

# SINCLAIR RADIO LABORATORIES LIMITED

## TELEVISION ANTENNAS TYPE 106-TV & 206-TV

### General Description

The TV Series yagi's are broadband antennas for TV Translator repeaters, Satellite transmitters, or CATV Headend receiving installations. These are available for channel 2 through 13 and the FM Band. Rugged construction of corrosion resistant aluminum elements--all grounded for lightning protection--insures dependable operation.

Two and four stacked arrays are complete with stacking hardware and matching harness.

### ELECTRICAL CHARACTERISTICS

COLOUR SERIES		Gain over Dipole	P A T T E R N			V S W R		Input Power
Model	Channel		Horiz $\frac{1}{2}$ -Power Beamwidth (E)	Vert $\frac{1}{2}$ -Power Beamwidth (H)	Back Radiation	Video Carrier	Aural Carrier	
106-TV	2 to 6	+8 dB	51°	64°	-4 dB	1.2 Max	1.45 Max	300-W
106-2TV	2 to 6	+10.5 dB	51°	40°	-2 dB	1.2 Max	1.45 Max	500-W
106-4TV	2 to 6	+13 dB	25°	40°	+1 dB	1.2 Max	1.45 Max	500-W
206-TV	7 to 13	+9.5 dB	40°	47°	-8 dB	1.1 Max	1.4 Max	250-W
206-2TV	7 to 13	+12 dB	40°	34°	-6 dB	1.2 Max	1.4 Max	400-W
206-4TV	7 to 13	+14.5 dB	22°	34°	-6 dB	1.2 Max	1.4 Max	400-W

IMPEDANCE - 50 ohms - Standard

BANDWIDTH - 6 MHz

INPUT CONNECTOR - 50 ohm "N" Male

### General Configuration

The 106-TV and 206-TV series are six element yagi antennas utilizing folded dipole driven elements. Solid cast aluminum clamps are used to secure all elements to the boom. That section of the boom at which the antenna is mounted has an O.D. of 1.9" for the 106-TV and 1.5" for the 206-TV series.

The two stack arrays are usually mounted above one another. Four stack arrays are usually stacked in an "H" configuration to give the patterns described above. Suitable clamps for mounting either single units or arrays to support structures can be provided on special order.

### MECHANICAL SPECIFICATIONS

Model	Channel	Weight	Projected Area with $\frac{1}{2}$ Inch of Ice	Horizontal Thrust at 85 m.p.h.	Overall Dimension L x W x H	Rated Design Conditions
106-TV	2	44 lbs.	18 $\frac{1}{2}$ sq. ft.	337 lbs.	17 $\frac{1}{2}$ 'x8.8'	85 mph- $\frac{1}{4}$ " Ice
106-2TV	2	113 lbs.	40 sq. ft.	740 lbs.	17 $\frac{1}{2}$ 'x8.8'x10 $\frac{1}{2}$ '	85 mph- $\frac{1}{4}$ " Ice
106-4TV	2	325 lbs.	95 sq. ft.	1728 lbs.	17 $\frac{1}{2}$ 'x26'x10 $\frac{1}{2}$ '	85 mph- $\frac{1}{4}$ " Ice
206-TV	7	9 $\frac{1}{2}$ lbs.	3.7 sq. ft.	68 lbs.	67"x 34"	85 mph- $\frac{1}{4}$ " Ice
206-2TV	7	30 lbs.	9.2 sq. ft.	170 lbs.	67"x 34"x 40"	85 mph- $\frac{1}{4}$ " Ice
206-4TV	7	57 lbs.	18.8 sq. ft.	344 lbs.	5 $\frac{1}{2}$ 'x 7 $\frac{1}{2}$ 'x 40"	85 mph- $\frac{1}{4}$ " Ice

Note: All mechanical specifications include stacking hardware where required.

## DESIGN FEATURES - SINCLAIR 106-TV and 206TV SERIES YAGI ANTENNAS

Sinclair 106TV and 206TV series yagis are high performance antennas designed for professional systems where long term trouble free performance is a necessity. Excellent electrical specifications coupled with rugged construction and unique Sinclair design features combine to produce antennas of outstanding quality.

Fabrication is from type 6061-T6 aluminum. Parasitic elements are one piece and made of .75 to 1.0 inch O.D. tube with .065 wall thickness. Booms are 1.5 to 1.9 inch O.D. Clamps are cast aluminum with hot dip galvanised steel hardware.

### Electrical Design

Antenna design is optimised within a given TV channel, to produce high gain with the least number of parasitic elements. This minimises wind loading on the support structure, and still permits the use of large diameter strong elements.

Antenna VSWR is an uncompromised 1.2 maximum at the visual carrier and 1.4 maximum at the aural carrier. This is a direct result of the unique Sinclair folded dipole feed system and the use of broadband matching techniques. The balun design is integral with the dipole; hence, no external balun is required. This simplified design greatly enhances reliability. Cable connections are made within the dipole assemble, protected from rain and corrosion.

In addition the folded dipole assembly is directly grounded to the antenna boom as are all other elements. This minimises noise generation, and provides excellent lightning protection.

## Electrical Design, Continued

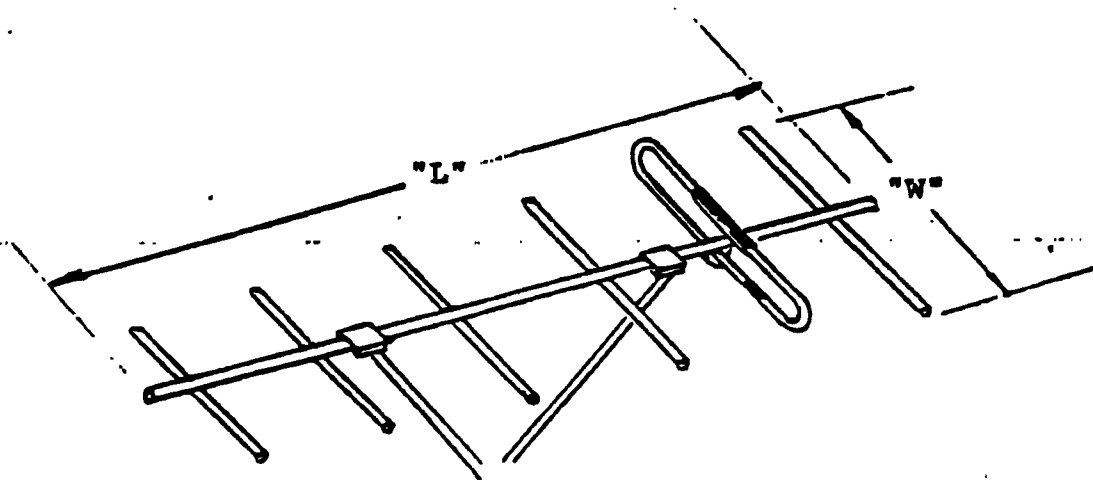
The standard termination on these antennas is a 50 ohm type N male. These have been found to be a good compromise between performance, strength and availability. Every antenna is individually tested for VSWR.

## Mechanical Design

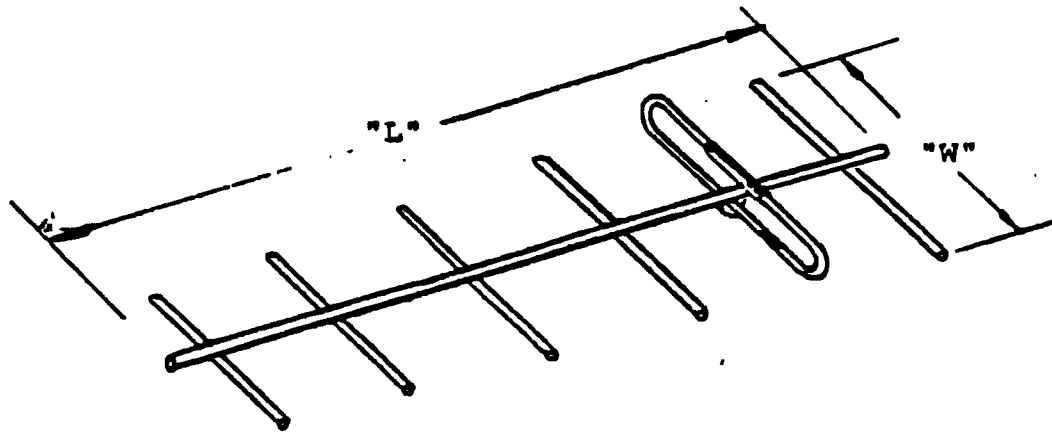
106TV and 206TV antennas are designed to withstand an 85 mph wind with  $\frac{1}{4}$  inch of radial ice coating with a minimum factor of safety of 1.67 as recommended by the EIA. The wind rating without ice is in excess of 110 mph. Ice build-up on Yagi antennas will cause significant detuning. Normal performance will be restored when ice melts. Wind induced vibrations which cause metal fatigue are effectively arrested by special Sinclair designed dampers. These are installed in all parasitic elements on channel 2 to 6 yagis.

Care is taken in material selection to minimise galvanic corrosion. Incompatible couplets such as copper against aluminum or brass against aluminum are isolated with suitable interfacing metals.

Standard finish on Sinclair antennas is natural aluminum. Special anti-corrosion surface coatings such as chromate, anodise, or paint (epoxy or urethane) are available on special order.



CHANNEL	DIM "L"	DIM "W"
2	210"	109"
3	190"	98"
4	174"	90"
5	153"	78"
6	142"	73"



CHANNEL	DIM "L"	DIM "W"
7	69	33 3/8
8	67	32 1/4
9	65	31 1/4
10	63	30 1/4
11	61	29 3/8
12	60	28 1/2
13	58	27 3/4