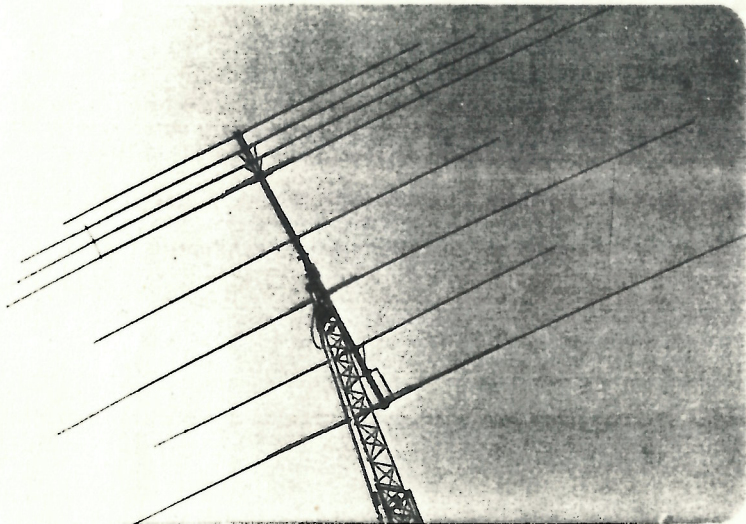


DJ2UT Multiband Trapless Beams

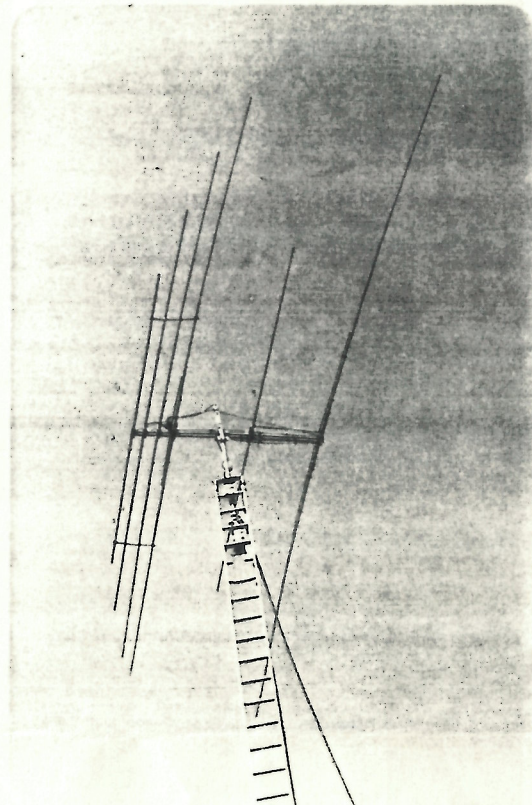
Optionally available in 3 to 7 Band configurations

(U.S.A., European, Japanese Pats. Pending)

SOMMER
Sommer GmbH | Kandelstraße 35
D-7819 Denzlingen | Tel. (0 76 66) 17 04
DJ2UT



XP 507



XP 407



XP 706

Available in USA:

H.J. Theiler Corp. (c/o K14KN)
P.O.Box 5369 HWY 1-85
Spartanburg, SC 29304
(803) 576-5566 Telex 80-9411

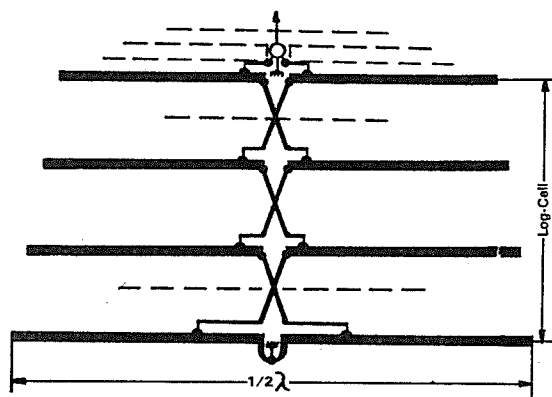
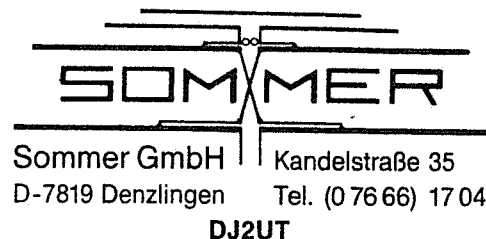
Philosophy

It is well known that typical multiband antenna systems constitute significant compromises in overall performance. Shortened element length, necessitated by the introduction of L/C trap loading, severely limits both the gain and f/b ratio of a conventional triband system. Additionally, L/C traps are prone to significant power losses (heating) at high power levels, and invariably suffer from both short- and long-term effects of changing climate.

*Through nearly a decade of experimentation, DJ2UT has developed a completely new approach to the multiband antenna. His system differs from conventional designs in one very important respect — the traps have been **completely** eliminated. This is in sharp contrast to other manufacturers' approaches — such as "linear loading" the element instead of using coil-type traps. We at Sommer believe that a trap is still a trap — no matter how it is configured. True "monoband" performance from a multiband design can only be achieved by total elimination of the traps. This is our philosophy, and we believe it shall be yours, too — once you experience a Sommer antenna.*

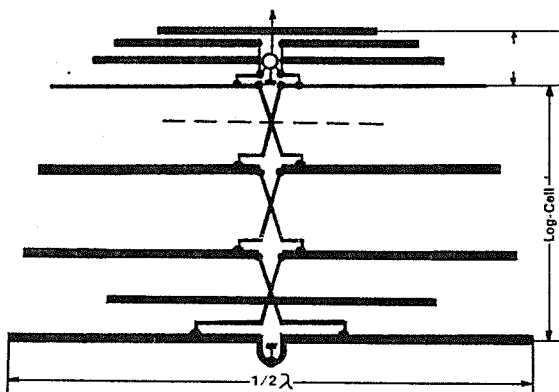
DJ2UT Multiband - System

Working Principle



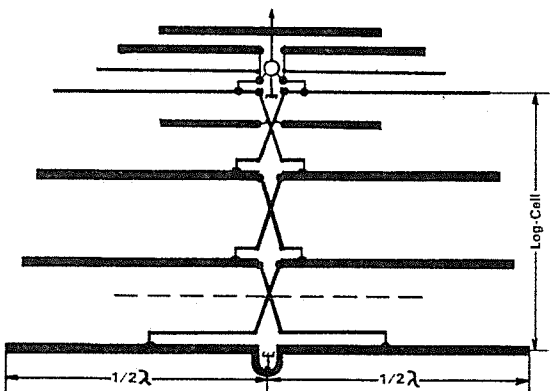
20 m

On this band the DJ2UT system is a full-sized beam utilizing $1/2$ -wave elements without traps. The primary difference is that all elements are driven via a phasing line — in a fashion similar to the log periodic. This technique provides “monoband” gain or better without the narrow bandwidth commonly associated with such antennas. As on all bands, the compromise between forward gain and f/b ratio has been optimized for amateur use through actual on-the-air testing — and not random selection.



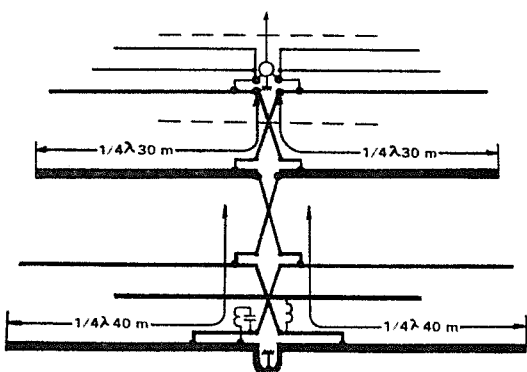
15/17 m

Because the 20-m elements are approximately $5/8$ -wave long on these bands, the resulting high feedpoint impedance must be compensated for. Instead of resorting to “power-hungry” L/C traps DJ2UT utilizes the capacitance found in the phasing line, in combination with another unique approach. Clustered about the feedpoint are 3 or 4 elements (depending on antenna model) in close proximity to each other. This combination of parasitic and driven elements simply and effectively brings the system impedance down to the desired 50 Ohms. In addition, a special means of feeding the elements reduces the unwanted side-lobe radiation common to $5/8$ -wave systems.



10/12 m

Since the primary elements of this design are $1/2$ -wavelength on 20 m, they are approximately a full wavelength on 10 and 12 m. In the DJ2UT system, they are fed via the phasing line as “split” $1/2$ -wavelength elements in a collinear fashion. This configuration also presents a high feedpoint impedance. As on 15/17 m, this high value is reduced to 50 Ohms by the influence of 3 or 4 elements in close proximity, along with an auxiliary 12-m element.



30/40 m

By ignoring all elements but the longest (found at the rear of the boom), we may consider the DJ2UT antenna a simple dipole with a transmission line attached. Since this element, or dipole, is only 11.6 m (approx.) long, it is too short to be resonant on either 30 or 40 m and presents a capacitive reactance at these frequencies. On 30 m, the problem is solved by the simple addition of a L-C-match. Similarly, 40-m compensation is achieved with a coil and/or coaxial capacitor. Since these networks are not in series with the antenna and only serve to cancel the “blind” reactive components, the problems of L/C trap loading are again avoided. It should also be noted that on 30 m, the 3-or 4-element cluster at the feedpoint serves as a director — providing some gain and a cardioid directive pattern in the larger models. On 40 m the antenna has the same bidirectional characteristics as a $1/2$ -wave dipole.

DJ2UT-Multiband Beam

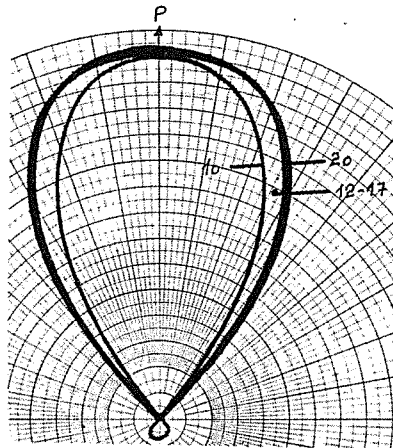
Series XP40 — 2,4 m/8-Foot Boom

10 - 12 - 15 - 17 - 20 - 30 - 40 m

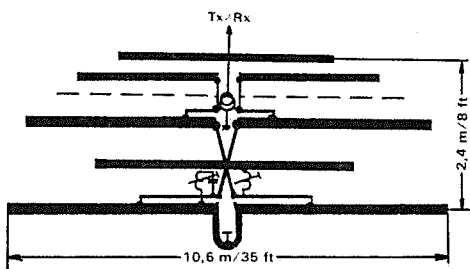
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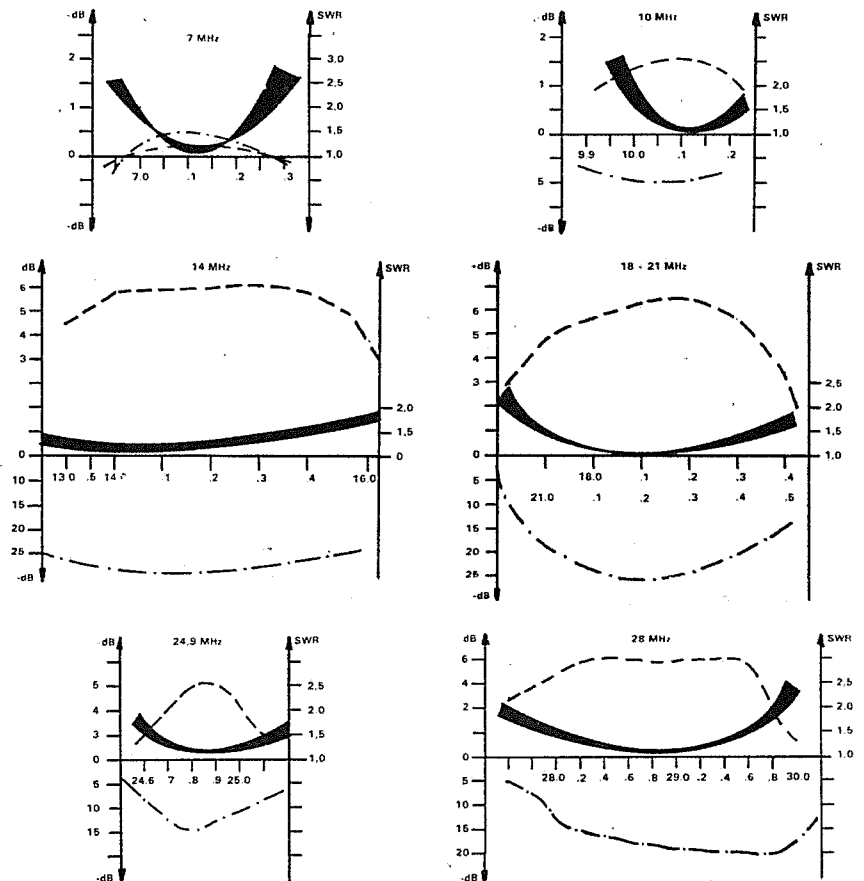
— = SWR
 - - - = Gain
 · · · = f/b-Ratio



Horizontal-Radiation Pattern



(dotted lines = WARC)



The XP40 series beams are the smallest offered in the DJ2UT/Sommer antenna line. With a mere 8-foot boomlength, they are the perfect answers for those with space restrictions. Unlike other "minibeams," the XP40 series maintains high efficiency through the TOTAL elimination of L/C traps. This results in a system that amazingly outperforms conventional, trapped antennas of much larger size. The graphs below illustrate why the XP40 antennas are truly extraordinary.

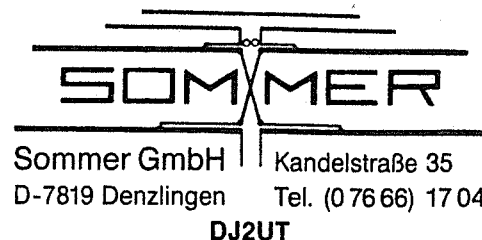
To maintain high performance, every DJ2UT antenna is fed with a model UT-2000 balun (included at no additional cost). This is an air-core device made from high-voltage, Teflon® dielectric coaxial cable. With no ferrite core to saturate, this balun will handle 2 kW output without heating. This allows us to rate all Sommer antennas above maximum legal power — regardless of mode or band.

All XP40 series antennas are built to the same rugged standards as our larger models. Aircraft-quality aluminum tubing is used throughout and all hardware is made of stainless steel. High-quality materials, combined with precision German craftsmanship ensure that your Sommer antenna will provide many years of maintenance-free performance. To back that up, we provide each antenna with a six-month warranty on both materials and labor. We sincerely invite you to experience both our performance and quality.

DJ2UT-Multiband Beam

Series XP50 — 4,4 m/15-Foot Boom

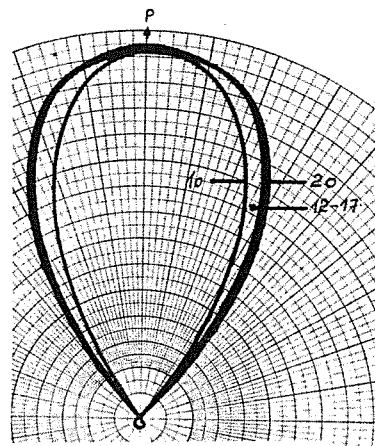
10 - 12 - 15 - 17 - 20 - 30 - 40 m



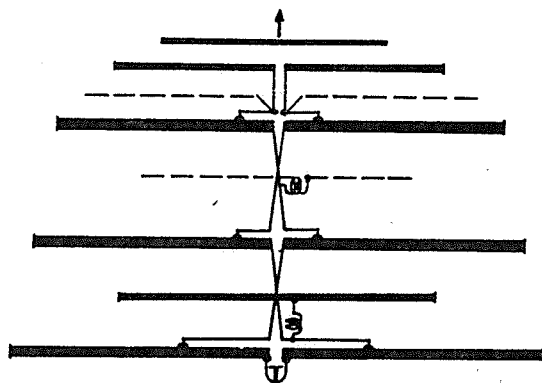
NEW: Heavy duty Boom series XP 50.. US

(Standard in U.S.A.)

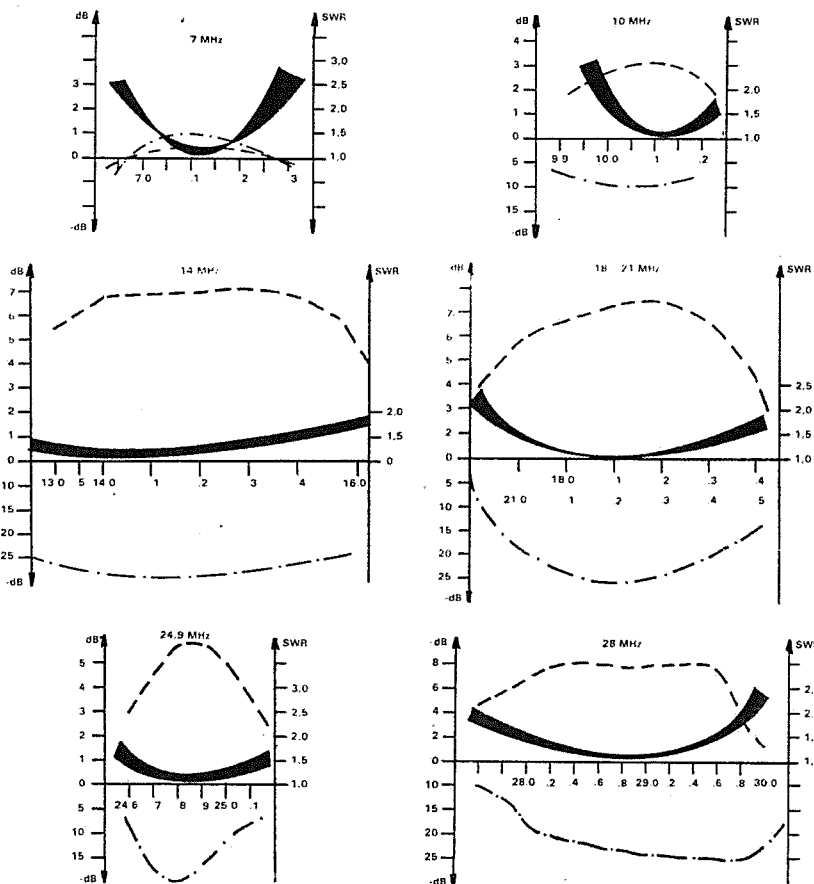
— = SWR
- - - = Gain
- · - · - = f/b-Ratio



Horizontal-Radiation Pattern



(dotted lines = WARC)



The XP50 series beams are intermediate sized and designed to replace conventional 3- and 4-element antennas. Although the boomlength is a modest 15 feet, superb performance is obtained through the TOTAL elimination of L/C traps. Former trapped-antenna owners immediately notice increased signal reports, broader gain and SWR bandwidths, and f/b ratios that are good across the entire band — not just over one small sector. The performance graphs below illustrate the XP50 series.

To maintain high performance, every DJ2UT antenna is fed with a model UT-2000 balun (included at no additional cost). This is an air-core device made from high-voltage, Teflon® dielectric coaxial cable. With no ferrite core to saturate, this balun will handle 2 kW output without heating. This allows us to rate all Sommer antennas above maximum legal power — regardless of mode or band.

All XP50 series antennas are built to very high standards of strength. Aircraft-quality aluminum tubing is used throughout, and all hardware is made of stainless steel. High-quality materials, combined with precision German craftsmanship ensure that your Sommer antenna will provide many years of maintenance-free performance. To back that up, we provide each antenna with a six-month warranty on both materials and labor. We sincerely invite you to experience both our performance and quality.

DJ2UT-Multiband Beam

Series XP70 — 6 m/20-Foot Boom

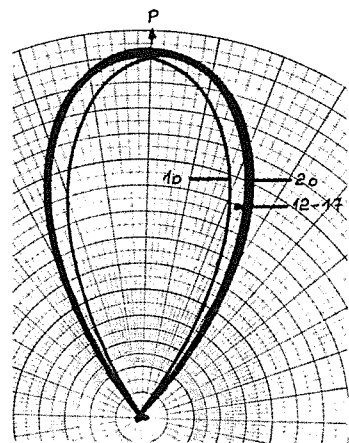
10 – 12 – 15 – 17 – 20 – 30 – 40 m



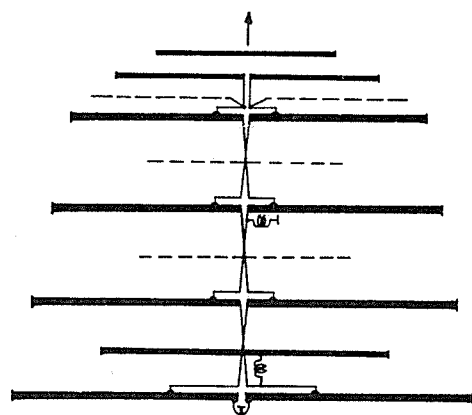
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 D-7819 Denzlingen | Tel. (076 66) 17 04
 DJ2UT

NEW: Heavy duty Boom series XP 70..US (Standard in U.S.A.)

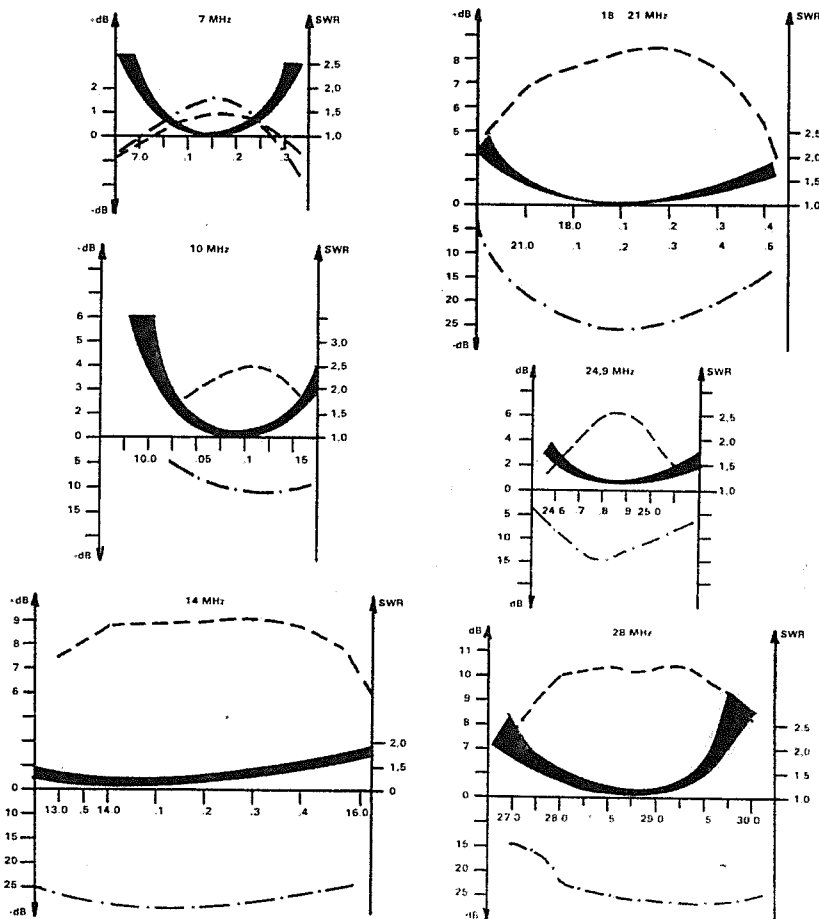
— = SWR
 - - - = Gain
 · · · = f/b-Ratio



Horizontal-Radiation Pattern



(dotted lines = WARC)



The XP70 series beams are designed for the amateur with all-out performance in mind. Although the boom length is only 20 feet, XP70s have easily outpaced much larger, conventional antennas in careful testing. The key to this is the TOTAL elimination of traps, which rob performance from even the largest of multiband antennas. Because of their high efficiency, XP70 series antennas suitably replace 4- and 5-element antennas of conventional design. The graphs below illustrate typical performance of the XP70 series.

To maintain high performance, every DJ2UT antenna is fed with a model UT-2000 balun (included at no additional cost). This is an air-core device made from high-voltage, Teflon® dielectric coaxial cable. With no ferrite core to saturate, this balun will handle 2 kW output without heating. This allows us to rate all Sommer antennas above maximum legal power — regardless of mode or band.

All XP70 series antennas are built to very high standards of strength. Aircraft-quality aluminum tubing is used throughout, and all hardware is made of stainless steel. High-quality materials, combined with precision German craftsmanship, ensure that your Sommer antenna will provide many years of maintenance-free performance. To back that up, we provide each antenna with a six-month warranty on both materials and labor. We sincerely invite you to experience both our performance and quality.

Table of mechanical details Range of values from 3 band to 7 band models

Type **XP403 → XP407** **XP503 → XP507** **XP703 → XP707**

Longest (m)	10,6	10,6	11,2	11,2	11,6	11,6
Element (ft)	34,8	34,8	36,8	36,8	38,1	38,1
Boom-length (m)	2,4	2,4	4,4	4,4	6,0	6,0
(ft)	7,9	7,9	14,4	14,4	19,7	19,7
Turning-radius (m)	5,6	5,6	6,5	6,5	7,0	7,0
(ft)	18,4	18,4	21,3	21,3	23,0	23,0
Max mast-diameter (mm)	52	52	52	52	52	52
(in)	2	2	2	2	2	2
Wind loading (dm ²)	56	68	72	93	85	110
(ft ²)	6	7,3	7,7	10,0	9,0	11,8
Net weight (kg)	20	24	28	34	35	40
± 5% (lbs)	44	53	60	74	77	88
Shipping weight (kg)	22	26	31	37	38	43
(lbs)	48	57	68	81	83	94
Wind survival (km/h)	≥ 128 (12)					
(mph)	80					