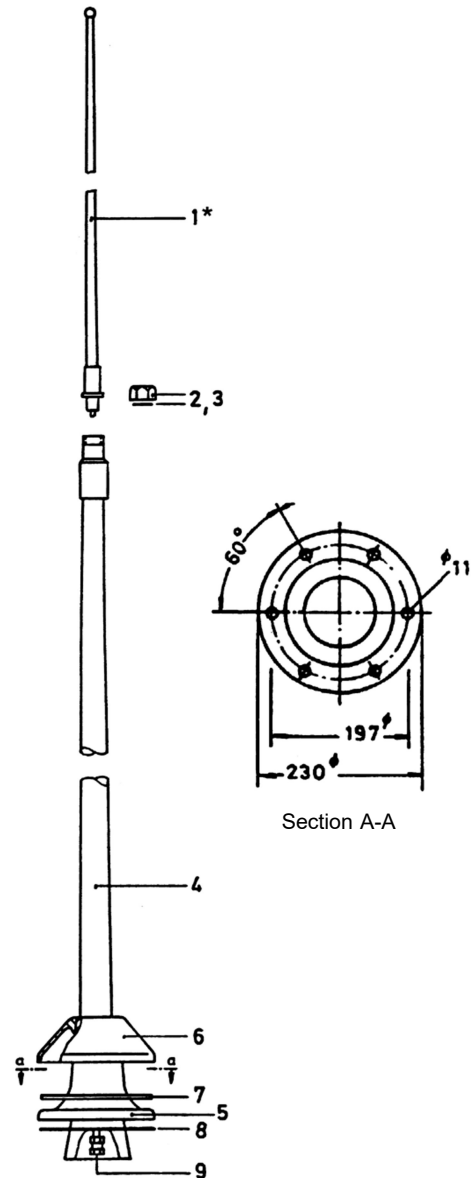


# Mastantennen / Mast-Antennas

STA 40 M, STA 50 M, STA 60 M

## Specification

<b>Frequency range</b>	100 kHz – 30 MHz (receive)
<b>RF power</b>	15 kV eff.
<b>Insulation</b>	$> 10^7$ Ohm
<b>Polarization</b>	vertical
<b>Characteristic</b>	omnidirectional
<b>Radiator</b>	diameter 65 mm (lower section)
<b>Length</b>	STA 40 M - approx. 3940 mm STA 50 M - approx. 4940 mm STA 60 M - approx. 5940 mm
<b>Weight</b>	STA 40 M - approx. 11.5 kg STA 50 M - approx. 12.0 kg STA 60 M - approx. 12.5 kg
<b>Color</b>	light grey, similar to RAL 7035
<b>Deflection at 150 km/h wind</b>	STA 40 M - less than 165 mm STA 50 M - less than 380 mm STA 60 M - less than 870 mm
<b>Max. Bending Stress at Base Insulator</b>	STA 40 M - 990 Nm) STA 50 M - 1230 Nm) STA 60 M - 1510 Nm) represents 8 m/s <sup>2</sup> acceleration plus 200 km/h wind
<b>Ambient Temperature</b>	-40° ... 50° C
<b>Storage Temperature</b>	-40° ... 60° C



## Application

This antenna is intended to meet the requirements of maritime mobile services. It is ideally suited for extreme climatic and operational conditions, where these antennas guarantee max. strength, stiffness and reliability. It requires very low maintenance. The antenna mainly operates as a vertically polarized radiator with an omnidirectional pattern. It can be used as both transmitting and receiving antenna.

Receiving antennas may be equipped with wideband toroidal core matching transformers types EAU 60/240 resp. EAU 60/240/II as per data sheet.

- 1\* STA 40 M: upper section STA 10 HV/M
- 1\* STA 50 M: upper section STA 20 HV/M
- 1\* STA 60 M: upper section STA 30 HV/M
- 2 Locking nut
- 3 O-Ring
- 4 Lower Section, complete with:
- 5 Base insulator
- 6 Insulator cap with water-protected area
- 7 Thrust collar
- 8 Sailing ring
- 9 Clamping cone Ø 6
- 10 Base flange detail

STA = Rod Antenna  
E = Receiving Rod Antenna  
EAU = Transformer

K = Tilt  
TR = reinforced  
SE = Transmit Antenna

SSB = internal feeding  
SSB/E = external feeding  
PM/M = dark grey (similar to RAL 7000)

NDB = Non Directional Radio Beacon



# Mastantennen / Mast-Antennas

STA 40 M, STA 50 M, STA 60 M

## Mechanical Specification

### Design

This very robust antenna is the result of decades long experience with glassfibre reinforced synthetic resins. The electrolytic copper radiators are embedded into the resin laminate.

The antennas consist of two sections. The lower section with its base insulator has a length of approx. 3 m. This self-supporting lower “mast” section is connected with the upper section by means of a junction assembly. Upper sections are available with lengths of 1, 2 and 3 meters.

The antenna is absolutely non-magnetic.

### Required Space

Only a minimum of space is required for this self-supporting out-standing stiff antenna construction, mounted on a base flange of 230 mm diameter.

On board of ships the antenna shall be mounted in a sloping position from 5 to 15° in order to avoid oscillation.

### Environmental

Due to the extraordinary chemical resistance of the glassfibre reinforced material the antenna withstands any known marine environmental stress.

### Maintenance

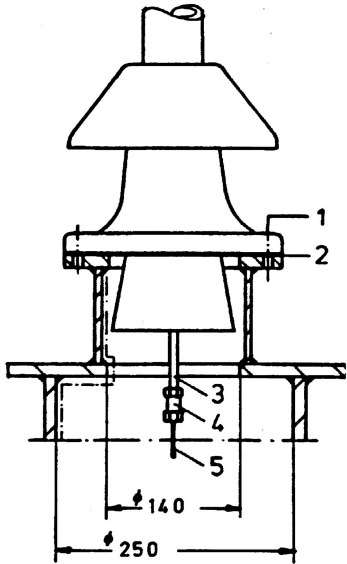
Negligible: The antenna shall be cleaned from time to time with sweet water. In case of oily soil, please, add self-detergents to the water.

### Spare Parts List

Position	Designation	Order-Code
1	STA 40 M	E 107-606
1	STA 50 M	E 107-607
1	STA 60 M	E 107-608
1*	upper section:	
	STA 10 HV/M (STA 40 M)	E 107-145
	STA 20 HV/M (STA 50 M)	E 107-146
	STA 30 HV/M (STA 60 M)	E 107-125
2	Locking nut	E 107-224
3	O-Ring	E 107-245
4	Lower Section (complete)	E 107-429

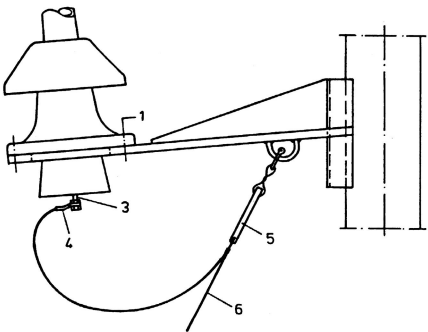
ELNA reserves the right to make changes in specifications without notice.

## Installation Proposal



- 1 Hexagon screw M 10 – DIN 933-A2
- 1 Washer 10.5 – DIN 125-A2
- 1 Self-locking hexagon nut M 10 – DIN 985-A2
- 2 Sealing
- 3 Axial-lengthening
- 4 Clamp-cone
- 5 Cu-tube 6 dia

..... to be insulated to avoid condensation of water



- 1 Hexagon screw M 10 – DIN 933-A2
- 1 Washer 10.5 – DIN 125-A2
- 1 Self-locking hexagon nut M 10 – DIN 985-A2
- 3 Axial-lengthening
- 4 Terminal
- 5 Insulator
- 6 Stranded wire 4-8 dia

pos. 1, Tightening torque max. 20 Nm

# Antennenübertrager / Antenna Matching Transformer

EAU 60/240/II

## Application

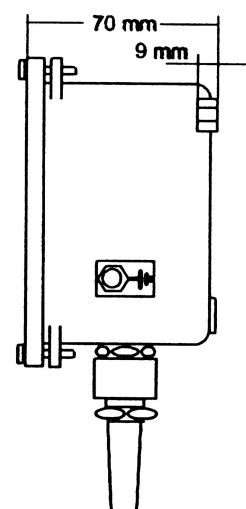
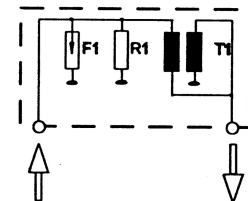
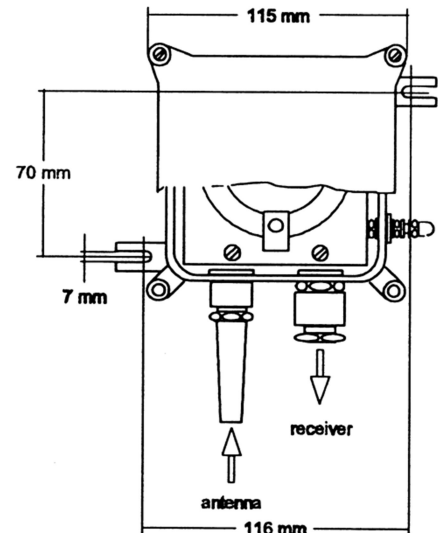
When the antenna transformer is used, short rod or wire antennas (3 to 15 m) can be connected to a coaxial cable. The antenna transformer considerably improves the efficiency of the receiving antenna, particularly in the lower frequency range, and protects the receiver from static charges. Because of the high RF power limit of 100 W, the antenna transformer can also be used for receiving antennas which have been set up close to transmitting antennas.

## Specification

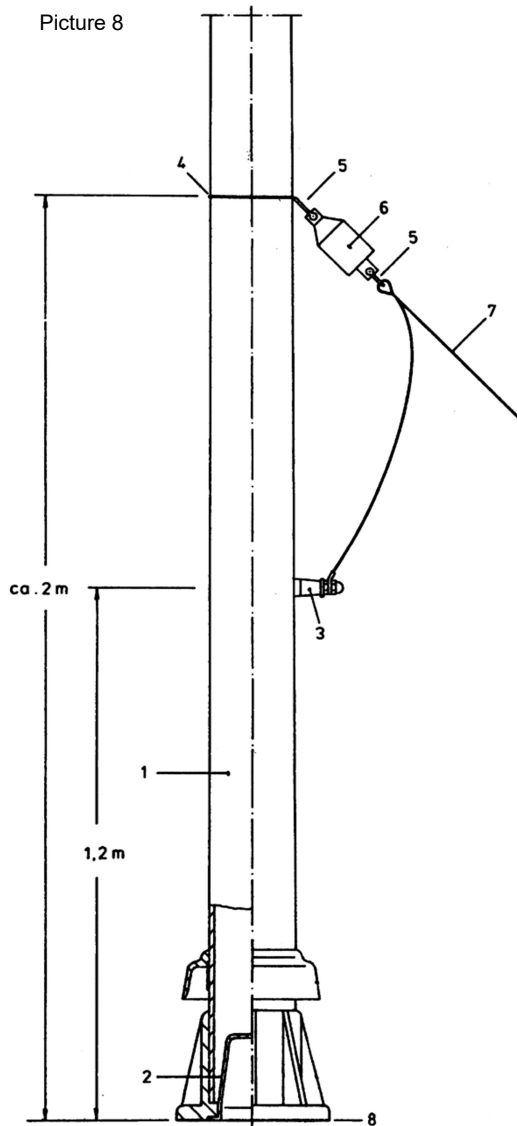
<b>Dimensions (w x h x d)</b>	115 x 115 x 70 mm
<b>Weight</b>	1.9 kg
<b>Ambient temperature</b>	-40 ... +70°C
<b>Storage temperature</b>	-50 ... +80°C
<b>Protecting rating</b>	IP 56 (vertical installation recommended)
<b>Material of casing</b>	bronze-cast
<b>Color EAU 60/240/II</b>	RAL 7000
<b>Cable inlet (antenna side)</b>	cable screw joint PG 13.5 and insulator for antenna litz wire 7x7x0.5 Ø = 4.5 mm
<b>Cable outlet (receiver side)</b>	cable screw joint SHV-Erko 16/11/8 for coax cable RG 213/214 U
<b>Frequency range</b>	0.1 – 30 MHz
<b>Max. permissible RF-power</b>	100 W
<b>Output impedance</b>	50 ... 75 Ω
<b>Transformer attenuation</b>	< 1 dB
<b>Lightning arrester</b>	230 V

<b>Part-No.</b>	E 107 965
<b>NSN</b>	5985-12-190-2099

All data indicated without tolerance are approximate values.

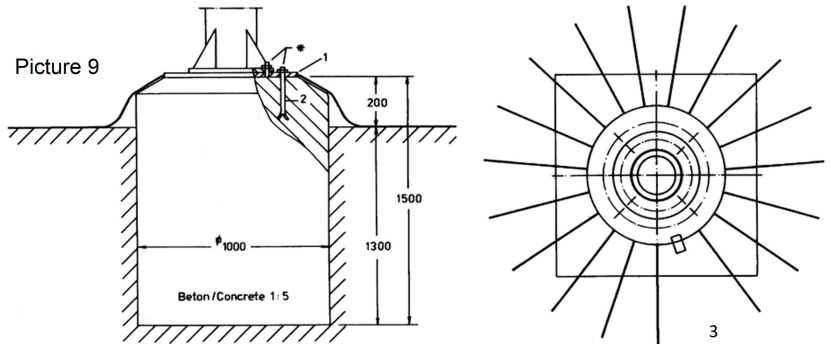


## External feeding STA ... PM/E



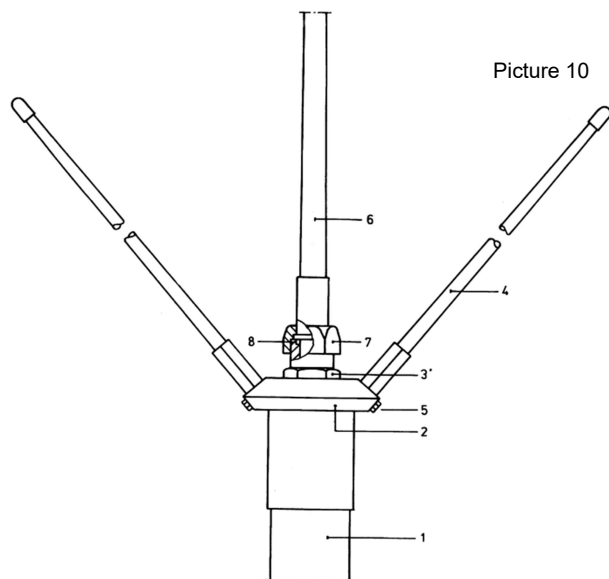
- 1 Lower section US 80 PM/E
- 2 Sealing cap
- 3 Lead-in insulator P 6
- 4 Holding rope
- 5 Shackle
- 6 Insulator
- 7 Wire feeder
- 8 Flat gasket

## Concrete basement for STA ... PM/E



- 1 Foundation plate 8 A
- 2 Stone bold M 16 x 200 - DIN 529 (8x)
- 3 Counter poise CP 18 (18 radials 15 m length)
- \* Tightening torque  $M_A = 160 \text{ Nm}$

## STA ... PM/D4/ ...



- 1 Lower section US 80 PM
- 2 Top fork capacity disk DK 4
- 3 Holding nut for DK 4
- 4 Top fork capacity STA ... D (4x)
- 5 Locking screw M 6 x 10 DIN 933 - stainless steel (4x)
- 6 Upper section STA ... HV
- 7 Locking nut for upper section
- 8 O-ring Ø 29.1 x 2.55

STA = Rod Antenna  
E = Receiving Rod Antenna  
EAU = Transformer

K = Tilt  
TR = reinforced  
SE = Transmit Antenna

SSB = internal feeding  
SSB/E = external feeding  
PM/M = dark grey (similar to RAL 7000)

NDB = Non Directional Radio Beacon

# Mastantennen / Mast-Antennas

STA 105 - 140 PM/M

With supporting pipes and tilting mechanisms (our tilting flange K 8 is shown on picture 7), these antennas can be used in a wide range of installation setups. An illustration of available ground networks is shown in picture 9.

RF power is being injected through the base of the antenna as a standard (internal feeding as per picture 4). It is, however, also possible to supply the antennas as model STA ... PM equipped for external feeding according to picture 8.

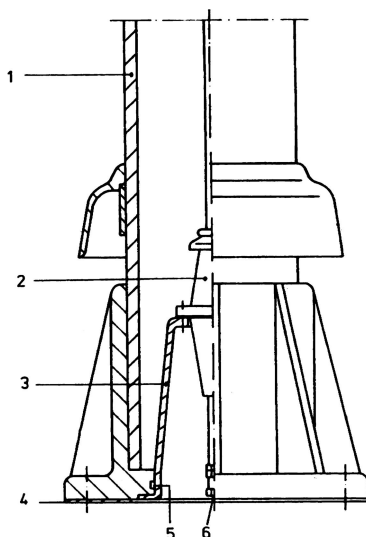
The externally fed equipment is marked with the additional letter "E" within the type designation (STA ... PM/E).

To improve the antennas' efficiency at low frequencies (1.5 - 4.5 MHz), it is possible to install an additional top fork capacitance on the top of the lower section US 80 PM (see picture 10).

This top fork capacitance consisting of four antenna rods with a length of 200 resp. 300 cm each. It can also be added supplementary at a later time to an existing ELNA antenna installation.

## Internal feeding

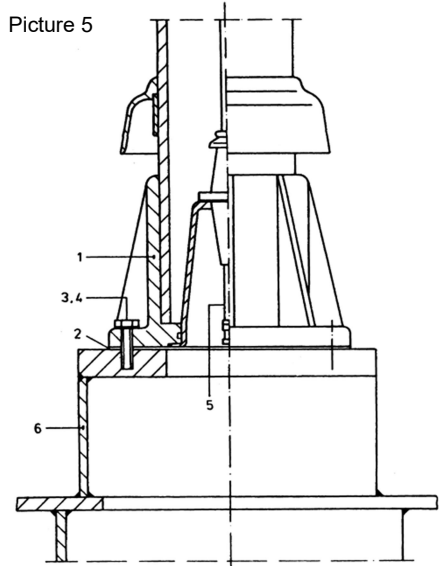
Picture 4



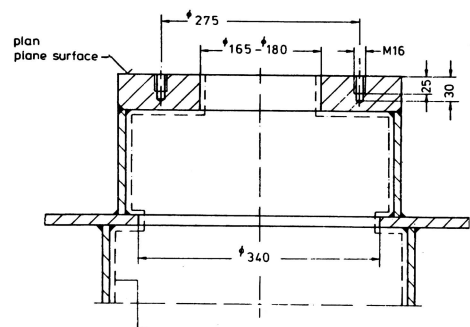
- 1 Lower section US 80 PM
- 2 Lead-through insulator P 75-1
- 3 Insulator holding device
- 4 Sealing
- 5 O-ring  $\varnothing 129.8 \times 3.53$
- 6 Clamping cone  $\varnothing 6$

## Mounting Proposal

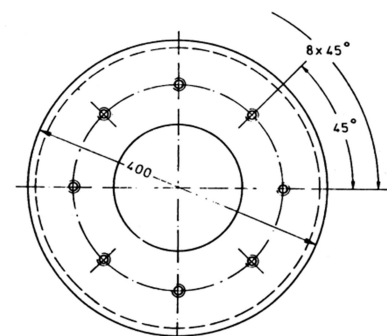
Picture 5



- 1 Pedestal
- 2 Sealing
- 3 Hexagon screw M 16 x 50  
DIN 931-A2 (8x)  
Tightening torque  $M_A = 160 \text{ Nm}$
- 4 Disk B 17 DIN 125-A2 (8x)
- 5 Internal feeder with clamping cone  $\varnothing 6$
- 6 Platform



to be insulation to avoid condensation of water



### Specification

<b>Frequency range</b>	1.5 - 30 MHz (transmit) 1.1 - 30 MHz (receive)
<b>RF power</b>	1 kW
<b>Insulation</b>	$> 10^7$ Ohms
<b>Polarization</b>	vertical
<b>Characteristic</b>	omnidirectional
<b>Length ** (Picture 1)</b>	STA 105 PM: approx. 10.5 m (c. 35.0 ft.) STA 110 PM: approx. 11.0 m STA 120 PM: approx. 12.0 m (c. 40.0 ft.) STA 140 PM: approx. 14.0 m (c. 46.7 ft.)
<b>Weight</b>	STA 105 PM, approx. 61.0 kg STA 110 PM, approx. 62.0 kg STA 120 PM approx. 62.0 kg ) $\pm$ 2.5 kg STA 140 PM, approx. 68.0 kg
<b>Color</b>	light grey, like RAL 7035 or grey, like RAL 7000 (STA ... PM/M)
<b>Temperature range</b>	-40° ... +70° C
<b>Deflection at 150 km/h wind</b>	STA 105 PM - approx. 1.10 m STA 110 PM - approx. 1.30 m STA 120 PM - approx. 1.50 m STA 140 PM - approx. 2.50 m
<b>Max. bending moment at antenna base</b>	1300 daNm (represents 8 m/s acceleration plus 140 km/h wind)
<b>Static Capacitance *)</b>	STA 105 PM - 127 pF STA 110 PM - 130 pF STA 120 PM - 135 pF STA 140 PM - 147 pF

\*) Can be increased by adding a top fork capacitance as per picture 10.

STA = Rod Antenna

E = Receiving Rod Antenna

EAU = Transformer

K = Tilt

TR = reinforced

SE = Transmit Antenna

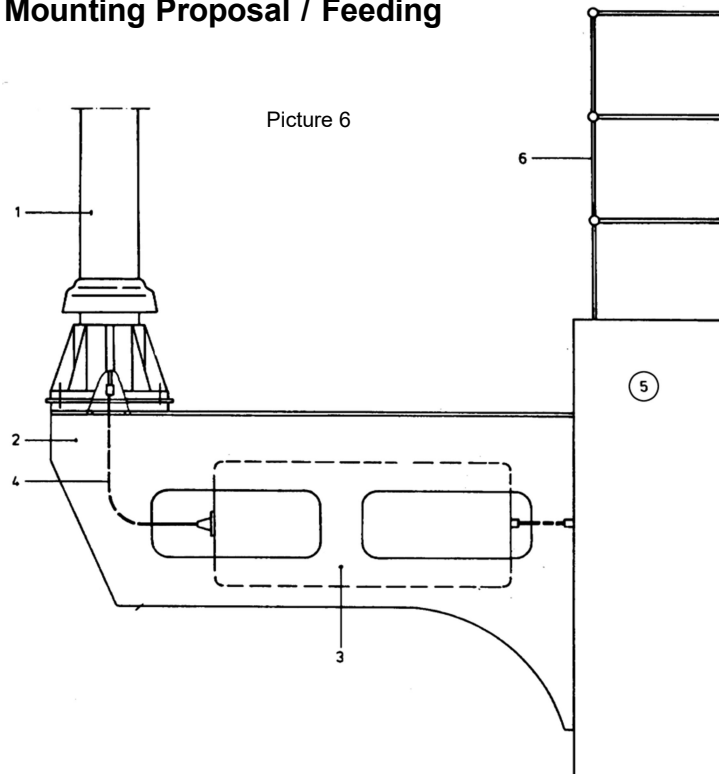
SSB = internal feeding

SSB/E = external feeding

PM/M = dark grey (similar to RAL 7000)

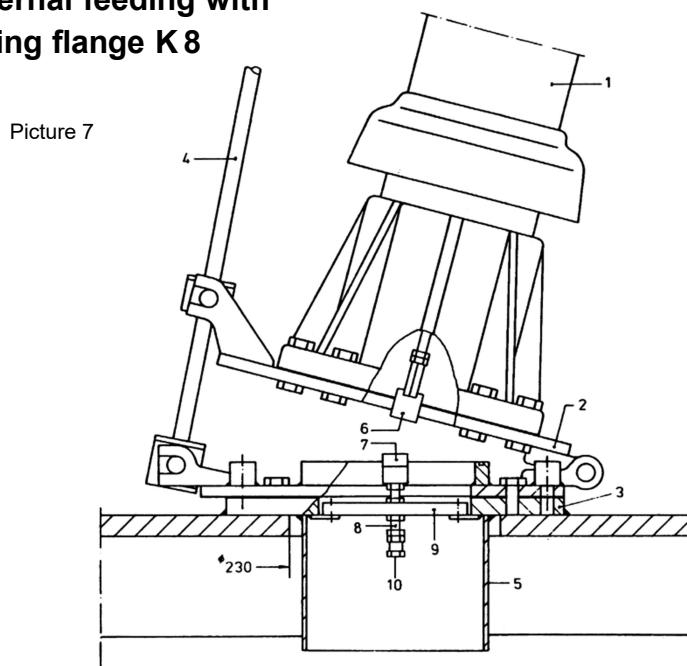
NDB = Non Directional Radio Beacon

## Mounting Proposal / Feeding



- 1 Antenna
- 2 Mounting support
- 3 Antenna matching unit
- 4 Copper base Ø 6
- 5 Operator room
- 6 Rail

## Internal feeding with tilting flange K 8



- 1 Antenna STA ... PM
- 2 Tilting flange K 8
- 3 Connection flange
- 4 Spindle (Optional) SP/ ...
- 5 Decks lead-through pipe Ø 219.1 x 4.5
- 6 Knife contact
- 7 Contact spring
- 8 Axis
- 9 Plate insulator
- 10 Clamping cone Ø 6

### Information for Orders

STA ... PM / . / .. / ..  
(1) (2) (3)

(1) Length of antenna	105 = 10.5 m 110 = 11.0 m 120 = 12.0 m 140 = 14.0 m
(2) Index "E"	for external feeding
(3) Index "D 4/20"	for top fork capacitance 2 m
Index "D 4/30"	for top fork capacitance 3 m
Standard Color	Light grey like RAL 7035 - or grey like RAL 7000 (type STA ... PM/M) other colors upon request
Delivery Scope	Types STA 105 PM, STA 110 PM, STA 120 PM and STA 140 PM: as per picture 2
For external feeding	additional items 3 - 6 as per picture 8
For additional top fork capacitance	items 2 - 5 as per picture 10

### Spare Parts List

Position	Designation	Order-Code
1	STA 105 PM	E 107-690
1	STA 110 PM	E 107-691
1	STA 120 PM	E 107-689
1	STA 140 PM	E 107-614
1a	top rod STA 25 HV (STA 105 PM)	E 107-638
1b	top rod STA 30 HV (STA 110 PM)	E 107-135
1c	top rod STA 40 HV (STA 120 PM)	E 107-185
1d	top rod STA 60 HV/2 (STA 140 PM)	E 107-082
2	Locking nut	E 107-224
3	O-Ring 29.1 x 2.55	E 107-245
4	Lower Section US 80 PM	E 107-492

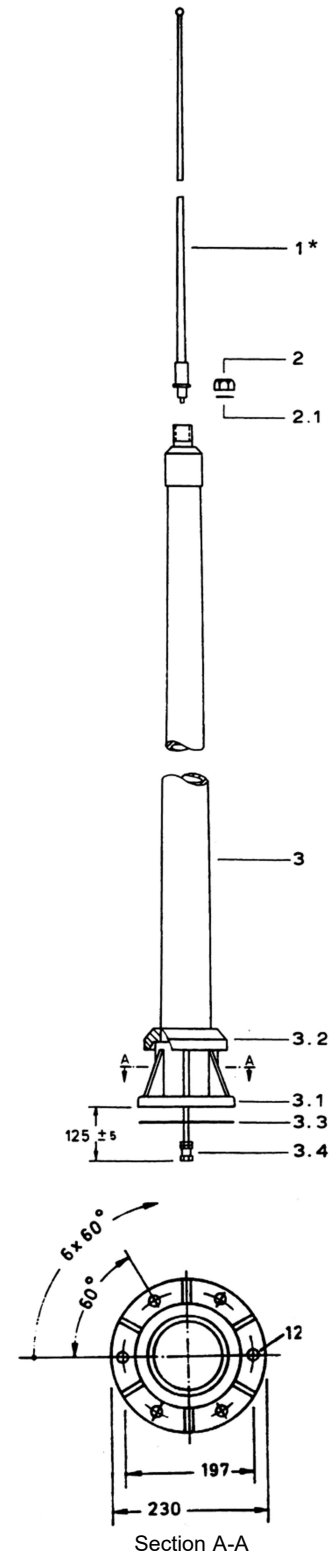


### Specification

<b>Frequency range</b>	1.5 - 30 MHz
<b>RF power</b>	1 kW pep (4 - 30 MHz)
<b>Insulation</b>	$> 10^8$ Ohm
<b>Polarization</b>	vertical
<b>Characteristic</b>	omnidirectional
<b>Diameter of radiator</b>	95 mm (lower section)
<b>Feeding</b>	internal (base injection)
<b>Length</b>	STA 70 PM/M: 7100 mm STA 80 PM/M: 8100 mm STA 90 PM/M: 9100 mm STA 100 PM/M: 9880 mm - Tolerance $\pm 30$ mm -
<b>Weight</b>	STA 70 PM/M: c. 25.5 kg STA 80 PM/M: c. 26.0 kg STA 90 PM/M: c. 26.9 kg STA 100 PM/M: c. 27.0 kg
<b>Color</b>	STA ... PM/M: dark grey, similar to RAL 7000 STA ... PM: light grey, similar to RAL 7035
<b>Deflection</b>	STA 70 PM/M: c. 0.55 m STA 80 PM/M: c. 0.90 m STA 90 PM/M: c. 1.40 m STA 100 PM/M: c. 2.00 m
<b>Bending stress at antenna base</b>	STA 70 PM/M: 200 daNm STA 80 PM/M: 230 daNm STA 90 PM/M: 260 daNm STA 100 PM/M: 280 daNm - represents 42 m/s resp. 8 m/s <sup>2</sup> acceleration plus 150 km/h wind -
<b>Temperature</b>	- 40° ... + 70° C

1\* STA 70 PM/M: top rod STA 20 HV/M  
1\* STA 80 PM/M: top rod STA 30 HV/M  
1\* STA 90 PM/M: top rod STA 40 HV/M  
1\* STA 100 PM/M: top rod STA 50 HV/M  
2 Locking Nut  
2.1 O-Ring 29.1 x 2.55

3 Lower section US 50 PM/M  
3.1 Antenna base  
3.2 PTFE insulator cap with dry zone  
3.3 Flat gasket  
3.4 Clamping cone Ø 6



STA = Rod Antenna  
E = Receiving Rod Antenna  
EAU = Transformer

K = Tilt  
TR = reinforced  
SE = Transmit Antenna

SSB = internal feeding  
SSB/E = external feeding  
PM/M = dark grey (similar to RAL 7000)

NDB = Non Directional Radio Beacon

# Mastantennen / Mast-Antennas

STA 70 - 100 PM/M

## Application

This transmitting antenna is intended to meet the requirements of maritime mobile services. It is ideally suited for extreme climatic and operational conditions, where these antennas guarantee max. strength, stiffness and reliability. It requires very low maintenance.

The antenna mainly operates as a vertically polarized radiator with an omnidirectional pattern.

## Mechanical Specification

### Design

The antennas consist of two sections, where the lower "mast" section with its seawater resistant cast aluminum base has a length of approx. 5 meters. The self-supporting lower section is connected with the upper section by means of a junction assembly. Upper sections are available with lengths up to 5 m. The tinned electrolytic copper radiators are embedded into the resin laminate.

The antenna is absolutely non-magnetic.

### Space required

Only a minimum of space is required for this self-supporting, extraordinarily stiff antenna construction, mounted on a base flange of 230 mm diameter.

Usually, the antenna is vertically mounted. On board of ships the antennas STA 90 PM/M and STA 100 PM/M, however, shall be mounted in a sloping position from 5° to 15° in order to avoid rotary oscillation.

### Environmental:

Due to the extraordinary chemical resistance of the glassfibre reinforced materials used, this antenna withstands any known marine environmental stress.

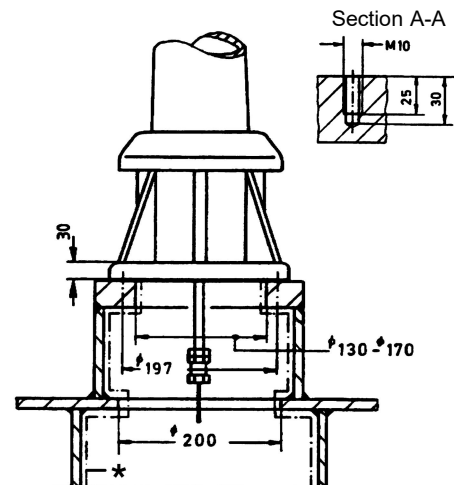
### Maintenance:

Negligible: The antenna shall be cleaned from time to time with sweet water. In case of oily soil or salt please add soft detergents to the water.

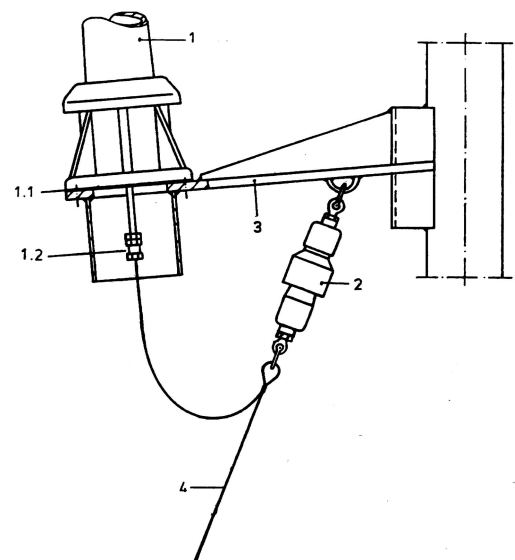
### Crank mechanism:

Quick mechanical tilting device ("TIF")

## Installation Proposal

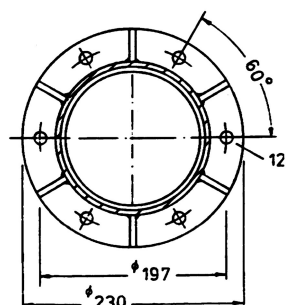


(not applicable with external feeding)  
\* to be insulated against condensation

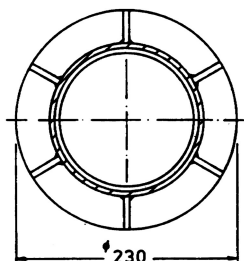


- 1 Antenna
- 1.1 Flat gasket
- 1.2 Clamping cone Ø 6
- 2 Isolator GT 300
- 3 Mounting support
- 4 Wire feeder

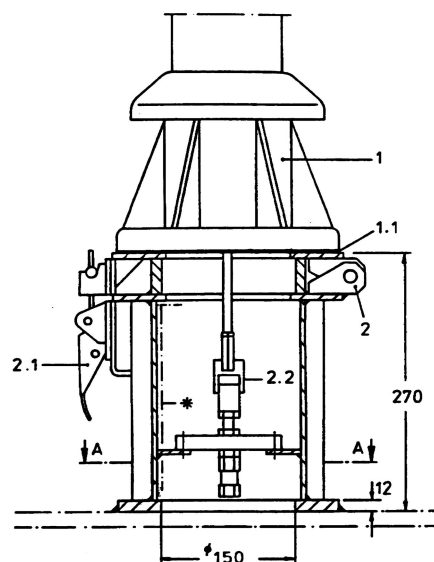
### Manual Tilting Device with Toggle Fasteners TIF



Section A-A  
Alternative



Section A-A



- 1 Antennas STA 70 to 100 PM/M
- 1.1 Flat gasket
- 2 Tilting device TIF
- 2.1 Toggle fastener
- 2.2 Contact

(not applicable with external feeding)  
\* to be insulated against condensation

### Spare Parts List

Position	Designation	Order-Code
1	STA 70 PM/M	E 107-609
1	STA 80 PM/M	E 107-610
1	STA 90 PM/M	E 107-611
1	STA 100 PM/M	E 107-612
1*	top rod:	
	STA 20 HV/M (STA 70 PM/M)	E 107-146
1*	STA 30 HV/M (STA 80 PM/M)	E 107-125
1*	STA 40 HV/M (STA 90 PM/M)	E 107-144
1*	STA 50 HV/M (STA 100 PM/M)	E 107-136
2	Locking nut	E 107-224
2.1	O-Ring 29.1 x 2.55	E 107-245
3	Lower Section US 50 PM/M	E 107-449

# MF/HF Mastantennen / MF/HF Transmitting Antennas

## STA 115 C/MF/HF/E

This antenna is a self-supporting mast antenna. It serves mainly as a transmitting antenna in the frequency bands

**405 - 535 kHz and 1.5 - 30 MHz<sup>1)</sup>**

The excellent efficiency in the MF range is due to a well-positioned loading coil in the upper part of the antenna. The loading coil and the top load capacitance match ideally and provide a favorable voltage distribution on the antenna.

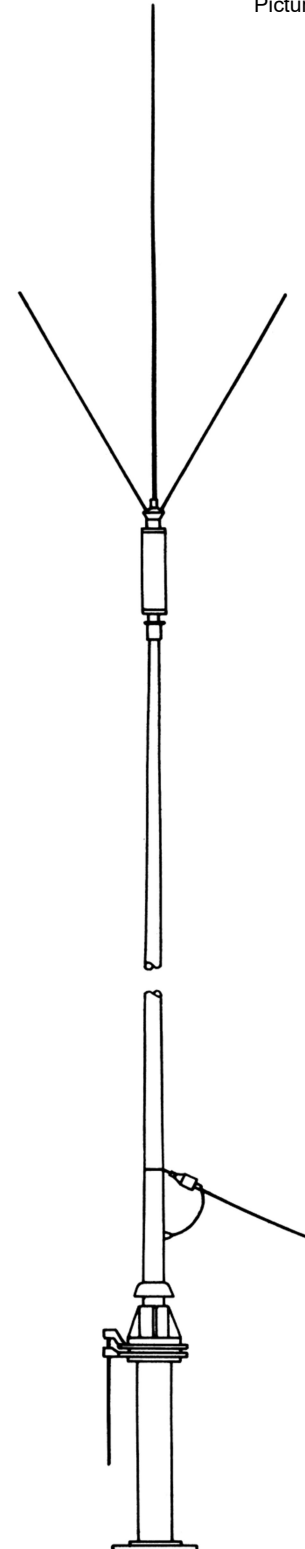
The top load assembly also serves as a resonant shortening circuit in the shortwave bands. Due to this shortening effect the antenna provides well defined low angle propagation throughout the HF bands qualifying it especially for long distance traffic.

The STA 115 C/MF/HF/E is an externally fed mast antenna. It can be installed on supporting pipes with appropriate tilting devices.

Modified versions of this antenna are available for other frequency ranges, e.g. non-directional beacons for shore and seaborne installations and aviation NDB's.

1) The frequency range can be expanded from 250 to 1000 kHz by using different loading coils.

Picture 1



Description

The antenna is a self-supporting mast antenna. It is made of glass-fibre reinforced plastic and consists of three different sections:

- Lower Mast Section
- Loading Coil Assembly
- Top Rod Assembly

The complete top load assembly consisting of the loading coil and the five top rods is identical to the load assembly of the transmit antenna STA 150 C/....

This feature eases spare part supply and inventory costs if both, STA 150 C/... and STA 115 C/..., are being installed.

All parts are made interchangeable to its corresponding counterpart of the other antenna and no further adjustment of the antenna tuning unit is necessary after such replacements.

Type Designations: Antennas and Supports

STA 115 C/MF/HF/E	antenna with external RF-feeder
STA 115 C/MF/HF/E/KS	idem, with tilting flange K 5/E (*), and spindle assembly SP/G (incl. ratchet)
TR 2 R/E (TR 2 R/E/B**)	supporting pipe (*) 0.20 m high for external feeding
TR 15 R/E (TR 15 R/E/B**)	idem (*), 1.50 high

(\*) painted with rust preventing primer

(\*\*) standard supports are for welding anchorage, supports with letter "B" are provided with base flange bore holes for fixing bolts

# MF/HF Mastantennen / MF/HF Transmitting Antennas

STA 115 C/MF/HF/E

## Specification

<b>Frequency range</b>	MF 405 - 520 kHz <sup>1)</sup> HF 1.5 - 30 MHz (marine bands)
<b>Max. RF load</b>	MF 500 Watts <sup>2)</sup> HF 2000 Watts
<b>Impedance MF</b>	Resistance: 0.5 ... 4 Ohm Capacitance: 200 ... 500 pF
<b>Polarization</b>	vertical
<b>Characteristic</b>	omnidirectional
<b>Construction</b>	self-supporting mast antenna
<b>RF injection method</b>	external feeding
<b>Material mast</b>	glassfibre reinforced polyester
<b>antenna base</b>	G-Al Si10Mg (seawater resistant aluminum)
<b>Color</b>	grey
<b>Height</b>	approx. 11.5 m
<b>Weight</b>	approx. 50 kg
<b>Center of gravity</b>	4.0 m over surface
<b>Max. bending moment</b>	600 daNm at 150 km/h wind + 8 m/s <sup>2</sup> acceleration
<b>Temperature</b>	-40° ... +80° C
<b>Environment</b>	resistant to sea environment as met on board of seagoing vessels
<b>Icing</b>	isolation and foot impedance very little or not at all effected due to preventing protective measures
<b>Mold growth</b>	not effected
<b>Microbes &amp; termites</b>	not effected

\* incl. 5 m external feeder

3) The frequency range can be expanded from 250 to 1000 kHz by using different loading coils.

4) Reduced power for frequencies below 400 kHz.

STA = Rod Antenna  
E = Receiving Rod Antenna  
EAU = Transformer

K = Tilt  
TR = reinforced  
SE = Transmit Antenna

SSB = internal feeding  
SSB/E = external feeding  
PM/M = dark grey (similar to RAL 7000)

NDB = Non Directional Radio Beacon



# MF/HF Mastantennen / MF/HF Transmitting Antennas

## STA 150 C/MF/HF/...

This antenna is a self-supporting mast antenna. It serves as main and/or reserve transmitting antenna in the frequency bands

**405 - 535 kHz and 1.5 - 30 MHz<sup>1)</sup>**

The excellent efficiency in the MF range is due to a well-positioned loading coil in the upper part of the antenna. The loading coil and the top load capacitance match ideally and provide a favorable voltage distribution on the antenna.

The top load assembly also serves as a resonant shortening circuit in the shortwave bands. Due to this shortening effect the antenna provides well defined low angle propagation throughout the HF bands qualifying it especially for long distance traffic.

The STA 150 C/... is available base-injected (internally fed) as well as with external feeding. Base injected antennas permit direct installation above the radio room and the transmitter, thus saving additional installation equipment (e.g. lead-through insulators, trunks, etc.) and providing a short way between transmitter and antenna input.

Both antenna versions, the external and the base injected, can be installed on supports with appropriate tilting devices. Special attention has been paid to the watertight design of the base injected equipment.

The internally fed arrangement offers not only the cheaper installation, but is also much more insensitive to the environment. The tilting devices may be furnished with hydraulic cylinders for both, manual or remote automatic operation.

Modified versions of this antenna are available for other frequency ranges, e.g. non-directional beacons for shore and seaborne installations and aviation NDB's.

1) The frequency range can be expanded from 250 to 1000 kHz by using different loading coils.

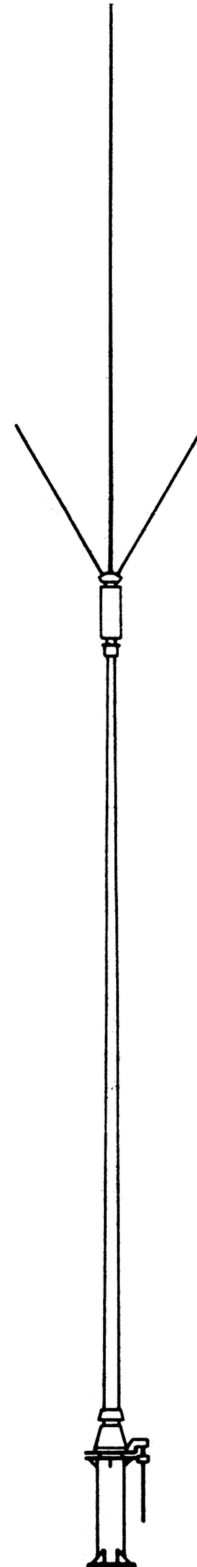
### DESCRIPTION

The antenna is a self-supporting mast antenna. It is made of glass-fibre reinforced plastic and consists of three different sections:

**Lower Mast Section  
Loading Coil Assembly  
Top Rod Assembly**

The complete top load assembly consisting of the loading coil and the five top rods is identical to the load assembly of the transmit antenna STA 115 C/... . Refer to the part lists of both antennas, please.

Picture 2



# MF/HF Mastantennen / MF/HF Transmitting Antennas

## STA 150 C/MF/HF/...

This feature eases spare part supply and inventory costs if both, STA 150 C/... and STA 115 C/..., are being installed.

All parts are made interchangeable to its corresponding counterpart of the other antenna and no further adjustment of the antenna tuning unit is necessary after such replacements.

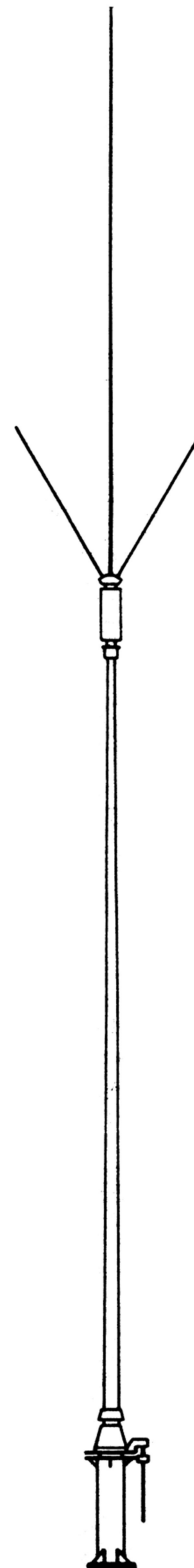
### Lower Sections US 80 PM and US 80 PM/E (E for external)

The lower section is a conical tubular mast with radiators embedded in the mast's wall. The RF feed insulators, external and base-injected ones, are carefully designed in order to avoid instable antenna impedances. The base-injection runs concentrically into the mast tube. It is held by small supports of good dielectric constant.

On top of the lower section mast tube a joint armature carries the top load assembly. This joint fitting is connected to the embedded radiators and serves also as the electrical connection to the load assembly.

The lower section mast tube stands on a cast aluminum base. This antenna base is fixed to tilting flanges or other stands by means of eight stainless steel bolts.

Picture 2



### Type Designation Antennas and Supports

<b>STA 150 C/MF/HF</b>	base injected (internal) antenna
<b>STA 150 C/MF/HF/KS</b>	idem, with tilting flange K 8 (*), crank and ratchet, knife contact assembly for RF-feeder
<b>TR 4</b>	supporting pipe (*) 0.40 m high, complete with internal RF-feeder, base injected
<b>TR 12</b>	idem, but 1.20 m high
<b>STA 150 C/MF/HF/E</b>	antenna with external RF-feeder
<b>STA 150 C/MF/HF/E/KS</b>	idem, with tilting flange K 8/E (*), crank and ratchet
<b>TR 4/E</b>	supporting pipe (*) 0.40 m high for external antennas
<b>TR 12/E</b>	idem, but 1.20 m high

(\*) painted with rust preventing primer

STA = Rod Antenna

E = Receiving Rod Antenna

EAU = Transformer

K = Tilt

TR = reinforced

SE = Transmit Antenna

SSB = internal feeding

SSB/E = external feeding

PM/M = dark grey (similar to RAL 7000)

NDB = Non Directional Radio Beacon





# MF/HF Mastantennen / MF/HF Transmitting Antennas

STA 150 C/MF/HF/...

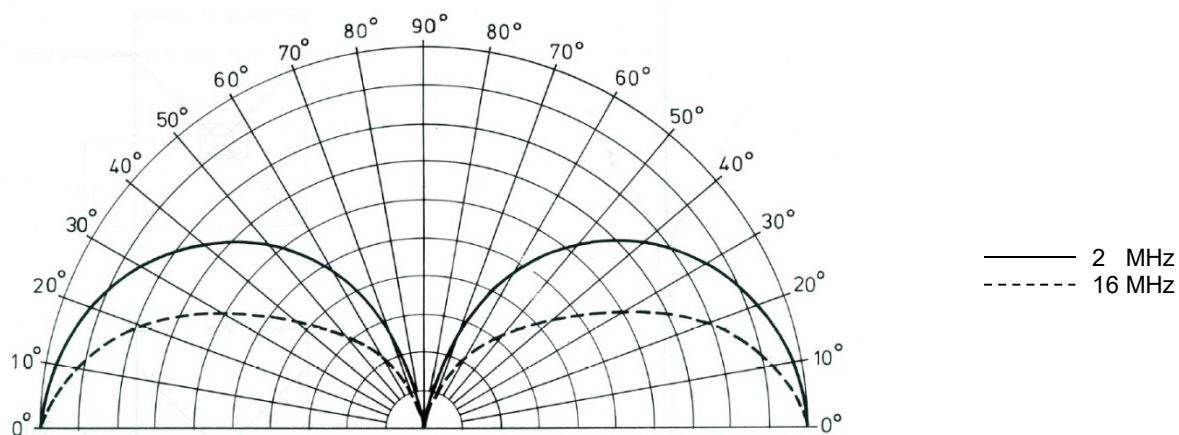
## Specification

<b>Frequency range</b>	MF 405 - 520 kHz HF 1.5 - 30 MHz (marine bands)
<b>Max. RF load</b>	MF 500 Watts HF 2000 Watts
<b>Impedance MF</b>	Resistance: 0.5 ... 4 Ohm Capacitance: 200 ... 500 pF
<b>Polarization</b>	vertical
<b>Horizontal pattern (MF + HF)</b>	omnidirectional
<b>Vertical pattern (HF)</b>	refer to pictures 3 + 4
<b>Construction</b>	self-supporting mast antenna
<b>RF injection methods</b>	1. internal base injection 2. external lead-in
<b>Material mast antenna base</b>	glassfibre reinforced polyester G-Al Mg3Si (seawater resistant aluminum)
<b>Color</b>	grey
<b>Height</b>	14.5 m
<b>Weight</b>	82 kg
<b>Center of gravity of surface</b>	4.8 m
<b>Max. bending moment</b>	1200 daNm at 150 km/h wind + 8 m/s <sup>2</sup> acceleration
<b>Temperature</b>	-40° ... +80° C
<b>Environment</b>	resistant to sea environment as met on board of seagoing vessels
<b>Icing</b>	isolation and foot impedance very little or none at all effected due to preventing protective measures
<b>Mold growth</b>	not effected
<b>Microbes &amp; termites</b>	not effected

# MF/HF Mastantennen / MF/HF Transmitting Antennas

STA 150 C/MF/HF/...

Picture 3



Picture 4

