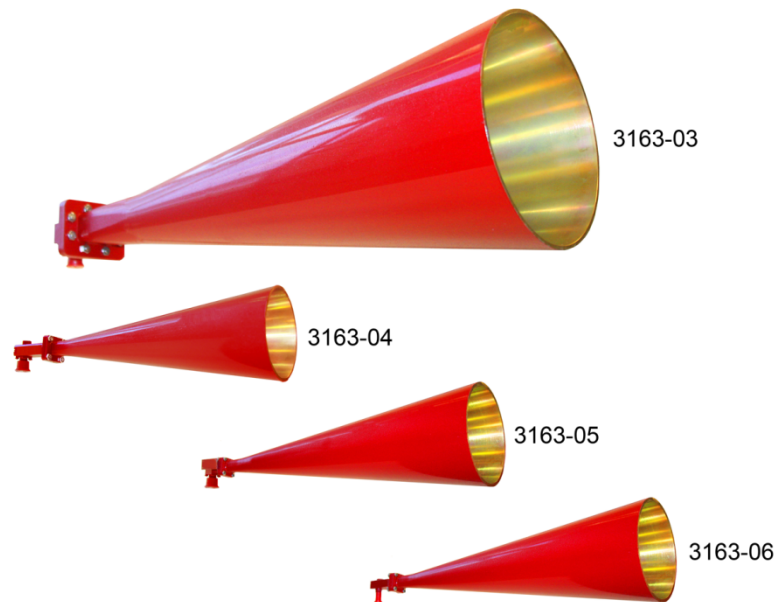


*Model 3163 Series*

# High Gain Conical Horn Antenna

User Manual



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#### **Revision Record**

**MANUAL,3163 SERIES HIGH GAIN CONICL HORN | Part # 399315, Rev. A**

<b>Revision</b>	<b>Description</b>	<b>Date</b>
A	Initial Release	February, 2010

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## Notes, Cautions, and Warnings

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	<b>Note:</b> Denotes helpful information intended to provide tips for better use of the product.
	<b>Caution:</b> Denotes a hazard. Failure to follow instructions could result in minor personal injury and/or property damage. Included text gives proper procedures.
	<b>Warning:</b> Denotes a hazard. Failure to follow instructions could result in SEVERE personal injury and/or property damage. Included text gives proper procedures.



See the ETS-Lindgren *Product Information Bulletin* for safety, regulatory, and other product marking information.

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## 1.0 Introduction

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The **ETS-Lindgren Model 3163 Series High Gain Conical Horns** include these antennas:

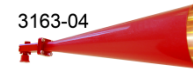
### Model 3163-03

- C Band
- 4 GHz to 8 GHz



### Model 3163-04

- X Band
- 8 GHz to 12 GHz



### Model 3163-05

- Ku Band
- 12 GHz to 18 GHz



### Model 3163-06

- K Band
- 18 GHz to 26.5 GHz



The Model 3163 Series was designed for use as feeds in tapered anechoic chambers, as well as in applications requiring high gain and linear polarization. When back mounted and attached to a rotator at the feed of the taper chamber, the design allows for rotation inside the conical feed sections. Flared angles enable easy positioning along the feed section to obtain the best possible illumination of the Quiet Zone (QZ). The Model 3163 Series exhibits improved reflectivity levels in the QZ of tapered chambers with low VSWR across the range.

The Model 3163 Series exhibits high gain performance, with the 3163-03 C band horn having a gain of 16 dBi or higher across the range. The X band to K band horns exhibit gain increasing from 16.5 dBi to 25 dBi.

The VSWR of the Model 3163 Series is low, with an average level of less than 1.5:1 for most of the range. The VSWR may be higher at the edges of the band but never exceeds 3.2:1.

The Model 3163 Series can be mounted directly into the feed section of a tapered chamber or mounted to a tripod and used in a rectangular chamber. The Model 3163 Series includes a built-in 1/4–20 thread mount, as well as a coaxial to waveguide adapter. For all mounting options available for the Model 3163 Series, see *Mounting Instructions* on page 15.

### **Tripod Options**

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ETS-Lindgren offers the following non-metallic, non-reflective tripods for use at both indoor and outdoor EMC test sites.

- **4-TR Tripod**—Constructed of linen phenolic and delrin, designed with an adjustable center post for precise height adjustments. Maximum height is 2.0 m (80.0 in), and minimum height is 94 cm (37.0 in). This tripod can support up to an 11.8 kg (26.0 lb) load.



- **7-TR Tripod**—Constructed of PVC and fiberglass components, providing increased stability for physically large antennas. The unique design allows for quick assembly, disassembly, and convenient storage. Allows several different configurations, including options for manual or pneumatic polarization. Quick height adjustment and locking wheels provide ease of use during testing. Maximum height is 2.17 m (85.8 in), with a minimum height of 0.8 m (31.8 in). This tripod can support a 13.5 kg (30 lb) load.



### **ETS-Lindgren Product Information Bulletin**

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See the ETS-Lindgren *Product Information Bulletin* included with your shipment for the following:

- Warranty information
- Safety, regulatory, and other product marking information
- Steps to receive your shipment
- Steps to return a component for service
- ETS-Lindgren calibration service
- ETS-Lindgren contact information

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## 2.0 Maintenance

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### CAUTION

Before performing any maintenance, follow the safety information in the ETS-Lindgren *Product Information Bulletin* included with your shipment.



Maintenance of the Model 3163 Series is limited to external components such as cables or connectors.

If you have any questions concerning maintenance, contact ETS-Lindgren Customer Service.

### Annual Calibration

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See the *Product Information Bulletin* included with your shipment for information on ETS-Lindgren calibration services.

### Service Procedures

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For the steps to return a system or system component to ETS-Lindgren for service, see the *Product Information Bulletin* included with your shipment.

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### 3.0 Specifications

#### Electrical Specifications

	3163-03	3163-04	3163-05	3163-06
<b>Frequency Range:</b>	4 GHz to 8 GHz	8 GHz to 12 GHz	12 GHz to 18 GHz	18 GHz to 26.5 GHz
<b>VSWR Ratio (Avg):</b>	3.2:1 Max 1.5:1 Avg	2.5:1 Max 1.5:1 Avg	2:1 Max 1.25:1 Avg	2:1 Max 1.25:1 Avg
<b>Maximum Continuous Power:</b>	250 Watts	250 Watts	200 Watts	50 Watts
<b>Impedance (Nominal):</b>	50 $\Omega$	50 $\Omega$	50 $\Omega$	50 $\Omega$
<b>Connectors:</b>	Type N (F)	Type N (F)	Type N (F)	SMA (F)

#### Physical Specifications

	3163-03	3163-04	3163-05	3163-06
<b>Length (Without Mount):</b>	60.0 cm 23.5 in	37.0 cm 14.6 in	39.0 cm 15.3 in	38.0 cm 14.8 in
<b>Aperture Diameter:</b>	17.8 cm 7.0 in	10.2 cm 4.0 in	10.2 cm 4.0 in	10.2 cm 4.0 in
<b>Weight:</b>	1.8 kg 4.0 lb	0.5 kg 1.2 lb	0.6 kg 1.4 lb	0.5 kg 1.2 lb

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## 4.0 Mounting Instructions

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### CAUTION

Before connecting any components, follow the safety information in the ETS-Lindgren *Product Information Bulletin* included with your shipment.

### CAUTION

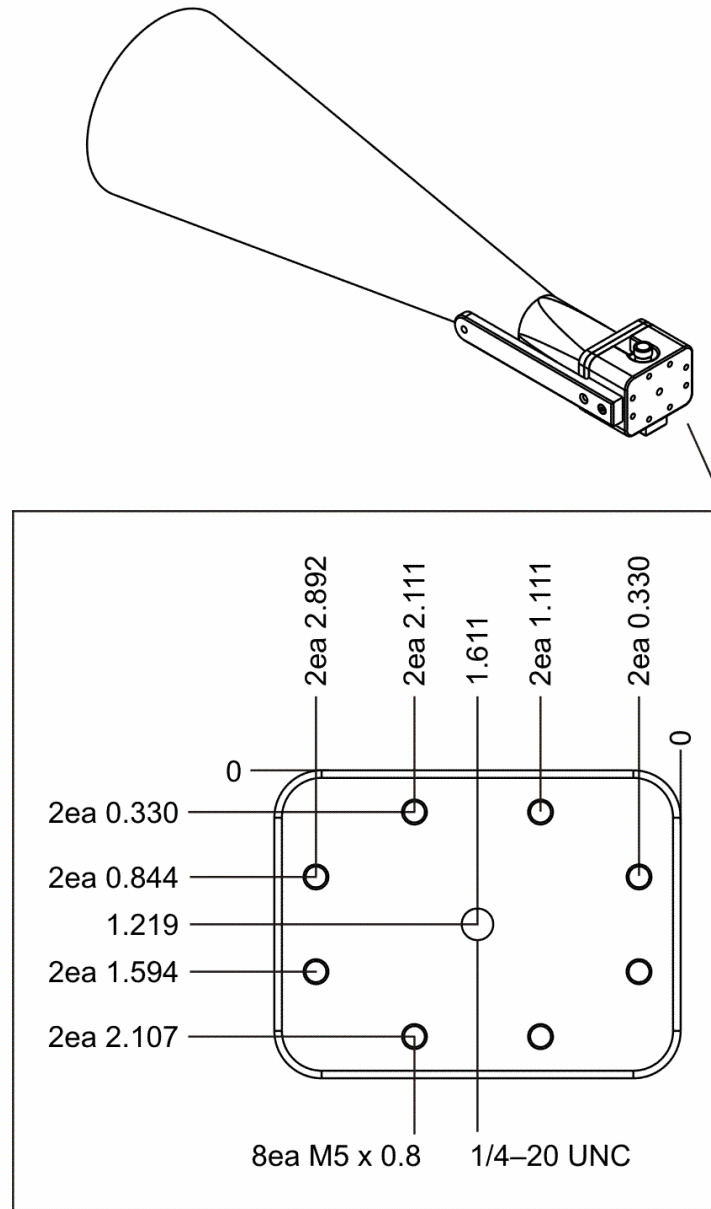
The Model 3163 Series antennas are precision measurement devices. Handle your antenna with care.

### Backplate Diagrams for Custom Mounts

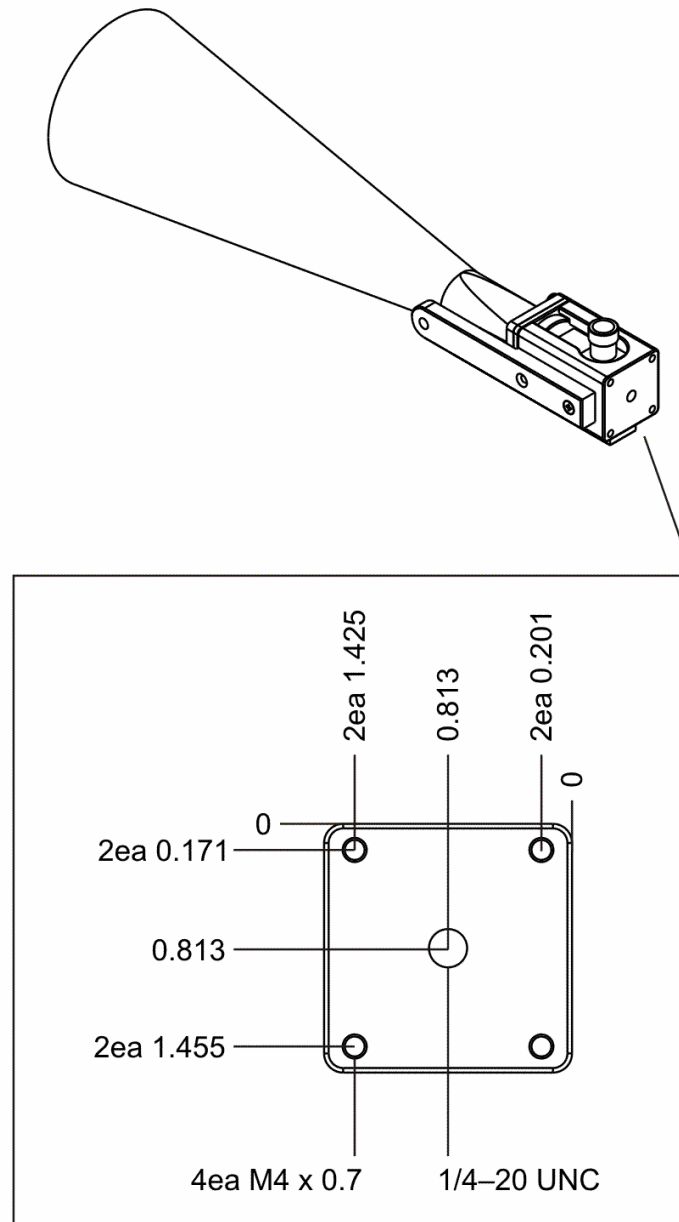
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The backplate on each Model 3163 Series High Gain Conical Horn provides threaded holes for mounting directly into the feed section of a tapered chamber. Additionally, you can use the threaded holes to create your own custom mounting solution. Following is the backplate diagram for each Model 3163 Series horn.

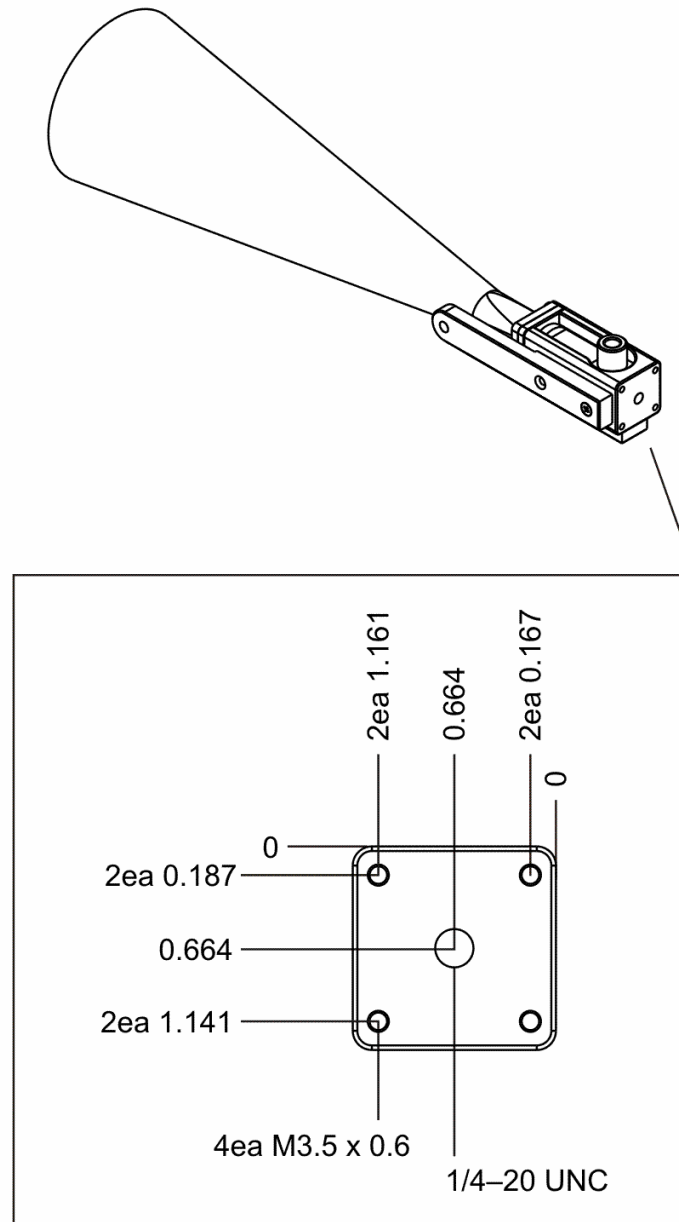
**MODEL 3163-03**



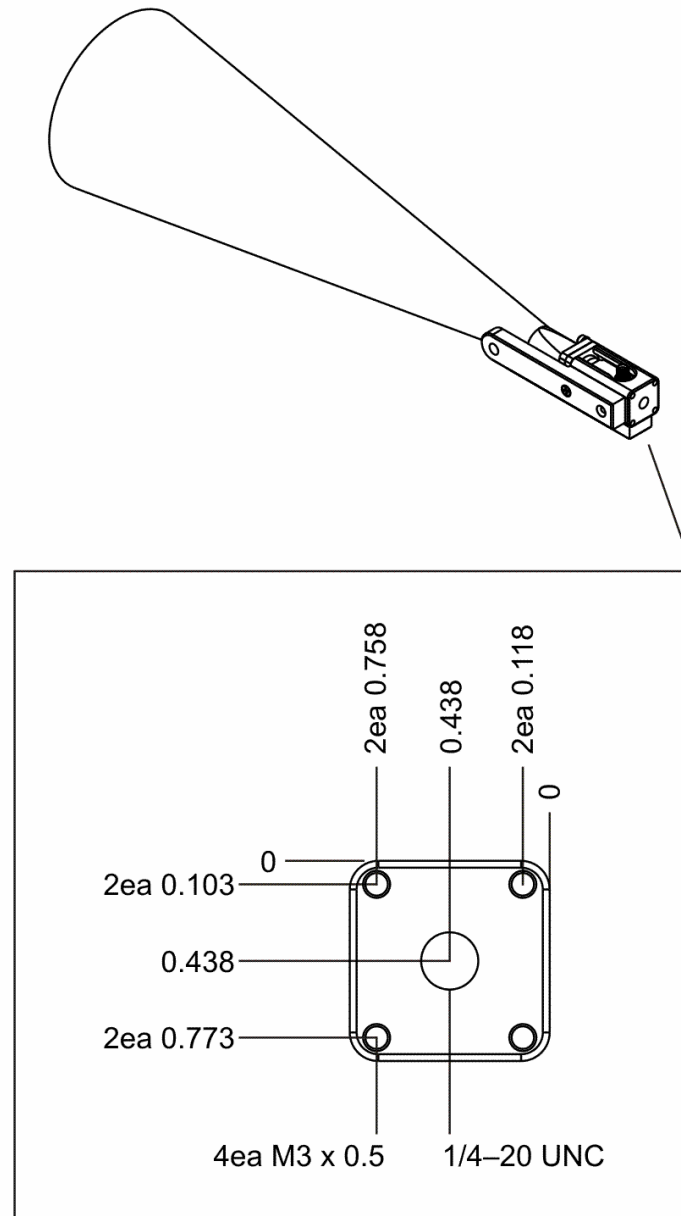
**MODEL 3163-04**



**MODEL 3163-05**



**MODEL 3163-06**



## 4-TR Mounting Options

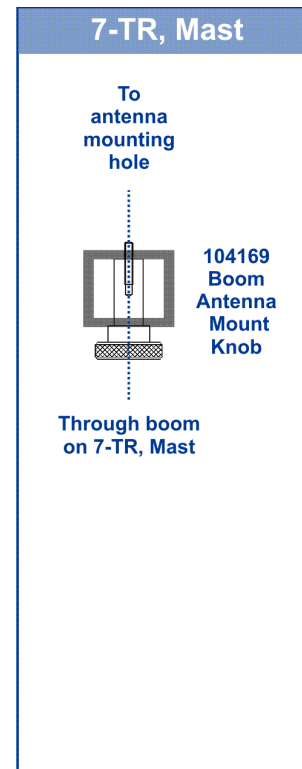
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The Model 3163 Series High Gain Conical Horns include a built-in 1/4–20 thread mount for connecting directly to an ETS-Lindgren 4-TR Tripod. No additional hardware is required.

## 7-TR and Mast Mounting Options

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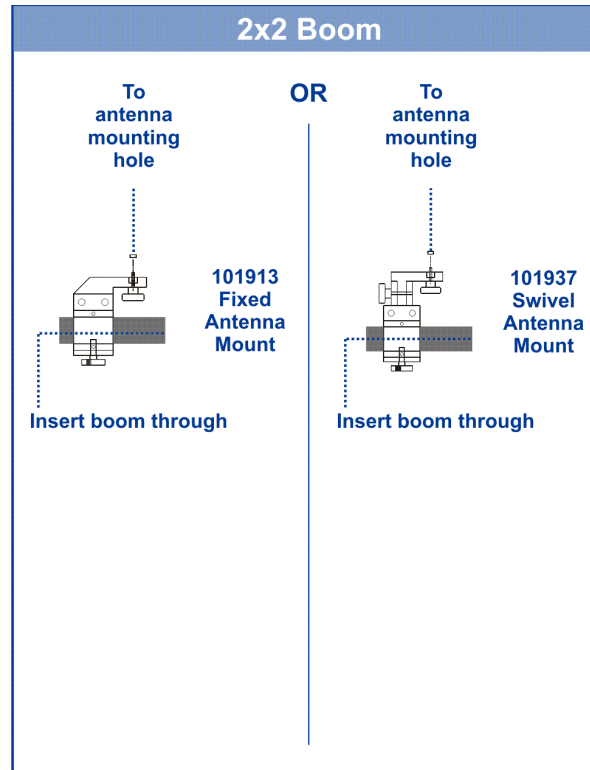
In addition to the 1/4–20 thread mount attached to the Model 3163 Series, here is an additional option for mounting onto an ETS-Lindgren 7-TR Tripod or mast. Contact the ETS-Lindgren Sales Department for information on ordering optional mounting hardware.





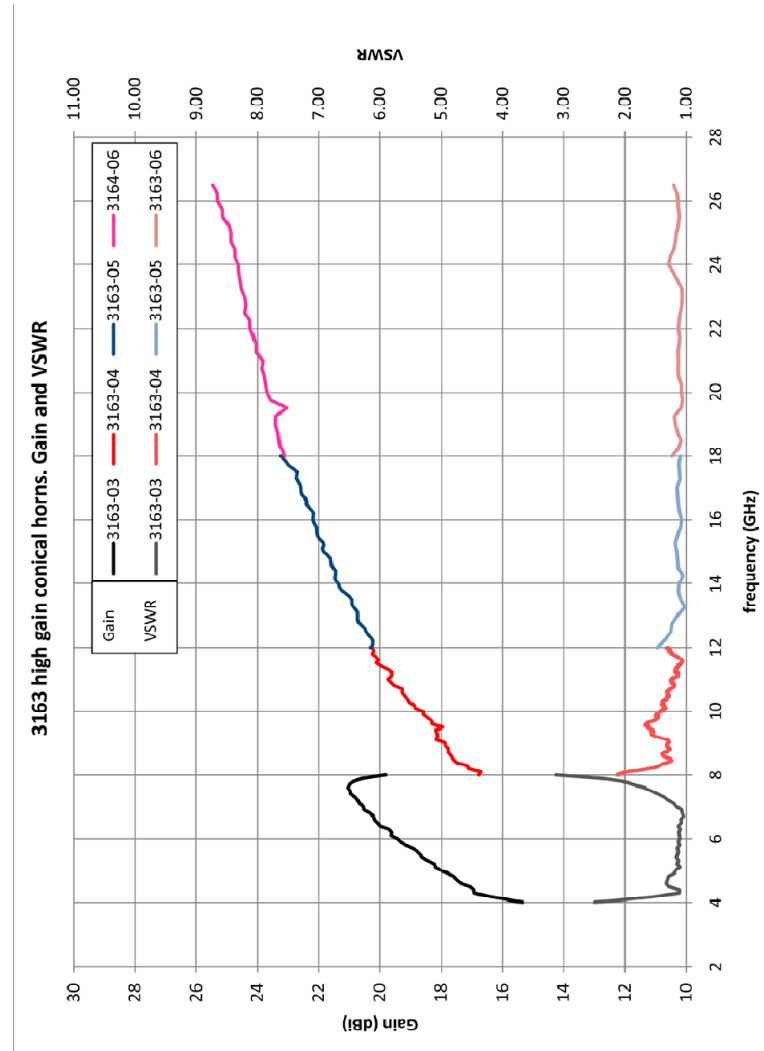
## 2x2 Boom Mounting Options

Following are additional options for mounting the Model 3163 Series onto a 2x2 boom. Contact the ETS-Lindgren Sales Department for information on ordering optional mounting hardware.



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## 5.0 Typical Data



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## Appendix A: Warranty

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See the *Product Information Bulletin* included with your shipment for the complete ETS-Lindgren warranty for your Model 3163 Series.

### DURATION OF WARRANTIES FOR MODEL 3163 SERIES

All product warranties, except the warranty of title, and all remedies for warranty failures are limited to two years.

Product Warranted	Duration of Warranty Period
Model 3163 Series High Gain Conical Horns	2 Years