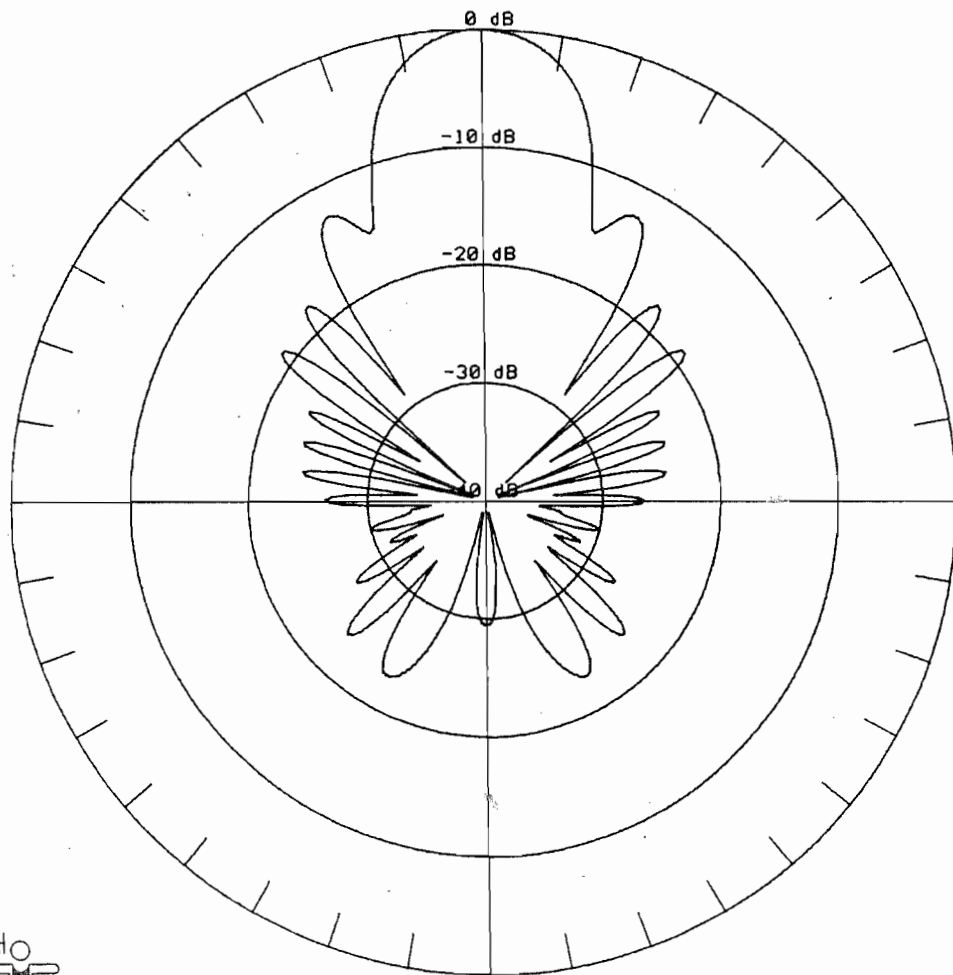


DIAGRAMME DE RAYONNEMENT CALCULE: 21 ELEMENTS LONG YAGI

FREQUENCE: 432.0 MHz PLAN: H

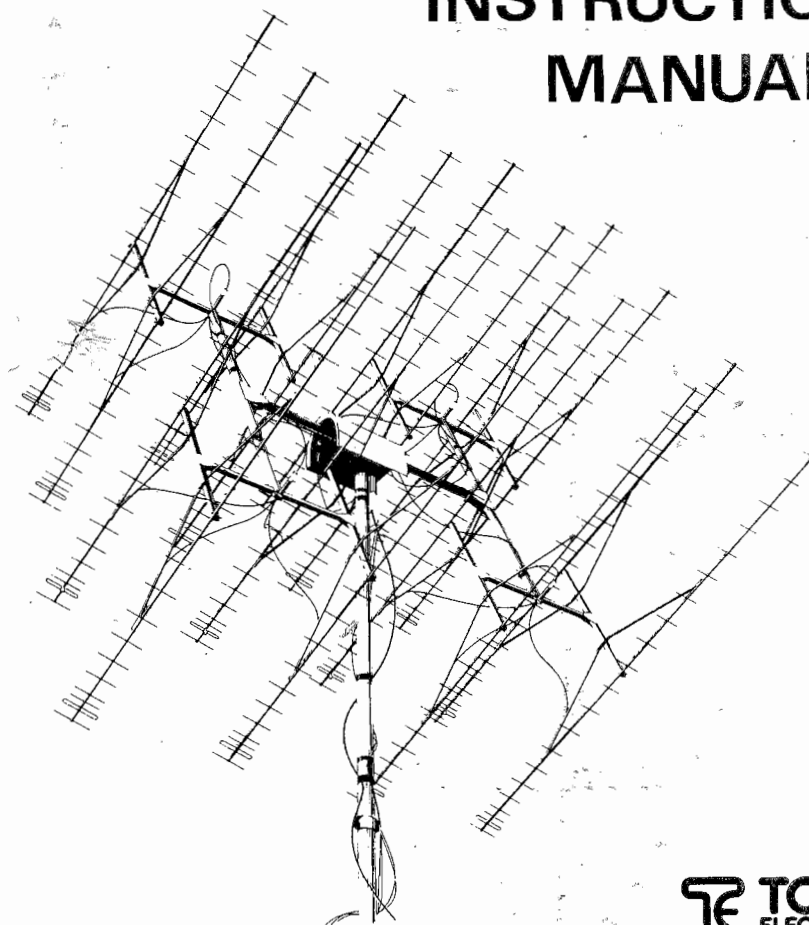
GAIN CALCULE : 18.15 dB iso RAPPORT AV./ARR. : 29.49 dB

ANGLE D'OUVERTURE A -3dB : 2 x 11.21 deg.



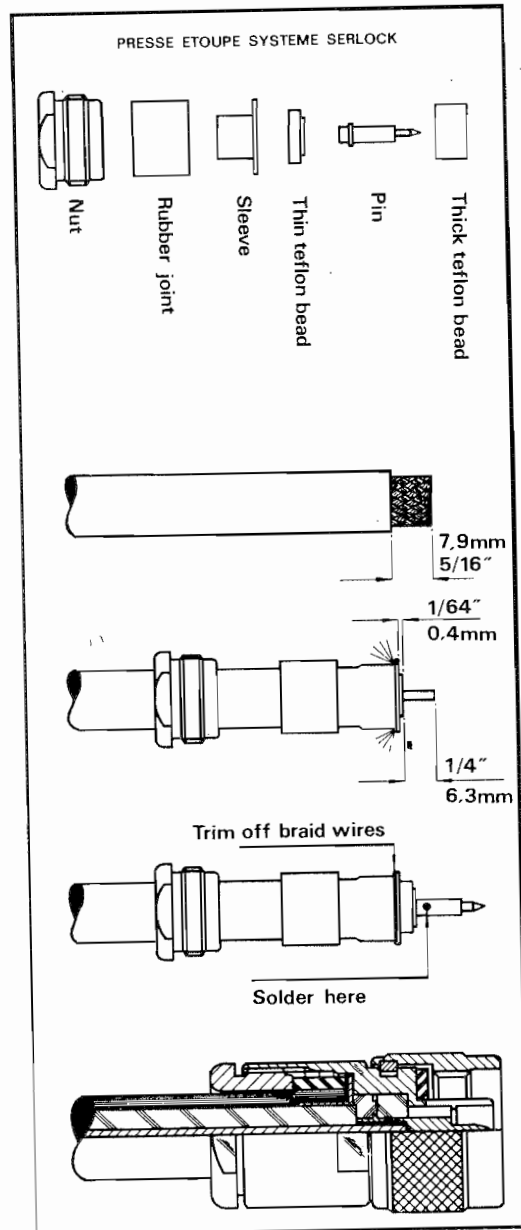
ANTENNES  
**TONNA**

# 432 MHz 21 ELEMENT INSTRUCTION MANUAL



ASSEMBLY INSTRUCTIONS

432 / 438 MHz 21 element F9FT ANTENNA



IMPORTANT

When opening the package, check and compare all parts and hardware with enclosed part list. Then, thoroughly and carefully read the instructions.

ELEMENT ASSEMBLY

Each element is mounted on the boom with a special holder (#8 on pictorial sketch), made of glass fiber loaded polycarbonate. This holder is provided with a shaped hole in which an M5 nut (#22) is located. Each holder is held against boom with the M5x25 screw #9. DO NOT OVERTIGHTEN THIS SCREW !! Note: an M5x25 hexagonal screw is used for directors D1 and D2 (#10).

On each element is provided a centering bump which must fit inside the centering cavity of the holder (See arrow on close-up D). First snap the holder on the element, taking care for proper centering, and mount the holder on the boom, with screw #9. The holder should be mounted as shown on the diagram (the hole is located BEHIND the element, when antenna is seen from rear). If not, spacings between directors, driven element and reflectors may not be correct any longer.

CAUTION

The antenna still being on the ground, make sure that all element lengths decrease, from reflector R (longer element) through director D19 (shorter element); each successive element is either the same or shorter than the prior element, and must be properly centered on the boom. If not, performance of the antenna may be drastically reduced.

FEED-LINE AND DRIVEN ELEMENT

The feed-line is connected to the driven element (DIP) with a watertight type N connector set. The driven element is fitted with a built-in standard UG58A/U female receptacle. A standard UG21B/U male connector is delivered as accessory with the antenna. Use RG213/U, or better coaxial cable whenever available.

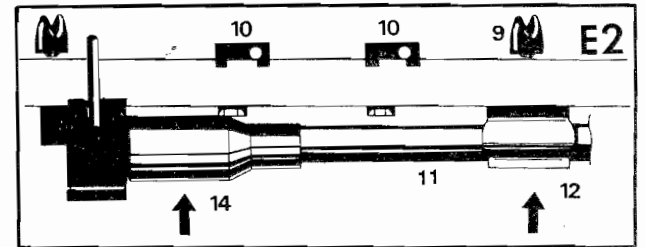
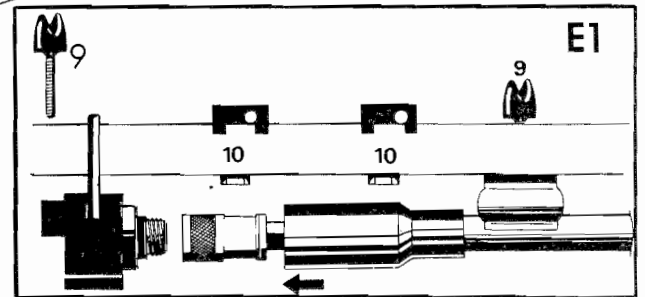
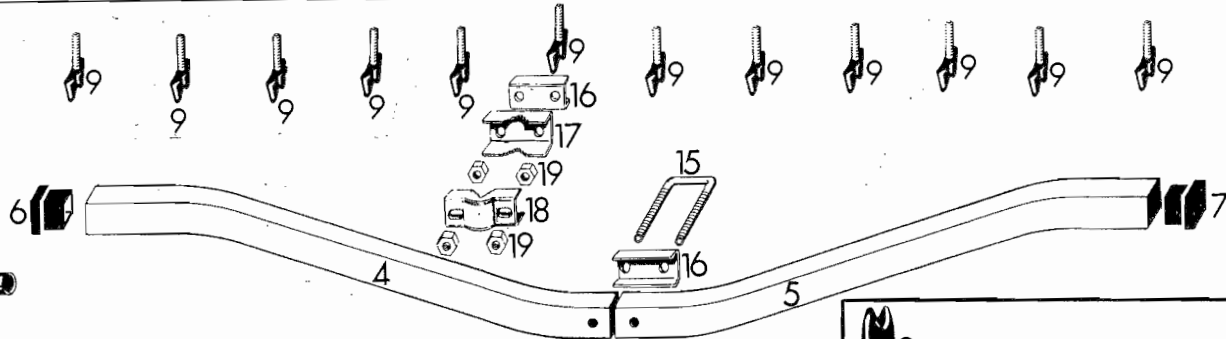
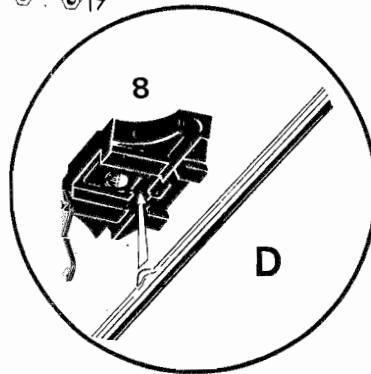
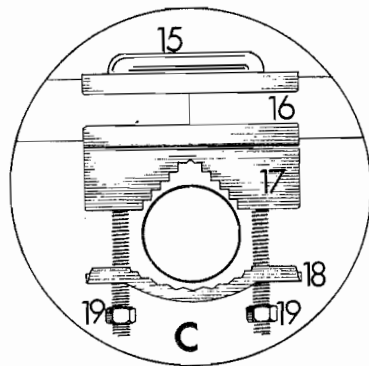
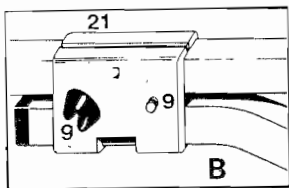
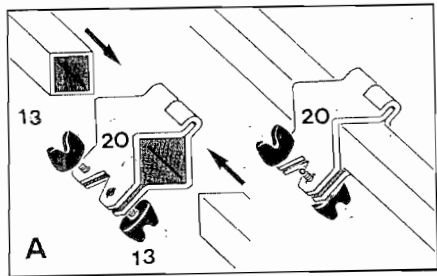
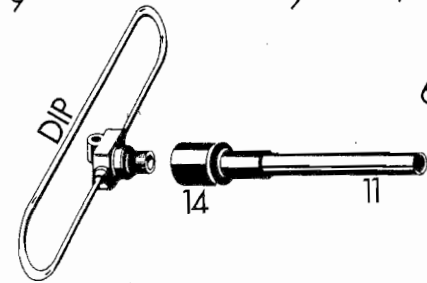
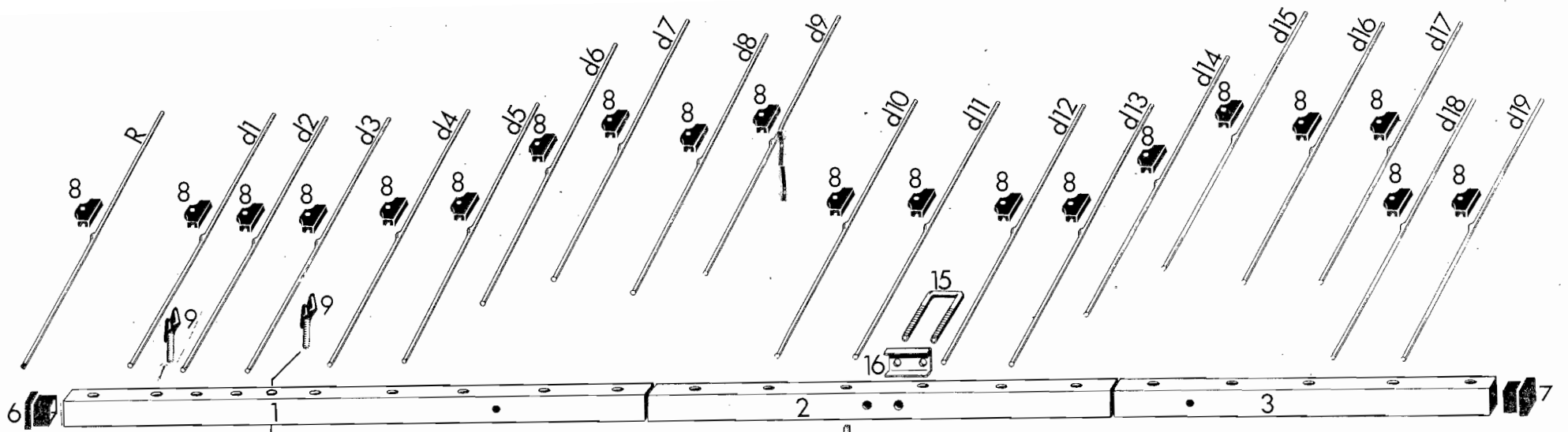
A quarter wave filter, called "bazooka" (#11), is used to cancel the outer currents on the outer conductor of the coaxial line. A plastic hood (#14) is also provided, to avoid condensation around the connector, on the driven element.

Slide the hood on the bazooka, the broad end of the hood facing one end of the bazooka, and snap the mounting clamp (#12) on the other end; slide the bazooka on the coax, with the clamp #12 opposite to the coax end; mount the connector on the coax cable (See connector sketch for proper mounting on cable). Put the driven element case above mounting hole, and tighten with the wing screw #9. Screw in the UG21B/U connector on the UG58A/U receptacle, and finally tighten to boom the bazooka clamp, with M5 wing screw #9 and M5 nut #22. DO NOT OVERTIGHTEN THE SCREWS! Slide the hood around the ring provided around the coaxial receptacle, on the driven element (See close-up E1 and E2), and drill a "breathing" hole (1.5 mm or 1/16 ") on the lower part of the hood.

Coaxial cable must run UNDER the boom and rear supporting leg, taping occurring two or three times along the rear boom section and rear section of supporting leg.

BOOM ASSEMBLY

Attach together the three boom sections with the clamp set #20 and M5x15 wing screws #13 (see close-up A). Then mount on boom the supporting legs with the clamp set #21; make sure the protruding stud inside the clamp fits into the provided holes on the proper boom section. The purpose of the stud is to prevent unwanted slipping of the clamp, when mounting and tightening (see close-up B). Tighten with M5x25 wing screw #9.



**MOUNTING OF ANTENNA TO MAST**

The maximum useful mast outer diameter is 54 millimeters (2" 1/8). Mount on boom and supporting legs U-bolt #15, clamps #16 and #17, and first set of M6 nuts #19; tighten the assembly. Then slide on U-bolts clamps #18, and screw in second set of nuts #19. Finally run mast through both clamp set, and tighten boom to mast with nuts #19 (see close-up C).

**OPERATING HINTS**

It is recommended to keep the antenna in local dominant wind direction, when not in use.

**PART AND HARDWARE LIST**

Diagram #	Description	Quantity
1	Rear boom section	1
2	Central boom section	1
3	Front boom section	1
4	Rear supporting leg	1
5	Front supporting leg	1
6	Black cap (rear)	2
7	Red cap (front)	2
8	Polycarbonate element attaching jumper	20
9	M5x25 stainless steel wing screw	24
10	M5x25 stainless steel hex screw	2
11	Quarter wave filter ("bazooka")	1
12	Bazooka mounting clamp	1
13	M5x15 stainless steel wing screw	4
14	Protective hood	1
15	U-bolt, M6x80	1
16	Smooth-hole attaching clamp	8
17	Mast to boom attaching "alligator" clamp	2
18	Mast tightening "alligator" clamp	2
19	Stainless steel M6 tightening nut	8
20	Boom attaching clamp set	2
21	Boom to supporting leg attaching clamp set	2
22	M5 stainless steel nut	21

**ACCESSORY**

TYPE "N" MALE CONNECTOR UG21B/U	1
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**ELEMENT LENGTHS**

Elements	"DX" Version (432 MHz)		"ATV" Version (438 MHz)	
	Millimeters	Inches	Millimeters	Inches
Reflector	360	14 3/16	350	13 25/32
Driven element *	330 *	13	330 *	12 25/32
Director 1	325	12 25/32	330	13
Director 2	315	12 13/32	320	12 19/32
Directors 3 - 4	305	12	305	12
Directors 5 - 7	300	11 13/16	4 - 5 300	11 13/16
Directors 8 - 12	290	11 13/32	6 - 7 295	11 5/8
Directors 13 - 15	285	11 7/32	8 - 15 285	11 7/32
Directors 16 - 17	280	11 1/32	16 - 19 280	11 1/32
Directors 18 - 19	275	10 13/16		

\* Overall length.

NOTE: The company ANTENNES TONNA S.A. reserves for itself the right for modifying its products, without notice.

ANTENNES TONNA S.A. 132 Boulevard Dauphinois 51100 REIMS FRANCE

**DIAGRAMME DE RAYONNEMENT CALCULE: 21 ELEMENTS LONG YAGI**

FREQUENCE: 432.0 MHz

PLAN: E

GAIN CALCULE

: 18.15 dB Iso

RAPPORT AU./ARR.:

29.49 dB

ANGLE D'OUVERTURE A -3dB : 2 x 10.82 deg.

