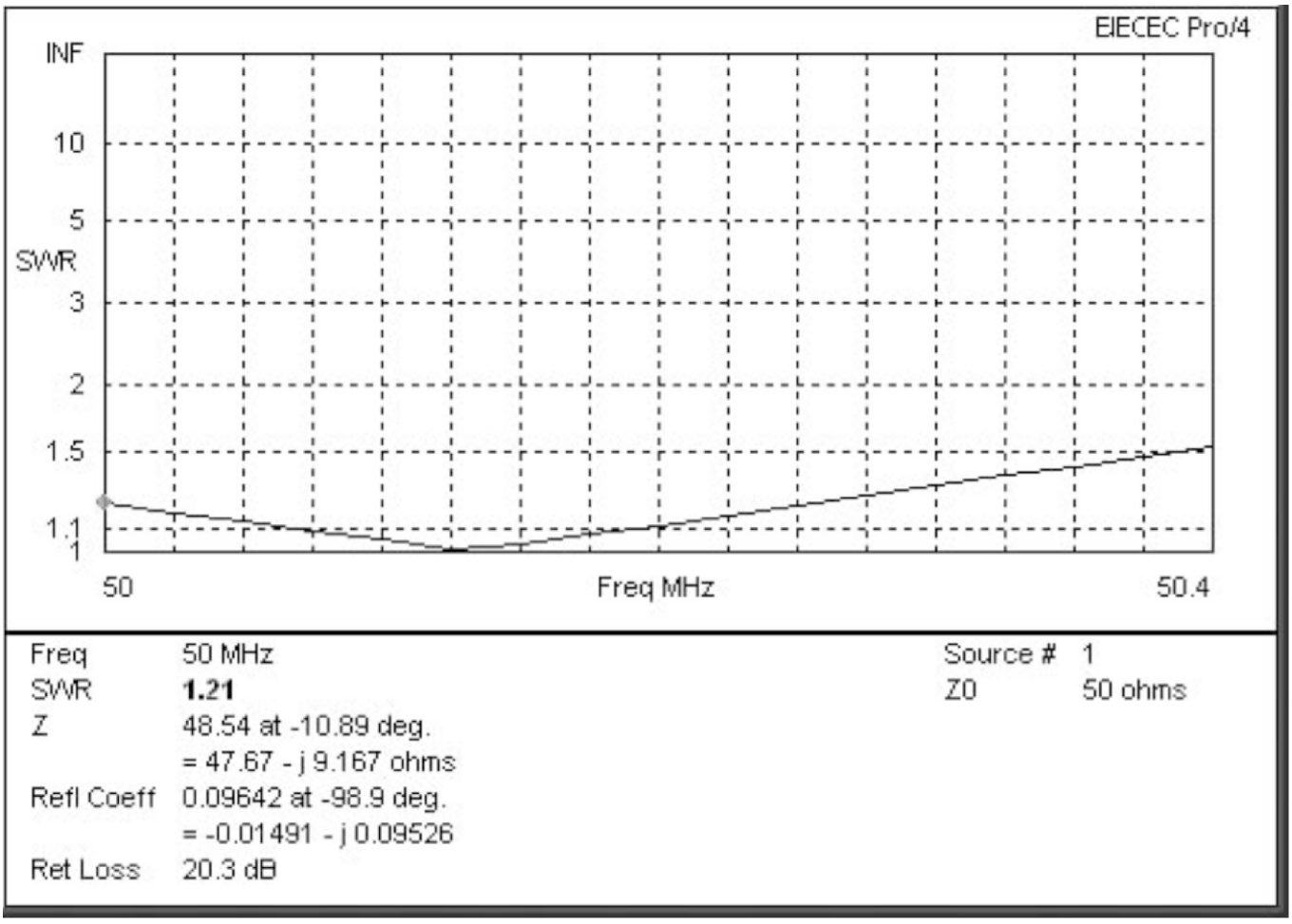
Elevation Plot		Cursor Elev	0.0 deg.
Azimuth Angle	0.0 deg.	Gain	11.74 dBi
Outer Ring	11.74 dBi		0.0 dBmax
			0.0 dBmax3D
3D Max Gain	11.74 dBi		
Slice Max Gain	11.74 dBi @ Elev Angle = 0.0 deg.		
Front/Back	30.07 dB		
Beamwidth	57.2 deg.; -3dB @ 331.4, 28.6 deg.		
Sidelobe Gain	-6.64 dBi @ Elev Angle = 70.0 deg.		
Front/Sidelobe	18.38 dB		

Plotter de Azimut



Azimuth Plot		Cursor Az	0.0 deg.
Elevation Angle	0.0 deg.	Gain	11.74 dBi
Outer Ring	11.74 dBi		0.0 dBmax
			0.0 dBmax3D
3D Max Gain	11.74 dBi		
Slice Max Gain	11.74 dBi @ Az Angle = 0.0 deg.		
Front/Back	30.07 dB		
Beamwidth	47.2 deg.; -3dB @ 336.4, 23.6 deg.		
Sidelobe Gain	-16.75 dBi @ Az Angle = 131.0 deg.		
Front/Sidelobe	28.49 dB		

Gráfico de R.O.E.

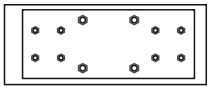
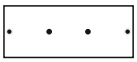


Freq	50 MHz	Source #	1
SWR	**1.21**	Z0	50 ohms
Z	48.54 at -10.89 deg.		
	= 47.67 - j 9.167 ohms		
Refl Coeff	0.09642 at -98.9 deg.		
	= -0.01491 - j 0.09526		
Ret Loss	20.3 dB		

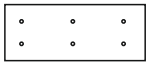
PACKING LIST
LISTA DE PIEZAS

ENGLISH **ESPAÑOL**

BOLSA 1 - BAG #1

PART # PIEZA Nº	IMAGEN PART IMAGE	DESCRIPCION DESCRIPTION	MEDIDAS SIZES	CANTIDAD QUANTITY
EA013501		Placa Mástil/Boom Mast and Boom plate	250 x 100 x 6mm	1
P0500025		Abarcon 1 ½" M8. Incluye arandelas y tuercas 1 ½" U-Blot. Includes nuts and washers	M8	3
P0500022		Mordaza 1 1/2" 1" ½ Tube Clamp		3
P0500029		Abarcon Cuadrado 35mm Square 35mm Clamp		4
P0400006		DIN 9021	M6	8
P0300004		DIN 934	M6	8
EA010007		Placa Tensor de Vientos Guys wire plate		1
P1500003		Tensor Guy wire tightener	M5	2
R1700045		DACRON	4,8 x 3500mm	2
P1500011		SUJETACABLES CHAPA WIRE CLAMP	M5	4
P1300001		Llave Allen 5		1
P1300003		Llave Fija M10		1

BOLSA 2 - BAG #2

PART # PIEZA Nº	IMAGEN PART IMAGE	DESCRIPCION DESCRIPTION	MEDIDAS SIZES	CANTIDAD QUANTITY
EA010026		Placa para Elementos Elements plates		7
Q0200089		Tornillo Allen DIN 912 Allen DIN 912 Screw	20x6mm	14
P0400006		DIN 9021	M6	14
P0200102		Anilla M6x40mm	M6	2

PACKING LIST
LISTA DE PIEZAS

ENGLISH **ESPAÑOL**

BOLSA 3 - BAG #3

PART # PIEZA Nº	IMAGEN PART IMAGE	DESCRIPCION DESCRIPTION	MEDIDAS SIZES	CANTIDAD QUANTITY
EAHYP013		Plásticos 13mm Ø 13mm Ø Plastic Blocks		14
Q0200001		Tornillo Allen DIN 912 Allen DIN 912 Screw	40x6mm	28
P0300007		Tuerca Autoblocante DIN 985 DIN 985 NUT	M6	28
P0100022		Abrazadera Sin-Fin 8-16mm 8-16mm Hose clamp		4
P0200088		Tornillo Allen DIN 7984 Allen DIN 7984 Screw	12x4mm	10
P0300055		Remache M4 M4 Insert	M4	10

BOLSA 4 - BAG #4

PART # PIEZA Nº	IMAGEN PART IMAGE	DESCRIPCION DESCRIPTION	MEDIDAS SIZES	CANTIDAD QUANTITY
EA014039		Piezas unión de Boom Boom joint part	200 x 40mm	6
P0200024		Tornillo Allen DIN 933 Allen DIN 933 Screw	16x6mm	24
P0400006		DIN 9021	M6	24

PACKING LIST
LISTA DE PIEZAS

ENGLISH **ESPAÑOL**

PART # PIEZA Nº	IMAGEN PART IMAGE	DESCRIPCION DESCRIPTION	MEDIDAS SIZES	CANTIDAD QUANTITY
50LFA6m A-A			1586mm x 35mm	1
50LFA6m A-B			1586mm x 35mm	1
50LFA6m B-C			1586mm x 35mm	1
50LFA6m C			1585mm x 35mm	1
		Pieza lateral Loop Loop Driven	522mm x 12cm x 6mm Ø	2
		Parte Central de Elementos Middle part of Elements	1200mm x 13mm Ø	6
		Parte Central de DE1 Middle part of DE1	1200mm x 13mm Ø	1
DE1		DE1 EXCITADO DE1 DRIVEN	700mm x 10mm Ø	2
DE2		DE2 EXCITADO DE2 DRIVEN	701mm x 10mm Ø	2
REF		REFLECTOR	1012,5mm x 10mm Ø	2
D1		DIRECTOR 1	917,5mm x 10mm Ø	2
D2		DIRECTOR 2	885,5mm x 10mm Ø	2
D3		DIRECTOR 3	847mm x 10mm Ø	2
D4		DIRECTOR 4	780mm x 10mm Ø	2