

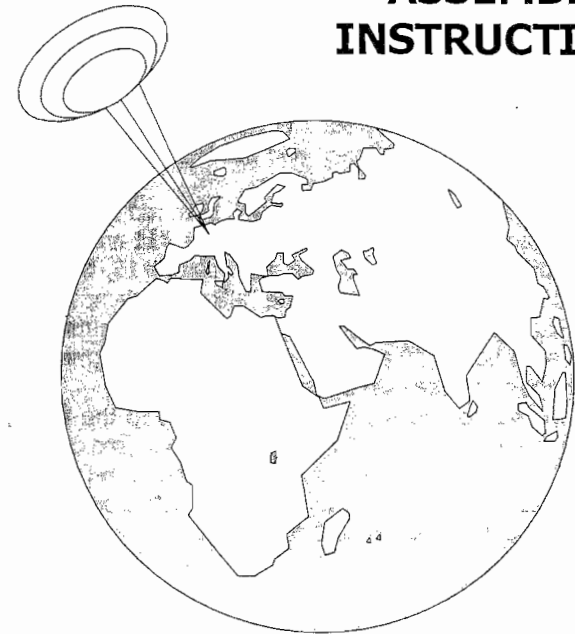
This connector can be used with cables RG213/U, Pope H100, Pope H500

# AFT

## 144 MHz 17 Element Antenna

Part #: 20817

### ASSEMBLY INSTRUCTIONS



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# F9FT

## 144 MHz 17 ELEMENT ANTENNA, Part #: 20817

### IMPORTANT

When opening the box, check and compare all delivered parts with enclosed part list. Then carefully and thoroughly read the assembly instructions

### BOOM ASSEMBLY

Refer to assembly diagram. The boom is split in four sections: two rear and two front sections. The rear side of the rear most section (#1) is terminated with a black plastic cap. The front side of this section as well as the rear side of the middle rear section (#2) are marked with a green ring (or dot). The front side of the front most section (#4) is terminated with a red plastic cap. The rear side of this section as well as the front side of the middle front section (#3) are marked with a red ring (or dot).

The supporting leg is split in two sections: the rear section (#5) or short section, with a black plastic cap, and the front section (#6), or long section, with a red plastic cap.

Assemble rear boom sections #1 and #2, both green marked ends facing to each other, with the rear section #5 of the supporting leg. Attach the whole assembly with the clamp set #11 (one smooth hole, one tapped hole, M6) and #13 (two smooth holes) and the M6 screws #22 (see assembly diagram and close-up C).

Assemble front boom sections #3 and #4, both red marked ends facing to each other. Attach both sections with clamp set #11 and M6 screws #23.

Assemble both half-booms with the main plate #15, the clamp #12 and the threaded U-bolts #19 and #20, the "alligator" clamps #14 and the M6 nuts #21. First tighten half-booms together with M6 nuts #21. Then slide clamps #14 on U-bolts #19 and #20 (see assembly diagram). Keep this last assembly temporary loose (see close-up A).

Assemble the supporting leg front section (#6) to the front most boom section (#4), the same way as for the rear sections (see close-up C).

Assemble the supporting posts #7 of the trigonal reflector on the rear most boom section with the T-clamps #8 (smooth holes) and #9 (tapped holes, M5), and tighten with M5x30 screws #16.

### ELEMENT ASSEMBLY

Each element is attached on the boom using a special jumper (#10) made of glass fiber loaded polycarbonate. This jumper features a hexagonal

print into which the M5 element tightening nut #17 fits.

First snap the element inside the jumper, making sure for proper centering (see bump and arrows on close-up B), and mount the jumper on the boom, with M5x30 screw #16 and M5 nut #17. The jumper should be mounted as shown on the assembly diagram and on the close-up E (the hole is located on the **left** of the element, when the antenna is seen as shown on the assembly diagram, with its rear oriented to the upper left corner of the page). If not, spacings between parasitic elements (directors and reflectors), and the driven element are no more correct. Reflectors R2 and R3 are mounted on the supporting posts #7; refer to diagram for proper assembly.

Reflectors R1, R2 and R3, driven element Dip, and directors D1 and D2 are located on the rear most boom section (#1, black cap). Directors D3, D4 and D5 are located on the middle rear section (#2, green mark). Directors D6 through D9 are located on the middle front section (#3, red mark). Directors D10 through D13 are located on the rear most boom section (#4, red cap).

### CAUTION !

The antenna still being on ground, make sure that all element lengths decrease, from reflectors R1, (R2 or R3, longest elements) through director D13 (shortest element); each successive element is either the same or shorter than the prior element. Otherwise, performance of the antenna may be drastically reduced.

### DRIVEN ELEMENT AND FEED-LINE

The feed-line is connected to the driven element (Dip on assembly diagram) with a watertight type N connector set. The driven element is fitted with a built-in standard UG58A/U female socket. A standard UG21B/U male connector is delivered together with the antenna. Use RG213/U, or better coaxial cable, but with same diameter, whenever available.

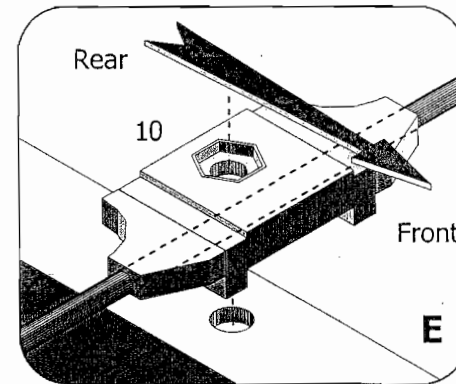
A quarter-wave filter, called *bazooka*, is used to cancel the outer currents, on the outer conductor of the coaxial line. A plastic hood is also provided, to avoid condensation around the connector, on the driven element,

Slide the bazooka (#26) on the coax, with the mounting screw set (#24 and #25) opposite to the coax end; then mount the connector on the coax (see connector assembly sketch, on page 8, for proper mounting on cable). Screw in the UG21B/U connector on the driven element UG58A/U socket. Firm hand tightening is sufficient; **do not use any tool !** Mount the driven element on the boom with the special Parker wing-screw #18; **do not overtighten this screw !** Run the bazooka screw #24 through the boom,

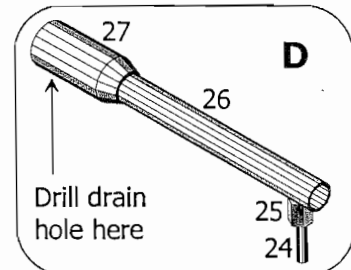
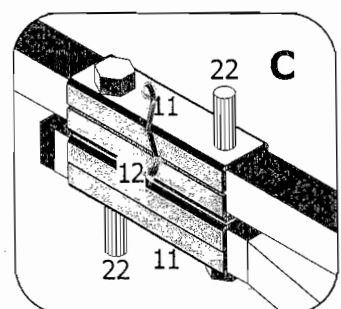
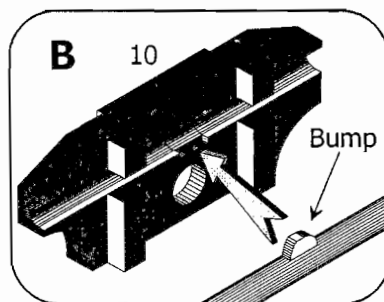
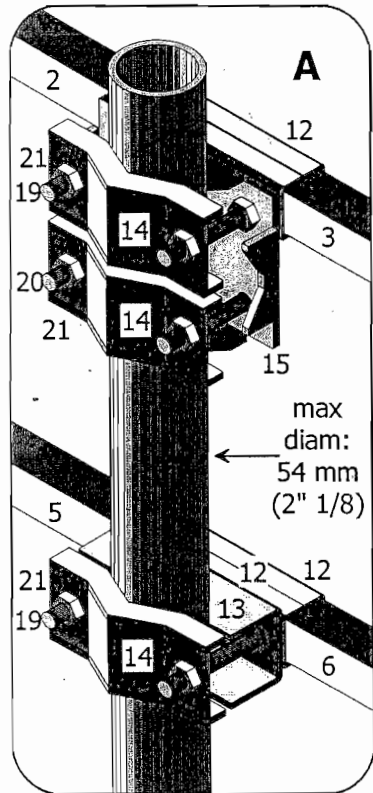
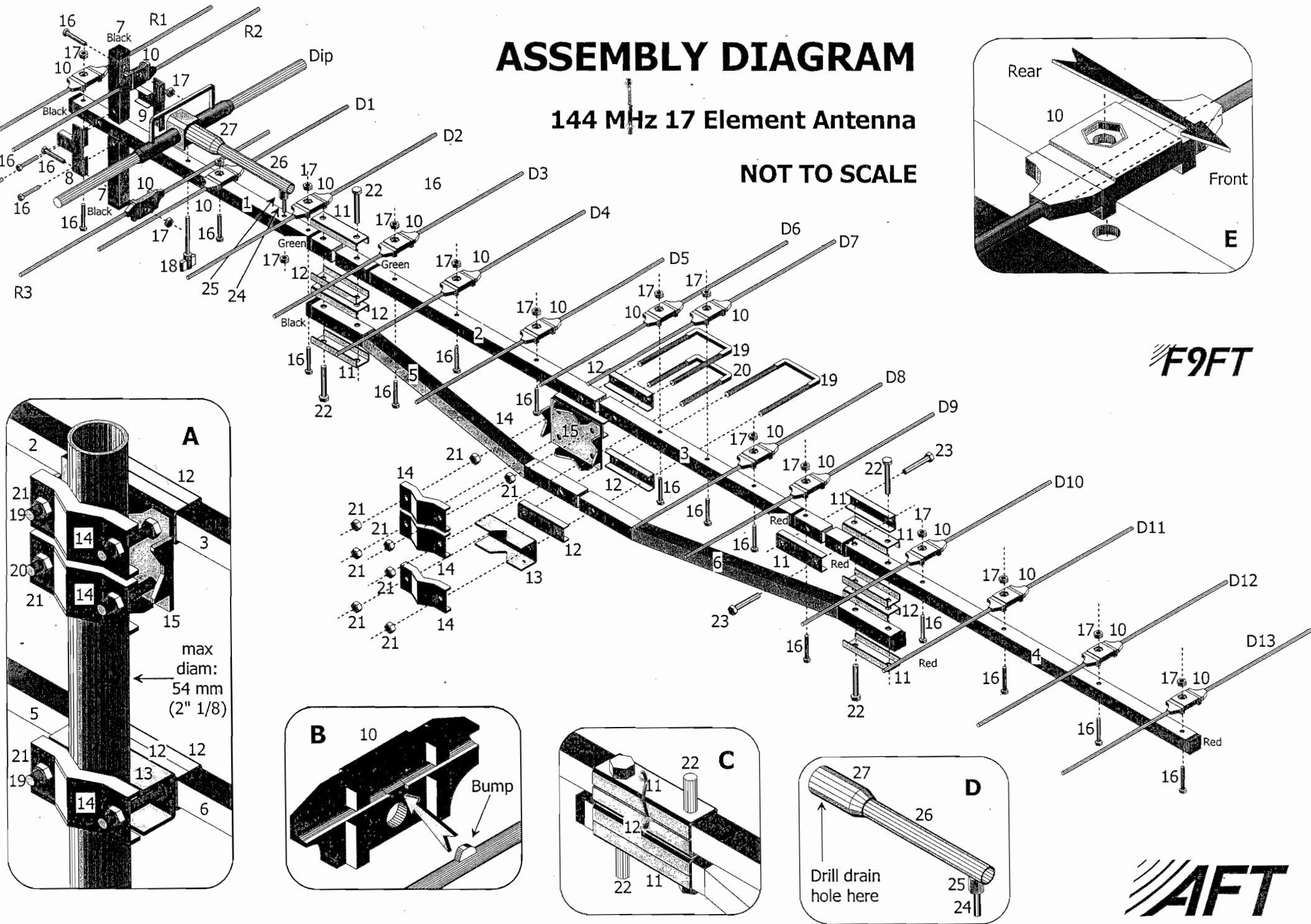
# ASSEMBLY DIAGRAM

## 144 MHz 17 Element Antenna

NOT TO SCALE



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and tighten using M5 nut #17. Drill a 3~4 mm (1/8~3/16") drain hole on the plastic hood (see close-up D). Slide the hood on the case snap-on ring, making sure the drain hole faces towards ground. The coax cable should be run "above" the element jumpers; it is held along the boom and the support leg using "household electricity grade" adhesive tape approximately every 30 cm (every foot).

### ASSEMBLY OF ANTENNA TO MAST

The maximum useful mast outer diameter is 54 millimeters (2" 1/8). See close-up A.

Run the mast through the clamp sets (see close-up A), and first tighten the boom to the mast, with clamps #14 and nuts #21. Then apply upward pressure on the supporting leg; hold in this position, while tightening nuts #21. This is to slightly stress the boom, to hold it in a horizontal position, without downward droop.

### ELEMENT LENGTHS

| Element  | Length (mm) | Length (inches) |
|--|-------------|-----------------|
| Reflectors R1, R2, R3<br>Driven element<br>(beta-match dipole) | 1055        | 41" 9/16        |
| Director 1   | 970         | 38" 3/16        |
| Director 2   | 940         | 37"             |
| Director 3   | 930         | 36" 5/8         |
| Director 4   | 930         | 36" 5/8         |
| Director 5   | 910         | 35" 13/16       |
| Director 6   | 910         | 35" 13/16       |
| Director 7   | 890         | 35"             |
| Director 8   | 890         | 35"             |
| Director 9   | 870         | 34" 1/4         |
| Director 10  | 870         | 34" 1/4         |
| Director 11  | 850         | 33" 7/16        |
| Director 12  | 850         | 33" 7/16        |
| Director 13  | 830         | 32" 11/16       |

**NOTE:** The length of the driven element is given without the end caps.

### OPERATING HINTS

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

### PART LIST

| Diagram part # | Description   | Qty |
|----------------|---|-----|
| 1              | Rear most boom section (black cap)                      | 1   |
| 2              | Middle rear boom section (green mark)                   | 1   |
| 3              | Middle front boom section (red mark)                    | 1   |
| 4              | Front most boom section (red cap)                       | 1   |
| 5              | Rear supporting leg section (short, black cap)          | 1   |
| 6              | Front supporting leg section (long, red cap)            | 1   |
| 7              | Trigonal reflector supporting post                      | 2   |
| 8              | Galvanized steel assembly T-clamp, smooth holes         | 1   |
| 9              | Galvanized steel assembly T-clamp, tapped holes, M5     | 1   |
| 10             | Glass fiber loaded polycarbonate element holding jumper | 16  |
| 11             | Galvanized steel clamp, 1 smooth hole, 1 M6 tapped hole | 6   |
| 12             | Galvanized steel assembly clamp, 2 smooth holes         | 7   |
| 13             | Galvanized steel U-shaped "alligator" clamp             | 1   |
| 14             | Galvanized steel flat "alligator" clamp                 | 3   |
| 15             | Galvanized steel main antenna to mast assembly plate    | 1   |
| 16             | Stainless steel hexagonal head screw, M5x30             | 19  |
| 17             | Stainless steel nut, M5                                 | 17  |
| 18             | "Parker" wing screw, for driven element                 | 1   |
| 19             | Stainless steel threaded U-bolt, M6x105                 | 1   |
| 20             | Stainless steel threaded U-bolt, M6x80                  | 2   |
| 21             | Stainless steel nut, M6                                 | 8   |
| 22             | Stainless steel hexagonal head screw, M6x60             | 4   |
| 23             | Stainless steel hexagonal head screw, M6x30             | 2   |
| 24             | Stainless steel conical head screw, M5x45               | 1   |
| 25             | Stainless steel hexagonal stand-off, M5x10              | 1   |
| 26             | "Bazooka" quarter-wave filter                           | 1   |
| 27             | Protective plastic hood                                 | 1   |
| Accessory      | Male type N connector (UG21B/U)                         | 1   |