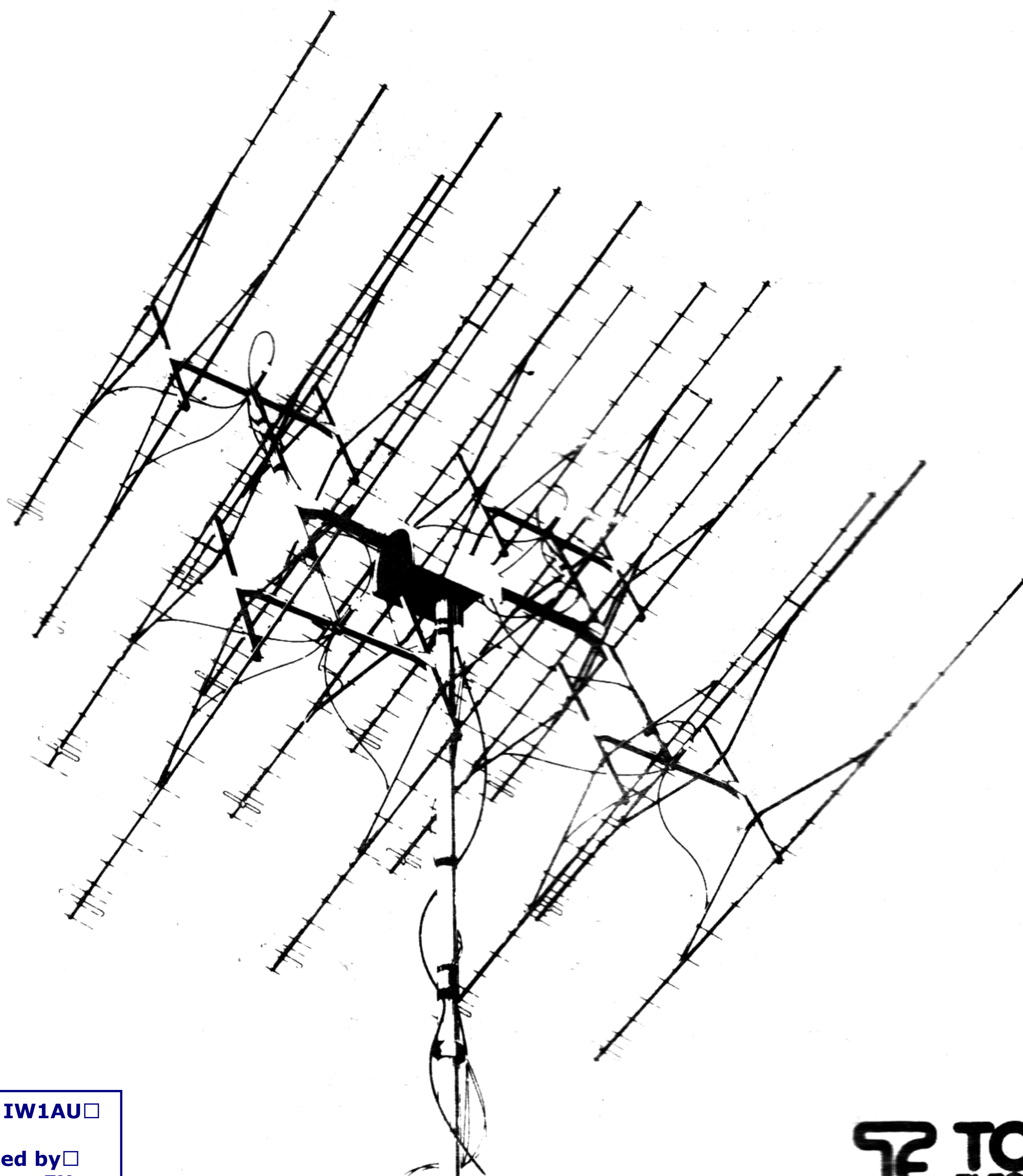


ANTENNES



25 DIRECTORS 2300 MHz



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TE TONNA
ELECTRONIQUE

Part #: 20725

FEED HORN ASSEMBLY

Refer to exhibit 5. Mount the folded plates B & C on the U-shaped frame A, with the set of screws E. The drilled plate C can be mounted on either side of the horn. Mount the "Connector + probe" set D on the horn; the broad side of the probe must be seen from the aperture, as shown on the sketch.

The horn is mounted on the rear of the antenna, on the two holes getting through the boom; use screws #5x25 #6, washers #7 and M5 nuts #8. The head of the screw must be inside the horn; the aperture is turned forwards to the front of the antenna; the director being closest to the horn is called the first director (D1) (see exhibit 4); others follow in increasing order.

DIRECTOR ASSEMBLY

Mount each director in a stand-off; operation must be carried out with utmost care. Make sure each director is properly centered in its stand-off (refer to exhibit 2).

Snap on each director on the boom (exhibit 1), according to color code. Refer to director table for proper coding order.

Make sure spacings are correct, especially for the first four directors. Refer to director table for proper spacings.

If the above mentioned conditions are not correctly fulfilled, performance of the antenna may be drastically reduced.

BOOM ASSEMBLY

The boom is delivered in two fit-in sections. Attach both sections according to exhibit 3 and fasten with screw #6 and nut #8 (M5).

BOOM TO MAST BRACKET ASSEMBLY

This bracket is to be mounted on the rear of the antenna, behind the feed-horn. The antenna is then a so-called rear-mounted antenna. Refer to exhibits 6A, 6B and 6C, for proper mounting of the bracket on the mast.

STACKING AND PHASING

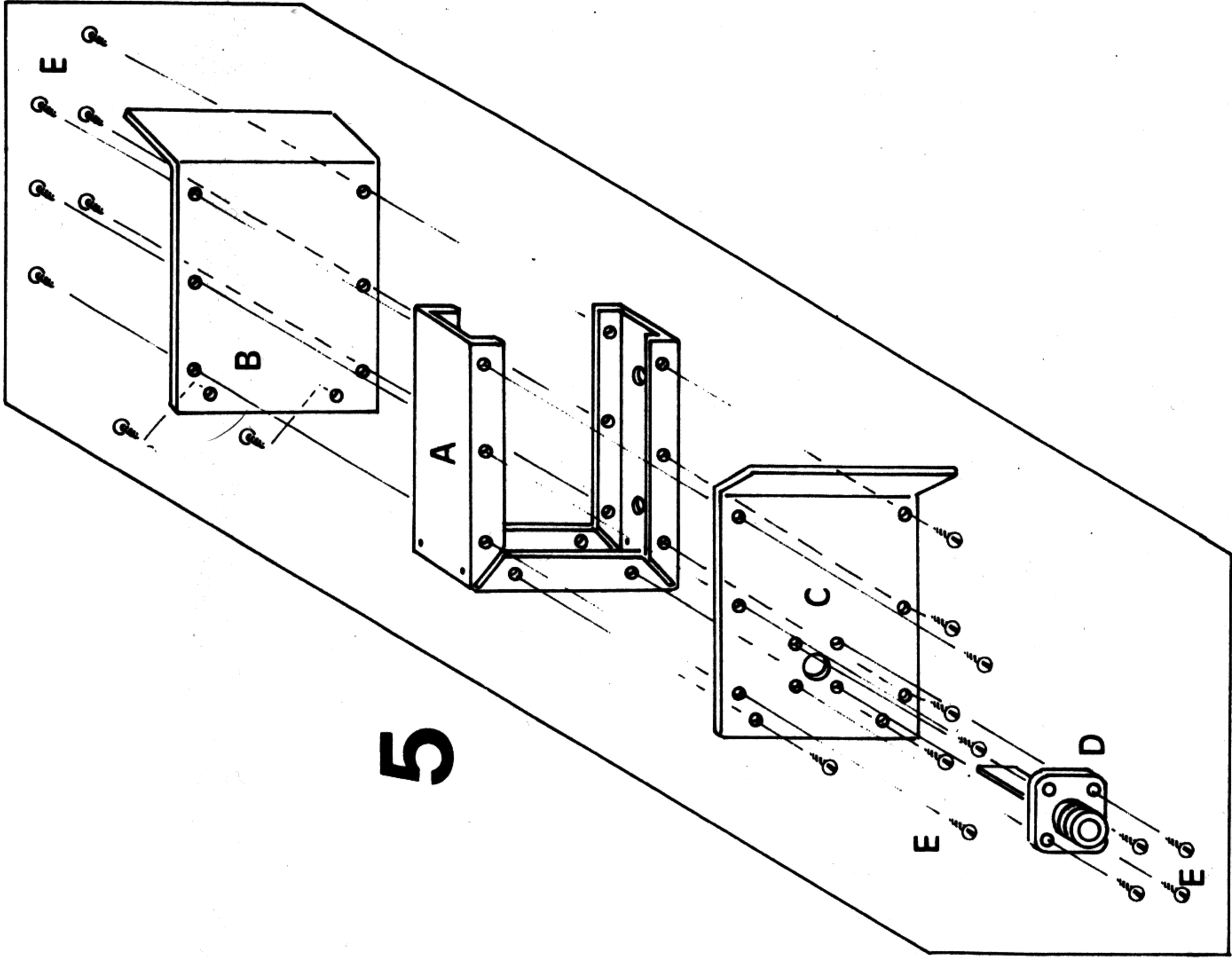
These antennas can be stacked and phased by two or by four, using our two-way or four-way power splitters (Part #: 29213 and 29413 respectively). The optimum stacking distances, from axis to axis of the directors, is as follows:

E plane:	0.41 meter (16" 1/8)
H plane:	0.43 meter (16" 15/16)

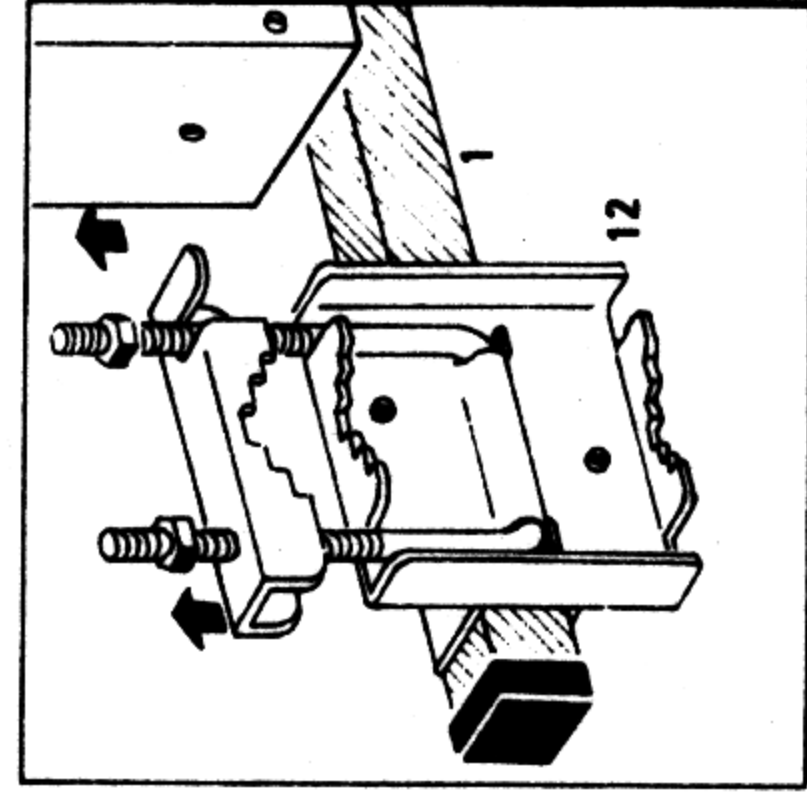
In the case of a quad stack, the practical position of the antenna cable connectors (all turned inside the quad) forces to use two sets of phasing lines, having a length difference of a half wavelength, in order to properly phase in the antenna array.

Phasing lines must be cut with utmost care. Measuring method of the line length is indicated on exhibit 7: first cut the coax to approximate length; then mount a connector; cut the coax to proper length, between connector and sleeve, as shown on lower sketch of chosen length; length must be kept within 0.5 mm (20 mils); then slide connector body onto coax and tighten lock nut; recheck length according to upper sketch of chosen length; this is the final length, which must also be kept within 0.5 mm (20 mils).

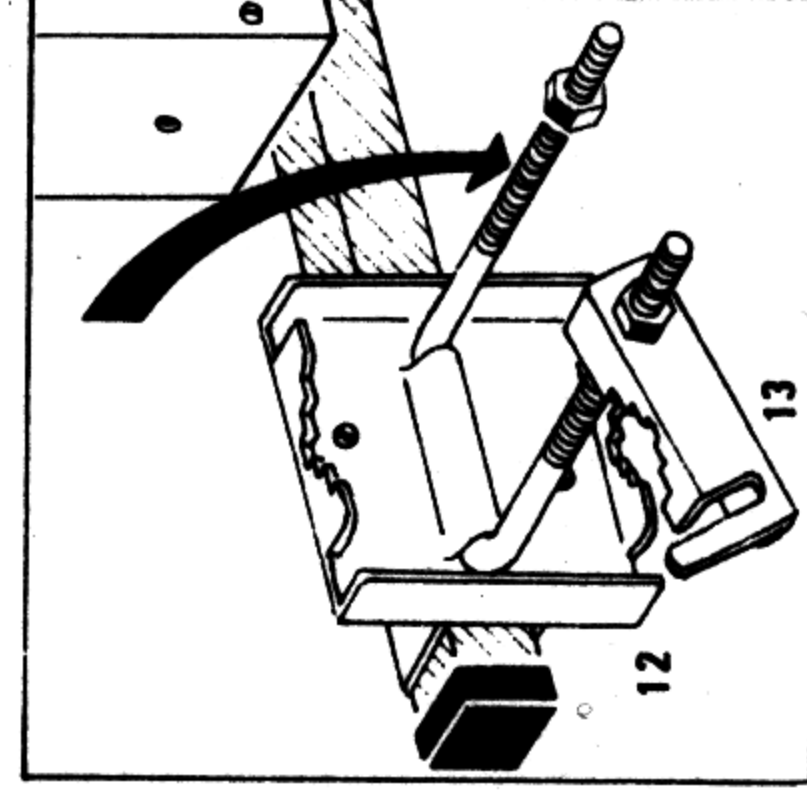
These lengths have been experimentally designed for RG213/U coax cable, using a network analyser (Hewlett Packard HP8730A). These lengths are to be used as highly recommended. The short length of coax cable to be used is an even number of half wavelengths. The long length, to be used, is an odd number of half wavelengths. The practical mounting of the phasing lines is indicated in exhibit 8. The phasing lines are indicated with an even number.



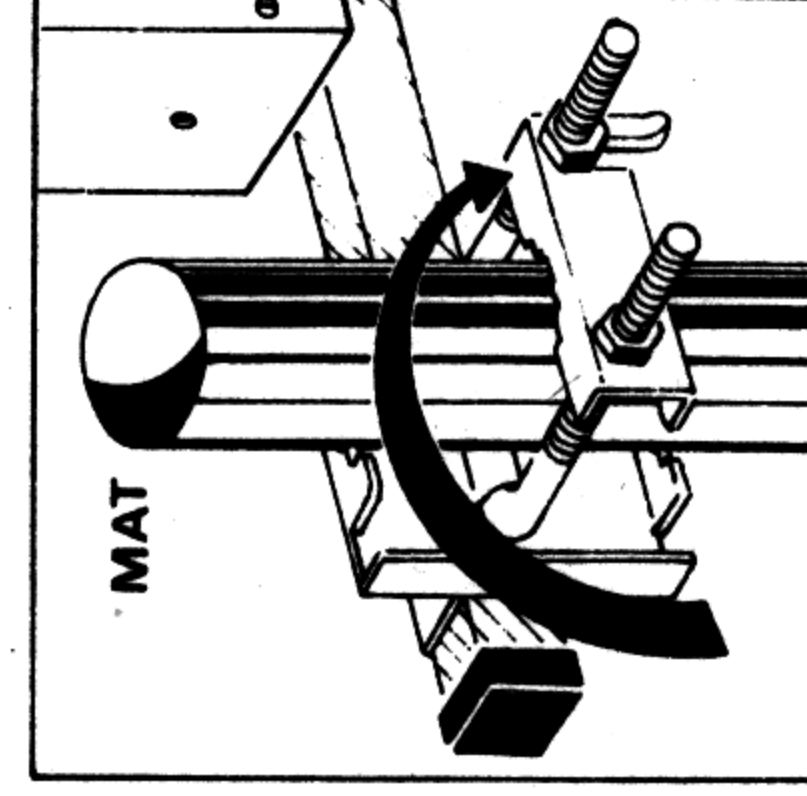
6



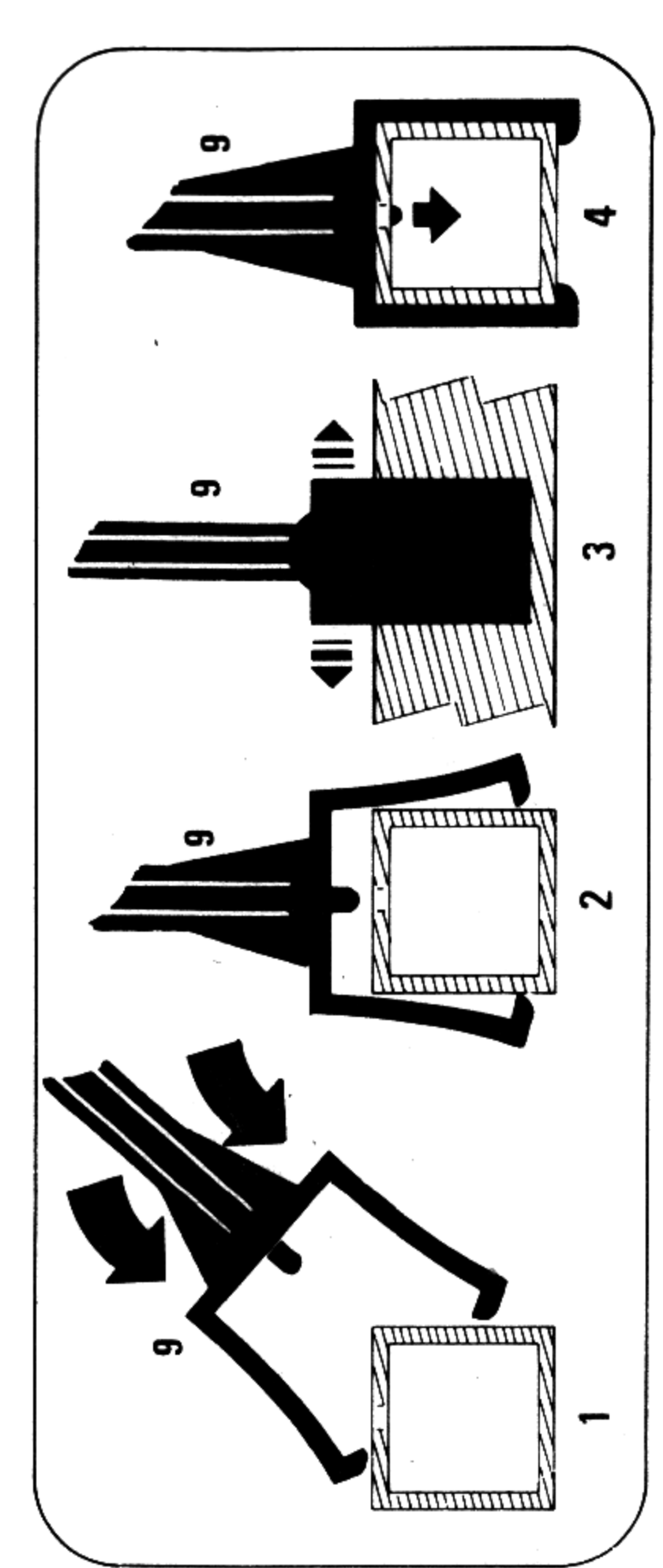
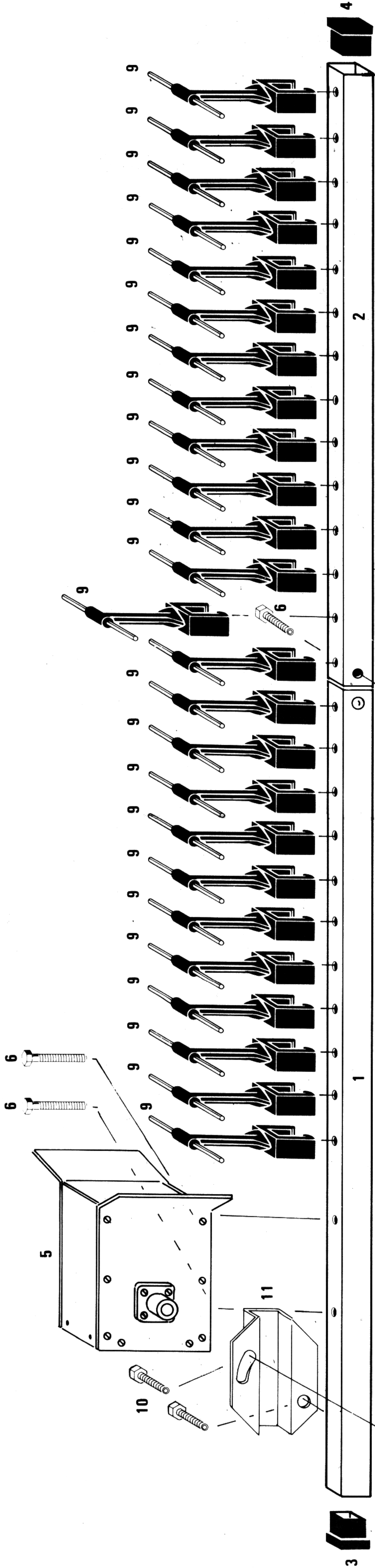
A



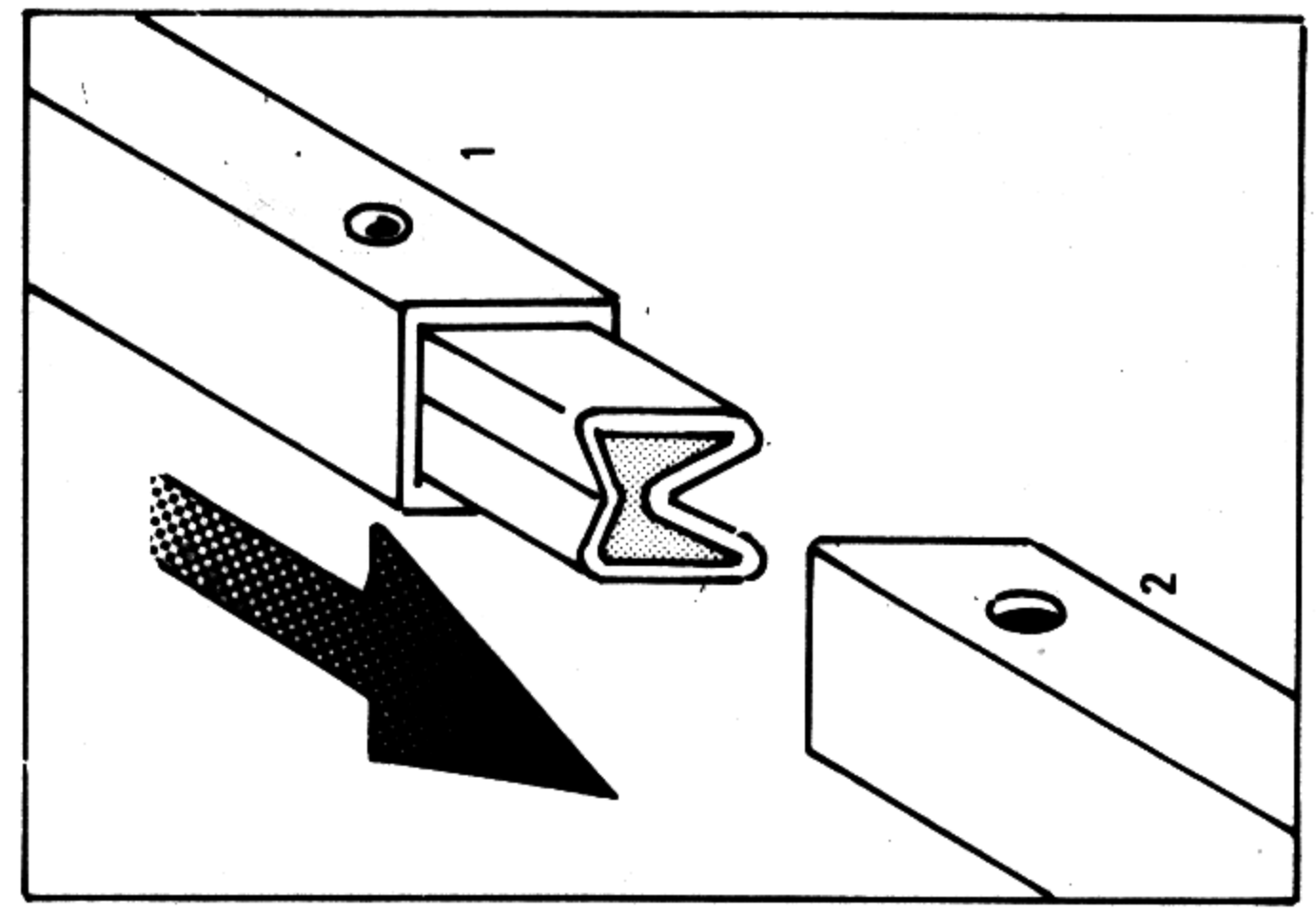
B



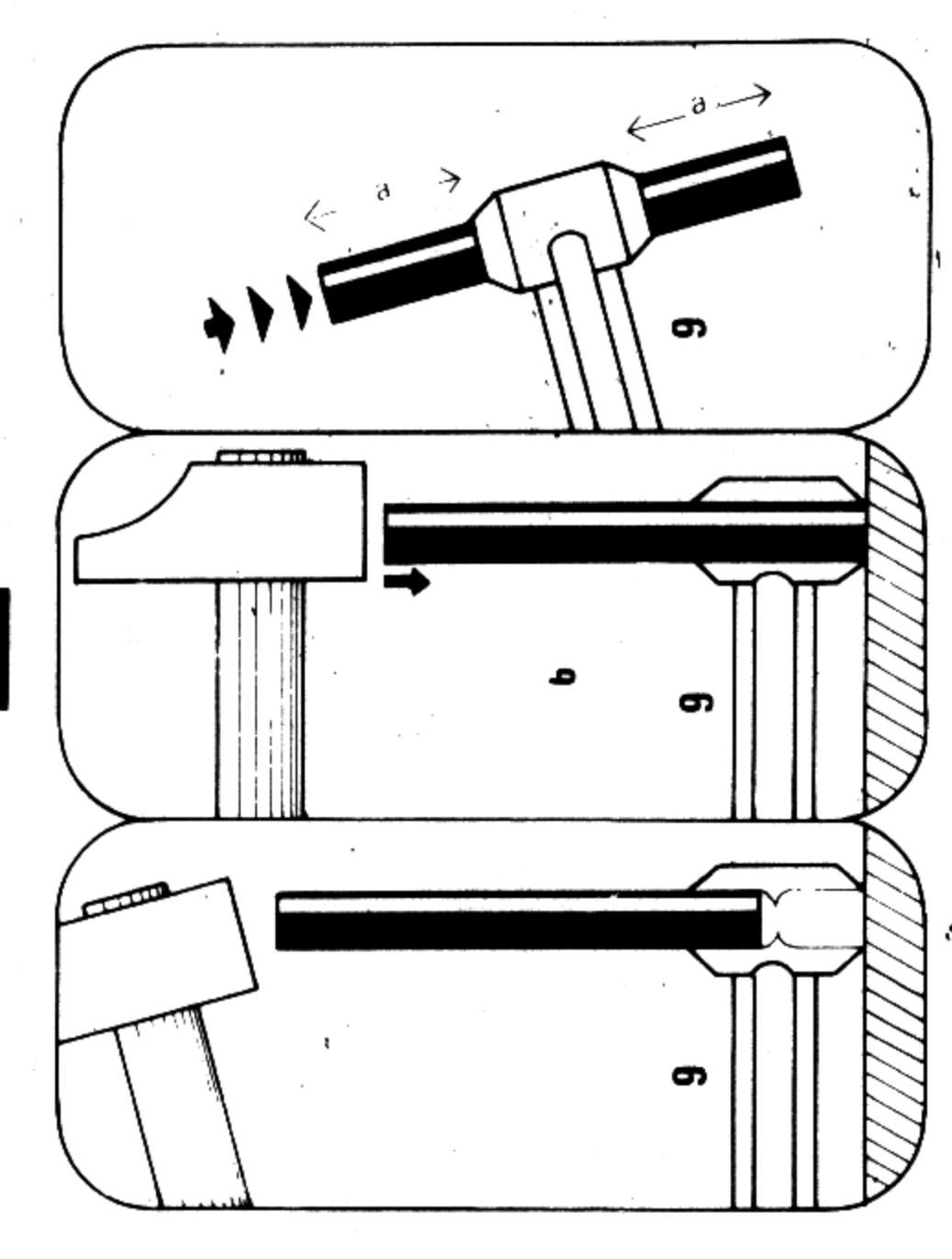
C



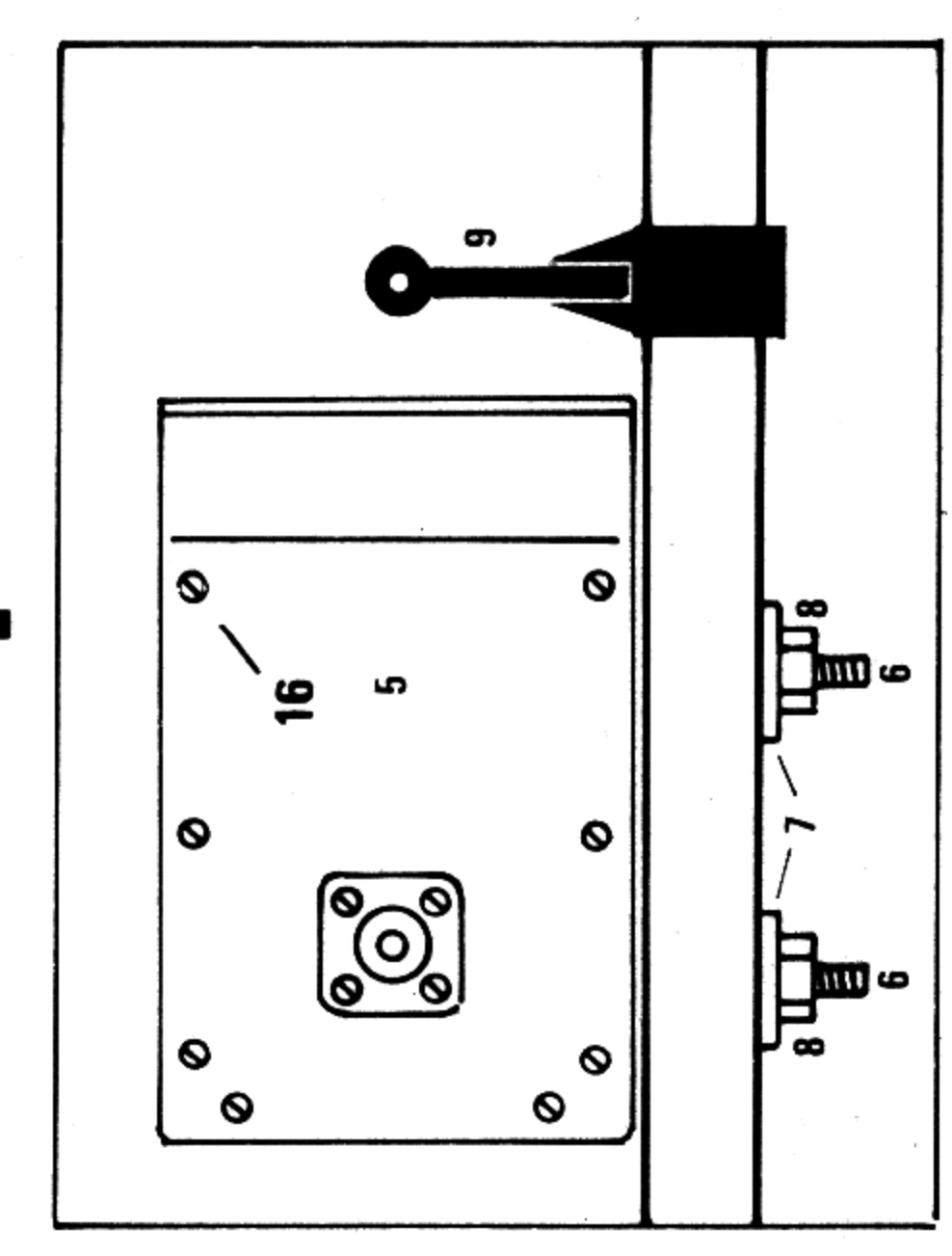
3

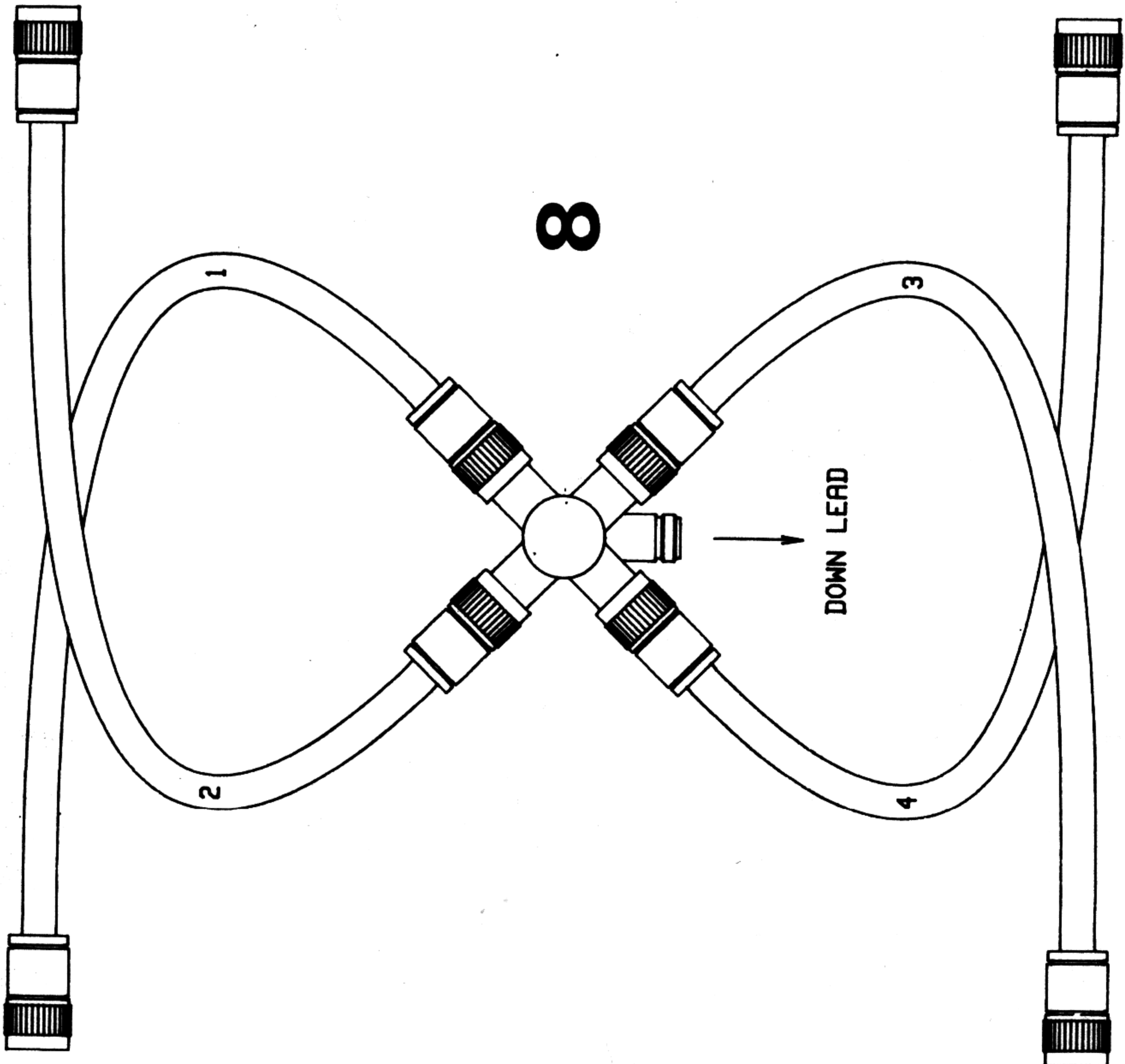


2



4





If the antennas are mounted one above the other, use the shorter line length. In the case of four antennas, the upper two antennas are phased together, as well as the lower two antennas, with two two-way splitters, the whole system being phased in at the center with two more phasing lines and a third two-way splitter.

Stacking gain figures, referred to a single antenna, and taking into account the losses in the phasing lines, are as follows (within 0.1 dB).

- + 2.8 dB for two antennas.
- + 5.6 dB for four antennas.

DIRECTOR LENGTH, CODING AND SPACING TABLE

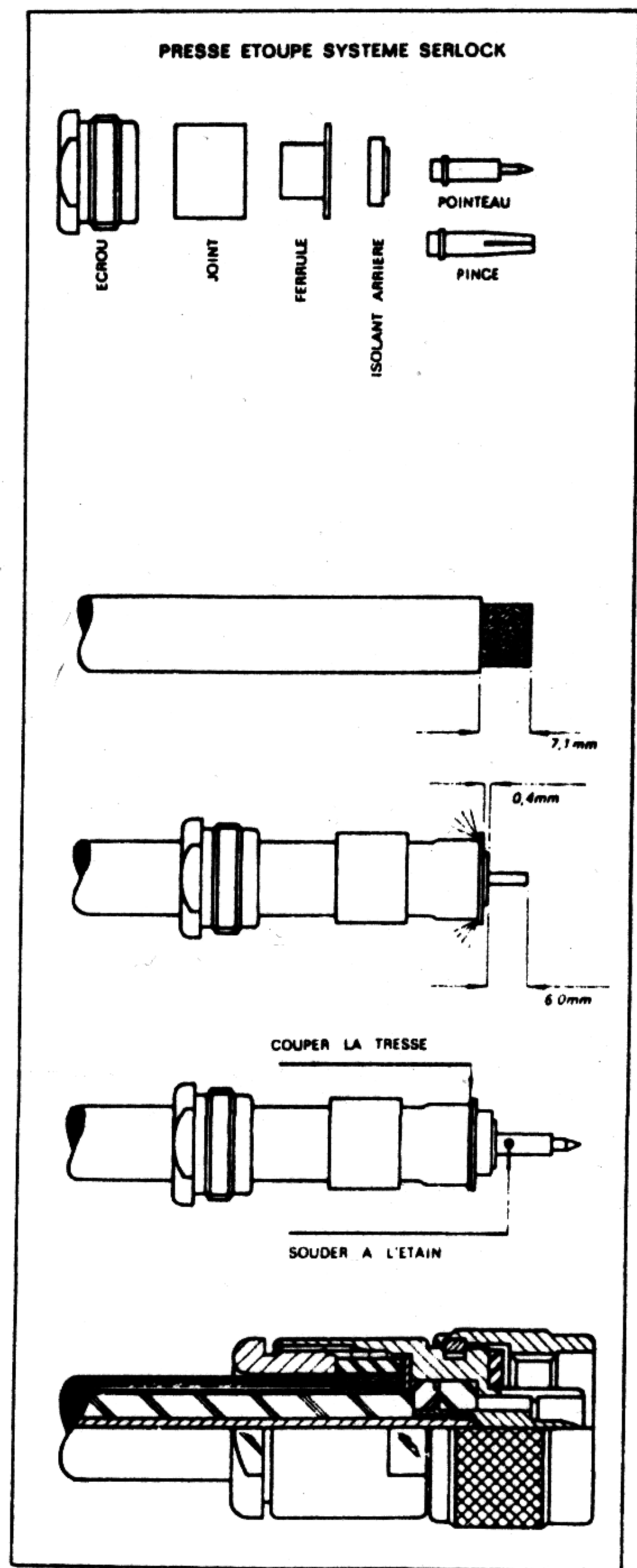
LENGTH (millimeters and inches)	CODE	SPACINGS (millimeters and inches)
NOTE:		
The horn is not counted as a director. It is just used to "end fire" the antenna director alignment.		
Director 1 : 52 (2" 1/16)	Brown	Distance from horn front mounting hole to Dir 1: 61.5 mm (2" 7/16)
Director 2 and 3: 49 (1" 15/16)	Red	Distance horn edge to Dir 1: 47 mm (1" 27/32)
Director 4 thru 12: 48 (1" 7/8)	Orange	Dir 1 - Dir 2: 49 mm (1" 15/16)
Director 13 thru 25: 47 (1" 27/32)	Yellow	Dir 2 - Dir 3: 45 mm (1" 3/4)
		Dir 3 - Dir 4: 50 mm (1" 31/32)
		And so forth up to Dir 25: 50 mm (1" 31/32)

ACCESSORY

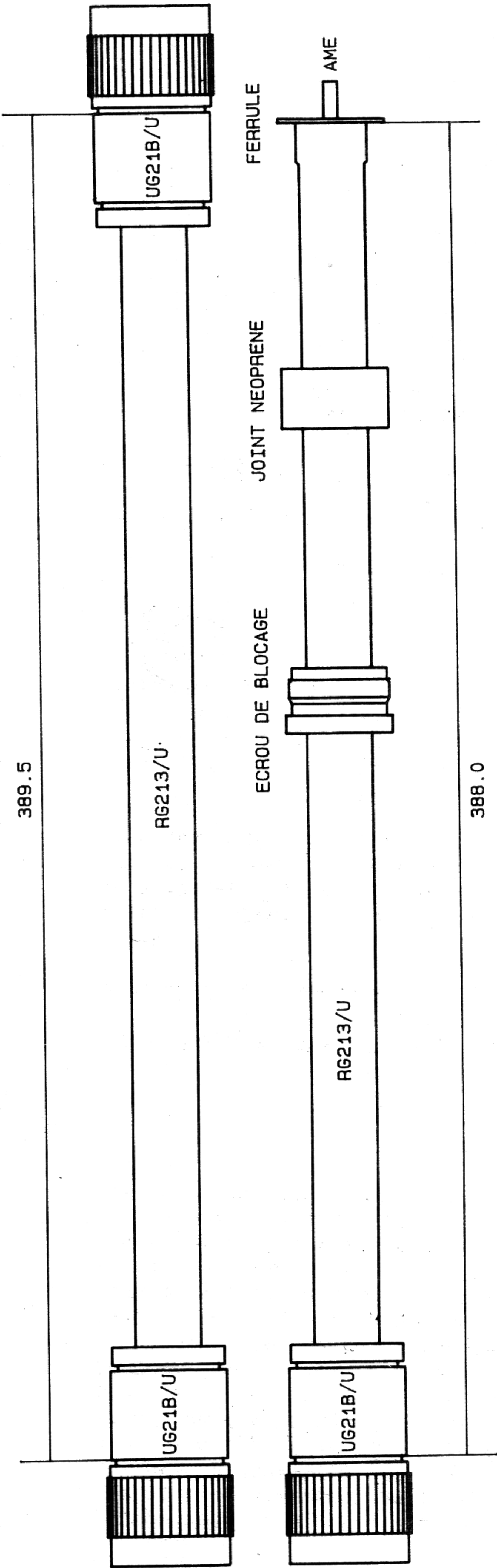
Male coaxial connector, type N: UG21B/U ("SERLOCK")

HARDWARE PART LIST

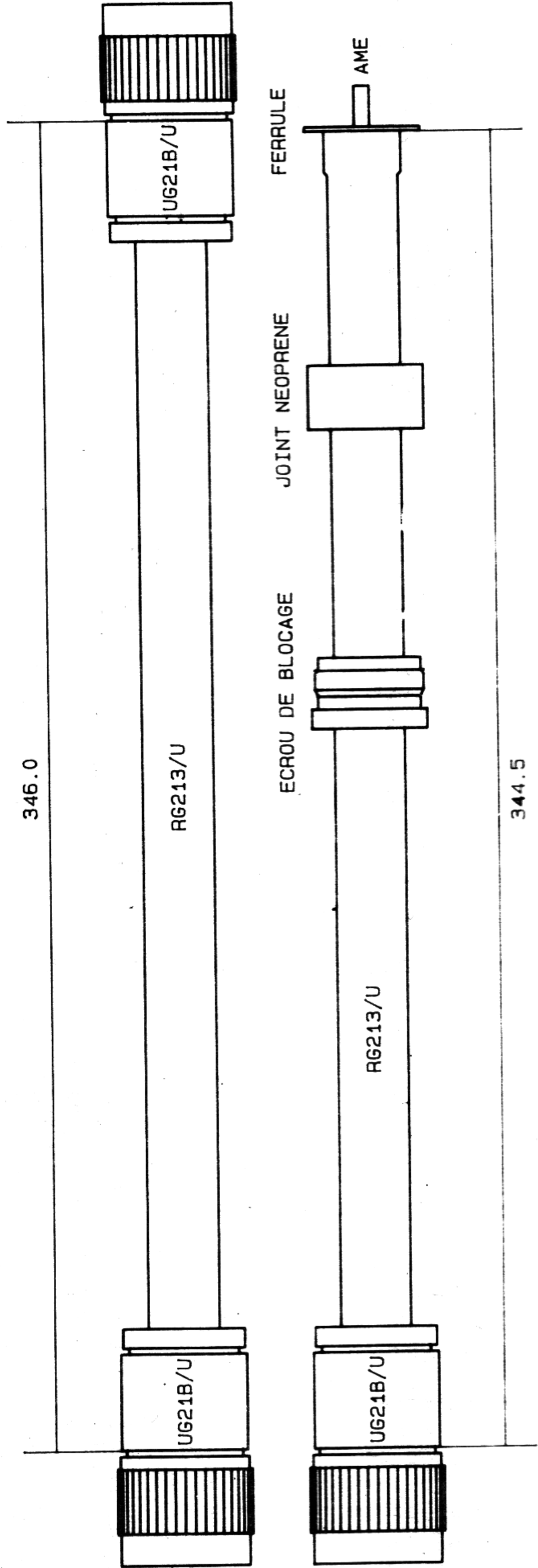
Part #	Description	Quantity
1	Rear boom section	1
2	Front boom section	1
3	Black plastic cap (rear)	1
4	Front plastic cap (front)	1
5	Sectoral horn completed (see exhibit 5)	1
6	Stainless steel screw, M5x25	3
7	Stainless steel flat washer	2
8	Stainless steel tightening nut, M5	3
9	Plastic director stand-off	25
10	Boom to mast tightening screw, M6x12	2
11	Boom to mast attaching gusset	1
12	Boom to mast attaching plate	1
13	Boom to mast tightening "alligator" clamp	1
14	Stainless steel tightening nut, M6	2
15	Boom to mast attaching U-bolt, M6 thread	1
16	"Parker" screw, for horn mounting	20 + 1 spare



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