BOLPA 10 Element HF Log Periodic

Band Optimised Log Periodic Array

Model: BOLPA-10

Z08564-0118

Weight: 48,0 Kg.
Max Power: 10 kW+

Rev. V2.4 - 10/11/2020

Contents

BOLPA LOG Antenna Overview

The BOLPA Log Periodic is a unique multi-band HF directional beam antenna. Some of the features which make this antenna unique include the following:

Full-sized 6 Band Directional Antenna

The BOLPA is the only 6 band HF directional antenna available today with ham-band optimised performance. 11m is also covered within the operational range of the BOLPA which provides 6 instead of 5 bands.

At least 3 active elements on each band

The BOLPA has at least 3 active elements on each band which have all been space-optimised on the boom to ensure maximum performance. Each 'band cell' is individually optimised for element length and spacing between elements and then each band cell has its spacing optimised between these cells to ensure each cell benefits from the presence of the next cell.

This is with the exception of the 17m band which has one dedicated element and uses the last element in the 20m driver cell as a rear or 'reflector' type element and the first element in the 15m cell as a final or 'director' type element. the positions of the 20m cell and 15mm cells having been optimised along the boom for best results.

SDR-friendly Yagi

Unlike 'active' dynamic antennas, the BOLPA can be used on ALL BANDS AT ONCE. This means if using a radio such as a Flex 6700 which can have up to 8 operation receivers, 6 receiver slots on 6 bands can be used at the same time on the BOLPA.

Wet Weather Stable

Being optimised with close-spacing and wide bandwidth the BOLPA provides stable operation within wet weather.

Computer optimised Electromagnetic and mechanical design

In addition to using computer optimisation for the electromagnetic design, the BOLPA has been mechanically optimised by computer too, to ensure long-term survival. Elements all tapered quickly with the center sections of the 20m elements being 35mm in diameter in the middle and 13mm at the tips.

Check your Parts and Read the Manual!

Before doing anything else, check the parts list in the back of this manual against what you have received and read the construction information fully before attempting to build this antenna. This will ensure your construction will be trouble-free and you will spend less time building the antenna too.

Boom Construction

The boom is constructed of 50mm diameter square tube (2mm wall thickness) in several sections. A round joining tube is supplied and should be fitted as per the picture below.

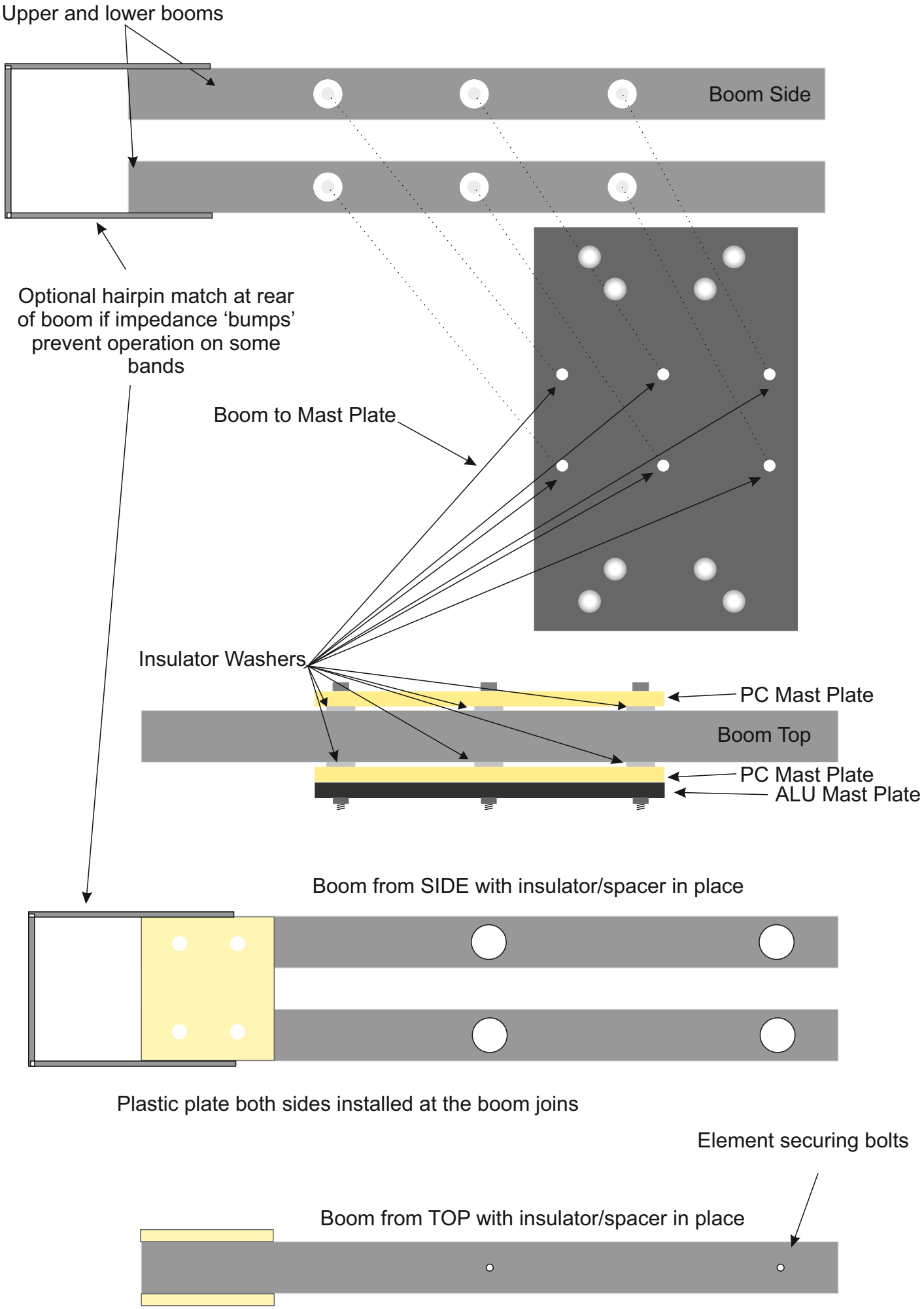
Insert the M6 bolts into the holes and all the way through the boom secure on the opposite side with an M6 nut and washer. It is advised that you insert the joining tube into one section of outer boom, fully secure with the M6 bolts and then add the next piece of boom (also marked ‘A’ in order the boom join now shows ‘A-A’ as in the below picture) and duplicate the finalisation process with M6 bolts.

DO NOT over-tigthen the bolts and always oil or grease all hardware before joining to prevent galling. Over-tigthening could weaken the join and lead to a shorter life length of your antenna boom.

Below is one section of the XR 3 boom with the square joining tube inserted. The second square section of boom should be slid onto the joiner and both sides bolted as shown in the photo below.

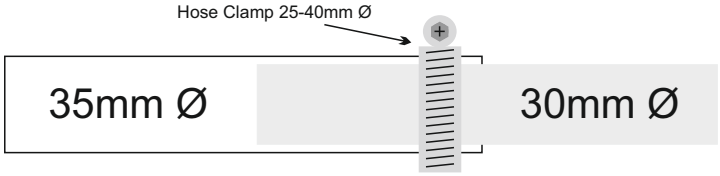
Boom Joining Tube

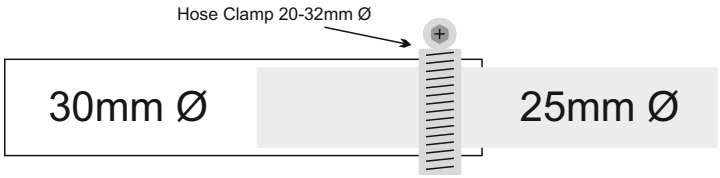
Boom To Mast Assembly including boom spacers

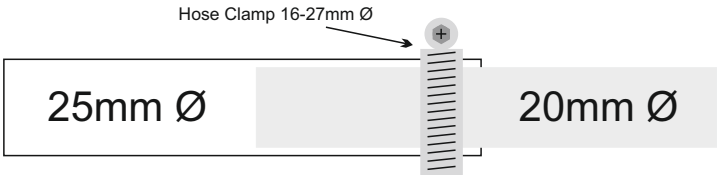


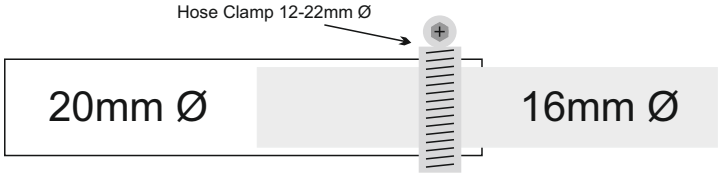
Element Joining Instructions

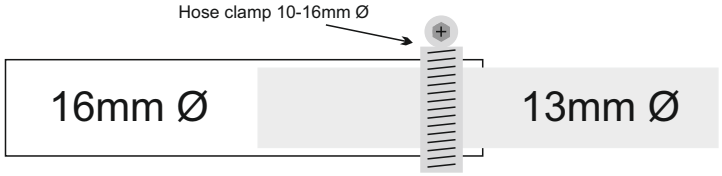
Element sections are joined by a stainless steel hose clamp at each join. the hose clamp ensures a continuous contact patch around the element join. If tweaking band element, any section of any element can be adjusted for fine-tuning











Balun and Coax Routing

This BOLPA Log Periodic is designed incorporating a twin boom structure with both booms performing the tasks of supporting the elements in addition being the parallel tuned feed line that supplies current to the antenna.

The coax cable/balun attaches to the front of the booms with the inner core of the coax attaching to the top boom and the outer core or braid attaching to the lower of the two booms. The balun will connect to the terminal bolts on the front of the boom and be forward-facing for a few cms/inches. It should be lopped back and ideally, run up the guy rope and back down the mast rather than being attached to the lower of the two booms.

While the coax cable feeding the antenna can run under the bottom boom, it should be secured loosely in order it is not pulled hard-up against the booms surface.

A BOLPA-10 with coax routed back along the forward guy

Element Sizes & Taper

20m Cell (3 elements)

11.130m, 10.280m, 9680m Total width of first three element (20m driver cell)

1175mm First - 750mm second - 450mm third element tip length @13mm diameter

848mm@16mm

848mm @20mm

848mm @25mm

848mm @30mm

1022mm @35mm

17m

8.280m Total width of fourth element (17m One element only)

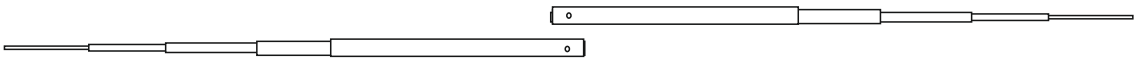
598mm fourth element tip length @13mm diameter

848mm @16mm

848mm @20mm

848mm @25mm

1022mm @30mm



15m

7.20m, 6.50m, 6.20m Total width of fifth, sixth and seventh element

906mm fifth - 556mm sixth - 406mm seventh element tip length @13mm diameter

848mm @16mm

848mm @20mm

1022mm @25mm

10m/12m

5.42m, 4.81m, 4.34m Total width of eight, nineth and tenth element

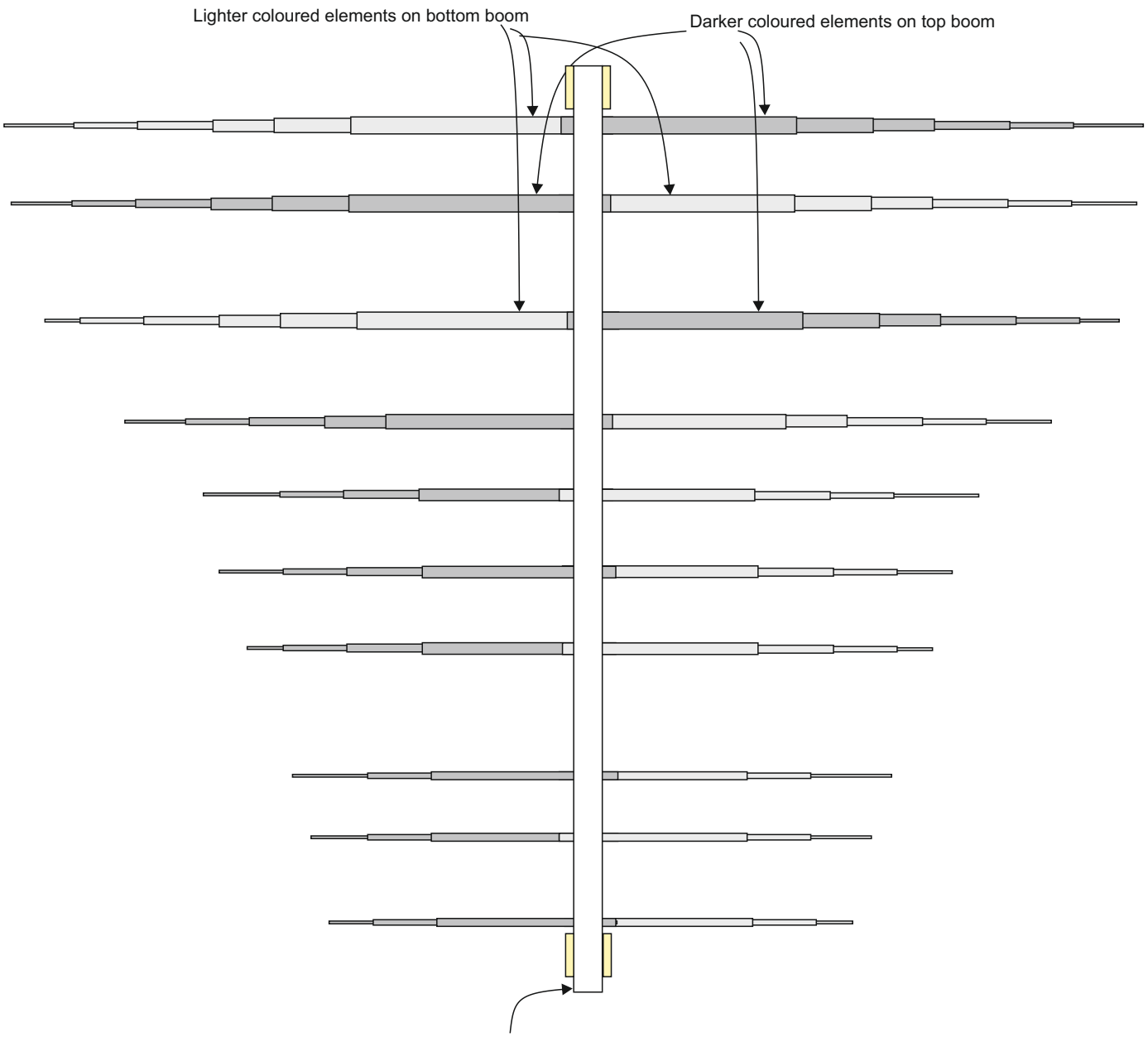
864mm fifth - 559mm sixth - 324mm seventh element tip length @13mm diameter

848mm @16mm

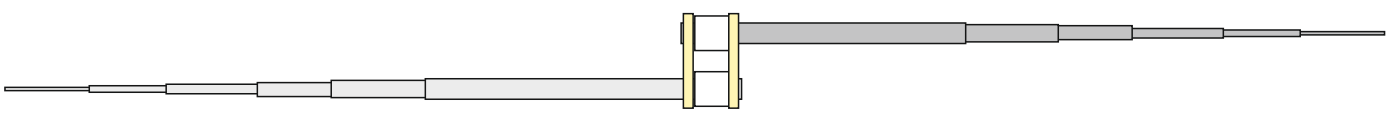
1022mm @20mm

Boom and Element Layout

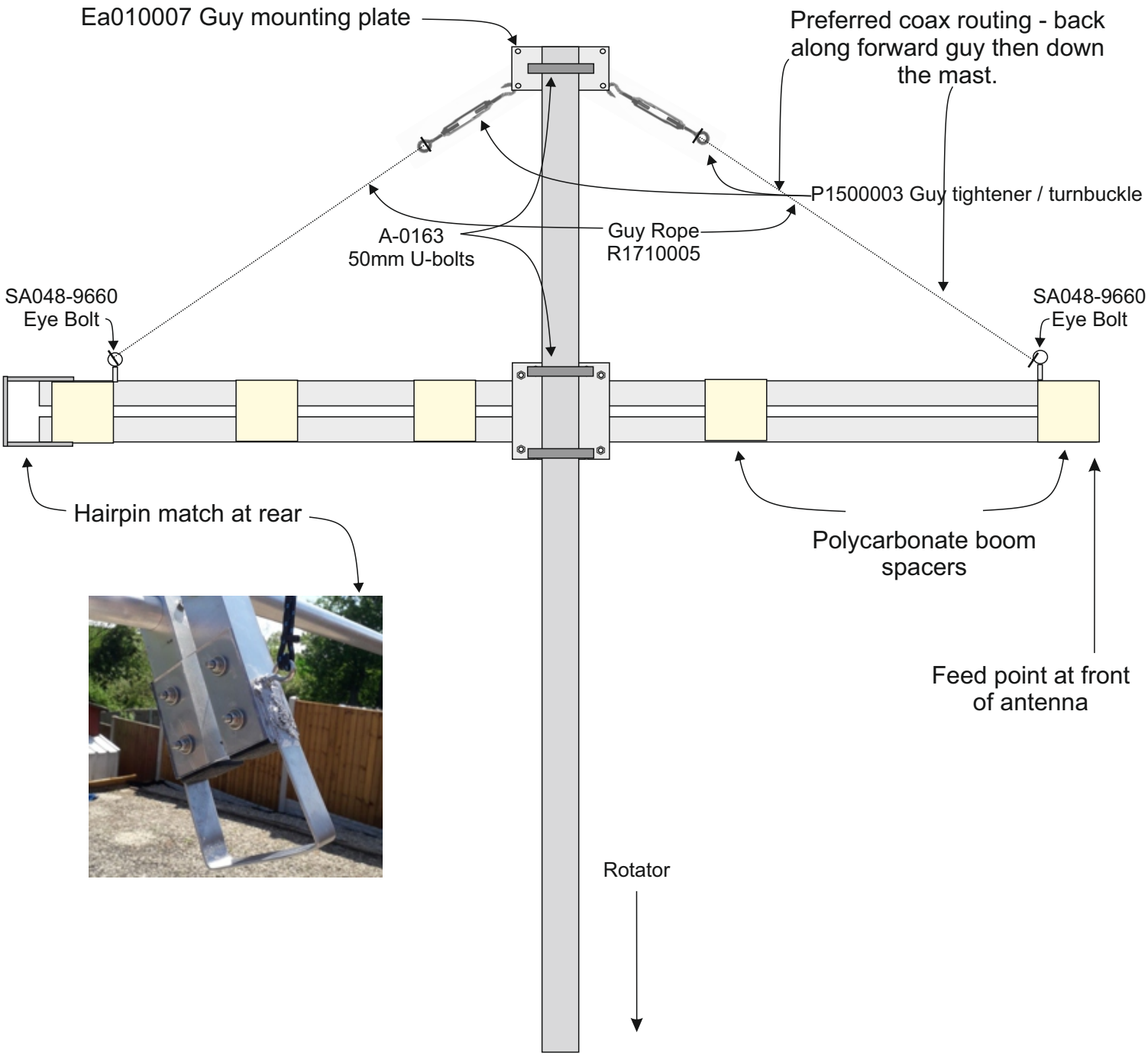
Top View



Front View



Guy Support Setup



U-bolts saddles and tools - BAG #1

PART #	PART IMAGE	DESCRIPTION	SIZES	QUANTITY
A-0163		2" U-Bolt	50mm, M8	2
23035.50		2'' Saddle Clamp	50mm	2
S127-98		DIN 127 WASHER	M8	4
S934-98		DIN 934 NUT	M8	4

Element joining bolts and hardware - BAG #2

PART #	PART IMAGE	DESCRIPTION	SIZES	QUANTITY
P0100026		Hose Clamp	25-40mm	6
P0100025		Hose Clamp	20-32mm	10
P0100023		Hose Clamp	16-27mm	14
P0100024		Hose Clamp	12-22mm	20
P0100033		Hose Clamp	10-16mm	20

Element to Boom hardware - BAG #3

PART #	PART IMAGE	DESCRIPTION	SIZES	QUANTITY
S7991-9650		Countersink DIN 7991 Screw	50x6mm	20
S985-906		DIN 985 NUT	M6	20

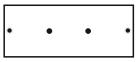
Boom to mast plate hardware - BAG #4

PART #	PART IMAGE	DESCRIPTION	SIZES	QUANTITY
S933-08		DIN 912 Allen Bolt	M8x100mm	6
S127-98		Lock washer DIN 127	M8	12
S985-908		DIN 985 NUT	M8	6

Polycarbonate plate hardware - BAG #5

PART #	PART IMAGE	DESCRIPTION	SIZES	QUANTITY
S7380-9665		DIN 7380 Bolt	M6x65mm	20
S127-96		Lock washer DIN 127	M6	20
S985-906		DIN 985 NUT	M6	20

Guy rope and hardware BAG #6

PART #	PART IMAGE	DESCRIPTION	SIZES	QUANTITY
EA010007		Guy Mounting Plate	150x50x6mm	1
P1500003		Guy Wire Tightener/Turnbuckle	M5	2
P1710005		GUY 5mm	5000mm	2
23060.5		WIRE CLAMP	M5	4
SA048-9630		M6 Eye Bolt	M6	2
S125-96		DIN 125 Washer	M6	2
S934-96		DIN 934 NUT	M6	2
A-0163		2" U-Bolt	50mm, M8	1
23035.50		2'' Saddle Clamp	50mm	1
S127-98		DIN 127 WASHER	M8	2
S934-98		DIN 934 NUT	M8	2

Boom Inserts hardware - BAG #7

PART #	PART IMAGE	DESCRIPTION	SIZES	QUANTITY
S7991-9660		Countersink DIN 7991 Screw	M6x60mm	64
S9021-96		DIN 9021 Washer	M6	64
S985-906		DIN 985 NUT	M6	64

Hairpin hardware - BAG #8

PART #	PART IMAGE	DESCRIPTION	SIZES	QUANTITY
S933-9616		DIN 933 Allen Bolt	M6x16mm	4
S9021-96		DIN 9021 Washer	M6	4
EASDR-10A		IMPEDANCE HAIRPIN		1

Caps - BAG #9

PART #	PART IMAGE	DESCRIPTION	SIZES	QUANTITY
P0900015		Element Cap	35mm	6
P0900014		Element Cap	30mm	4
P0900013		Element Cap	25mm	6
P0900012		Element Cap	20mm	6
P0900024		Element Cap	13mm	20

PART #	PART IMAGE	DESCRIPTION	SIZES	QUANTITY
A		Boom Section	1900mm x 45mm	2
B		Boom Section	1900mm x 45mm	2
C		Boom Section	1560mm x 45mm	2
D		Boom Section	1290mm x 45mm	2
E		Boom Section	1348mm x 45mm	2
EA0140040.IN			400mm x 40mm	8
SDR-10 @35			1023mm x 35mm Ø	6
SDR-10 @30#1			1023mm x 30mm Ø	4
SDR-10 @30#2			998mm x 30mm Ø	6
SDR-10 @25#1			1023mm x 25mm Ø	6
SDR-10 @25#2			998mm x 25mm Ø	8
SDR-10 @20#1			1023mm x 20mm Ø	6
SDR-10 @20#2			998mm x 20mm Ø	14
SDR-10 @16#1			998mm x 16mm Ø	20

PART #	PART IMAGE	DESCRIPTION	SIZES	QUANTITY
EASDR-10		Mast to Boom Plate ALU	200 x 150 x 10mm	1
EASDR-102		Mast to Boom Plate Polycarbonate	150 x 100 x 10mm	2
EASDRPOL		Polycarbonate Plates	110 x 100 x 5mm	10

PART #	PART IMAGE	DESCRIPTION	SIZES	QUANTITY
SDR-10 @13A			1325mm x 13mm Ø	2
SDR-10 @13B			900mm x 13mm Ø	2
SDR-10 @13C			600mm x 13mm Ø	2
SDR-10 @13D			748mm x 13mm Ø	2
SDR-10 @13E			1056mm x 13mm Ø	2
SDR-10 @13F			706mm x 13mm Ø	2
SDR-10 @13G			556mm x 13mm Ø	2
SDR-10 @13H			1014mm x 13mm Ø	2
SDR-10 @13I			709mm x 13mm Ø	2
SDR-10 @13J			474mm x 13mm Ø	2