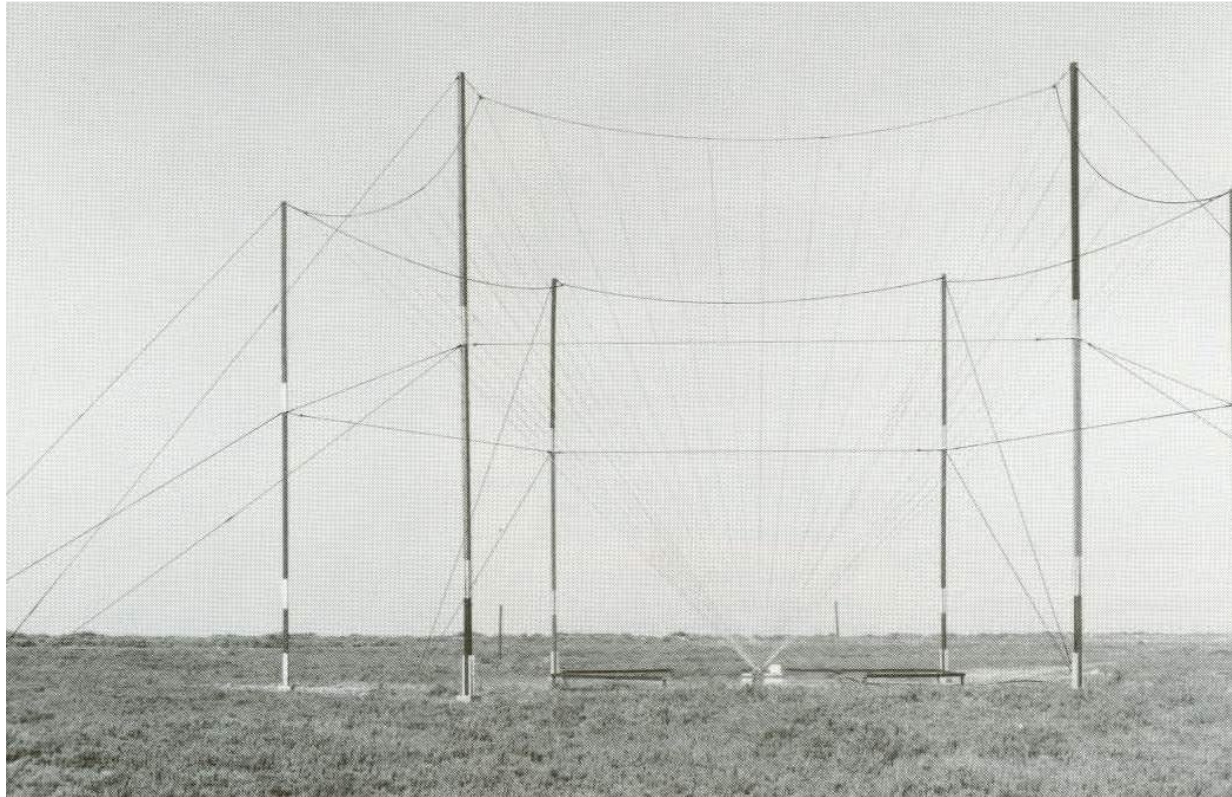


Type 794 Series GRANGER™ MONOCONE™ HF Antennas



- **Wide Range of Frequencies: 2-30; 2.5-30; 3-30 MHz**
- **Up to 40 kW Average, 160 kW Peak Power Rating**
- **Vertical Polarization**
- **Omnidirectional**
- **2.0:1 Maximum VSWR**
- **Low-Angle Radiation Patterns**
- **Short-Range Communications (Groundwave)**
- **Long-Range Communications (Skywave)**

General Description

The 794 Series MONOCONE antenna have been designed for high-power area coverage transmission, and are particularly suited to ship/shore, ground air and HF broadcast applications. The broad frequency range permits us of the optimum frequency for any distance, while the radiation patterns are suitable for skywave propagation at medium and low ranges, supplemented by ground-wave propagation at short ranges. The antennas perform efficiently at all frequencies within the specified ranges. There are no frequencies which must be avoided because of high VSWR, poor radiation patterns or any other causes.

Features

Use with Two or More Transmitters.

The extremely broad frequency range of the 794 Series antennas can be divided into two or more ample sub-ranges, each available to a separate transmitter. For this purpose, a high-power transmitting multi-coupler is available. A typical system is diagrammed in Fig. 2. The multi-coupler does not require tuning, and each transmitter functions within its allotted bandwidth as though the other were not in the circuit. A system coupling four transmitters to the 794 antenna is diagrammed in Figure 3.

Strength and Durability. All exposed materials are highly corrosion resistant-aluminum, copper, epoxybonded fiberglass and stainless steel fittings.

These materials form a simple, symmetrical, flexible structure. Radiators of aluminum-clad stranded steel cables, stronger than any copper or bronze and of equal conductivity, lengthen the service life of an antenna exposed to heavy gusts of wind and continuous vibration. Aluminum protects the steel effectively in highly-corrosive industrial, marine and tropical atmospheres. The steel is protected from nicks or scratches by a coat of aluminum oxide formed by electrolysis. Wherever dissimilar materials must be joined, fittings of non-magnetic stainless steel are used so that corrosive electrolytic action cannot occur.

Ground screens are fabricated of copper radials, brazed to a copper ground plate at the apex of the cone and grounded at the perimeter to copper-clad steel rods driven five feet deep. Guys are epoxy-bonded fiberglass rod, a non-conducting material which cannot distort the radiation pattern. The guys are as strong as steel but far more elastic, enabling them to stretch to relieve wind loads without being permanently elongated. The epoxy binder, unlike many non-metallic materials, will not absorb water and salts; and is thus not subject to becoming conductive nor to burning in fields of intense radiation.

Ease of Installation. The antenna is available for use with either of two types of customer supplied vertical supports: standard utility poles or two-piece poles. It is shipped largely preassembled to facilitate erection. ASC Signal offers engineering services to help the user select an effective

site and to supervise installation. When comprehensive service is desired, ASC will undertake all responsibility for providing a fully-operational antenna system, including specification, siting, installation and field tests.

Radiation Patterns. The elevation plane radiation patterns shown illustrate the capability of the antennas for communication at greatly varying distances. The solid lines are the patterns over perfectly conducting ground for all MONOCONE antennas. Note that at the higher frequencies, generally useful for long-range skywave transmission, radiation is concentrated at the low-elevation angles required. At the lower frequencies, useful for shorter ranges, the patterns show greater gain at the higher angles required for skywave transmission, while preserving sufficient gain at low angles to facilitate groundwave propagation.

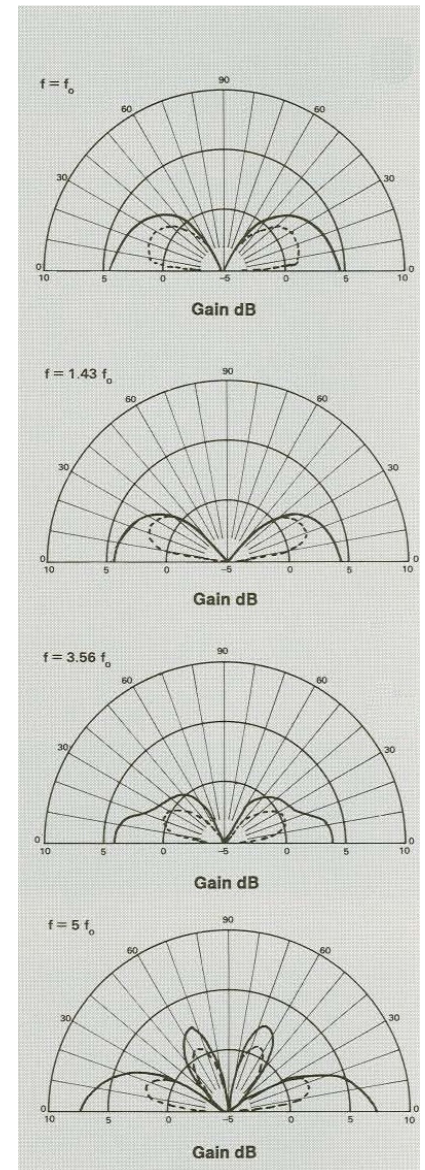
The broken lines show the pattern over average soil for the 2-30 MHz antenna, with the ground screen provided. Patterns for the 2.5-30 MHz and 3-32 MHz antenna will be similar. Average soil is defined to have a conductivity of .012 mhos/meter and a relative dielectric constant of 15.

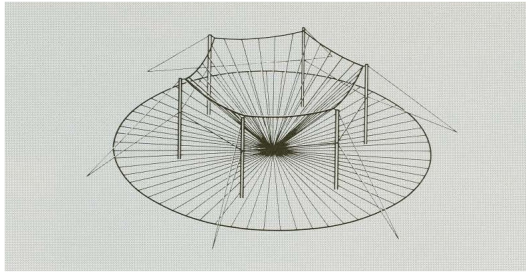
The patterns shown are representative of the entire frequency range. There are no frequencies within the specified ranges at which the pattern deteriorates significantly from those shown.

Accessories

The following accessories are available for ease of installation and maintenance: tower lighting kit, erection kit, paint kit, tool kit, lightning rod kit, anti-climbing kit, and spares kit.

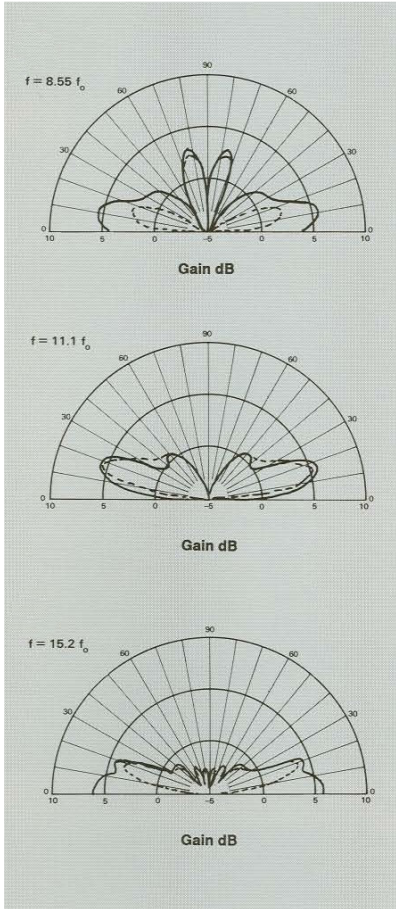
Elevation Plane Radiation Patterns (Gain in dB Relative to Isotropic)





Characteristics

Type	HF MONOCONE
Frequency Range, MHz	2-30, 2.5-32 or 3-32
Power Rating, kW	Up to 40 average, 160 peak
Polarization	Vertical
VSWR	2.0:1 maximum
Azimuth Plane Radiation Patterns	Circular within ± 0.75 dB
Elevation Plane Radiation Patterns	See pages 2 and 3
Wind Survival Rating, mph (km/h)	
Without Ice	120 (190)
With $\frac{1}{2}$ in (12 mm) Radial Ice	100 (160)



Two Transmitters Multicoupled to a Single MONOCONE Antenna for Simultaneous Transmissions

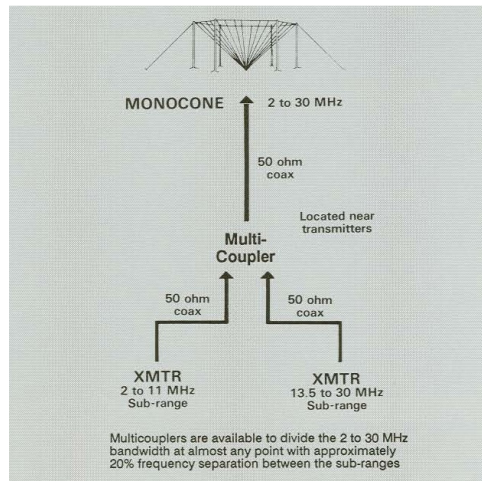


Figure 2

Typical Plot of VSWR vs. Frequency for 3 to 32 MHz MONOCONE

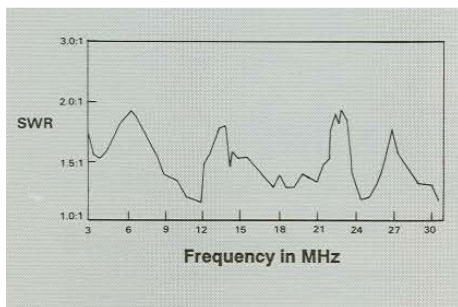


Figure 1

Four Transmitters Sharing a MONOCONE Simultaneously

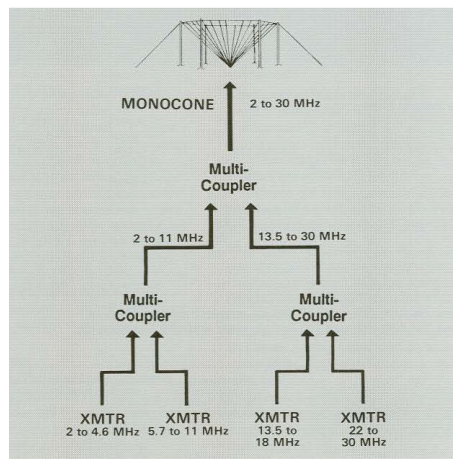


Figure 3

Structural Details and Dimensions

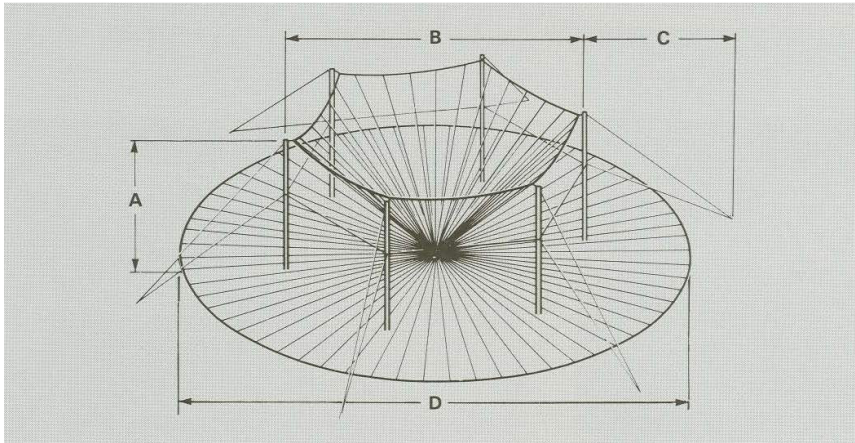


Figure 4

Ordering Information

Type No.	Frequency Range MHz	Power Rating KW Average	Peak	Input Impedance Ohms	Input Connector	Dimensions A Ft (m)	B Ft (m)	C Ft (m)	D Ft (m)
Without Support Poles									
794-101-1	2-30	20	70	50 coaxial	1-5/8 in EIA	71 (22)	140 (43)	70 (12)	246 (75)
794-101-2	2-30	40	160	50 coaxial	3-1/8 in EIA	71 (22)	140 (43)	70 (12)	246 (75)
794-101-3	2-30	Receive Only		50 coaxial	Type N Jack	71 (22)	140 (43)	70 (12)	246 (75)
794-101-4	2-30	3	10	50 coaxial	7/8 in EIA	71 (22)	140 (43)	70 (12)	246 (75)
794-102-1	2.5-32	20	70	50 coaxial	1-5/8 in EIA	57 (17)	112 (34)	56 (17)	196 (60)
794-102-2	2.5-32	40	160	50 coaxial	3-1/8 in EIA	57 (17)	112 (34)	56 (17)	196 (60)
794-102-3	2.5-32	Receive Only		50 coaxial	Type N Jack	57 (17)	112 (34)	56 (17)	196 (60)
794-102-4	2.5-32	3	10	50 coaxial	7/8 in EIA	57 (17)	112 (34)	56 (17)	196 (60)
794-103-1	3-32	20	70	50 coaxial	1-5/8 in EIA	48 (15)	94 (29)	47 (14)	164 (50)
794-103-2	3-32	40	160	50 coaxial	3-1/8 in EIA	48 (15)	94 (29)	47 (14)	164 (50)
794-103-3	3-32	Receive Only		50 coaxial	Type N Jack	48 (15)	94 (29)	47 (14)	164 (50)
794-103-4	3-32	3	10	50 coaxial	7/8 in EIA	48 (15)	94 (29)	47 (14)	164 (50)
With Support Poles									
794-105-1	2-30	20	70	50 coaxial	1-5/8 in EIA	71 (22)	140 (43)	70 (12)	246 (75)
794-105-2	2-30	40	160	50 coaxial	3-1/8 in EIA	71 (22)	140 (43)	70 (12)	246 (75)
794-105-3	2-30	Receive Only		50 coaxial	Type N Jack	71 (22)	140 (43)	70 (12)	246 (75)
794-105-4	2-30	3	10	50 coaxial	7/8 in EIA	71 (22)	140 (43)	70 (12)	246 (75)
794-106-1	2.5-32	20	70	50 coaxial	1-5/8 in EIA	57 (17)	112 (34)	56 (17)	196 (60)
794-106-2	2.5-32	40	160	50 coaxial	3-1/8 in EIA	57 (17)	112 (34)	56 (17)	196 (60)
794-106-3	2.5-32	Receive Only		50 coaxial	Type N Jack	57 (17)	112 (34)	56 (17)	196 (60)
794-106-4	2.5-32	3	10	50 coaxial	7/8 in EIA	57 (17)	112 (34)	56 (17)	196 (60)
794-107-1	3-32	20	70	50 coaxial	1-5/8 in EIA	48 (15)	94 (29)	47 (14)	164 (50)
794-107-2	3-32	40	160	50 coaxial	3-1/8 in EIA	48 (15)	94 (29)	47 (14)	164 (50)
794-107-3	3-32	Receive Only		50 coaxial	Type N Jack	48 (15)	94 (29)	47 (14)	164 (50)
794-107-4	3-32	3	10	50 coaxial	7/8 in EIA	48 (15)	94 (29)	47 (14)	164 (50)

Types 794-101, 102 and 103 include support hardware kits only.

Types 794-105, 106 and 107 include poles and pole hardware kits.