

# ***XR* "SERIES**

## **100 mph and 5KW Standard, Plug and Play Multi-band Yagis**

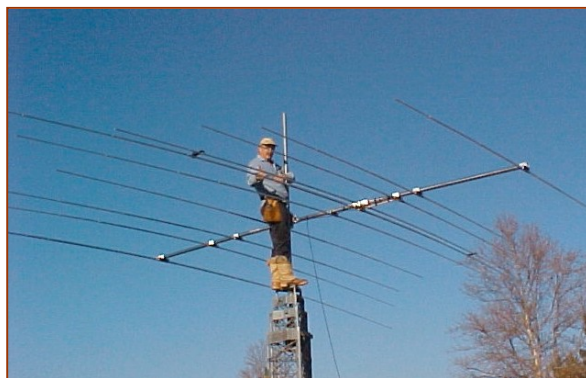
1998 introduced an expanded XR series antennas, with the first *XR* "series antenna, the *C-31XR*, named after Natan, W6XR/2 (Force 12, East), who politely pushed for its completion. The *C-31XR* 31 boom no-trap tribander has quickly become the antenna of choice for those who want the best. The basic design goals have been carried throughout the expanded *XR* line. For 2002, the series now includes the *XR-5* for 20-17-15-12-10 meters.

The *XR* series utilizes multiple monoband Yagis. This is an extension of Force 12 designs that have been in production for several years on antennas such as the C-3, C-3S, C-3SS, 5BA, 4BA, 15/10 duoband Yagis and the C-3XL. Besides utilizing the experience and knowledge of our successful designs, some of the groundwork was based on additional testing using physical models at 2-6GHz. The monoband Yagis are placed onto the same boom, one on top of the other. This must be done carefully; otherwise, the antenna will not perform properly. One key is the right design that will pass energy through elements that are otherwise unfriendly. The *XR* 's that include 40 meters place the 40 meter Yagi in a safe zone towards the rear of the boom. Another key is the feed system. The patented 3-band open sleeve developed by Force 12 for the C-3 and C-3S and the closed sleeve developed for the C-3SS and WARC-7 in 1997 were combined to efficiently feed the *XR* series.

### **Design features on the XR series include:**

- No traps for highest efficiency (no need to estimate trap loss)
- High forward gain and excellent pattern (front to side & F/B)
- Standard 100 mph design (120 optional), booms >150mph
- 5KW+ rating (no traps to worry about)
- Stepped gain on 10 mtrs to assist in stacking (except XR-5)
- Low profile, strong, riveted elements and tapered booms
- Minimal mast torque
- Open space at the center for side mounting

***XR-5*** Wonderful five band coverage with a single feed line is yours with this is new *XR* addition. The *XR-5* is a blend of *XR* and C-series technology overlaying five monoband Yagis for 20-17-15-12-10 meters. An easy to handle 18 boom and one feed line make it a delight. The Force 12 patented open sleeve feed system is utilized to enable one feed line. Weight is 56 pounds, 10 elements, 5KW+ rating. *XR-5* #1 and N6BT shown to the right.



***C-19XR*** This great tribander can be installed by everyone. The *C-19XR* shares the *C-31XR* technology in a smaller footprint. The 19 boom contains three overlaid monoband Yagis: 3el on 20, 3el on 15 and 5el on 10 mtrs, all with a single feedline. The patterns are excellent, as are the forward gain figures. Simple assembly, open area at the center, 100 mph standard, with an overbuilt boom. The *C-19XR* is specifically designed for optimum performance on 20-15-10 mtrs, 11 elements, 5KW+ rating.

***C-31XR*** Back cover, is also a photo of this magnificent tribander that began the *XR* series. It is a product of over 2 years of development to provide an antenna that exceeded the performance of the *C-3* and *C-3XL*. The *C-31XR* is composed of three wide-spaced monobanders overlaid on a 31 boom: 3el on 20 mtrs, 4el on 15 mtrs and 7el on 10 mtrs, for a total of 14 elements. The feed system is an expansion of the patented 3-band system by Force 12, utilizing both open sleeve and closed sleeve techniques. This versatile feed can be used as a single feedline and can be changed in the field to separate feedlines to make maximum use of new transceivers and for multi-operator contesting (remember to use bandpass filters!). 100 mph standard and 120 mph optional, with no increase in windload. 5KW+ rating. The *C-31XR* is the tribander for those who want the best.

***C-49XR*** As written about in the body of this brochure, the *C-49XR* is the "grand daddy" of all 20-15-10 meter Yagis. The *C-49XR* is a 49 boom with 24 elements and a single feedline, convertible to separate feedlines at your convenience. To accomplish the high threshold of performance for the *C-49XR*, new techniques had to be developed. After being in production on the *C-19XR* and *C-31XR*, one would think this was simple not so, unless you consider 15 months simple. This antenna is designed to meet the needs and dreams of having a stack of large monobanders without having the vertical stacking issues. Rated standard 100 mph, available 120 mph (4" & 3" boom).

## **'XR' Series for 40-20-15-10**

**C-39XRN** The **C-39XRN** is an enhanced model of the former **C-36XR**. It now has the incredible **Magnum 240N** that uses the  $\approx$  40 meter elements, so almost the entire band is covered. The boom was extended slightly to 39' and includes the **C-19XR** for 20-15-10 mtrs. The 2 element 40 meter Yagi is wide spaced for excellent gain and pattern. The **C-39XRN** is rated at 100 mph standard, with two feedlines: one for 40 and one for 20-15-10.

**C-51XRN** This is the largest quad-bander ever built. The 51' boom has the fantastic **C-31XR** for 20-15-10, plus the excellent 2el 40 mtr Magnum 240N. The antenna comes crated, because the boom is in long lengths of 4' and 3" diameter tubing. The **C-51XRN** has the Force 12 drop-in tilt cradle mount for ease of installation. The 20-15-10 can use a single feedline, or separates. The **C-51XRN** is rated at 100 mph.

### **XR SERIES SPECIFICATIONS**

Antenna	Boom Length	Wind Load	Frequency in MHz	Gain @74' <sup>1</sup>	Net Gain <sup>2</sup>	F/B Ratio <sup>3</sup>	VSWR <sup>4</sup> (max)	Turning Radius	Wt.	Mast Torque
<b>XR-5</b> 10 el; one 50 ohm feedline 30' open space at center Excellent pattern.	18'	8.5sqft	14.000-14.350	12.6dBi	4.6dBd	16dB	<1.6:1	20.3'	56#	<150in/lb 100 mph rating
			18.068-18.168	12.6	4.6	16	<1.5:1			
			21.000-21.450	12.8	4.8	18	<1.6:1			
			24.890-24.990	12.6	4.5	20	<1.5:1			
			28.000-29.700	12.5	4.4	19	<1.8:1			
<b>C-19 XR</b> 11 el; one 50 ohm feedline 21' open space at center	19'	9.1sqft	14.000-14.350	13.3dBi	5.2dBd	23dB	<1.6:1	20.3'	58#	<150in/lb 100 mph rating
			21.000-21.450	13.1	5.0	24	<1.8:1			
			28.000-29.300	14.1	5.9	20	<1.7: (28.0-29.1)			
<b>C-31 XR</b> 14 el; 1, 2 or 3, 50 ohm feedlines 30' open space at center	31'	10.7	14.000-14.350	14.0dBi	6.0dBd	20dB	<1.7:1	23.8'	82#	<200 in/lb 100 mph rating 120 mph optional
			21.000-21.450	14.3	6.3	22	<1.7:1			
			28.000-29.300	15.6	7.4	21	<1.7: (28.0-29.1)			
<b>C-49 XR</b> 24 el; 1, 2 or 3, 50 ohm feedlines 40' open space at center	49'	17.0	14.000-14.350	15.5dBi	7.6dBd	21dB	<1.6:1	30.9'	159#	<1100 in/lb 100 mph rating 120 mph optional
			21.000-21.450	16.1	8.2	21	<1.7:1			
			28.000-29.300	17.4	9.4	21	<1.7: (28.0-29.1)			
<b>XR 40-20-15-10 meter Yagis (utilize the Magnum 240N for 40 meters):</b>										
<b>C-39 XRN</b> 14 el; two 50 ohm feedlines 30' open space at center 40 mtr adjustable in band	39'	16.8	7.000-7.300	12.5dBi	4.4dBd	19dB pk	250kHz, 2:1	34.8'	180#	<800 in/lb 100 mph rating
			14.000-14.350	13.3dBi	5.2dBd	23dB	<1.6:1			
			21.000-21.450	13.1	5.0	24	<1.8:1			
			28.000-29.300	14.1	5.9	20	<1.4: (28.0-29.1)			
<b>C-51 XRN</b> 16 el; 40 mtr feedline 1, 2, or 3 feedlines 20-15-10 70' open space at center 40 mtr adjustable in band	51'	17.6	7.000-7.300	12.5dBi	4.4dBd	19dB pk	250kHz, 2:1	38.1'	250#	<900 in/lb 120 mph rating
			14.000-14.350	14.0dBi	6.0dBd	20dB	<1.7:1			
			21.000-21.450	14.3	6.3	22	<1.7:1			
			28.000-29.300	15.6	7.4	21	<1.7: (28.0-29.1)			

**1,2,3,4 Footnotes: see Antenna Specifications on pages 8&9 and NOTES on Page 18 for details on specifications.**