



Sailor

Sailor

INSTALLATION OF
SAILOR EQUIPMENT



A/S S. P. RADIO · AALBORG · DENMARK

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- SECTION 8 CABLE DIMENSIONS ETC.
- SECTION 9 TROUBLE SHOOTING ETC.

SECTION 1

FOREWORD

GENERAL INFORMATION

FOREWORD

This book contains a detailed description of and information about all the aerals and various installation materials which can be used together with the SAILOR equipment.

You will also find a lot of good advice and directions regarding installation methods, all based on our own experience from 1962 when the first SAILOR Transmitter was brought on the market and up to now.

In this book you will also find examples of a lot of configurations and installations.

As trouble shooting is an important part of the job of a technician, the book also tells you how to avoid interference and other disturbances on the remaining instruments and circuits on board.

Hopefully the book will be of great help to you when you carry out installation, service and sale of SAILOR products.

Aalborg, February 1990

K.E. Dantoft

AERIALS AND INSTALLATION MATERIALS

AERIALS

STA150C MF/HF/E	TX - 500 kHz
KUM850	TX - 1.6 - 30 MHz
KUM480	TX - 1.6 - 4 MHz
KUF480	RX - R501 (2182 kHz)
Log Periodic Aerial (1.2 KW)	TX - 13 - 30 MHz
- - - - -	TX - 9.5 - 30 MHz
Multi Dipole (1.0 KW)	TX - 3 - 30 MHz

DECK INSULATORS

STP2500D	500 kHz
P502	500 kHz
SG 1.8	1.6 - 30 MHz
SG 02	1.6 - 30 MHz
H40	RX only

INSULATORS

RHG220	500 kHz
H22 Delrin (20 cm)	1.6 - 30 MHz
H23 Delrin (12 cm)	RX only
Ebonit	RX only
Porcelain 80 x 100 mm	TX 1.6 - 30 MHz

STAND OFF'S

ST500	500 kHz
H30	1.6 - 30 MHz

VHF AERIALS

Al61 5/8 Ground Plane 3 dB	155 - 162 MHz
Al51 CX4 Coax 0 dB	146 - 162 MHz
CX3 Coax 3 dB	155 - 162 MHz
CX3 Coax 3 dB (tiltable)	155 - 162 MHz

GROUND PLATES

Mark I	For receivers etc.
Mark II	For TX 400W
Mark V	For TX 800W

AERIAL BOX

H1209	RX Wire Aerials
RX Protecting Unit H1223	RX

POWER TRAFOS

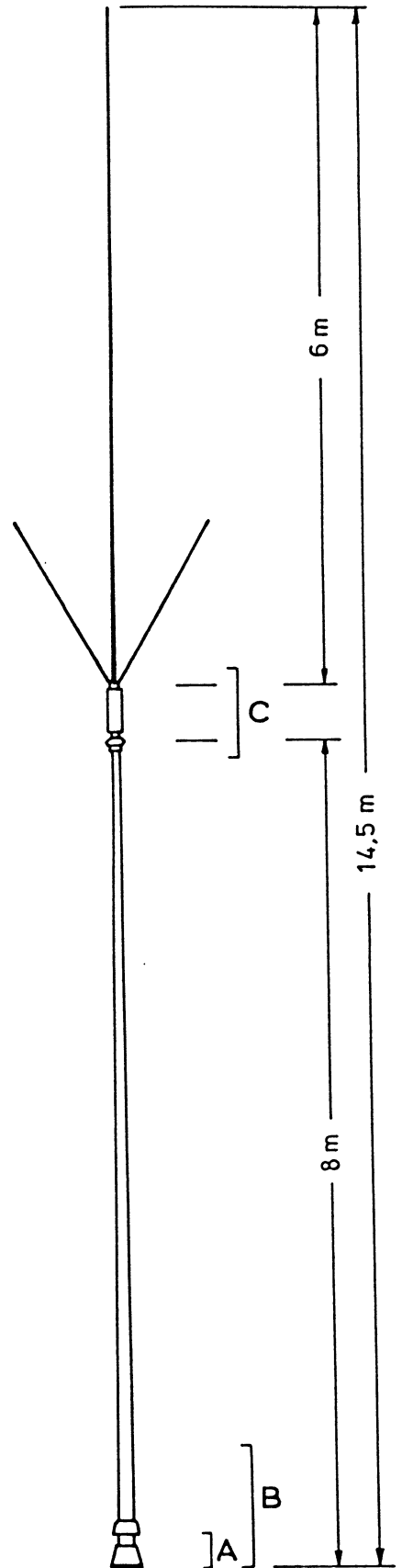
Lubcke 380/220 440/220	2200 VA
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SECTION 2

MARITIME AERIALS

1. MAST AERIAL
2. WHIP AERIALS
3. WIRE AERIALS

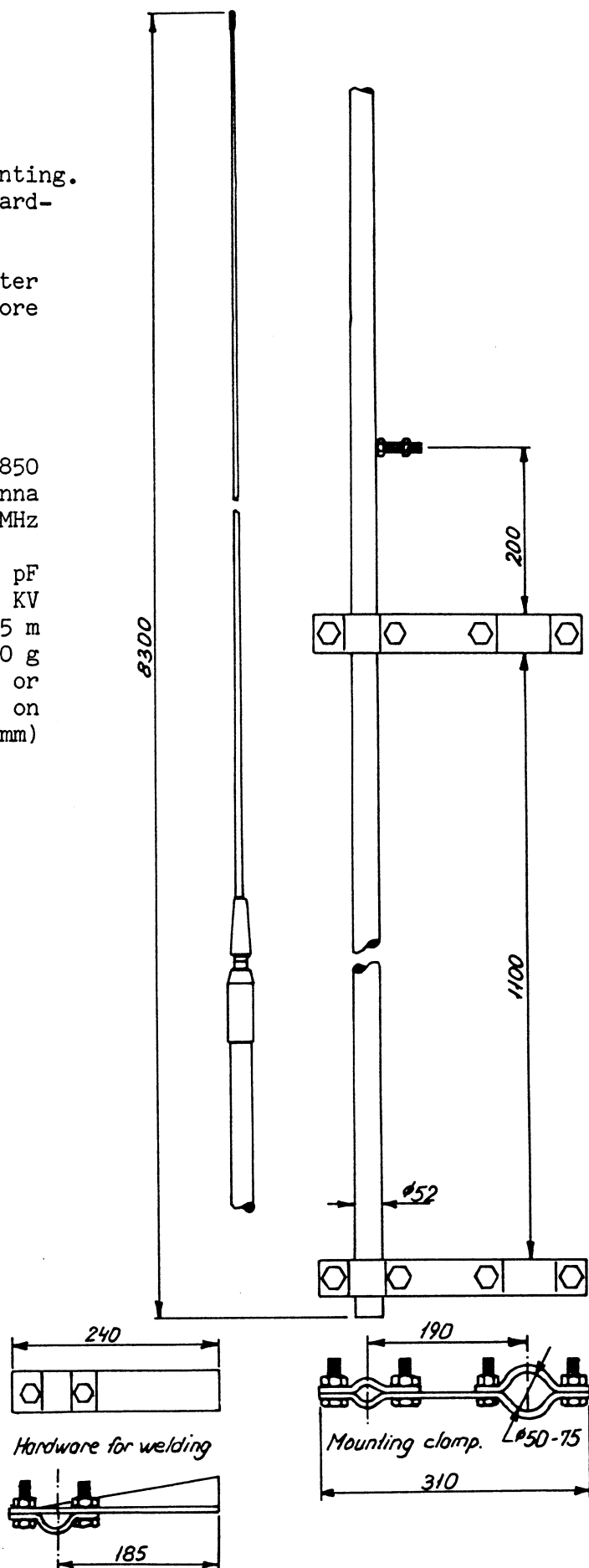
STA 150 C-MF/HF



Marine whip aerial for mast mounting.
Antenna can be delivered with hardware for welding or clamping.

Materials are reinforced polyester fibre with cast-in sturdy polycore copper conductor.

MODEL: KUM 850
ANTENNA TYPE: Stick-antenna
FREQUENCY RANGE: 1.4-25 MHz
INSULATION RESISTANCE: 10
STATIC CAPACITY: approx. 98 pF
MAX. HF-VOLTAGE: 18 KV
LENGTH: 8.5 m
WEIGHT: 8500 g
MOUNTINGS: Hardware for welding or
clamps for fitting on
mast (50-75 mm)



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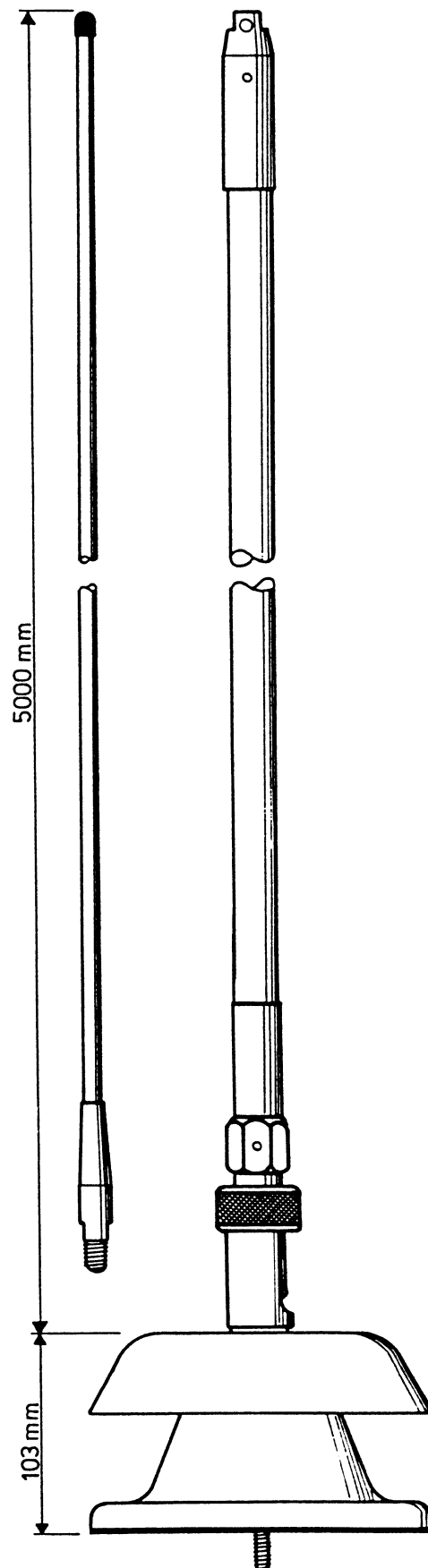
WHIP AERIAL TYPE KUM 850

KUV 480

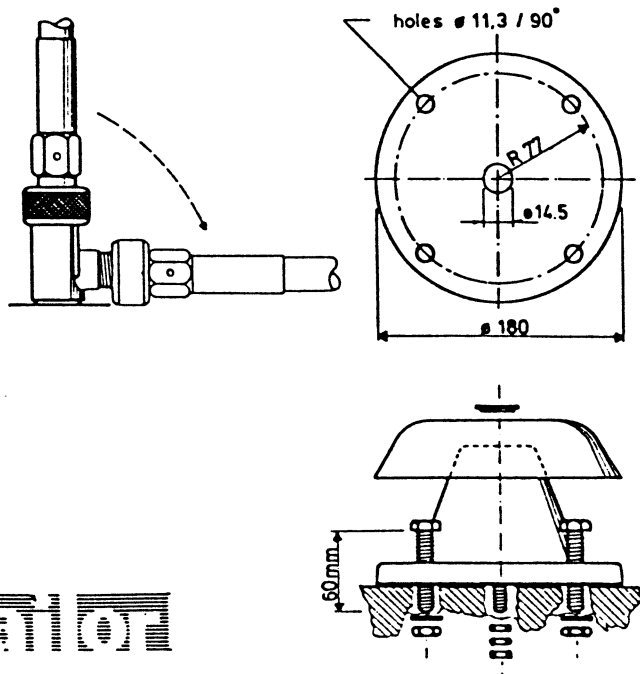
HF marine whip antenna for mounting on deck, made of glassfibre reinforced polyester and stainless steel.

For easy tilting, the antenna is provided with a toggle joint of stainless steel.

MODEL:	KUV 480
ANTENNA TYPE:	Whip-antenna
FREQUENCY RANGE:	1.4-30 MHz
INSULATION RESISTANCE:	> 10 ⁹ Ω
STATIC CAPACITY:	Approx. 55 pF
MAX. HF VOLTAGE:	9 kV
LENGTH:	5.0 m
WEIGHT:	4 kg
CONNECTION:	See drawing
MOUNTING:	See drawing



MOUNTING [dimensions in mm]



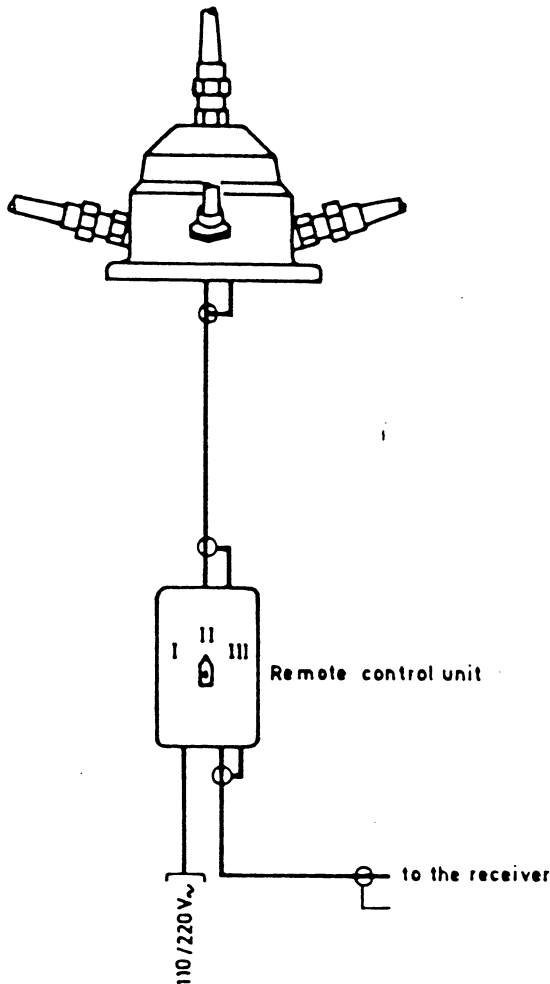
571107

Mehrfach Antennen-Umschaltteinrichtung Multi aerial remote control unit

Type ARCU

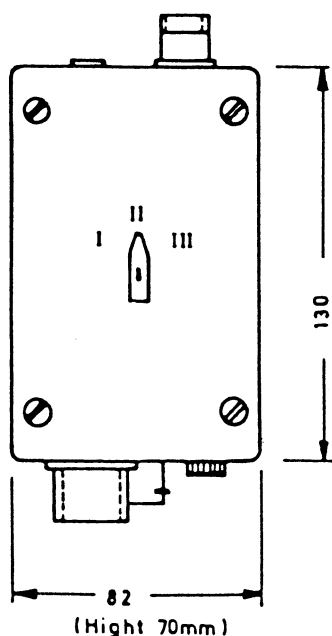
3 Aerials - 1 Cable

STA-HD 2 - VA1



Die Mehrfach-Antennen-Umschaltteinrichtung Typ ARCU ermöglicht, die oben angegebenen passiven Mehrfach-Empfangsantennen über nur ein Koaxialkabel zum Empfangsplatz zu führen und von dort die Antennenwahl vorzunehmen.

The multi aerial remote control unit type ARCU provides the convenience to switch the above passive multiple aerial systems via only one coaxial cable to the receiving place and there select the aerial required.



A161

GP 2m 5/8

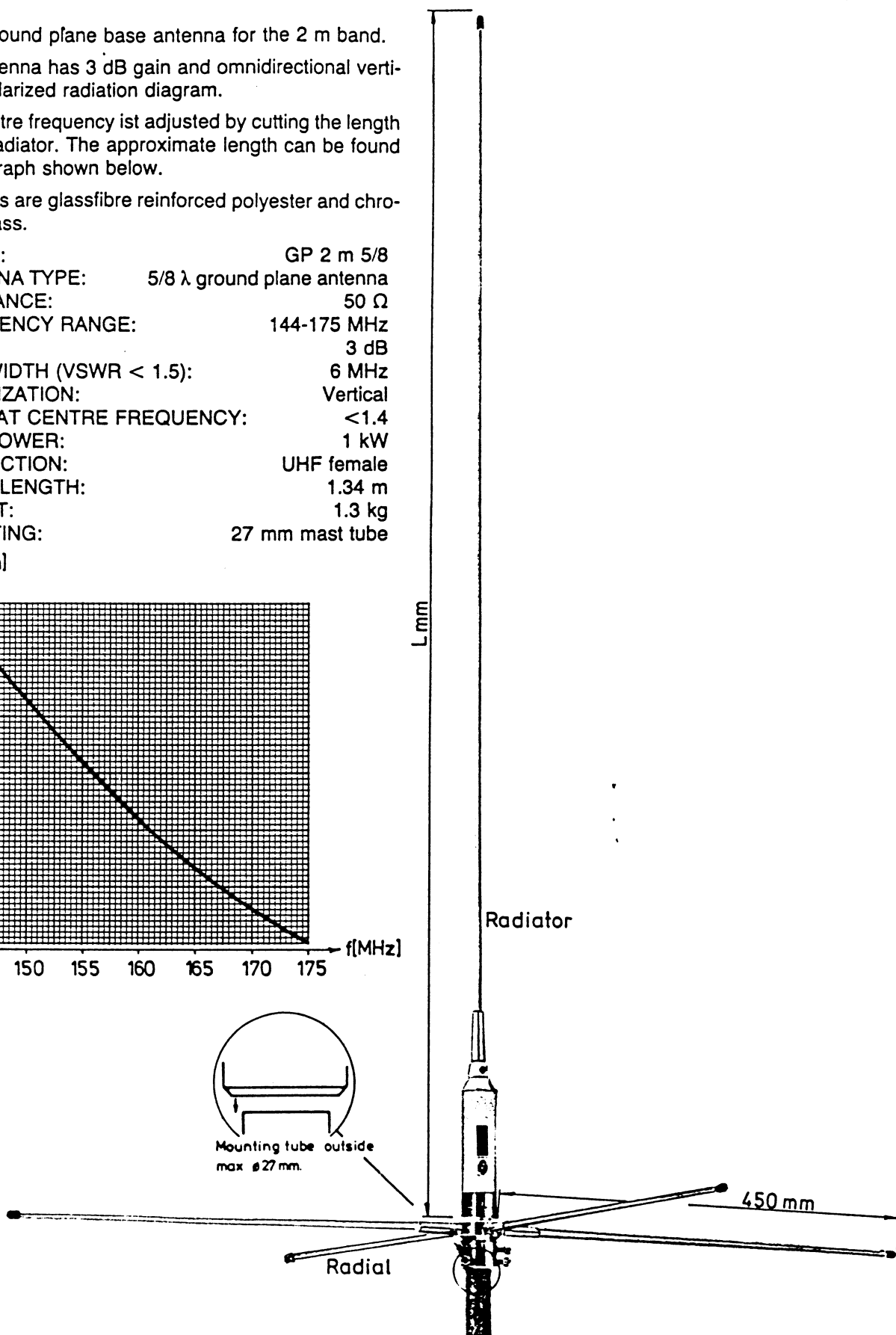
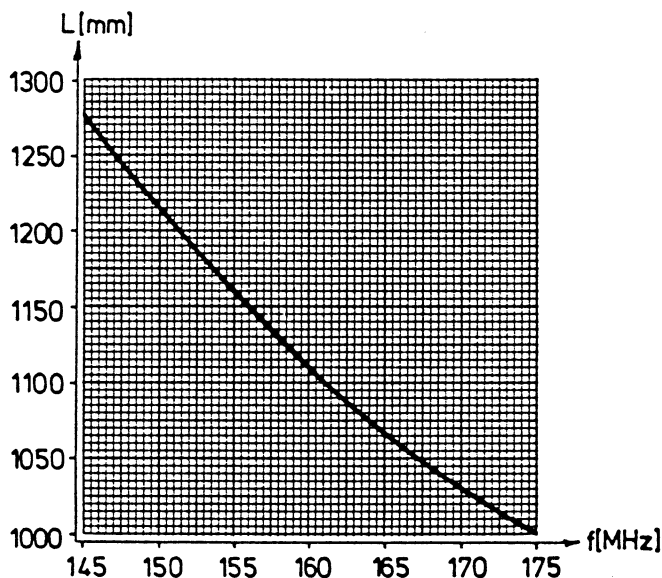
5/8 λ ground plane base antenna for the 2 m band.

The antenna has 3 dB gain and omnidirectional vertically polarized radiation diagram.

The centre frequency is adjusted by cutting the length of the radiator. The approximate length can be found in the graph shown below.

Materials are glassfibre reinforced polyester and chromed brass.

MODEL:	GP 2 m 5/8
ANTENNA TYPE:	5/8 λ ground plane antenna
IMPEDANCE:	50 Ω
FREQUENCY RANGE:	144-175 MHz
GAIN:	3 dB
BANDWIDTH (VSWR < 1.5):	6 MHz
POLARIZATION:	Vertical
VSWR AT CENTRE FREQUENCY:	<1.4
MAX. POWER:	1 kW
CONNECTION:	UHF female
TOTAL LENGTH:	1.34 m
WEIGHT:	1.3 kg
MOUNTING:	27 mm mast tube



NOTE: If the antenna is not mounted in free space, adjustment with a VSWR-meter is recommended.

A151

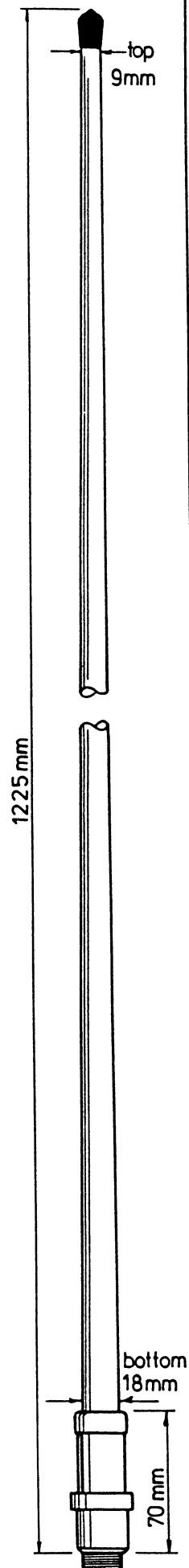
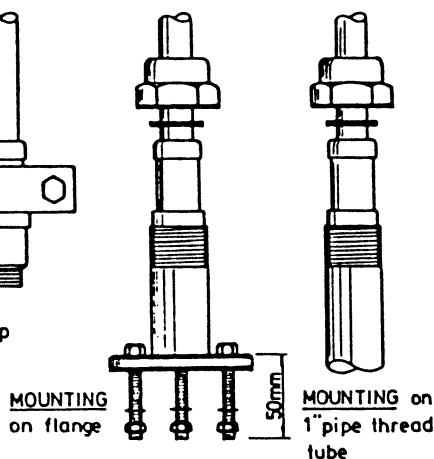
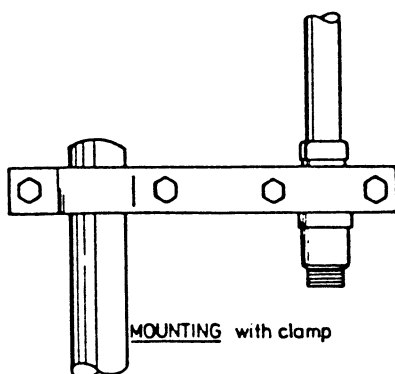
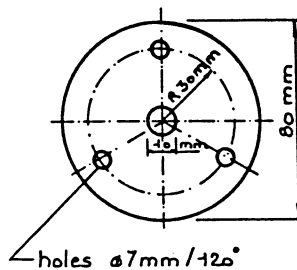
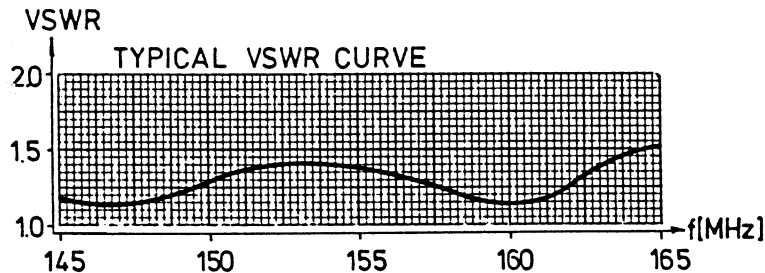
CX 4

CX 4 is a coaxial maritime and base antenna for mounting on a flat surface or for mast mounting.

The antenna is antistatic, and the protective tube is made of watertight glassfibre of the highest quality.

MODEL:	CX 4
ANTENNA TYPE:	Coaxial broadband antenna
IMPEDANCE:	50 Ω
FREQUENCY RANGE:	144-165 MHz
GAIN:	0 dB
BANDWIDTH:	21 MHz
POLARIZATION:	Vertical
VSWR AT CENTRE FREQUENCY:	<1.5
MAX. POWER:	100 W
CONNECTION:	UHF (teflon)
TOTAL LENGTH:	1.23 m
WEIGHT:	0.5 kg
MAST MOUNTING:	1" mast tube mounting or side mounting
DECK MOUNTING:	Flange for mounting on a flat surface

NOTE: For side mounting on a mast please specify: N230. For tube mounting on a mast please specify: N240. For flange mounting on a flat surface please specify E179



57107

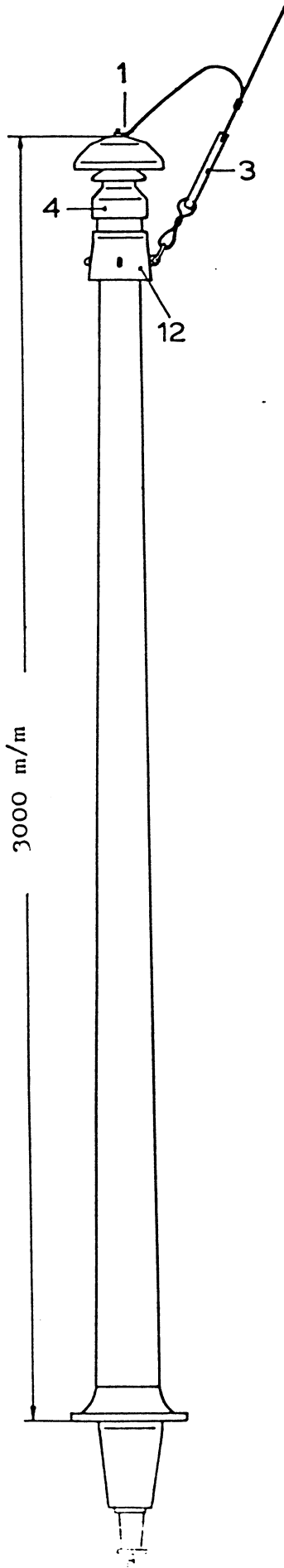
SECTION 3

INSTALLATION MATERIALS

1. LEAD-THROUGH INSULATORS
2. WIRE INSULATORS
3. STAND-OFF's
4. GROUND PLATES
5. AERIAL BOX
6. POWER TRANSFORMERS
7. RECEIVER PROTECTING UNIT

STÜTZPUNKT-ISOLATOR / BASE INSULATOR TRUNK

STP 3000 D



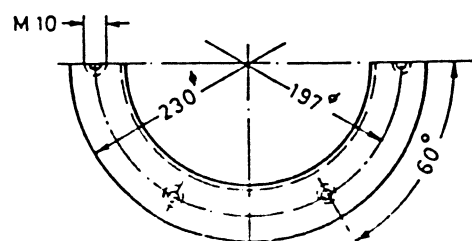
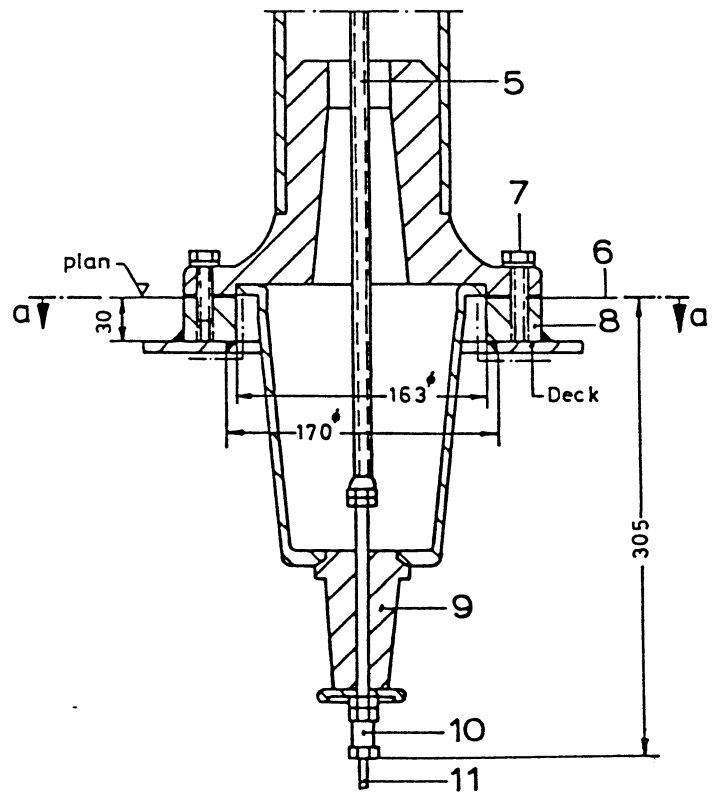
- | | |
|---|--|
| 1 Klemmkabelschuh | 1 Terminal |
| 3 Isolator | 3 Insulator |
| 4 Einführungsisolator | 4 Lead-in insulator |
| 5 Durchführungsleiter | 5 Conductor |
| 6 Dichtung | 6 Sealing |
| * 7 Schraube M10x40
Scheibe 10,5
Werkstoff Nr. 4571 | * 7 Screw M10x40
Disk 10,5
Stainless steel |
| * 8 Stahlflansch | * 8 Steel flange |
| 9 Durchführungsisolator PTFE | 9 Lead-through insulator PTFE |
| 10 Klemmkonus | 10 Clamp-cone |
| 11 Kupferrohr 6" | 11 Cu-tube 6 dia |
| 12 Abfangring m. Augenschrb. | 12 Suspensionring with eye-bolts |

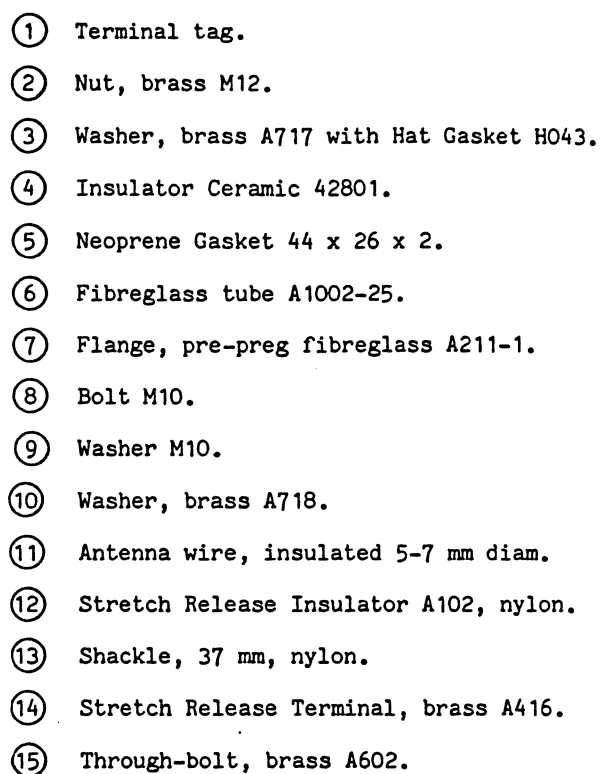
— gegen Schweißwasser
isolieren

— to be insulated to avoid
condensation of water

* Werftlieferung

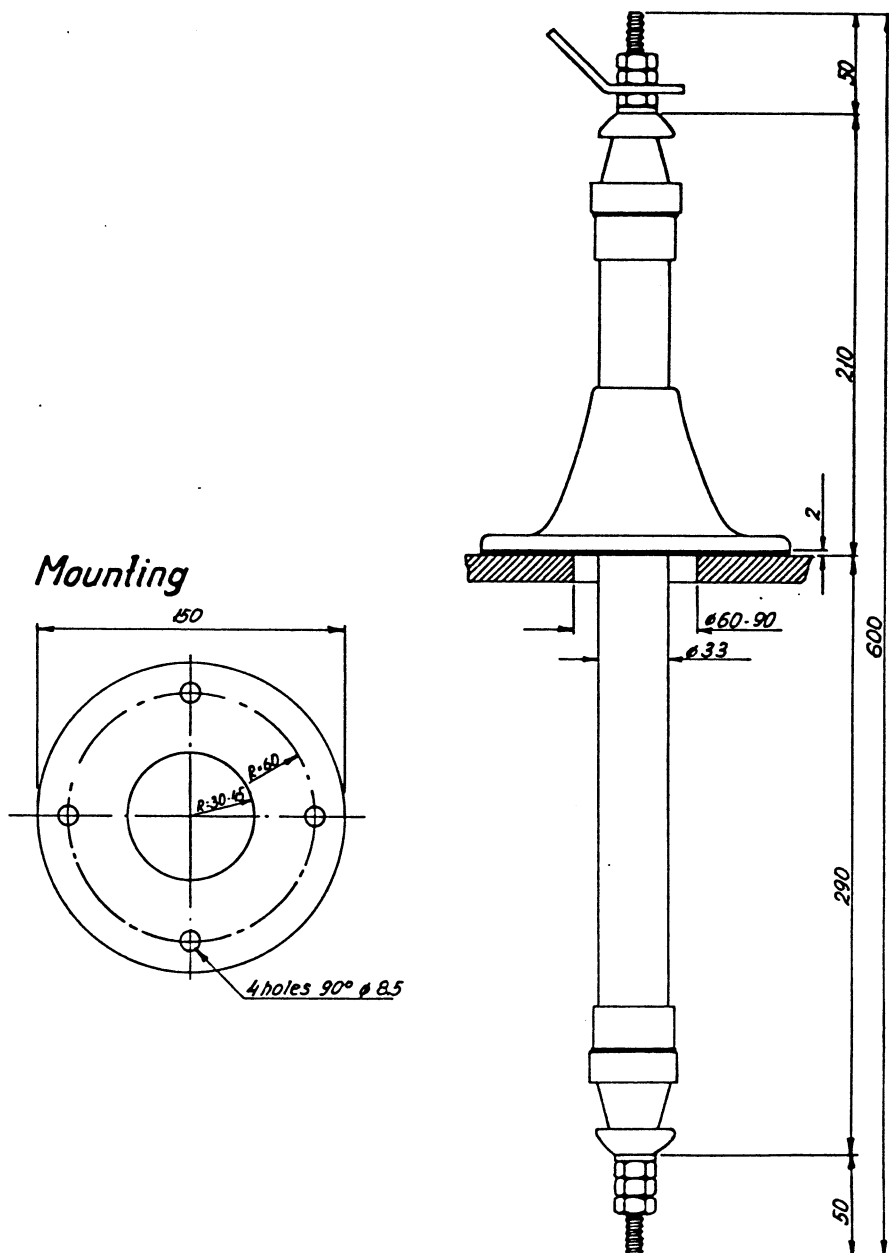
* to be supplied by yards





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DECK - INSULATOR TYPE SG 1,8



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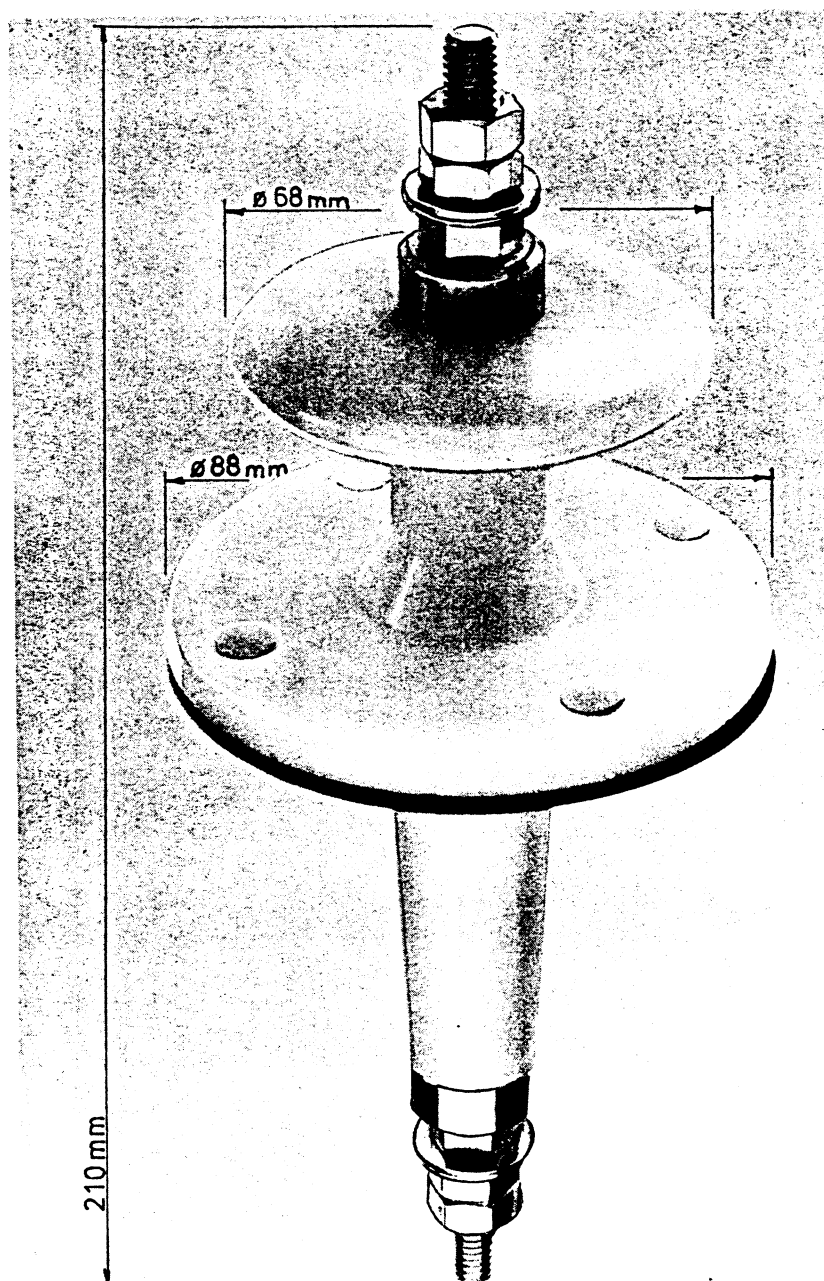
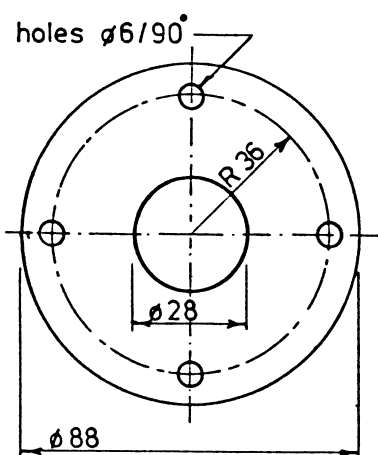
DECK-INSULATOR TYPE SG 02

Feed-through for wire antennas

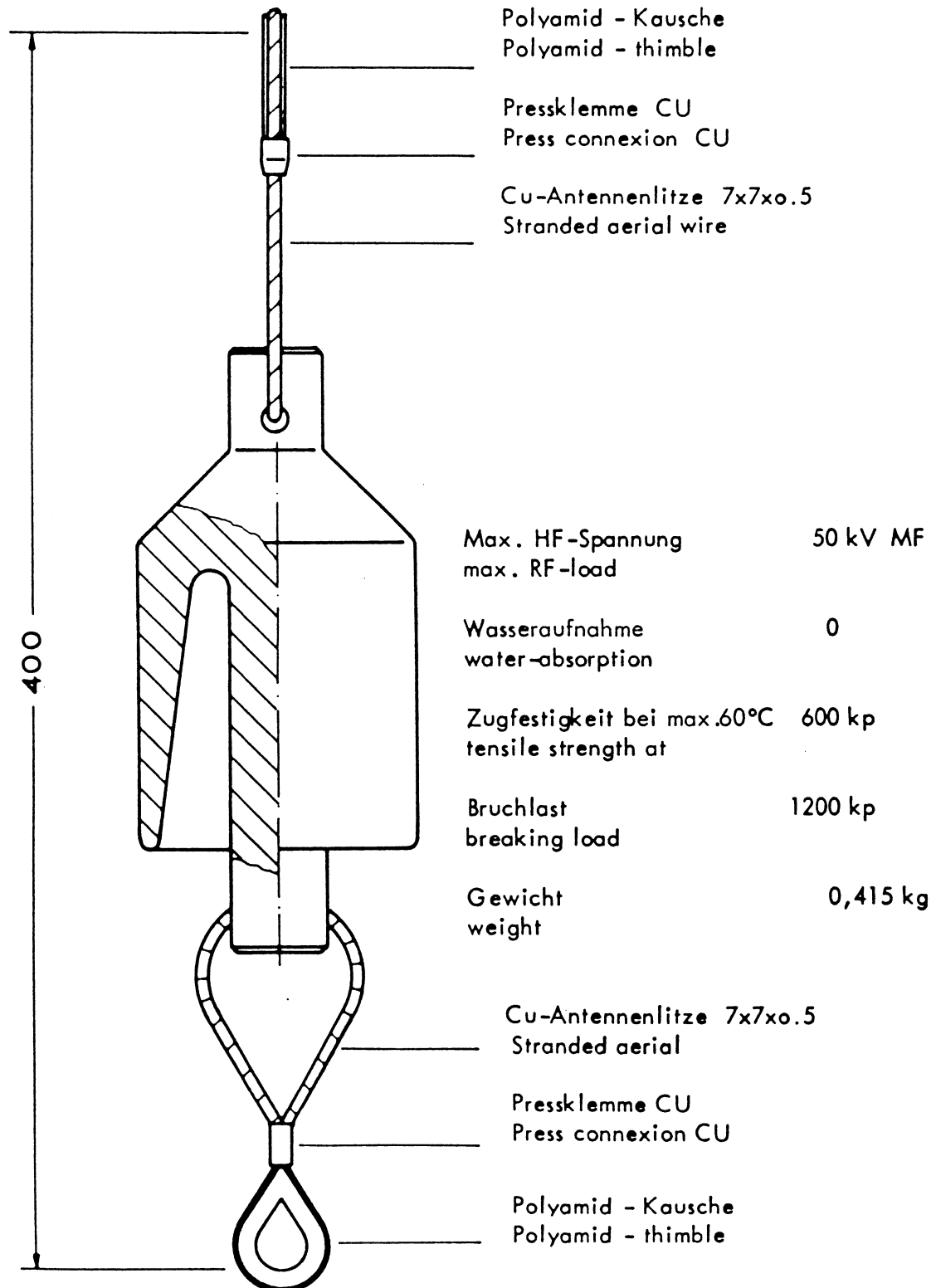
This combined insulator/feed-through for wire antennas is made of Delrin and chromed brass. A Neoprene rubber packing to tighten between the feed-through and mounting surface is enclosed. The feed-through is mainly designed for 400 Watts marine SSB equipment covering MF and HF.

MODEL: H 40 Feed through for wire antennas
WEIGHT: 0.3 kg
ISOLATIONS RESISTANCE: $>10^{13}\Omega$

MOUNTING [dimensions in mm]



GLOCKENISOLATOR Typ RHG 220
Cup Insulator



Insulators for wire antennas

Delrin insulators for wire antennas are used on board ships where outstanding high voltage insulating characteristics and high tensile strength are combined with rough resistance against corrosive environments.

The shackles are either hot galvanized or stainless steel. Please specify type when ordering.

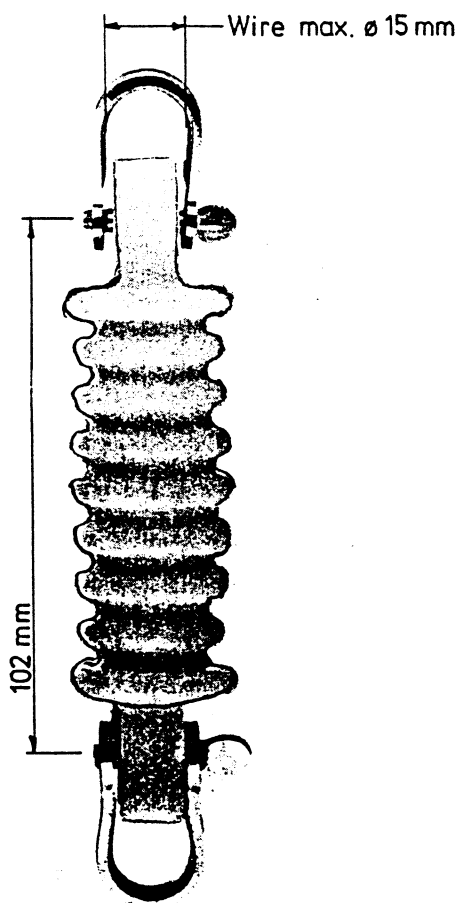
MODELS:

MIN. TENSILE STRENGTH:

INSULATION RESISTANCE:
(TEST VOLTAGE = 500 VDC)

Insulators

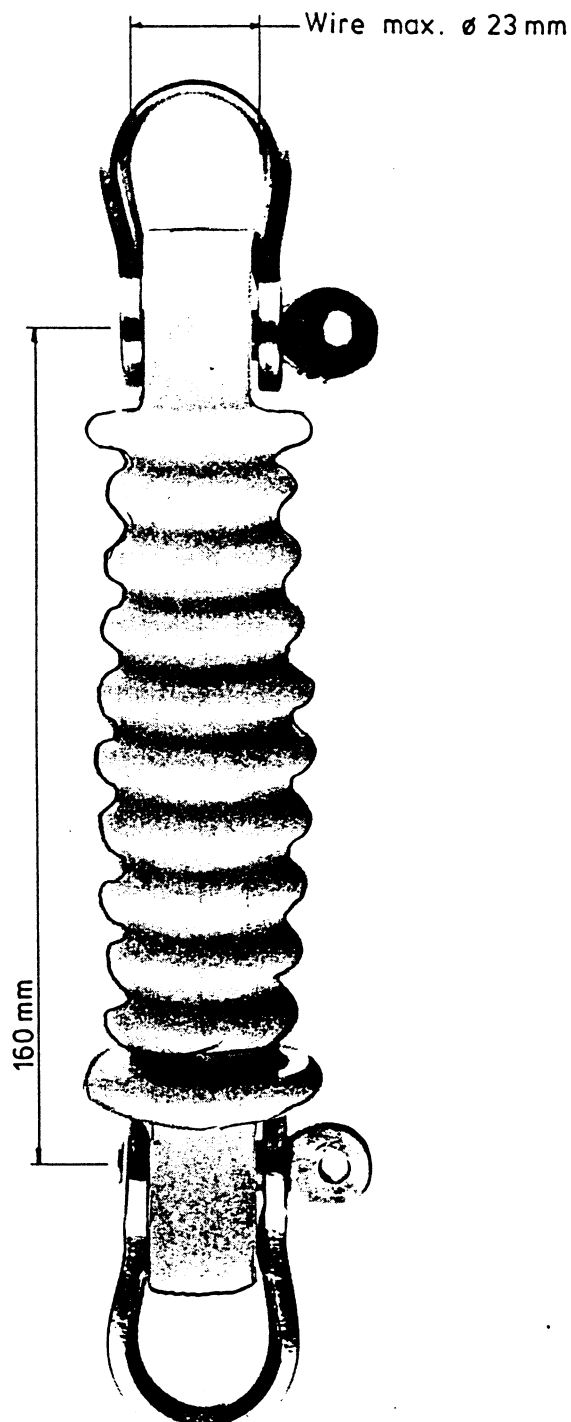
H 26	120 Kp
H 21	500 Kp
H 26	$> 10^{14} \Omega$
H 21	$> 10^{14} \Omega$



H 23 without shackles

H 25 galvanized shackles

H 26 stainless steel shackles



H 22 without shackles

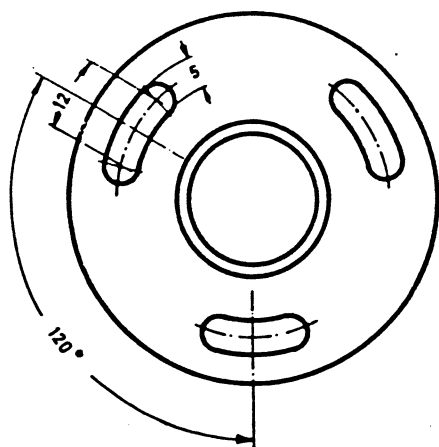
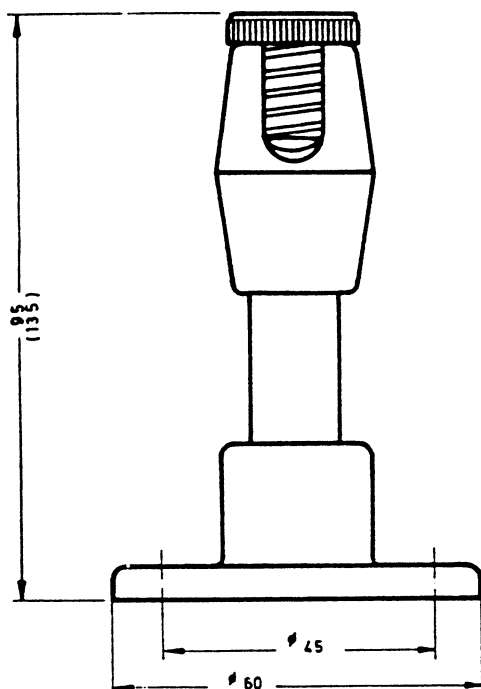
H 20 galvanized shackles

H 21 stainless steel shackles

Sailor

Stand-off insulator

Type ST 500



SPECIFICATIONS

Dimensions:	ST 500
Height	135 mm
Slotted holes	3
Width of cap screw clamping	8 mm

Material:

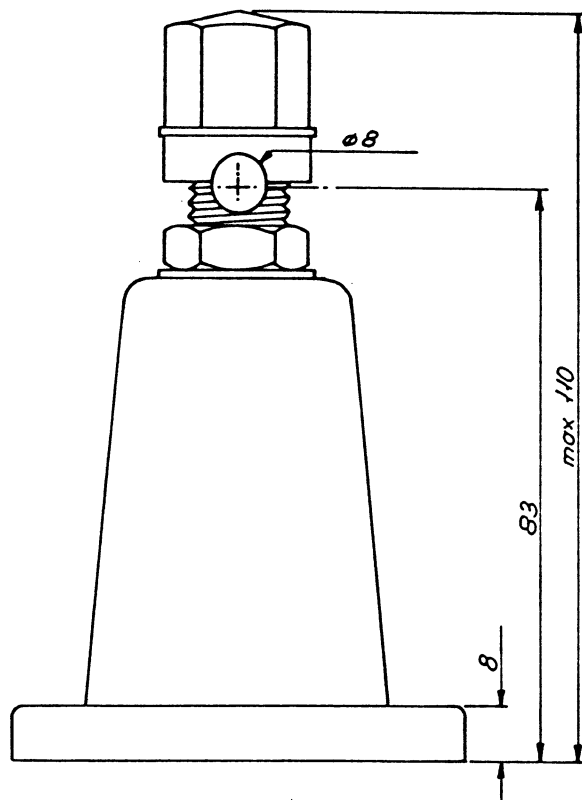
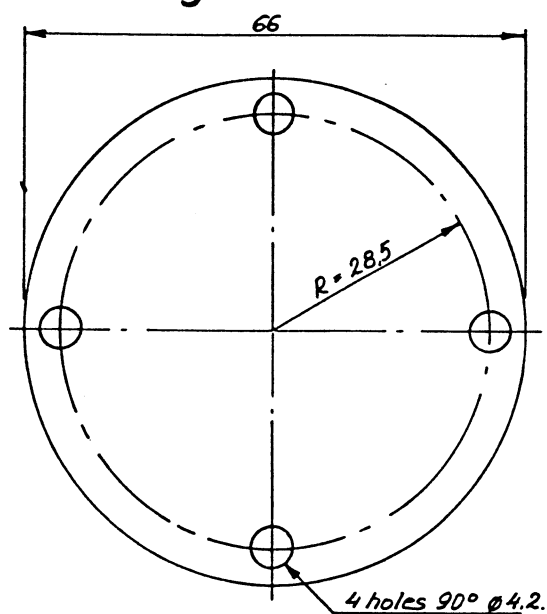
Mounting flange and Cap screw clamping	thermoplastics
Shaft	polyester

Electrical Data:

Max. RF operating voltage	50 kV
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MAX. HEIGHT: 110 mm
 MAX. DIAMETER: 66 mm
 WEIGHT: 140 g

Mounting.



Order no: H 30

»SAILOR«

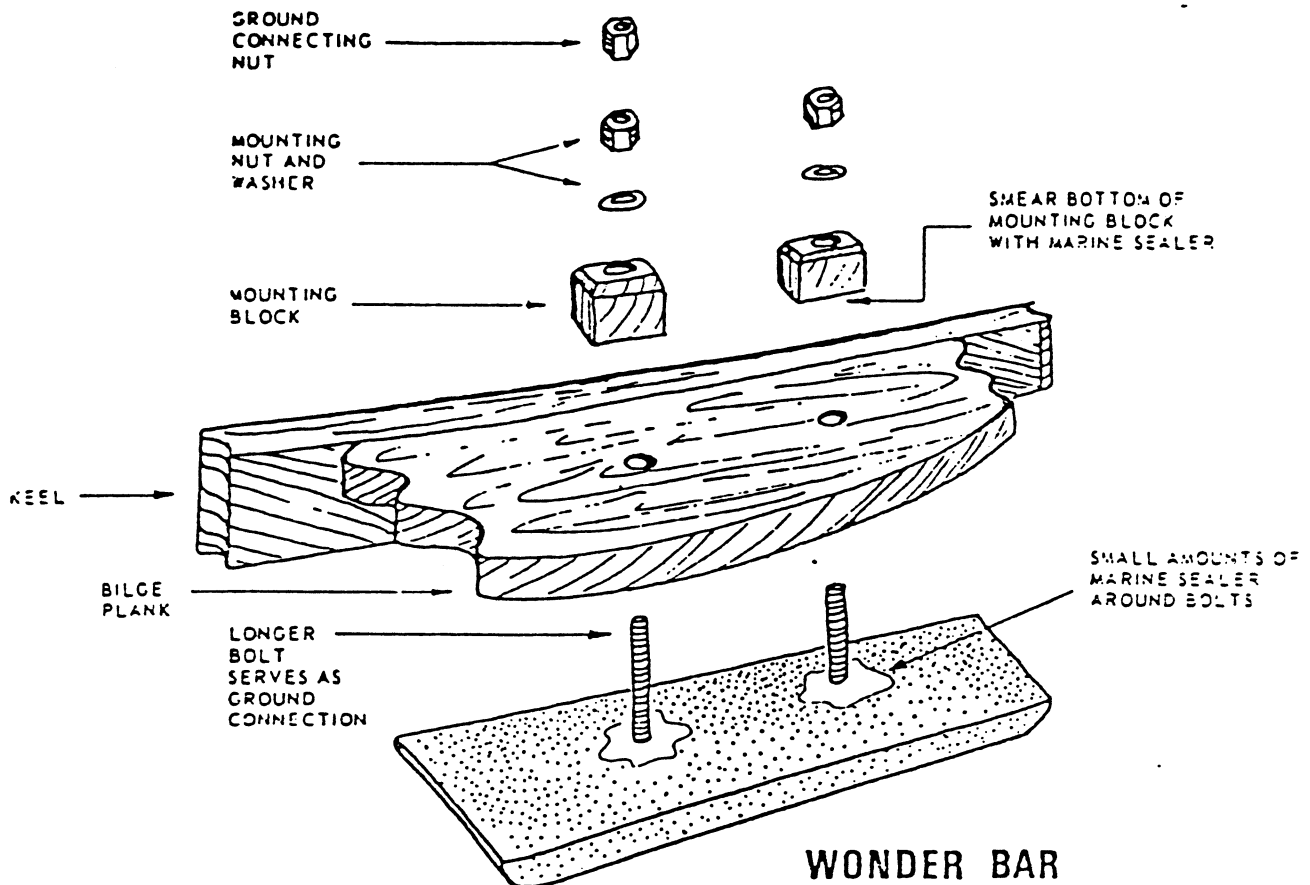
S. P. RADIO AALBORG DENMARK



STAND - OFF FOR MF AND HF

WONDER BAR

Installation Instructions



INSTALLATION

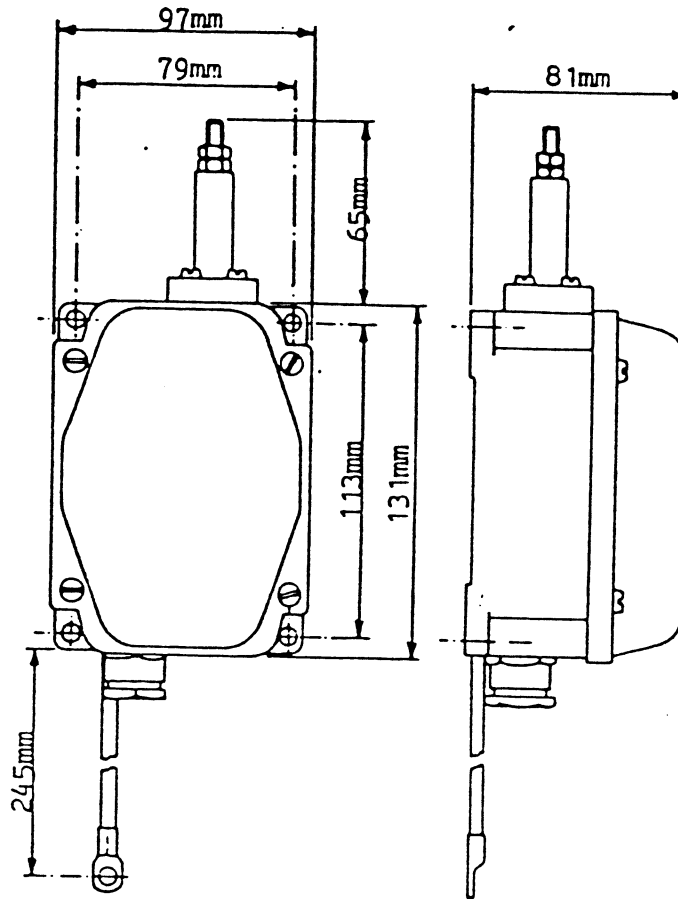
1. Use WONDER BAR as drilling template.
2. Place small amounts of Marine Sealer on Blocks and around Bolts as shown.
3. Position WONDER BAR on outside of Hull, push Bolts thru Hull with Wood Blocks inside the Hull as shown.
4. Make up Bolts with Washers and Nuts as shown.
5. DO NOT hammer on WONDER BAR or Bolts.
6. DO NOT tighten up too much as inside Blocks will swell when wet.

IMPORTANT

PLACE WONDER BAR CLOSE TO RADIOTELEPHONE LOCATION.
This allows use of a short, heavy ground lead.



RECEIVER AERIAL CONNECTION BOX SAILOR H1209



MOUNTED WITH TRIAXIAL CABLE

To be grounded effectively.

If metal mast to mast.

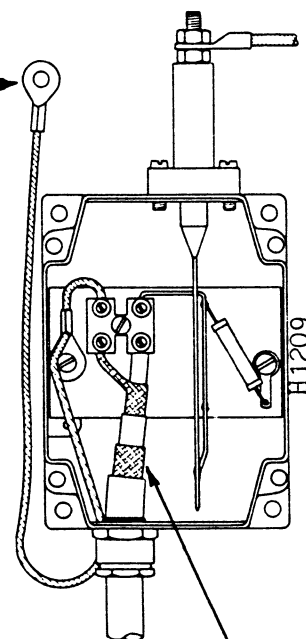
Metal mast must be connected to either metal hull or to grounding system.

If wooden mast to cu-strip (50x1) fastened to the mast.

In the lower end the strip must be connected to deck (if metal ship) or to separate grounding system (equal to transmitter system) close to mast.

All standing rigging must in the top end be connected to metal mast or cu-strip and in the receiver end to cu-strip or grounding system.

To avoid crackling noise make all connections by welding, bolting or soldering.



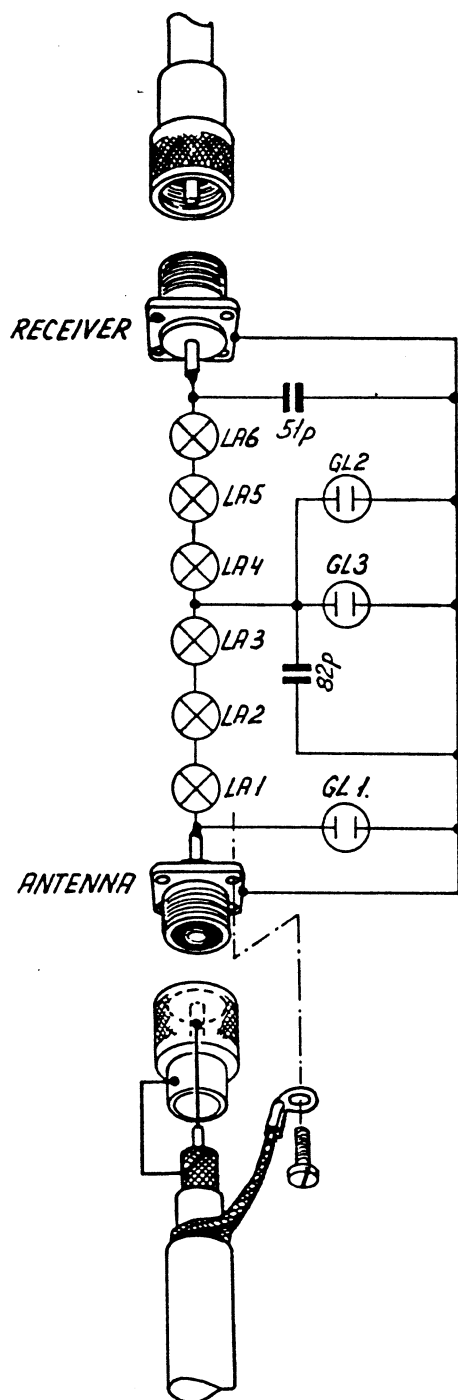
Outer screen is not connected to ground at this end.

NOTE

Do not use other cables than 50 ohm triaxial cable with same electrical data as RG213U.
E.g. SP type H1213.

»SAILOR« RECEIVER PROTECTOR TYPE H1223

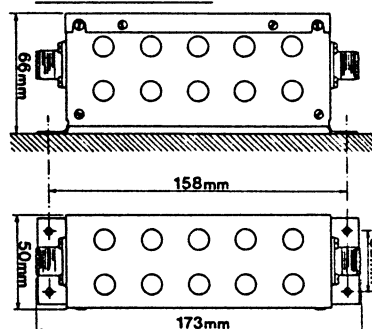
S. P. RADIO A/S AALBORG DENMARK



TECHNICAL DATA

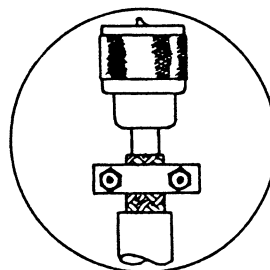
Input impedance: 50 ohm
 SWR: 1,8
 Frequency range: DC - 30 MHz
 Insertion loss: 2,8 dB

INSTALLATION



Receiver coaxial cable.

If 50 ohm coaxial cable RG213U is used, the cable has to run in steel tube (conduit). If 50 ohm triaxial cable H1213 (S.P. Radio) is used, outer screen has to be earthed at console end only.

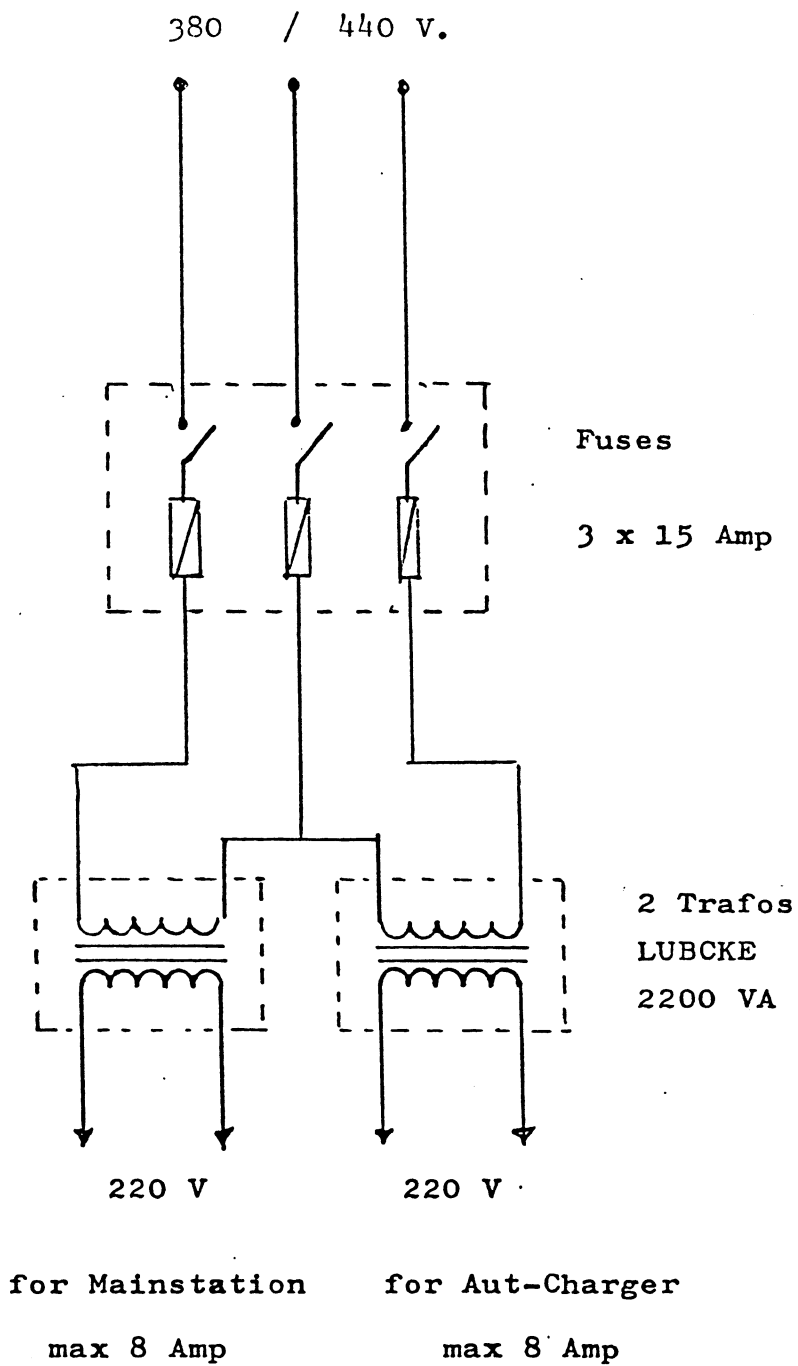


LA1-3:
 LA4-6:
 GL1: Glow lamp.
 GL2: Glow lamp.
 GL3: Glow lamp.
 Mica capacitor
 Mica capacitor

12V 5W
 24V 10W
 150V
 90V
 90V
 51 pF 10% 500V
 82 pF 10% 500V

Philips 12821
 Philips 13814
 Siemens A71-A150-Q69-X245
 Siemens A71-C90-Q69-X247
 Siemens A71-C90-Q69-X247
 Jahre 49.54/5
 Jahre 49.54/5

(B)

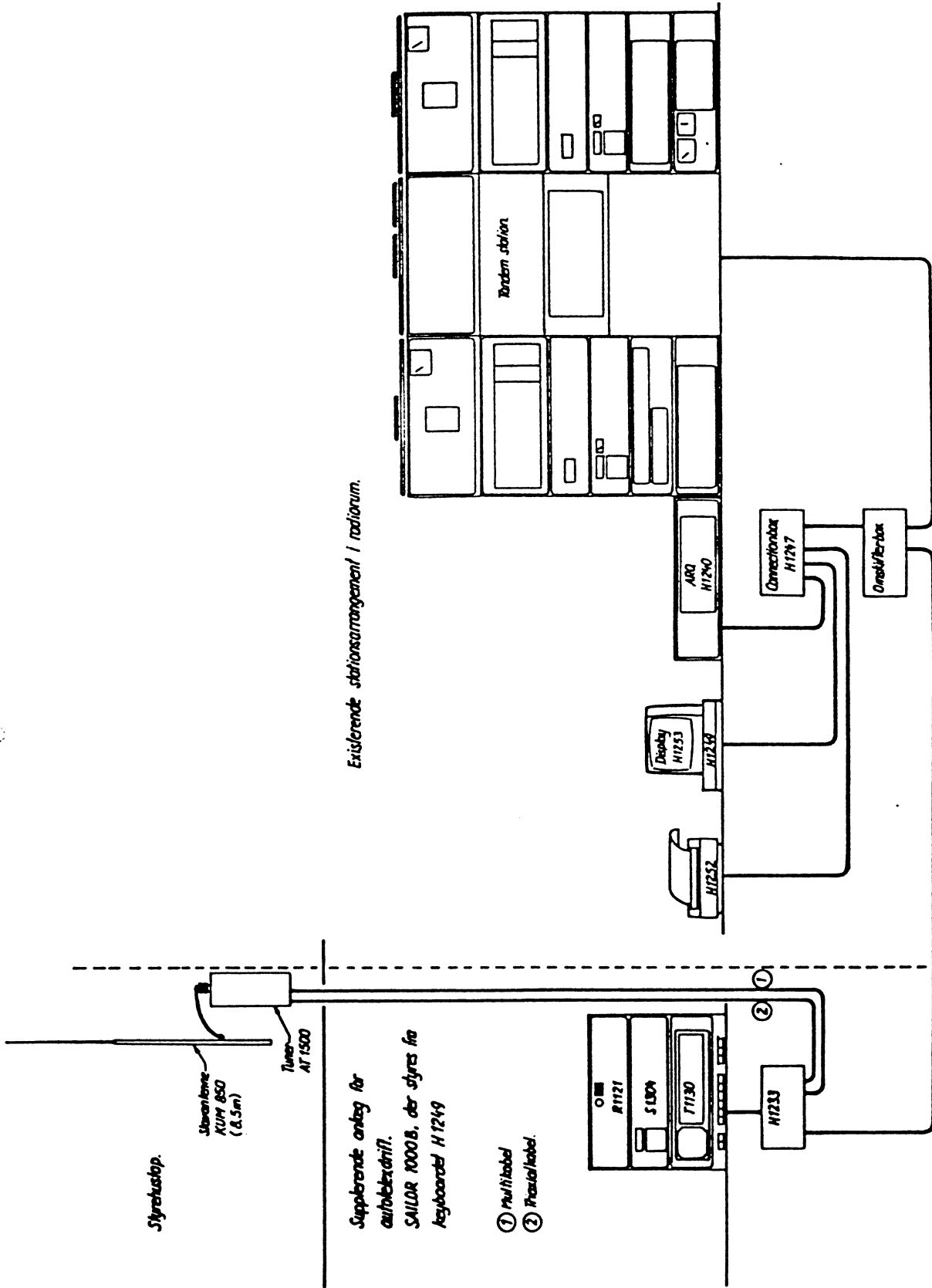


Rettelser	1/2 S. P. RADIO AALBORG POWER TRANSFORMER.	Tegn.	KD
		Kont.	
		Målestok	

SECTION 4

INSTALLATION DRAWINGS FOR MF/MHF/HF

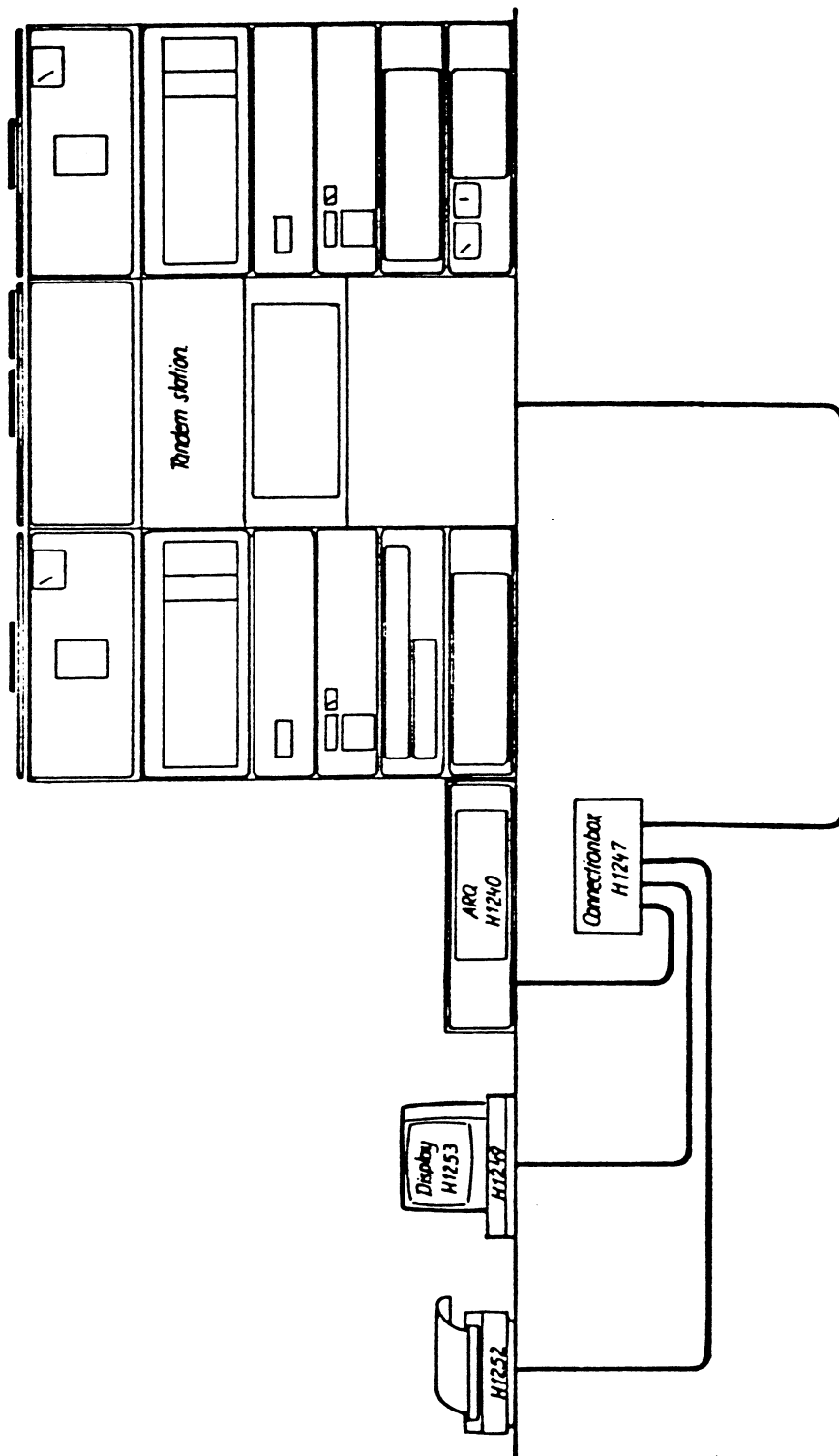
1. PROGRAMME 1000, TANDEM STATION
2. PROGRAMME 1000, BACK-UP STATION
3. COAST TELEPHONY STATION
4. PROGRAMME 1000/B, 400/1250W SHORT WAVE
5. COMPACT 2000 SHORT WAVE
6. WATCH RECEIVER R501



Existerende stationsarrangement i radio rum.

Supplerende anlag for autotekstdrift.
SAILOR 1000B, der styres fra keyboardet H 1249

- ① Multikabel
- ② Presetkabel



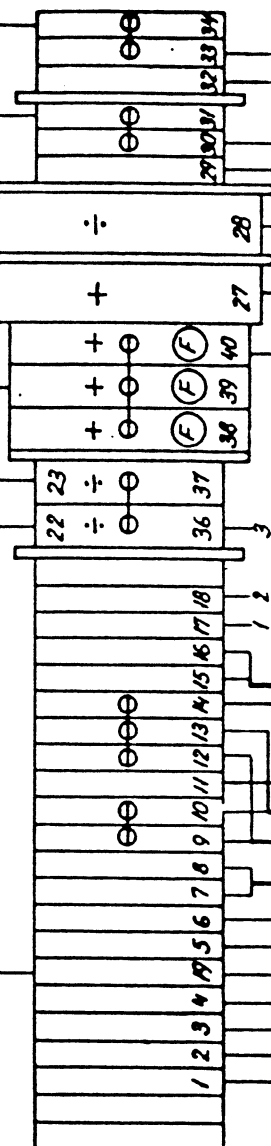
SAILOR RADIO STATION Center panel H 1222.

ARCU → 220V AC (31-34)

H 1223
Panel 2
H 1223
Panel 3
H 1223
Panel 4

H 1213
H 1213
H 1213

Radio room



2x1.5" ENSPM
2x1.5" ENSPM
2x1.5" ENSPM

2x0.5" PF-US-K
2x0.5" PF-US-K
2x1.5" ENSPM

2x0.5" PF-US-K
2x1.5" ENSPM
3x1.5" ENSPM

2x4" ENCO
2x4" ENCO
2x4V/420Ah

2x4" ENCO

Telephone line (SSB)

Water Alarm in Foremast

Radio, main receiver

Radio, Reserve receiver

Radio, auto alarm

Radio room

Radio, auto alarm

Radio, auto alarm

Radio, house

Radio, house

Radio, house

Radio, house

Radio, house

Radio, house

Radio, house

Radio, house

Radio, house

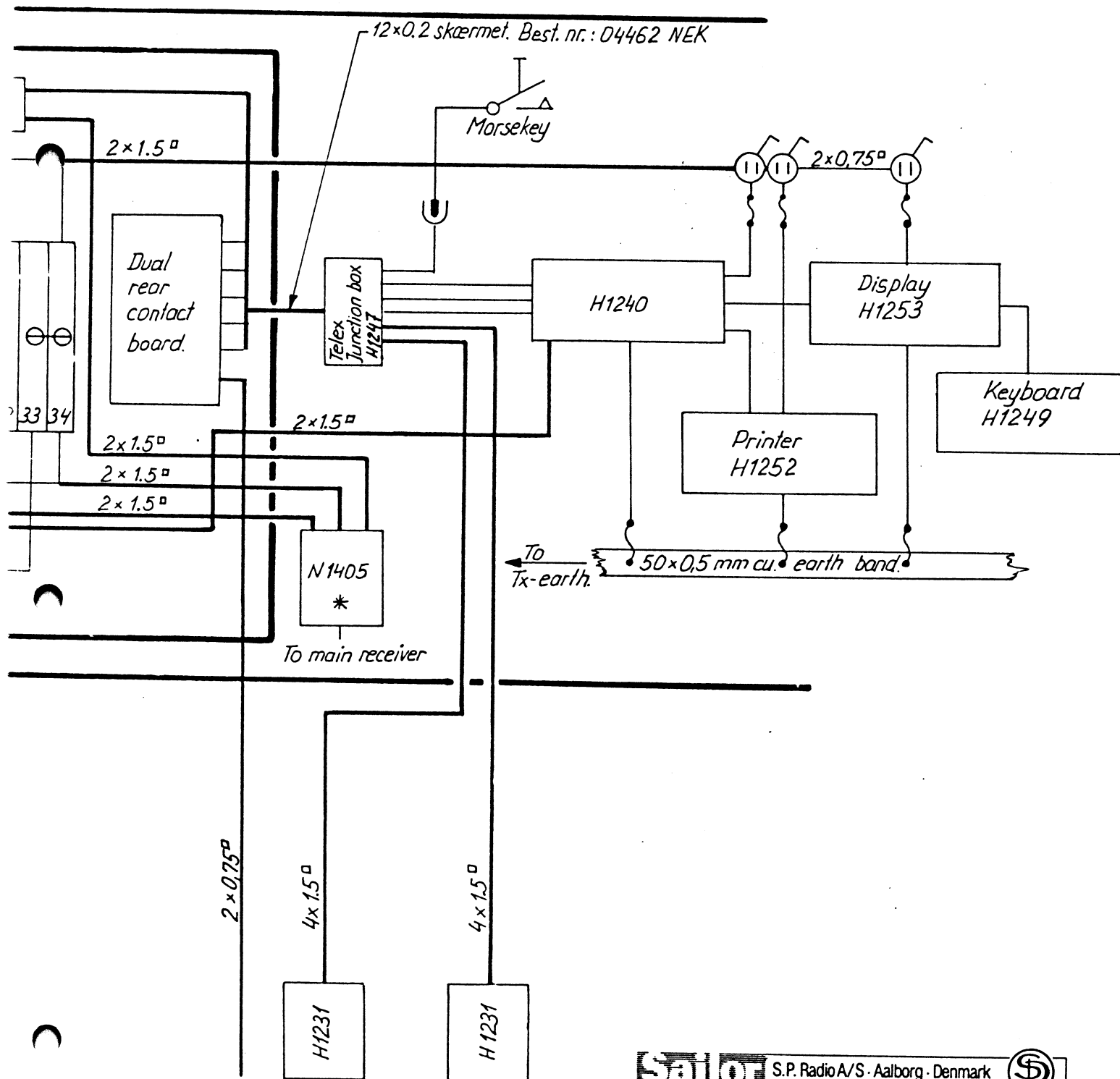
Radio, house

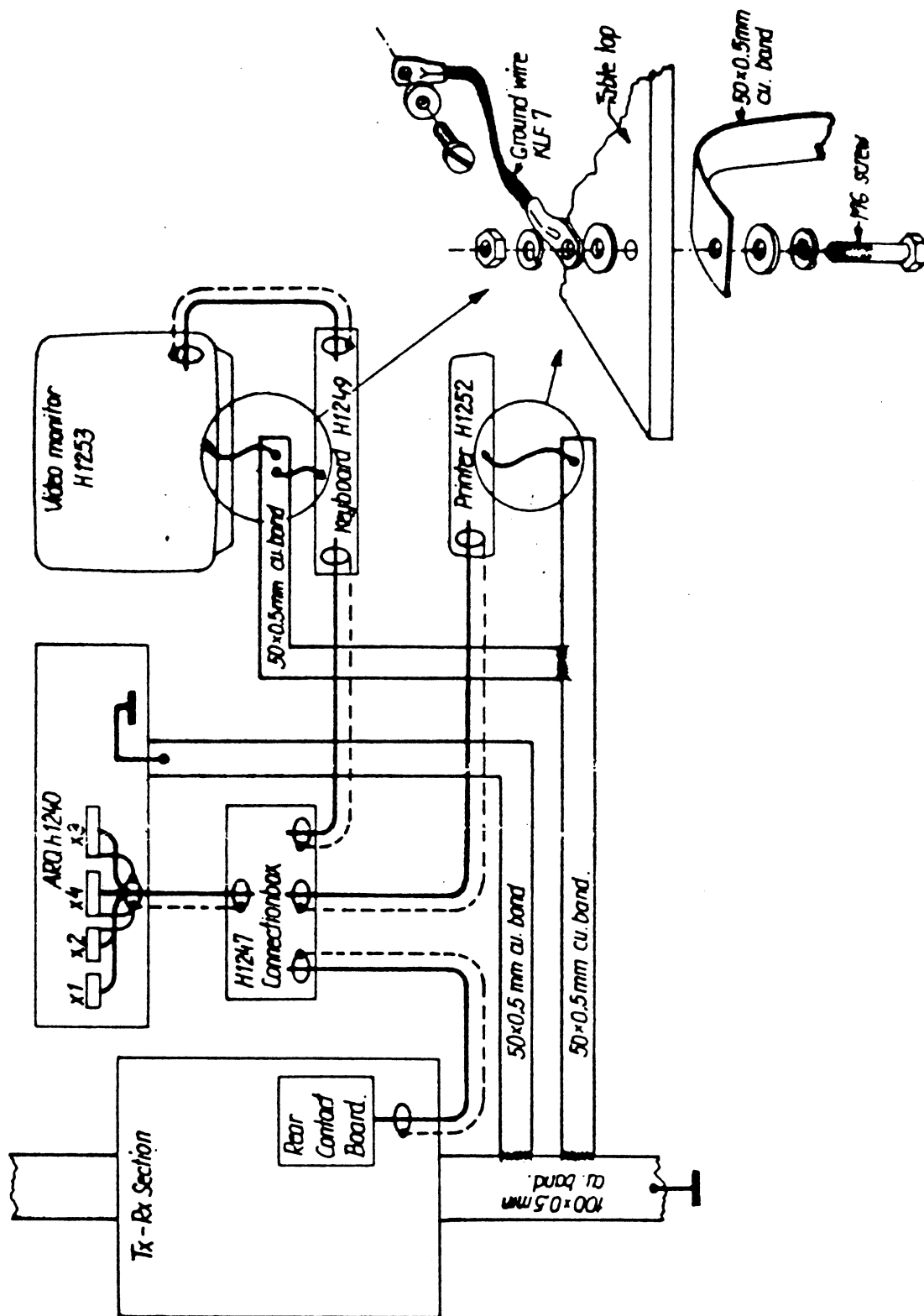
Radio, house

Radio, house

Radio, house

Radio, house

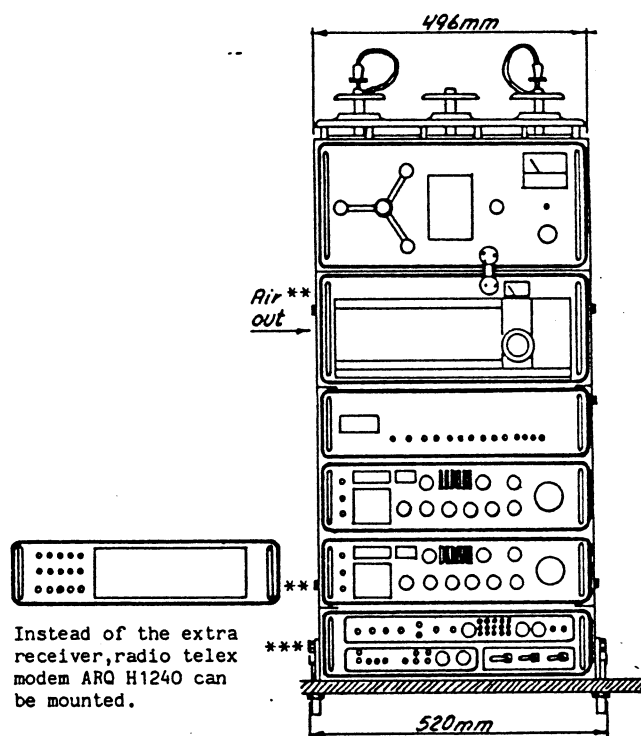




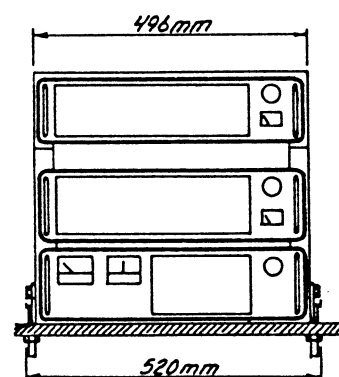
Rettelser	S. P. RADIO AALBORG	Tegn.	K.D
		Kont.	6-2-90
		Målestok	
		Grounding of Telex Equipment	

Satellite back-up station consisting of
H1201 with H1241, T1127L, S1301L, R11XX,
R11XX, H1218 with receiver aerial selec-
tor H1243 and N1401, H1203, N1400, N1404.

DIMENSIONS

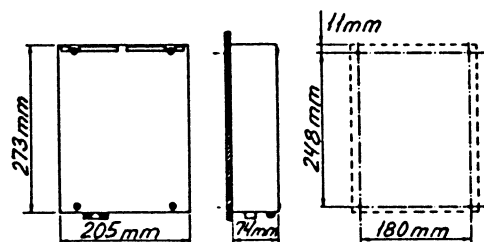


RECEIVER AND TRANSMITTER SECTION

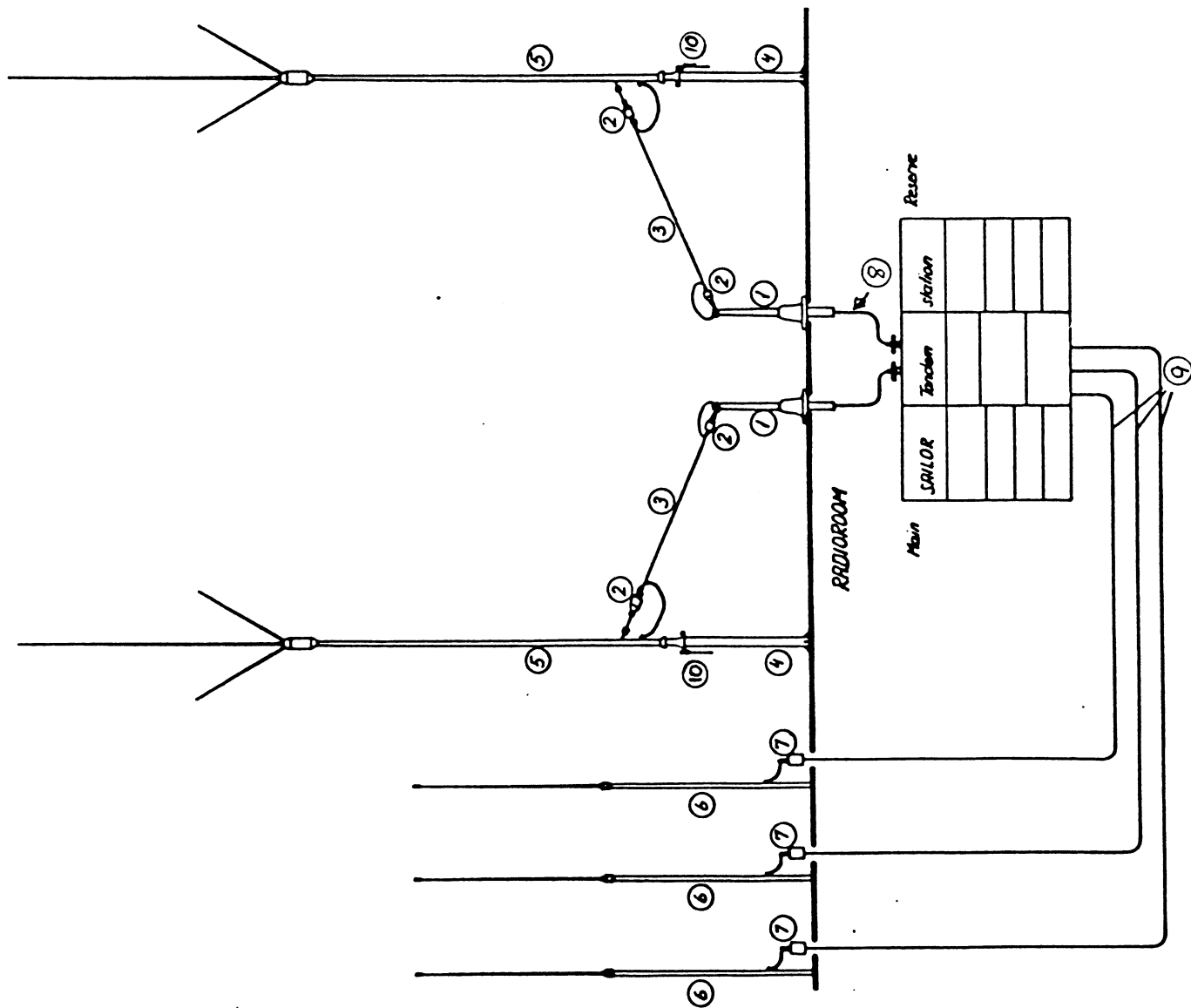


POWER PACK SECTION

POWER SUPPLY N1405 AND CONNECTION BOX H1242



Rettelser	1/2 S. P. RADIO AALBORG	Tegn.	KD
		Kont.	7-2-90
	Satellite Back Up.	Målestok	



1 Lead-Through STP2500D

2 Insulator RHG220

3 Aerial Wire 16 sq.

4 Supporting Pipe for STA150C

5 Mast Aerial STA150C

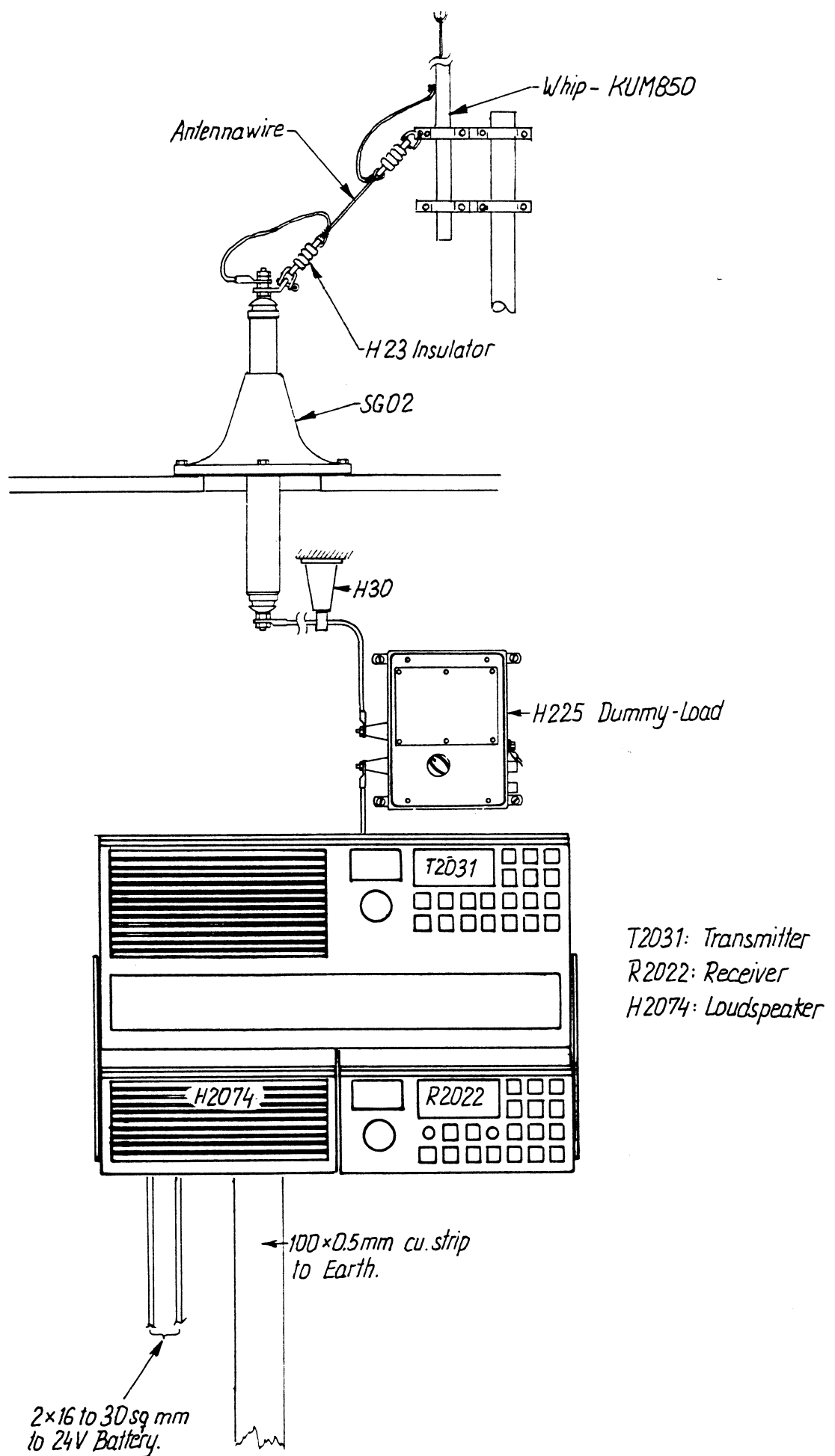
6 Whip Aerial KUM850 with crown

7 Aerial Connection Box H1209

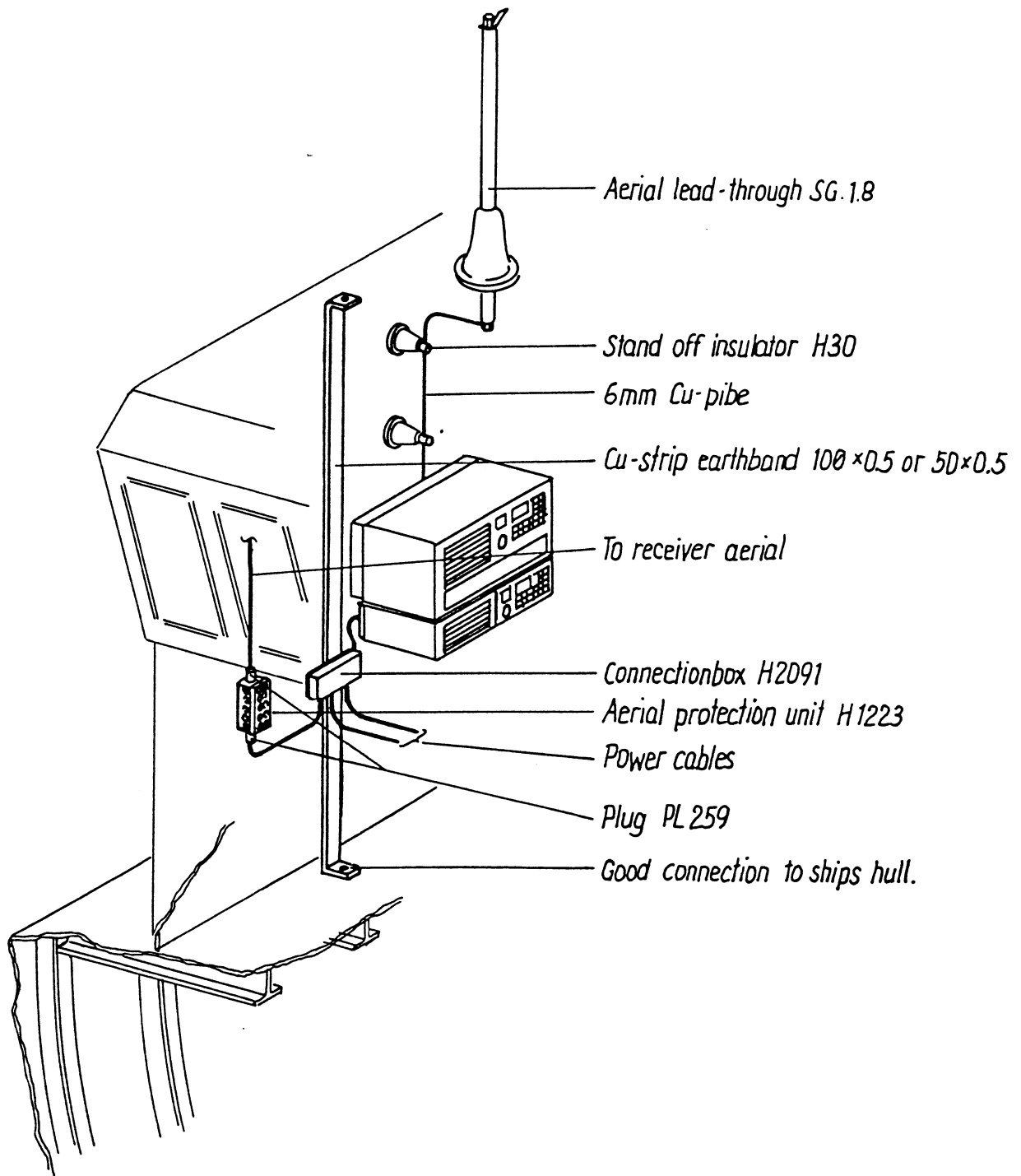
8 Ø 6 mm copper tube

9 Triaxial Cable type H1213

10 Tilting Device for STA150C

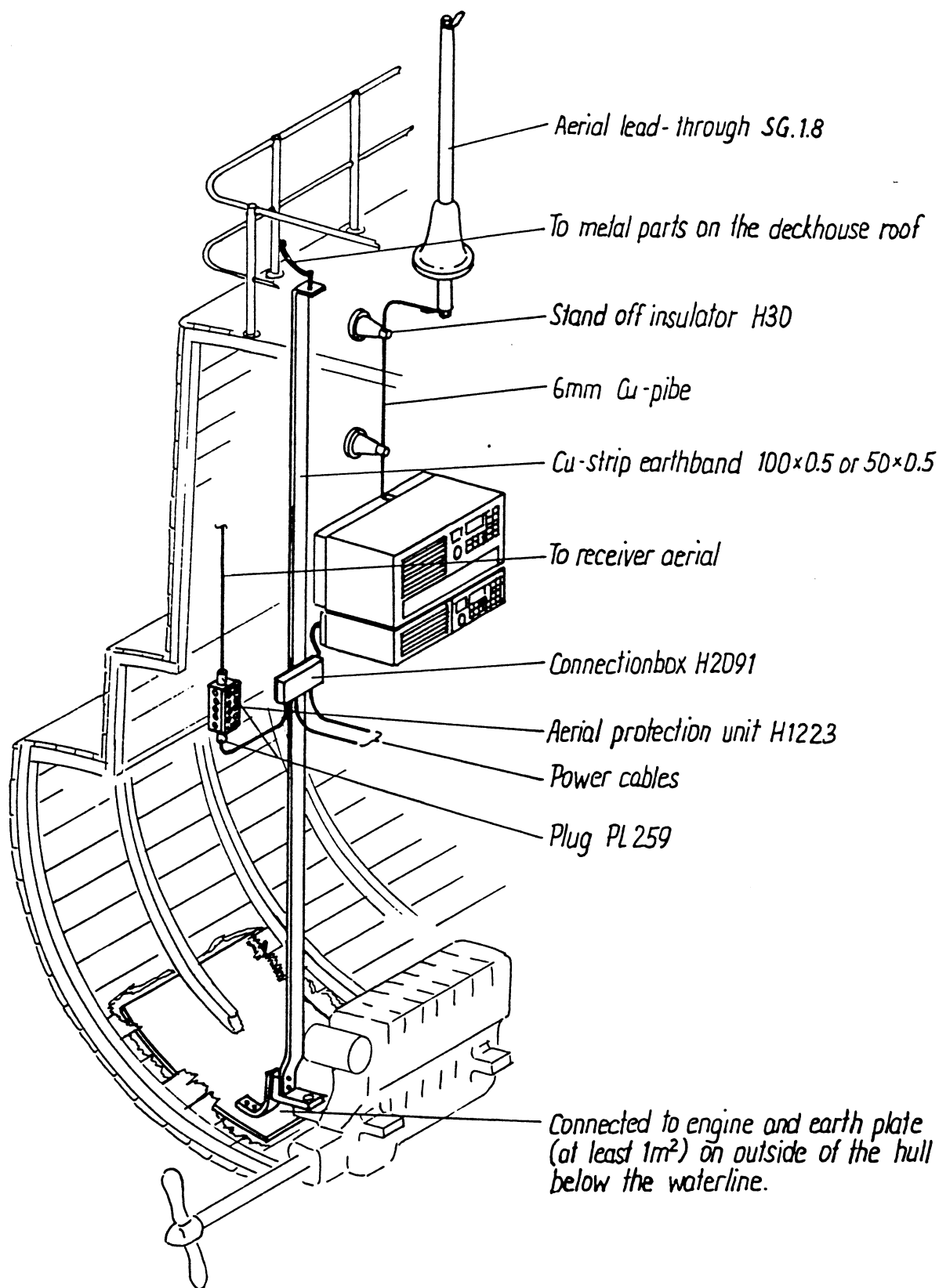


Mounting in metal boats



Rettelser	S. P. RADIO AALBORG	Tegn.	7.5.86 NPR
		Kont	
	Pgr. 2000 installation in metal boats.	Målestok	
		4-0-25120	

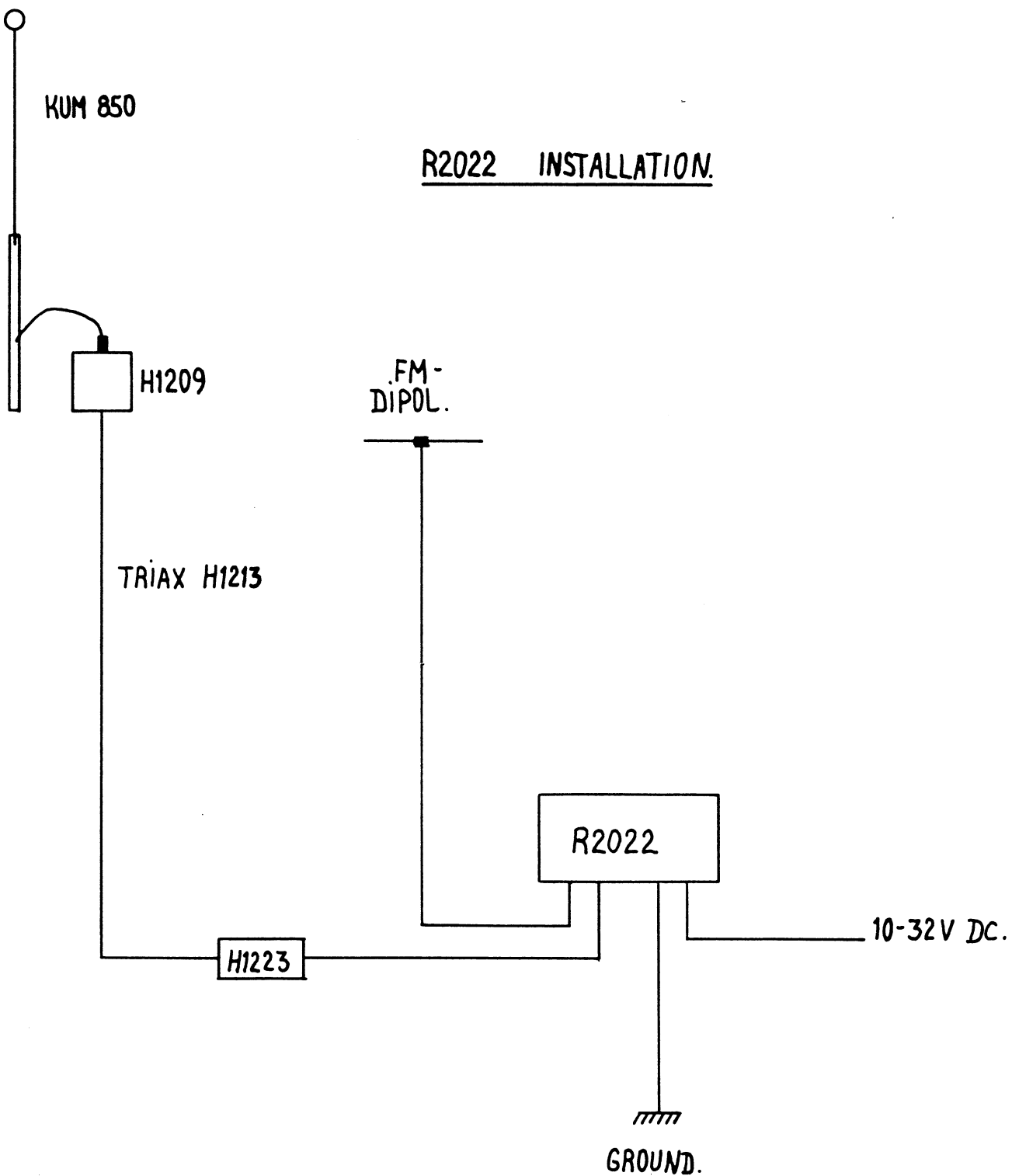
Mounting in wooden boats.



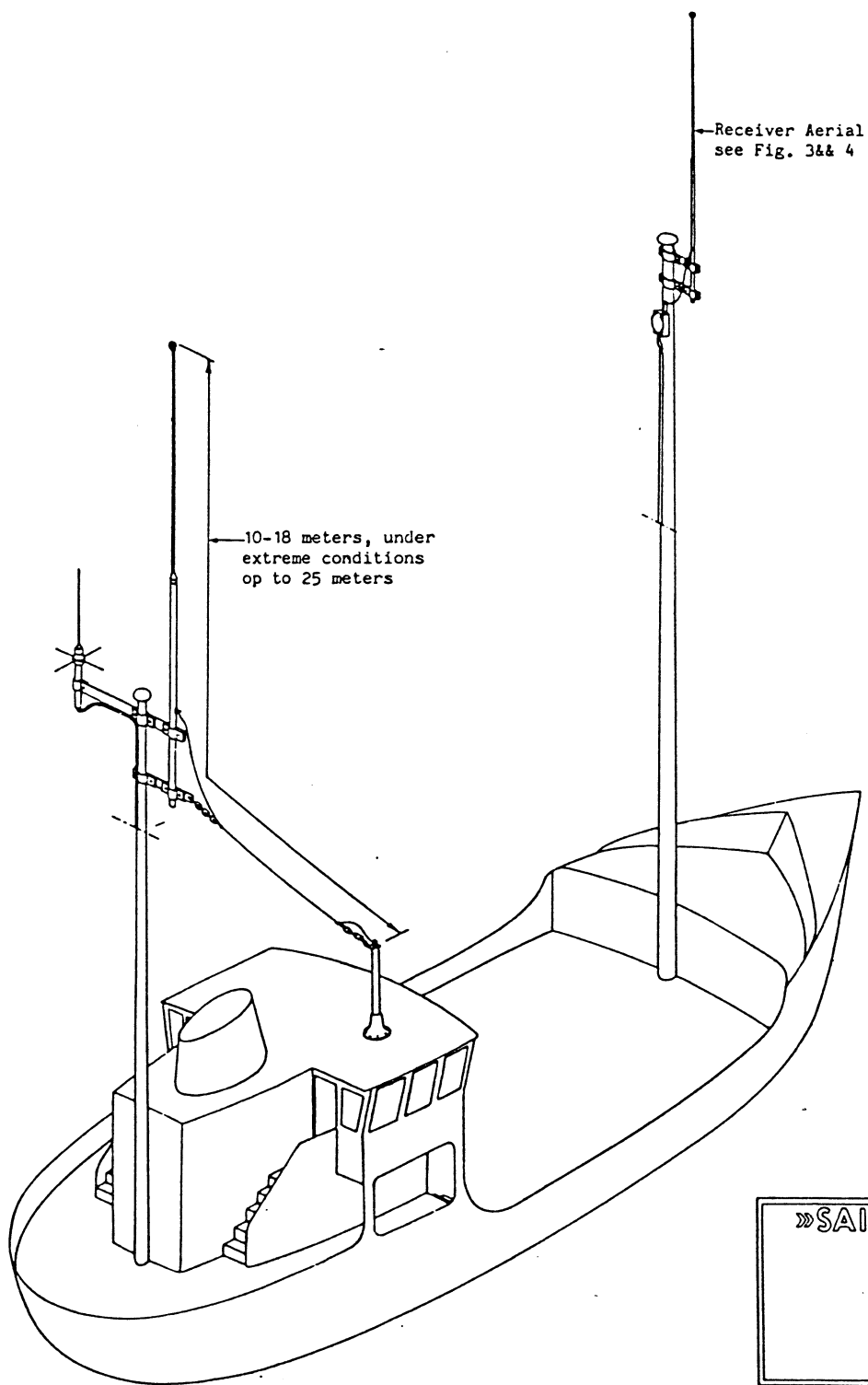
Rettelser	S. P. RADIO AALBORG	Tegn.	75.86 NPR
		Kont.	
	Pgr. 2000 installation in wooden boats.	Målestok	
		4-0-25119	

KUM 850

R2022 INSTALLATION.



Rettelser		S. P. RADIO A/s AALBORG	Elzn.		Rå		MATR.
			Forn.		Konserv.		VARE NR.
			Forcrom.		Div.		
			Elox.				
			Affedtes				TEGN. NR.
		Renses i spån					
		Tegn. 06.02.90 BSA	Kontr.	Målestok			

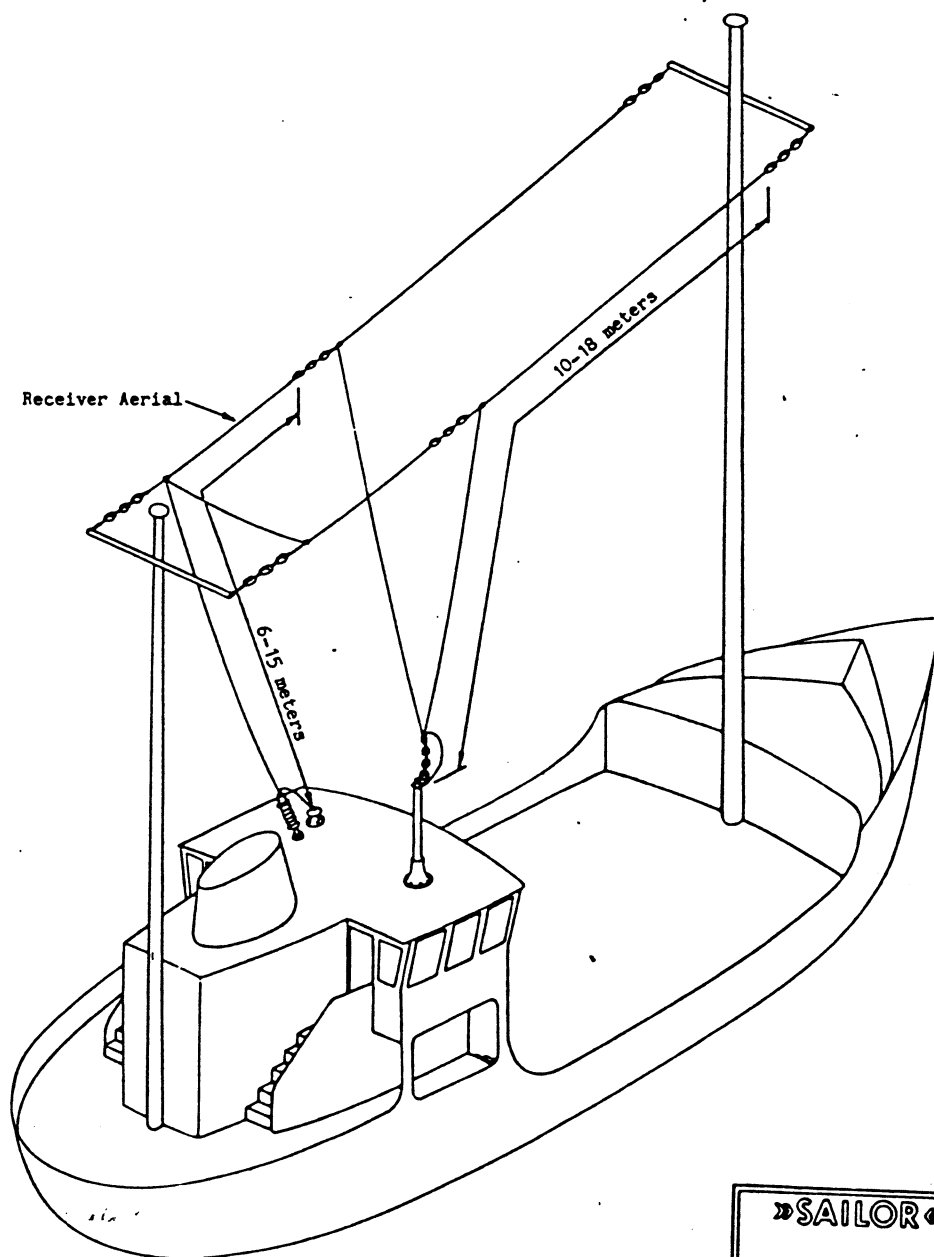


»SAILOR«

S. P. RADIO 'A' AALBORG DENMARK

Fig. 6

SHORT WAVE INSTALATION




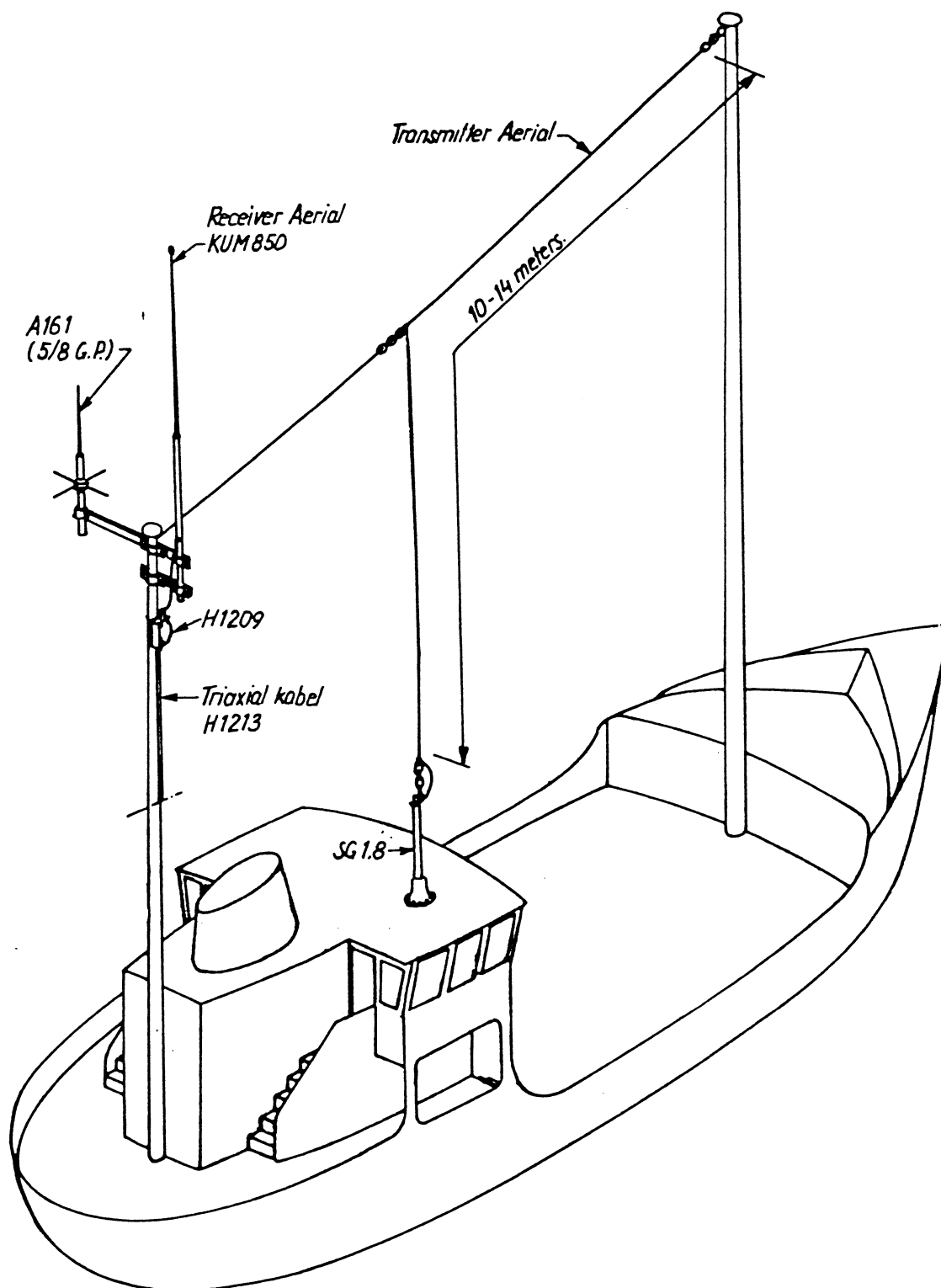
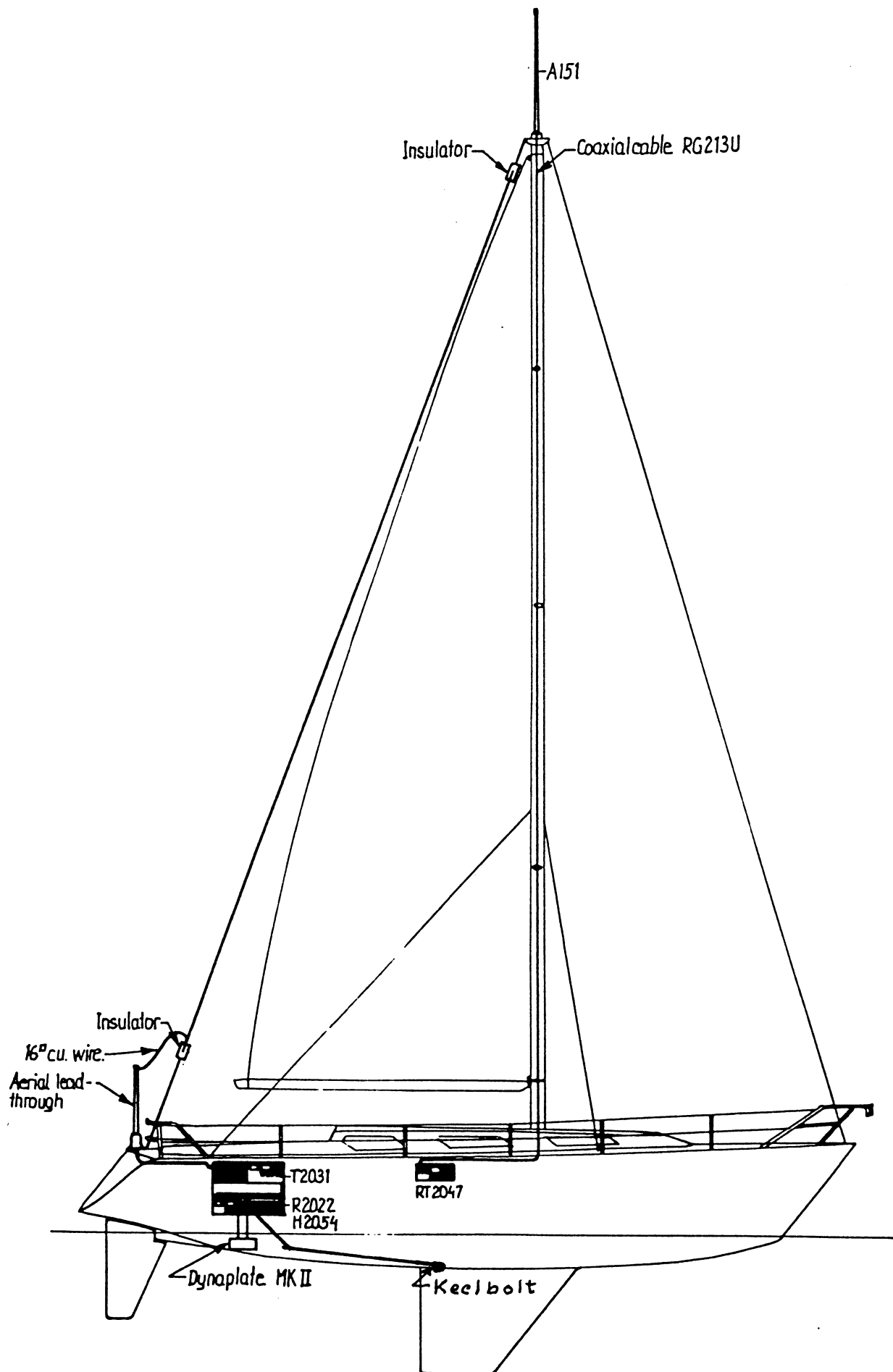
»SAILOR« S. P. RADIO & AALBORG DENMARK 

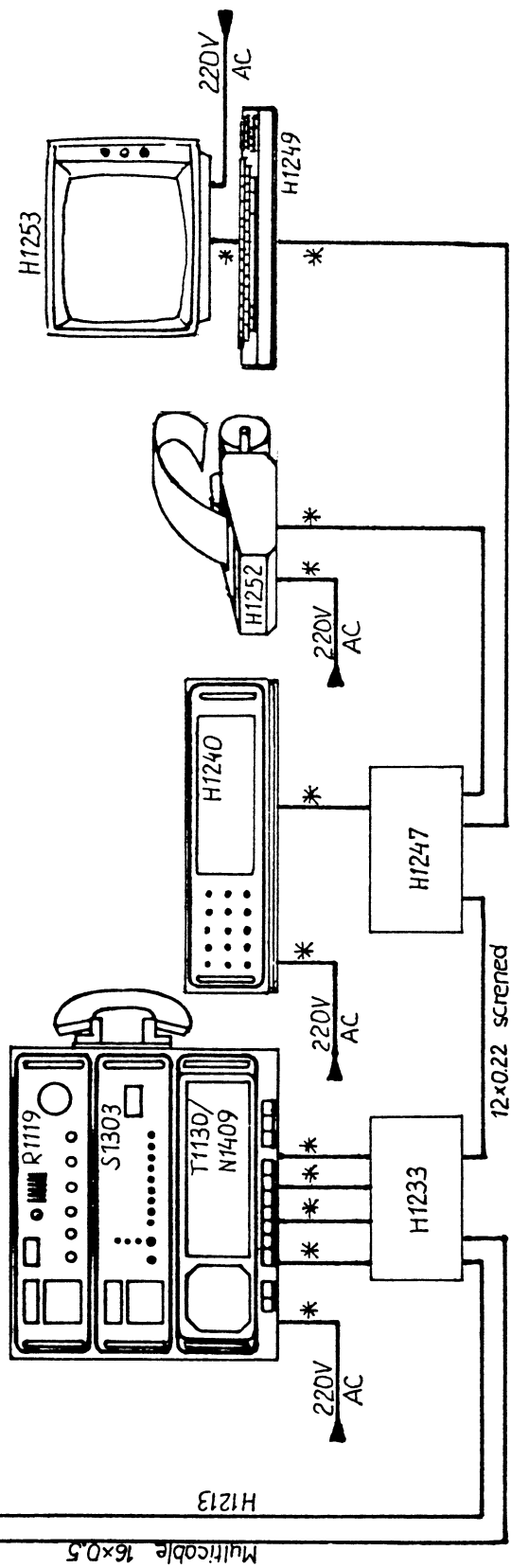
Fig. 5.
HF INSTALLATION 1,6 - 4MHz

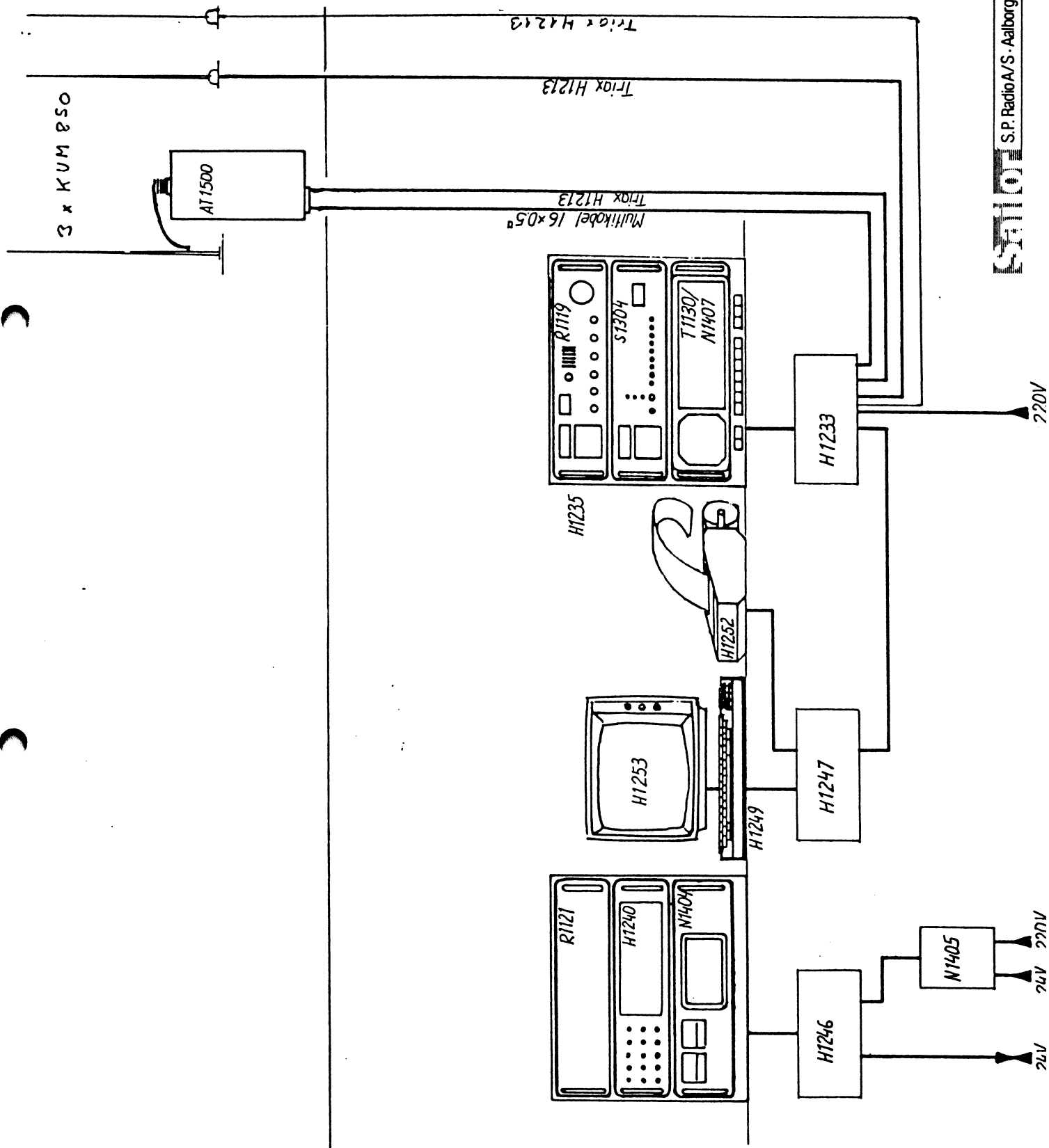




RADIO ROOM

* Factory mounted cables.





H1275



	S. P. RADIO A/S AALBORG	Euro Euro	AJ	MATH
	CONNECTION DIAGRAM	Ford Ford	CAR	VARE NR
	N°410 - HIC75	Engel Engel		TECH N°A
		Reichelt Reichelt		31 9 111

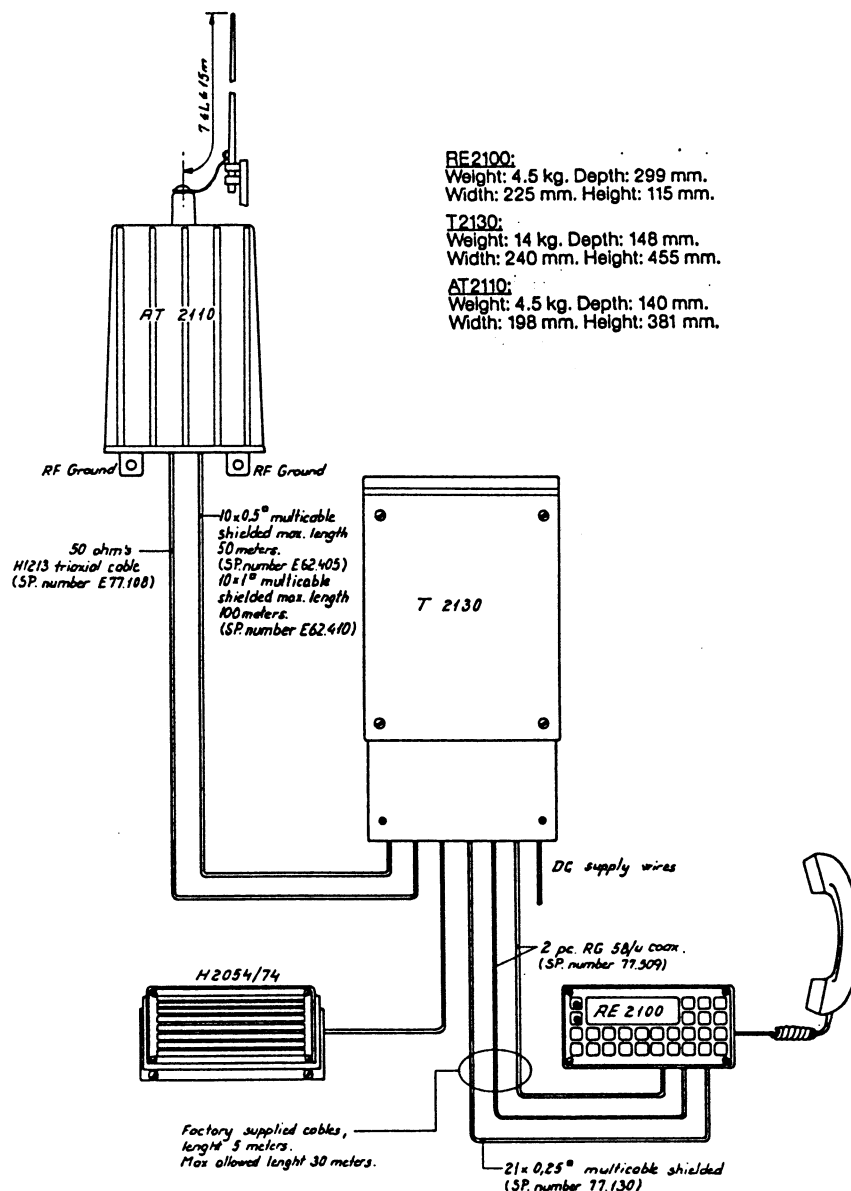
2.1.1. INSTALLATION HINTS

The HF SSB Transmitter T2130 has to be installed vertically because it is convection cooled.

To ensure free airflow inside the transmitter, at least 100 mm free space is necessary at the top of the cover. At the bottom of the transmitter, 100 mm free space is necessary for cable lead-in.

In order to facilitate the installation, dismantle the turnable inner chassis (see the section 4.0. MECHANICAL DISASSEMBLING). Then install the back plate with the connection board PCB as described in section 2.1. MOUNTING POSSIBILITIES/DIMENSIONS AND DRILLING PLAN.

When all cables have been connected according to the cable plans in question, reinstall the turnable inner chassis and complete the installation by executing the performance check (see the section 3.5. PERFORMANCE CHECK).



2.2.5. MAIN CABLE PLAN WHEN SUPPLIED FROM 12V DC BATTERY,
USING N2160 12V DC TO 24V DC CONVERTER

Note 1, 2 and 3

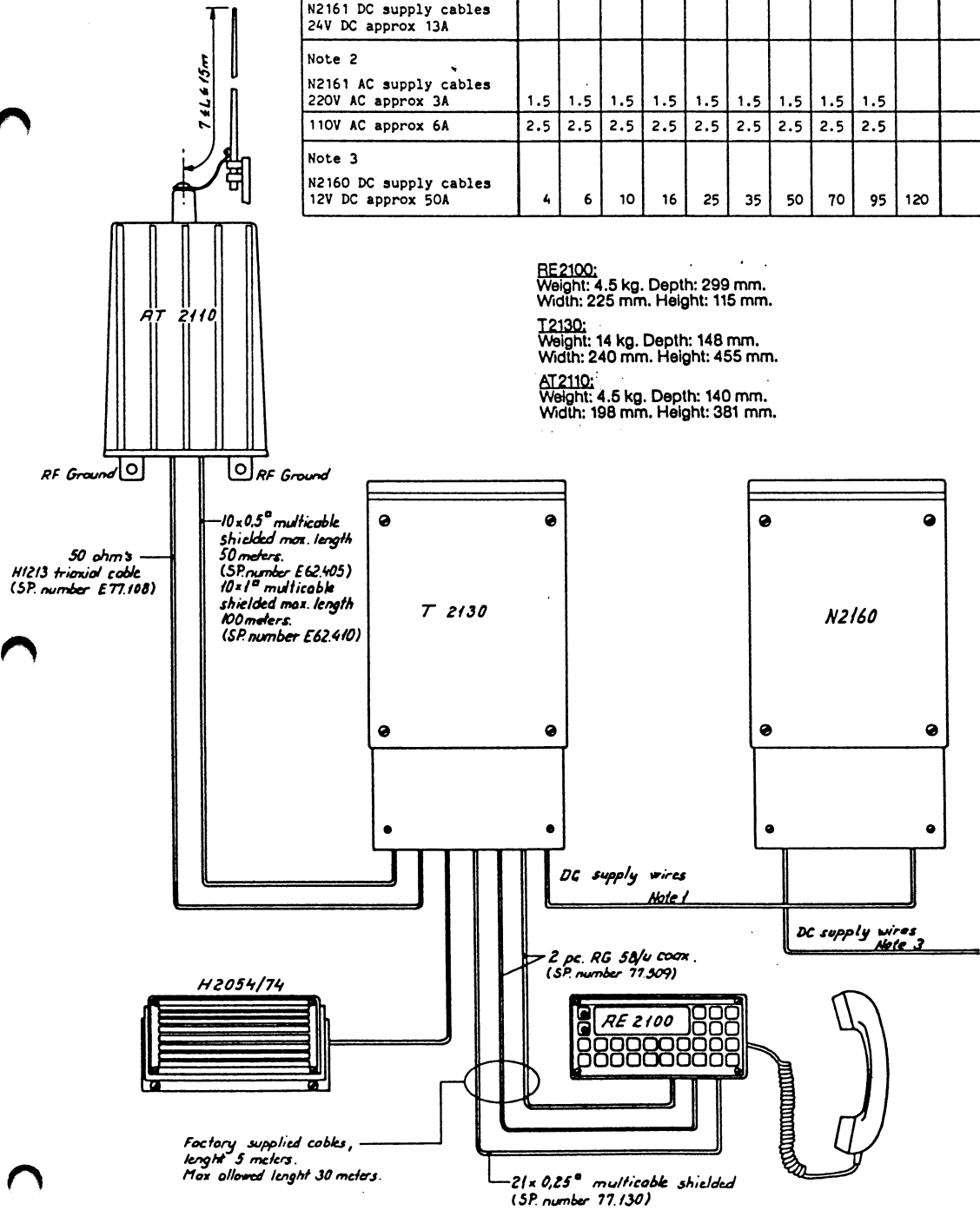
Distance/cable dimensions table

Distance in meters	1.3	2	3.2	5	8	10	13	16	24	34	Mains fuse
Copper cable dimensions in mm ²											
Note 1 T2130 DC supply cables 24V DC approx 13A and N2161 DC supply cables 24V DC approx 13A	1.5	2.5	4	6	10	10	16	16	25	35	
Note 2 N2161 AC supply cables 220V AC approx 3A	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5		10A
110V AC approx 6A	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		10A
Note 3 N2160 DC supply cables 12V DC approx 50A	4	6	10	16	25	35	50	70	95	120	

RE2100:
Weight: 4.5 kg. Depth: 299 mm.
Width: 225 mm. Height: 115 mm.

T2130:
Weight: 14 kg. Depth: 148 mm.
Width: 240 mm. Height: 455 mm.

AT2110:
Weight: 4.5 kg. Depth: 140 mm.
Width: 198 mm. Height: 381 mm.

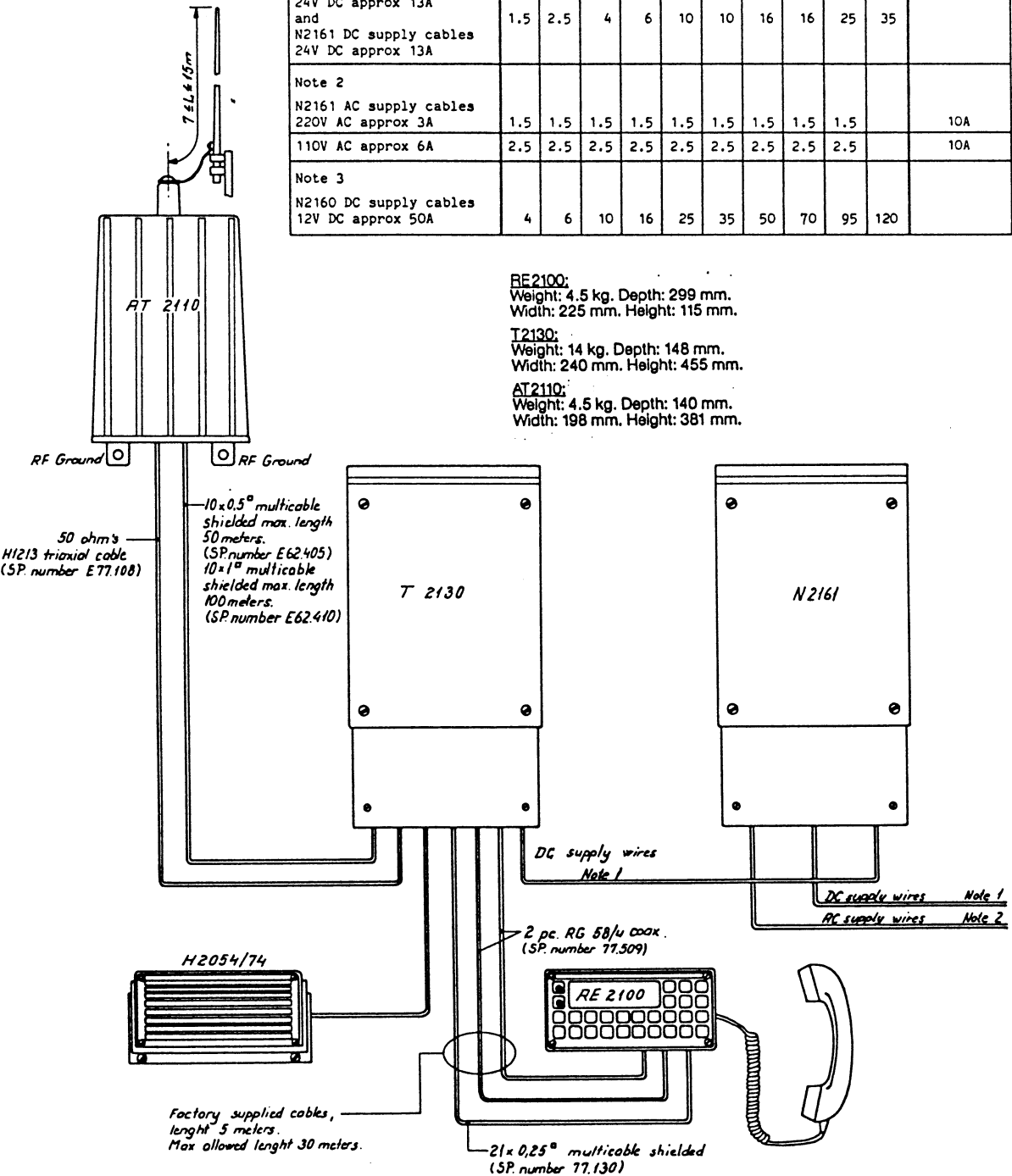


2.2.6. MAIN CABLE PLAN WHEN SUPPLIED FROM AC, USING N2161 AC TO 24V DC POWER SUPPLY.
MAIN CABLE PLAN WHEN SUPPLIED BOTH FROM AC AND DC (N2161).

Note 1, 2 and 3

Distance/cable dimensions table

Distance in meters	1.3	2	3.2	5	8	10	13	16	24	34	Mains fuse
Copper cable dimensions in mm ²											
Note 1 T2130 DC supply cables 24V DC approx 13A and N2161 DC supply cables 24V DC approx 13A	1.5	2.5	4	6	10	10	16	16	25	35	
Note 2 N2161 AC supply cables 220V AC approx 3A 110V AC approx 6A	1.5 2.5	1.5 2.5	1.5 2.5	1.5 2.5	1.5 2.5	1.5 2.5	1.5 2.5	1.5 2.5	1.5 2.5		10A 10A
Note 3 N2160 DC supply cables 12V DC approx 50A	4	6	10	16	25	35	50	70	95	120	



Most important for good communication is the aerial. The best efficiency of the aerial will be with the Aerial Coupler AT1500 mounted outdoors close to the footpoint of the aerial and the aerial placed as high and free as possible. The Aerial Coupler AT1500 has to be grounded carefully.

AERIAL LENGTH

Max. length 14 metres, min. length 5 metres. Aerial length measured from insulator on AT1500 to the top of the aerial.

If the transmitter has to work mainly on frequencies below 4 MHz a total aerial length of 12-14 metres is recommended.

If the transmitter has to work mainly on frequencies higher than 4 MHz an 8.5 m whip aerial is recommended.

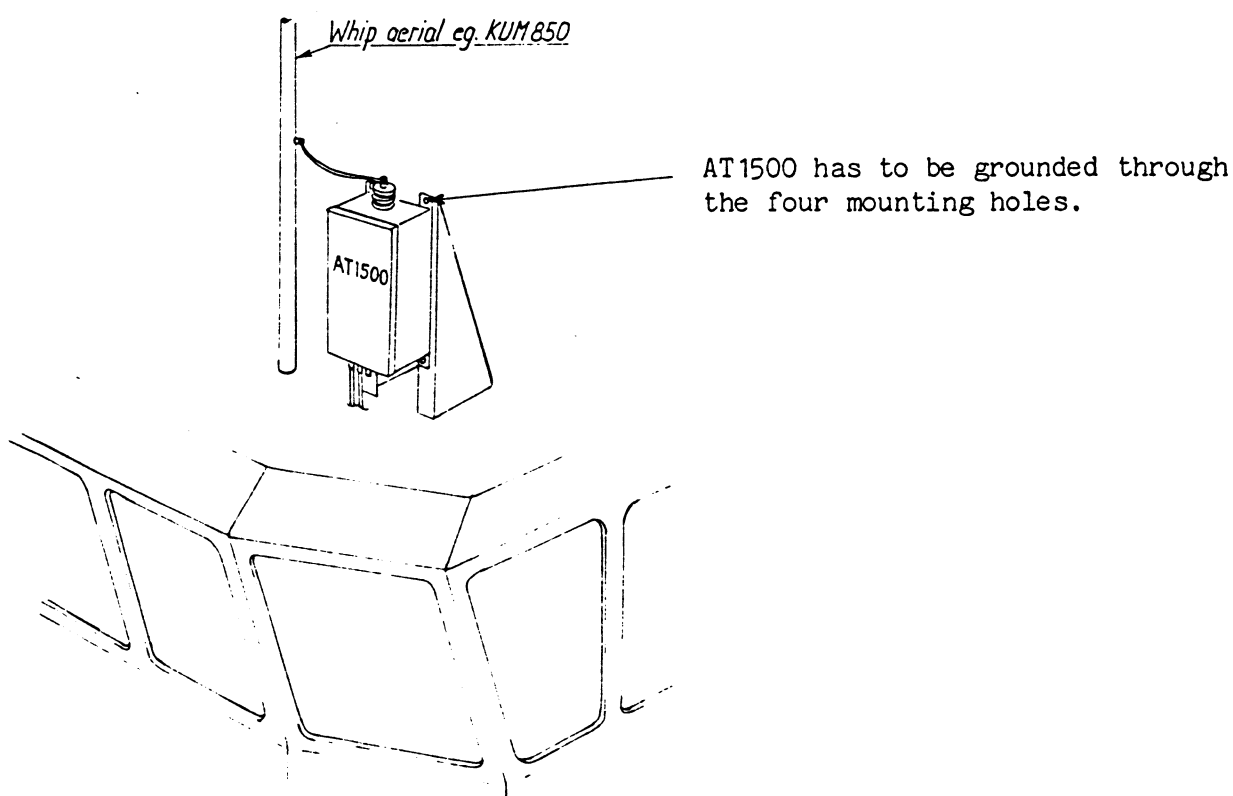
GROUND

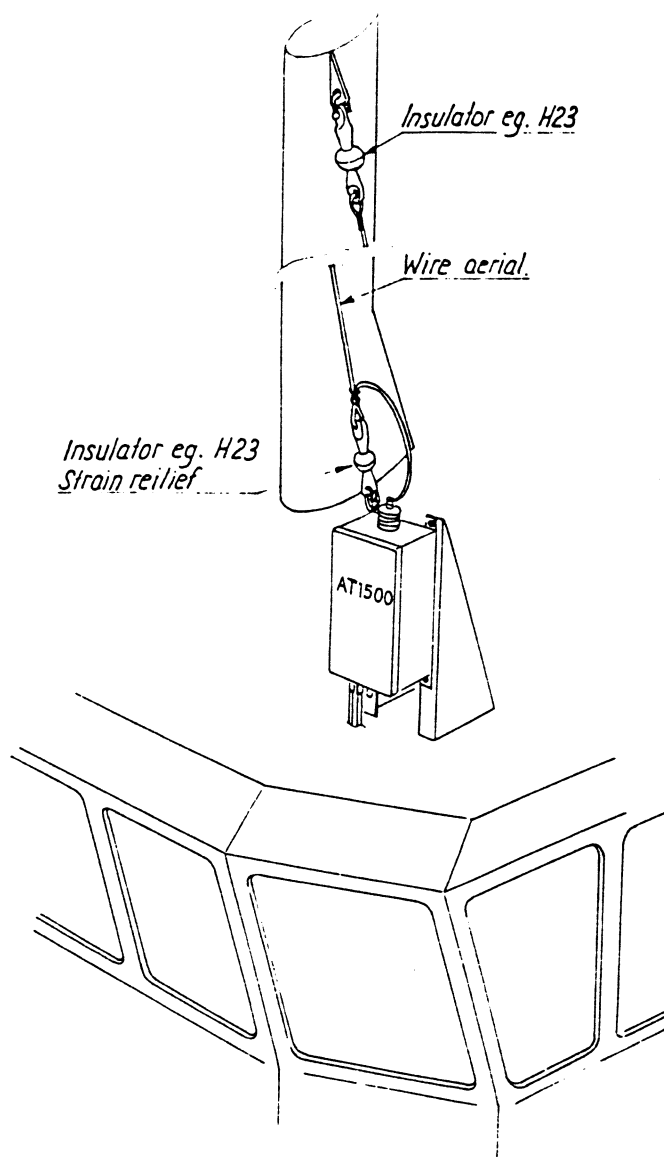
AT1500 has to be grounded at the footpoint of the aerial.

If a metal wheel house, weld up a pillar for AT1500 and bolt it to the pillar. This is the best way of getting a good ground for the aerial system.

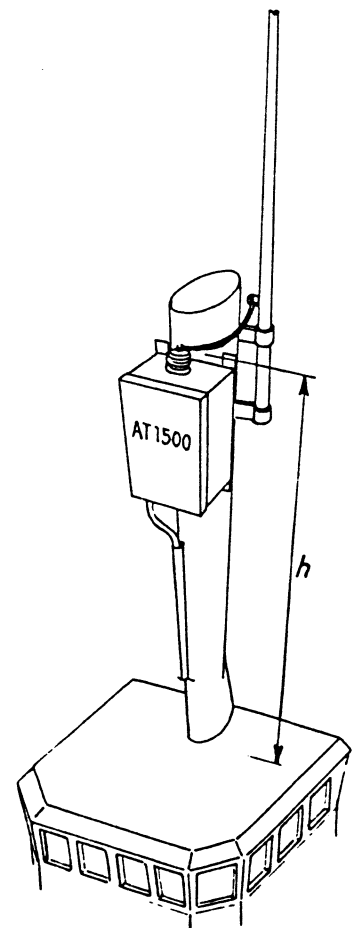
If a wooden or fibre glass boat, connect all accessible metal parts together and connect them to the aerial coupler (one or more of the four mounting screws) with a copper strip (100 x 0.5 mm) making the copper strip as short as possible. You can also make an artificial ground under the aerial as shown in ex. 5.

Ex. 1. AT1500 mounted on top of a wheel house with a whip aerial.





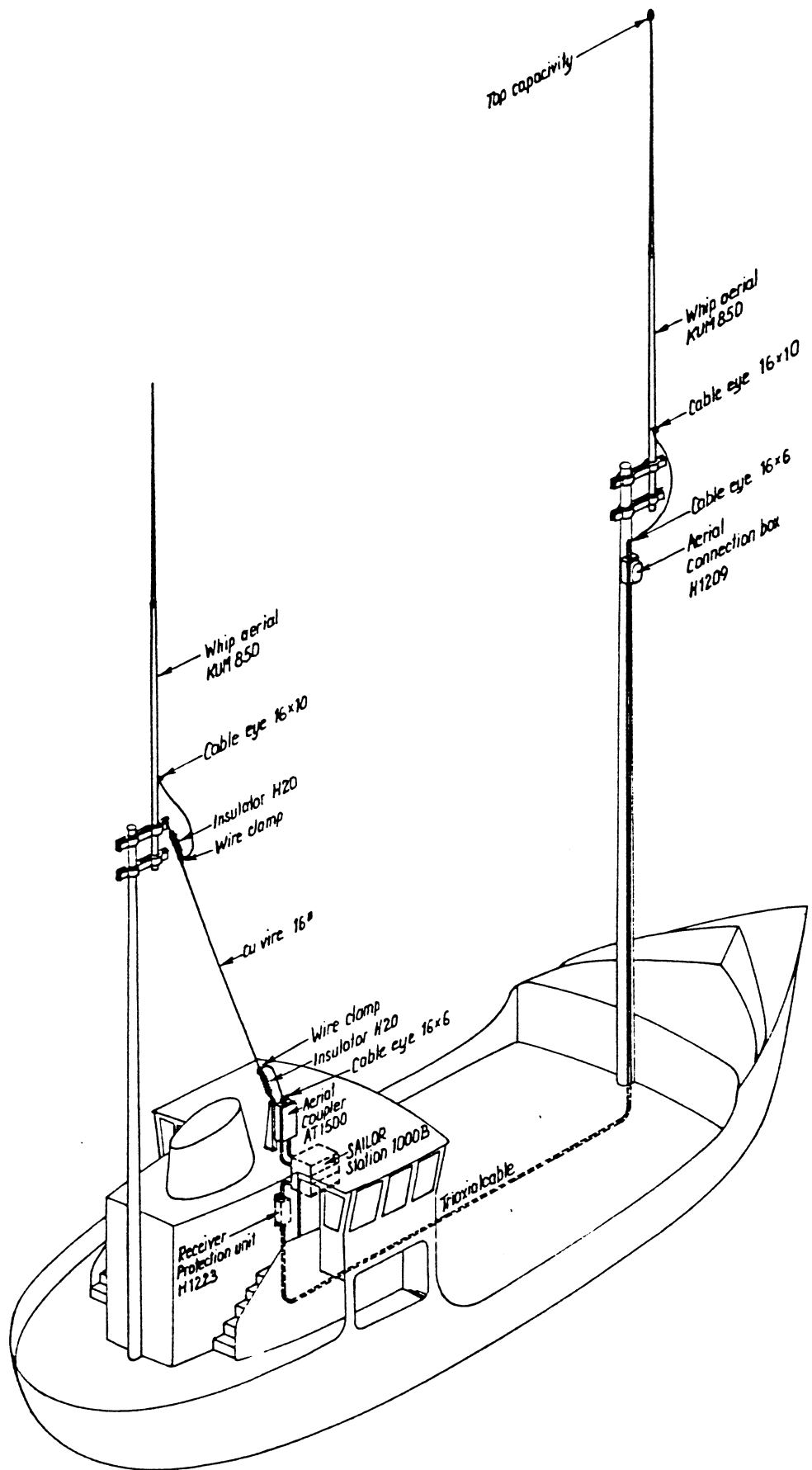
Ex. 3. AT1500 mounted on top of a mast.



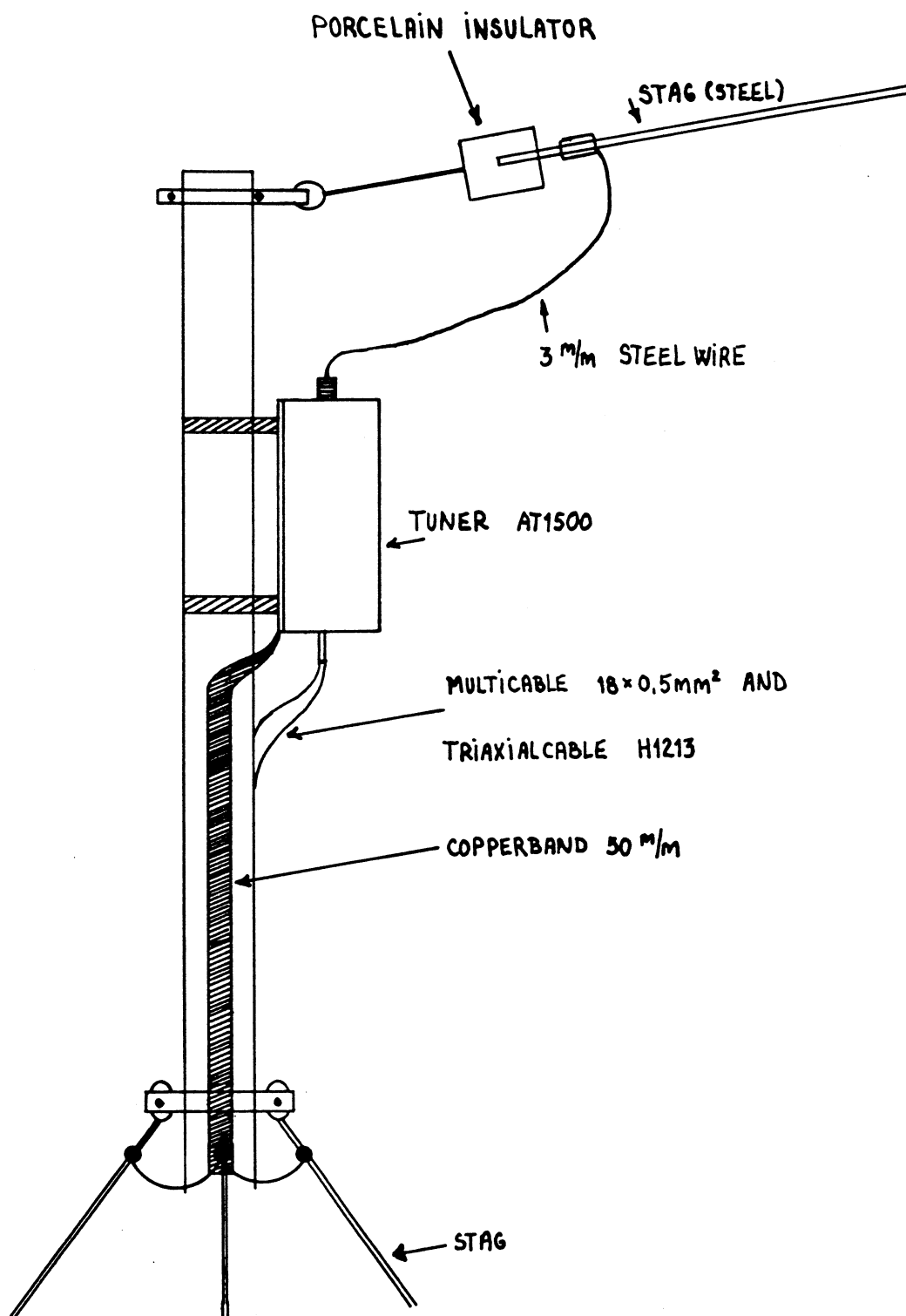
AT1500 has to be grounded to the mast if a metal mast.

If $h > 8$ m then the coax cable will work as ground and an acceptable performance will be obtained.

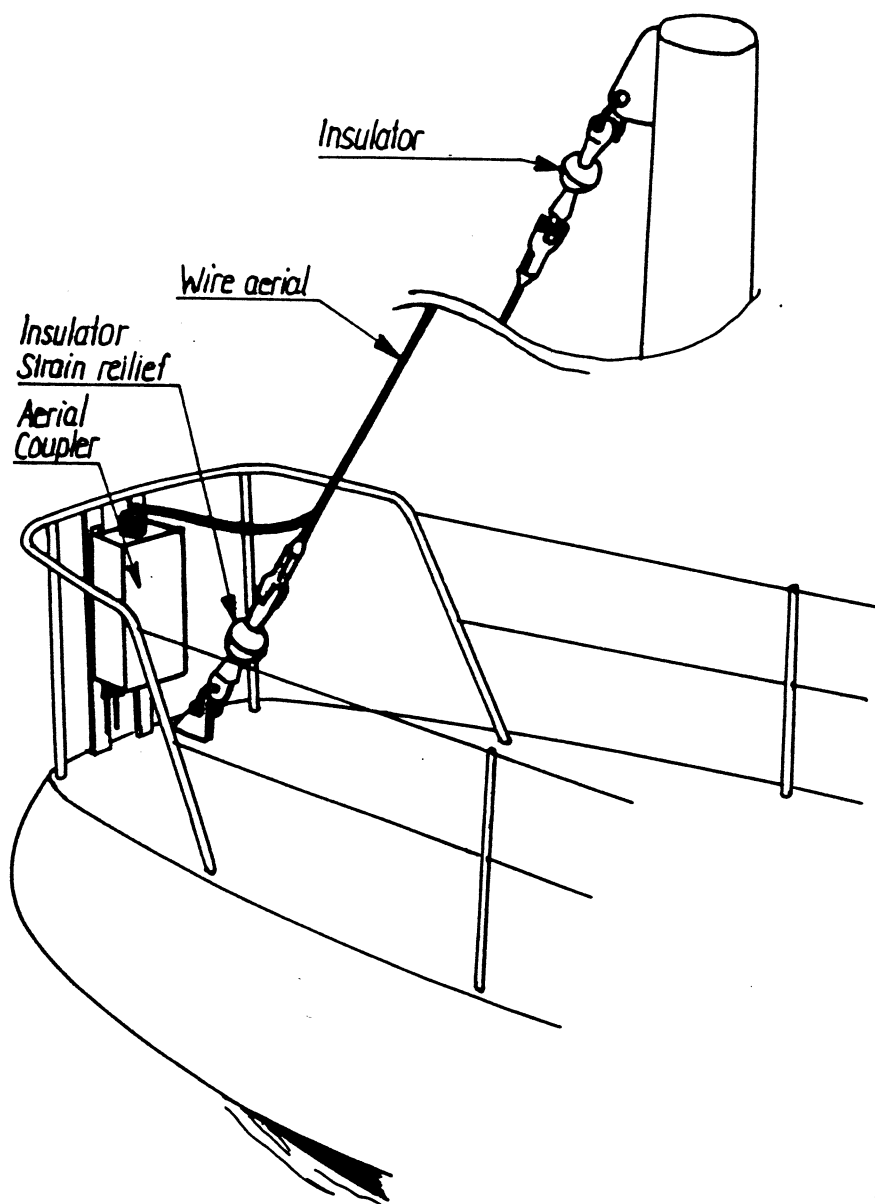
If $h < 8$ m then a copper strip (10 x 0.5 mm) has to be connected from AT1500 to ground. (See chapter GROUND).



Kensler	U. S. P. RADIO AA1801G		Tun. 174.86 Mc
	Aerial arrangement for SSB - and short wave station		4-D-25115
		Kont.	
		Material	



Rettelser		S. P. RADIO A/s AALBORG	Elzn		Rå		MATR.
			Forn.		Konserv		
			Forcrom		Div		
			Elox.				VARE NR.
			Affedtes				
			Renses i spån				TEGN. NR.
		Tegn. 08.02.90 BSA	Kontr.		Målestok		



Rettelser	S. P. RADIO AALBORG	Tegn.	15.9.86 <i>MD</i>
		Kont.	-
	Aerial coupler mounted on a sailing ship.	Målestok	
		4-0-25237	

KUM 480

R501 INSTALLATION.

H1209

TRIAX
H1213

R501

H1223

220 AC
OV 24 DC

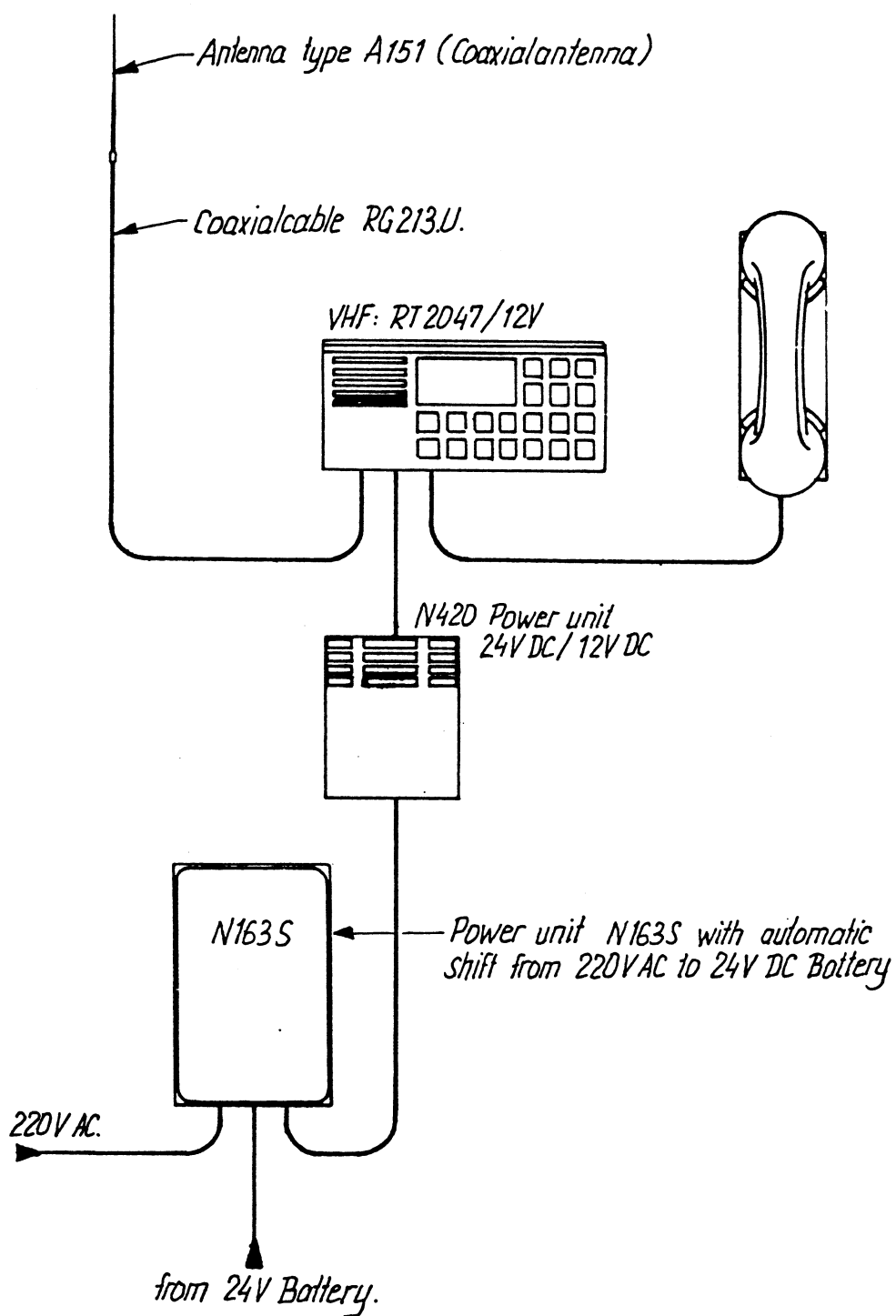
MUTE FROM TX.

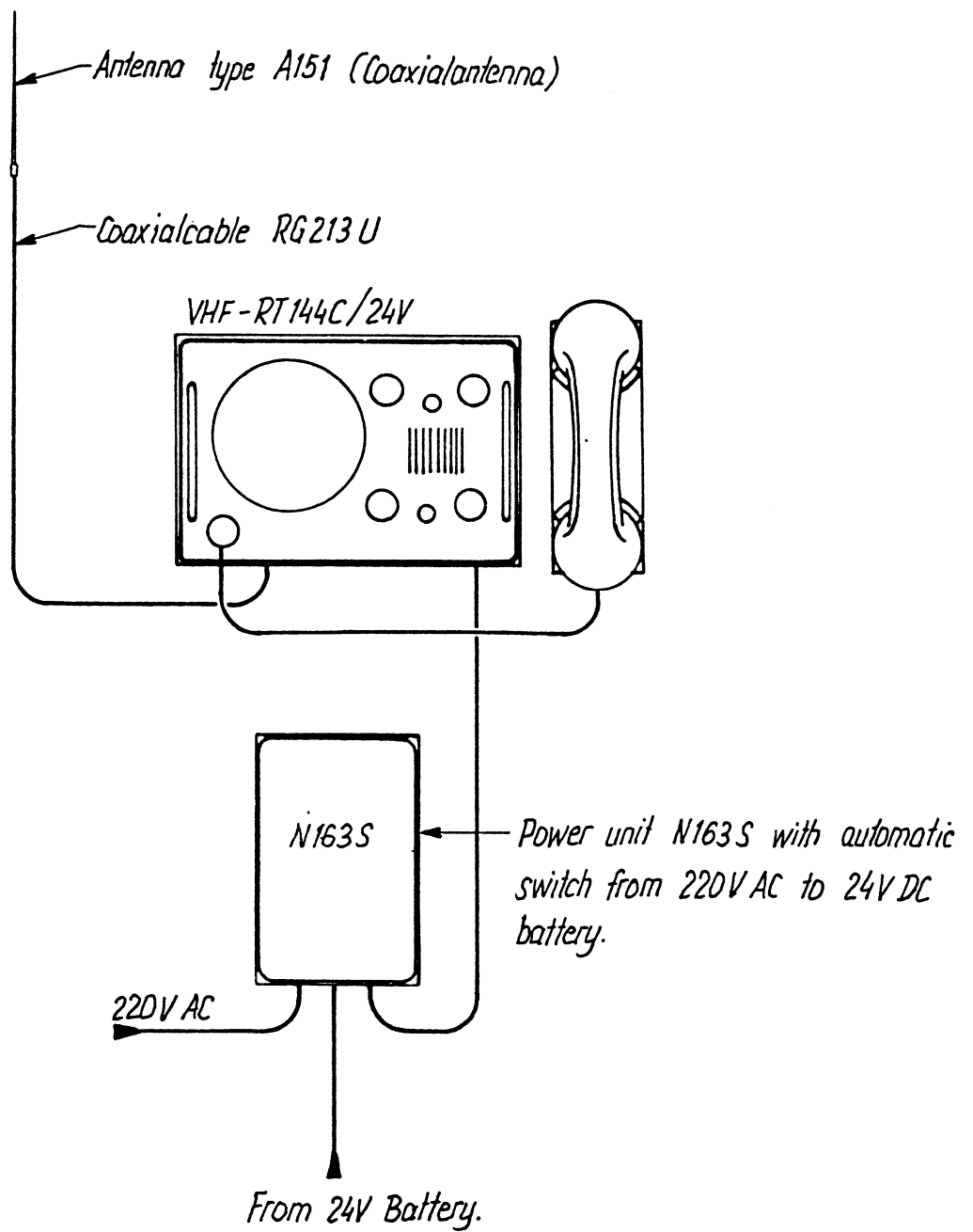
Rettelser		S. P. RADIO A/s AALBORG	Elzn.		Rå		MATR.
			Forn.		Konserv.		
			Forcrom.		Div.		VARE NR.
			Elox.				
			Affedtes				TEGN. NR.
		Renses f. spån.					
		Tegn. 05.02.90 BSA	Kontr.	Målestok			

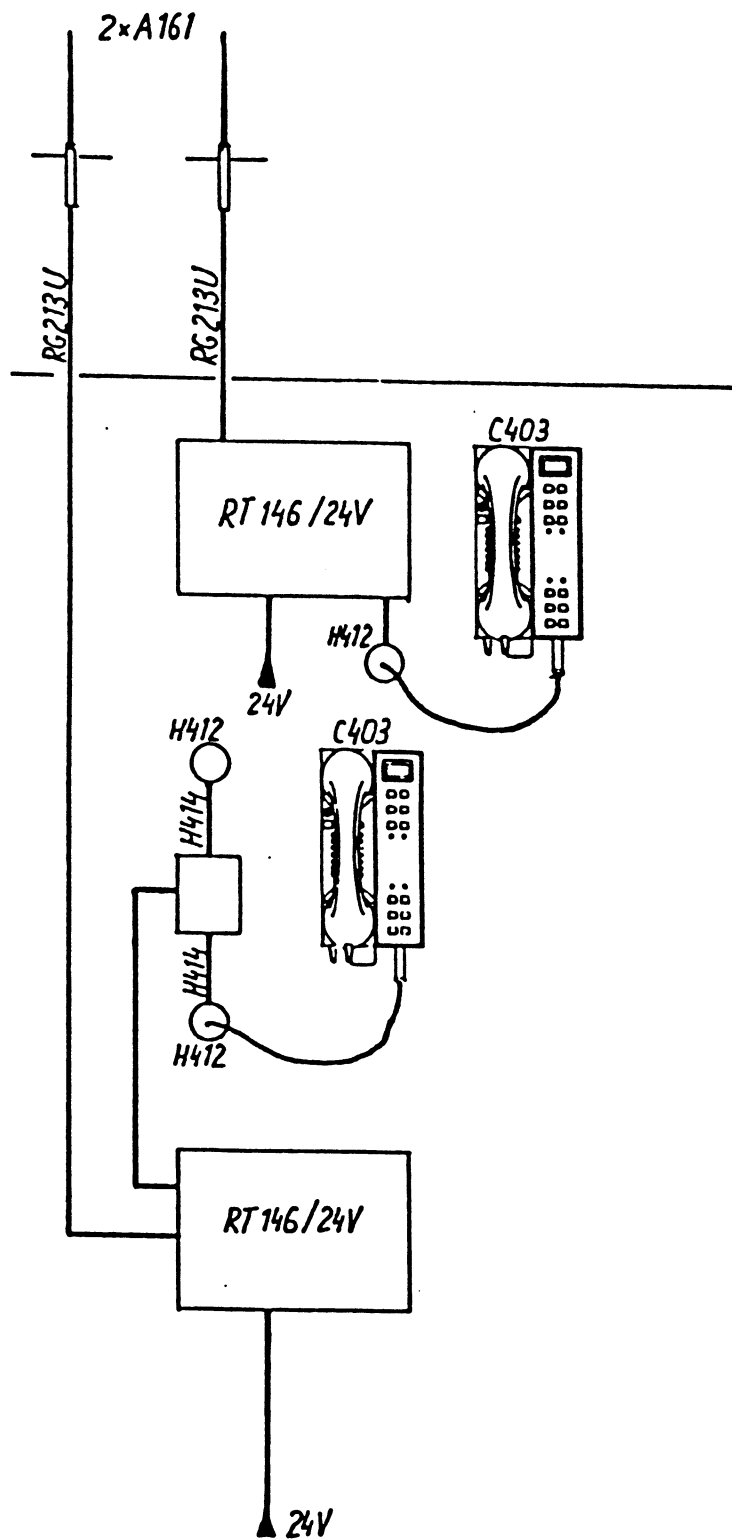
SECTION 5

INSTALLATION DRAWINGS FOR VHF

1. RT144C
2. RT146/C40X
3. RT2047
4. RT2048





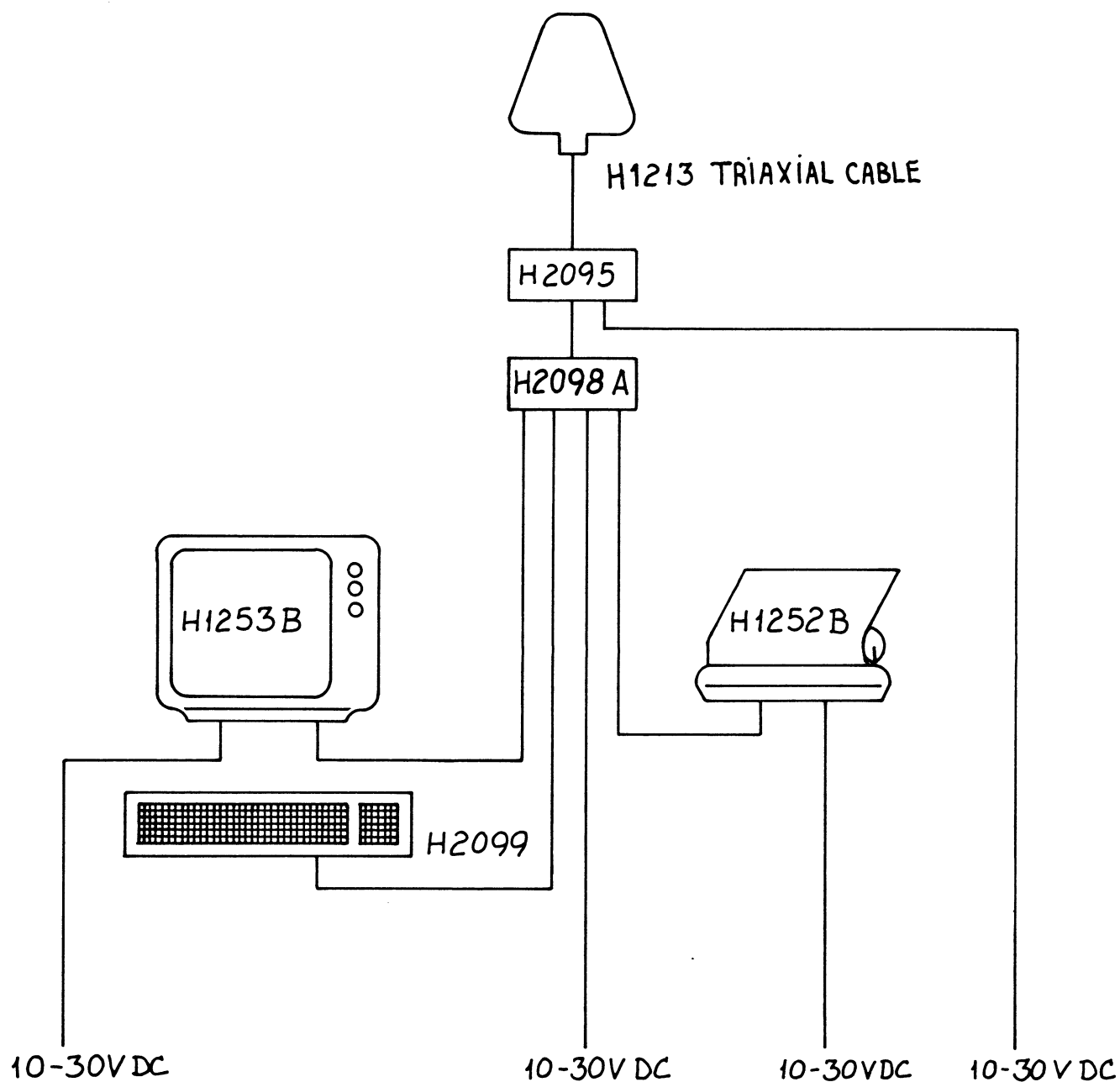


SECTION 6

SATELLITE COMMUNICATIONS

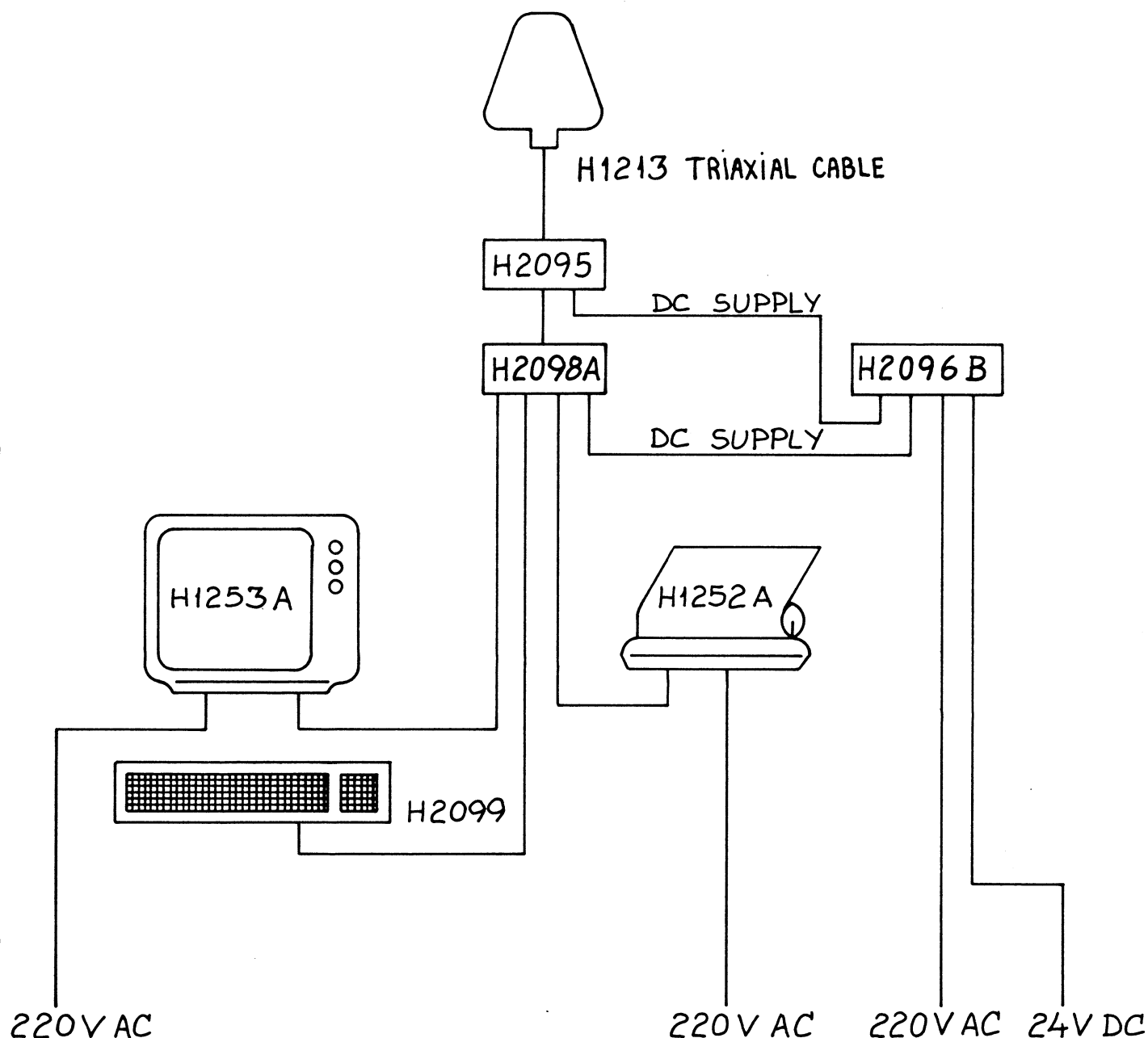
STANDARD-C

SAILOR STANDARD-C SATELLITE STATION WITH DC SUPPLY.



Rettelser		S. P. RADIO A/s AALBORG	Elzn	Rå	MATR.
			Forn	Konserv	
		SAILOR STANDARD - C	Forcrom	Div	VARE NR.
		DC SUPPLY.	Elox		
			Affdetes		TEGN NR.
			Renses f spån		4-0-26021 A
		Tegn 06.03.89 KJ	Kontr.	Målestok	

SAILOR STANDARD-C SATELLITE STATION WITH AC SUPPLY.

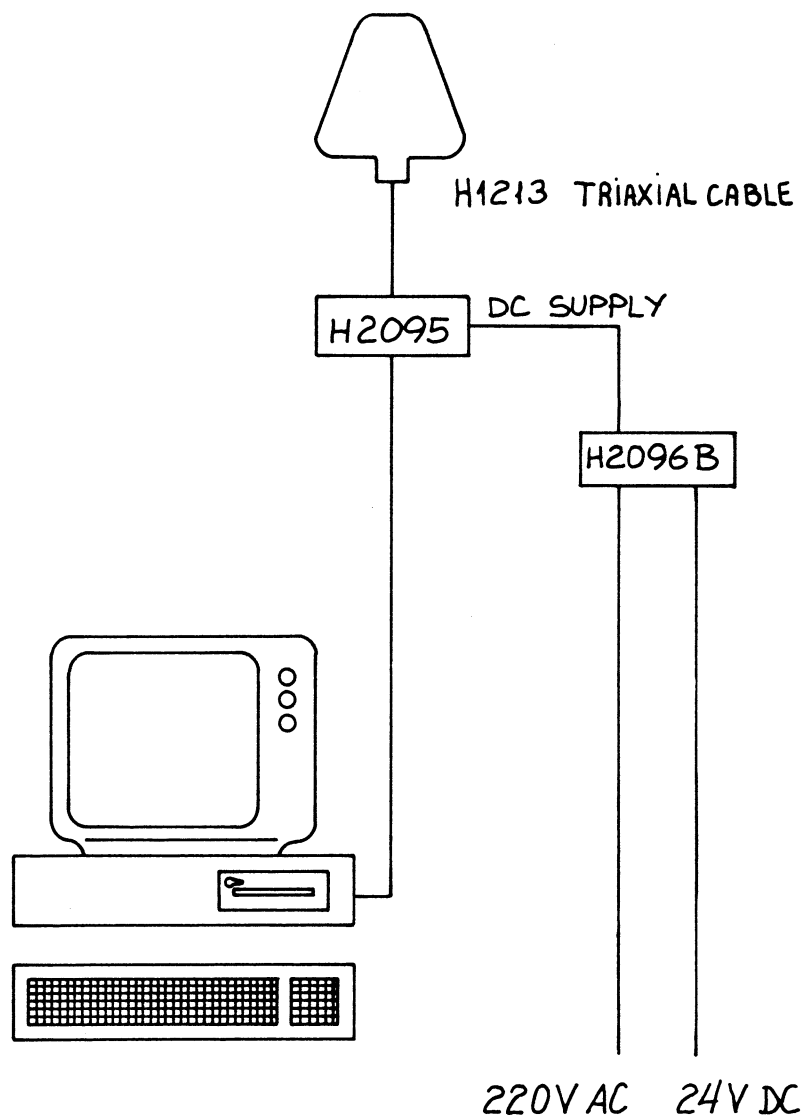


H2095 AND H2098A ARE DC SUPPLIED FROM POWER SUPPLY H2096B.

H1252A AND H1253A ARE AC SUPPLIED FROM MAINS.

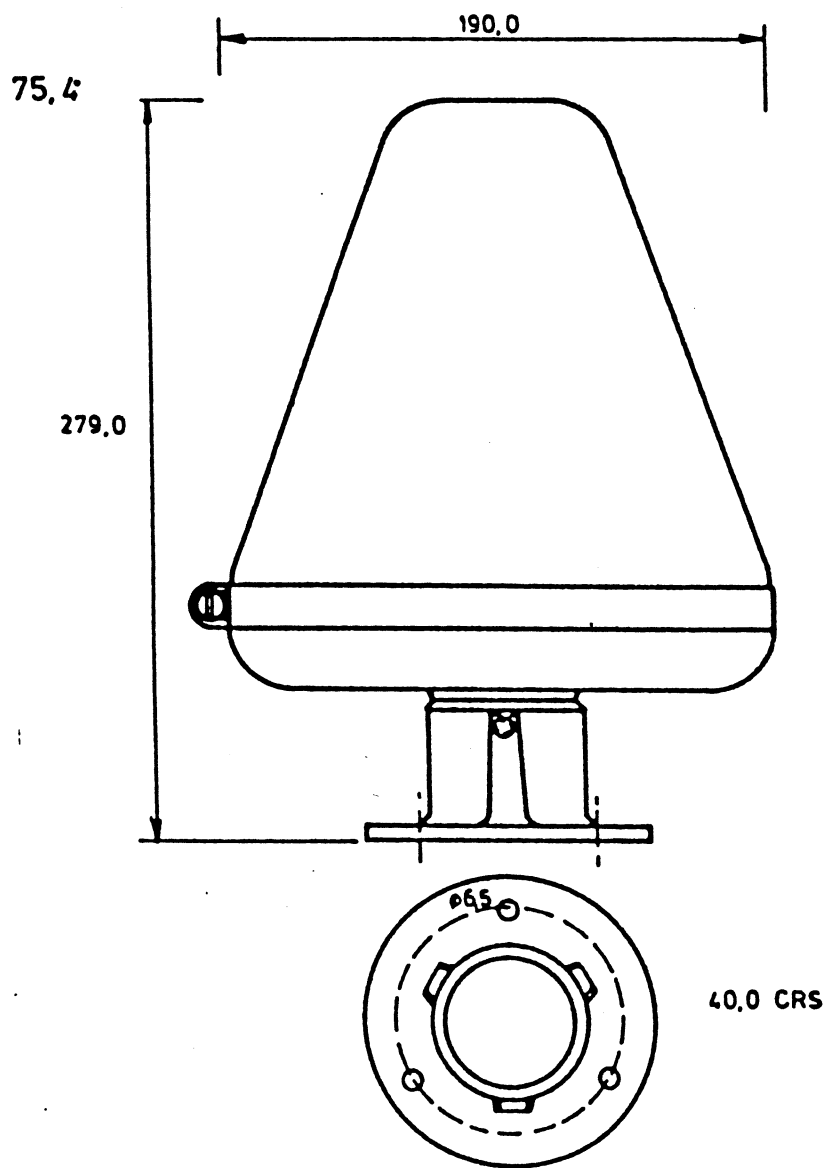
Rettelser		S. P. RADIO A/s AALBORG	Elzn.		Rå	MATR.
			Forn.		Konserv	
		SAILOR STANDARD-C	Forcrom.		Div	VARE NR.
		AC SUPPLY.	Elox.			
			Affdetes			TEGN. NR.
			Renses f. spån			
	B:05.02.90 BSA	Tegn 06.03.89 KLJ	Kontr.	Målestok		4-0-26022 B

SAILOR STANDARD -C SATELLITE TRANSCEIVER CONTROLLED FROM
IBM CONVERTIBLE PC - AC SUPPLY.



55.105, MESSAGE AND CONTROL SOFTWARE PROGRAMME FOR
OPERATION WITH AN EXTERNAL MONOCHROME OR
COLOUR MS-DOS PERSONAL COMPUTER, 3,5" OR
5,25" DISK SIZE WITH 2M INTERFACE CABLE.

Rettelser		S. P. RADIO A/s AALBORG	Elzn		Rå		MATR.
			Forn		Konserv		
		SAILOR STANDARD -C	Forcrom		Div		VARE NR.
		IBM CONVERTIBLE PC	Elox.				
			Affedtes				TEGN. NR.
			Renses f spån				4-0-26023B
	B:05.02.90 BSA	Tegn. 06.03.89 KLJ	Kontr.		Målestok		



Rettelser	1/2 S. P. RADIO AALBORG	Tegn.	KD
		Kont.	7-2-90
	Stand. C.	Målestok	
	Antenna		

SECTION 7

LAND BASE STATIONS AND POINT-TO-POINT

1. SHORT WAVE STATION
2. REMOTE CONTROLLED STATIONS
3. LOG-PERIODIC AERIALS
4. MULTIDIPOLE
5. WHIP AERIAL

MAIN CABLE PLAN WHEN SUPPLIED FROM 24V DC BATTERY

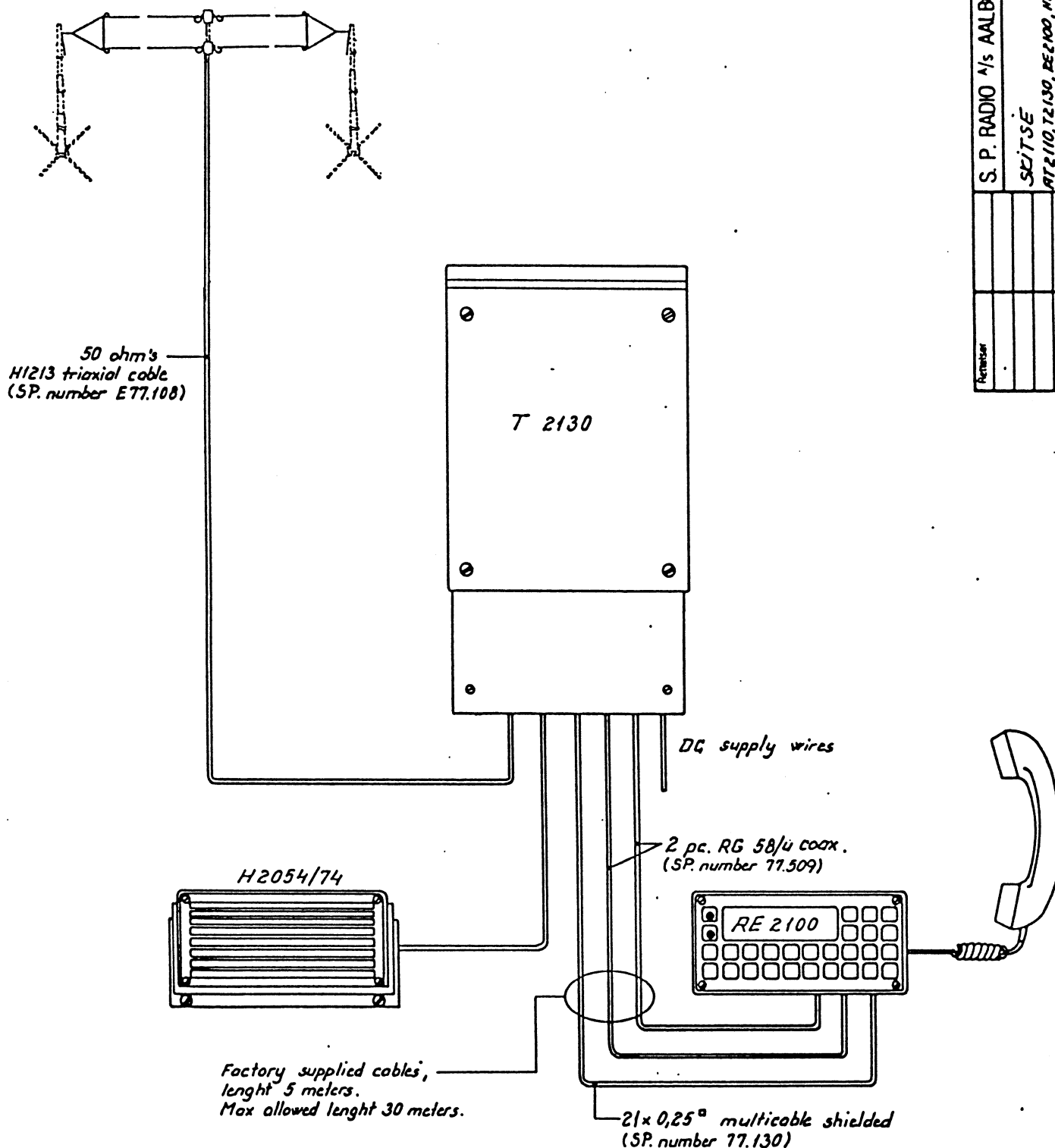
RE2100:

Weight: 4.5 kg. Depth: 299 mm.
Width: 225 mm. Height: 115 mm.

T2130:

Weight: 14 kg. Depth: 148 mm.
Width: 240 mm. Height: 455 mm.

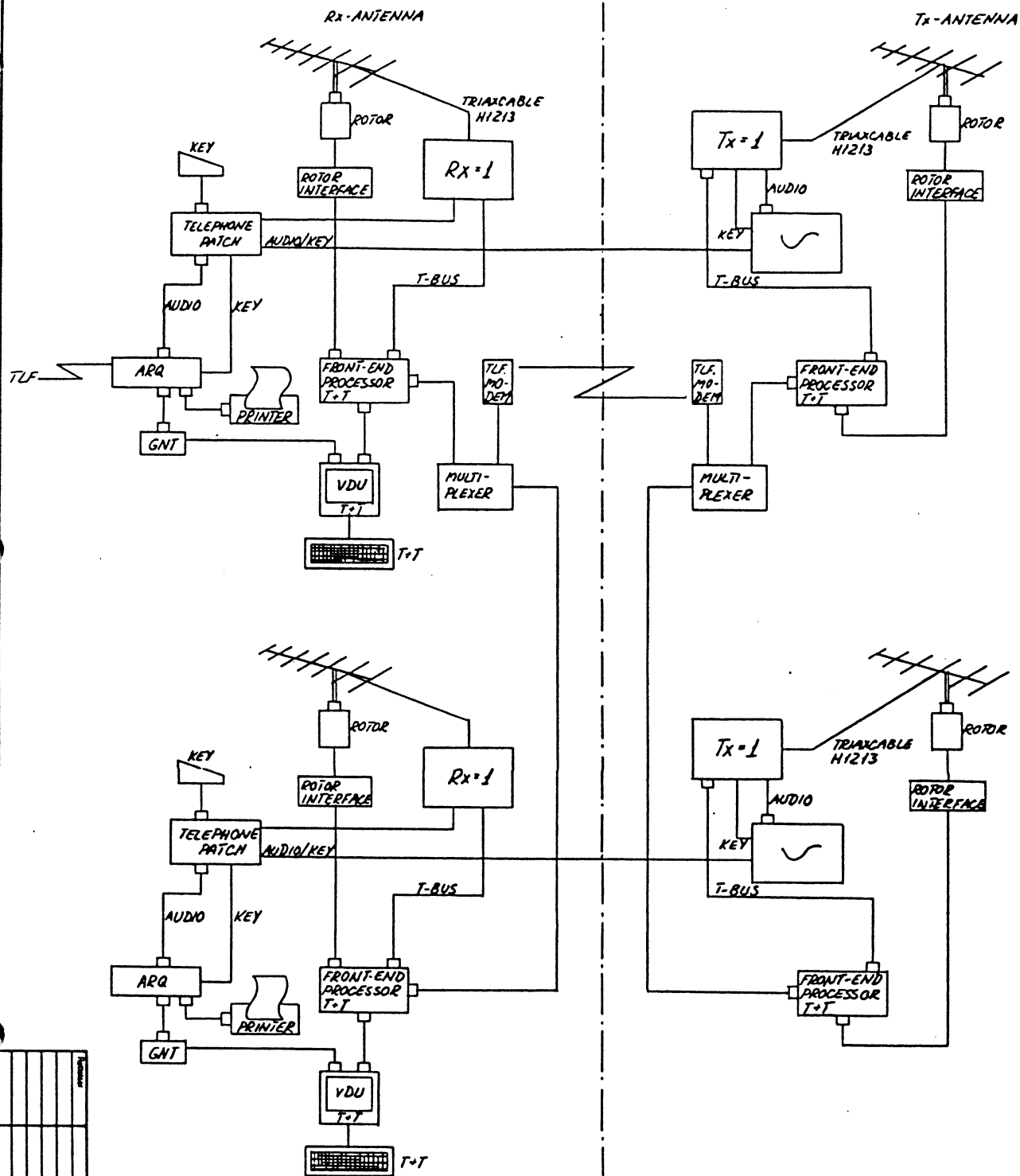
Broad Band Wire Dipole Antenna



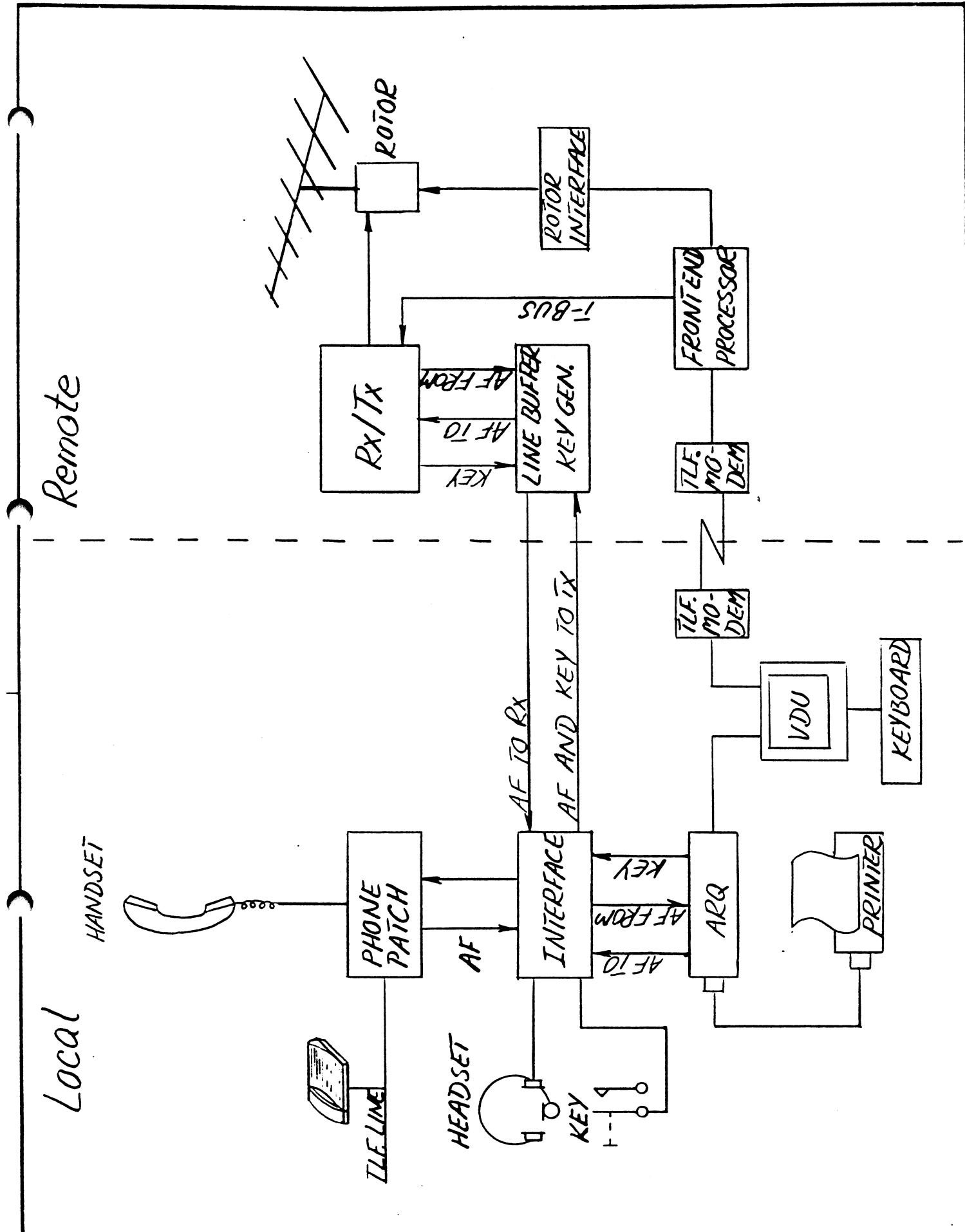
REMARKS	DATE	BY	CHKD	APPROVED	TECH. NO.	4-0-25958A
S. P. RADIO 4/s AALBORG						
SKITSE						
RT 2110, T2130, RE2100, H2054						
Top 24.11.88						
1:4						

Control room

Remote radio



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
S. P. RADIO 4/5 AALBORG																																																																																																			
Name																																																																																																			
Address																																																																																																			
Telephone																																																																																																			
Fax																																																																																																			
E-mail																																																																																																			
Web																																																																																																			
Other																																																																																																			



Rettelser		S. P. RADIO A/s AALBORG	Elzn.		Rå		MATR.
		BASIC SYSTEM	Forn.		Konserv.		
			Forcrom.		Div.		VARE NR.
			Elox				
			Affledes				TEGN. NR.
			Renses f spån.				4-0-26001
		Tegn. 08.02.89	Kontr.		Målestok	—	

SAILOR REMOTE CONTROLLED STATION

MAINSTATION

Description

Functions.

Remote of Rx-Tx frequensies.
Remote of Mode SSB - Telex
Remote of USB - LSB

Antenna direction in step of 30 degrees.
STN 1 STN 2 switch.
Scanning facility.
Phone Patch (Simplex with manual keying)

The remote control demands 3 telephone lines.

Line 1 AF signal from receiver to desk.
Line 2 LF signal + key signal from desk to Tx.
Line 3 remote of functions.

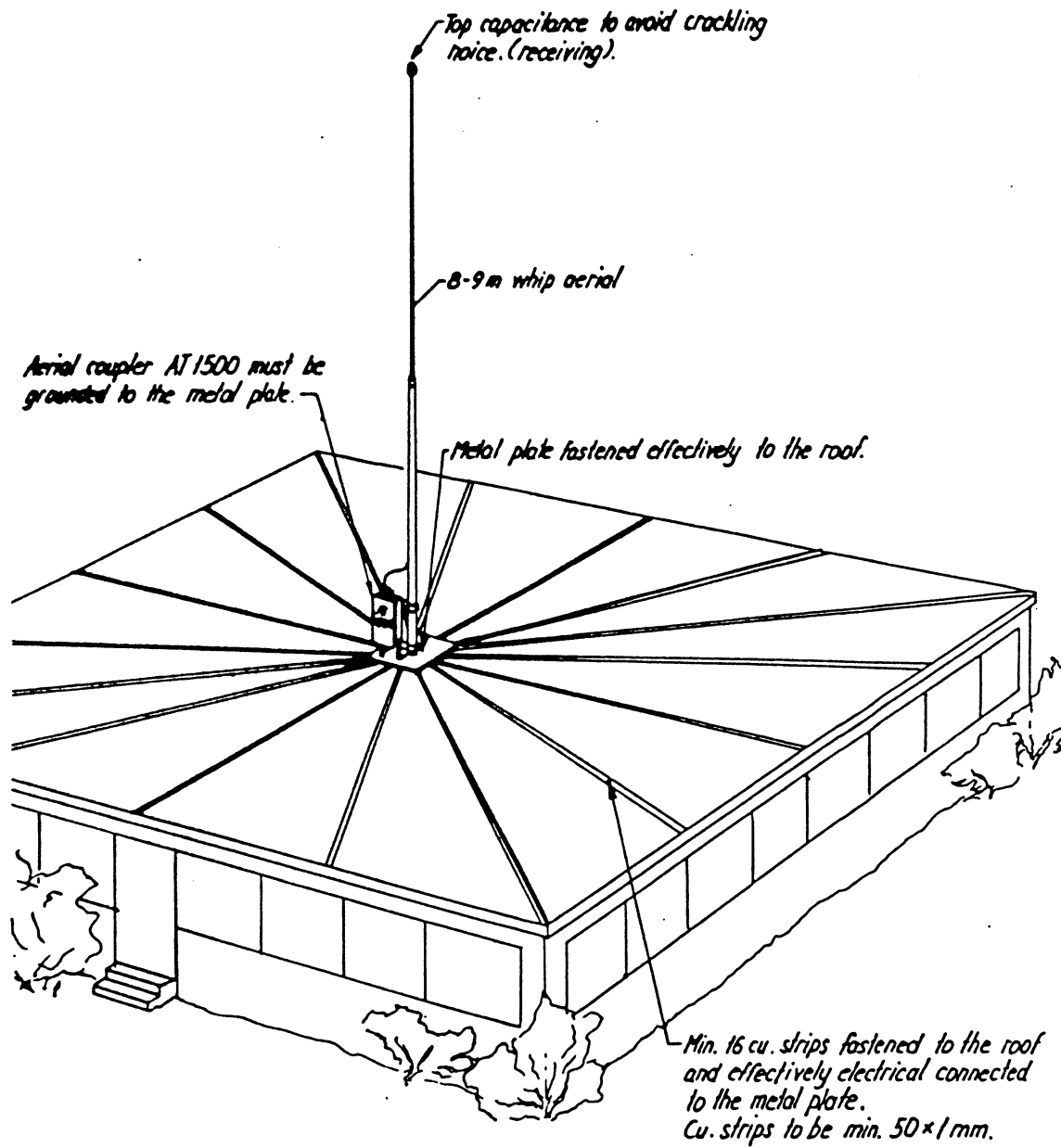
The composition of the unit for the Danish Ministry of Foreign Affairs is a simplex station with 1 antenna, but the system may be delivered with 2 antennas and 2 frontendprocessors for duplex operation. At simplex operation of phone patch there should be monitoring at the operating position for manual keying of the transmitter.

The control desk consists of a displayprocessor complete with screen and keyboard. From here the setting up of transmitter, receiver and antenna is controlled. In the desk tlx modem H1240 has been mounted and connected to the displayprocessor, which means that the tlx functions are controlled from the keyboard incl. localfunctions. A ASKII/BODUX switcher may be mounted on H1240 as option, allowing switch between tlx operation from the displayprocessor and tlx function from a TTY machine, the latter being the case, if a seperate CRY is used on tlx.

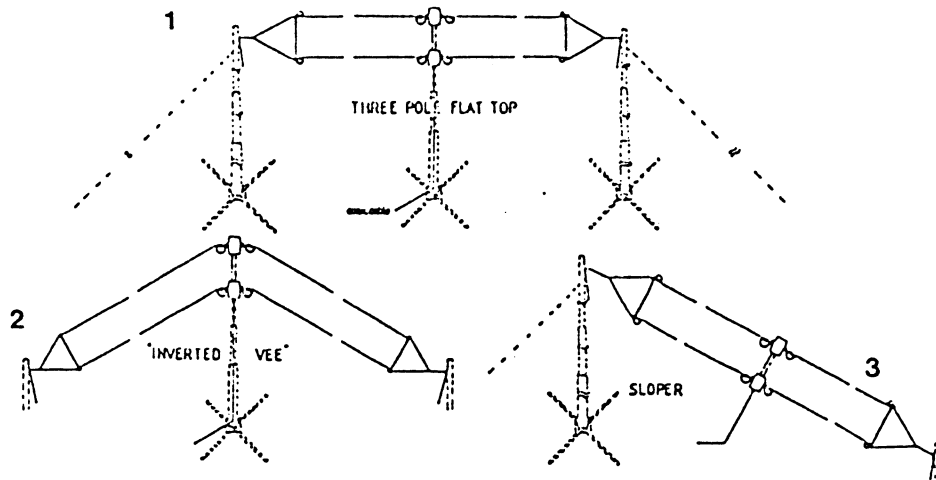
A headset (mike and earpiece in one) and a foot lever for keying the transmitter are delivered for the desk. Furthermore a standard 1000 B handset connected to a H1224 phone patch is delivered. The built-in loudspeaker has volume control and there is volume control for earpiece in the headset.

In the desk a H1224 phone patch is mounted, thus making possible to switch calls from the radiostation to any telephone subscriber. It should be noted that the system used by the Danish Ministry of Foreign Affairs is only simplex operated that which demands that operators listen in and key the transmitter at the right moments.

AT1500 mounted on top of a building.



Broad Band Dipole Antenna



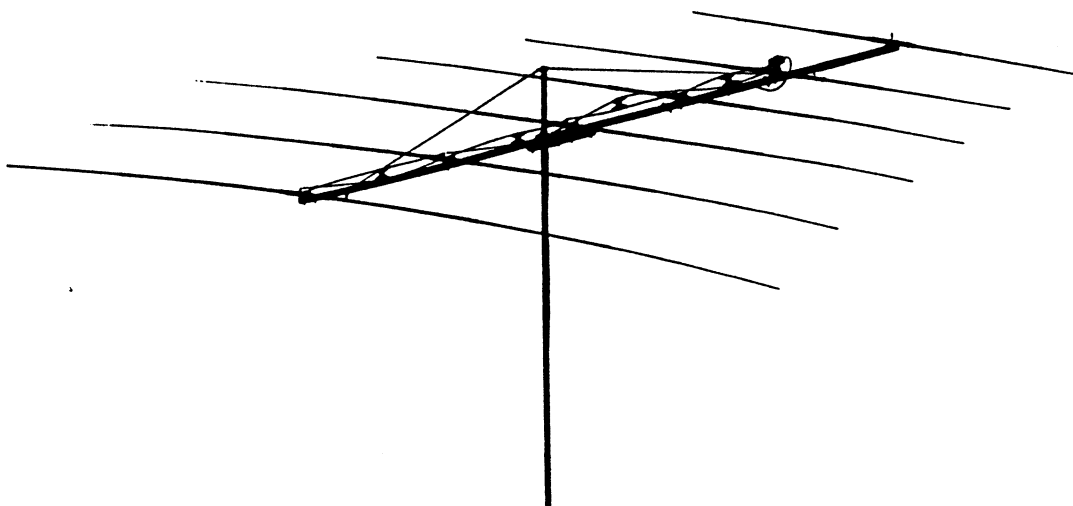
INSTALLATION

1. Determine where and how the antenna will be installed.
Sides of a building, trees, poles ect. we suggest a height of at least 4,5 - 5 m. and an average of 7,0 - 12 m.
"Do not install parallel to power lines".
2. Run the coax to the station. Try to run the coax perpendicular to the antenna.

Technical Specifications:

Typical overall length	: 25 m.
Frequency band	: 3,5 - 30 MHz
V S W R	: max 2,0 : 1
Power handling capacity	: 1000 W (CW SSB)
Radiation Pattern	: Omni-directional (Pattern depending on actual installation method and site surrounding).

6 ELEMENT LOG-PERIODIC ANTENNA



Frequency Range (in MHz)	9,5 - 30	13 - 30
Power Handling Capability. Average/P.E.P. (in KW)	1,5 / 3,0	1,5 / 3,0
Forward Gain (nominal) apprx.	10	10
Front-to-Back Ratio (nominal)	14	14
Maximum VSWR	2 - 1	2 - 1
Input Impedance (in ohms)	50	50
Input Connector	Type N	Type N
Azimuth Beam Width (at half power points) nominal	58°	58°
Angle of Max. Radition. Low Frequency	20°	18°
Angle of Max. Radition. High Frequency	8°	8°
Boom Length (in m.)	8,5	8,5
Longest Element (in m.)	14	12
Turning Radius (in m.)	8	7
Number of Elements	6	6
Shipping Weight of the Antenna (in Kg.)	95	90
Wind Survival (in MPH)	100	100
Shipping Volume for both Antennas (in m.)	4,50 x 0,30 x 0,20	

Radiation Pattern Characteristics



SECTION 8

CABLE DIMENSIONS ETC.

SUPPLY CABLES FOR SAILOR SHORT-WAVE SETS

In order to provide for the best possible working conditions for the short-wave set, the following cable dimensions should be used:

24V DC SUPPLY CABLES

Max. voltage drop allowed between batteries and short-wave set is 0,66V at max. 55 Amp. power consumption, on basis of which the adjoining cable for 24V DC supply cables has been set up:

l = distance between battery and short-wave set	
q = diameter of conductor in sqmm	
q	l
4	1,3 m
6	2 m
10	3,2 m
16	5 m
25	8 m
35	11 m
50	16 m
70	22 m

AC SUPPLY CABLES

When the set is to work on AC, the following diameters are recommended for the conductor:

110-117V AC conductor-diameter = 2,5 sqmm

220-240V AC conductor-diameter = 1,5 sqmm

REMOTE CONTROL CABLES FOR T1127

Installations with cable-consumption of up to 25 m

Coaxial cable (signal cable) RG213U

Coaxial cable (high voltage cable) RG213U

Multicable (control- and supply cable) 30x0,5 sqmm; 250V AC

Installations with cable-consumption of between 25 and 200 m

Coaxial cable (signal cable) RG213U

Coaxial cable (high voltage cable) RG213U

Multicable (control- and supply cable) 30x0,5 sqmm; 250V AC

Multicable (supply cable) 4x4 sqmm; 250V AC

EARTHBAND

For installation use a copper earthband of 100 mm x 0,5 mm (min.)

FIG. 6.

Mounting plate for SAILOR short-wave set

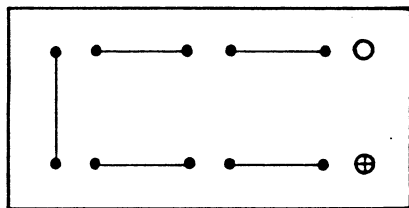
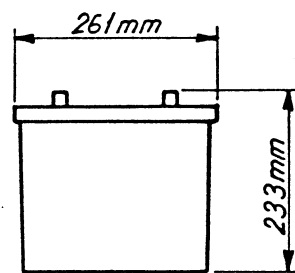
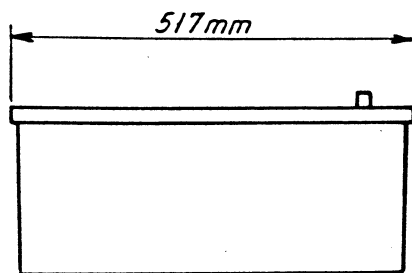
INTERCONNECTION CABLES FOR SAILOR COMPACT HF SSB

The control unit RE2100 and the transmitter T2130 are connected by means of 3 factory delivered cables, each 5 metres long.

S.P. number	Control unit end	Cable type	Transmitter end
1 526006	25-pole D-connector (male)	Multicable 21x0.25 mm ² screened	Wires to be stripped during installation
2 526007	BNC (male)	Coaxcable RG58 C/U marked red	Wires to be stripped during installation
3 526008	BNC (male)	Coaxcable RG58 C/U marked blue	Wires to be stripped during installation

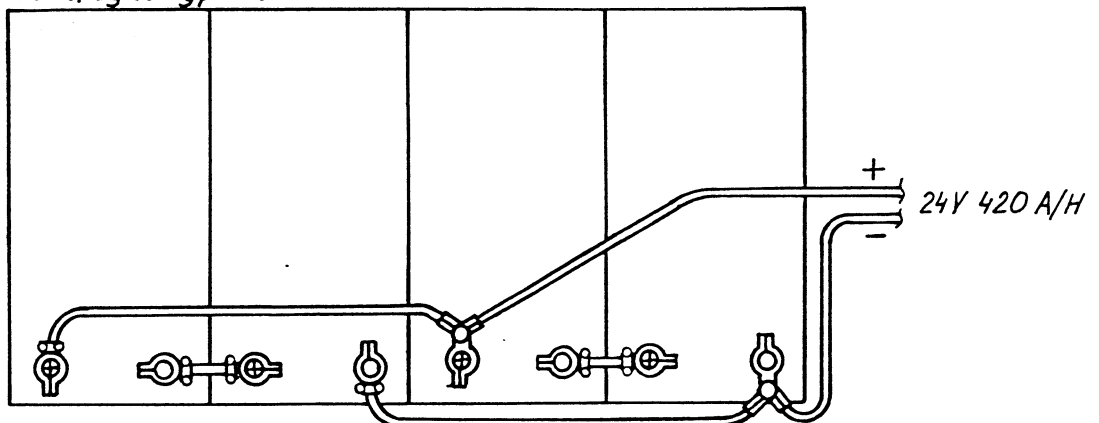
The transmitter T2130 and aerial coupler AT2110 are connected by means of 2 customer supplied cables.

S.P. number	Cable type
1a up to 50 metres E62.405	Multicable 10x0.5 mm ² screened
1b up to 100 metres E62.410	Multicable 10x1 mm ² screened
2 E77.108	H1213 Triaxial cable

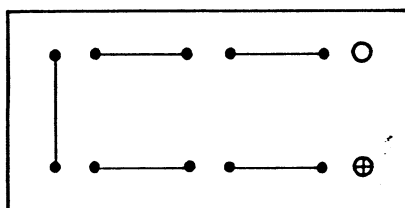
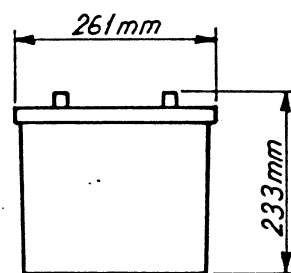
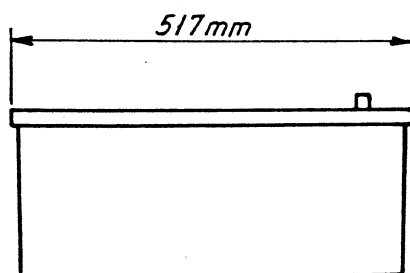


Lyac typ. 990
12 Volt 210 A/H

4stk. Lyac typ. 990:

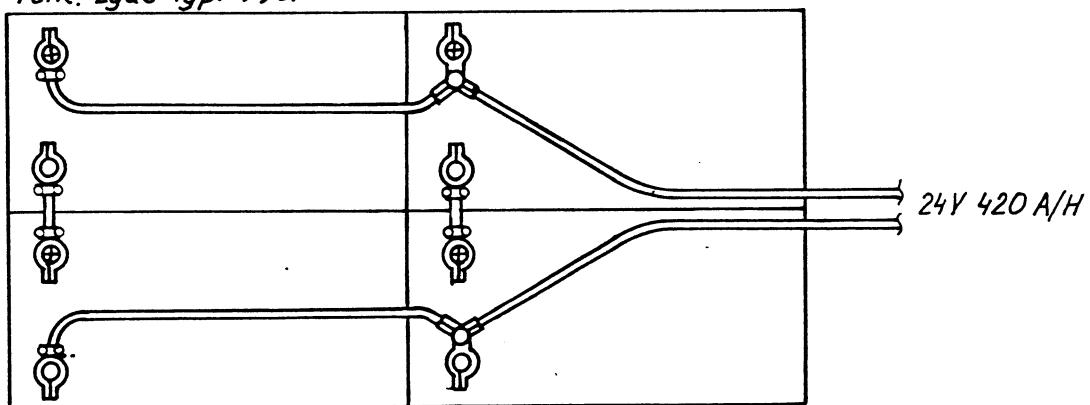


Rettelser	½ S. P. RADIO AALBORG	Tegn.	24.3.82 <i>NPR</i>
26.9.83 <i>NPR</i> A		Kont.	
	Batteries for Sailor Radiostation.	Målestok	1:10
		4-0-23965 A	



Lyac typ. 990
12Volt 210 A/H

4stk. Lyac typ. 990.



Rettelser	S. P. RADIO AALBORG	Tegn.	24.3.82 <i>NPR</i>
26.9.83 <i>NPR</i> A		Kont.	
	<i>Batteries for Sailor Radiostation.</i>	Målestok	1:10
			4-0-23965 A

TRANSMITTER T2031 - RECEIVER R2022

	<u>CONSUMPTION</u>	
<u>T2031</u>		
Tune	750 W	31.0A
J3E (SSB)	350 W	14.5A
Standby	24 W	1.0A
<u>R2022</u>	24 W	1.0A

Lys.

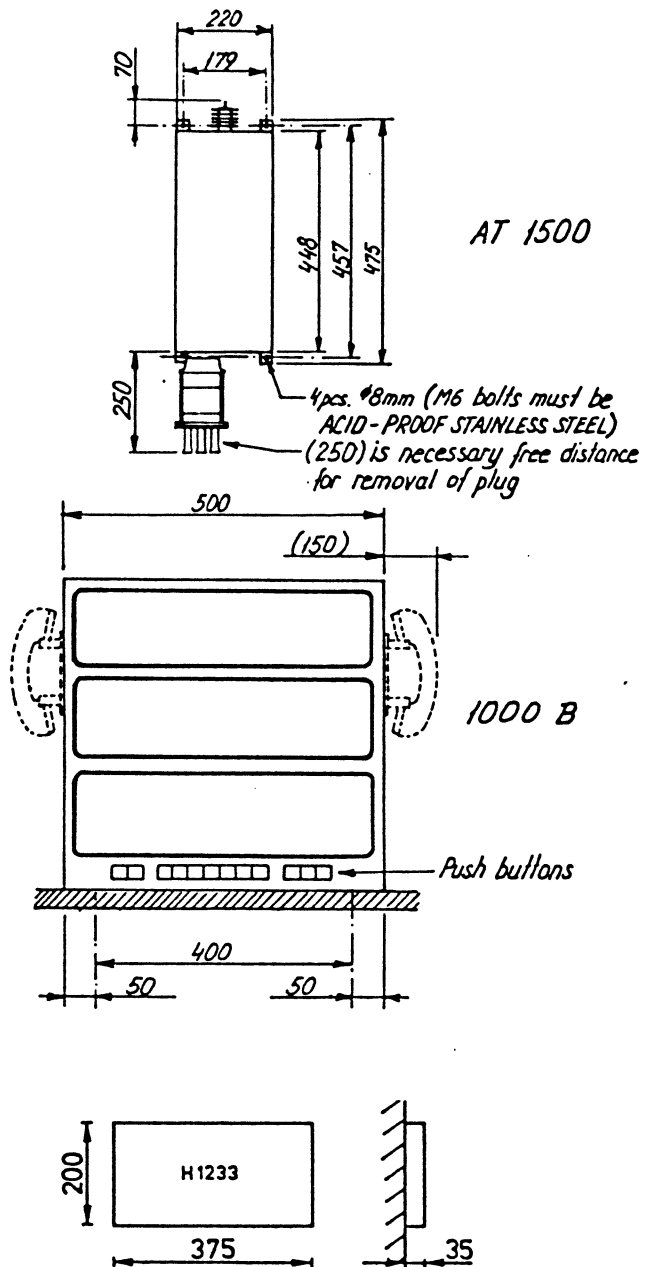
BATTERY CAPACITY ACCORDING TO SOLAS

For stations consisting of: T2031, R2022 and emergency light: 90 A/T

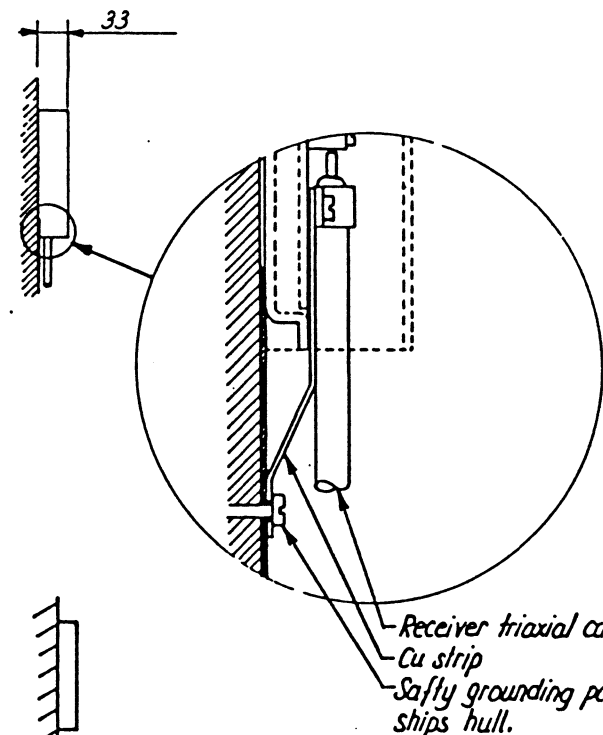
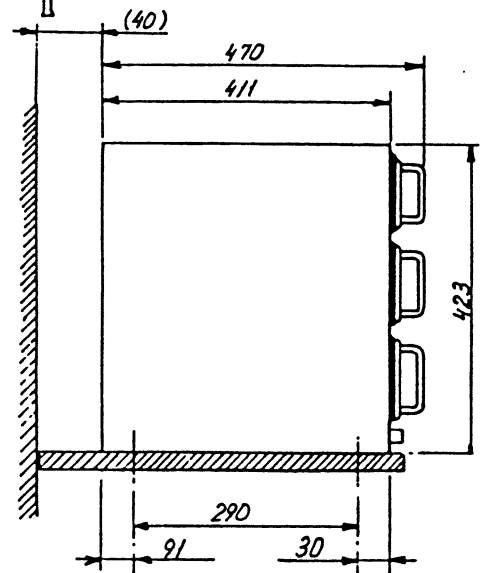
For stations consisting of: T2031, R2022, RT2047 and
emergency light: 120 A/T

CABLE DIMENSIONS

Cable length between station and battery	Min. cable dimension
Less than 6 metres	10 mm ²
6 - 10 metres	16 mm ²
10 - 16 metres	25 mm ²

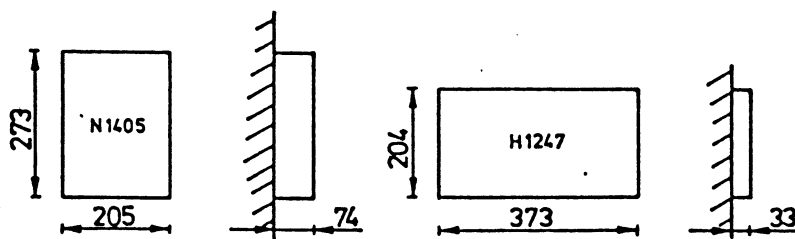


AT 1500 must be mounted as shown here (Vc)
AT 1500 must not be painted.
AT 1500 must be RF grounded.

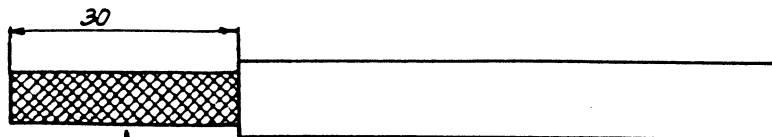


Dimensions in brackets are min. free distances in mm.

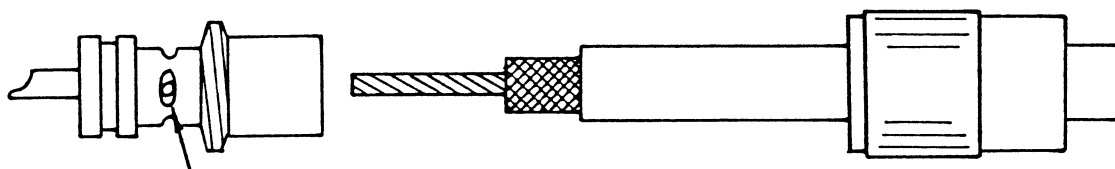
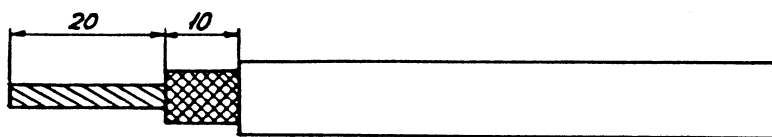
Cable length between 1000B rack and H1233 is 2.0 meters.



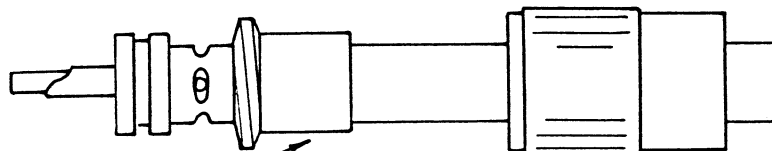
DRILLING PLAN AND DIMENSIONS FOR PROGRAMME 1000/B



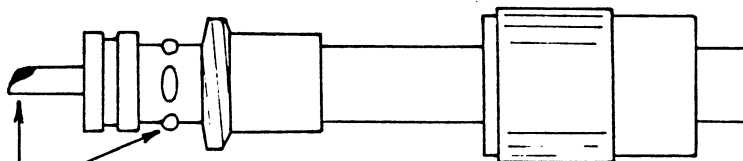
To be tinned without damaging the insulation material.



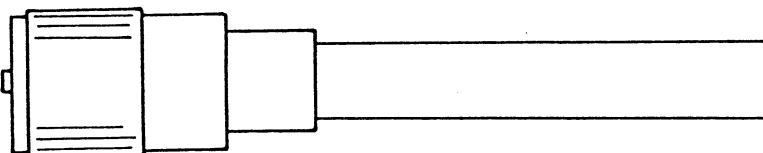
All 4 holes are slotted by a round - file



To be screwed tightly.



To be soldered - cooled in spirits after each soldering



Remove superfluous tin.

»SAILOR«

S. P. RADIO 4 AALBORG DENMARK

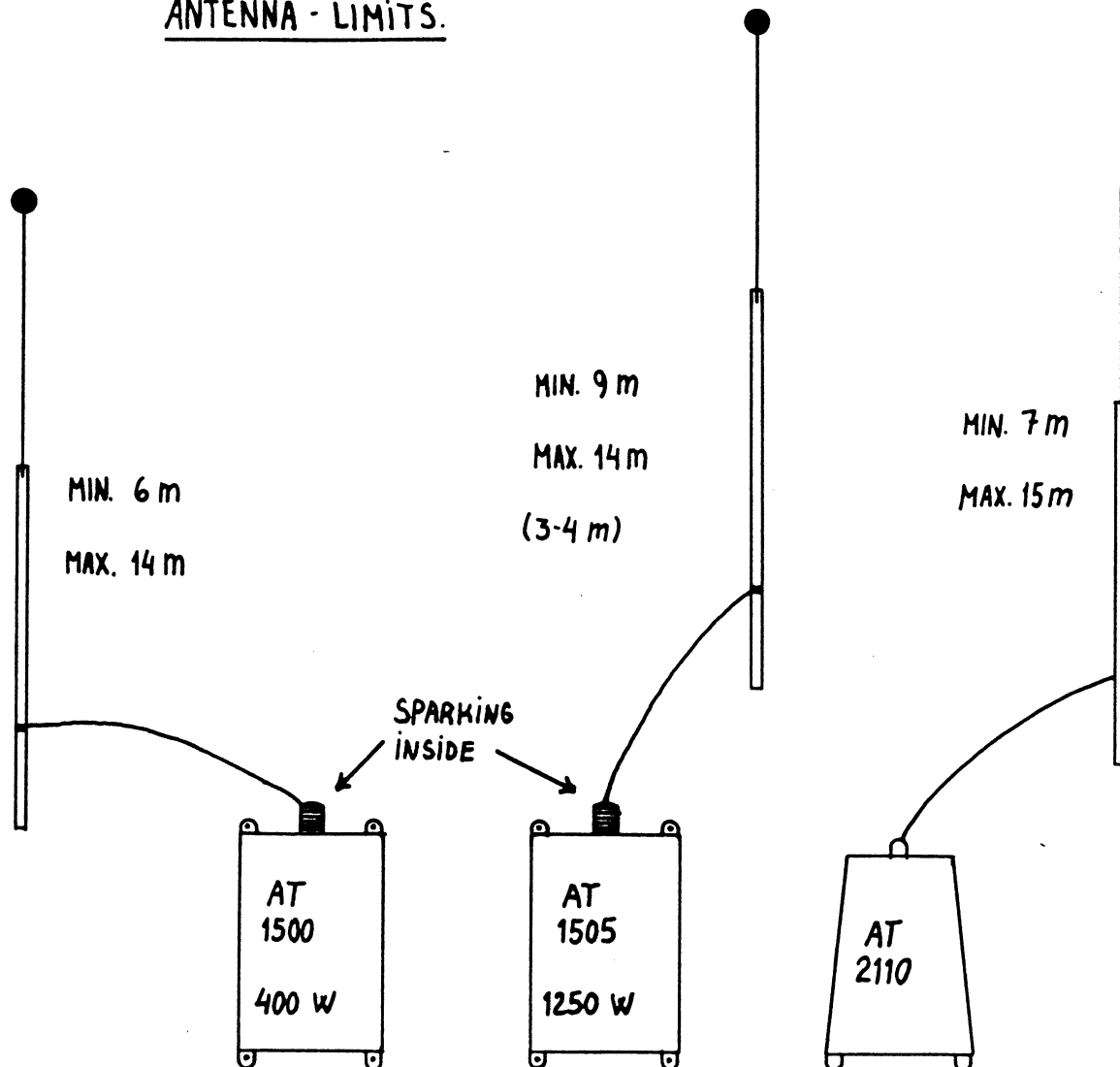


MOUNTING OF PL259 ON RG213U

SECTION 9

TROUBLESHOOTING ETC.

ANTENNA - LIMITS.

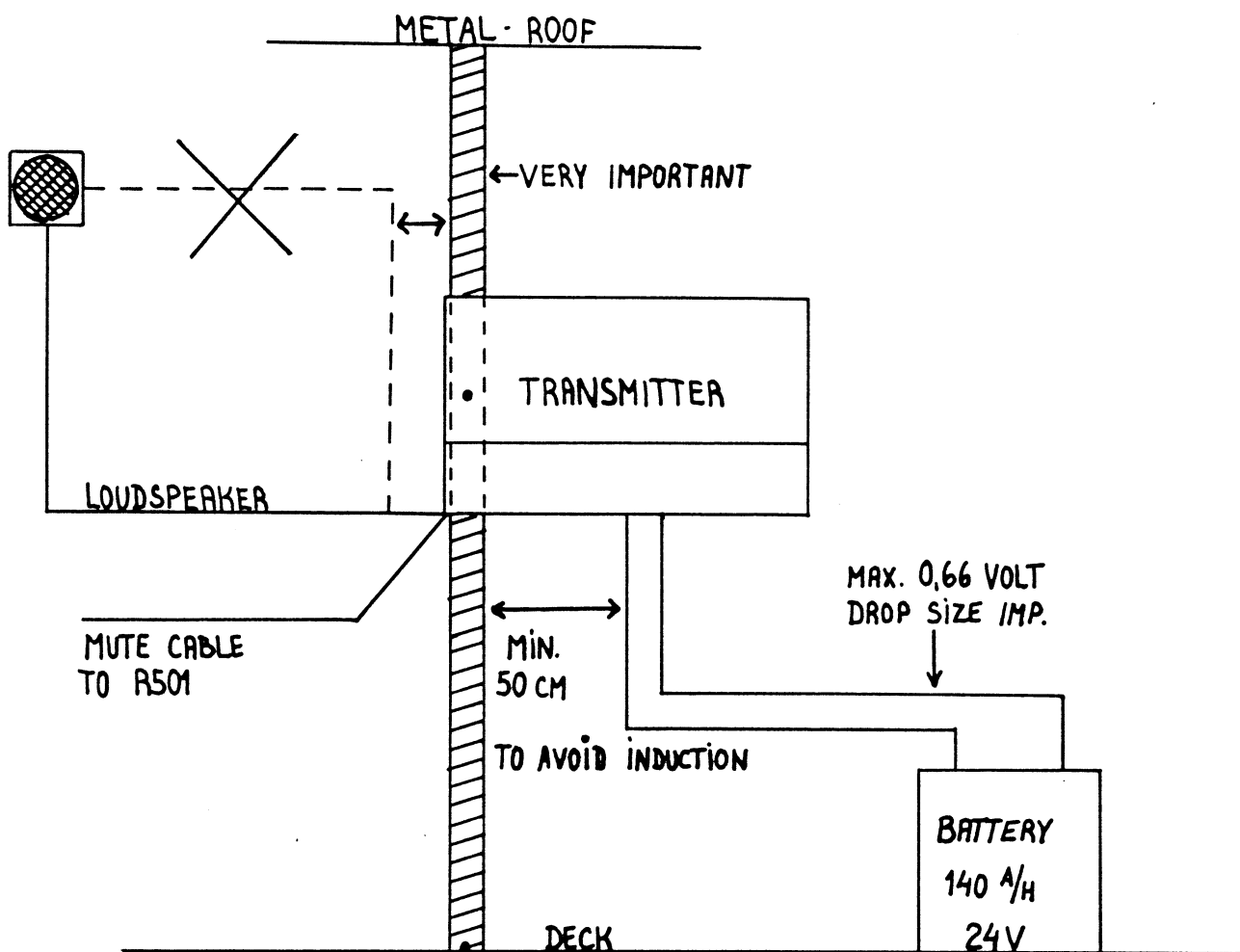


SHORT ANTENNA - HIGH VOLTAGE

LONG ANTENNA - LOW VOLTAGE

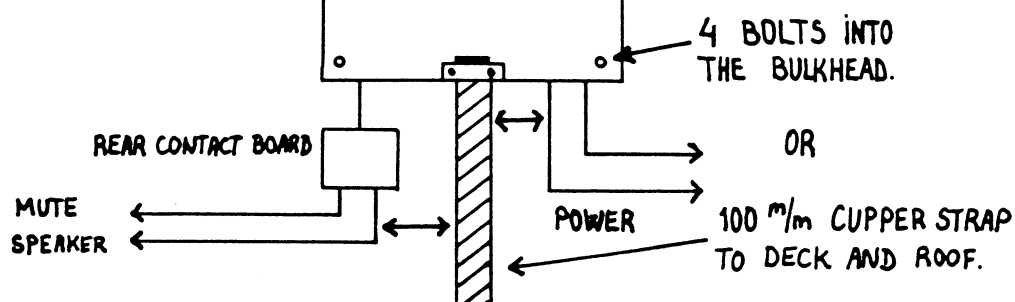
ON THE TERMINALS

Rettelser		S. P. RADIO A/s AALBORG	Elzn.		Rå		MATR.
			Forn.		Konserv.		
			Forcrom.		Div.		VARE NR.
			Elox.				
			Affedtes				
			Renses i spån				TEGN. NR.
		Tegn. 06.02.90 BSA	Kontr.		Målestok		

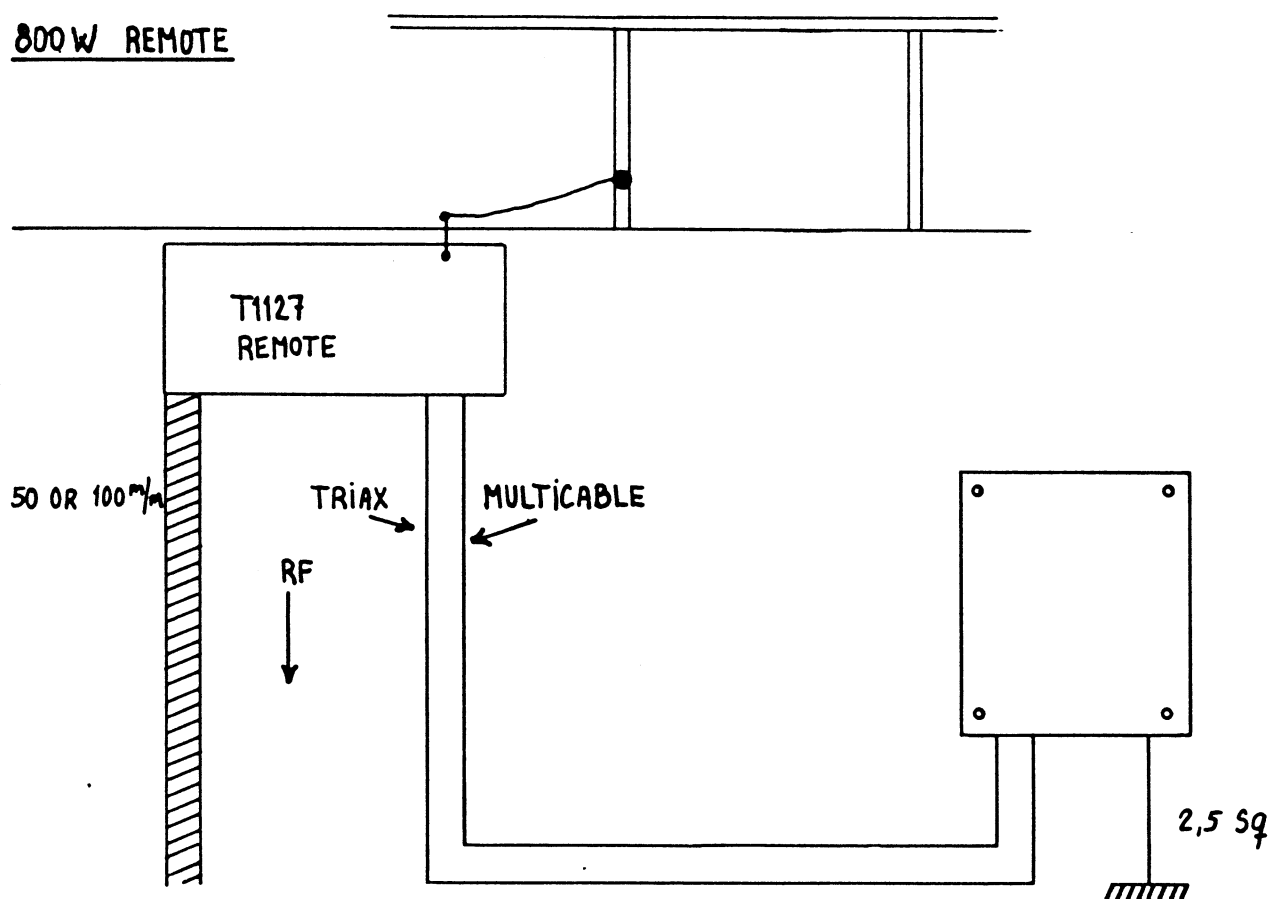


Rettelser		S. P. RADIO A/s AALBORG	Elzn.		Rå		MATR.
			Forn.		Konserv.		
			Forcrom.		Div.		
			Elox.				
			Affedtes				
			Renses f. spån				VARE NR.
							TEGN. NR.
		Tegn. 05.02.90 BSA	Kontr.		Målestok		

SHORTWAVE 800 W

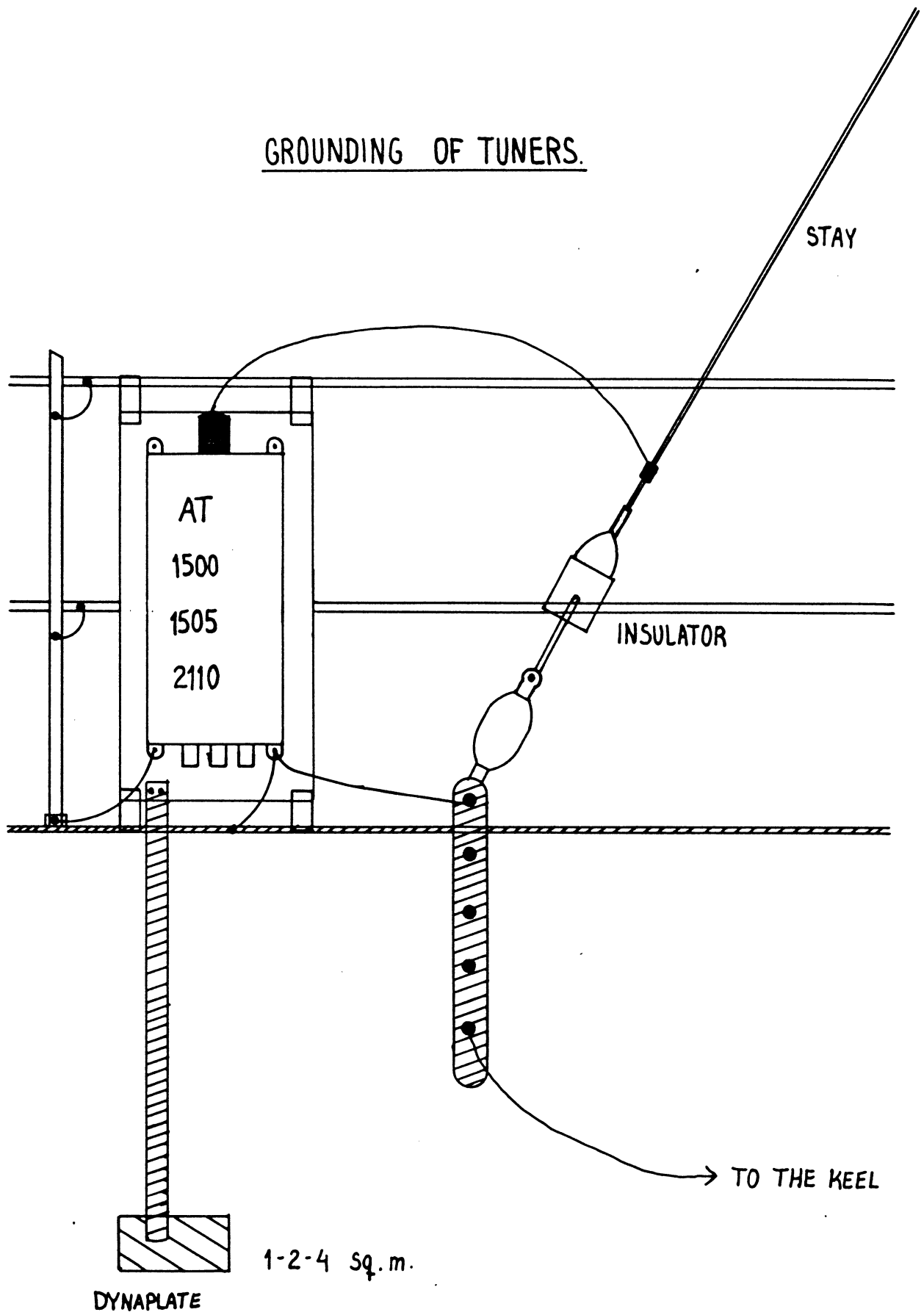


800 W REMOTE



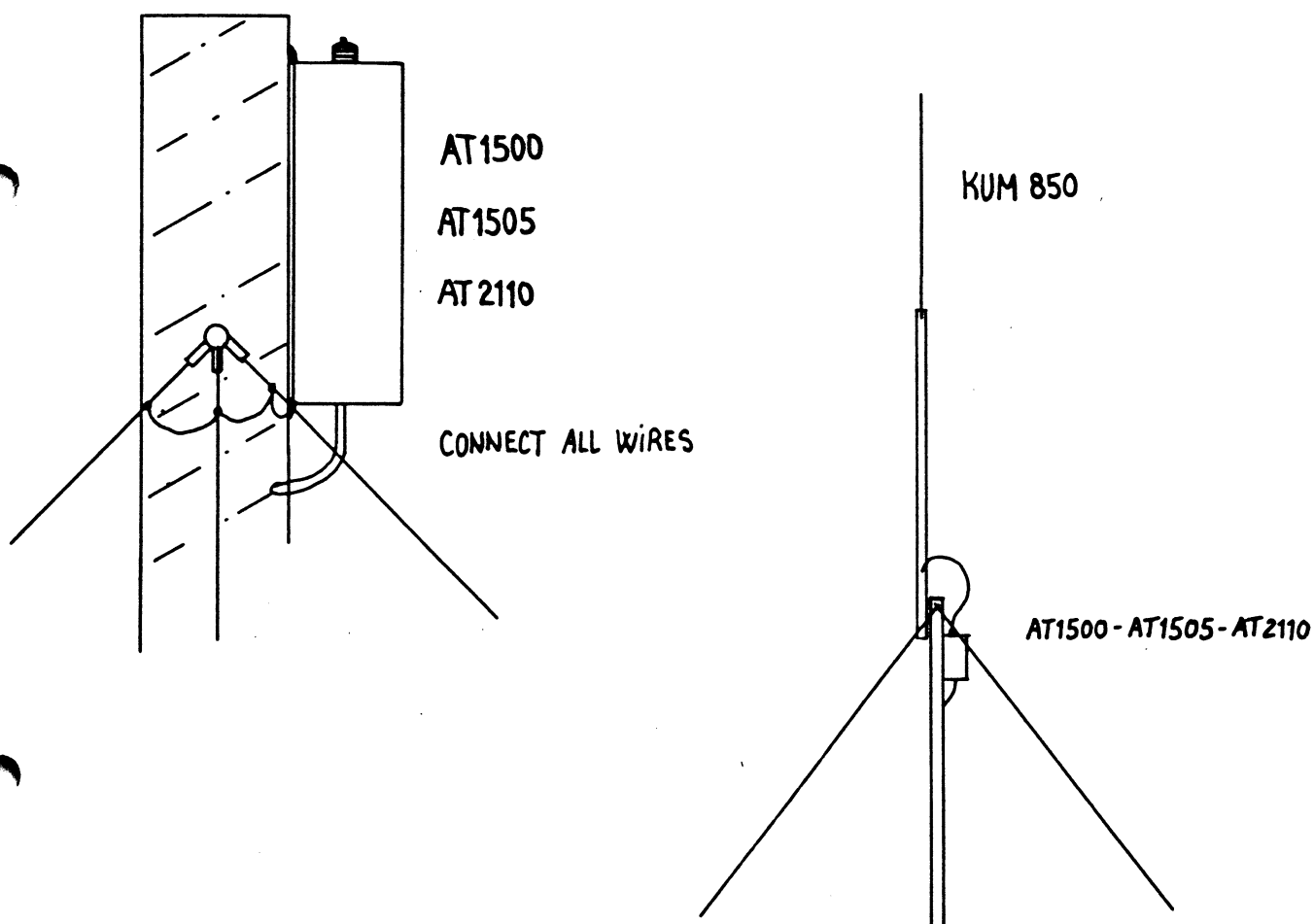
Rettelser		S. P. RADIO A/s AALBORG	Elzn.		Rå		MATR.
			Forn.		Konserv.		
			Forcrom.		Div.		VARE NR.
			Elox.				
			Affdetes				
			Renses f spån				TEGN. NR.
		Tegn. 07.02.90 BSA	Kontr.		Målestok		

GROUNDING OF TUNERS.



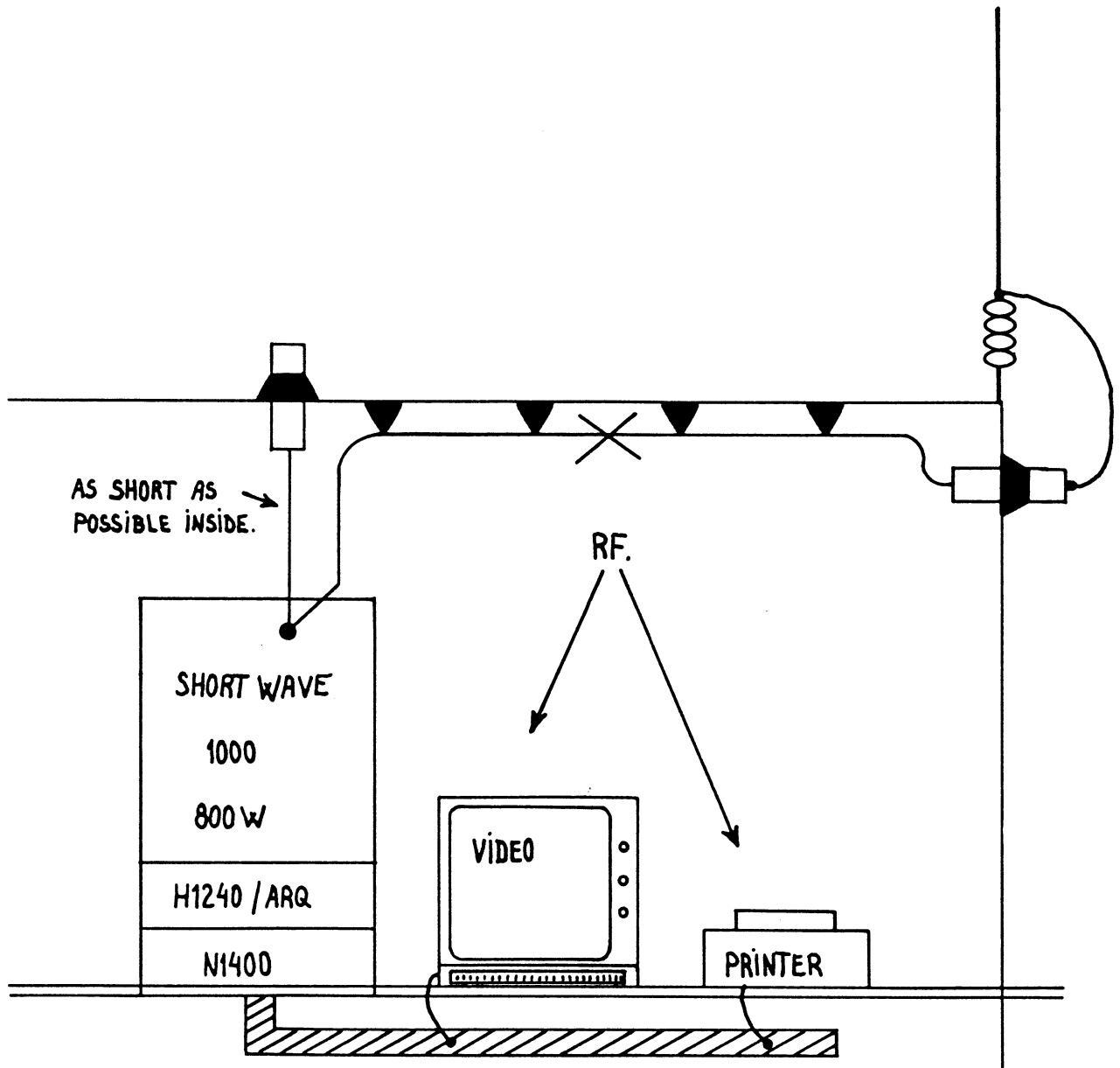
Rettelser		S. P. RADIO A/s AALBORG	Eizn.		Rå		MATR.
			Forn.		Konserv.		
			Forcrom.		Div.		VARE NR.
			Elox.				
			Affdetes				
			Renses i spån				TEGN. NR.
		Tegn. 06.02.90 BSA	Kontr.		Målestok		

GROUNDING OF MASTMOUNTED AERIAL COUPLERS.



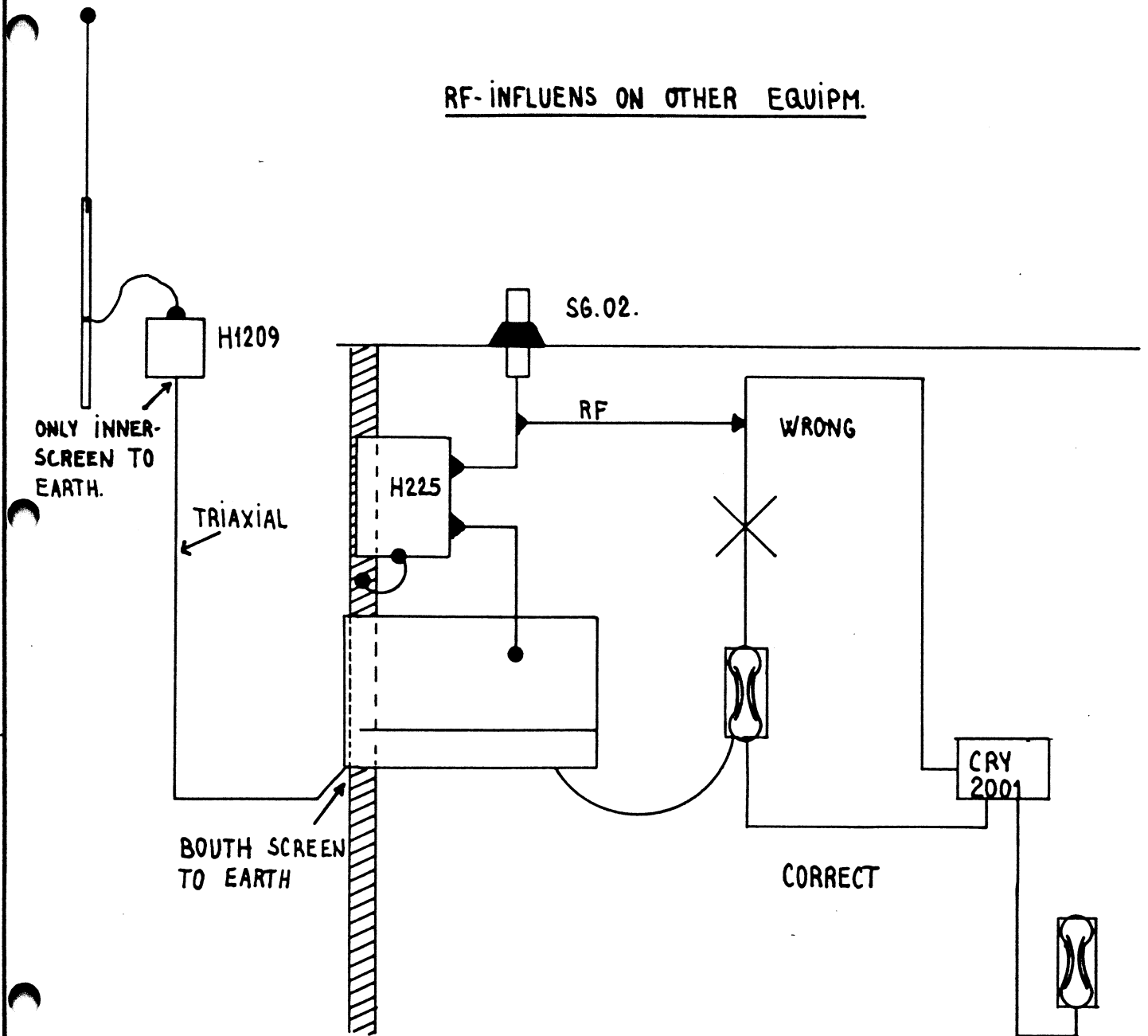
Rettelser		S. P. RADIO A/s AALBORG	Elzn		Rå		MATR.
			Forn.		Konserv		
			Forcrom		Div.		VARE NR.
			Elox.				
			Affedtes				TEGN. NR.
			Renses f. spån.				
		Tegn. 06.02.90 BSA	Kontr.		Målestok		

RF-INFLUENS ON TELEX EQUIPMENT.



Rettelser		S. P. RADIO A/s AALBORG	Elzn.		Rå		MATR.
			Forn.		Konserv.		
			Forcrom.		Div.		VARE NR.
			Elox.				
			Affedtes				
			Renses f. spån.				TEGN. NR.
		Tegn. 07.02.90 BSA	Kontr.		Målestok		

RF-INFLUENS ON OTHER EQUIPM.



Rettelser		S. P. RADIO A/s AALBORG	Elzn.	Rå	MATR.
			Forn.	Konserv.	
		1	Forcrom.	Div.	VARE NR.
			Elox.		
			Affedtes		
			Renses f. spån		TEGN. NR.
		Tegn. 06.02.90 BSA	Kontr.	Målestok	

T1130/AT1500

KUM 850

MIN. 7 m

MAX. 16 m

MIN. ANGEL
30°

AT1500

TRIAX OR COAX
WHEN TO SHOUT
BAD SWR. AND
RF. ON THE
CABLE BACK.

MULTICABLE

R1119

S1304

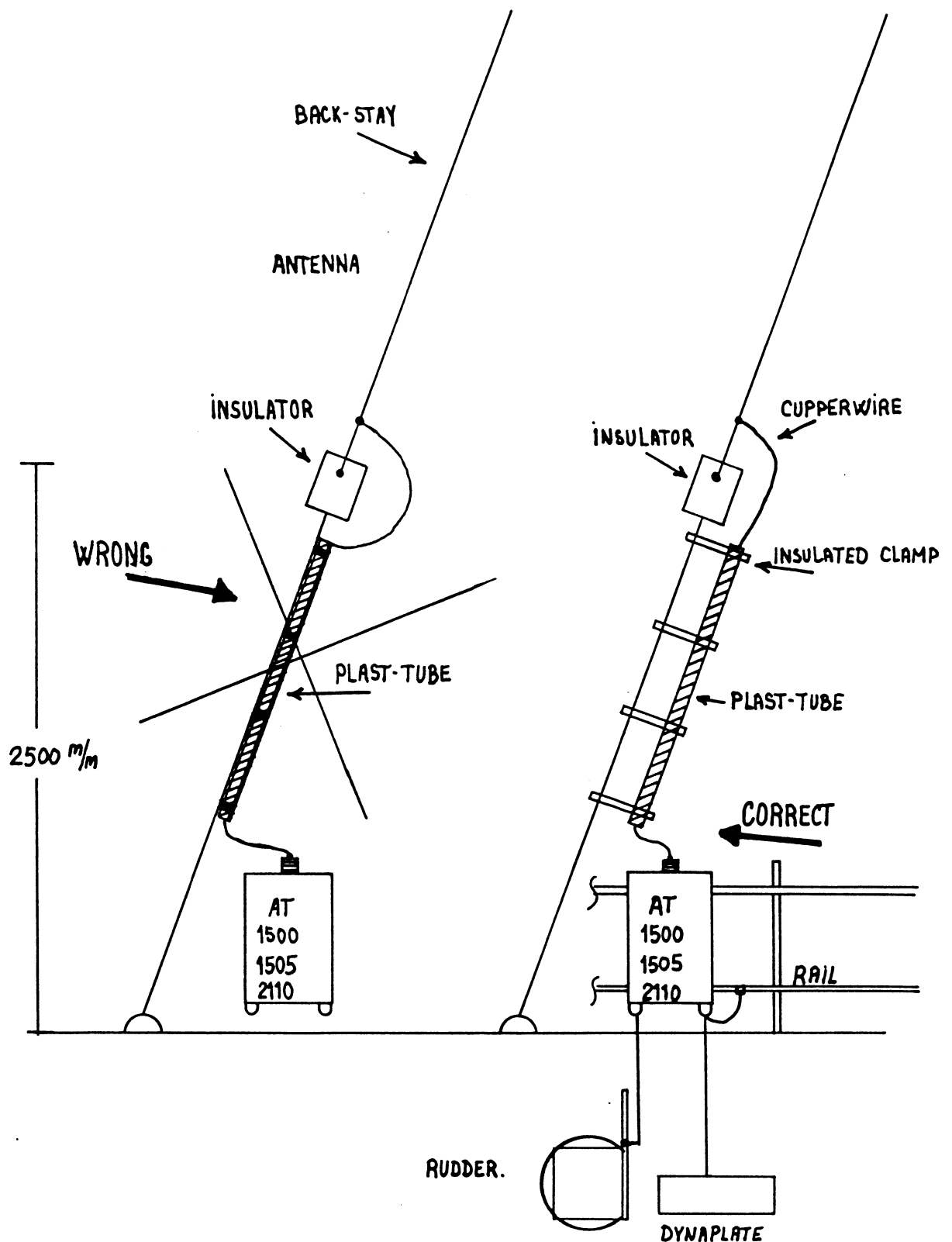
T1130

H1233

GROUND
← 2,5 sq

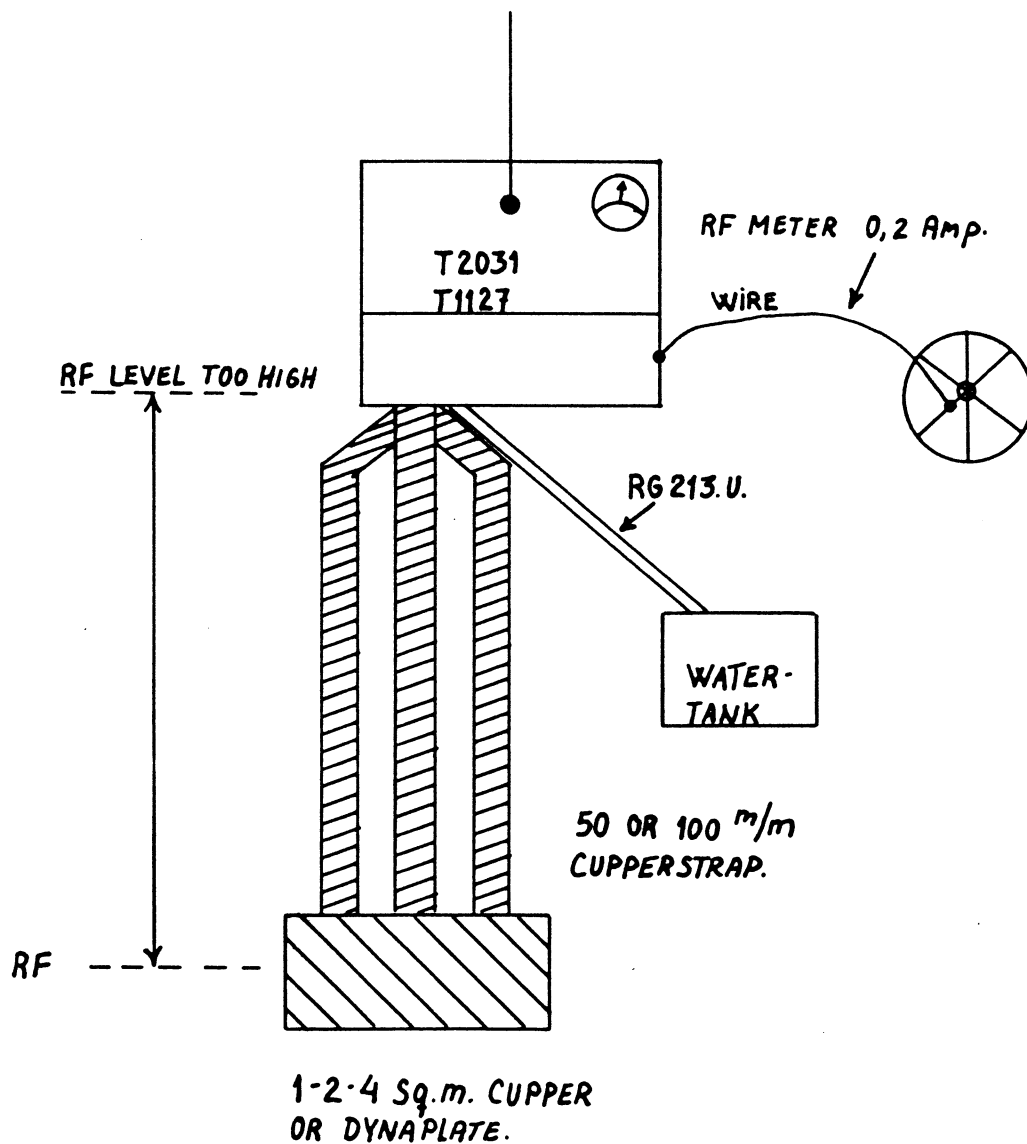
Rettelser		S. P. RADIO A/s AALBORG	Elzn		Rå		MATR.
			Forn		Konserv		
			Forcrom		Div		VARE NR.
			Elox.				
			Affedtes				
			Renses t spån				TEGN. NR
		Tegn. 08.02.90 BSA	Kontr.		Målestok		

PROTECTING OF FEEDER.



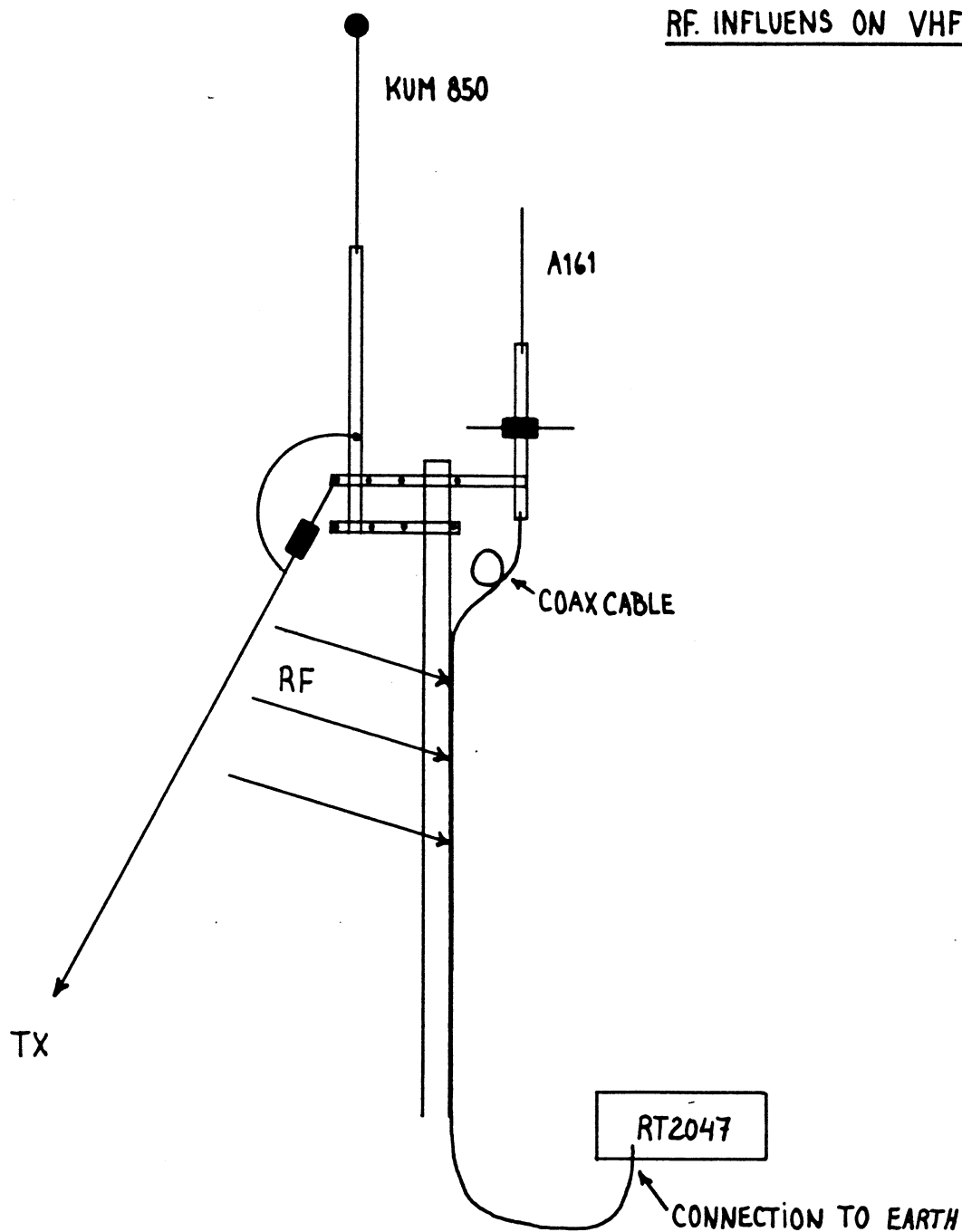
Rettelser		S. P. RADIO A/s AALBORG	Elzn.	Rå	MATR.
			Forn.	Konserv	
			Forcrom	Div.	VARE NR.
			Elox.		
			Affledes		TEGN. NR.
			Renses l spån		
		Tegn. 08.02.90 BSA	Kontr.	Målestok	

IN WOODEN AND FIBERGLASS BOATS GROUNDING-SYSTEM.



Rettelser		S. P. RADIO A/s AALBORG	Elzn.		Rå		MATR.
			Forn.		Konserv		
			Forcrom.		Div.		VARE NR.
			Elox.				
			Affedtes				TEGN. NR.
			Renses f. spån				
		Tegn. 06.02.90 BSA	Kontr.		Målestok		

RF. INFLUENS ON VHF-CABLES.



Rettelser		S. P. RADIO A/s AALBORG	Elzn.		Rå		MATR.
			Forn.		Konserv.		VARE NR.
			Forcrom.		Div.		
			Elox.				
			Affedtes				TEGN. NR.
		Renses f. spån					
		Tegn. 06.02.90 BSA	Kontr.		Målestok		