The NA5N Terminated Folded Dipole (TFD)

80–10M 2-wire TFD with 20M passive elements

SPECIFICATIONS:
Homebrew – no commercial components
FREQ: 3.5–28 MHZ (SWR ≤1.5:1)
IMPEDANCE: 800 ohms (with 16:1 balun)
FEED: 50Ω coax direct, no tuner
POWER: QRP (not tested >50 watts)

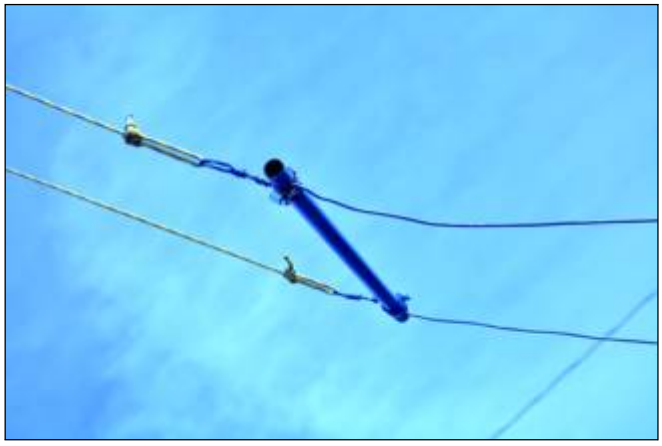
TFD DIPOLE ELEMENTS:

32’6”	per active segment (Feed point to ends)
65’	End-to-end length
130’	Total folded active length
16”	Folded dipole separation
33’	20M Passive element
800Ω	termination resistance

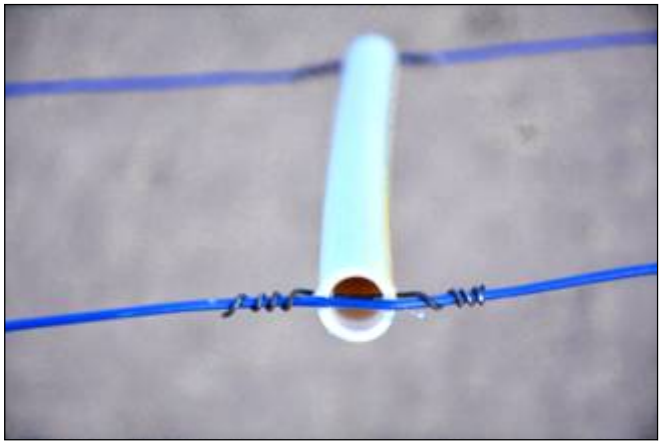
SUPPORT MASTS
Homebrew tiltover wood masts, guyed
28’6” Total heigth

Building the wood support masts with 2”x4”x8½’ and 8 ft. 2”x2s.” Base support in concrete 2’6” ft. deep.

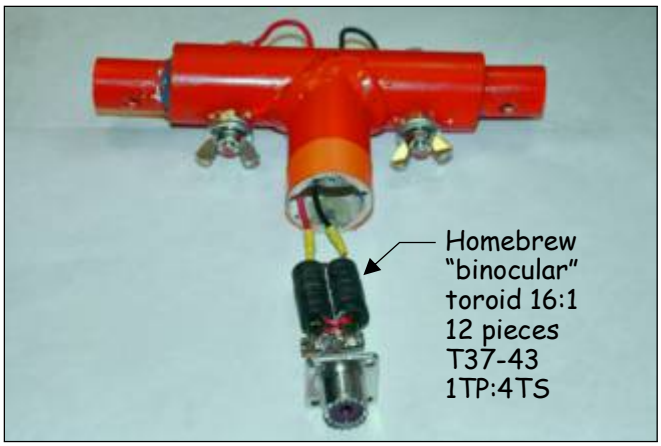
Finished mast top with dipole cross arm and tensioner. Both north and south masts identical.



TFD end using 1/2” EMT tubing for conductive crossover connected to support ropes at mast ends.



Spacing maintained by PVC tubing 1/2” O.D. x 16” every 8 ft., secured to 12 ga. radiator wires as shown.

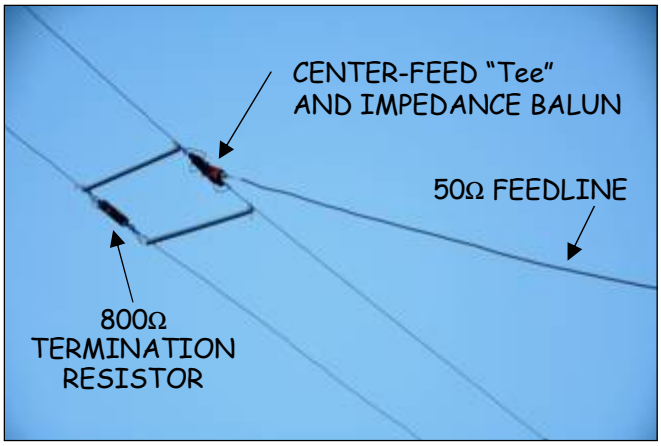


Homebrew center-feed "Tee" and housing for 16:1 balun transformer using 3/4" and 1/2" O.D. PVC tubing; ¼-20 bolts and wingnuts for dipole connections.

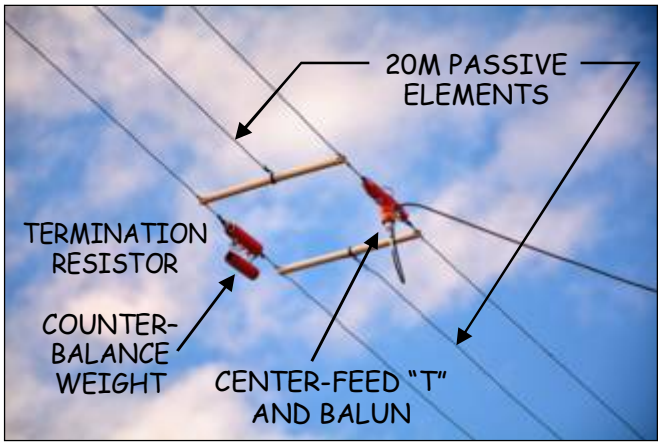
Finished center-fed "Tee," assembled, with SO-239 connector for RG-58 50Ω coaxial feed line input.

Terminator resistor unit, assembled. Internal resistors (800Ω at 10W) inside 3/4" O.D. x 5" PVC tubing; ¼-20 bolts and wingnuts for dipole connections.

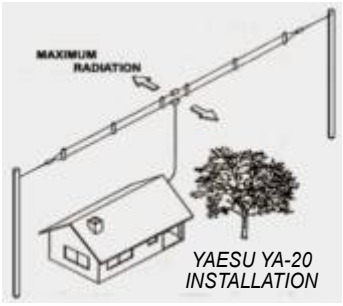
Feed "Tee" and balun with 330+470Ω resistors to simulate 800Ω load of terminator for bench testing. Balun SWR 1:1 @ 3.5MHz to 1.2:1 at 30 MHz.



Original configuration of Termination Resistor and Feed "Tee." SWR 1.2:1 to 1.5:1 all bands except 20M with SWR 3:1.



Final configuration with 3rd wire 16.5 ft. length each side of "Tee" as a 20M resonant passive element (not connected to feed). 20M SWR lowered to 1.5:1. Lead pipe piece added to Terminator to keep TFD level as counter-balance and stops wind buffeting.



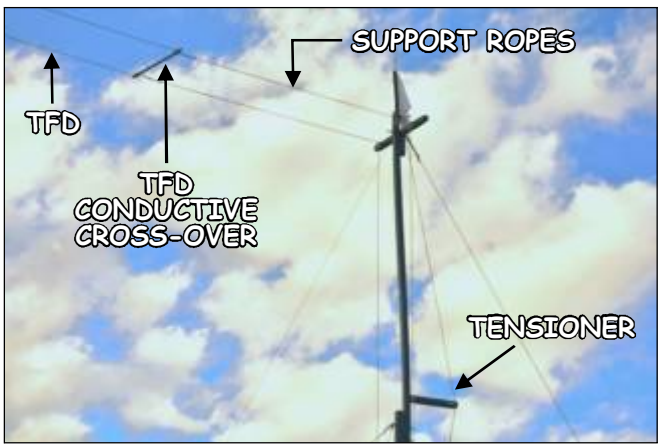
Commercial TFD antennas (Yaesu YA-20, Icom AH-710, Buxcomm, B–Squared Engineering, etc.) are mounted with the balun wire run below the terminator wire run, and suspended with single support ropes as shown in the YA-20 installation drawing. The single support ropes makes the TFD very unstable and “twisty” in winds. The bottom wire and balun adds weight to the top wire run causing significant sag with considerable “swinging” in windy conditions. The NA5N TFD is mounted horizontally (wire runs side-by-side) with two support ropes on each end. This scheme reduces sag and is very stable in high winds.

North mast – Showing horizontal mounting (antenna runs side-by-side) to the cross arms. This reduces antenna sag. The TFD remains very stable in high winds due to the two support ropes on each end instead of a single support rope. Flag shows winds.

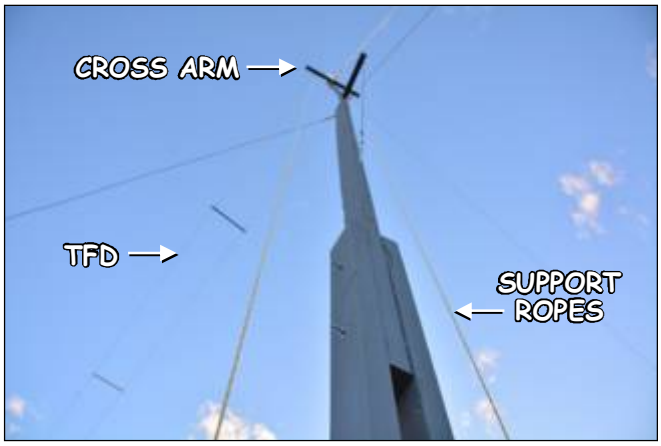
Counter weights on ends of support ropes maintains tension to reduce TFD sag and offers stability in windy conditions. Support ropes also allows TFD to be dropped to ground level for maintenance.

Both masts are identical. Unpainted lower mast section is ground support, set in cement 2’6” deep.

Center mast section showing guy wires and the top section tensioner.



Top mast section showing TFD and tensioner. Top 2x2”x8’ section (shown) since replaced with 2x3”x8’ for added strength.



TFD mast and support ropes returning to ground level.