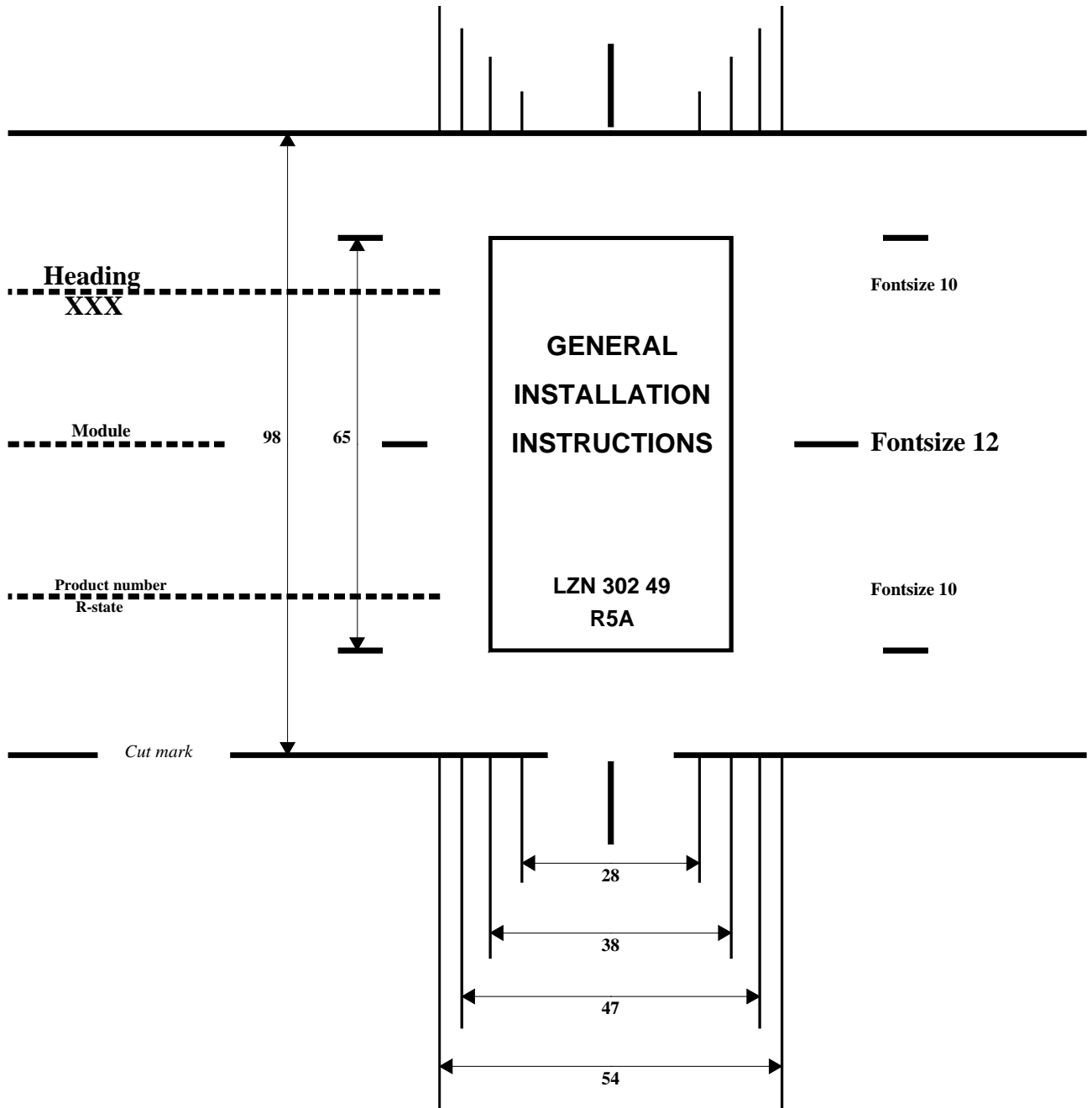


P00589A

Radio Base Stations

General Installation Instructions

Uppgjord (även faktaansvarig om annan) - Prepared (also subject responsible if other)		Nr - No.	
ERA/LRN/ZP AndersJansson		2/001 59-LZN 302 49 Uen	
Dokansv/Godk - Doc respons/Approved	Kontr - Checked	Datum - Date	Rev
ERA/LRN/ZGC (Leif-Olof Fager)		1999-10-20	A
		File	



Document No. 001 53-LZN 302 49		Document List	0
Date 99-10-07	Rev E	Preface	1
		Safety	2
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		Earthing and Lightning Protection Installation Instructions	5
		Antenna Equipment Installation Instructions	6
		Outdoor Installation Instructions	7
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Uppgjord — <i>Prepared</i>	Datum — <i>Date</i>	Rev	Dokumentnr — <i>Document no</i>
SG/ERA/LRN/ZG Monika Ågren 850 467 24	1999-10-20	H	1/001 51-LZN 302 49 Uen
Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

1 Document List

GENERAL INSTALLATION INSTRUCTIONS

Standard Site Material

Before Section 0

Document Name	Document Number	Rev.
List of Headings	001 53-LZN 302 49 Uen	E

Section 0 Document List

Document Name	Document Number	Rev.
Document List	1/001 51-LZN 302 49 Uen	H

Section 1 Preface

Document Name	Document Number	Rev.
Preface	1/001 59-LZN 302 49 Uen	E
Fault Announcement	1751-LZN 302 49 Uen	D

Section 2 Safety

Document Name	Document Number	Rev.
Safety	190 08-FAD 101 0250 Uen	J

Section 3 Site Installation Procedures

Document Name	Document Number	Rev.
Site Installation Procedures	1551-FCM 103 413/3 Uen	D

Section 4 Tools and Equipment Documents

Document Name	Document Number	Rev.
Contents List	4/001 52-LZN 302 49 Uen	E

Datum — Date	Rev	Dokumentnr — Document no
1999-10-20	H	1/001 51-LZN 302 49 Uen

1.1 Product Lists

	Document Name	Document Number	Rev.
Sub-section			
4.1	Installation Tool Sets		
	Tool Set, RBS Installation, 110V AC	131 22-LTT 601 95/1 Uen	A
	Tool Set, RBS Installation, 230V AC	131 22-LTT 601 95/2 Uen	A
	Tool Set, RBS Cabinet	131 22-LTT 601 96/1 Uen	B
	Tool Set, RBS Antenna System	131 22-LTT 601 97/1 Uen	A
	Feeder Jack Stand 5 tons, hydraulic	131 22-LTT 601 97/2 Uen	A
	Basic Tools, Maintenance, Rucksack	131 22-LTT 601 107/1	A
4.2	Preparation Tools for Feeders		
	Tool Set, 1/2" Feeder Preparation	131 22-LTT 601 046/31 Uen	C
	Tool Set, 7/8" Feeder Preparation	131 22-LTT 601 046/32 Uen	A
	Tool Set, 1 5/8" Feeder Preparation	131 22-LTT 601 046/33 Uen	A
4.3	Crimping Tool Sets		
	Tool Set, Crimping, PCM Cable, 75 ohms, Inner Conductor	131 22-LTT 601 108 Uen	B
	Tool Set, Crimping, PCM Cable, 75 ohms, Outer Conductor	131 22-LTT 601 16 Uen	A

Datum — Date	Rev	Dokumentnr — Document no
1999-10-20	H	1/001 51-LZN 302 49 Uen

Tool Set, Crimping, Grounding & Lightning Protection	131 22-LTT 601 86 Uen	B
Tool Set, Crimping, Coaxial Connectors	131 22-LTT 601 87 Uen	B
Tool Set, Crimping, Opto Cable Connectors	131 22-LTT 601 88 Uen	B
Tool Set, Crimping, RBS 2302, DC/Data Cable	131 22-LTT 601 98/1 Uen	A
Tool Set, Crimping, DC Cable 24 V for Transmission	131 22-LTT 601 99/1 Uen	A
4.4 Drill Machine Sets		
Hammer Drill Machine, Cordless, 110 V AC	131 22-LTT 601 12/1 Uen	B
Hammer Drill Machine, Cordless, 230 V AC	131 22-LTT 601 12/2 Uen	B
Hammer Drill Machine, 110 V AC	131 22-LTT 601 105/110 Uen	A
Hammer Drill Machine, 230 V AC	131 22-LTT 605 105/220 Uen	A
Screwdriver Machine, Cordless, 230 V AC	131 22-LTT 601 106 Uen	A

Datum — <i>Date</i>	Rev	Dokumentnr — <i>Document no</i>
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4.5 Spare Material Kit

Spare Material Kit for Fastening 131 22-NTM 201 1491/1 Uen C

4.6 Personal Safety

Personal Safety, Rescue and Lifting Equipment Set for Working at Heights 131 22-LYB 921 22+ Uen F

1.2 Directions for Use

Document Name	Document Number	Rev.
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4.7 IDC Tool

Tool, Pistol Grip Handle for IDC Slot Connector 1553-LSD 319 83 Uen C

4.8 Marking Template

Marking Template, RBS 2202 1553-LTY 151 351/1 Uen C

4.9 Test Equipment Set

Test Equipment Set 1553-LTR 171 04 Uen D

4.10 Crimping Tool Sets

Tool Set, Crimping, Grounding & Lightning Protection 1553-LTT 601 86 Uen C

Tool Set, Crimping, Coaxial Connectors 1553-LTT 601 87 Uen C

Tool Set, Crimping, Opto Cable Connectors 1553-LTT 601 88 Uen A

4.11 Tents

Tent, RBS 2101, 17 kg 1553-LYA 175 101+ Uen D

Tent, RBS 2102, 27 kg

Tent 1553-LYA 175 102 Uen C

Datum — Date	Rev	Dokumentnr — Document no
1999-10-20	H	1/001 51-LZN 302 49 Uen

Tent, RBS 2102, 12 kg, Rucksack	1553-LYA 175 107/1 Uen	C
Heating/Ventilation Fan	1553-LVS 150 20+ Uen	A
Portable Mains Distribution Unit	1553-NCF 521 01	A
4.12 Carrying Bags		
Carrying Bag, RBS 2202	1553-LYA 175 104/1 Uen	B
Carrying Bag, RBS 899M	1553-LYA 175 106/1 Uen	A
4.13 Personal Safety		
Personal Safety, Lifting and Rescue Equipment Set for Working at Heights	1553-LYB 921 22+	B

Datum — Date	Rev	Dokumentnr — Document no
1999-10-20	H	1/001 51-LZN 302 49 Uen

Section 5 Earthing and Lightning Protection Installation Instructions

	Document Name	Document Number	Rev.
	Contents List	5/001 52-LZN 302 49 Uen	E
Sub-section			
5.1	Installation Activity		
	Earthing and Lightning Protection Material	1531-FCM 103 413/2 Uen	F
5.2	Earthing Bar		
	Earthing Bar (rod)	1531-9/NTM 201 230/2Uen	D
5.3	Earthing Sets		
	Earthing Set	1531-9/NTM 201 230/1Uen	D
	Earthing Set	131 22-9/NTM 201 230/4Uen	A
	Earthing Sets to 1/2", 3/8", 7/8", 1 1/4" and 1 5/8" Feeders	1531-NGT 211 04+ Uen	B
	Earthing Set, Indoor	1531-NTM 201 219+ Uen	D
	Earthing Cable, Indoor Set	1531-4/NTM 201 201+ Uen	F

Datum — Date	Rev	Dokumentnr — Document no
1999-10-20	H	1/001 51-LZN 302 49 Uen

Section 6 Antenna Equipment Installation Instructions

	Document Name	Document Number	Rev.
	Contents List	6/001 52-LZN 302 49 Uen	E
Sub-section			
6.1	Installation Activity		
	Antennas, Feeders and Jumpers	1531-FCM 103 413/1 Uen	E
6.2	Clamps		
	Feeder Clamps for 1/2" and 10 mm feeders	1531-NTM 201 215+ Uen	C
	Feeder Clamps for 7/8", 1 1/4", 1 5/8" and 10 mm feeders	1531-6/NTM 201 230+ Uen	E
	Feeder Clamps for 10 mm, 1/2" and 7/8" feeders	1531-NTM 201 234+ Uen	A
6.3	Connectors 7/16		
	Connector to 1/2" Feeder Cable	1531-RPT 403 206/1 Uen	F
	Connector to 7/8" Feeder Cable	1531-RNT 403 095/1 Uen	G
	Connector to 1 5/8" Feeder Cable	1531-SXA 105 3082 Uen	H
6.4	Marking Sets		
	Marking Set	1531-NTM 201 207/1 Uen	E
	Marking Set	1531-NTM 201 239 Uen	D
	Marking Set	1531-NTM 201 240 Uen	D
6.5	Cable Lead-in		
	Cable Lead-in	1531-NTM 201 217 Uen	G
6.6	Sealing Set		
	Sealing Set	1531-NTM 201 2426 Uen	B
6.7	Jumpers		
	LCF 1/2" Jumpers	1531-TSR 951 63/1+ Uen	A

Datum — Date	Rev	Dokumentnr — Document no
1999-10-20	H	1/001 51-LZN 302 49 Uen

Section 7 Outdoor Installation Instructions

	Document Name	Document Number	Rev.
	Contents List	7/001 52-LZN 302 49 Uen	F
Sub-section			
7.1	Antenna Support		
	Antenna Support	1531- SXX 107 2125+ Uen	E
7.2	Support Extension		
	Support Extension	1531-SXX 107 2127 Uen	D
7.3	Supports for Adjustable Antenna Supports		
	Support for Tilted Antennas	1531-SXX 107 2128 Uen	D
	Adjustable Antenna Support	1531-SXX 107 2130 Uen	D
7.4	Antenna Boom		
	Antenna Boom Versions	1531-SXX 107 2152+ Uen	H
7.5	Cable Ladder Outdoor		
	Cable Ladder, Outdoor	1531-NTM 201 294/1 Uen	B

Datum — Date	Rev	Dokumentnr — Document no
1999-10-20	H	1/001 51-LZN 302 49 Uen

Section 8 Indoor Installation Instructions

	Document Name	Document Number	Rev.
	Contents List	8/001 52-LZN 302 49 Uen	F
Sub-section			
8.1	Cable Ladder Indoor		
	Indoor Ladder Set	1531-NTM 201 231 Uen	B
8.2	Distribution Frame Units, DF		
	Distribution Frame	1531-NTM 201 249/1 Uen	D
	Connection Box	1531-NTM 201 249/3 Uen	A
	Distribution Frame	1531-3/NTM 201 201/2 Uen	G
8.3	Interface D-sub Connector Items Sets		
	Interface D-sub Connector Items Set to PCM Cable 120 ohms	1531-RPM 513 755+ Uen	C
	Interface D-sub Connector Items Set to PCM Cable 75 ohms	1531-RPM 513 756+ Uen	C
	Interface D-sub Connector Items Set to Power Connection Cable +24V DC	1531-RPM 513 757+ Uen	C
	Interface D-sub Connector Items Set to PCM Cable 100 ohms	1531-RPM 513 758+ Uen	D

Datum — <i>Date</i>	Rev	Dokumentnr — <i>Document no</i>
1999-10-20	H	1/001 51-LZN 302 49 Uen

**Section 9
Glossary**

Document Name	Document Number	Rev.
Glossary	0034-LZN 302 49 Uen	E

Uppgjord — <i>Prepared</i>	Faktaansvarig — <i>Subject responsible</i>	Nr — <i>No.</i>			
ERA/LRN/ZG			1/001 59-LZN 302 49 Uen		
Dokansv/Godk — <i>Doc respons/Approved</i>	Kontr — <i>Checked</i>	Datum — <i>Date</i>	Rev	File	
ERA/LRN/ZGC (Leif-Olof Fager)		1999-10-20	E		

Preface

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Nr — No.		1/001 59-LZN 302 49 Uen	
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1999-10-20	E		

1 Preface

1.1 Objectives

This manual LZN 302 49 R5A is intended to be used during the installation process and provides outdoor and indoor general site installation work instructions, which are mostly system independent.

However, this manual does not deal with the installation of Radio Base Stations (RBSs). Here specific Installation Manuals for each type of RBS are available.

1.2 Target Group

These instructions are targeted for outdoor and indoor installation teams. The teams may consist of Ericsson personnel, operators or subcontractors.

The supervisors shall have a thorough knowledge of Ericsson material and methods.

The supervisor has responsibility to ensure that safety regulations are followed by all members in the team and that only qualified personnel are assigned to certain jobs.

Note If these instructions are not followed, Ericsson can take no responsibility for the overall safety and function of the Radio Base Station or site.

1.3 Scope of Work

The scope of work is based upon the Radio Site Investigation done by the Radio Site Installation Engineering. This results in detailed documents for each site.

1.4 Trouble Report Instruction

See the attached document Trouble Report on Equipment or on this Manual 1751–LZN 302 49 Uen.

Nr — No.	1/001 59-LZN 302 49 Uen	
Datum — Date	Rev	File
1999-10-20	E	

Section	Section heading	Document no.	Action
7	Outdoor Installation Instructions	7/001 52-EN/LZB 119 2693/1 Uen doc no. changed to 7/001 52-LZN 302 49 Uen	Revised
8	Indoor Installation Instructions	8/001 52-EN/LZB 119 2693/1 Uen doc no. changed to 8/001 52-LZN 302 49 Uen	Revised
9	Glossary	0034-EN/LZB 119 2693/1 Uen doc no. changed to 0034-LZN 302 49 Uen	Revised

Note Documents not listed in the table are unchanged.

2 Appendix

2.1 Fault Announcement 1751–LZN 302 49 Uen for Trouble Report on Equipment or on this Manual

See attached document.

Uppgjord — <i>Prepared</i>	Datum — <i>Date</i>	Rev	Dokumentnr — <i>Document no</i>
SG/ERA/LRN/ZG Monika Ågren 850 467 24	1999-09-30	D	1751-LZN 302 49 Uen
Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

Trouble Report on Equipment or on this Manual

Contents	Page
1	Trouble Report on Equipment or on this Manual 2

Datum — <i>Date</i>	Rev	Dokumentnr — <i>Document no</i>
1999-09-30	D	1751-LZN 302 49 Uen

1 **Trouble Report on Equipment or on this Manual**

A Trouble Report should be written when system components are not operating as expected or when disturbances occur repeatedly. It should not be written for occasional hardware failures. A Trouble Report should also be written when a fault is found in this manual. Any comments on this manual can be submitted in a similar way.

When writing a Trouble Report, always include as much information as possible. Write the Trouble Report as soon as possible, preferably at the RBS site. The next pages contain an example of a filled-in Trouble Report and a blank Trouble Report.

The Trouble Report should be sent to the nearest FSC for resolution and registration in the Ericsson trouble report system MHS (Modification Handling System). The FSC should forward the Trouble Report via the node MHO ERA BTS.

Datum — Date	Rev	Dokumentnr — Document no
1999-09-30	D	1751-LZN 302 49 Uen

Trouble Report

Company: <i>World-Wide Telecom</i>	Date: <i>27 April 1995</i>
Issued by: <i>Jane Doe</i>	Phone no: <i>+01 419 555 1212</i>
Address <i>501 Montgomery Avenue Mansfield, Ohio USA</i>	Memo id: <i>DOE@WW7.OHIO.US</i>
	Telefax no: <i>+01 419 555 1212</i>

Heading: <i>TRXC (TRU) is reporting wrong fault code</i>		
Product number or Document number: <i>KRC 131 47/01</i>		R-state <i>R 1A</i>
Site name: <i>Hillfield, Ohio</i>	Site id: <i>EOA 043</i>	Site status: <i>Operation</i>
Trouble symptoms: <i>TRXC is reporting a fault code after CPU reset.</i>		
Trouble Description: <i>After you have pressed the CPU reset the TRU starts to send fault reports constantly. The code is: Internal Fault Class 1A fault no. 33 This fault code cannot be found in the fault list.</i>		
Comments: <i>The TRU fault indicator is not lit.</i>		

Figure 1 Example of filled-in Trouble Report

Datum — Date	Rev	Dokumentnr — Document no
1999-09-30	D	1751-LZN 302 49 Uen

Trouble Report

Company:	Date:
Issued by:	Phone no:
Address	Memo id:
	Telefax no:

Heading:		
Product number or Document number:		R-state
Site name:	Site id:	Site status:
Trouble symptoms:		
Trouble Description:		
Comments:		

Figure 2 Trouble Report, blank

Safety Instructions

Contents

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1.2 Notes.....	6
1.3 Beryllium Oxide (BeO).....	7
1.4 Electrical Hazards.....	9
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1.6.1 Rules and Advice for the Safe Use of Ladders	14
1.7 Radio Frequency Radiation.....	16
1.8 Other Hazards	17

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1 Safety Instructions

This chapter shows the system used for presenting safety information.

Note: Reduce the risk of accidents by studying all the instructions carefully before starting work. If questions arise regarding the safety instructions, contact the supervisor or the local Ericsson company.

Where local regulations exist, these are to be followed. The safety information in this manual is a supplement to local regulations.

It is the responsibility of the local project manager to make certain that local regulations are known and followed.

The relevant manual (including this safety information) and specific instructions supplied by Ericsson must be followed in any work performed on the Ericsson products or systems. A sufficient knowledge of English or of any of the other languages in which the manuals or instructions are printed is necessary.

The safety information in the relevant manuals presupposes that any person performing work on Ericsson products or systems has the necessary education, training and competence required in order to perform that work correctly. For certain work, additional training or special training may be required. For more precise information on the amount and content of the general and/or special training required for work on Ericsson products or systems, please contact the supervisor or the local Ericsson company.

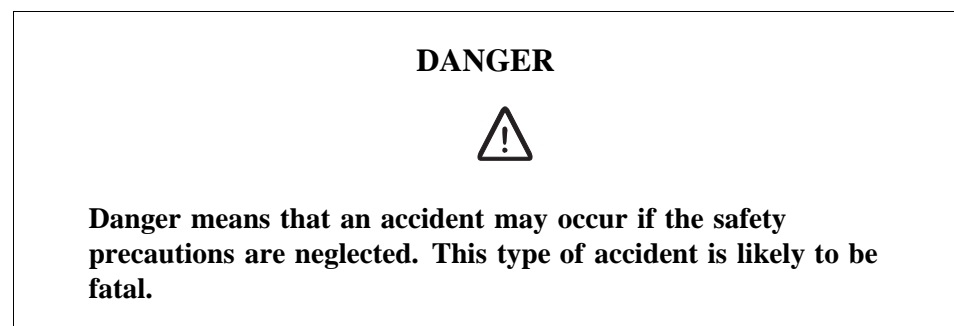
1.1 Warnings

Warnings are used to indicate hazardous activities. The warnings are preceded by the common hazard symbol.



Figure 1 Hazard symbol

The following three warning levels, shown here in order of urgency, are used:



WARNING



Warning means that an accident may occur if the safety precautions are neglected. This type of accident may be fatal or cause serious injury. It may also damage the product.

CAUTION



Caution means that an accident may occur if the safety precautions are neglected. This type of accident may cause injury or damage the product.

The following special symbols are used to indicate the risk of radio frequency radiation, electrical hazards and electrostatic discharge:



Figure 2 Radio frequency radiation



Figure 3 Electrical hazard



Figure 4 Electrostatic discharge

Warnings are used throughout this manual to alert the reader to special instructions concerning a particular task or operation that may be hazardous if performed incorrectly or carelessly. Therefore, read the instructions carefully.

Strict compliance with the special instructions while performing a task is the best way of preventing accidents.

1.2

Notes

Note: Notes are used to call the reader's attention to key points that might otherwise be overlooked.

1.3 Beryllium Oxide (BeO)

WARNING



Do not handle transistors and components without protection. Beryllium Oxide is highly toxic and may be found in transistors, and other components.

Hazard

Beryllium Oxide dust is created by chafing, filing or breakage. It is very dangerous if inhaled, even for only a few seconds. It can cause injury to skin or mucous membranes severe enough to endanger life or cause permanent injury. Particles penetrating the skin through wounds or abrasions are liable to cause chronic ulcerations.

Symptoms of Poisoning

Symptoms of Beryllium poisoning are respiratory troubles or cyanosis (grey-blue discoloration of the skin). These symptoms may develop within a week, or after a period of several years.

First Aid

- A suspected inhalation of Beryllium Oxide should be treated immediately by a doctor at a hospital.
- Wash the area thoroughly if it is suspected that Beryllium Oxide has been in contact with the skin or entered the skin through cuts or abrasions. This should be followed by a medical examination.

Components Containing Beryllium Oxide

Do not store components and washers loose. Do not file or machine them in any way. Do not apply heat except when the components are clamped in a heat sink application.

Power Transistors, Diodes and Thyristors

WARNING



Do not carry loose components in pockets, bags or containers, or tamper with them in any way that could cause them to break or disintegrate. Do not apply excessive heat during soldering. Do not break open components for inspection.

Components containing Beryllium Oxide are clearly marked in the manufacturer's packing, and identified by attached information.

- Store components in their original packing and do not mix them with other components.
- Ensure that they do not become mechanically damaged. Use care when replacing defective components.
- Beryllium Oxide is encapsulated and components are safe to handle for normal replacement purposes.

Heat Sink Washers

Note: Not all heat sink washers contain Beryllium. Heat sinks containing Beryllium, are individually packed when new.

WARNING



Do not store washers loose. Do not file or machine them in any way. Do not apply heat, except when the components are clamped in a heat sink.

- Handle with gloves or cloth when removing heat sink washers from packaging and mounting them into place in the equipment.

Cathode Ray Tubes (CRTs) and Ceramic Applications

WARNING



Do not handle broken glass with bare fingers. Do not blow on exposed surfaces due to the danger of Beryllium Oxide.

Ceramic cylinders or formers containing Beryllium are marked by blue colorations or black lines. They are safe to handle provided they are not damaged. If they are damaged, take precautions as with other components containing Beryllium.

Disposal

Dispose of defective and/or broken Beryllium components in approved containers. Mark them clearly on the outside of the wrapping "COMPONENTS CONTAIN BERYLLIUM"

WARNING



Never send defective and/or broken components containing Beryllium Oxide through the mail. Instead, return them to the nearest depot by hand.

1.4 Electrical Hazards

High Voltage

DANGER



High voltage is used in the operation of this equipment. Both direct contact with the mains power and indirect contact via damp items or moisture can be fatal.

- The AC installation must be carried out according to local regulations. These regulations may require the work to be carried out by a qualified and authorized electrician.
- Remove wrist watches, rings, bracelets, etc.
- Switch off the power if the cabinet is damp inside.

- Prevent damp entering the equipment during work in bad weather conditions.

DANGER



Improper electrical installation may cause fire or electrical shock. Approved circuit breakers for the AC mains and the cable's cross sectional areas must always be selected in accordance with local laws and regulations. Only a qualified and authorized electrician is permitted to install or modify the electrical installation.

Cable Markings

CAUTION



Verify that the cable markings correspond before connecting cables.

Faulty Electric Tools

WARNING



Do not repair a faulty electric tool yourself. Hand it over to your supervisor in exchange for a functioning tool.

Drilling

WARNING



Do not drill holes in the Radio Base Station. The drill bit may come into contact with live wires.

- Always use insulated protective gloves, such as the LYB 1032, when drilling where live wires might be hidden.
- Always use eye protectors (goggles) when drilling. Flying chips and dust may get into your eyes.

Thunderstorms

DANGER



Avoid working on electrical installations or towers/masts during thunderstorms.

Thunderstorms create strong electric fields. For that reason, and to avoid direct strokes of lightning, it is essential that the equipment is properly earthed for thunderstorm conditions.

1.4.1 Electrostatic Discharge, ESD

CAUTION



Sensitive components such as Integrated Circuits (IC) can be damaged by discharges of static electricity.

Electrical charges are generated by friction when a body moves, rubs against clothes, slides against a chair, when shoes rub against the floor, and when you handle ordinary plastics, etc. Such charges may remain for a considerable period of time.

Handling of printed board assemblies and IC components

Always use an approved antistatic bracelet to avoid damage to components mounted on printed board assemblies. The ESD wrist strap contains a resistor with an ohmic value greater than 1 M Ω in the cable to protect the operator. The resistance value is low enough to discharge the electrostatic voltage. Never replace the cable with any other cable. The ESD wrist strap must be connected to earth. Ericsson recommends wrist strap LYB 250 01/14.

Storing and Transporting printed board assemblies and IC Components

Use the original packaging. If this is not available, use a conductive material, or a special IC carrier that either short-circuits or insulates all leads of the components.

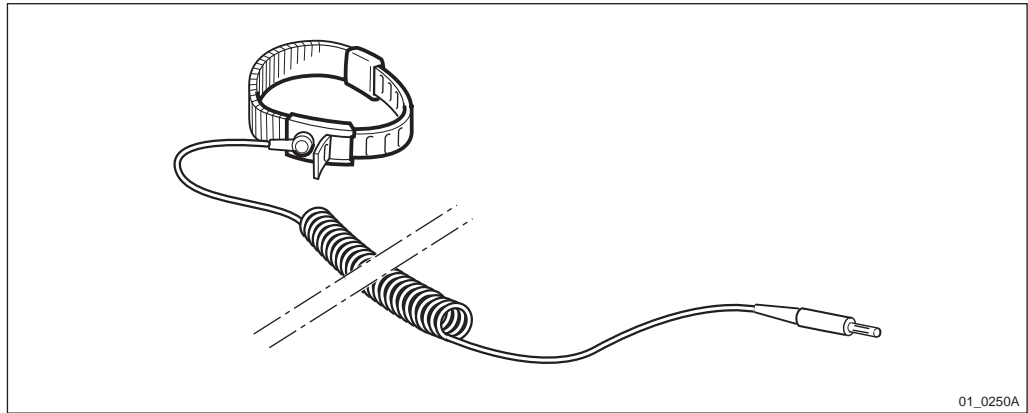



Figure 5 ESD wrist strap LYB 250 01/14

DANGER



To avoid potentially fatal circuits through the body to earth, wrist strap connections must include a resistor of at least 1 MΩ. Test the wrist strap regularly.


1.5

Batteries

Batteries can be hazardous if improperly handled. Special care must be used to prevent short-circuiting batteries, or loss of electrolyte. Electrolyte contains potentially hazardous material.

Work

DANGER



Read Safety Instructions regarding handling and connecting batteries.

General Precautions

When working with batteries:

- Remove wrist watches, rings, bracelets, etc.
- Use insulated tools.
- Make sure that eye wash facilities, or portable eye wash equipment, is available prior to starting work.

Use all the required PPE (Personal Protective Equipment) such as:

- Rubber gloves and aprons.

- Eye protection (goggles or a face shield).

Short-Circuiting of Batteries

CAUTION



Short circuits can cause injury or damage. Although the battery voltage may be low, the released power can be extremely high.

It is necessary to ensure that no metal object, such as a tool, short-circuits the batteries. If necessary, disconnect or remove the batteries before beginning work.

Explosive Gases

Batteries may give off explosive gases. All battery areas must be adequately ventilated and protected from fire.

CAUTION



Do not use open cell-lead acid batteries. They give off hazardous gases that may cause an explosion or corrosion of the equipment. The battery must be suitable for horizontal operation.

Overheated Batteries

CAUTION



Excessive heat can cause the battery casings to become soft and to warp, allowing acid to escape.

If the internal temperature of the cabinet exceeds + 60 °C (140 °F), take the following precautions:

- Check that the batteries have not leaked.
- If the batteries have leaked, see the section Hazardous Waste Material from Leaks.

Hazardous Waste Material from Leaks

Ensure that there are sufficient absorbers or neutralizing materials available on site, in case of spillage of hazardous substances. There is a danger of spillage occurring when installing, removing, replacing or servicing batteries. The absorbers and neutralizing materials must be suitable for the hazardous substances involved.


Table 1 Typical Neutralizers

Typical neutralisers	
Baking soda (bicarbonate)	NaHCO ₃
Sal soda	Na ₂ CO ₃ ·10H ₂ O
Soda ash	Na ₂ CO ₃

Consult the battery manufacturers for specific details of absorbers and neutralizing materials. Absorbers and neutralizing products will vary, depending on country and manufacturer.

1.6 Working at Heights

WARNING



Some working areas involve the risk of accidents caused by falling objects.

For example, when working on a mast, tower or a roof, the following precautions must be taken:

- Personnel working at heights must have the appropriate training and medical certificate.
- Full body safety harness and safety helmet must be used.
- Adequate protective clothing is essential in cold weather.
- All lifting devices must be tested and approved.
- During work on a mast, all personnel in the area must wear helmets.

1.6.1 Rules and Advice for the Safe Use of Ladders

- Make sure that the ladder is undamaged and has been approved for use.
- Do not overload the ladder.

The following types of ladders must be guyed or otherwise secured

- Leaning ladder longer than 5m.

- Free-standing ladder with a platform and knee-support, and with over 2 meters height to the platform.
- Any other free-standing ladder longer than 3m.

Positioning the ladder

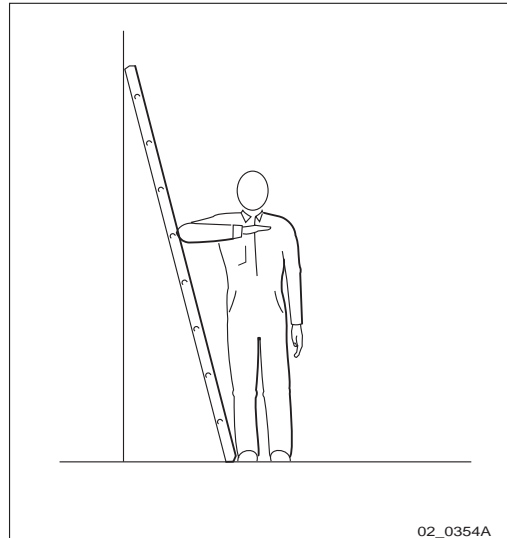


Figure 6 Checking the angle

- The ladder's inclination should be approximately 1:4 (75°). Position the ladder according to its gradation indicator (if there is one) or check the angle with your elbow.
- Use the ladder foot or a ladder support to reduce the risk of tipping over sideways.
- Always attach extension legs to a ladder that is to be used on a sloping base. Never prop up a ladder with boxes, stones or the like.
- Extend the ladder completely.
- Check that all four anti-slipping treads are firmly positioned on the base.

Climbing and using the ladder

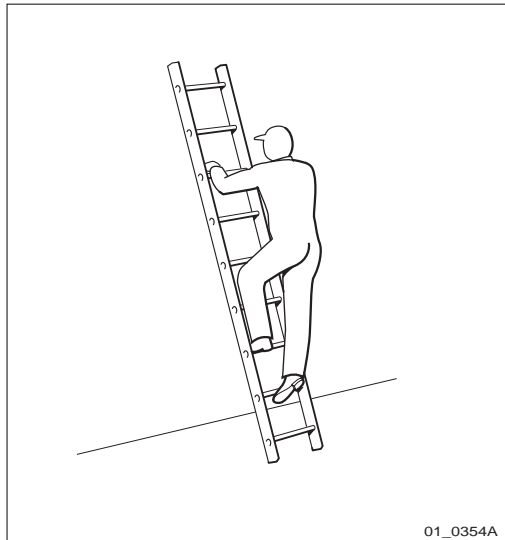


Figure 7 Climbing the ladder

- Climb the ladder facing it.
- When you lean sideways, outward from the ladder, your navel should never be outside the edge of the ladder's frame.
- Always keep 3 points of contact (two feet and one hand, two hands one foot) with the ladder when working on it. This will reduce the risk of falling.
- Never climb the topmost four rungs of a ladder. If you have to climb up on a roof, the ladder should extend at least one meter above the eaves.

1.7 Radio Frequency Radiation

CAUTION



Radio frequency (RF) radiation from antenna systems can endanger your health.

Co-ordinate with all mast users to switch off the transmitters when working with, or near, antennas.

1.8 Other Hazards

Handling Heavy Goods

WARNING



Read the Safety chapter regarding handling of heavy goods.

- Use tested and approved lifting devices only. They must only be used by trained personnel.
- Always check that all parts of the lifting devices are intact.
- Make sure that all lifting devices are properly stabilised or attached to fixed objects such as walls or buildings before lifting.
- Give clear and consistent command signals, for example
 - lift
 - lower
 - stop
- Make sure that there is never an angle of more than 90° between the straps at the point where they are attached to the lifting hook.

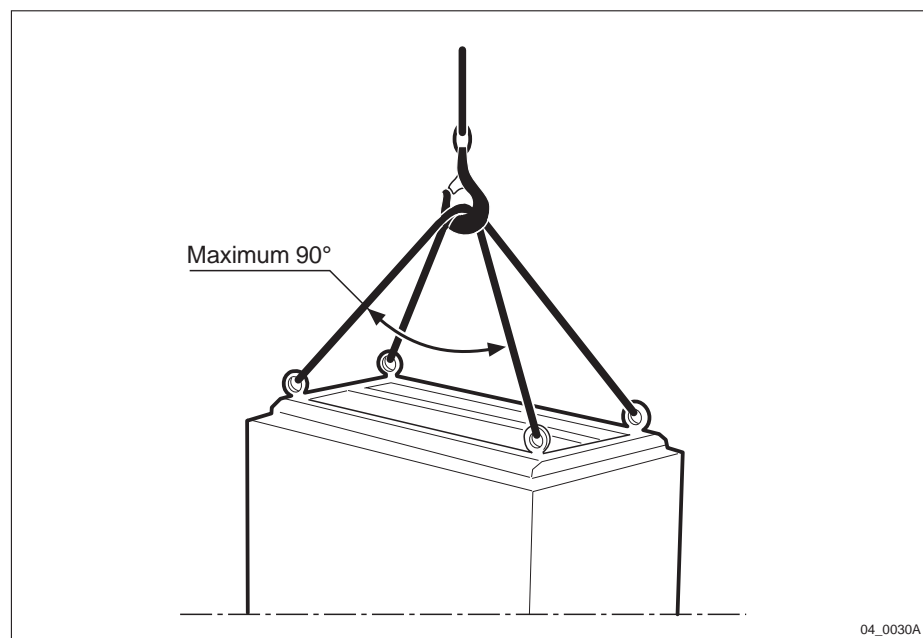


Figure 8 Use long straps

- Too large an angle between the lifting straps increases the strain on them and may cause them to snap. Overloading, or wrong use of lifting devices in other ways, can have catastrophic consequences.

- Never walk under hoisted loads.
- Follow local regulations for safety clothing and safety equipment for hoisting and moving goods.
- Unsecured cabinets have a high centre of gravity. They can easily tip over and harm personnel.

WARNING



There is a danger of the assembly toppling over, which could cause injury to personnel or damage to the equipment.

Fire

WARNING



Fire may spread to neighbouring rooms. When working on a radio base station you may have to open cable ducts, channels and access holes, thereby interfering with the fire sectioning of the building.

- Close the cable ducts and fire doors (if applicable) as soon as possible.
- After completing work on cables, seal the cable ducts according to the regulations for the building.
- Minimize the amount of inflammable material.
- Avoid storing empty packaging material on the site.
- Use a powder or carbon dioxide type of fire extinguisher due to the electric nature of the equipment inside the Radio Base Station.

Sharp Edges

WARNING



Wear protective gloves when handling the equipment. There may be sharp metal edges.

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Site Installation Procedures

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1 General

These procedures are performed after the Radio Site Investigation and the Radio Site Installation Engineering are completed.

The Radio Site Installation Engineering results in detailed documents for each site which form the basis of the Outdoor and Indoor Installation Planning and Preparation.

1.1 Standard of Installation

Each new RBS shall be installed to the same engineering standards.

1.2 Outdoor Installation Procedure

1.2.1 Installation Planning

1. Verify that the Site Installation Documentation includes:

- Situating Plan
- Configuration Plan
- Antenna Placement Information
- Plant Specification

2. Check the following items:

- Site Investigation Report which shall include information covering :
 - Site documents
 - Site preparations assembled in a binder for delivery to the Design Review form the basis for a Confirmed System. Design agreement with the customer.
- Installation tools.

3. Check Plant Specification concerning:

- Antenna supports, screws and other fixing items

4. Follow the timetable for material delivery to the site.

1.2.2 On-site Installation Preparation

1. Check the safety precautions taken, see Section 2 Safety Liability Instructions.

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2. From the Antenna Placement Information or Situating Plan identify True North for correct orientation of antennas.
3. Verify that the site preparation has been completed according to the Site Investigation Report:
 - Antenna mast/tower erected.
 - Lightning protection installed.
 - Mains power distribution installed.

1.2.3 Lightning Protection and Earthing

1. Check the Plant Specification to verify that correct materials have been delivered.

See Section 5, Earthing and Lightning Protection Installation Instructions.

1.2.4 Antenna Installation

1. Check the Configuration Data and Plant Specification to verify that correct materials have been delivered.
 - Install the antennas.
2. Observe the following:
 - Correct positioning of antennas.
 - Antenna direction checked by compass.
 - Antenna angle from the wall in cases of wall-mounted antennas.
 - Height of antenna above roof/ground.
 - Recommended diversity distance.
 - Minimum vertical separation of Tx and Rx antennas.

1.2.5 Feeder Installation

1. Check the Plant Specification to verify that correct materials have been delivered.
2. Observe the following when installing the feeder:

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- Feeder cable route (the feeder route has to be as straight as possible).
- Bending radii, see Section 6 Antenna and Antenna Equipment Installation Instructions.
- When ALNA and TMA are used, a feeder drip-loop shall be made before termination on the RBS.
- Recommended distance between feeder clamps.
- Label the feeder at both ends. The text shall start at the feeder connectors and be read towards the cable. See Section 6, Antenna and Antenna Equipment Installation Instructions.
- Cut ends of unused feeders must be protected from humidity.
- Protection of feeder cabling: Cables might need extra protection from falling objects or from people stepping on them.

1.2.6 Cable Entry to Building

1. Use “Drip-loops” on cable entry to buildings. See Section 6, Antenna and Antenna Equipment Installation Instructions.
2. See Section 6 for detailed installation instructions covering Cable lead-in NTM 201 217.

1.2.7 Jumper Installation

1. Check the Plant Specification to verify that correct materials have been delivered.
2. See Section 6, Antenna and Antenna Equipment Installation Instructions for details.

1.2.8 Mounting and Sealing of Feeder Connectors

1. Check the Plant Specification to verify that correct materials have been delivered.
2. See Section 6, Antenna and Antenna Equipment Installation Instructions for details.

1.2.9 Antenna Measurement

1. Make Antenna Installation Tests as described in the test manuals for the RBS system to be installed.

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2. Send Test Reports to the Installation Manager. Test Reports are also included in the Site Installation Documentation and left on the site.

1.3 Indoor Installation Procedure

1.3.1 Installation Planning

1. Verify that the Site Installation Documentation includes:
 - Configuration Data
 - Floor Plan Drawings
 - Cable Way Drawings
 - Plant Specification
 - Cabling table
 - Allocation Table for Alarms
2. Check the following items:
 - Site Investigation Report which shall include information covering:
 - Site documents
 - Site preparations
 - Installation tools.
3. Check the Plant Specification concerning, screws and other fixing items
4. Follow the time-table for material delivery to the site.

1.3.2 On-site Installation Preparation

1. Check the safety precautions taken, see Section 2 Safety:
 - Verify the emergency exits.
 - Check that the emergency exits are unobstructed.
 - Check the first aid kit in the Team Common Tool Kit LTT 601 044/1 and that all team members know its location
 - Check that the correct safety equipment is present and in sufficient quantities, e.g.:
 - Helmets

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- Gloves
- Goggles
- Aprons etc.
- ESD
 - To avoid damage to circuit boards the use of ESD bracelets are required.

2. Verify that the Site Preparation is in accordance with the Site Installation Documentation:

- Walls finished to prevent generation of dust
- Floor even and finished to prevent generation of dust
- Mains power supply available and provided with one automatic circuit breaker per Power Supply Unit (PSU)
- A power socket outlet installed and connected
- Earth cable available
- Air conditioning functioning
- Sufficient working light available
- Check that the incoming earth cable is connected to the earth collection bar.

1.3.3 Earthing and Lightning Protection

1. Check the Plant Specification to verify that correct materials have been delivered.

See Section 5, Earthing and Lightning Protection Installation Instructions for details.

1.4 Cable Ladder and Cabinet Installation

1. Install the cable ladders, according to Section 7 Outdoor and Section 8 Indoor Installation Instructions, and remaining installation material.
2. Proceed according to the Installation Manual for the specific RBS Cabinet.

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1.5 Following-up Routines, Outdoor and Indoor

1. Update the following documents in the Site Installation Documentation binder if necessary:
 - Floor Plan Drawing
 - Cable Way Drawing
 - Antenna arrangement drawings
 - Plant Specification
 - List all jumpers that are not of standard length in the Plant Specification.
 - Fill in the length of the feeders in the Test Report.
2. Check that all cables are labeled.
3. Write the outdoor and indoor installation check list.
4. Carry on an outdoor and indoor clean-up and remove waste material.
5. Send a copy of all updated documentation to the engineering department.
6. Leave the corrected Site Installation Documentation on the site.

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2 Before Leaving the Site

2.1 Installation Check List

1. Make a careful outdoor/indoor installation check after the installation is completed.
2. Fill in an Installation Check List.

2.2 Site Installation Documentation

1. If revision of the original Site Installation Documentation has been necessary, a copy of this revised documentation must be sent to the engineering department.

2.3 Tidying Up Before Leaving

Before leaving the site /site area:

- Empty the site /site area of used packing to reduce fire hazards
- Tidy up the entire site/site area.

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Tools and Equipment Documents

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1 Tools and Equipment Documents

1.1 Product lists

Table 1

Sub-sect.	Product Lists	Product name/ number	Notes
1		Install. tool sets	
	131 22-LTT 601 95/1 Uen	LTT 601 95/1	tool box, 110V AC
	131 22-LTT 601 95/2 Uen	LTT 601 95/2	tool box, 230V AC
	131 22-LTT 601 96/1 Uen	LTT 601 96/1	tool case
	131 22-LTT 601 97/1 Uen	LTT 601 97/1	ant./feeder tool box
	131 22-LTT 601 97/2 Uen	LTT 601 97/2	for handling cable drums
	131 22-LTT 601 107/1 Uen	LTT 601 107/1	tool rucksack
2		Stripping and trim- ming tools for feeders	
	131 22-LTT 601 046/31 Uen	LTT 601 046/31	for 1/2" feeders
	131 22-LTT 601 046/32 Uen	LTT 601 046/32	for 7/8" feeders
	131 22-LTT 601 046/33 Uen	LTT 601 046/33	for 1 5/8" feeders
3		Crimping tool sets	
	131 22-LTT 601 108 Uen	LTT 601 108	for inner conn., PCM cable 75 ohm

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Sub-sect.	Product Lists	Product name/ number	Notes	
4	131 22-LTT 601 16 Uen	LTT 601 16	for outer conn., PCM cable 75 ohm	
	131 22-LTT 601 86 Uen	LTT 601 86	for grounding and lightning prot.	
	131 22-LTT 601 87 Uen	LTT 601 87	for crimp. of conn. to coax. cables	
	131 22-LTT 601 88 Uen	LTT 601 88	for crimp. of conn. to opto cables	
	131 22-LTT 601 98/1 Uen	LTT 601 98/1	for crimp. of conn. to DC/Data cable	
	131 22-LTT 601 99/1 Uen	LTT 601 99/1	for crimp. of conn. to power conn. cable +24V DC	
			Drill machine sets	
	131 22-LTT 601 12/1 Uen	LTT 601 12/1	batt. powered, 110V AC charger	
	131 22-LTT 601 12/2 Uen	LTT 601 12/2	batt. powered, 230V AC charger	
	131 22-LTT 601 105/110 Uen	LTT 601 105/110	for 110V AC	
	131 22-LTT 601 105/220 Uen	LTT 601 105/220	for 230V AC	
	131 22-LTT 601 106 Uen	LTT 601 106	batt. pow. screw-driver, 230VAC charger	

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Sub-sect.	Product Lists	Product name/ number	Notes
5	131 22-NTM 201 1491/1 Uen	Spare material kit NTM 201 1491/1	for fasten- ing in diff. materials
6	131 22-LYB 921 22+ Uen	Personal safety, rescue and lifting eqpt sets LYB 921 22/2-4	for working at height

1.2 Directions for Use

Table 2

Sub-sect.	Directions for Use	Product name/ number	Notes
7	1553-LSD 319 83 Uen	IDC Pistol Grip Tool LSD 319 83	for termin. of wires in IDC slot conn.
8	1553-LTY 151 351/1 Uen	Marking template LTY 151 351/1	for marking of fast. holes for RBS 200 and RBS 2000 cabinets
9	1553-LTR 171 04 Uen	Test eqpt set LTR 171 04	for comm. on long test objects
10	1553-LTT 601 86 Uen	Crimping tool sets LTT 601 86	for C- clamps, sleeves and lugs

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Sub-sect.	Directions for Use	Product name/ number	Notes
	1553-LTT 601 87 Uen	LTT 601 87	for BNC and TNC conn.s
	1553-LTT 601 88 Uen	LTT 601 88	for opto cabl. conn.ing
11	1553-LYA 175 101+ Uen	Tents LYA 175 101	for inst. and maint. of outdoor RBSs
	1553-LYA 175 102 Uen	LYA 175 101/2 LYA 175 102	big, heavy- duty version
	1553-LYA 175 107/1 Uen	LYA 175 107/1	lightweight version for RBS 2102
	1553-LVS 150 20 Uen	LVS 150 20	tent acc.: heat/vent. fan
	131 22-NCF 521 01 Uen	NCF 521 01	tent acc.: port. mains distr. unit
12	1553-LYA 175 104/1 Uen	Carrying bags LYA 175 104/1	for RBS 2202
	1553-LTT 175 106/1 Uen	LYA 175 106/1	for RBS 889M
13	1553-LYB 921 22+ Uen	Personal safety, rescue and lifting eqpt set LYB 921 22/2-4	for working at height

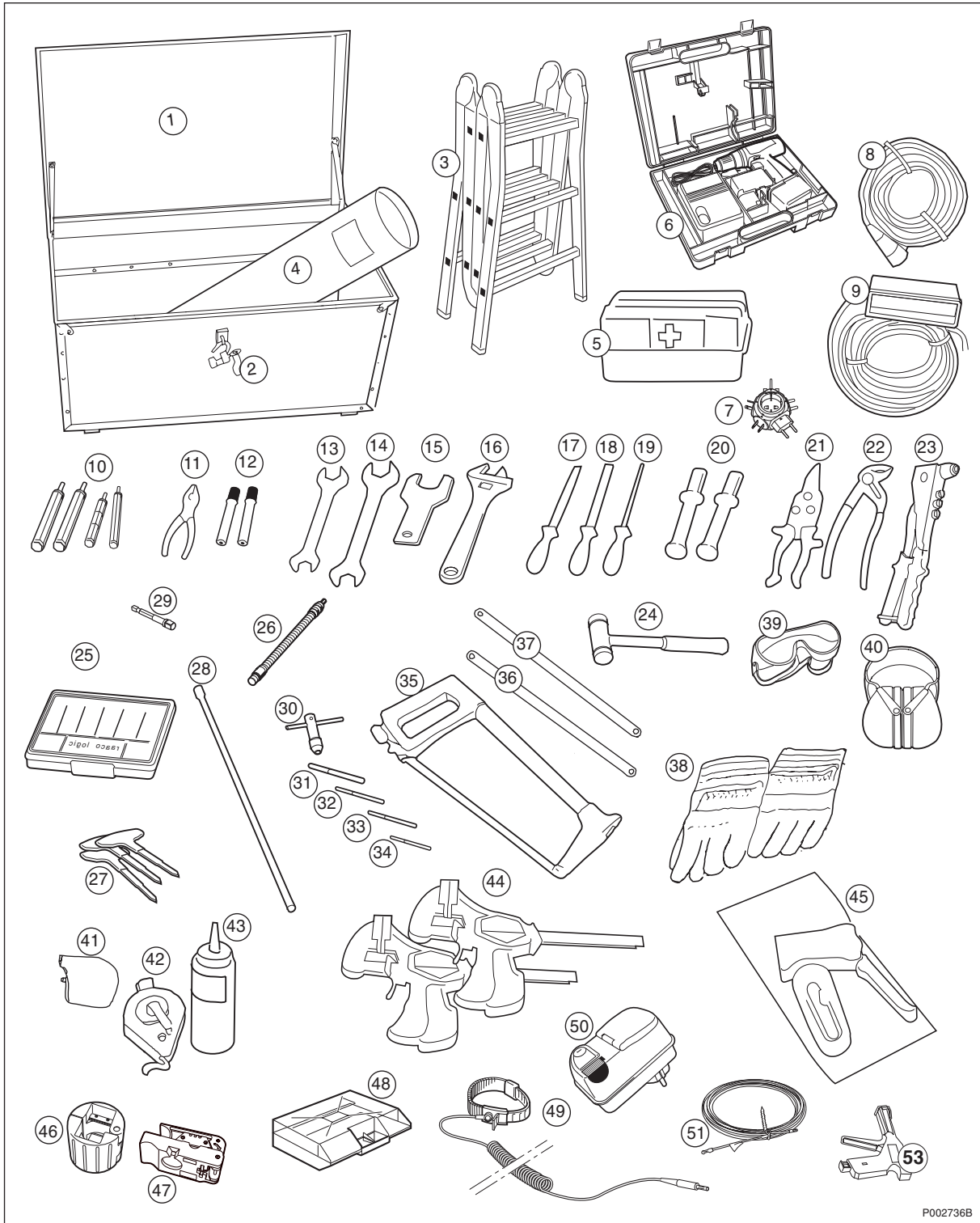
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**List of Tool Set, RBS Installation,110V AC:
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**1 List of Tool Set, RBS Installation 110V AC:
LTT 601 95/1**



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Figure 1 Tool Set LTT 601 95/1

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Note Contents of kit may be subject to changes without notice.

Case dimensions: l: 805 w: 325 h: 370 mm
 Ladder: 1000 x 400 x 250 mm
 Tool kit total weight: 44 kg

Table 1 Tool Set LTT 601 95/1 details

Pos.	Description	Qty
1.	Tool box 800	1
2.	Pad lock for pos. 1	1
3.	Step ladder, Combiflex 3.6 m	1
4.	Marking template ¹⁾	1
5.	First aid kit	1
6.	Bosch drill set Including: 1 Charger 110 V AC 1 Extra battery, 2.0 Ah	1
7.	Travel adapter plug	1
8.	Distribution cable, 20 m	1
9.	Cable, 15 m with socket outlets	1
10.	Sockets (long) 10, 2x13, 16, 17 mm	5
11.	Combination pliers	1
12.	Marking pen	2
13.	U-spanner, 24x27 mm	1
14.	U-spanner, 30x32 mm	1
15.	U-spanner, 30 mm, short	1
16.	Adjustable spanner, 12"	1
17.	File, flat 6"	1

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Pos.	Description	Qty
18.	File, half-round 6"	1
19.	File, round 6"	1
20.	Cable knife 9854	2
21.	Plate shears, straight (yellow)	1
22.	Slip joint pliers, Polygrip	1
23.	Rivet tool	1
24.	Hammer, plastic 32 mm	1
25.	Assortment box 1 Including: Drill set; 3, 3.3, 4.1, 4.2, 5.0, 6.0, 6.4, 6.8, 8.0 mm	2 of each
26.	Flexible shaft 1/4"	1
27.	Gypsum drills	3
28.	Extension bar 3/8", l=400 mm	1
29.	Socket adaptor 1/4" to 3/8"	1
30.	Thread taps holder	1
31.	Thread tap, M4	1
32.	Thread tap, M5	1
33.	Thread tap, M6	1
34.	Thread tap, M8	1
35.	Hack saw	1
36.	Saw blade, 12" 18 TPI	10
37.	Saw blade, 12" 32 TPI	10
38.	Gloves, size: L, XL	2
39.	Eye protectors	1
40.	Ear muffs	1
41.	Measuring tape, 6 m	1
42.	Chalking line	1
43.	Marking chalk	1
44.	Quick clamps	2
45.	Mollyplug mounting pliers	1
46.	Stripping tool 7/8"	1
47.	Trimming tool, Spinner LCF 7/8"	1

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Pos.	Description	Qty
48.	Assortment box 2 Including: pos 10, 26, 29	1
49.	Static control wrist strap	1
50.	Earth fault breaker	1
51.	Fish wire, 10 m	1
52.	Tool for cable ties	1

¹⁾ See Directions for Use 1553-LTY 151 351/1 in the latter part of this section.

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List of Tool Set, RBS Installation, 230V AC: LTT 601 95/2

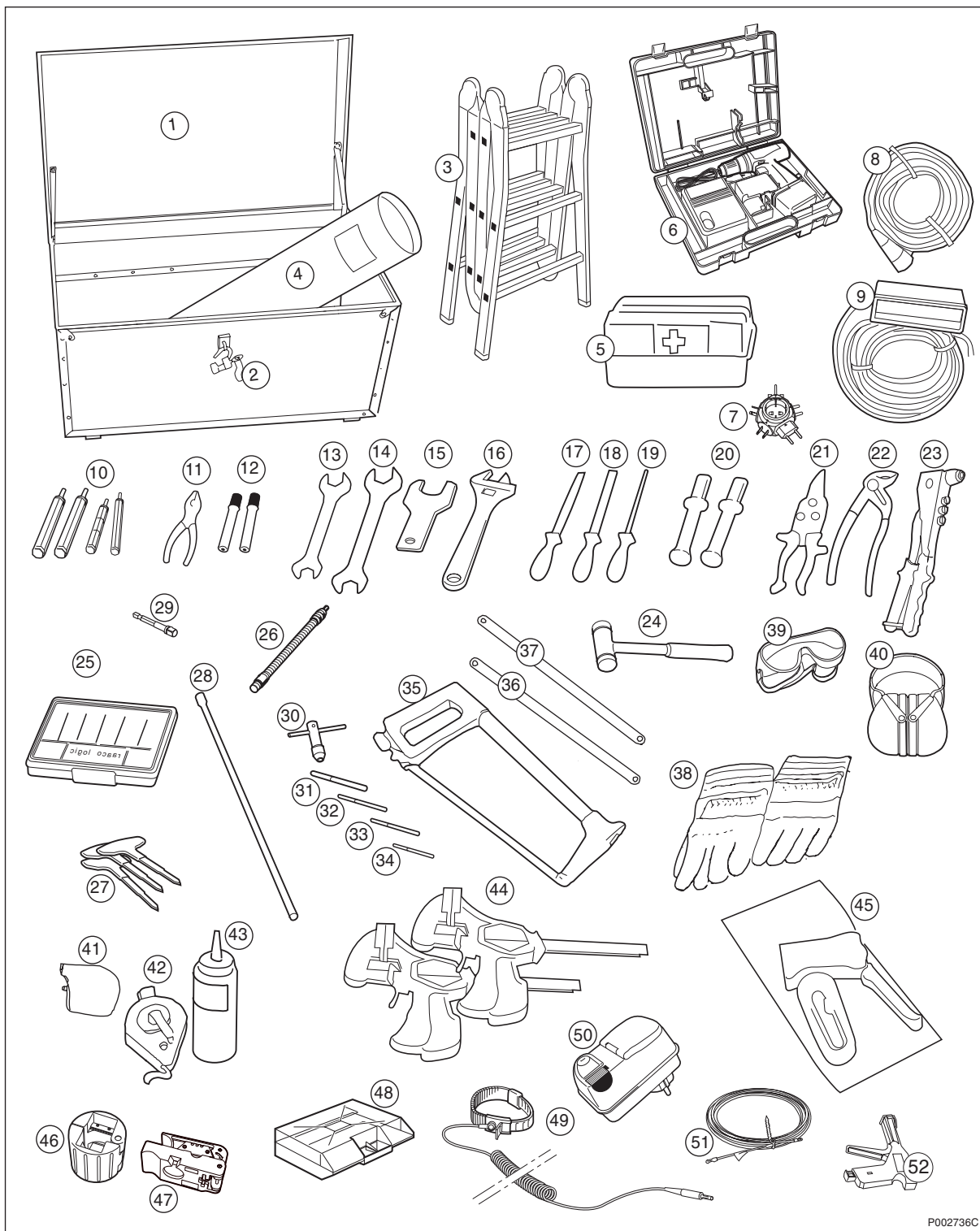
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**1 List of Tool Set, RBS Instalation, 230V AC:
LTT 601 95/2**



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Figure 1 Tool Set LTT 601 95/2

Datum — Date	Rev	Dokumentnr — Document no
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Note Contents of kit may be subject to changes without notice.

Case dimensions: l: 805 w: 325 h: 370 mm
Ladder: 1000 x 400 x 250 mm
Tool kit total weight: 44 kg

Table 1 Tool Set LTT 601 95/2 details

Pos.	Description	Qty
1.	Tool box 800	1
2.	Pad lock for pos. 1	1
3.	Step ladder, Combiflex 3.6 m	1
4.	Marking template ¹⁾	1
5.	First aid kit	1
6.	Bosch drill set Including: 1 Charger 230 V AC 1 Extra battery, 2.0 Ah	1
7.	Travel adapter plug	1
8.	Distribution cable, 20 m	1
9.	Cable, 15 m with socket outlets	1
10.	Sockets (long) 10, 2x13, 16, 17 mm	5
11.	Combination pliers	1
12.	Marking pen	2
13.	U-spanner, 24x27 mm	1
14.	U-spanner, 30x32 mm	1
15.	U-spanner, 30 mm, short	1
16.	Adjustable spanner, 12"	1
17.	File, flat 6"	1

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Pos.	Description	Qty
18.	File, half-round 6"	1
19.	File, round 6"	1
20.	Cable knife 9854	2
21.	Plate shears, straight (yellow)	1
22.	Slip joint pliers, Polygrip	1
23.	Rivet tool	1
24.	Hammer, plastic 32 mm	1
25.	Assortment box 1 Including: Drill set; 3, 3.3, 4.1, 4.2, 5.0, 6.0, 6.4, 6.8, 8.0 mm	2 of each
26.	Flexible shaft 1/4"	1
27.	Gypsum drills	3
28.	Extension bar 3/8", l=400 mm	1
29.	Socket adaptor 1/4" to 3/8"	1
30.	Thread taps holder	1
31.	Thread tap, M4	1
32.	Thread tap, M5	1
33.	Thread tap, M6	1
34.	Thread tap, M8	1
35.	Hack saw	1
36.	Saw blade, 12" 18 TPI	10
37.	Saw blade, 12" 32 TPI	10
38.	Gloves, size: L, XL	2
39.	Eye protectors	1
40.	Ear muffs	1
41.	Measuring tape, 6 m	1
42.	Chalking line	1
43.	Marking chalk	1
44.	Quick clamps	2
45.	Mollyplug mounting pliers	1
46.	Stripping tool 7/8"	1
47.	Trimming tool, Spinner LCF 7/8"	1

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Pos.	Description	Qty
48.	Assortment box 2 Including: pos 10, 26, 29	1
49.	Static control wrist strap	1
50.	Earth fault breaker	1
51.	Fish wire, 10 m	1
52.	Tool for cable ties	1

¹⁾ See Directions for Use 1553-LTY 151 351/1 in the latter part of this section.

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1 List of Tool Set, RBS Cabinet: LTT 601 96/1

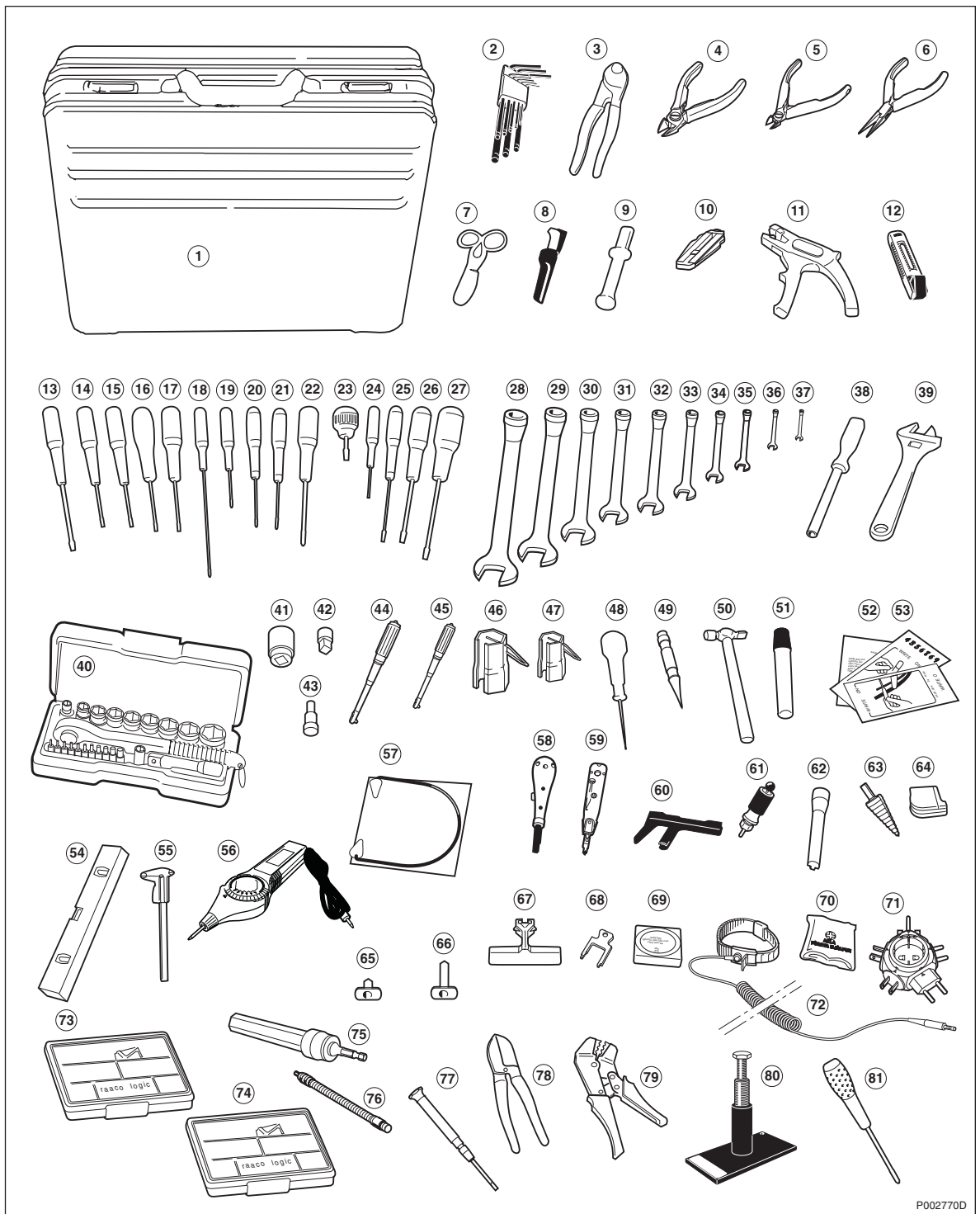


Figure 1 Tool Set LTT 601 96/1

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Note Contents of kit may be subject to changes without notice.

Case dimensions: l: 490 w: 220 h: 370 mm

Tool kit total weight: 16 kg

Table 1 Tool Set LTT 601 96/1 details

Pos.	Description	Qty
1.	Tool case	1
2.	Hexagon spanner set, 1.5-10 mm	1
3.	Cable cutter	1
4.	Side cutting pliers	1
5.	Side cutting pliers	1
6.	Snip nose pliers	1
7.	Scissors, short	1
8.	Knife	1
9.	Cable knife	1
10.	Wire stripper, adjustable 0.25-0.8 mm ²	1
11.	Wire stripper, 0.2-6.0 mm ²	1
12.	Cable-shield cutter, 25-150 mm ²	1
13.	Screwdriver, TORX no. 8x110	1
14.	Screwdriver, TORX no. 10x65	1
15.	Screwdriver, TORX no. 15x70	1
16.	Screwdriver, TORX no. 20x80	1
17.	Screwdriver, TORX no. 25x80	1
18.	Screwdriver, TORX no. 30x160	1
19.	Screwdriver, PH 0x60	1
20.	Screwdriver, PH 1x75	1
21.	Screwdriver, PZ 1x75	1
22.	Screwdriver, PZ 2x100	1
23.	Screwdriver, short	1
24.	Screwdriver, 0.5x3x50	1
25.	Screwdriver, 0.8x4x100	1
26.	Screwdriver, 1x5.5x100	1
27.	Screwdriver, 1.2x6.5x125	1
28.	U-ring wrench, 24 mm	1

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Pos.	Description	Qty
29.	U-ring wrench, 23 mm	1
30.	U-ring wrench, 20 mm	1
31.	U-ring wrench, 19 mm	1
32.	U-ring wrench, 17 mm	1
33.	U-ring wrench, 16 mm	1
34.	U-ring wrench, 13 mm	1
35.	U-ring wrench, 10 mm	1
36.	U-ring wrench, 8 mm	1
37.	U-ring wrench, 5 mm	1
38.	Nut spanner, 10 mm	1
39.	Adjustable spanner, L=250 mm (10")	1
40.	Socket set 3/8": 8, 10, 11, 12, 13, 14, 15, (16) ¹ , 17, (18) ¹ , 19 mm including: - 3" Extension bar bit holder - Bit assortment: 2 FD Bits 4 (5.5 mm) 2 PH Bits 1, 2 2 HEX Bits 5 (6 mm) 2 PZ Bits 1, 2 3 TX Bits 10,15, 20 ¹ Is included in Assortment box (pos 73)	1
41.	Socket 1/2", 24 mm	1
42.	Socket adaptor 3/8" to 1/2"	1
43.	Hexagon socket 8 mm for 3/8" wrench	1
44.	Torque wrench, 4-20 Nm	1
45.	Torque wrench, 10-55 Nm	1
46.	Slotted socket for 27 mm screw joint	1
47.	Slotted socket for 32 mm screw joint	1
48.	Bradawl	1
49.	Center punch, springloaded	1
50.	Pen hammer	1
51.	Marking pen	1

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Pos.	Description	Qty
52.	Marking labels, 25x75 mm	1
53.	Marking labels, 25x150 mm	1
54.	Spirit level 400 mm, magnetic	1
55.	Vernier, 140 mm	1
56.	Voltage tester	1
57.	Earplugs	2
58.	Termination tool, Ericsson	1
59.	Termination tool, Krone	1
60.	Tool for cable ties	1
61.	Extraction tool, PCM 75 ohm	1
62.	Penlight, mini	1
63.	Cone cut drill (Step drill), Ø5-21 mm	1
64.	Measuring tape, 6 m	1
65.	RU-extractor, button 25 mm	2
66.	RU-extractor, button 35 mm	2
67.	RU-extractor, handle	1
68.	Extractor tool for overvoltage protector covers	1
69.	Electrical tape, white	2
70.	First aid kit	1
71.	Travel adaptor plug	1
72.	Static control wrist strap	1
73.	Assortment box 1 Including: TORX Bit T30 Socket adaptor 1/4" to 3/8" Socket 3/8" 16 mm + 18 mm pos 42, 43, 63	1
74.	Assortment box 2 Including: pos 65, 66 (2 of each)	1
75.	Socket (long) 3/8", 17 mm	1
76.	Flexible shaft 1/4"	1
77.	Precision screwdriver	1

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Pos.	Description	Qty
78.	A pair of secateurs, RS 22	1
79.	Crimp. tool for stand. lugs; 0.75, 1.5 2.5 mm ² cond. area	1
80.	Compression tool	1
81.	Socket, 5mm	1

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List of Tool Set, RBS Antenna System: LTT 601 97/ 1

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1 List of Tool Set, RBS Antenna System: LTT 601 97/1

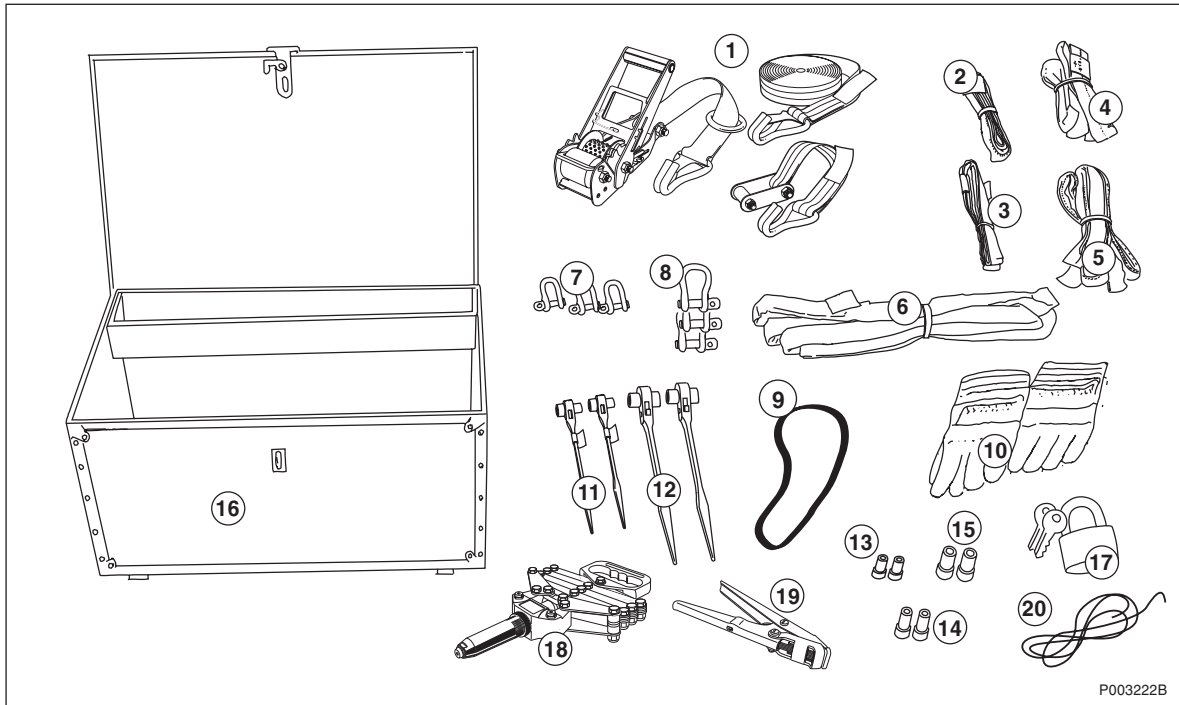


Figure 1 Tool Set LTT 601 97/1

Note Contents of kit may be subject to changes without notice.

If so required, safety and lifting equipment are delivered with test certification complying with ISO 9000.

Case dimensions: 805 x 325 x 370 mm

Tool set total weight: 25 kg

Table 1 Tool Set LTT 601 97/1 details

Pos.	Description	Qty
1.	Puller Hoist, Strapulli including a belt and a hook	1
2.	Lifting Belts, RSE-1 ton/1 m	4
3.	Lifting Belts, RSE- 1 ton/2 m	4
4.	Lifting Belts, RSE- 1 ton/3 m	2

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5.	Lifting Belts, RSE-1 ton/4 m	2
6.	Lifting Belts, RSE-2 tons/6 m	2
7.	Schackle M12-0.9 tons, FZ	3
8.	Schackle M16-1.5 tons, FZ	3
9.	Sling 60 cm, for feeder lifting	3
10.	Working gloves, size: M,L	2x4
11.	Ratchet Wrench 13-17 mm	2
12.	Ratchet Wrench 19-24 mm	2
13.	Extension Socket 17 mm	2
14.	Extension Socket 19 mm	2
15.	Extension Socket 24 mm	2
16.	Box 800	1
17.	Pad Lock	1
18.	Rivet Tool	1
19.	Tool for Band-it cable ties	1
20.	Rope diam. 2.8 mm, length 10 m	1

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List of Feeder Jack Stand, 5 tons, hydraulic: LTT 601 97/2

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**1 List of Feeder Jack Stand, 5 tons, hydraulic:
LTT 601 97/2**

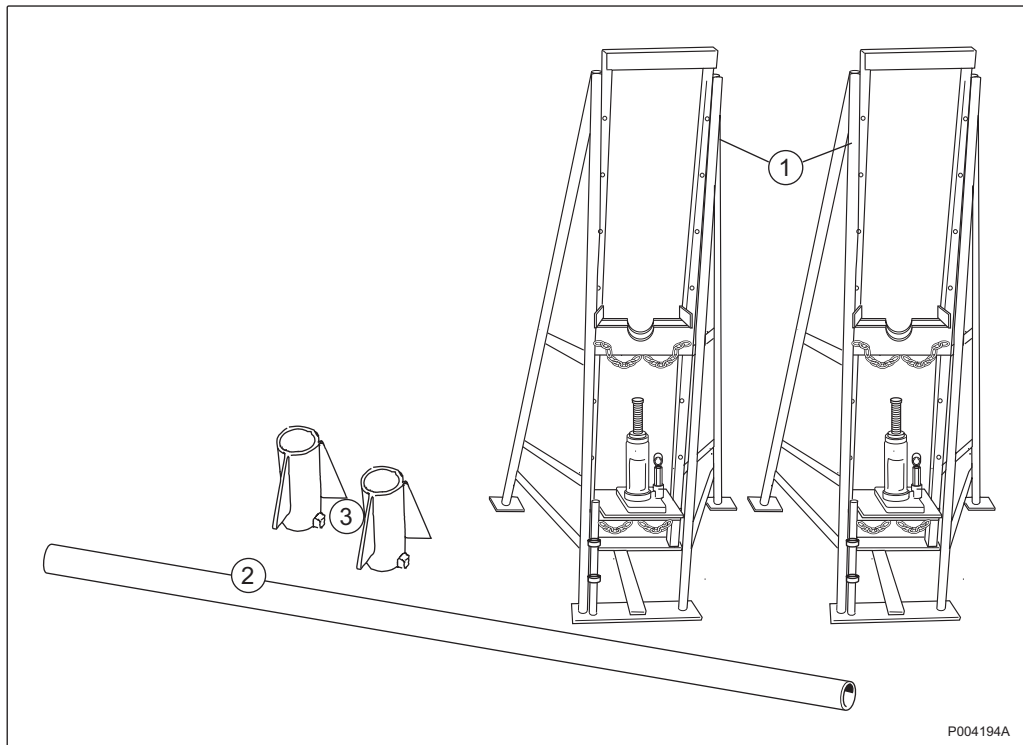


Figure 1 Feeder Jack Stand LTT 601 97/2

Ladder folded:

height 1.5 m

base width 0.4 m

axle length 1.9 m

Jack stand total weight: 53 kg

Table 1 Feeder Jack Stand LTT 601 97/2 details

Pos.	Description	Qty
1.	Stand	2
2.	Tubular axle, 2 meters	1
3.	Stop collar	2

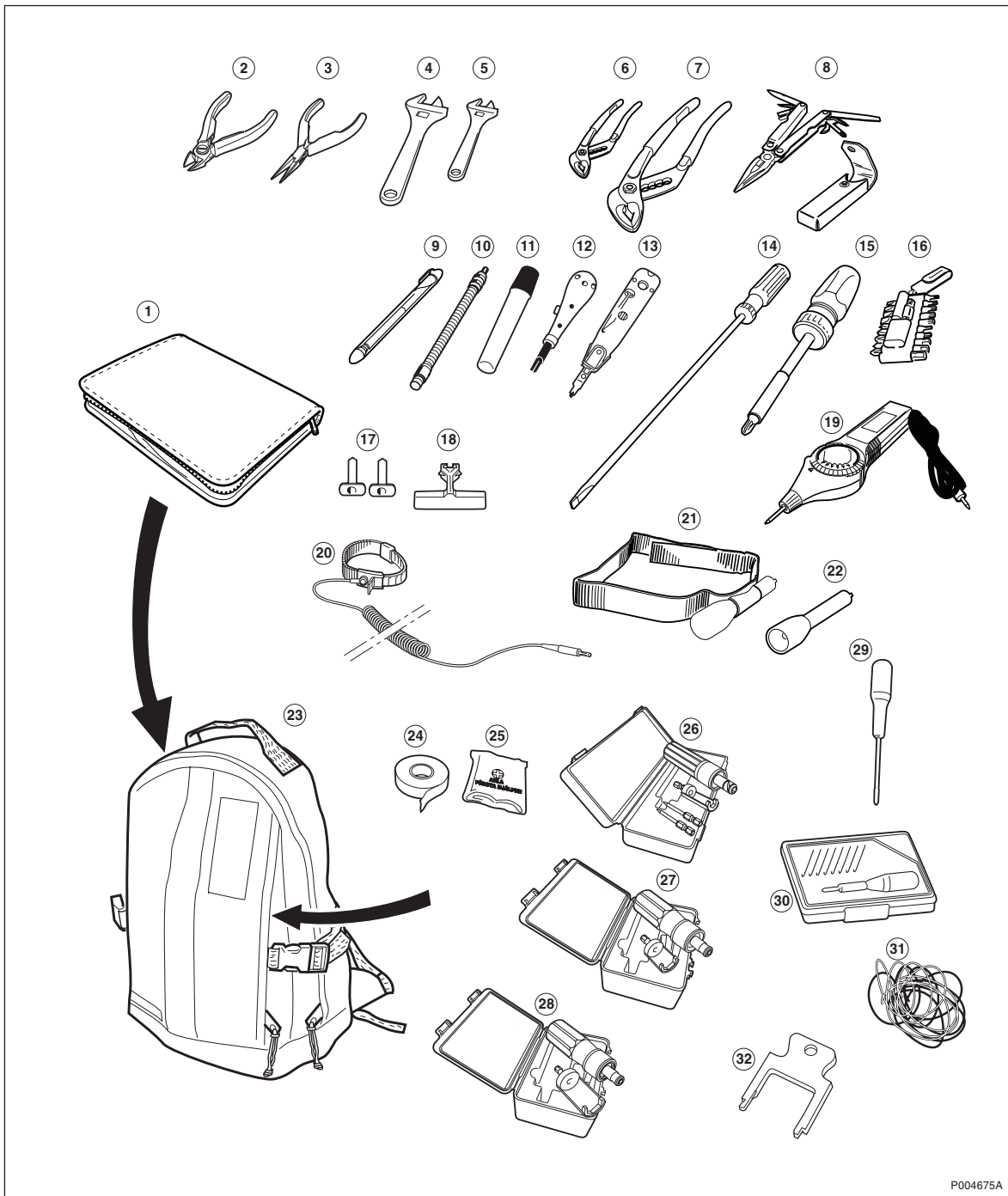
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List of Basic Tools, Maintenance, Rucksack: LTT 601 107/1

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**1 List of Basic Tools, Maintenance, Rucksack:
LTT 601 107/1**



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Figure 1 Rucksack LTT 601 107/1

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Note Contents of kit may be subject to changes without notice.

Case dimensions: l: 490 w: 220 h: 370 mm

Tool kit total weight: 16 kg

Table 1 Rucksack LTT 601 107/1 details

Pos.	Description	Qty
1.	Tool case	1
2.	Side cutting pliers	1
3.	Snip nose pliers	1
4.	Adjustable spanner l=160 mm	1
5.	Adjustable spanner l=100 mm	1
6.	Slip joint pliers l=125 mm	1
7.	Slip joint pliers l= 245 mm	1
8.	Pocket survival tool	1
9.	Marking pen, gold colour	1
10.	Flexible shaft 1/4"	1
11.	Marking pen	1
12.	Termination tool, Ericsson	1
13.	Termination tool, Krone	1
14.	Screwdriver l=200 mm	1
15.	Universal bit holder	1
16.	Bits kit	1
17.	RU-extractor, button 35 mm	2
18.	RU-extractor, handle	1
19.	Voltage tester	1
20.	Static control wrist strap	1
21.	Head band for lamp holding	1
22.	Penlight, mini	1
23.	Tool rucksack	1
24.	Electrical tape, white	2
25.	First aid kit	1
26.	Torque wrench kit 0.8 Nm LTT 601 83	1
27.	Torque wrench kit 1.7 Nm LTT 601 93	1
28.	Torque wrench kit 2.8 Nm LTT 601 94	1

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Pos.	Description	Qty
29.	Screwdriver, Torx T8	1
30.	Precision screwdriver set	1
31.	Jumper wire (2x0.5 mm) l=10 m	1
32.	Handle	1

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**List of Tool Set, 1/2” Feeder Preparation:
LTT 601 046/31**

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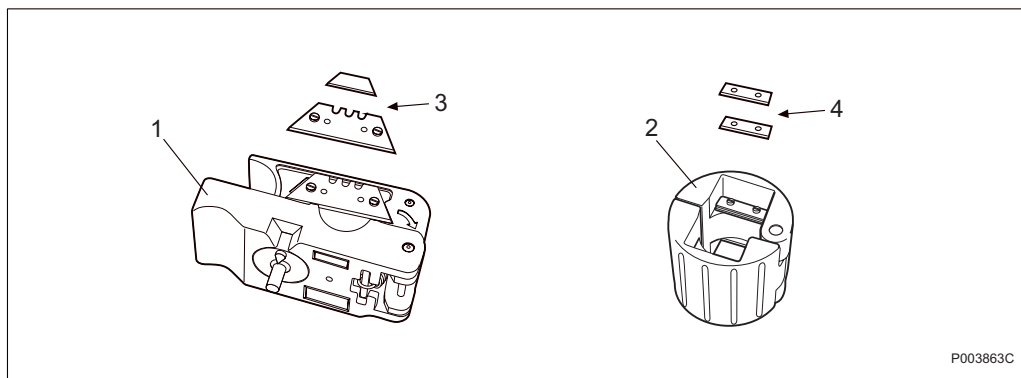


Figure 1 Tool Set, 1/2" Feeder Preparation LTT 601 046/31

Note Contents of kit may be subject to changes without notice.

Table 1 Tool Set, 1/2" Feeder Preparation LTT 601 046/31 details

Pos.	Description	Ericsson Prod. No.	Supplier Art. No.	Qty
1.	Trimming tool for 1/2" cable, Spinner	LTT 601 15/1	BN 541317	1
2.	Stripping Tool 1/2"	LTT 601 14/4	LCF 1/2" 155 697 50	1
3.	Trimming tool spare blade kit	LDK 901 09/1		1
4.	Stripping tool spare blade kit	LDK 901 09/2		1

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List of Tool Set, 7/8" Feeder Preparation: LTT 601 046/32

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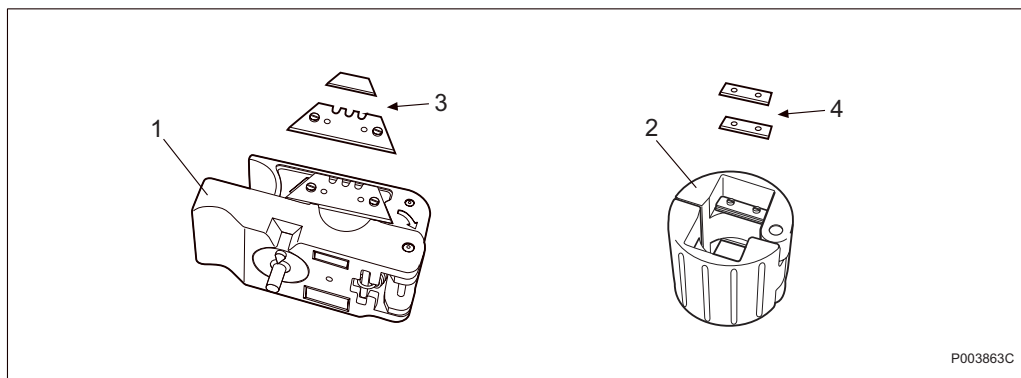


Figure 1 Tool Set, 7/8" Feeder Preparation LTT 601 046/32

Note Contents of kit may be subject to changes without notice.

Table 1 Tool Set, 7/8" Feeder Preparation LTT 601 046/32 details

Pos.	Description	Ericsson Prod. No.	Supplier Art. No.	Qty
1.	Trimming tool for 7/8" cable, Spinner	LTT 601 15/2	BN 541318	1
2.	Stripping Tool 7/8"	LTT 601 14/1	LCF 7/8" 155 497 50	1
3.	Trimming tool spare blade kit	LDK 901 09/1		1
4.	Stripping tool spare blade kit	LDK 901 09/2		1

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List of Tool Set, 1 5/8" Feeder Preparation: LTT 601 046/33

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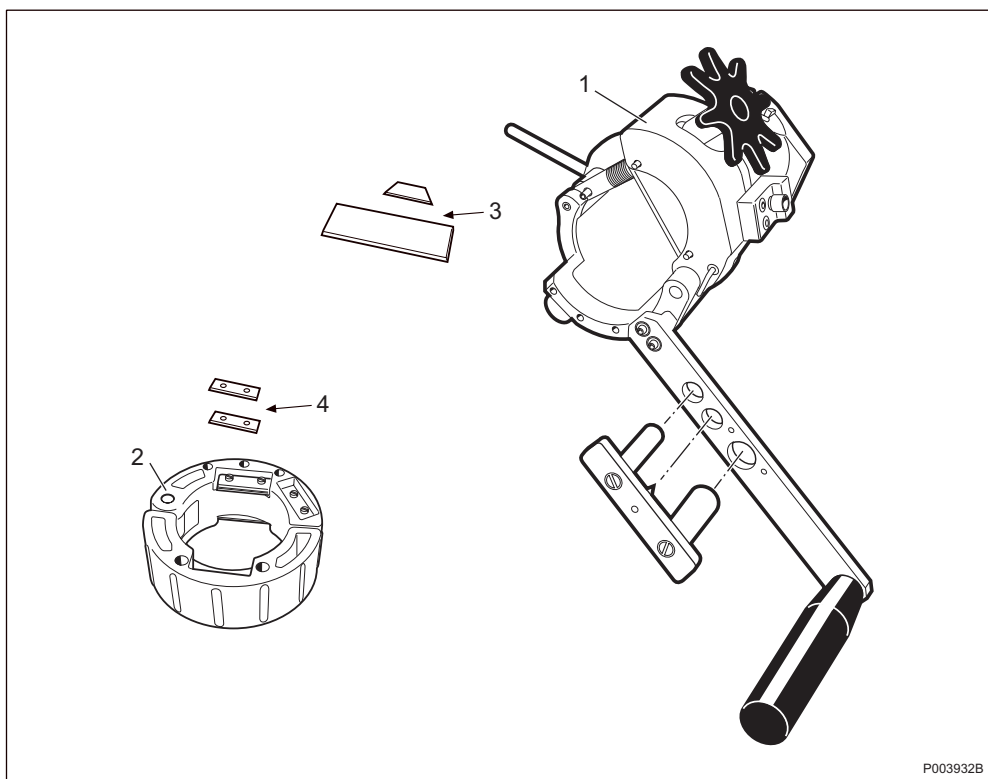


Figure 1 Tool Set, 1 5/8" Feeder Preparation LTT 601 046/33

Note Contents of kit may be subject to changes without notice.

Table 1 Tool Set, 1 5/8" Feeder Preparation LTT 601 046/33 details

Pos.	Description	Ericsson Prod. No.	Supplier Art. No.	Qty
1.	Trimming Tool 1 5/8"	LTT 601 15/4	LCF 1 5/8" 155 783 01	1
2.	Stripping Tool 1 5/8"	LTT 601 14/3	LCF 1 5/8" 155 797 50	1

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Pos.	Description	Ericsson Prod. No.	Supplier Art. No.	Qty
3.	Trimming tool spare blade kit	LDK 901 09/3		1
4.	Stripping tool spare blade kit	LDK 901 09/2		1

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**List of Tool Set, Crimping, PCM Cable, 75 ohms,
inner conductor: LTT 601 108**

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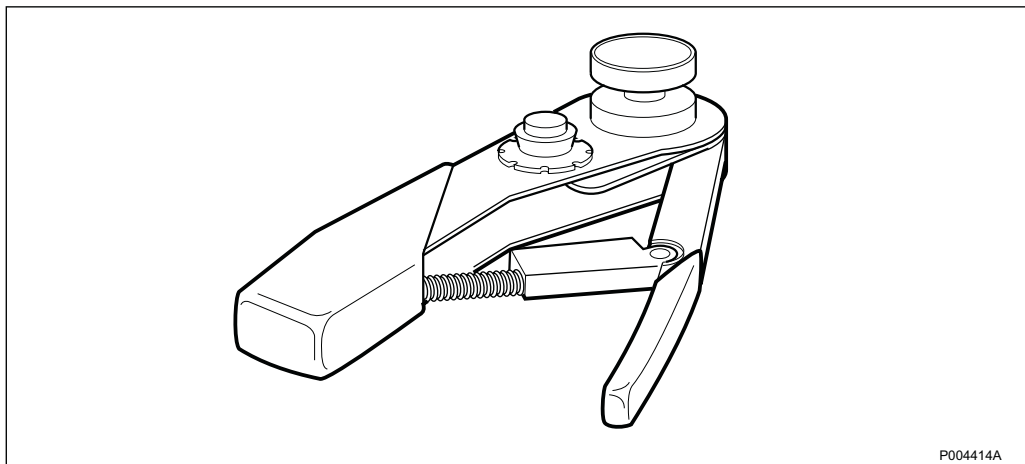


Figure 1 Crimping Tool Set LTT 601 108

Case dimensions:

l: 360 w: 120 h: 35 mm

Tool kit total weight:

0.8 kg

Table 1 Crimping Tool Set LTT 601 108 details

Pos.	Description	Ericsson Prod. No.	Qty
1.	Crimping tool	LSD 901 15/1	1
2.	Press die	LSD 901 28/10	1

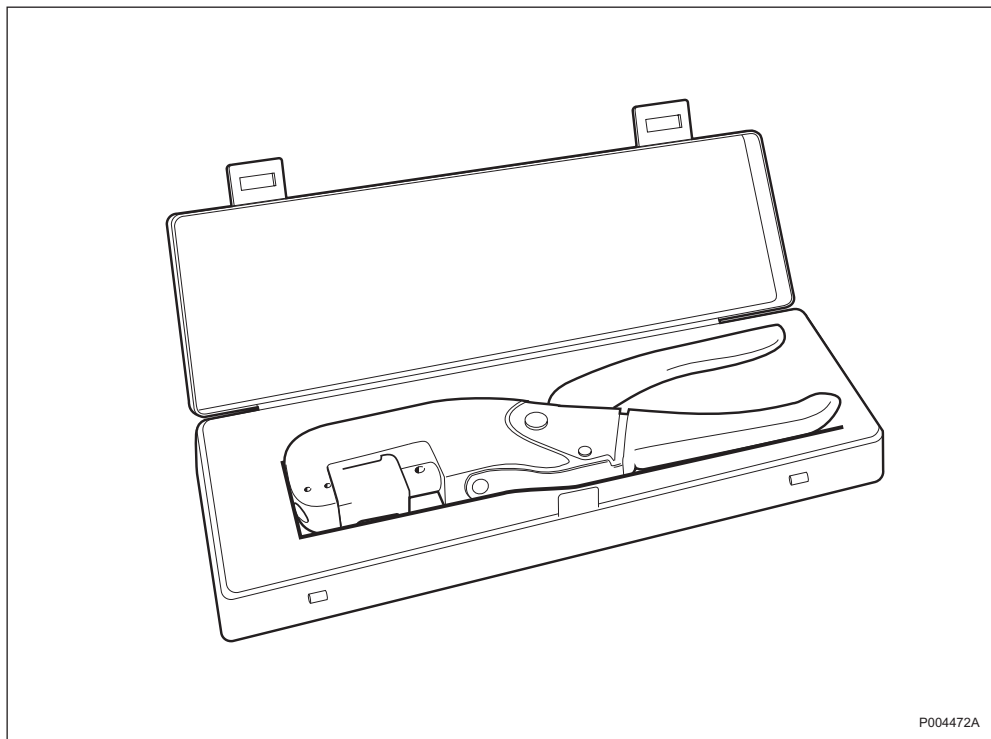
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List of Tool Set, Crimping, PCM Cable, 75 ohms, outer conductor: LTT 601 16

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1 List of Tool Set, Crimping, PCM Cable, 75 ohms, outer conductor: LTT 601 16



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Figure 1 Crimping Tool Set LTT 601 16

Case dimensions: l: 360 w: 120 h: 35 mm
 Tool kit total weight: 0.8 kg

Table 1 Crimping Tool Set LTT 601 16 details

Pos.	Description	Ericsson Prod. No.	Qty
1.	Crimping tool	LSD 319 171	1
2.	Press die	LSD 901 27/10	1

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List of Tool Set, Crimping, Grounding and Lightning Protection: LTT 601 86

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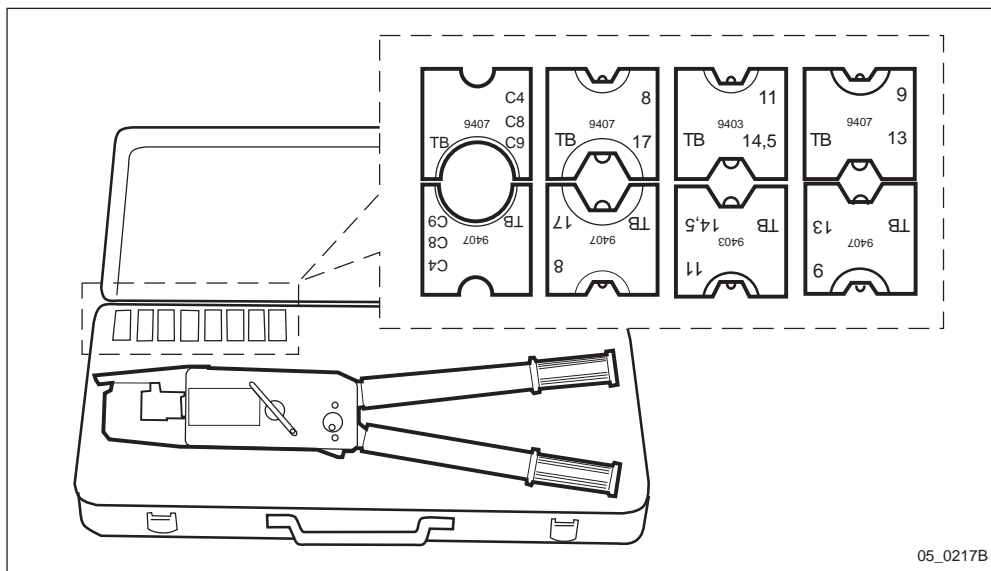


Figure 1 Crimping Tool Set LTT 601 86

Case dimensions:

l: 445 w: 195 h: 50 mm

Tool kit total weight:

4.5 kg

Table 1 Crimping Tool Set LTT 601 86 details

Pos.	Description	Supplier Art. No.	Qty
1.	Crimping tool	E08 201 40	1
2.	Press die, C-clamp	E08 201 80	1
3.	Press die, 10+70	E08 201 50	1
4.	Press die, 16+35	E08 201 60	1
5.	Press die, 25+50	E08 201 65	1

Note

See also Directions for Use 1553–LTT 601 86 Uen in the latter part of this section.

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List of Tool Set, Crimping, Coaxial Connectors: LTT 601 87

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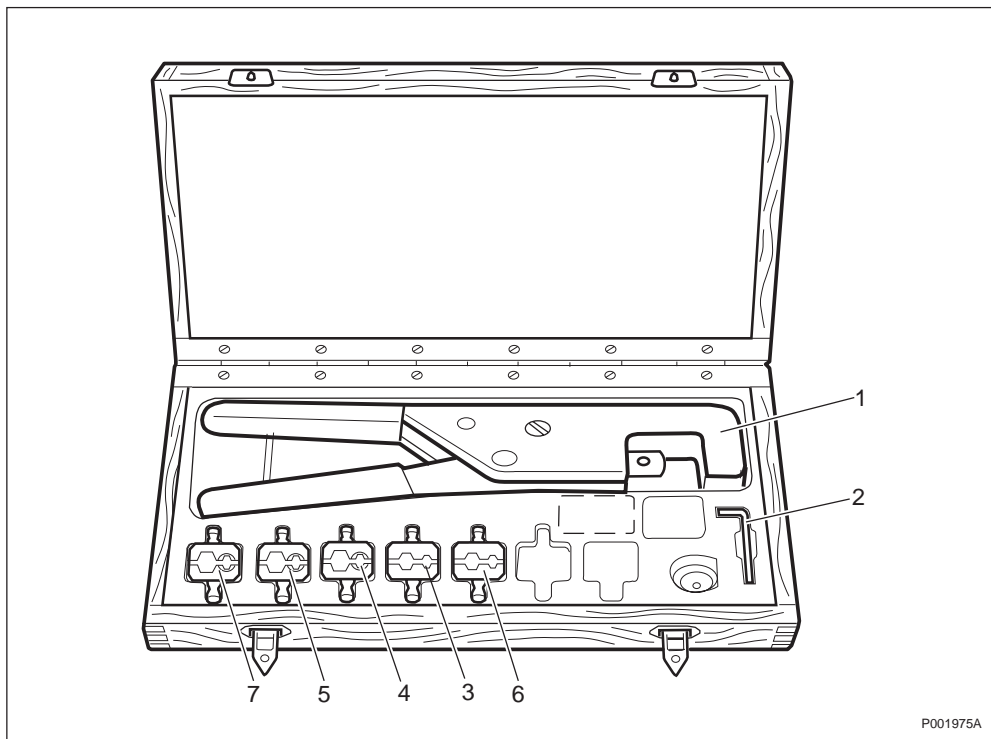


Figure 1 Crimping Tool Set LTT 601 87

Case dimensions: l: 360 w: 180 h: 40 mm
 Tool kit total weight: 1.5 kg

Table 1 Crimping Tool Set LTT 601 87 details

Pos.	Description	Ericsson Prod. No.	Qty
1.	Crimping tool	LSD 901 10	1
2.	Allen key	LSA 901 13	1
3.	Press die, orange, size 2B	LSD 901 10/10	1
4.	Press die, violet, size 3D	LSD 901 10/11	1

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Pos.	Description	Ericsson Prod. No.	Qty
5.	Press die, red, size 1/2A	LSD 901 10/12	1
6.	Press die, yellow, size 2C	LSD 901 10/13	1
7.	Press die, no colour, size >1/2A	LSD 901 10/14	1

Note See also Directions for Use 1553–LTT 601 87 Uen in the latter part of this section.

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List of Tool Set, Crimping, Opto Cable Connectors: LTT 601 88

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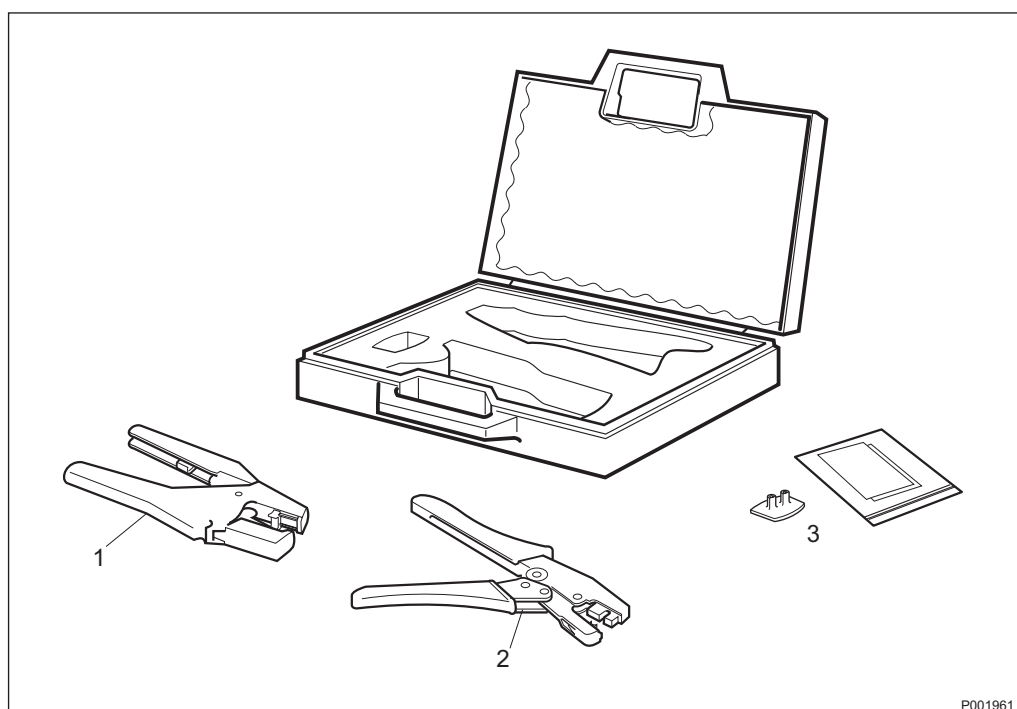


Figure 1 Crimping Tool Set LTT 601 88

Case dimensions:

l: 265 w: 225 h: 50 mm

Tool kit total weight:

1.0 kg

Table 1 Crimping Tool Set LTT 601 88 details

Pos.	Description	Ericsson Prod. No.	Qty
1.	Stripping tool	LSD 901 08	1
2.	Pressing tool	LSD 901 09	1
3.	Polishing set	LSY 901 04	5

Note

See also Installation Instruction 1531–LTT 601 88 Uen in section 8.

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ERA/LRN/ZGC (Leif-Olof Fager)			

List of Tool Set, Crimping, RBS 2302, DC/Data Cable: LTT 601 98/1

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1 List of Tool Set, Crimping, RBS 2302, DC/Data Cable: LTT 601 98/1

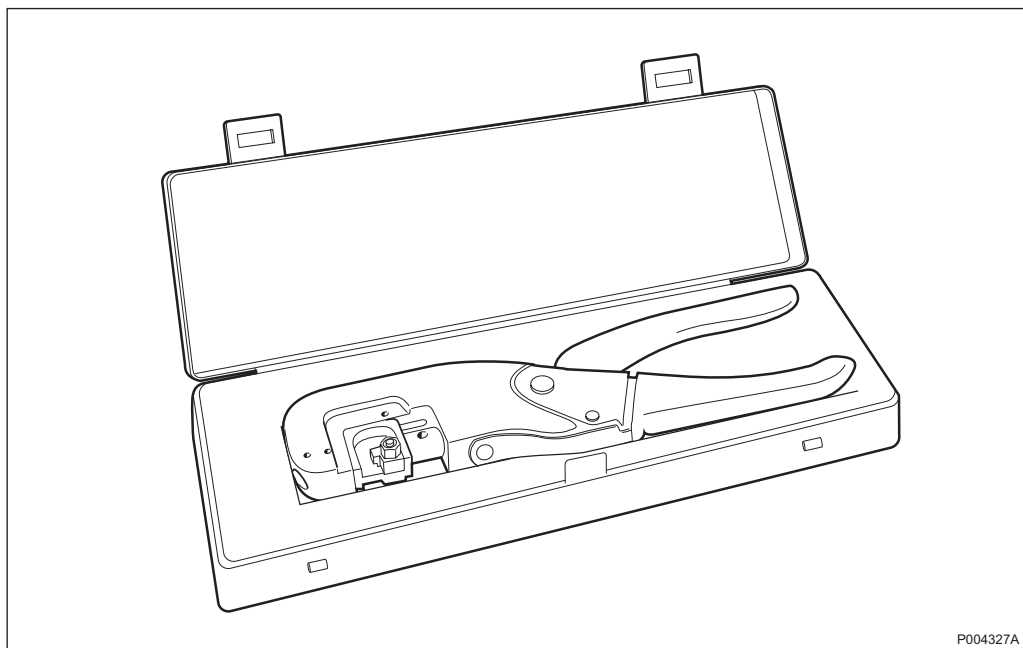


Figure 1 Crimping Tool Set LTT 601 98/1

Case dimensions:

l: 360 w: 120 h: 35 mm

Tool kit total weight:

0.8 kg

Table 1 Crimping Tool Set LTT 601 98/1 details

Pos.	Description	Ericsson Prod. No.	Qty
1.	Crimping tool	LSD 319 171	1
2.	Press die	LSD 901 24/1	1

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List of Tool Set, Crimping, DC Cable 24V for Transmission: LTT 601 99/1

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1 List of Tool Set, Crimping, DC Cable 24V for Transmission: LTT 601 99/1

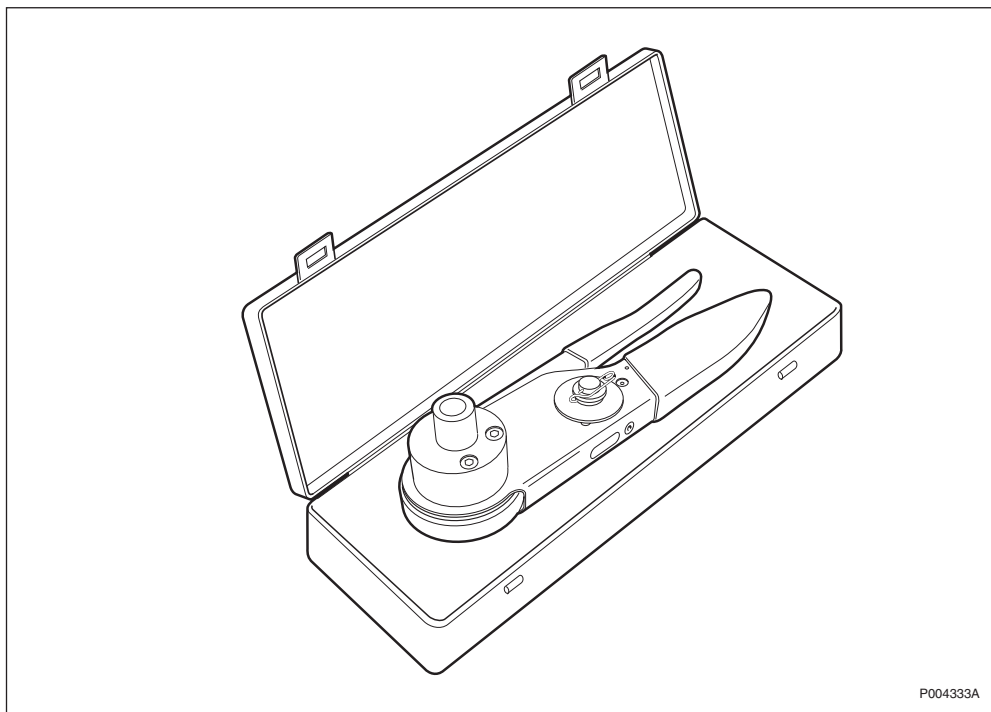


Figure 1 Crimping Tool Set LTT 601 99/1

Case dimensions: l: 360 w: 120 h: 35 mm
 Tool kit total weight: 0.6 kg

Table 1 Crimping Tool Set LTT 601 99/1 details

Pos.	Description	Ericsson Prod. No.	Qty
1.	Crimping tool	LSD 901 25/1	1
2.	Press die	LSD 901 26/1	1

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ERA/LRN/ZGC (Leif-Olof Fager)			

List of Hammer Drill Machine, Cordless, 110V AC: LTT 601 12/1

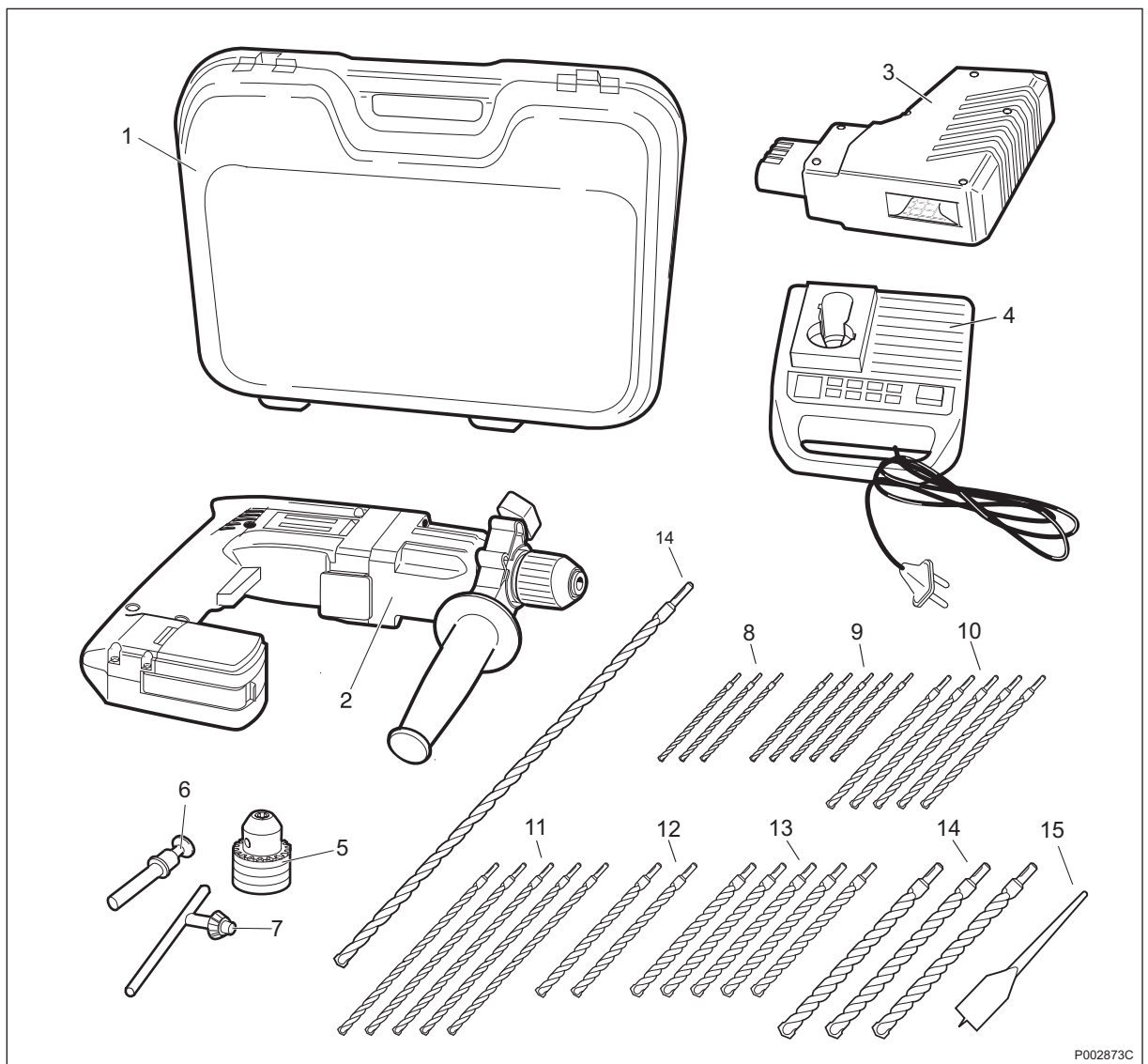
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**1 List of Hammer Drill Machine, Cordless, 110V AC:
LTT 601 12/1**



P002873C

Figure 1 Drill Machine Set LTT 601 12/1

Datum — Date	Rev	Dokumentnr — Document no
1999-02-03	B	131 22-LTT 601 12/1 Uen

Case dimensions:

l: 540 w: 420 h: 130
mm

Tool set total weight:

10.1 kg

Table 1 Drill Machine Set LTT 601 12/1 details

Pos.	Description	Qty
1.	Tool box	1
2.	Cordless hammer drill machine including: Battery 1.4 Ah	1
3.	Battery 2.5 Ah	1
4.	Charger for 110V AC	1
5.	Spindle 799 2 - 13 mm	1
6.	Adaptor for pos. 3	1
7.	Key	1
8.	Hammer drill, dia. 5.5 mm l=100 mm	3
9.	Hammer drill, dia. 6 mm l=100 mm	5
10.	Hammer drill, dia. 8 mm l=150 mm	5
11.	Hammer drill, dia. 8 mm l=200 mm	5
12.	Hammer drill, dia. 10 mm l=150 mm	2
13.	Hammer drill, dia. 12 mm l=150 mm	5
14.	Hammer drill, dia. 18 mm l=200 mm	3
15.	Wood drill, 22 mm	1
16.	Hammer drill, dia. 20 mm l=400 mm	1

Note

See the Tool Set LTT 601 95/1 for more drills.

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ERA/LRN/ZGC (Leif-Olof Fager)			

List of Hammer Drill Machine, Cordless, 230V AC: LTT 601 12/2

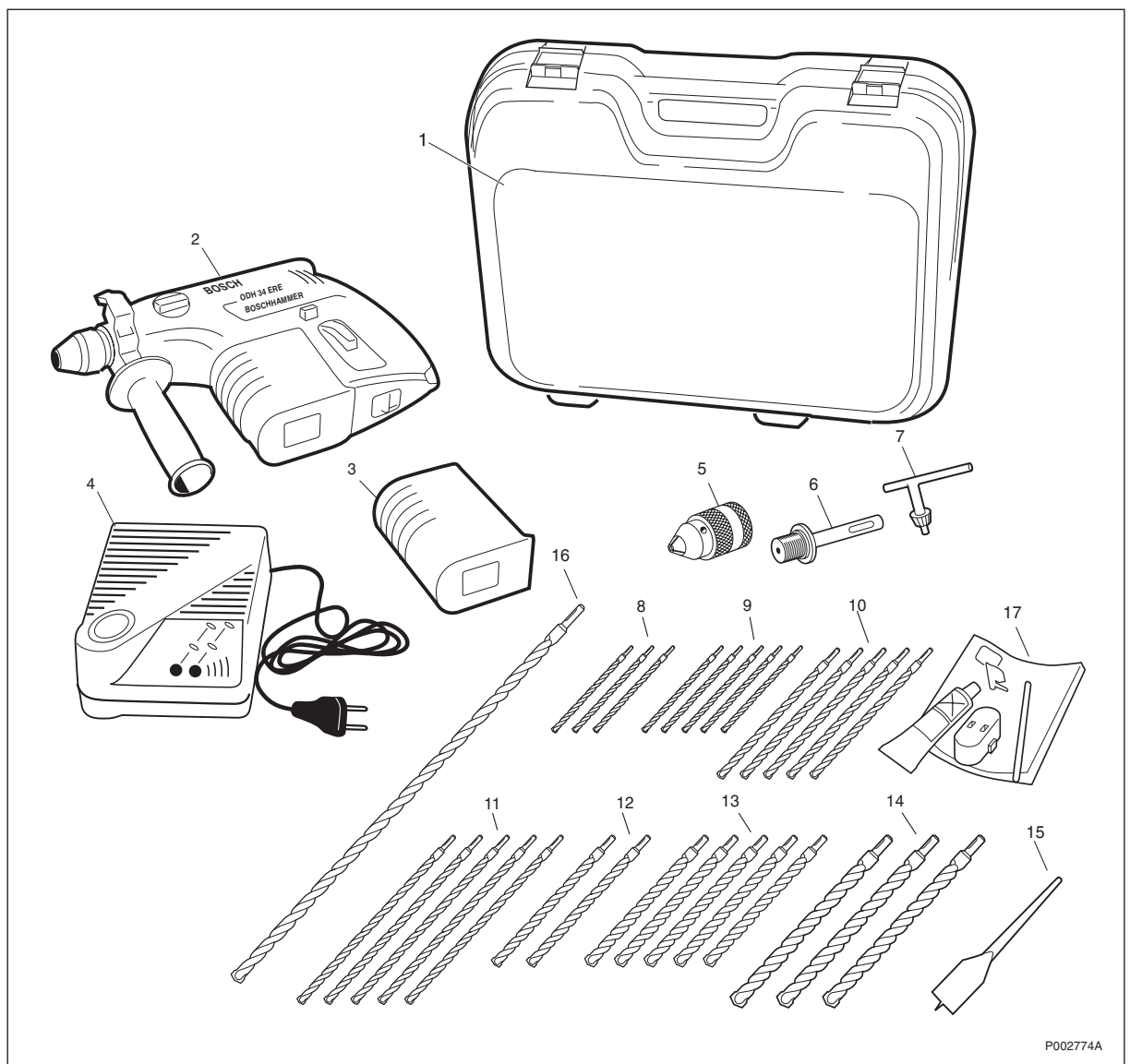
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**1 List of Hammer Drill Machine, Cordless, 230V AC:
LTT 601 12/2**



P002774A

Figure 1 Drill Machine Set LTT 601 12/2

Datum — Date	Rev	Dokumentnr — Document no
1999-02-04	B	131 22-LTT 601 12/2 Uen

Case dimensions:

l: 500 w: 400 h: 135 mm

Tool kit total weight:

10.9 kg

Table 1 Drill Machine Set LTT 601 12/2 details

Pos.	Description	Qty
1.	Tool box	1
2.	Cordless hammer drill machine including: Battery 1.7 Ah	1
3.	Battery 2.5 Ah	1
4.	Charger for 230V AC	1
5.	Spindle 799 2 - 13 mm	1
6.	Adaptor for pos. 3	1
7.	Key	1
8.	Hammer drill, dia. 5.5 mm l=100 mm	3
9.	Hammer drill, dia. 6 mm l=100 mm	5
10.	Hammer drill, dia. 8 mm l=150 mm	5
11.	Hammer drill, dia. 8 mm l=200 mm	5
12.	Hammer drill, dia. 10 mm l=150 mm	2
13.	Hammer drill, dia. 12 mm l=150 mm	5
14.	Hammer drill, dia. 18 mm l=200 mm	3
15.	Wood drill, 22 mm	1
16.	Hammer drill, dia. 20 mm l=400 mm	1
17.	Maintenance set	1

Note

See the Tool Set LTT 601 95/1 for more drills.

Uppgjord — <i>Prepared</i> SG/ERA/LRN/ZG NHg	Datum — <i>Date</i> 1999-02-02	Rev A	Dokumentnr — <i>Document no</i> 131 22-LTT 601 105/110 Uen
Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

List of Hammer Drill Machine, 110V AC: LTT 601 105/110

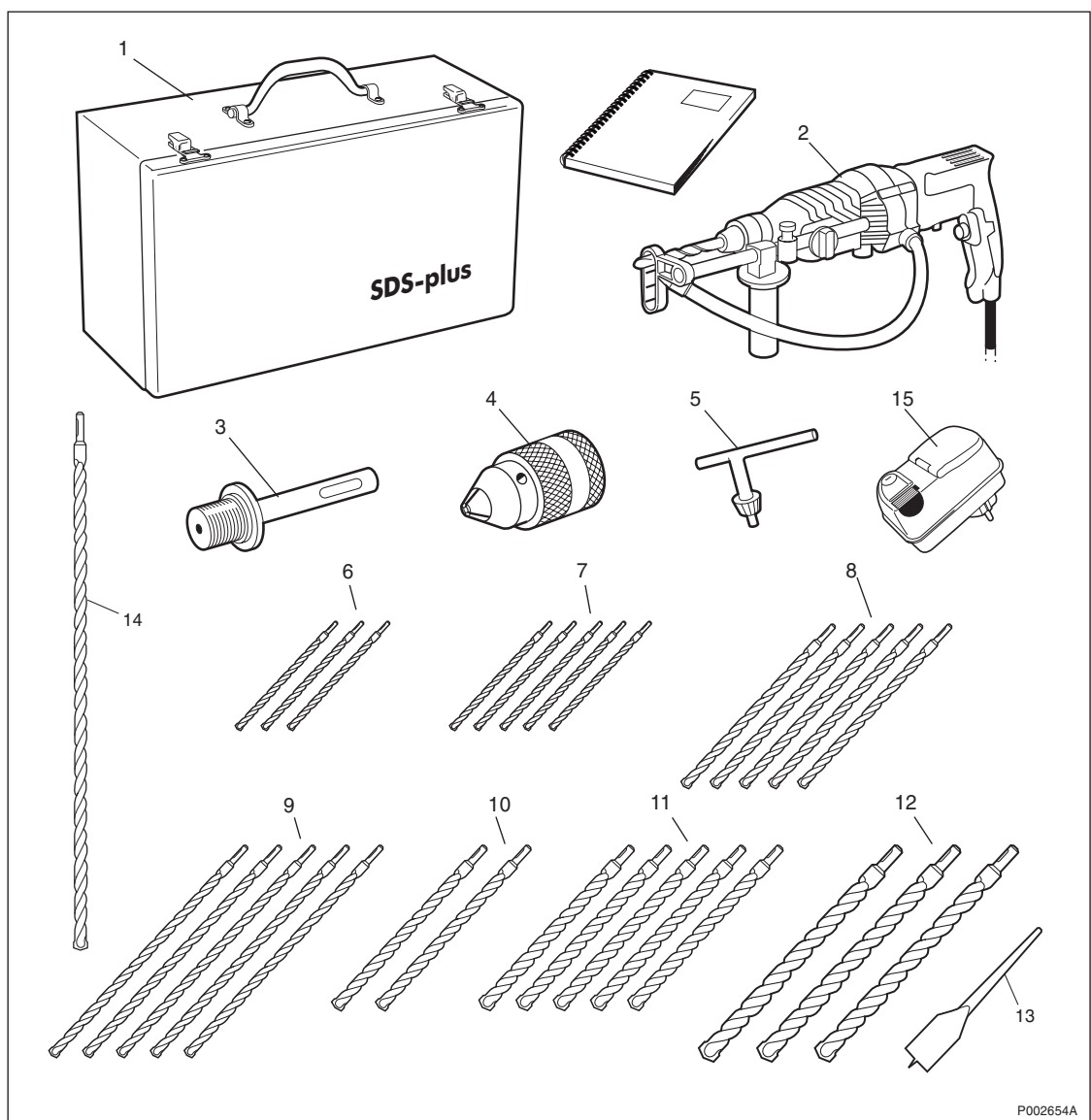
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**1 List of Hammer Drill Machine, 110V AC:
LTT 601 105/110**



P002654A

Figure 1 Drill Machine Set LTT 601 105/110

Datum — Date	Rev	Dokumentnr — Document no
1999-02-02	A	131 22-LTT 601 105/110 Uen

Case dimensions: l: 450 w: 250 h: 190mm

Tool kit total weight: 10 kg

Table 1 Drill Machine Set LTT 601 105/110 details

Pos.	Description	Qty
1.	Tool box	1
2.	Hammer drill machine, 110V AC	1
3.	Chuck holder	1
4.	Chuck	1
5.	Key	1
6.	Hammer drill, dia. 5.5 mm l=100 mm	3
7.	Hammer drill, dia. 6 mm l=100 mm	5
8.	Hammer drill, dia. 8 mm l=150 mm	5
9.	Hammer drill, dia. 8 mm l=200 mm	5
10.	Hammer drill, dia. 10 mm l=150 mm	2
11.	Hammer drill, dia. 12 mm l=150 mm	5
12.	Hammer drill, dia. 18 mm l=200 mm	3
13.	Wood drill, 22 mm	1
14.	Hammer drill, dia. 20 mm l=400 mm	1
15.	Earth fault breaker	1

Note See the Tool Set LTT 601 95/1 for more drills.

Uppgjord — <i>Prepared</i> SG/ERA/LRN/ZG NHg	Datum — <i>Date</i> 1999-02-02	Rev A	Dokumentnr — <i>Document no</i> 131 22-LTT 601 105/220 Uen
Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

List of Hammer Drill Machine, 230V AC: LTT 601 105/220

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**1 List of Hammer Drill Machine, 230V AC:
LTT 601 105/220**

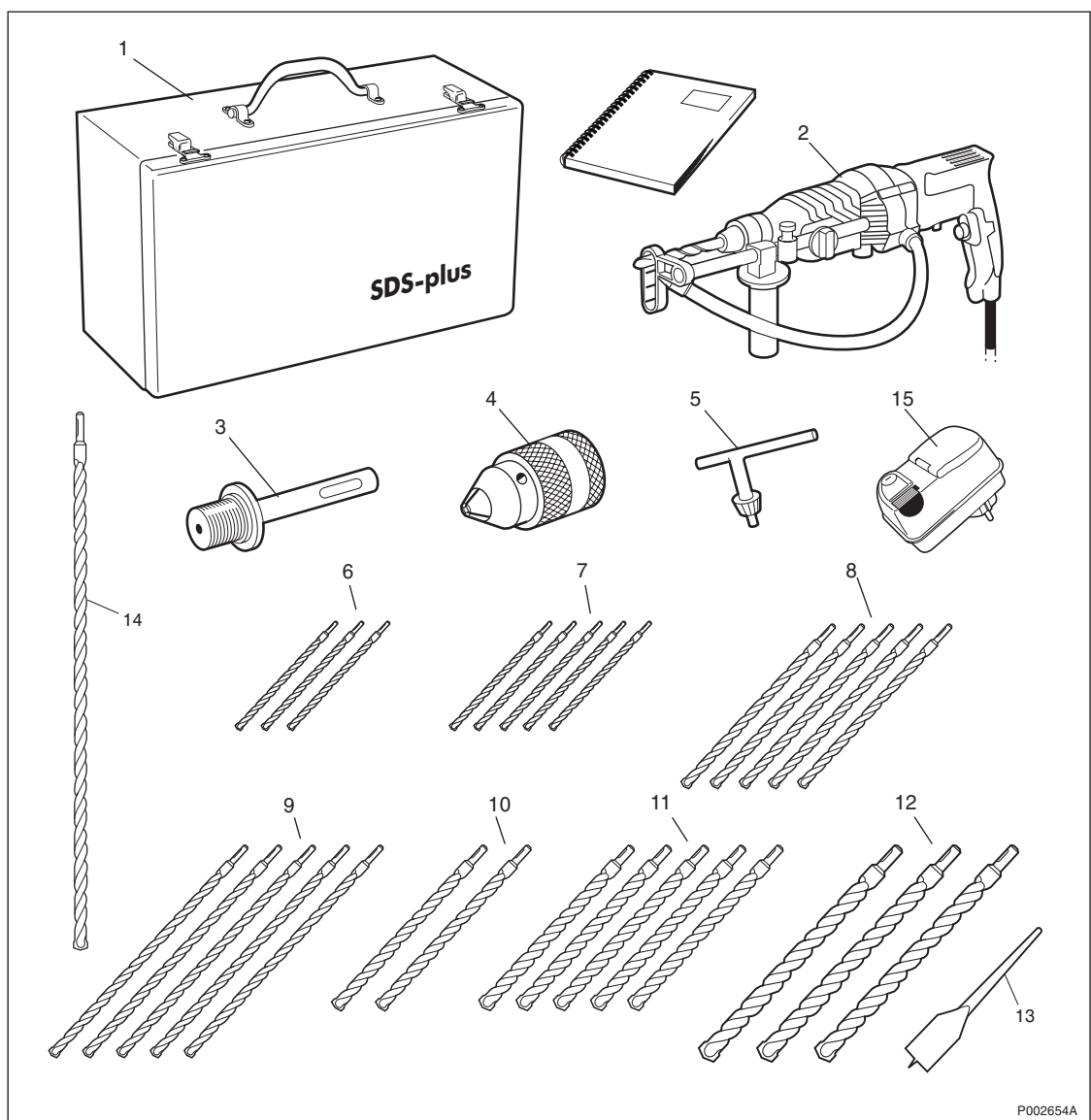


Figure 1 Drill Machine Set LTT 601 105/220

Datum — Date	Rev	Dokumentnr — Document no
1999-02-02	A	131 22-LTT 601 105/220 Uen

Case dimensions: l: 450 w: 250 h: 190mm

Tool kit total weight: 10 kg

Table 1 Drill Machine Set LTT 601 105/220 details

Pos.	Description	Qty
1.	Tool box	1
2.	Hammer drill machine, 220V AC	1
3.	Chuck holder	1
4.	Chuck	1
5.	Key	1
6.	Hammer drill, dia. 5.5 mm l=100 mm	3
7.	Hammer drill, dia. 6 mm l=100 mm	5
8.	Hammer drill, dia. 8 mm l=150 mm	5
9.	Hammer drill, dia. 8 mm l=200 mm	5
10.	Hammer drill, dia. 10 mm l=150 mm	2
11.	Hammer drill, dia. 12 mm l=150 mm	5
12.	Hammer drill, dia. 18 mm l=200 mm	3
13.	Wood drill, 22 mm	1
14.	Hammer drill, dia. 20 mm l=400 mm	1
15.	Earth fault breaker	1

Note See the Tool Set LTT 601 95/1 for more drills.

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Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>	Tillhör/referens — <i>File/reference</i>		
ERA/LRN/ZGC (Leif-Olof Fager)				

**List of Screwdriver Machine, Cordless, 230V AC:
LTT 601 106**

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**1 List of Screwdriver Machine, Cordless, 230V AC:
LTT 601 106**

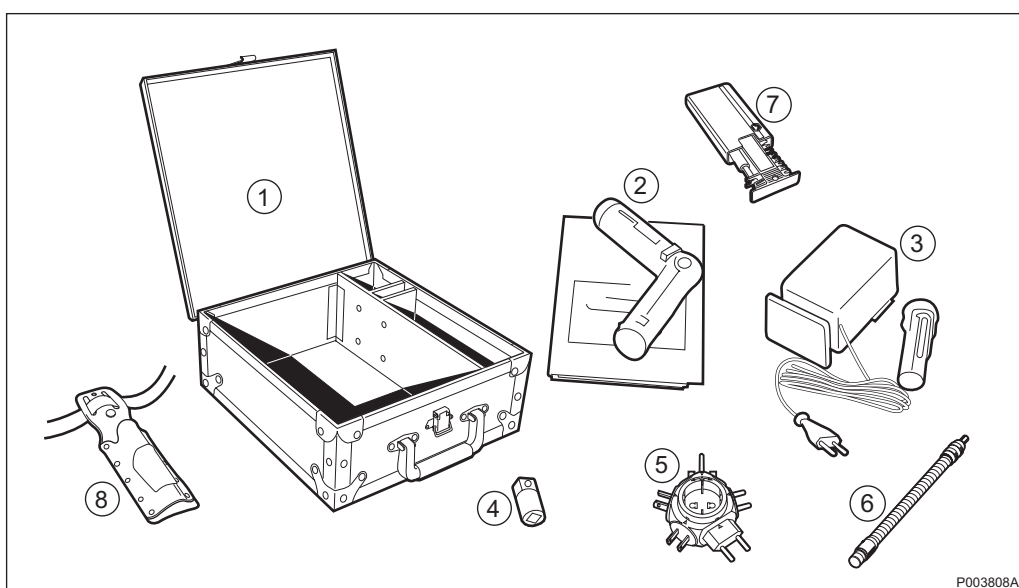


Figure 1 Screwdriver Machine Set LTT 601 106

Note Contents of set may be subject to changes without notice.

Case dimensions: l: 360 w: 320 h: 135 mm

Tool set total weight: 4.2 kg

Table 1 Screwdriver Machine Set LTT 601 106 details

Pos.	Description	Qty
1.	Tool box 22034	1
2.	Cordless scwdriver machine	1
3.	Extra battery and charger 230 V AC	1
4.	Holder 1/4" for 3/8" socket	1
5.	Travel adapter plug	1

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Pos.	Description	Qty
6.	Flexible shaft including a socket adaptor, 1/2" and 3/8"	1
7.	TORX bits kit	1
8.	Holster including a belt	1

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

List of Installation Kit,Complementary Fastening Material NTM 201 1491/1

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**1 List of Spare Material Kit for Fastening:
 NTM 201 1491/1**

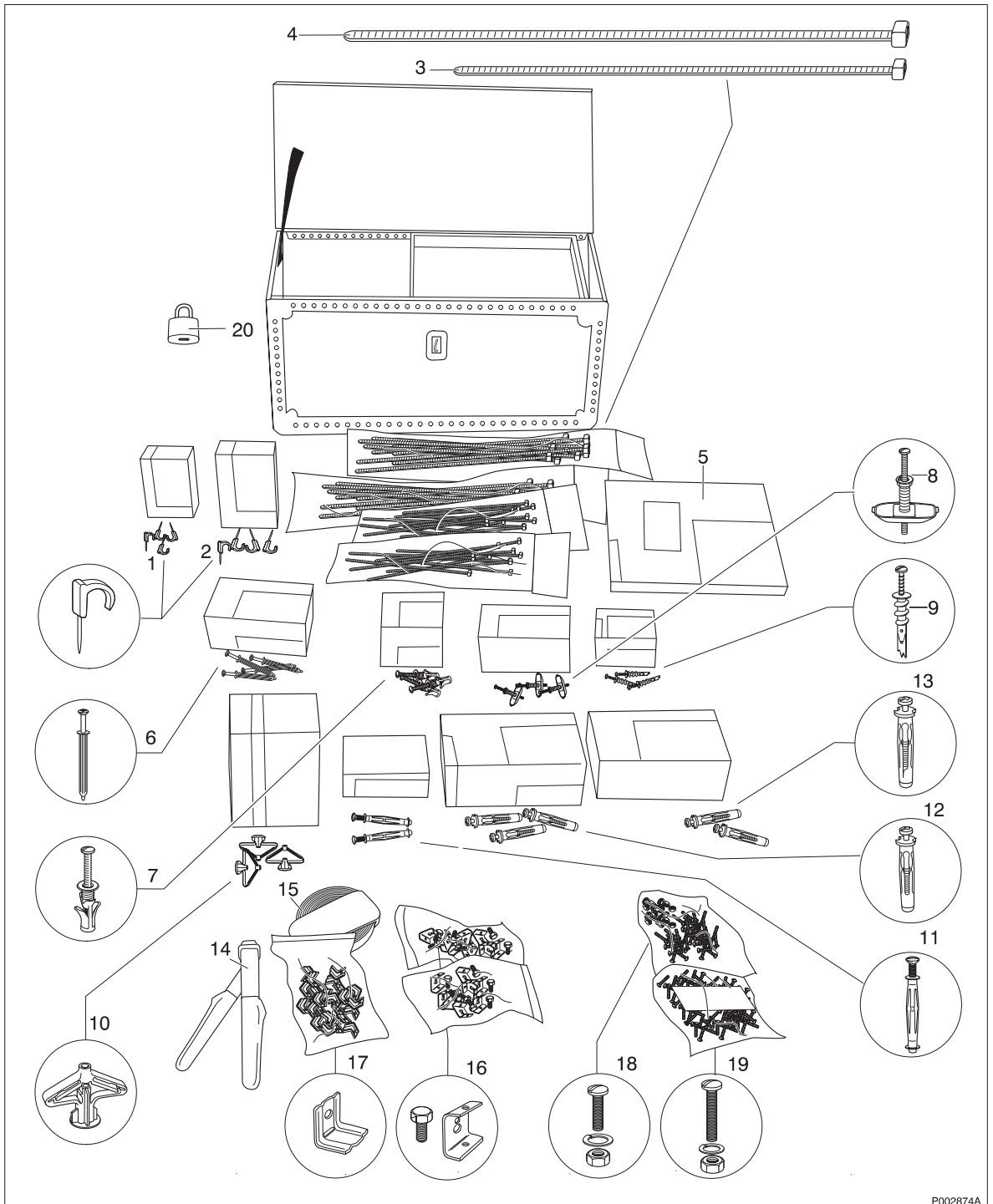


Figure 1 Spare Material Kit NTM 201 1491/1

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Case dimensions: l: 520 w: 250 h: 280 mm

Material kit total weight: 12 kg

Table 1 Spare Material Kit NTM 201 1491/1 details

Pos.	Description	Ericsson Prod. No.	Qty
1.	Cable clamp TC 7-10 l=25 mm, white, 100 pcs	SET 105 03/9	1
2.	Cable clamp TC 10-14 l=30 mm, white, 100 pcs	SET 105 04/9	1
3.	Cable clamp w=3.4 l=140 mm, white, 100 pcs	SET 103 05	2
4.	Cable clamp w=4.8 l=368 mm, black, 100 pcs	SET 103 03/0	2
5.	Fixing band TUB 12, 10m	NSV 421 01	1
6.	Plug TPS 5/20x50, 100 pcs	NSV 986 06/4	1
7.	Plug TSP 10x75, 25 pcs	NSV 989 04	1
8.	Plug TPP 13xM5S, 25 pcs	NSV 989 24/3	1
9.	Plug TPP Driva TPD-SK	NSV 989 10/1	25
10.	Plug Sormat-Ola, 100 pcs	NSV 986 08/1	1
11.	Plug TPN 6x35, 25 pcs	NSV 986 07/1	1
12.	Expander screw TMX-6D, 50 pcs	NSV 989 21/30	1
13.	Expander screw TMX-6E, 50 pcs	NSV 989 21/09	1
14.	Pliers/Punch-bend	LSD 901 11	1
15.	Tie strap 10x0.5 mm, L=10m	SET 133 12	1
16.	Set of materials: screw M8x16, nut, clamp, 10 pcs	NTM 201 1790/1	2
17.	Tie strap support, 100 pcs	SET 133 13	1
18.	Set of materials: screw M5x12, elastic washer, nut, 50 pcs	NTM 201 1789/1	1
19.	Set of materials: screw M5x25, elastic washer, nut, 50 pcs	NTM 201 1789/2	1
20.	Padlock	SMB 102 201/1	1

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SG/ERA/LRN/ZG Monika Ågren 850 467 24	1999-09-30	F	131 22-LYB 921 22+ Uen
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ERA/LRN/ZGC (Leif-Olof Fager)			

1 List of Personal Safety, Rescue and Lifting Equipment Sets: LYB 921 22/2–4

Safe Material Kits are under reconstruction. New information will be found in Standard Site Material Catalogue LZN 302 39 release R1A

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Directions for Use of Tool, Pistol Grip Handle for IDC Slot Connector: LSD 319 83

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3	Set-up adjustments and test	2
3.1	Wire Insertion Depth Adjustment	3
3.2	Feed Adjustment	4
4	Termination procedure	4
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1 General

These instructions apply for a Pistol Grip Tool used for the termination of wires in Insulation Displacement Connectors (IDC). The Pistol Grip Tool terminates 0,0507–0,519 mm² (30–20 AWG) wires and is used with Connectors RNT 403 207+ (PCM 100Ω) and RPT 403 108+ (PCM 120Ω)

The tool consists of a Pistol Grip Handle and an interchangeable Terminating Head. See Figure below.

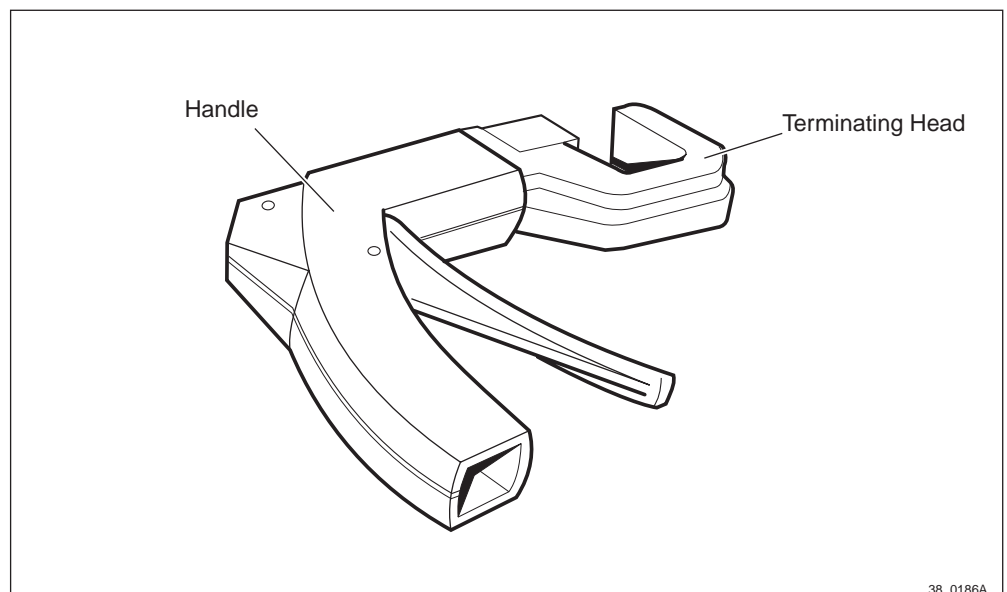


Figure 1 Pistol Grip Tool

2 Calibration and Maintenance

See the Calibrations Instructions Document 171 31–LXE 107 692 Uen.

3 Set-up adjustments and test

Perform a test termination and inspect the test termination using the following procedure:

1. Place the connector in head and carry out a test termination using the procedure described in the paragraph entitled "Termination Procedure".

If the connector cannot be inserted into the head or if it is too loose in the head, loosen the two screws on the

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wire guide (see figure 2) and adjust the wire guide until the connector fits properly in the head.

2. Push the connector out of the right side of the head.
3. Inspect the termination in accordance with the paragraph entitled “Inspection Procedure”.

3.1 Wire Insertion Depth Adjustment

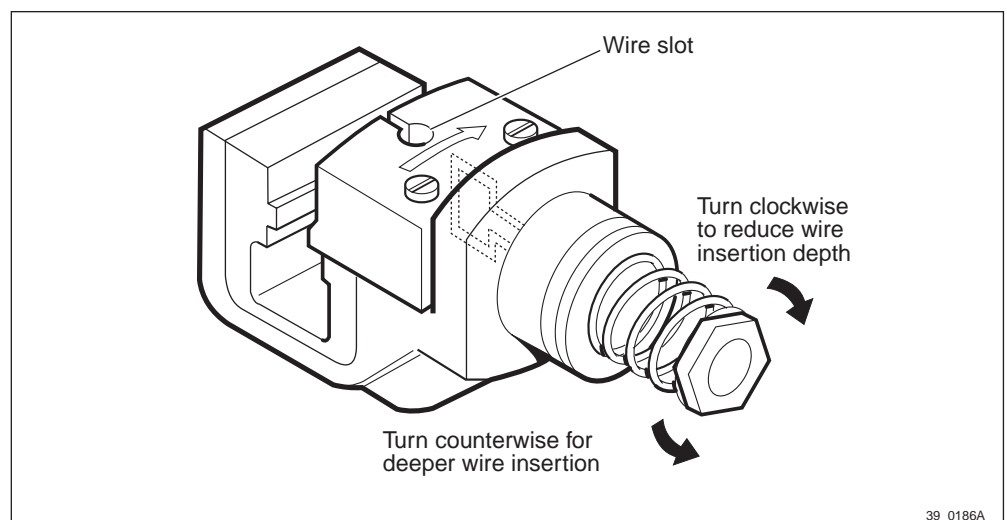


Figure 2 Tool head adjustment

If the wire is inserted too deep inside the contact, or not deep enough inside the contact, the depth of the wire inserter will need to be adjusted.

If the wire is too deep in the contact slot, remove the head and turn the adjuster 1/6 revolution clockwise (see figure above). This will reduce the wire insertion depth by approximately 0,2mm (.008in).

Repeat steps 1, 2 and 3 in “Set-up adjustments and test”.

The correct depth is shown in the figure below.figure 3

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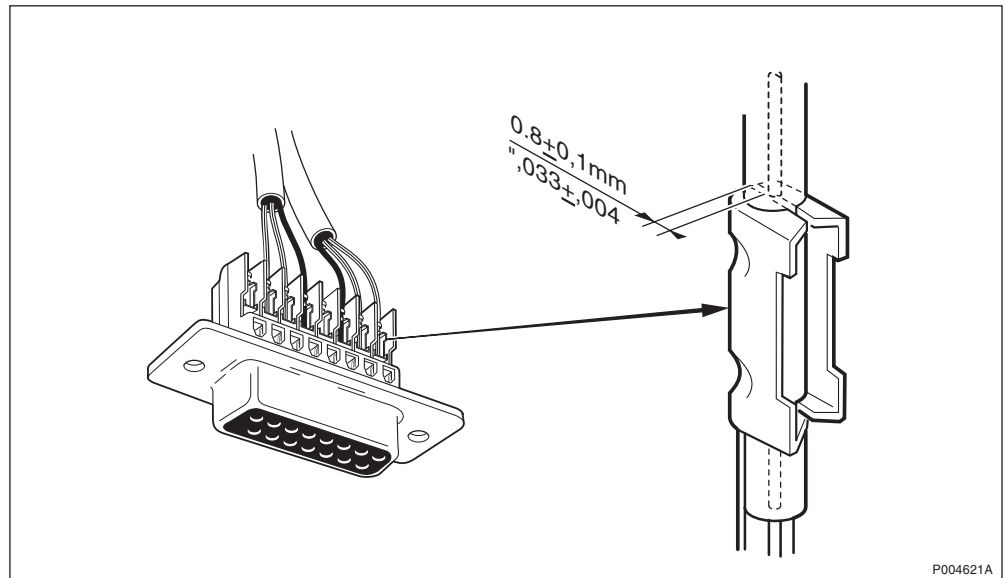


Figure 3 Correct depth of wire insertion

3.2 Feed Adjustment

A socket head adjustment screw located on the right side of the terminating head controls the location of the feed slide. If the screw is positioned too far in, the pawl on the feeder side will not engage in the connector housing, and the housing will not advance. If the screw is too far out, the slide will back up until the pawl engages, and the connector to be terminated will be positioned incorrectly.

To adjust the feed slide, turn the adjustment screw either in or out until it aligns the connector with the inserter and engages the locator pawl in the connector housing.

When the feed slide is adjusted correctly the following three observations can be made:

- The inserter is aligned with the connector to be terminated.
- The locator pawl is engaged in the housing.
- No movement of the housing occurs as the trigger or cam handle is actuated.

4 Termination procedure

The following steps are recommended when terminating wires in connectors:

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1. Insert the connector into the left slot of the head until the connector contact position is aligned with the slot.
2. Insert unstripped wire into the wire slot until the wire reaches the bottom of the tool base.
3. Centre the wire in the wire slot. Squeeze the cam handle of the pistol-grip handle assembly.
4. Release the cam handle. The inserter will retract and the connector will advance to the next contact position.
5. Repeat steps 2, 3 and 4 until all contacts are terminated.
6. Inspect each termination in accordance with the procedure entitled "Inspection Procedure".

5 Inspection Procedure

To inspect a termination use the following procedure:

1. Ensure that the conductor is below the transition of the lead-in on the contact slot.
2. Ensure that the wire extends beyond the front contact slot.
3. Ensure that the contact channels are not deformed. If damage is apparent, fit new contacts in accordance with instructions packaged with the connector.
4. Ensure that the insulation barrel is closed in order to secure the insulation of the wire.

Note The insulation barrel does not have to be wrapped tightly around the insulation. The purpose of the insulation barrel is to prevent the wire from being lifted away from the wire channel.

5. Ensure that the contact cavity wall has not been deformed

The figure below shows a correct termination.

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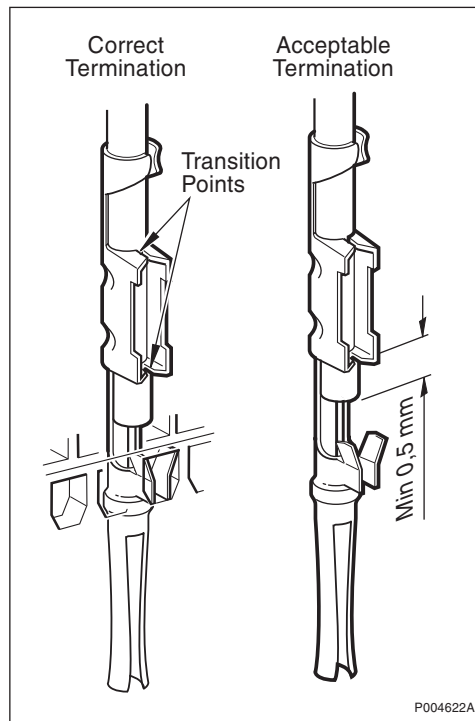


Figure 4 Correct termination

6 Daily maintenance

1. Remove dust, moisture and other contaminants with a clean brush or soft cloth. Do not use objects that could damage the terminating head.
2. Ensure that all components are in place and properly secured.
3. Press and release the spring-loaded ratchet pawl to ensure that the pawl moves freely.
4. Squeeze and release the cam handle to ensure that the mechanisms inside the handle and head assembly move smoothly.
5. Ensure that all the extension springs are properly located and are not deformed.

7 Periodic Inspection

Regular inspections should be performed by quality control personnel. A record of scheduled inspections should remain with the head and/or

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be supplied to supervisory personnel responsible for the head. Inspection frequency should be based on the amount of use, ambient working conditions, operator training and skill and company standards.

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Directions for Use of Marking Template, RBS 2202: LTY 151 351/1

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1 General

This template can be used for marking the holes for the fastenings to the floor of the RBS 200 or RBS 2000 indoor cabinets (excluding the RBS 2101 cabinet).

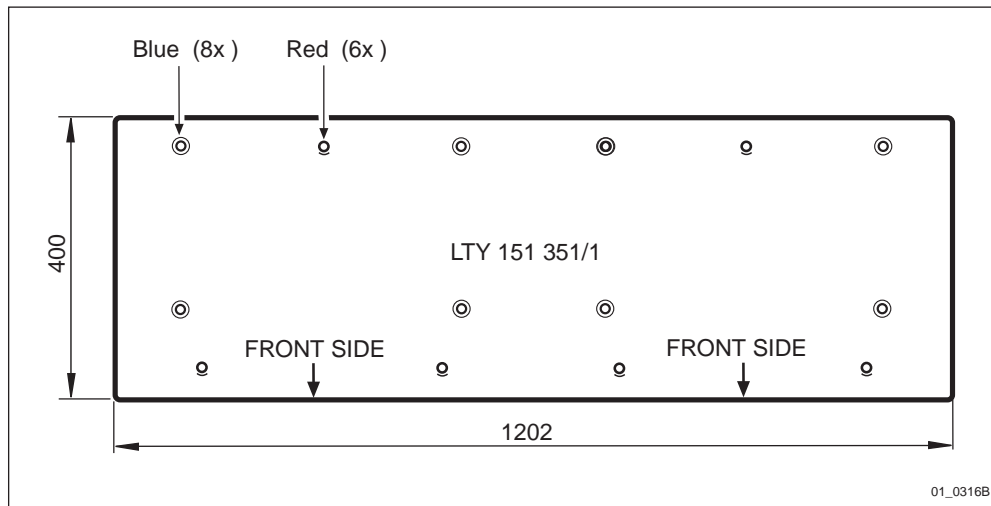


Figure 1 Marking Template LTY 151 351/1

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2 Directions for use

1.

Roll out the template on the floor where the cabinet shall be mounted

2.

If the cabinet shall be mounted against a wall, check if you have to allow space for some irregularity or gadget protruding from the wall covered by the cabinet

3.

Select the hole set marked with red if the 3-hole mounting version shall be used. Use the fastening Set of Materials NTM 201 293/1

4.

Select the hole set marked with blue if the 4-hole mounting version shall be used. Use the fastening Set of Materials NTM 201 257

5.

Mark the floor through the selected hole set

6.

Remove the template before drilling

The template must not be used when drilling as this will destroy the template

7.

Refer to the Installation Manual for the respective cabinet for details.

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Directions for Use of Test Equipment Set LTR 171 04

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1	General	2
2	Directions for Use	3

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1 General

This test set can be used for communication on long test objects e.g. the communication via a feeder between a man with a test set standing on the top of a tower at the antenna end of the feeder and a man with a test set standing in a site building at the cabinet end of the same feeder.

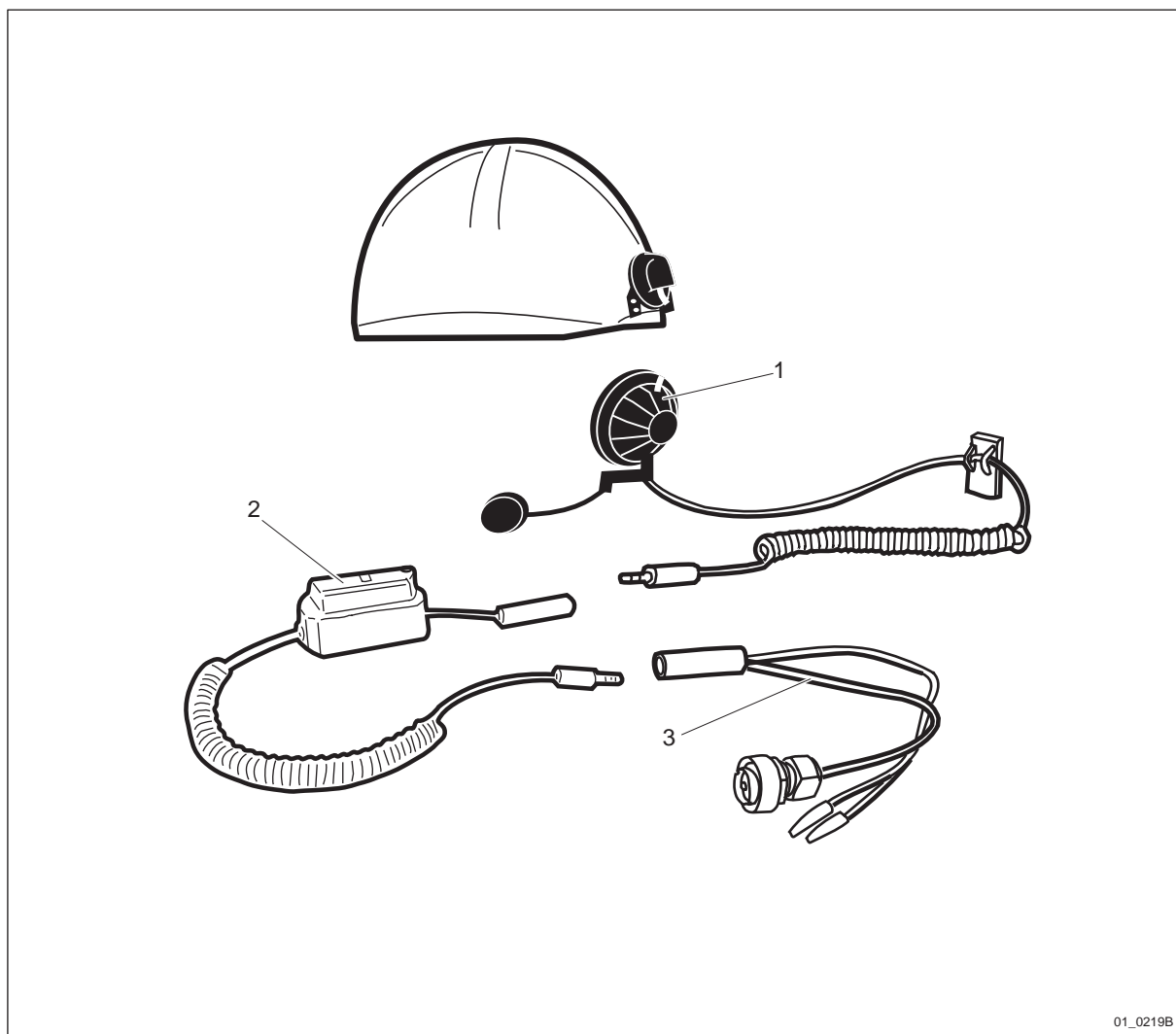


Figure 1 Test Equipment Set LTR 171 04

Table 1 Test equipment LTR 171 04 details

Pos	Description
1	Light-weight headset with helmet holder
2	Intercom amplifier 9V
3	Branch cable FMT 40

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2 Directions for Use

WARNING



This test set must not be connected to live conductors.

1.

Perform a continuity test of feeders to ascertain that feeders are connected to the correct antenna.

2.

Make sure that the test sets are connected to the selected feeder in the same manner e.g. the black clip to the inner conductor and the red clip to the outer conductor.

3.

Upon installation, check that the feeders are connected to the correct antenna by connecting the 7-16 male feeder connector of the headset to the corresponding female connector of the tested feeder.

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Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

Directions for use of Tool Set, Crimping, Grounding and Lightning Protection: LTT 601 86

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2	Calibration and Maintenance	2
3	Field Of Application	2
3.1	The Crimping Tool Set LTT 601 86	3
3.2	Connecting stranded wires using C-clamps	4
3.3	Crimping Tool Set LTT 601 86 User's Guide	5
3.4	Crimping Quality Requirements	8
3.5	Maintenance of Crimping Tool	10

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1 General

This chapter covers various crimping methods:

- Branching with C-clamps
- Joining with sleeves and lugs

using the Crimping Tool Set LTT 601 86.

Regarding the mounting of feeder connectors see Section 6, Antenna and Antenna Equipment Installation Instructions.

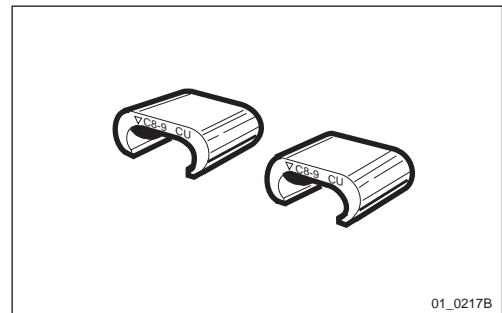
2 Calibration and Maintenance

See the Calibrations Instructions Document 171 31–LXE 107 692 Uen.

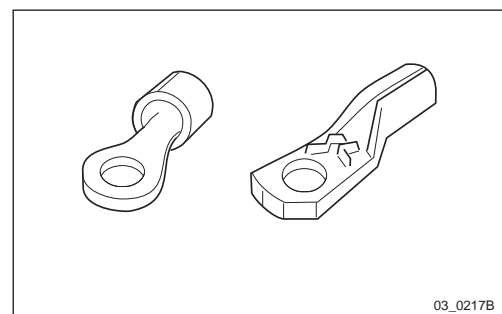
3 Field Of Application

This tool set is used for crimping:

- a) Branching sleeves,
C-clamps

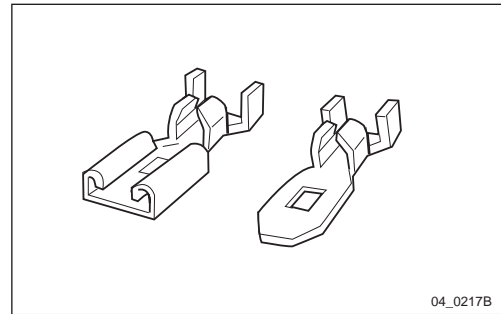


- b) Lugs, tubular and sheet



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c) Sleeve and pin connectors



3.1 The Crimping Tool Set LTT 601 86

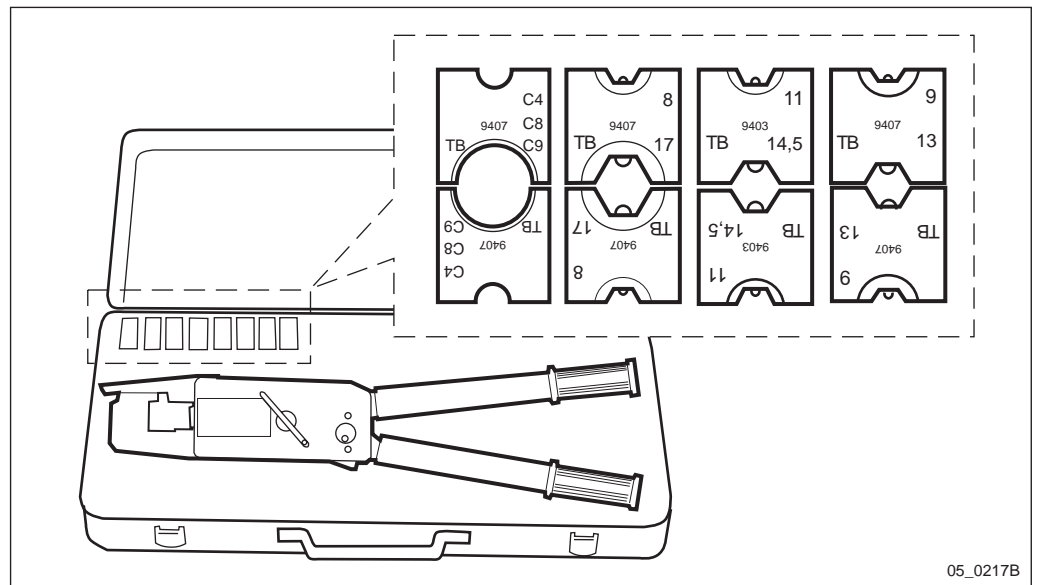


Figure 1 Crimping Tool Set LTT 601 86

The LTT 601 86 crimping tool set consists of a steel plate box with:

- Crimping tool
- 1 pair of dies for crimping C-clamps enabling crimping of three dimensions according to the table:

Table 1 Crimping object: C-clamp

Die pair marked	Conductor area mm ²	C-clamp
C4	6 - 10	C4
C8 - C9	16 - 50	C8 - C9 ⁽¹⁾

(1) Two crimpings shall be made side by side

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- 3 pair of dies for crimping joining sleeves and lugs, each pair enabling crimping of two dimensions according to the table:

Table 2 Cable lugs

Die pair marked	Conductor area mm ²	Cable lug
8	10	8
17	70	17 ⁽¹⁾
9	16	9
13	35	13
11	25	11
14.5	50	14.5

(1) Two crimpings shall be made side by side

The dies are made of hardened tool steel. Center pins and guiding studs ensure exact crimping results.

3.2 Connecting stranded wires using C-clamps

Table 3 Crimping objects: C-clamps

Wire 1 in mm ²	Wire 2 in mm ²	use C-clamp marked	use Tool LTT 601 86 with Die marked
25	25	C8-6	C8-C9
35	16	C8-6	C8-C9
35	25	C8	C8-C9
35	25	C9-6	C8-C9
35	35	C9-8	C8-C9
50	16	C9-6	C8-C9
50	25	C9-8	C8-C9
50	35	C9	C8-C9

Note The table is valid for tinned copper, fine stranded multi-conductors.

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3.3 Crimping Tool Set LTT 601 86 User's Guide

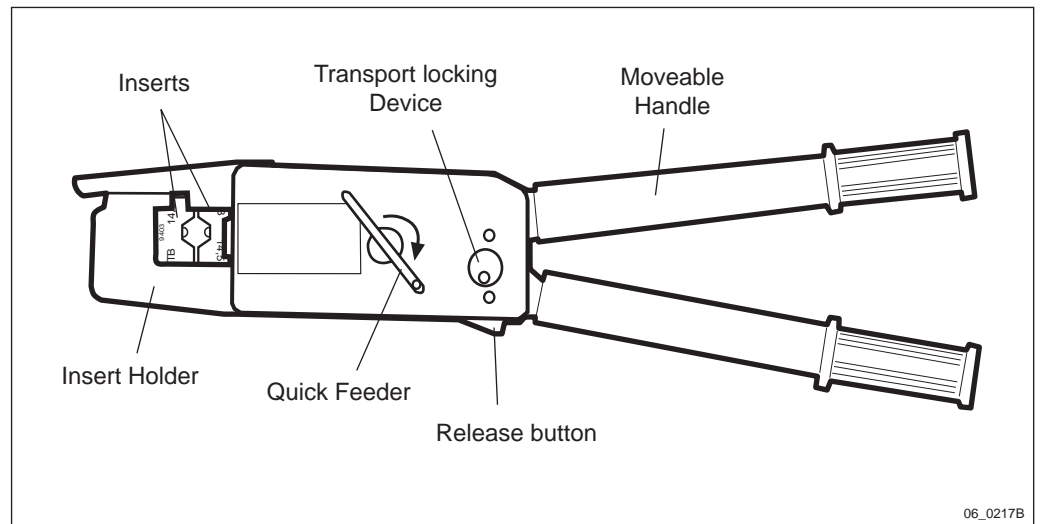


Figure 2 Crimping tool

3.3.1 Crimping C-clamps

1.

Peel off the jackets of the wires to be crimped to a width a few millimeters wider than the C-clamp.

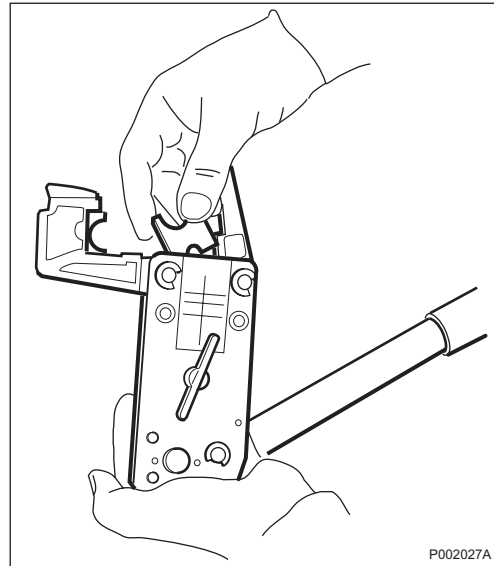
2.

Select the correct die for the crimping operation. See tables above.

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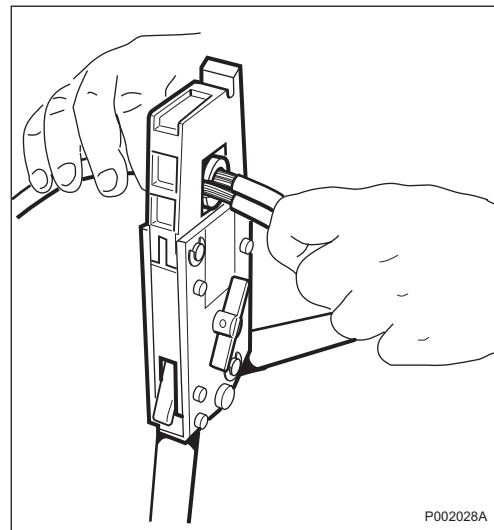
3.

Open the jaws of the crimping tool and mount the dies in the crimping head.



4.

Place the C-clamp to be crimped between the jaws and use the Quick Feeder so that the lower jaw holds the C-clamp firmly. The jaws shall be positioned about 2mm inside the outer edge of the C-clamp.



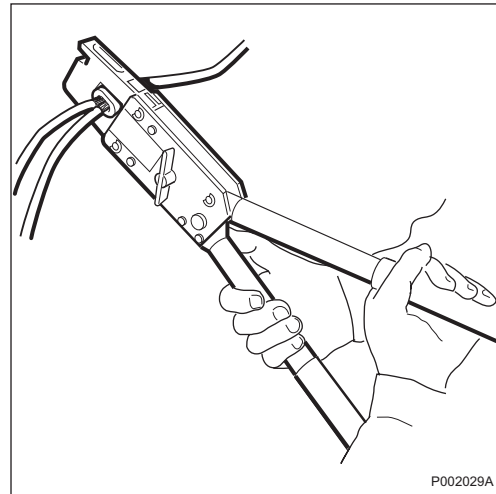
5.

Use the Release Button if the C-clamp is incorrectly inserted, holding the Moveable Handle in its outer position. Then use the Quick Feeder to release the lower jaw.

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6.

Complete the crimping by pumping until maximum pressure has been attained and the pumping resistance decreases.

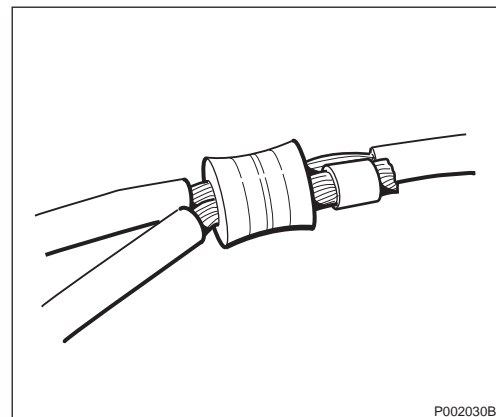


7.

Use the Quick Feeder to reset the crimping jaw.

8.

Make 2 crimpings side by side as shown in the figure when connectors shall be applied to conductors having areas of 50, 70 and 95 mm².

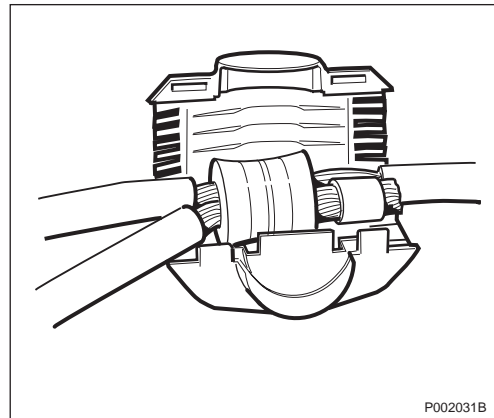


Cut one of the connectors so that a little rest of the isolation is left, holding together the strands of the cable end.

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9.

After visual inspection of the crimping, see para. 3.4.1, shield the crimping with the Insulating Cover SXA 105 3120.



3.3.2 Crimping lugs

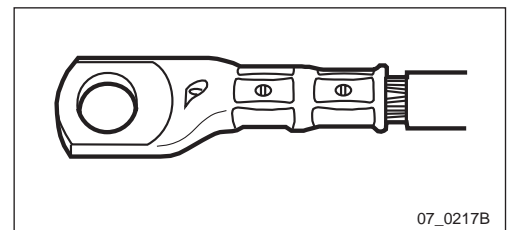
The tool is used as described in para. 3.3.1 above.

1.

Push the stripped wire as far as possible towards the inspection hole of the lug

2.

Make 2 crimpings side by side as shown in the figure when connectors shall be applied to conductors having areas of 70 mm² and 95 mm².



3.4 Crimping Quality Requirements

Crimped electrical connections shall satisfy two fundamental requirements:

- The transition resistance shall be low and constant
- The joint shall exhibit good mechanical strength.

3.4.1 Visual Inspection

Check that the crimp connection is correctly made satisfying the following requirements:

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- a The crimp is in the right place with full depth.
- b All wires in the conductors are undamaged and pressed together inside the crimped object.
- c The wires of the conductor have passed all the way through the C-clamp, see figure in point 8. in para. 3.3.1 or are visible through the inspection hole in the lug, see figure in point 2. in para. 3.3.2.
- d No visible cracks or other damage to crimping object or conductor.

3.4.2 Repairing crimped joints

1. Do not try to “improve” a connection by re-crimping.
2. Should a crimped joint be unsatisfactory then cut the crimp off and redo the complete joint.

3.4.3 Examples of Faulty Connections

Common crimping faults are mis-placed or poorly aligned conductors during the crimping process.

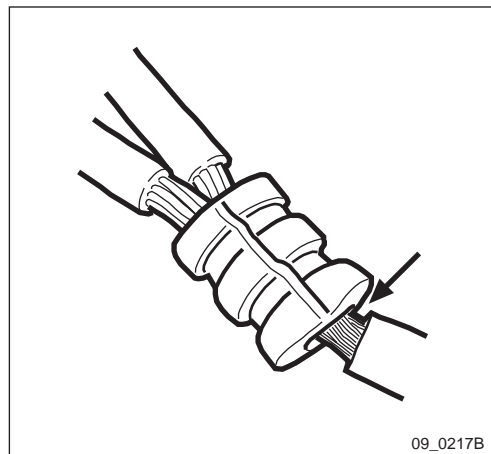


Figure 3 One conductor has not passed all the way through the C-clamp

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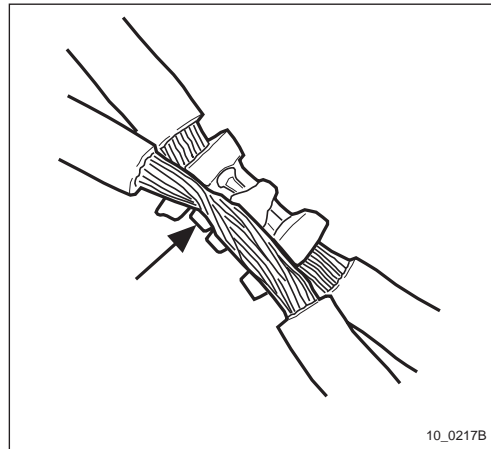


Figure 4 *Mis-placed conductor*

3.5

Maintenance of Crimping Tool

1. Protect moveable parts from water and dirt.
2. Spray moveable parts with Molykote or equivalent lubricant.

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Directions for Use of Tool Set, Crimping, Coaxial Connectors: LTT 601 87

Contents		Page
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3	Field Of Application	2
3.1	The Crimping Tool Set LTT 601 87	3
3.2	Crimping Tool User's Guide for the Single 75 Ohm Coaxial Cable TZC 750 05	4

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1999-02-05	C	1553_LTT 601 87 Uen

1 General

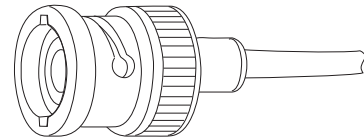
This tool is used for crimping BNC and TNC connectors on 75 ohm coaxial cable TZC 75 005.

2 Calibration and Maintenance

See the Calibration Instructions Document 171 31–LXE 107 692 Uen.

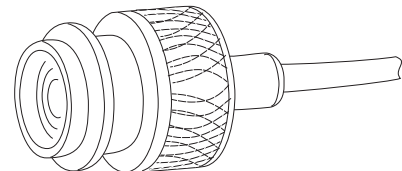
3 Field Of Application

BNC connectors: Coaxial connectors with **Bayonet lock**



11_0217B

TNC connectors: Coaxial connectors with **Thread coupling**



26_0217B

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3.1 The Crimping Tool Set LTT 601 87

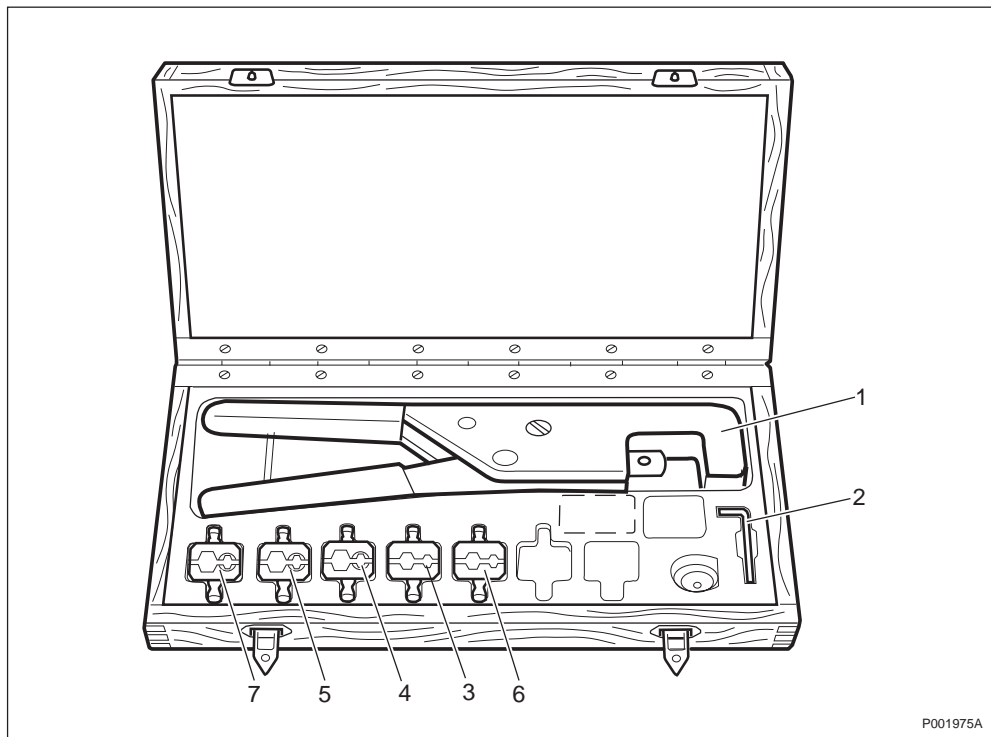


Figure 1 Crimping Tool Set LTT 601 87

Table 1 Crimping Tool Set LTT 601 87 details

Pos	Qty	Product Number	PRIM title
1	1	LSD 901 10	Pliers, Crimping tool
2	1	LSA 901 13	Allen key 2 mm
3	1	LSD 901 10/10	Press die, orange, size 2B
4	1	LSD 901 10/11	Press die, violet, size 3D
5	1	LSD 901 10/12	Press die, red, size 1/2A
6	1	LSD 901 10/13	Press die, yellow, size 2C
7	1	LSD 901 10/14	Press die, no colour, size >1/2A

The dies are made of hardened tool steel. Center pins and guiding studs ensure exact crimping results.

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3.2 Crimping Tool User's Guide for the Single 75 Ohm Coaxial Cable TZC 750 05

1.

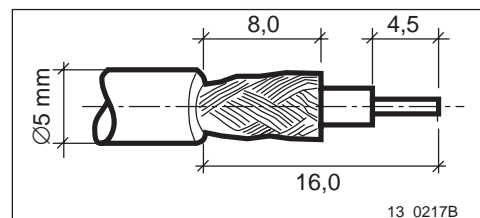
Prepare the crimping tool in the following way:

Insert one half of the orange die pair in the lower dies holding part of the pliers. Lock with the Allen key.

Insert the other half of the orange die pair in the upper dies holding part of the pliers. Lock with the Allen key.

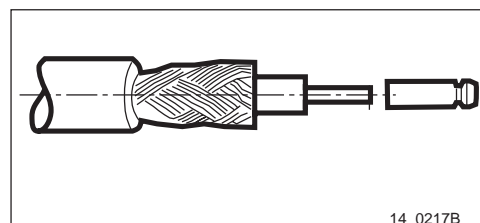
2.

Strip the cable as shown:



3.

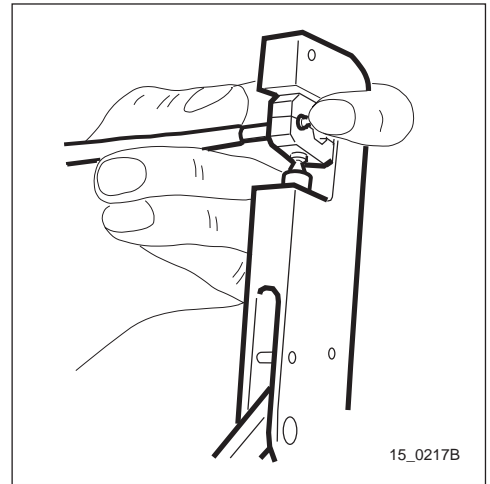
Push the pin over the inner conductor up to the dielectric.



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4.

With constant finger pressure on the pin, put the dielectric in the outer cylindrical notch with the pin resting in the crimping groove of the crimping tool.

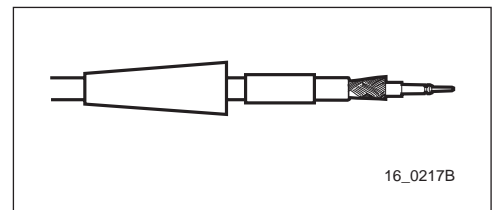


5.

Crimp until the tool releases.

6.

Slide the ferrule onto cable (prior to this, break protection can be put on the cable).

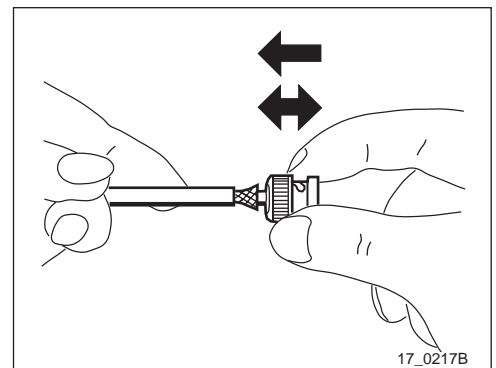


7.

Flare the braid by carefully nudging the connector body.

8.

Push the inner conductor pin into the connector body until the pin is in its locked position.



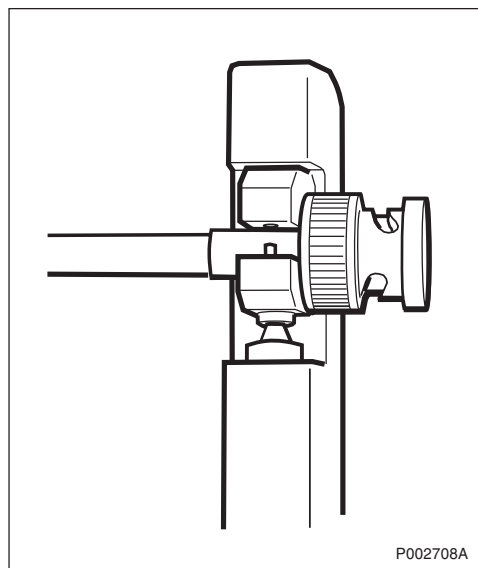
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9.

Slide the ferrule over the braid and until it rests against the connector body. Check that no strands from the braid have come between the ferrule and the connector body, thereby short-circuiting the braid and the pin.

10.

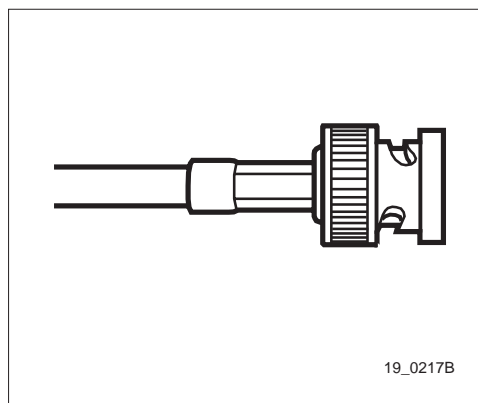
With the ferrule positioned close to the connector body at all times, put the ferrule in the inner hexagonal notch so that the connector body rests against the crimping tool.



11.

Crimp until the crimping tool releases and then open it.

The crimping tool has built-in interlock system which ensures that the crimping operation must be completed to the correct depth before the handles of the tool can be opened and the connector removed.



The figure shows a correct crimp. The ferrule is crimped all the way to the contact body.

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ERA/LRN/ZGC (Leif-Olof Fager)			

Directions for Use of Tool Set, Crimping, Opto Cable Connectors: LTT 601 88

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4.2	Mounting of Connector	4
4.3	Polishing of Fiber optic cable end with Polishing Set	4
LSY 901 04		5

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1 General

These Directions for Use describe how to crimp the Connector (RPT 864 11/1 or /2) to a Fiber Optic Cable (RPM 982 01/30000) using the Opto Set LTT 601 88.

2 Calibration and Maintenance

See the Calibration Instructions Document 171 31-LXE 107 692 Uen.

3 The Opto Set LTT 601 88

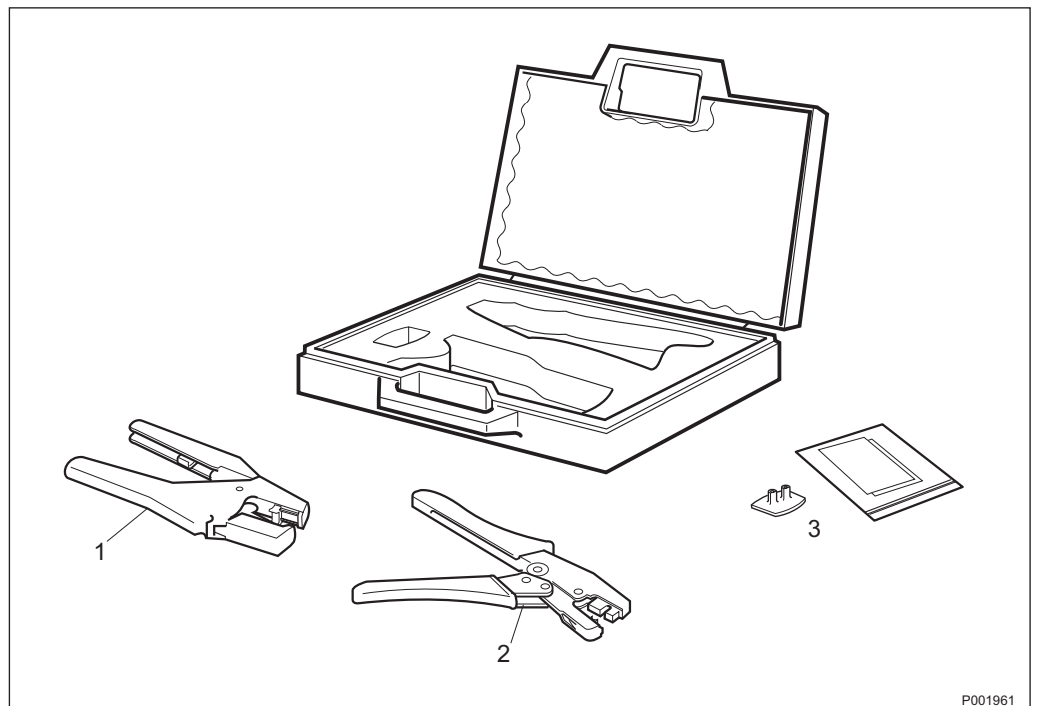


Figure 1 Opto Set LTT 601 88

Table 1 Opto Set LTT 601 88 details

Pos	Product Number	Designation	Qty
1	LSD 901 08	Stripping Tool	1
2	LSD 901 09	Pressing Tool	1
3	LSY 901 04	Polishing Set	5

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4 User's Guide

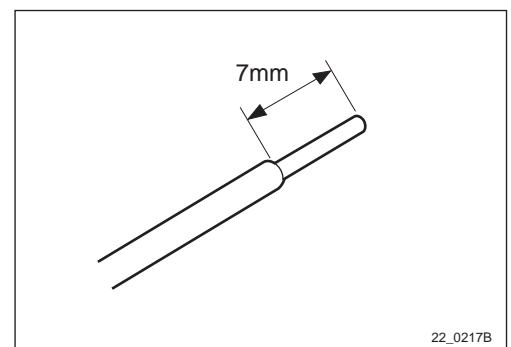
4.1 Trimming of Fiber optic cable

1.

Cut the cable to the desired length.

2.

Strip off approximately 7 mm of the outer jacket with Stripping Tool LSD 901 08.



3.

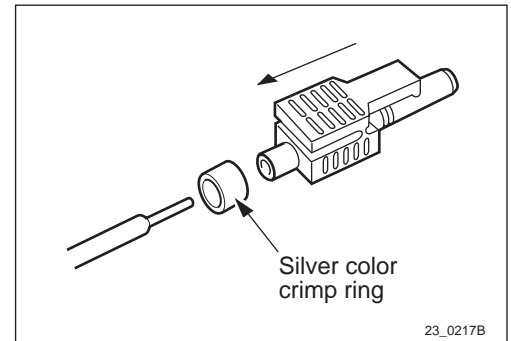
Excess webbing on duplex cabling may have to be trimmed to allow the simplex or simplex latching connector to slide over the cable.

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4.2 Mounting of Connector

1.

Place the crimp ring and connector over the end of the cable; the fiber should protrude about 3 mm through the end of the connector.



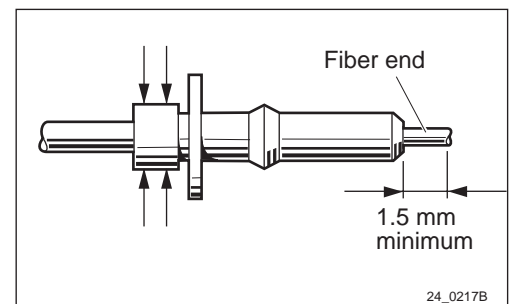
Place the gray connector on the cable end to be connected to the transmitter and the blue connector on the cable end to be connected to the receiver to maintain the color coding (both connectors are the same mechanically)

2.

Carefully position the ring so that it is entirely on the connector.

3.

Crimp the ring in place with the Pressing Tool LSD 901 09. One crimp tool is used for all connector crimping requirements.



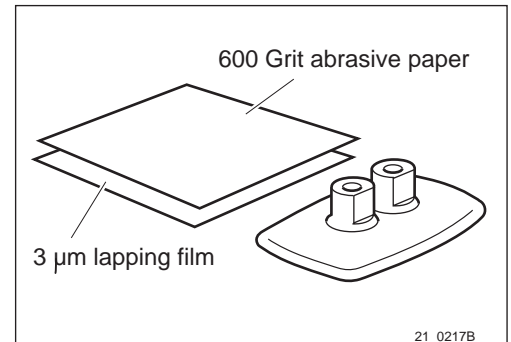
Any excess fiber protruding from the connector end may be cut off; however, the trimmed fiber should extend at least 1.5 mm from the connector end

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4.3 Polishing of Fiber optic cable end with Polishing Set LSY 901 04

1.

Insert the connector fully into the polishing fixture with the trimmed fiber protruding from the bottom of the fixture. This plastic polishing fixture can be used to polish two simplex latching connectors simultaneously



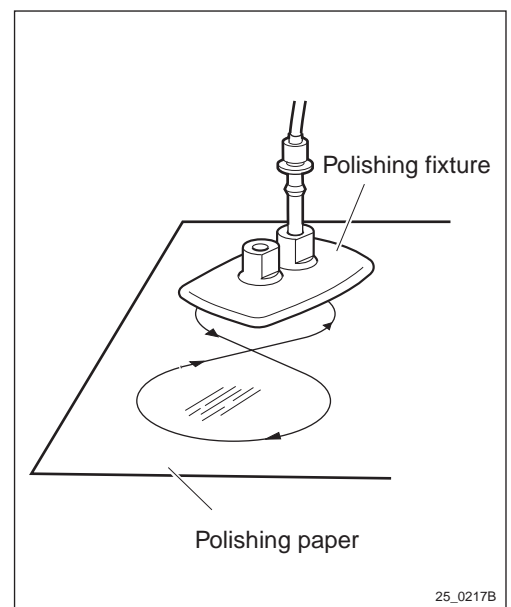
The four dots on the bottom of the polishing fixture are wear indicators. Replace the polishing fixture when any dot is no longer visible.

2.

Place the 600 grit abrasive paper on a flat smooth surface.

3.

Pressing down on the connector, polish the fiber and the connector using a figure eight pattern of strokes until the connector is flush with the bottom of the polishing fixture.



4.

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Wipe the connector and fixture with a clean cloth or tissue.

5.

Place the flush connector and polishing fixture on the dull side of the 3 micron pink lapping film and continue to polish the fiber and connector for approximately 25 strokes until the fiber end is flat, smooth and clean

The cable is now ready for use.

Use of the pink lapping film fine polishing step results in approximately 2 dB improvement in coupling performance of either a transmitter-receiver link or a bulkhead/splice over 600 grit polish alone. This fine polish is comparable to Hewlett-Packard factory polish. The fine polishing step may be omitted where an extra 2 dB of optical power is not essential, as with short link lengths. Proper polishing of the tip of the fiber/connector face results in a tip diameter between 2.8 mm minimum and 3.2 mm maximum.

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Directions for Use of Tent, RBS 2101, 17 kg: LYA 175 101 and Tent, RBS 2102, 27 kg: LYA

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1 **General**

Two tents of different sizes have been developed specifically for installation and maintenance of Ericsson outdoor base stations for the GSM system. The tents, when erected over the base station, protect the sensitive electronic equipment from being effected by dampness, dust etc. during installation and maintenance.

1.1 **Accessories**

There are a number of accessories available:

- A portable mains distribution unit.
- Heating fan for heat and air circulation.

See para. 3 for further information.

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2 Tents LYA 175 101 and LYA 175 101/2

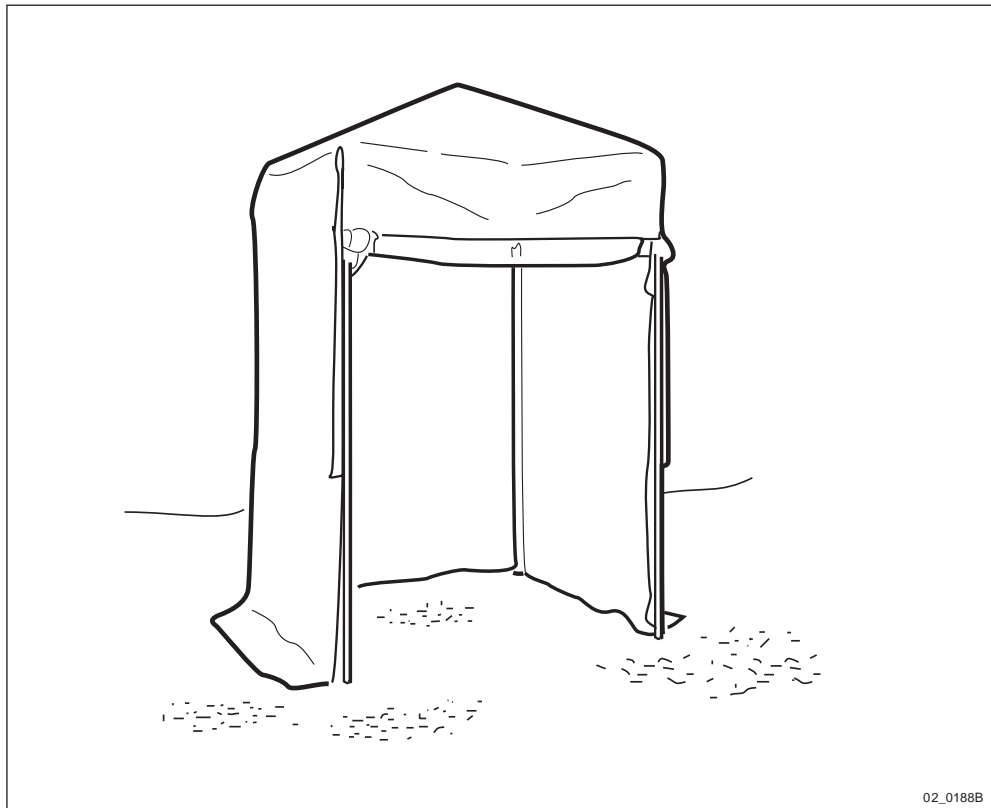


Figure 1 Tent for installation and maintenance

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2.1 Material and Characteristics

Table 1

	LYA 175 101	LYA 175 101/2	Remarks
Length, mm	1440	2430	
Width, mm	1440	2430	
Effective inner height to roof frame, mm	1960	1950	
Max. height to roof top, mm	2720	3070	
Weight total, kg	17	27	
Weight frame, kg	12	20	chromate steel
Weight fabric, kg	5	7	polyamid, silicon rubber coated
Temp. range	- 35°C to +70°C	- 35°C to +70°C	

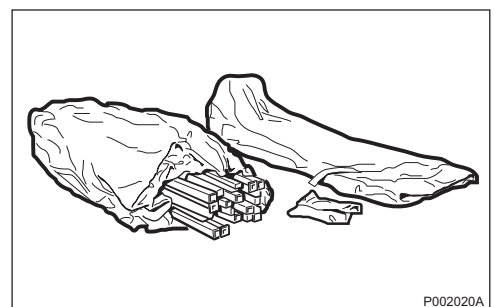
2.2 Raising the Tent

Two persons are needed to raise the tent.

2.2.1 Preparations

1.

Identify the tent framework with canvas applied and a plastic bag with lines, tent anchoring spikes etc. after the tent bag is emptied.

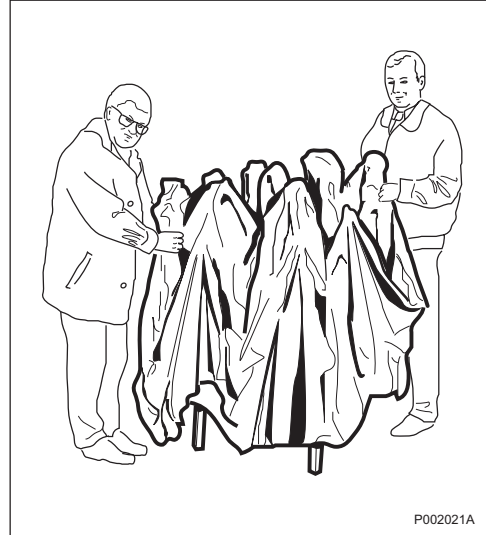


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2.2.2 Expanding the Tent Framework

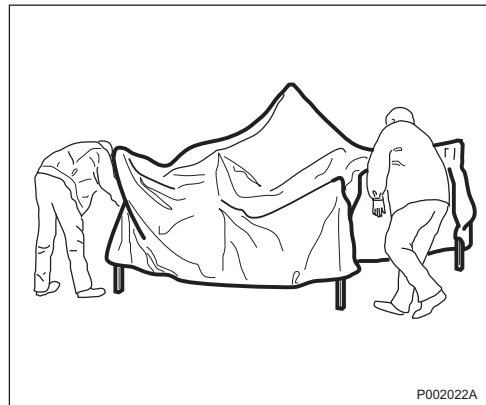
1.

Holding the framework vertically, lift and pull out, stepping away from each other, until the framework is pulled out as much as possible.



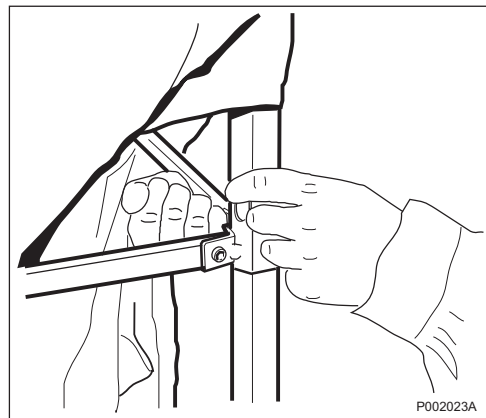
2.

From beneath grasp the center of the framework and push upwards until it is fully expanded.



3.

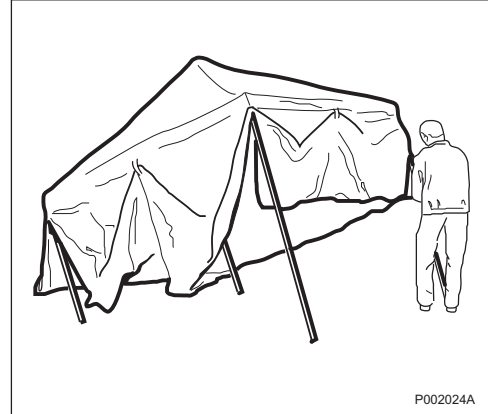
Secure the framework by locking all push pins in the frame arms.



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4.

First, raise one side of the tent. (This is easiest done having one person at each leg.) Then, repeat the same thing with the other side.

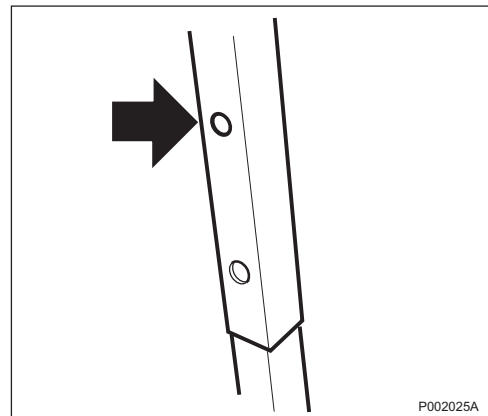


2.2.3

Adjusting the tent height

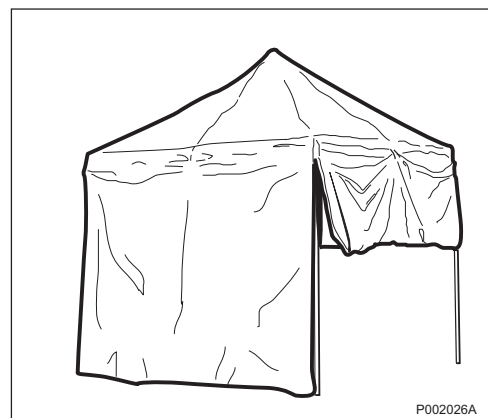
1.

Depress the leg latching buttons and slide the lower leg extensions to lock in one of the four adjustment holes as required.



2.

Release the tent walls by unlatching the holding lines and also let loose from the tent corner roof straps. Roll down the walls leaving one side of the tent open.



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3.

Put the lower legs on the leather pads included in the plastic bag and secure the tent walls to the pads by the elastic straps in the wall corners.

4.

Pull down the zippers.

2.2.4 Anchoring the tent on the ground

1.

Tie one end of each of the four ropes provided to each of the upper tent corner roof straps.

2.

Drive the four tent anchoring spikes into the ground at an appropriate distance from the corners of the tent.

3.

Tie each of the loose ends onto their respective anchoring spike.

Note:

Should the ground be unsuitable for driving tent spikes, use sand-bags, concrete blocks, or similar heavy weights to anchor the ropes.

2.2.5 Anchoring the Tent on a Roof

1.

Tie the ropes to any stable attachments such as pipes, conduits etc., use sand bags or any other suitable, heavy objects to weight down the corner ropes.

Note:

Under no circumstances is the roof surface to be used for fastening.

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2.3 Taking Down the Tent

Simply reverse the procedure for putting up the tent.

1.

Unzip all zippers.

2.

Hang up the tent walls in the roof strops and tie up the lines holding the tent cloth in the middle.

3.

Lower the tent by depressing the leg latching buttons and sliding in the lower leg extensions.

4.

Depress the push pins in the frame arms.

5.

Push together the tent diagonally.

6.

Put on the cover.

2.4 Double Tents

The smaller tent may be raised inside the larger tent. This will aid in keeping the temperature around the equipment at a more stable level during extreme weather conditions.

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3 Accessories

3.1 Heating/Ventilation Fan LVS 150 20

See the document 1553–LVS 150 20.

3.2 Portable Mains Distribution Unit NCF 521 01

See the document 1553–NCF 521 01.

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Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

Directions for Use of Tent LYA 175 102

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1 General

This larger installation tent is mainly intended to be used during installation where ample space is needed around the cabinet.

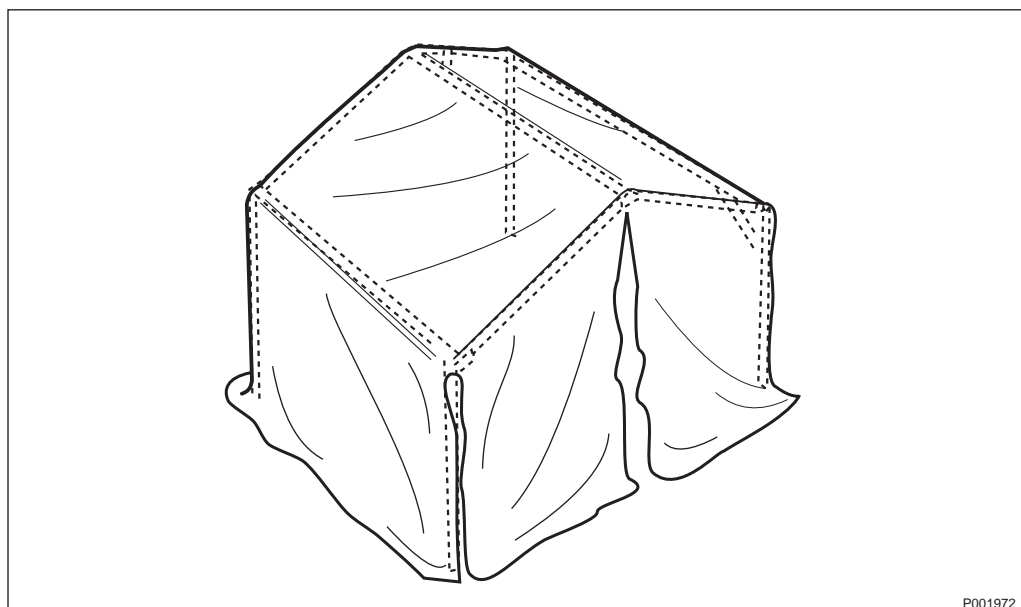
1.1 Accessories

There are a number of accessories available as:

- A portable mains distribution unit
- Heating fan for heat and air circulation
- Service table

See para. 3 for further information.

2 Tent LYA 175 102



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Figure 1 Tent LYA 175 02

2.1 Material and Characteristics

Table 1 Tent LYA 175 02 specifications

		Remarks
Length, mm	3200	
Width, mm	2500	

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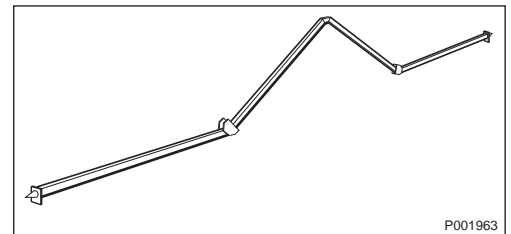
Height, mm	2600	
Weight frame, kg	45	aluminum
Weight total, kg	70	
Weight fabric, kg	25	polyester lining, PVC coated; flame protected
Temp. range	-30C to +70C	

2.2 Raising the Tent

2.2.1 Assembling the Installation Tent Frame

1.

Fold out roof supports as far as possible making sure that the legs are resting on the ground.

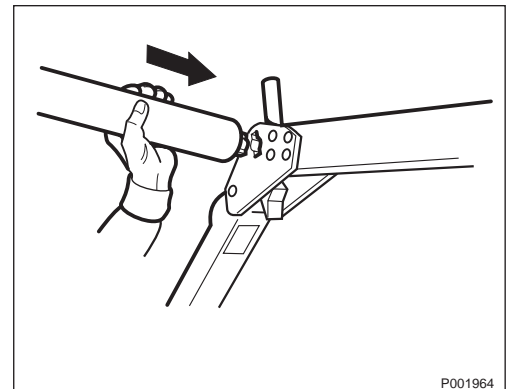


2.

Lay the second roof supports in parallel with the first.

3.

Connect roof supports to ridge poles by inserting ends of the ridge poles in corresponding roof support end holes as shown in diagram.



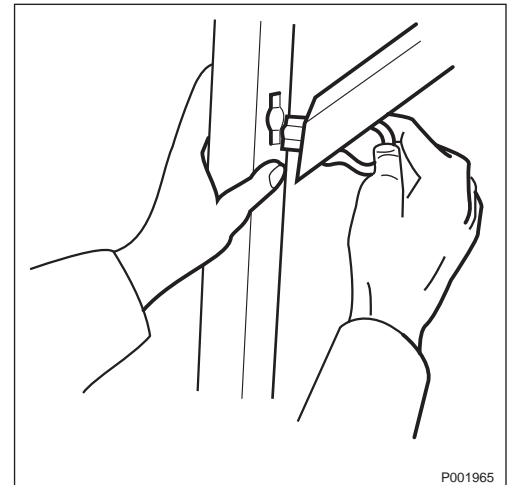
4.

Do the same with the two eaves poles supplied.

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5.

Lock ridge poles by twisting lateral supports until support locking mechanisms have reached the point where they can be put into the mounting holes of the roof ridges and the legs. Make sure that all lateral supports in the roof ridge are lying in the same direction.



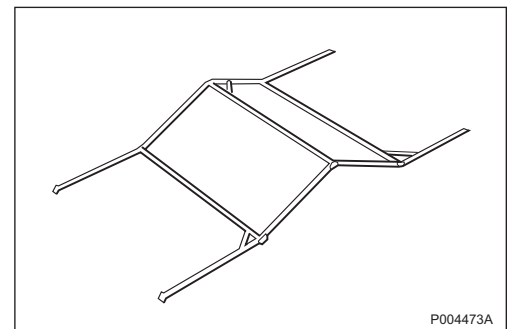
6.

Lock lateral supports by twisting handle in the locking mechanism about 90°. Then fold in the mechanism handle into the lateral support profile.

2.2.2 Putting Tent Cloth on the Frame

1.

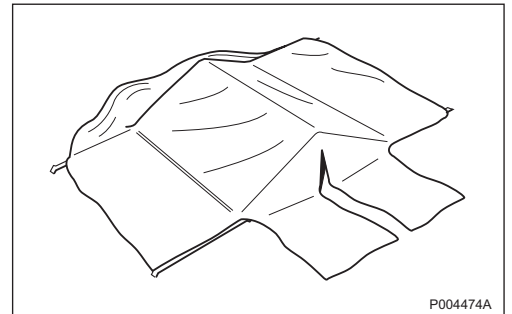
Spread out the connected roof, side and gable tent cloth over the tent frame.



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2.

Push down the grommets over the protruding points in each of the roof supports.



3.

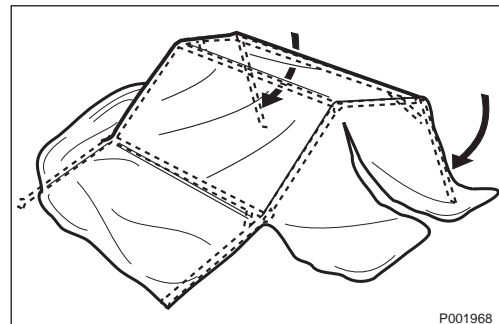
Tie together the loose gable with the roof.

2.2.3

Raising the Tent

1.

First, raise one side of the tent until the legs have locked into position.



Note:

The two legs should be raised at the same time by having one person at each leg.

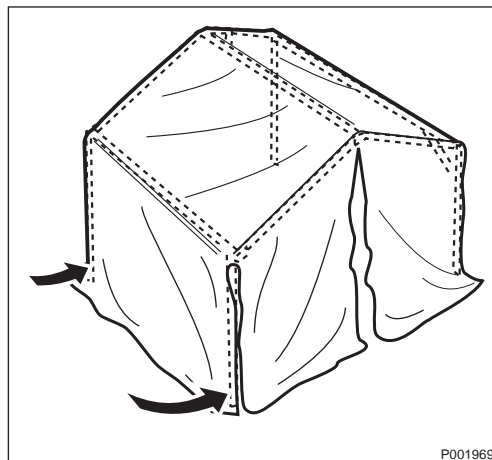
2.

Pull together leather straps where the roof and the side join to the respective pipe.

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3.

Raise the other side of the tent.



Note:

Here also, the legs should be raised at the same time by having one person at each leg.

4.

Tie gable cloth together with the side cloths by the corners against the ground.

5.

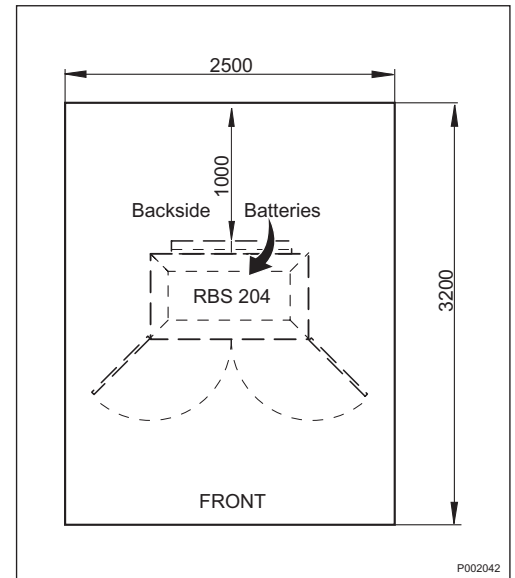
Pull leather straps together at bottom edge of the tent using the strap plate on each leg.

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2.2.4 Placing the Tent over the RBS

1.

Place the tent so that the distance from the back of the cabinet to the tent wall will be 1 m, to allow for batteries to be serviced. See the installation example shown here.



2.2.5 Anchoring the Tent on the Ground

1.

Tie one end of each of the four ropes provided to each of the four grommets in the corners of the tent cloth.

2.

Drive the four tent anchoring spikes into the ground at an appropriate distance from the corners of the tent.

3.

Tie each of the loose ends onto their respective anchoring spike.

Note:

Should the ground be unsuitable for driving down a tent spike, sand bags, concrete blocks, or similar heavy weight may be used to anchor the ropes.

2.2.6 Anchoring the Tent on a Roof

The tent can't be anchored on a roof as it would be on the ground.

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1.

Place each tent leg on a piece of thin wood, or similar to protect the roof surface.

2.

Use sand bags or any other suitable heavy object to weight down the corner ropes.

Note:

Under no circumstances is the roof surface to be used for fastening.

2.3 Taking down the Installation Tent

To take down the installation tent, simply reverse the procedure used in mounting.

3 Accessories

3.1 Heating/Ventilation Fan LVS 150 20

See the document 1553–LVS 150 20.

3.2 Portable Mains Distribution Unit NCF 521 01

See the document 1553–NCF 521 01.

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Directions for Use of Tent, RBS 2102, 12 kg, Rucksack: LYA 175 107/1

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1.2	Specifications	10
1.3	Installation Instruction	11
1.4	How to Take the Tent down	22
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1 Directions for Use of Tent, RBS 2102, 12 kg, Rucksack: LYA 175 107/1

1.1 General Description

The service tent LYA 175 107/1 is a lightweight tent intended for RBS 2102 and is a compliment to the heavy-duty tents previously provided. The tent is easy to install and may be erected in fairly strong winds (inclement weather).

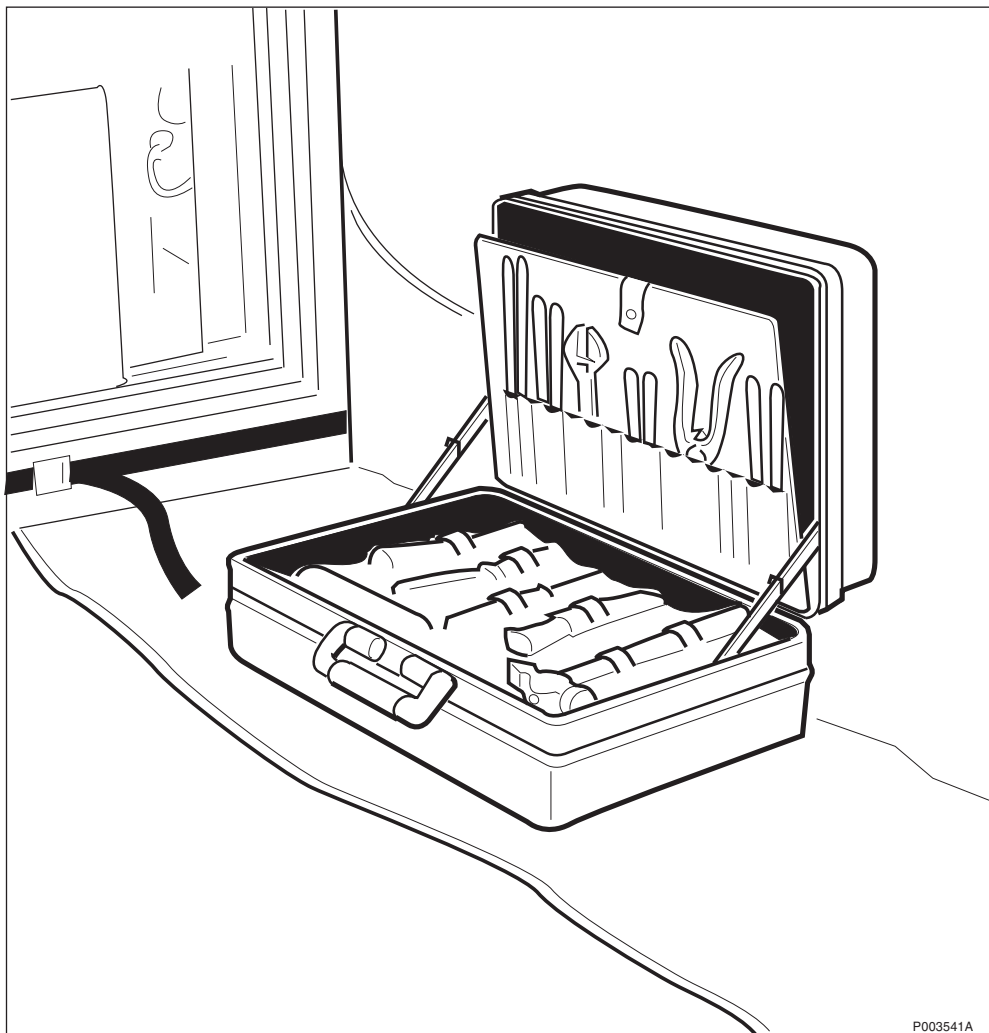


Figure 1 Service tent LYA 175 107/1 mounted to a cabinet, suitably fixed to the ground with a tool set

The tent is contained in a rucksack (backpack) for easy transportation and to leave two hands free for other purposes, such as climbing and carrying tools.

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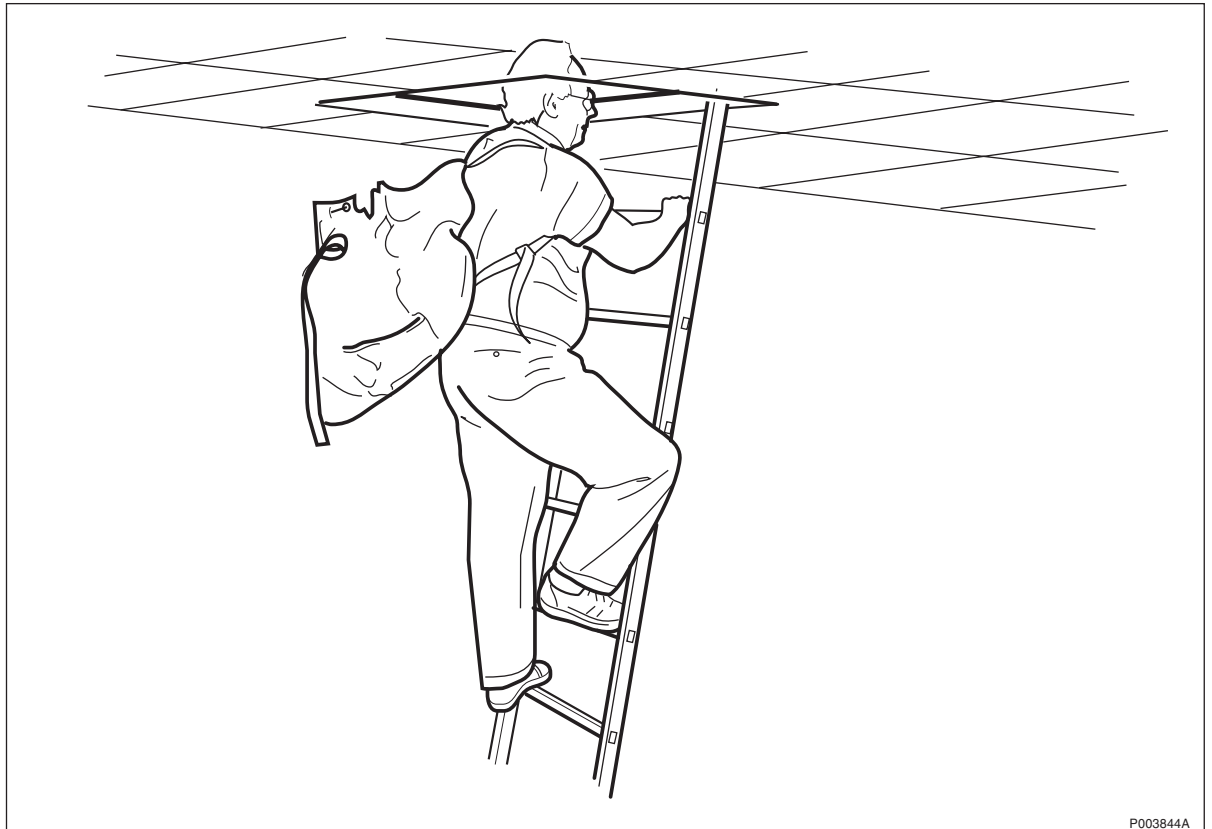


Figure 2 Tent rucksack

Due to safety considerations, the tent components are made as light as possible. Despite that, routine caution must be exercised to avoid dropping items off buildings or other high places.

The tent can accommodate different cabinet installation heights, such as cabinets with mounting base included and up to 400 mm of additional base frame.

The tent roof is equipped with spoilers to reduce the lifting force caused by wind.

The tent is equipped with internal securing straps. The securing straps may be tightened before erection, thus preventing the tent from blowing away during high winds.

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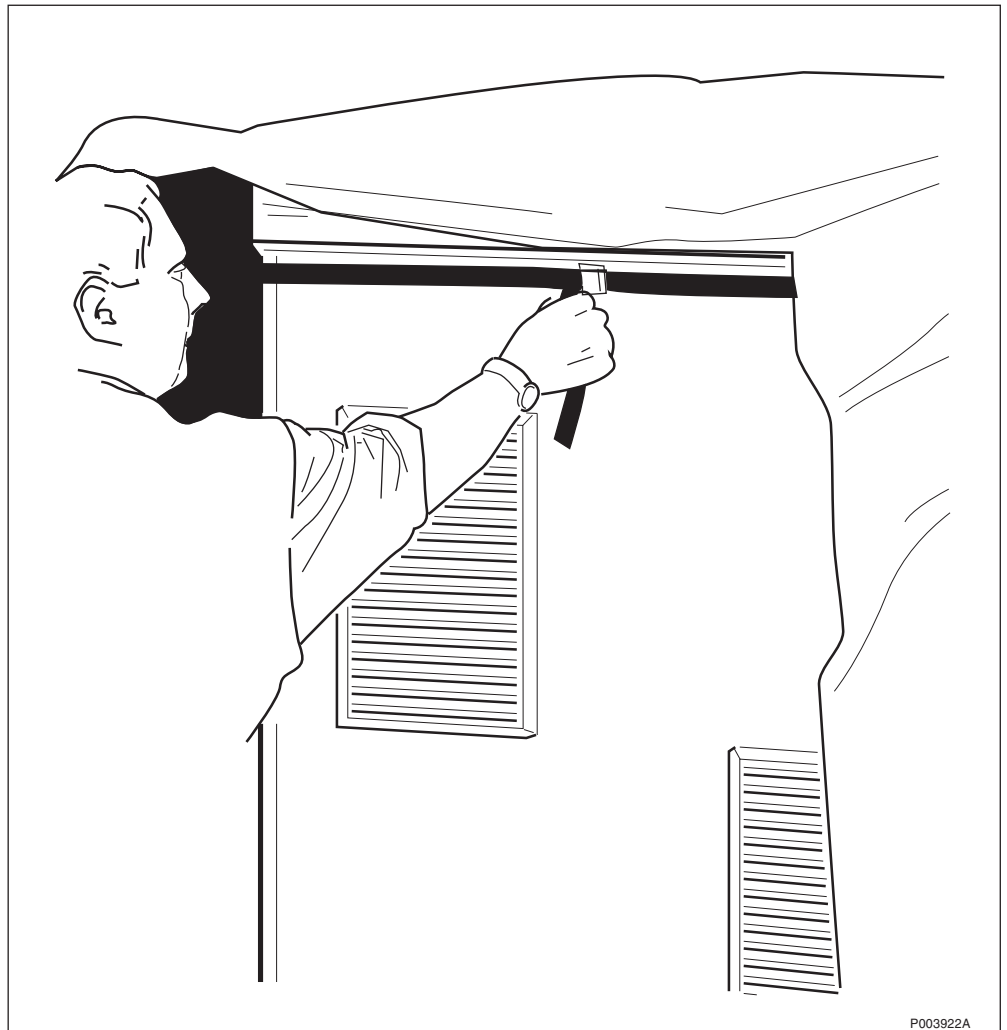


Figure 3 The upper securing strap

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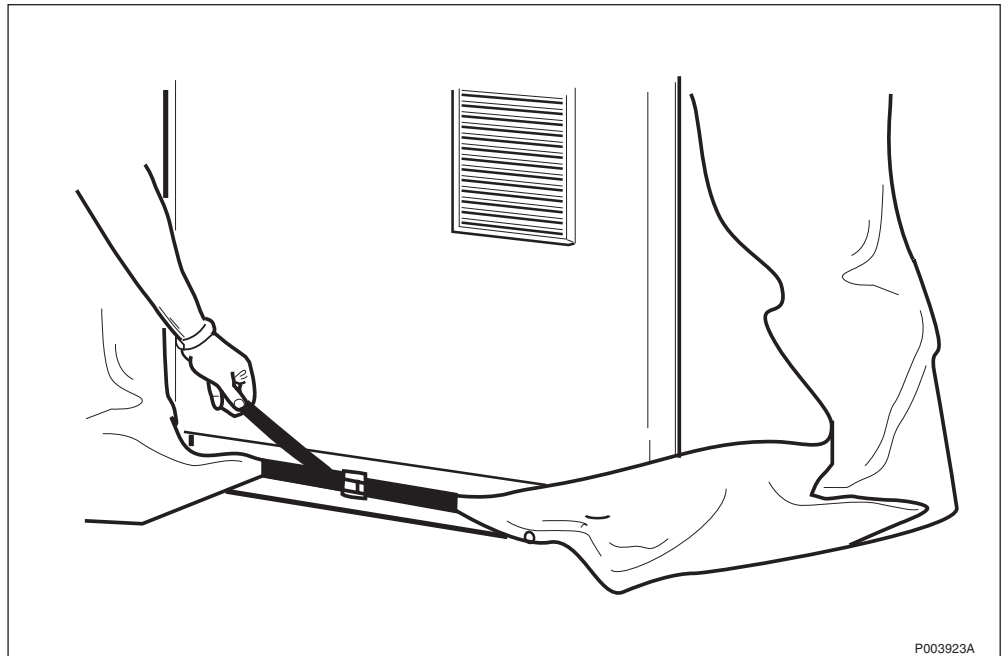


Figure 4 The lower securing strap

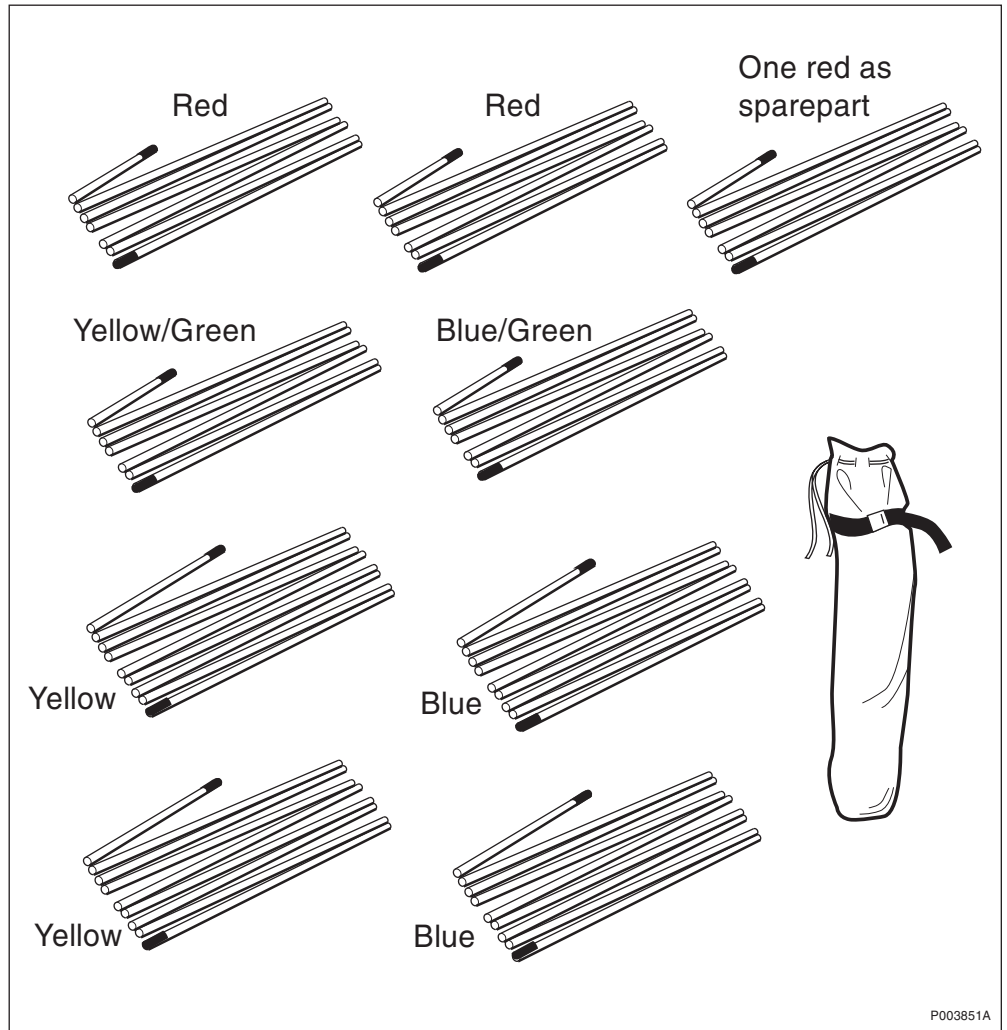
There are a number of tent-poles in the kit. They are marked in different colours for different positions.

The two poles for the roof must be inserted first and are for erecting the tent. Do not erect the tent until both of the roof poles are inserted into the tent-pole conduits.

The remainder of the tent-poles is for stabilising the tent and may be inserted if required.

Note that one red tent-pole for the roof is a spare part.

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Figure 5 Tent-poles

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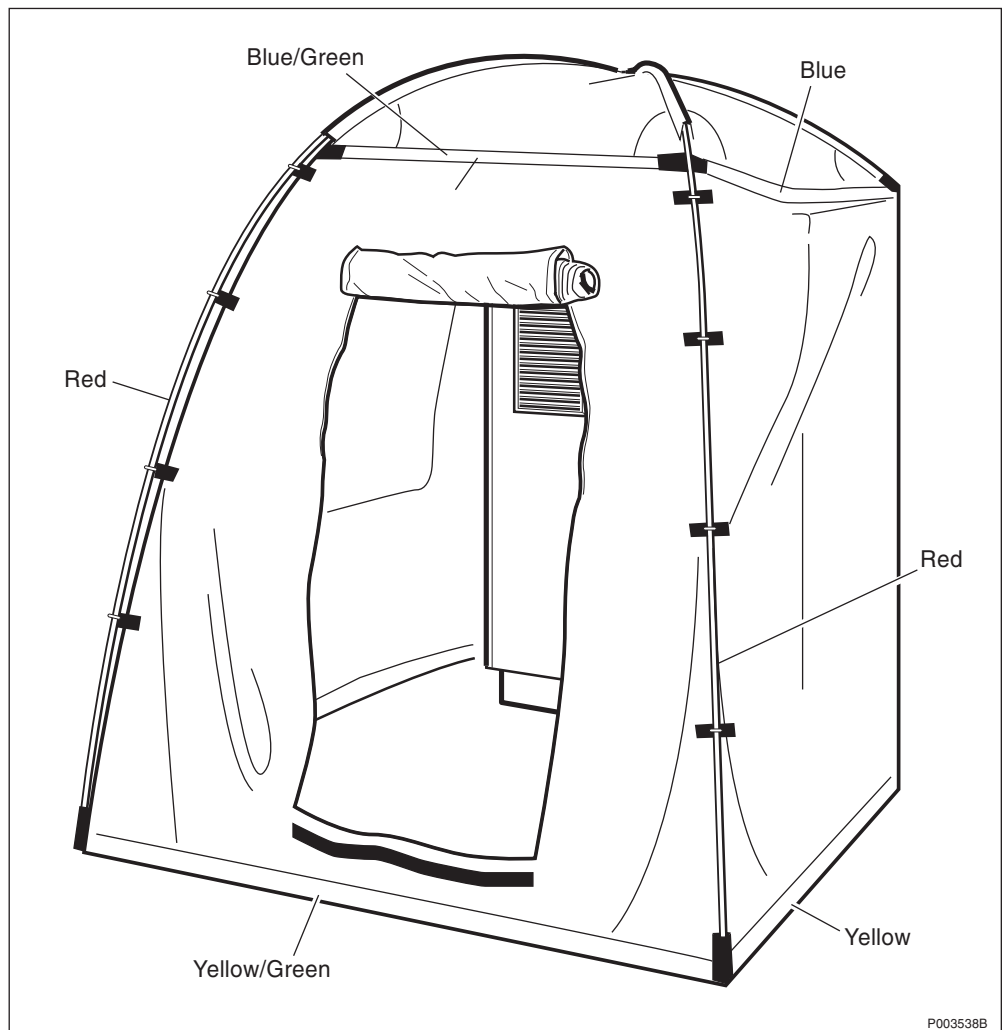


Figure 6 Tent-pole schematics

If a tent-pole for the roof should break, the tent still provides weather protection despite being a little more difficult to work in.

If further stabilising is required, each front side is equipped with two tags at each side for tying guy-ropes. The ropes are included in the kit.

Inside the tent, at the bottom rim, is a piece of extra canvas, flaps, that fold out on the ground. Tool boxes and replacement units may

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be placed on these pieces of canvas to add extra ground support pressure to the tent.

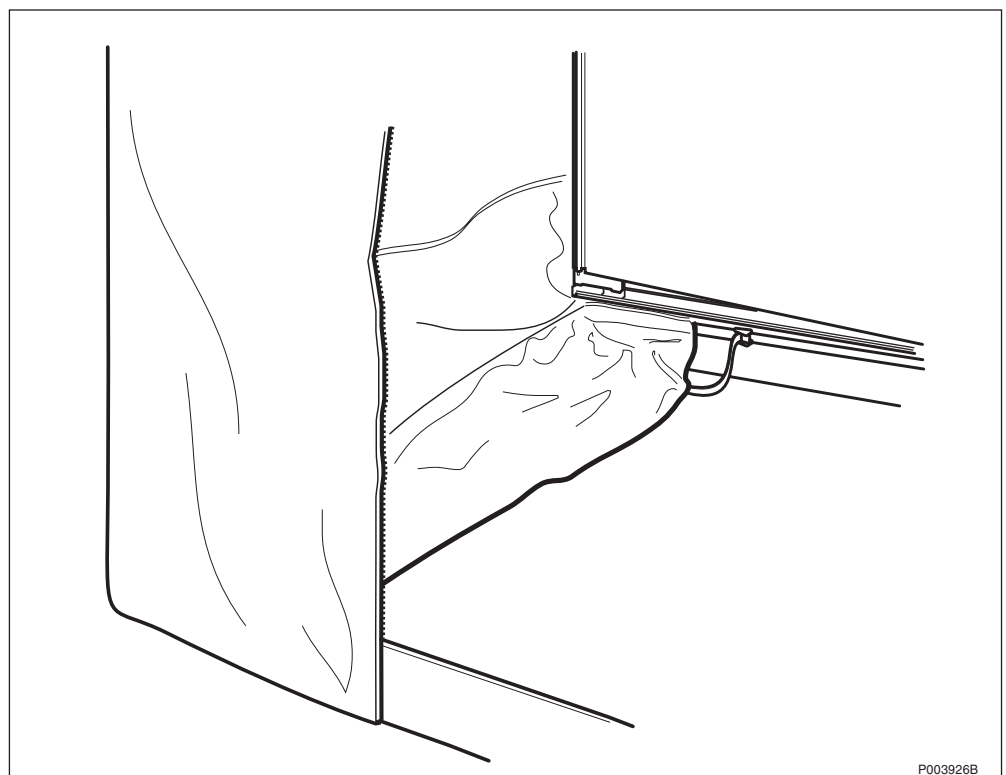
WARNING



Do not step on these flaps during icy conditions since they may become slippery.

If cable ducts are installed in such a way as to prevent the outer canvas from reaching the ground, the extra canvas in the tent will reach.

This design prevents wind blowing in under the tent if a heating apparatus is used and service equipment is placed on the extra canvas.



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Figure 7 Ground flaps

The tent is equipped with a chimney that may be opened or closed. This is used to prevent heat from escaping or accumulating inside the tent.

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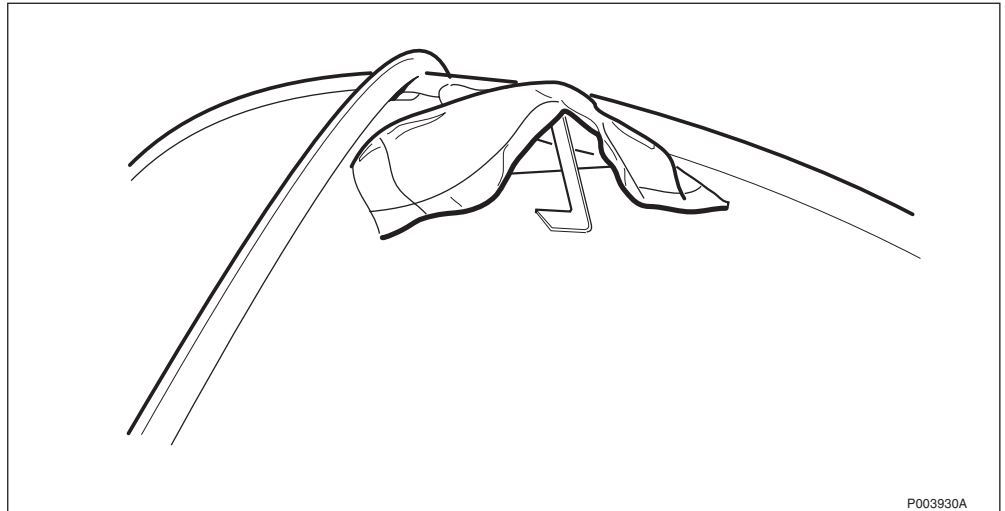


Figure 8 Chimney

The tent is equipped with a large opening for the Climate Unit vents acting as shutters if not required.

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Figure 9 Climate Unit vents

1.2 Specifications

Table 1 Measurements

Weight:	12 kg
Internal height:	2150 mm
Width at the front:	2160 mm
Width at the rear	1300 mm
Length:	2550 mm
Cabinet included 4 pcs of guy-ropes length:	10000 mm apiece
Installation time:	5 to 7 min.

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Table 2 Fabric

Fabric	80% Polyamide, 20% Acrylic resin
Area weight	250 g/m ²
Thickness	0.35 - 0.40 mm
Tensile strength	1800 N (lengthwise) 3000 N (crosswise)
Tear strength	500 N (lengthwise) 800 N (crosswise)

1.3 Installation Instruction

1. Place the rucksack as close to the cabinet door as possible to keep the wind from sizing the tent.
2. Secure the rucksack so it will not blow away when the tent is puled out.

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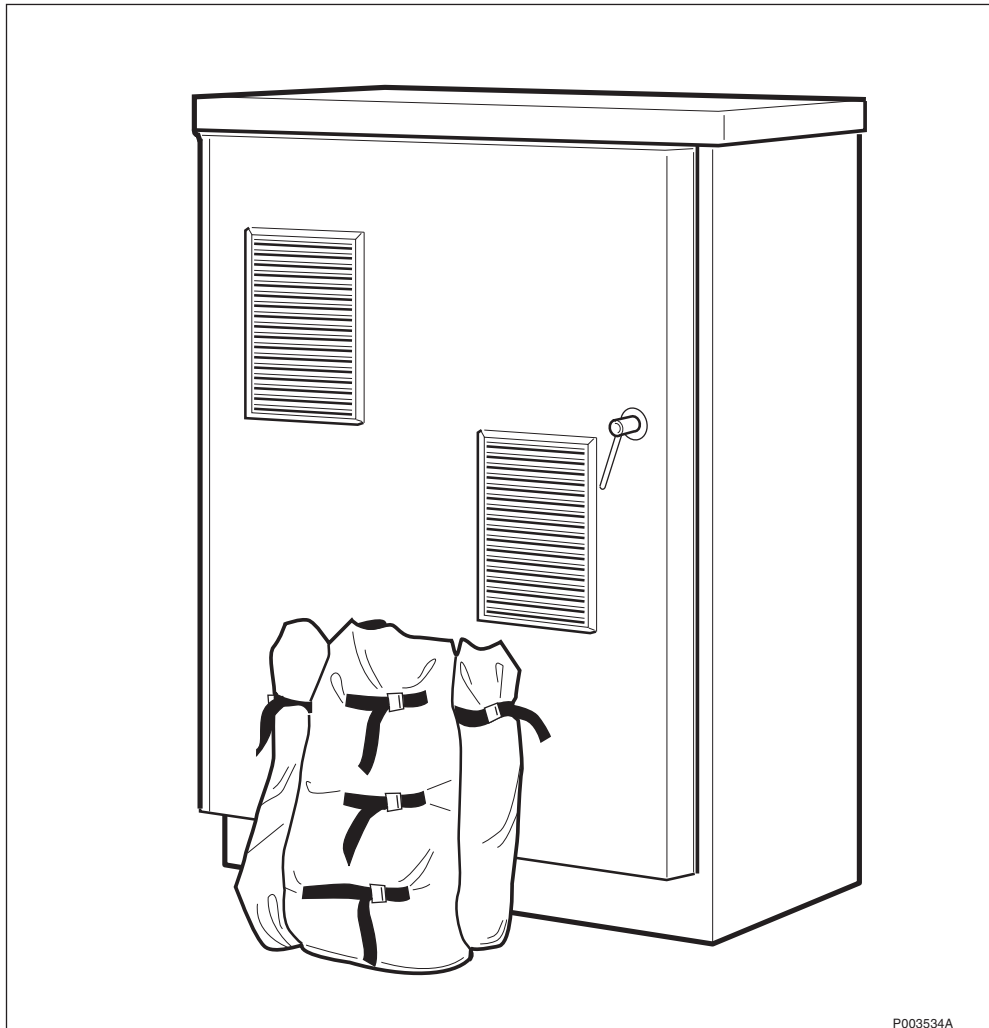


Figure 10 Tent and rucksack at the starting position

3. Open the rucksack and locate the two red pulling straps.
4. Use the two straps to pull the tent over and behind the cabinet.

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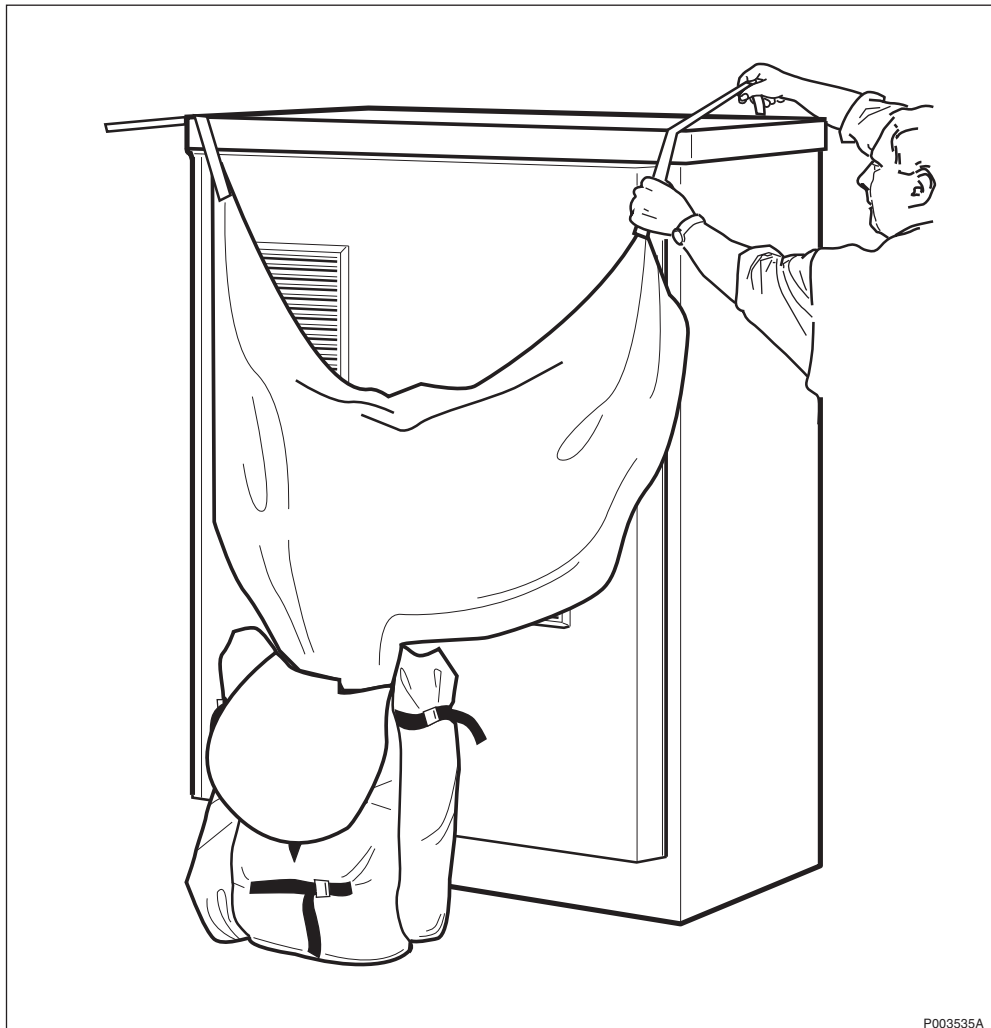


Figure 11 How to cover the RBS 2102 with the tent

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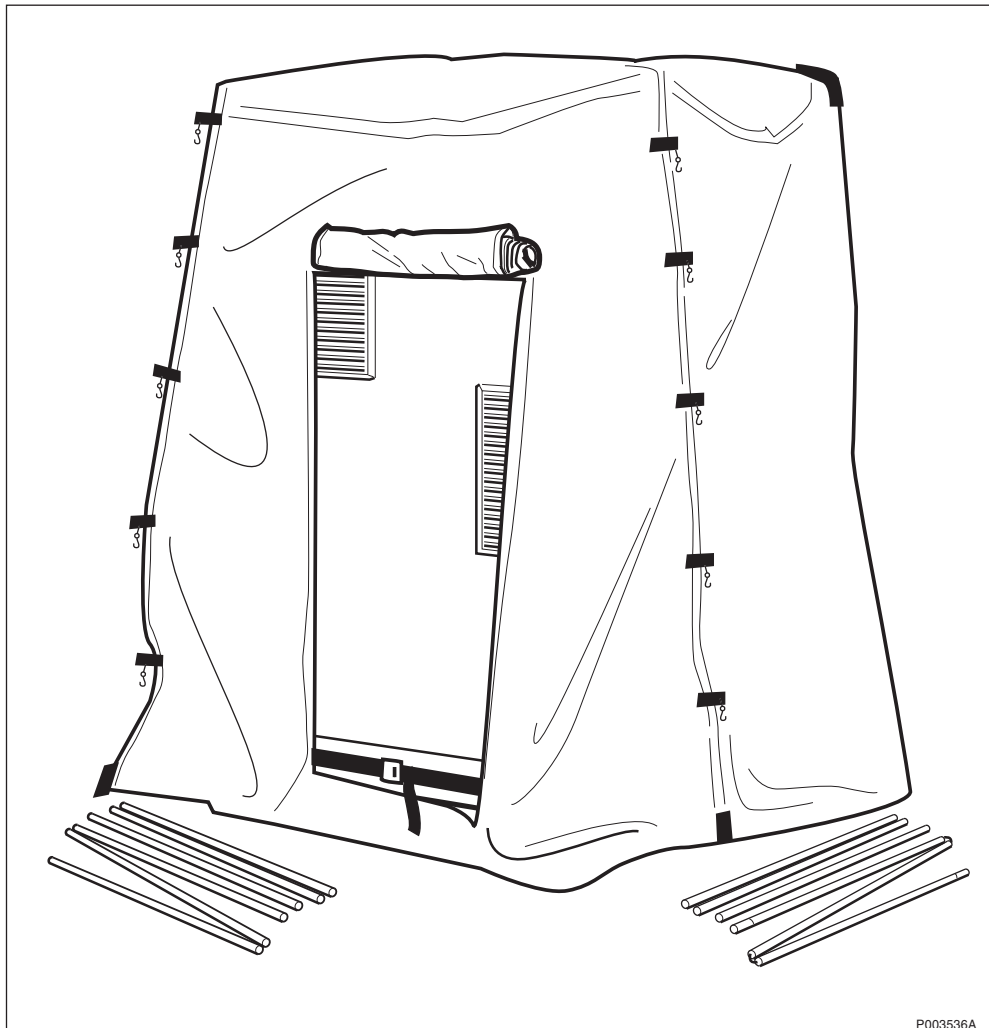


Figure 12 Tent without tent poles

5. See figures 3 and 4. Locate the securing straps inside the tent and tighten the upper and the lower strap around the cabinet. (There are two straps at the lower part of the tent to fit different installation heights of the cabinet.)
6. The tent is now secured to the cabinet.
7. Ensure that the rear end corners are in the correct position.

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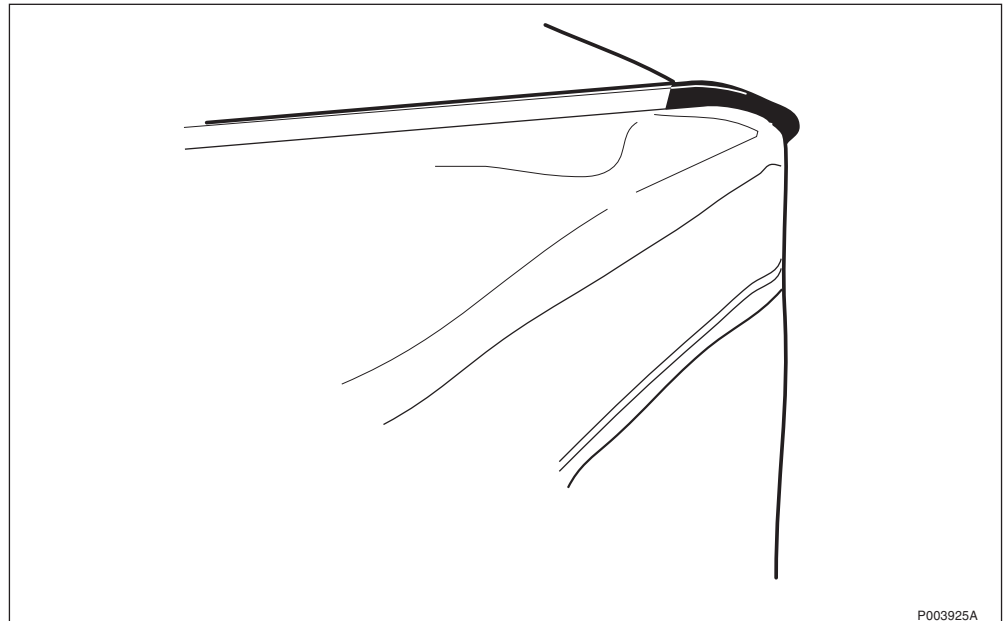


Figure 13 Rear end, red tent pole corners

8. Bring out the two red tent-poles and unfold them.

If the cabinet is installed in a confined space, the tent-poles may be unfolded during insertion and extraction.
9. Insert the tent-poles into the two conduits (spoilers) on the roof of the tent.

Note that the tip of the tent-pole with the extraction-line tightened to it should be inserted first.
10. Erect the tent by lifting the tent top with the tent-poles.

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Figure 14 Roof tent-pole insertions

11. Insert the ground end of the tent-poles into the shoes.

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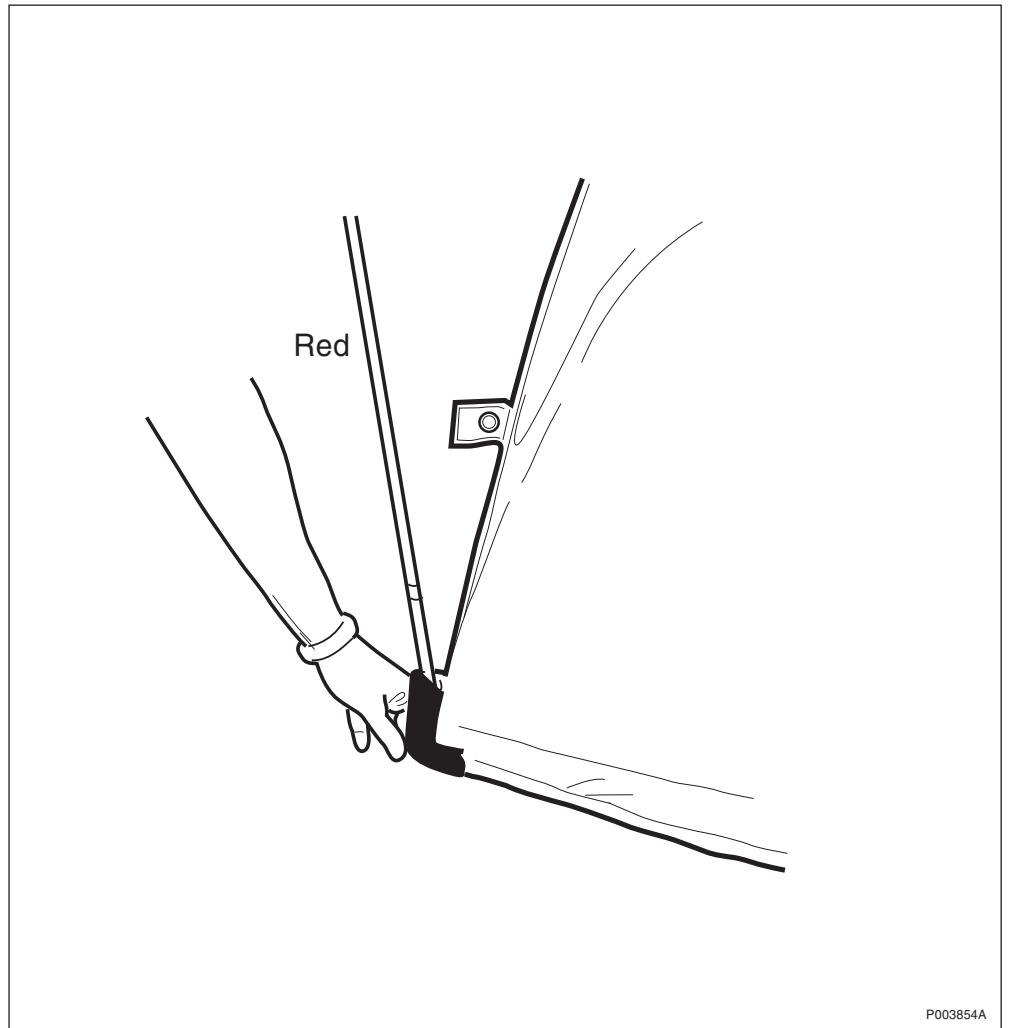


Figure 15 Ground shoe for the roof tent-poles

12. Hook the tent hooks onto the tent-poles.

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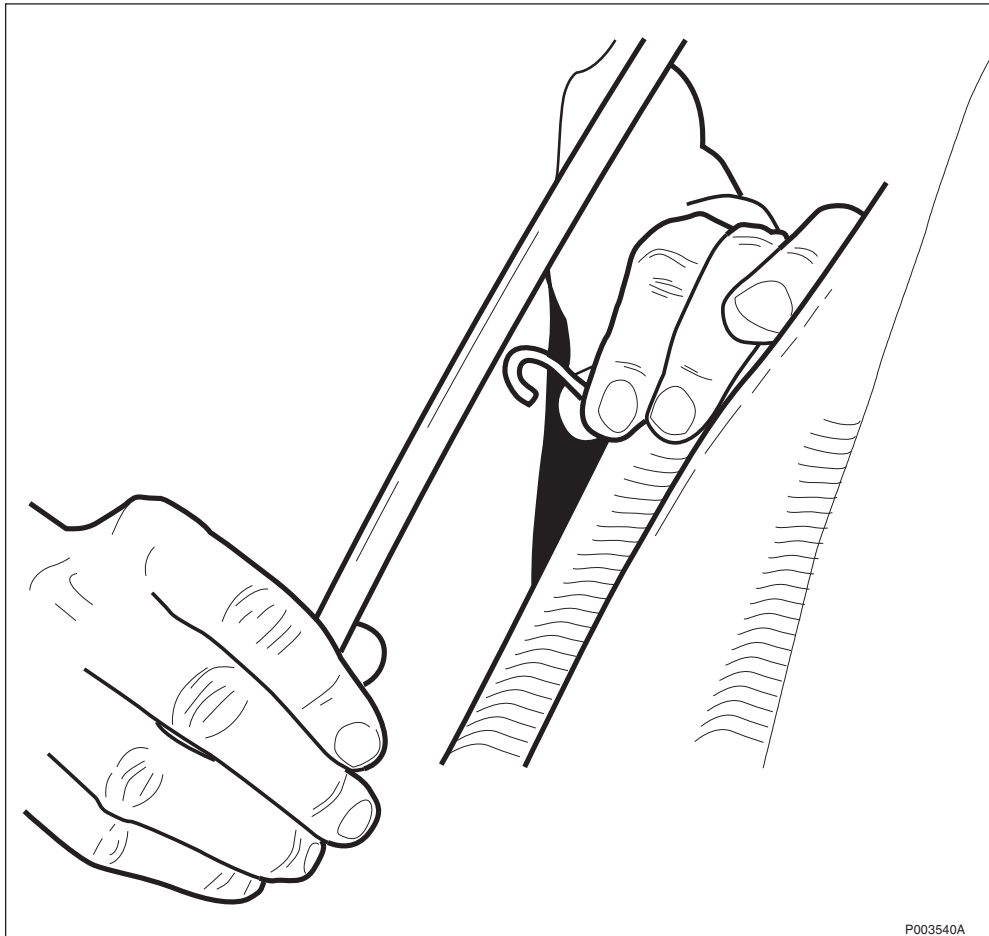


Figure 16 Hooks for the roof tent-pole

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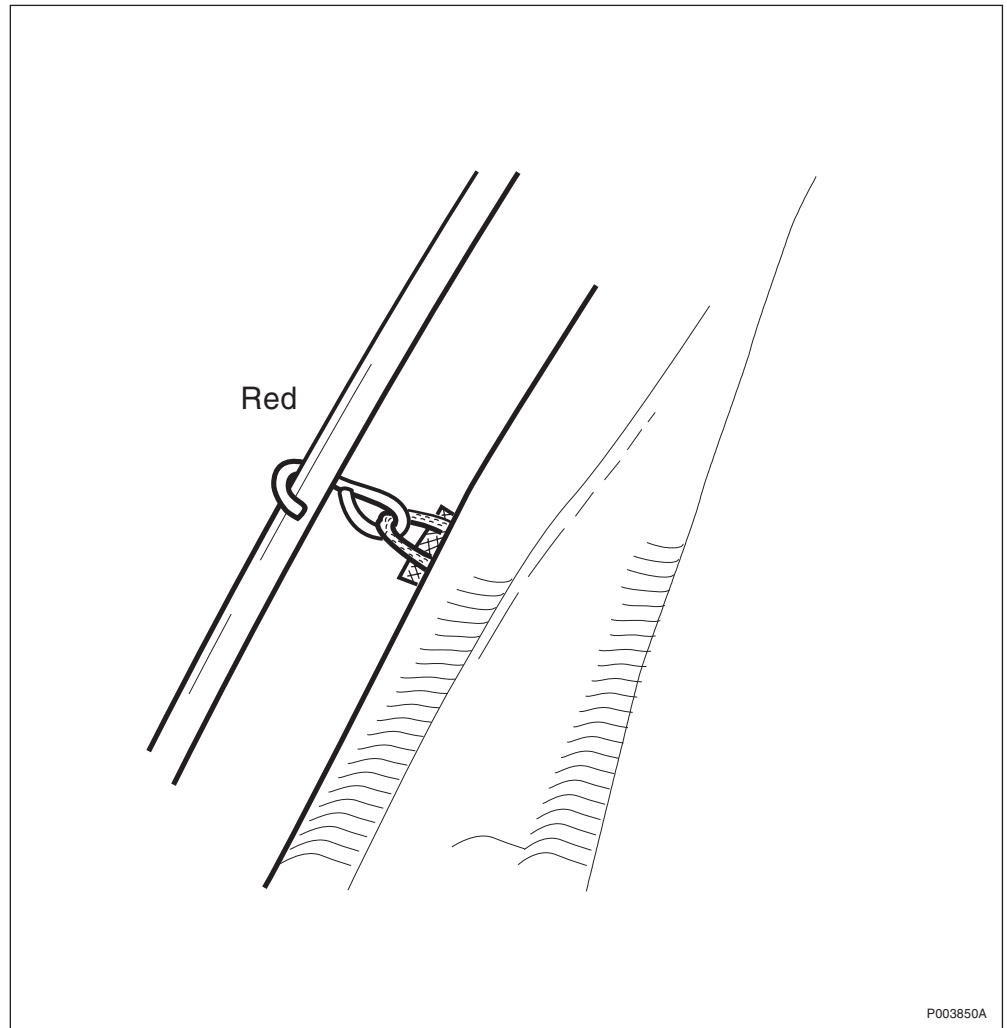


Figure 17 Hook in position

13. Stabilise the tent by supporting it with guy ropes.
During windy conditions it may be easier to erect the tent if the securing guy ropes are applied first.
14. Check the direction of the wind and apply the guy ropes accordingly.
15. Tie one of the guy ropes to one of the securing tags on the wind side of the tent.
16. Wrap the guy rope half a turn around some suitable object at some distance from the tent. Tie the other end of the guy rope to the second securing tag on the tent. This method provides guy rope adjustment possibilities when standing next to the tent.

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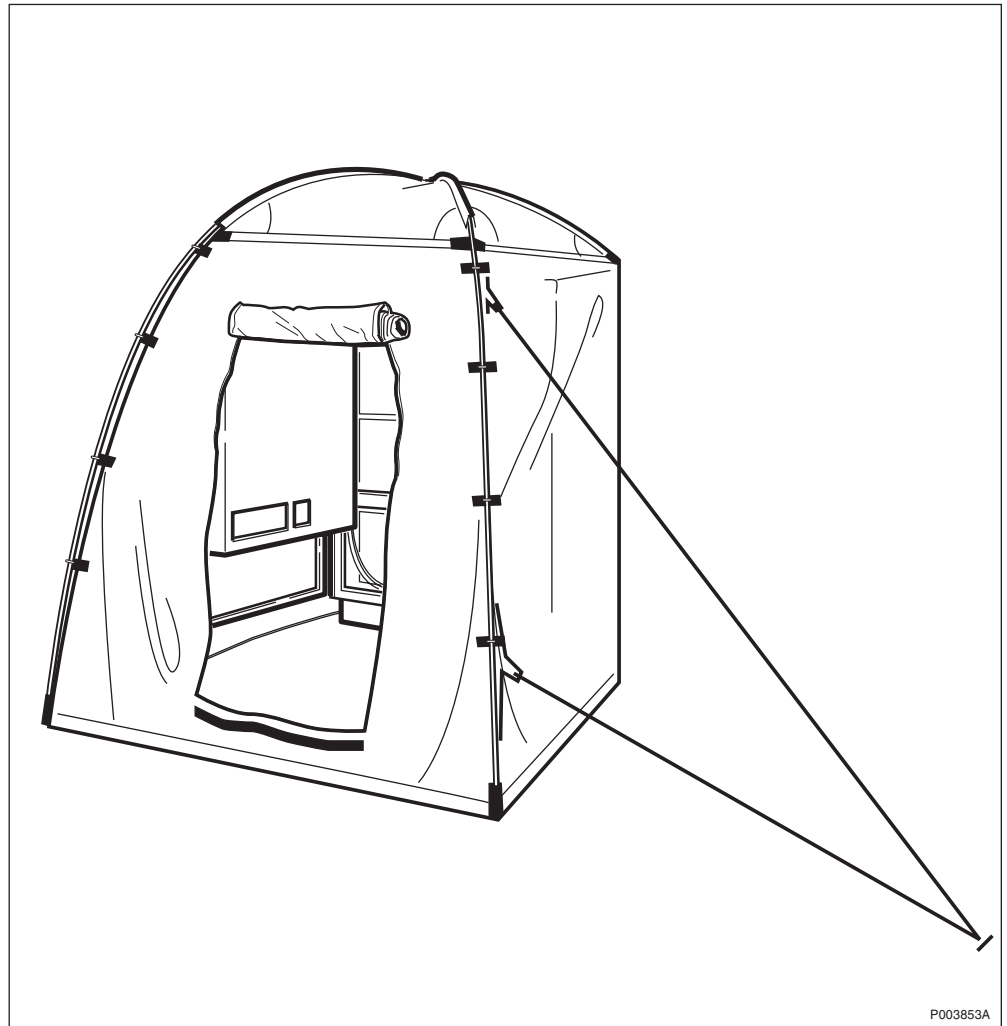


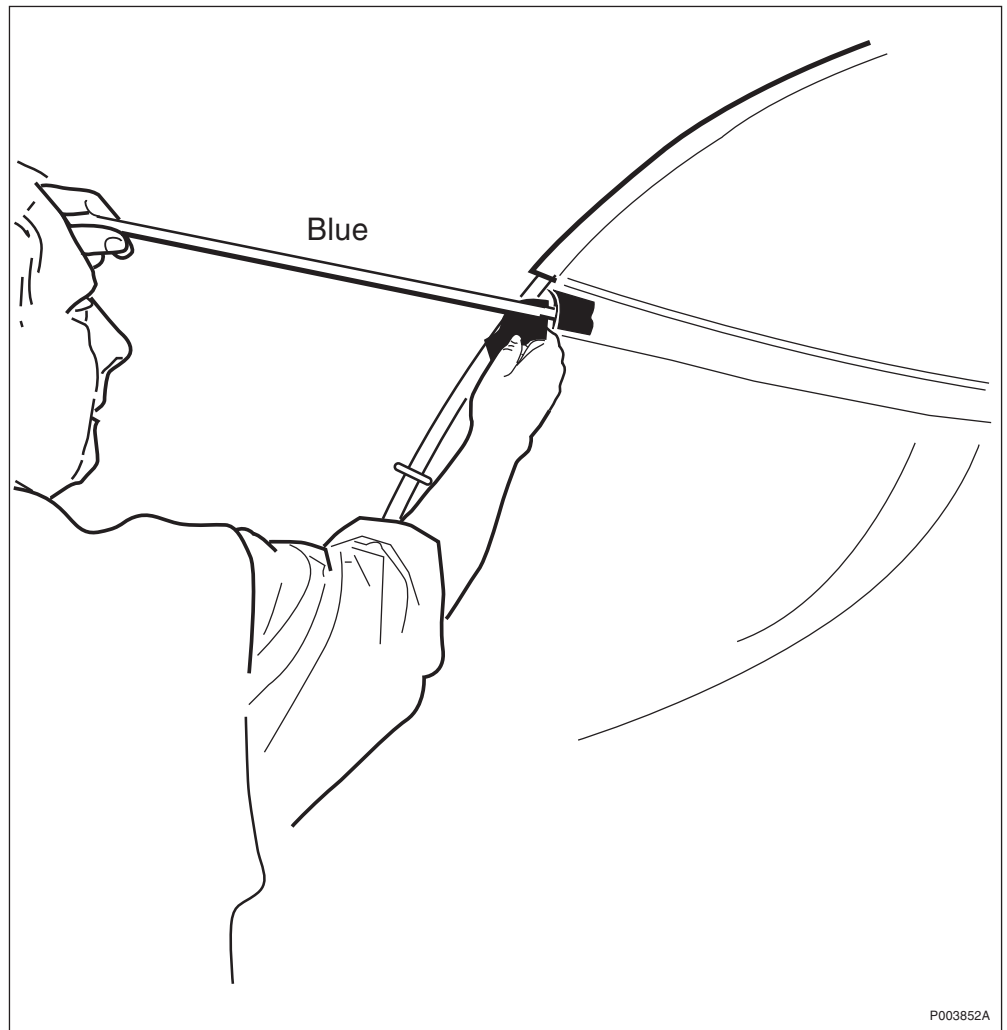
Figure 18 Tent stabilised by guy rope

17. Insert the stabilising tent-poles.

Before inserting the tent-poles for upper and the lower sides, the securing strap around the cabinet must be loosened. Loosen one strap at the time and retighten it before loosening another strap, thereby ensuring the tent will not fly away.

18. Start with the Blue/Green tent-pole.
19. Continue with the lower front Yellow/Green tent-pole.

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Figure 19 Insertion of the upper side tent-pole

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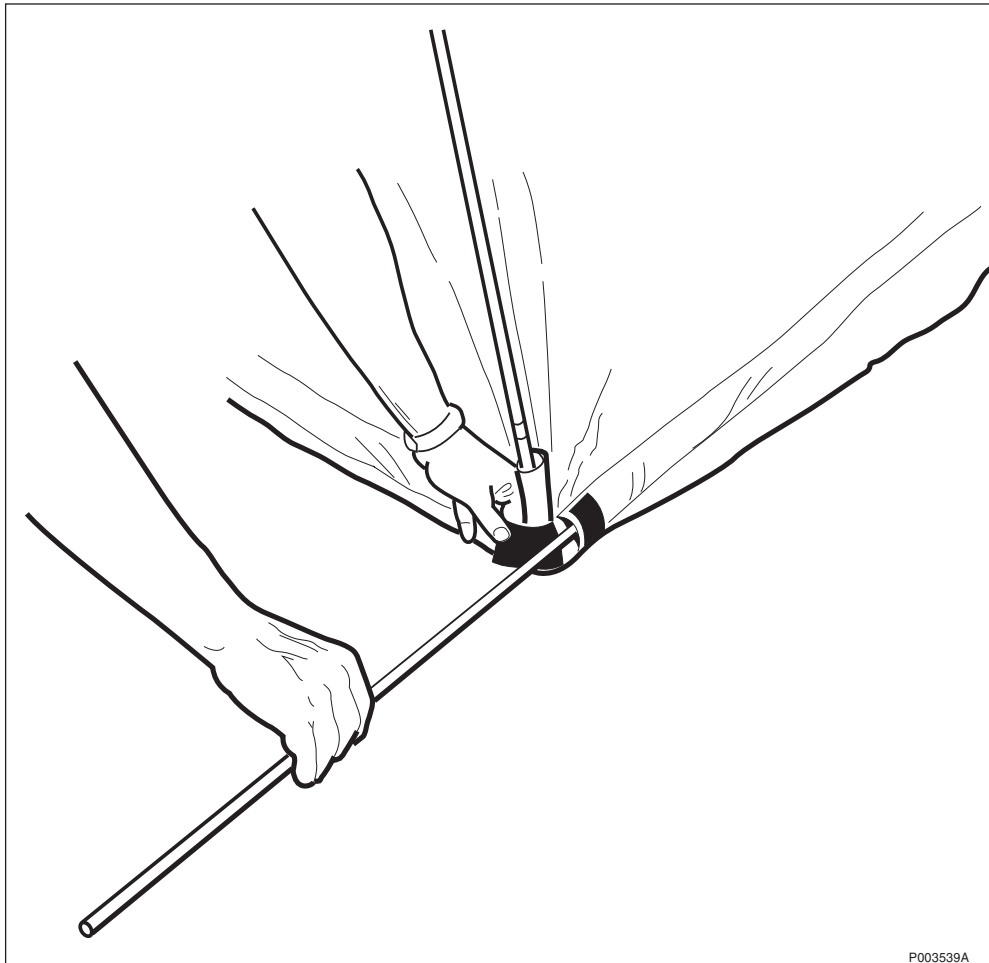


Figure 20 Insertion of the lower side tent-pole

20. When the tent-poles are inserted, if required, due to windy or other conditions, tighten the straps (inside the tent) that secure the tent to the RBS 2102.

1.4 How to Take the Tent down

1. Close the ventilation shutters for the Climate Unit Vents.

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Figure 21 Shutters for the Climate Unit vents

2. When the tent is to be taken down, slacken the securing straps inside the tent.
3. Pull out the side and front tent-poles.
4. Unhook the red tent-poles and lift the poles out of the ground shoes.
5. Use the extraction ropes and pull the red roof poles out of the conduits.
6. Stuff the tent back into the rucksack. The tent does not require folding, just push it back into the rucksack.

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- Note** Ensure that the red pulling straps are the last part to be packed. This will make it easier when erecting the tent the next time.
7. Fold all of the tent-poles and place them in the rucksack pockets.
 8. Tighten the rucksack straps as much as possible to decrease its size to ensure it can be brought up and down a hatch.

1.5 Accessories

1.5.1 Heating/Ventilation Fan LVS 150 20

See the document 1553-LVS 150 20.

1.5.2 Portable Mains Distribution Unit NCF 521 01

See the document 1553-NCF 521 01.

Uppgjord — <i>Prepared</i> SG/ERA/LRN/ZG NHg	Datum — <i>Date</i> 1999-02-05	Rev A	Dokumentnr — <i>Document no</i> 1553-LVS 150 20+ Uen
Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Directions for Use of Heating Fan LVS 150 20/02, / 05, /09

Contents		Page
1	General	2
2	Directions for Use	3

Datum — Date	Rev	Dokumentnr — Document no
1999-02-05	A	1553-LVS 150 20+ Uen

1 General

This fan is available in three configurations featuring three different heating effects:

Product number	Functional description
LVS150 20/02	Heating Fan, 2 kW, 230V AC
LVS150 20/05	Heating Fan, 5 kW, 380V AC, 3 phases
LVS150 20/09	Heating Fan, 9 kW, 380V AC, 3 phases

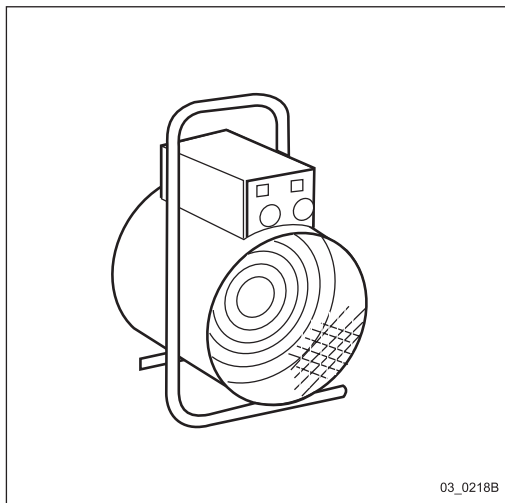


Figure 1 Heating/Ventilation Fan LVS 150 20+

Table 1 Specifications

Product number	LVS 150 20/02	LVS 150 20/05	LVS 150 20/09
Voltage	230 V, 50 Hz	380 V, 3-phase, 50 Hz	380 V, 3-phase, 50 Hz
Effect	2 kW	5 kW	9 kW
Current	9.2 A	7.6 A	13.6 A
Rotation speed	1300 rpm	1300 rpm	1300 rpm
Air flow	375 m ³ /h	1120 m ³ /h	1330 m ³ /h
Width	280 mm	370 mm	420 mm
Height	370 mm	460 mm	510 mm
Depth	225 mm	320 mm	440 mm
Weight	4.5 kg	8 kg	12.3 kg

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1999-02-05	A	1553-LVS 150 20+ Uen

2 Directions for Use

Note This fan contains a heating coil. Do not cover with or position the fan near inflammable fabric. Do not leave the operating fan unwatched for longer periods.

Each fan has two regulating knobs:

- Left knob - thermostat controlling heating effect
- Right knob - OFF/ON and combinations of fan speed and heat.

Note Cables for heating fans LVS 150 20/05 and /09 must be ordered separately.

Uppgjord — <i>Prepared</i> SG/ERA/LRN/ZG NHg	Datum — <i>Date</i> 1999-02-10	Rev A	Dokumentnr — <i>Document no</i> 1553-NCF 521 01 Uen
Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Directions for Use of Portable Mains Distribution Unit NCF 521 01

Contents		Page
1	General	2
2	Directions for Use	3

Datum — Date	Rev	Dokumentnr — Document no
1999-02-10	A	1553-NCF 521 01 Uen

1 General

This lightweight portable mains distribution unit has different mains outlets where the 16A and 10A outlets have earth fault breakers.

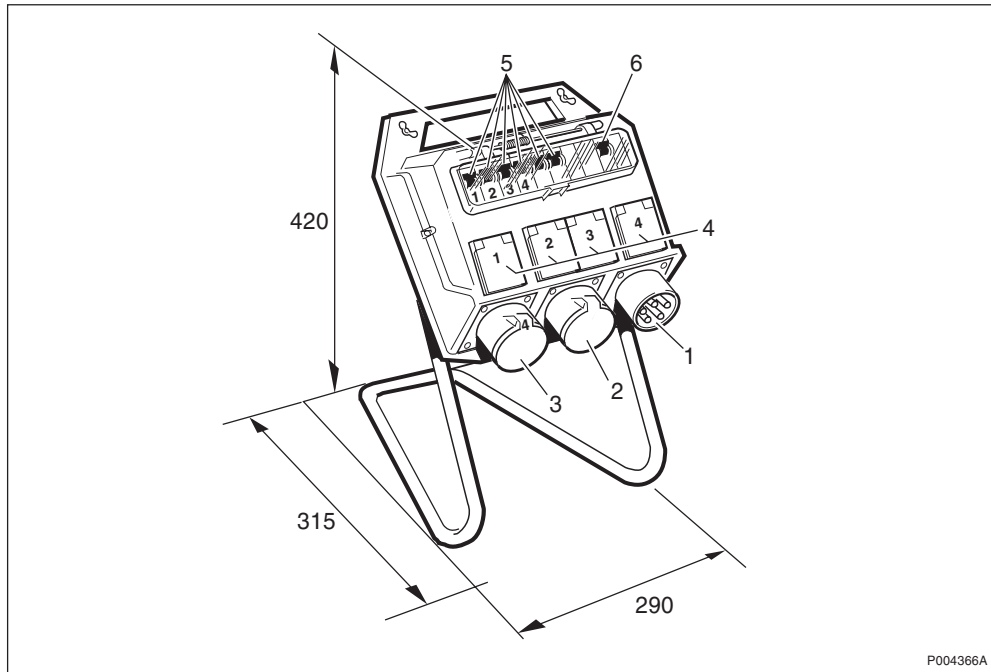


Figure 1 Mains Distribution Unit NCF 521 01

Table 1 Mains Distribution Unit NCF 521 01 details

Pos	Description	Qty
1	Inlet 32 A 3-phase	1
2	Outlet 32 A 3-phase	1
3	Outlet 16 A 3-phase	1
4	Outlets 10 A 1-phase	4
5	Earth fault breakers, marked acc. to markings on the 10A and 16A outlets	4
6	Automatic fuse	1

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1999-02-10	A	1553-NCF 521 01 Uen

2 Directions for Use

Note This unit must only be connected to an earthed outlet. The earth fault breakers included must be tested periodically.

Connect the mains distribution unit to the mains with the following cables which must be ordered separately.

Table 2 Connection Cables

Cable	Connectors
Cable 5x2.5 mm ² ; length=3m	1 pc CP 414-6 1 pc CS 416-6
Cable 5x6.0 mm ² ; length=3m	1 pc CP 432-6cs 1 pc CS 416-6

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Directions for use of Carrying Bag, RBS 2202: LYA 175 104/1

Contents		Page
1	General	2
2	Material and Characteristics	3
3	Directions for Use	3

Datum — Date	Rev	Dokumentnr — Document no
1999-02-05	B	1553-LYA 175 104/1 Uen

1 General

This carrying bag, which is produced of a very strong synthetic cloth, is intended for a safe transportation by several persons of a RBS 2202 cabinet in narrow spaces of a site, e.g. up or down the stairs.

It has 10 lifting handles (pos 1). Alternatively the 6 straps (pos 2) can be used for lifting by two bars.

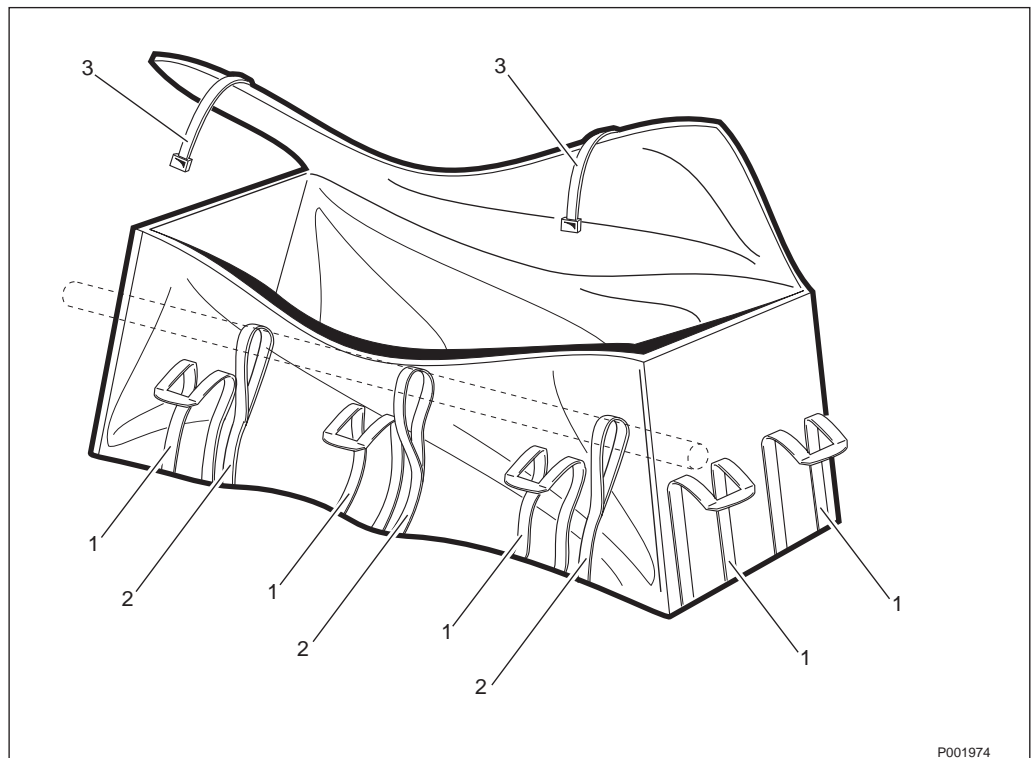


Figure 1 Carrying Bag LYA 175 104/1

Table 1

Pos	Description	Qty
1	Lifting handles	10
2	Straps for lifting bars	6
3	Clasping belts	2


Datum — Date	Rev	Dokumentnr — Document no
1999-02-05	B	1553-LYA 175 104/1 Uen

2 Material and Characteristics

Table 2

Fabric	40% Polyamide, 60% PVC
Area weight	450 g/m ²
Thickness	0.50 - 0.55 mm
Tensile strength	2500 N (lengthwise) 2400 N (crosswise)
Tear strength	400 N (lengthwise) 400 N (crosswise)
Colour code	243
Fastener	Velcro
Belt	Polypropylene, width 30 mm Tensile strength: 10500 N
Belt lock	30 mm, max. load 2500 N
Bottom plate	400 x 600 mm, plywood 12 mm

3 Directions for Use

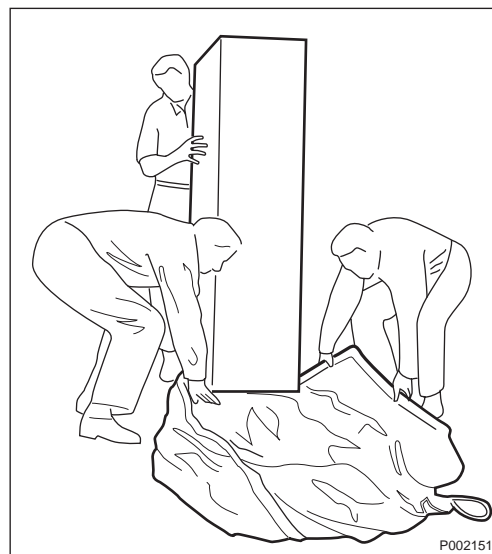
<p>WARNING</p>  <p>Read the Safety chapter regarding handling of heavy goods.</p>

Note Observe that there are enough persons to carry the cabinet. A fully equipped cabinet weighs about 200 kg.

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1.

Lean the cabinet from a standing position so that it is possible to push in the stiff gable of the carrying bag under the bottom of the cabinet.

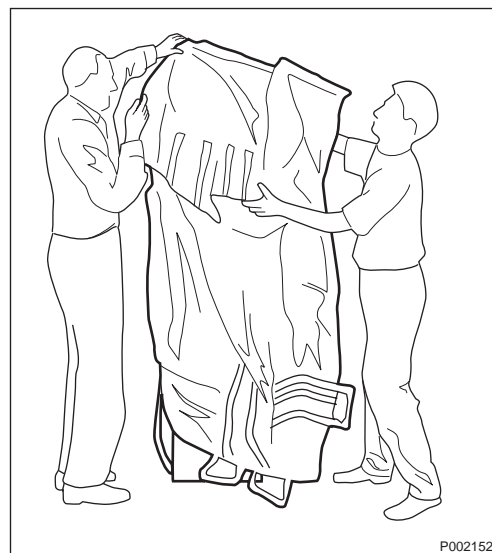


2.

Raise the cabinet again to a standing position.

3.

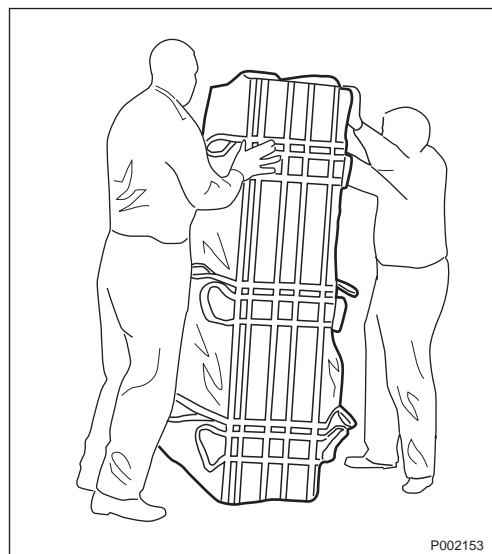
Put the carrying bag over the cabinet.



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4.

Wrap the carrying bag and its lid around the cabinet locking the Velcro sealing. Pull up and lock the two clasping belts.



5.

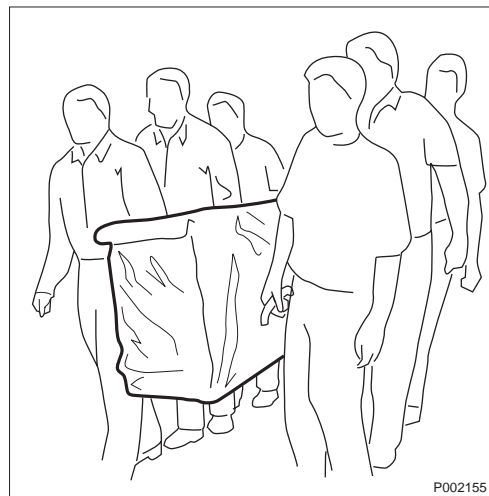
Lay down the cabinet cautiously on its longside with the carrying bag bottom against the floor.



Datum — Date	Rev	Dokumentnr — Document no
1999-02-05	B	1553-LYA 175 104/1 Uen

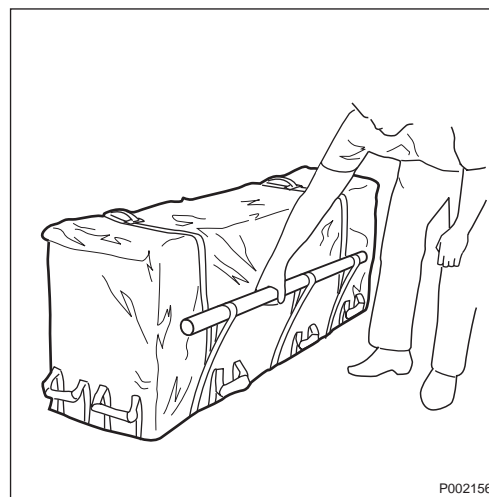
6.

Grip the lifting handles (pos 1) and carry the cabinet away.



7.

An alternative way to carry the cabinet is to put a bar of adequate strength and diameter through the straps (pos 2).



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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Directions for use of Carrying Bag, RBS 899M: LYA 175 106/1

Contents		Page
1	General	2
2	Material and Characteristics	2
3	Directions for Use	3

Datum — Date	Rev	Dokumentnr — Document no
1999-02-09	A	1553-LYA 175 106/1 Uen

1 General

This carrying bag, which is produced of a very strong synthetic cloth, is intended for a safe transportation by several persons of a RBS 889M cabinet in narrow spaces of a site, for example up or down the stairs.

It has 12 lifting handles (pos 1). Alternatively the 4 straps (pos 2) can be used for lifting by two bars.

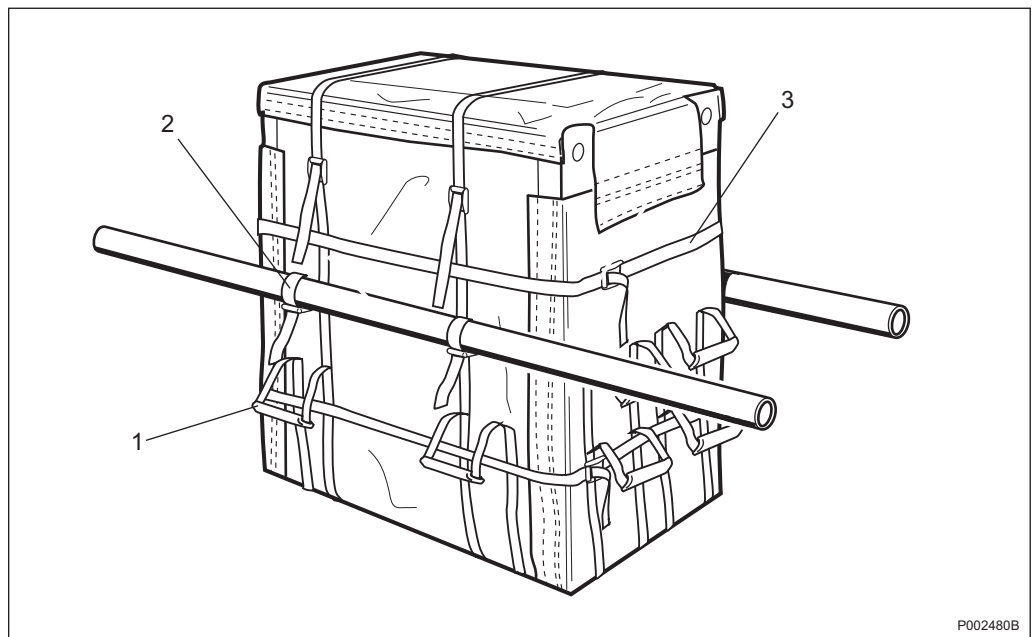


Figure 1 Carrying Bag LYA 175 106/1

Table 1

Pos	Description	Qty
1	Lifting handles	12
2	Straps for lifting barss	4
3	Claspings belts	2

2 Material and Characteristics

Table 2


Fabric	40% Polyamide, 60% PVC
Area weight	450 g/m ²
Thickness	0.50 - 0.55 mm

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Tensile strength	2500 N (lengthwise) 2400 N (crosswise)
Tear strength	400 N (lengthwise) 400 N (crosswise)
Colour code	243
Fastener	Velcro
Belt	Polypropylene, width 30 mm Tensile strength: 10500 N
Belt lock	30 mm, max. load 2500 N
Bottom plate	460 x 740 mm, plywood 12 mm

3 Directions for Use

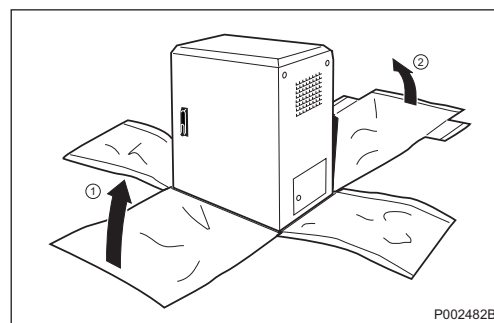
WARNING



Read the Safety chapter regarding handling of heavy goods.

Note Observe that there are enough persons to carry the cabinet. A fully equipped cabinet weighs about 105 kg.

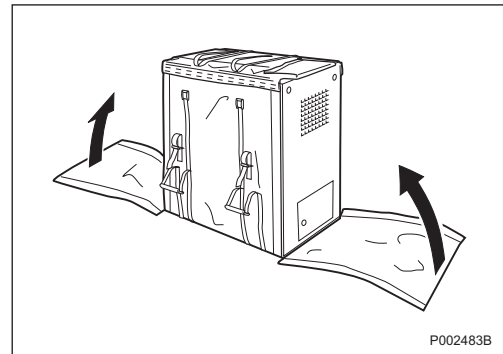
- Put one of the long sides under the leading stool and then push or lift the cabinet so it is positioned on the stiff gable of the carrying bag. Wrap the carrying bag and its lid around the cabinet.



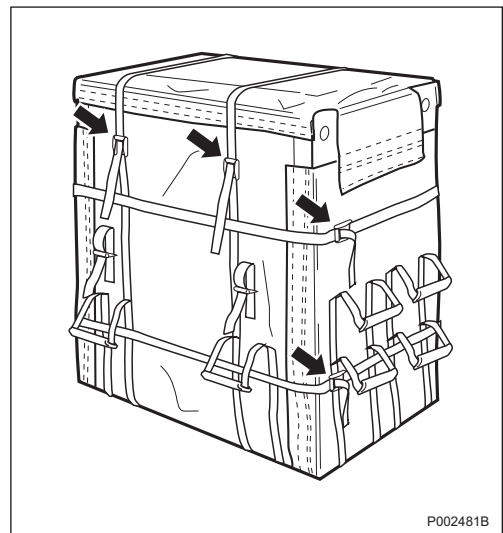
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Datum — Date	Rev	Dokumentnr — Document no
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2.
Lock the Velcro sealing.



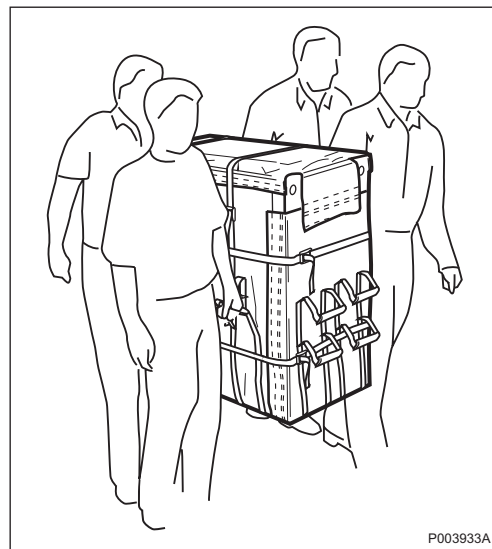
3.
Lock the four clasping belts.



Datum — Date	Rev	Dokumentnr — Document no
1999-02-09	A	1553-LYA 175 106/1 Uen

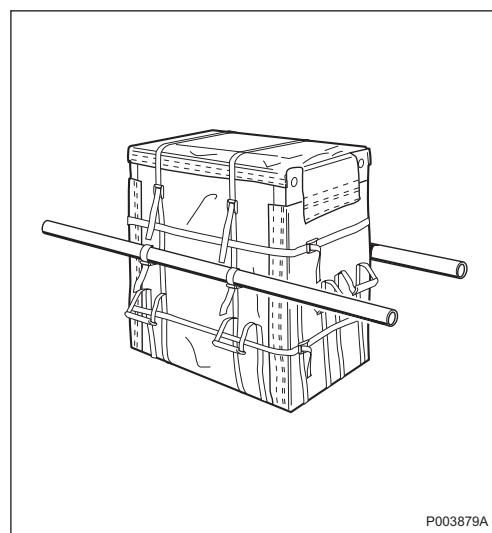
4.

Grip the lifting handles and carry the cabinet away.



5.

An alternative way to carry the cabinet is to put a bar of adequate strength and diameter through the straps.



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SG/ERA/LRN/ZG Monika Ågren 850 467 24	1999-09-30	B	1553-LYB 921 22+ Uen
Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

Directions for Use of Personal Safety, Rescue and Lifting Equipment Set for Working at Heights LYB 921 22/2–4

Contents		Page
1	General	2

Datum — Date	Rev	Dokumentnr — Document no
1999-09-30	B	1553-LYB 921 22+ Uen

1 General

These instructions apply for the Personal Safety Equipment Set for Working at Heights specified in the Product List 131 22–LYB 921 22+ Uen.

WARNING



Some working areas involve the risk of accidents caused by falling objects.

For example, when working on a mast, tower or a roof, the following precautions must be taken:

- Personnel working at heights must have the appropriate training and medical certificate.
- Full body safety harness and safety helmet must be used.
- Adequate protective clothing is essential in cold weather.
- All lifting devices must be tested and approved.
- During work on a mast, all personnel in the area must wear helmets.

Note This document is under reconstruction, due to new equipment.

To get further climbing instructions: Order the video “the Climbers”. It shows Ericssons method of climbing for work at height – on towers, roofs and walls.



the Climbers

KTE 110/02

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SG/ERA/LRN/ZG Monika Ågren 850 467 24	1999-09-30	E	5/001 52-LZN 302 49 Uen
Godkänd — Approved	Kontr — Checked		Tillhör/referens — File/reference
ERA/LRN/ZGC (Leif-Olof Fager)			

1 Earthing and Lightning Protection Installation Instructions

Table 1

Sub-sect.	Installation Instructions	Product name/number	Notes
1	1531-FCM 103 413/2 Uen	Install. activity FCM 103 413/2	earthing and lightning protection
2	1531-9/NTM 201 230/2 Uen	Earthing Bar (rod) 9/NTM 201 230/2	earthing of site, outdoor
3	1531-9/NTM 201 230/1 Uen	Earthing Sets 9/NTM 201 230/1	earthing of site, outdoor with 40 m 35 mm ² conn. cable
	131 22-9/NTM 201 230/4 Uen	9/NTM 201 230/4	ring earth electrode : 50 m 50 mm ² conn. cable
	1531-NGT 211 04+ Uen	NGT 211 04/1 NGT 211 04/2 NGT 211 04/3 NGT 211 04/4 NGT 211 04/5	earthing of feeder outdoor for Kabelmetall LCF: 7/8" 1/2" 3/8" 1 1/4" 1 5/8"

Datum — <i>Date</i>	Rev	Dokumentnr — <i>Document no</i>
1999-09-30	E	5/001 52-LZN 302 49 Uen

Sub-sect.	Installation Instructions	Product name/ number	Notes
	1531 - NTM 201 219+ Uen	NTM 201 219/1	earthing of feeder, indoor set with: 2 m 25 mm ² conn. cable
		NTM 201 219/2	2 m 16 mm ² conn. cable
	1531-4/NTM 201 201+ Uen	4/NTM 201 201	earthing of site, indoor set with: 40 m 35 mm ² cable. Earth bar NGT 210 01/10 included
		4/NTM 201 201/2	25 m 35 mm ² cable. Earth bar NGT 210 01/10 included

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SG/ERA/LRN/ZG NHg		1999-09-30	F	1531-FCM 103 413/2 Uen
Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>	Tillhör/referens — <i>File/reference</i>		
ERA/LRN/ZGC (Leif-Olof Fager)				

Installation of Earthing and Lightning Protection Material

Contents		Page
1	Safety Precautions	2
2	Site Building Installation Example	3
2.1	Earthing of Antennas	3
2.2	Earthing of Feeders	4
2.3	Ring Earth Electrode	4
2.4	Ground Site Installation: Earthing Sets, Overview	7
3	Outdoor Cabinet Installation Example	8
3.1	Earthing of Antennas	8
3.2	Earthing of Feeders	8
3.3	Ring Earth Electrode	9
3.4	Roof Site Installation: Earthing Sets, Overview	11
4	Earthing Sets, Details	12

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1999-09-30	F	1531-FCM 103 413/2 Uen

1 Safety Precautions

DANGER



Avoid working on electrical installations or towers/masts during thunderstorms.

DANGER



Improper electrical installation may cause fire or electrical shock. Approved circuit breakers for the AC mains and the cables' cross sectional areas must always be selected in accordance with local laws and regulations. Only a qualified and authorized electrician is permitted to install or modify the electrical installation.

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1999-09-30	F	1531-FCM 103 413/2 Uen

2 Site Building Installation Example

Note Please observe that the earth connection in this document must under no circumstances be regarded as protective earth. This earth connection is used only for lightning protection and EMC. Protective earth has to be installed as prescribed in the local electrical regulations.

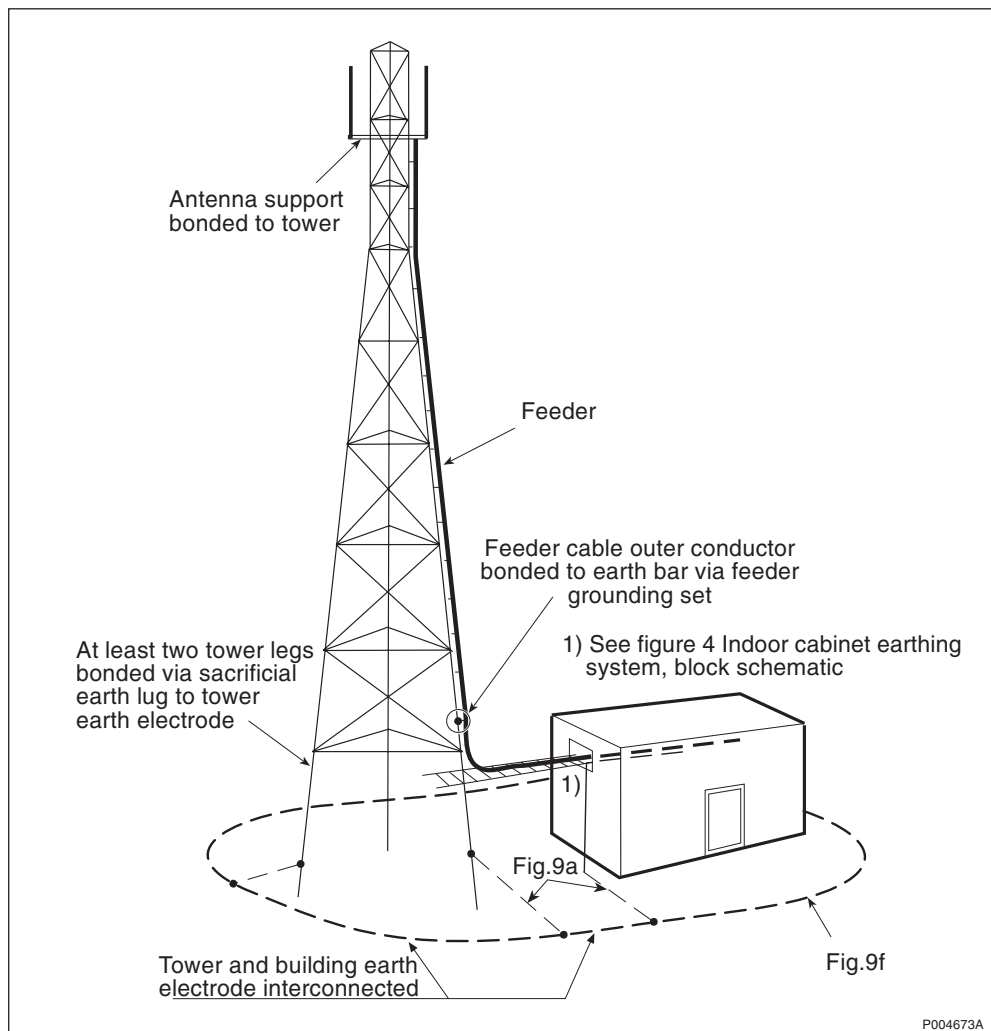


Figure 1 Earth electrode system connecting antennas, tower and site building

2.1 Earthing of Antennas

1. Earth the antenna(s) with at least 16 mm^2 copper wire if the antenna(s) are not earthed via the antenna support(s). At least 2 mast/tower legs shall be connected to earth.

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1999-09-30	F	1531-FCM 103 413/2 Uen

2.2 Earthing of Feeders

1. Bond the feeder outer conductor to the tower or earth electrode via the Outdoor Earthing Set NGT 211 04/1, NGT 211 03/2, SXA 105 3093 or NGT 211 03/4 before the feeder(s) leaves the mast/tower. See the following corresponding Installation Instruction 1531-.
2. Collect all incoming metallic cables (mains supply and feeder cables) on the same wall and close to the feeder cable lead-ins.

If the cables enter the site building from opposite directions, surge currents may pass through the entire site building.

2.3 Ring Earth Electrode

2.3.1 On ground

1. Lay an earth electrode with a 50 mm² copper wire ≥ 0.5 m deep around the site (mast/tower included), see figure 2 and connect to at least 2 mast/tower legs so that 2 paths to earth are always achieved.

WARNING



The ring earth electrode shall be laid at least 1 m outside all metallic objects.

Datum — Date	Rev	Dokumentnr — Document no
1999-09-30	F	1531-FCM 103 413/2 Uen

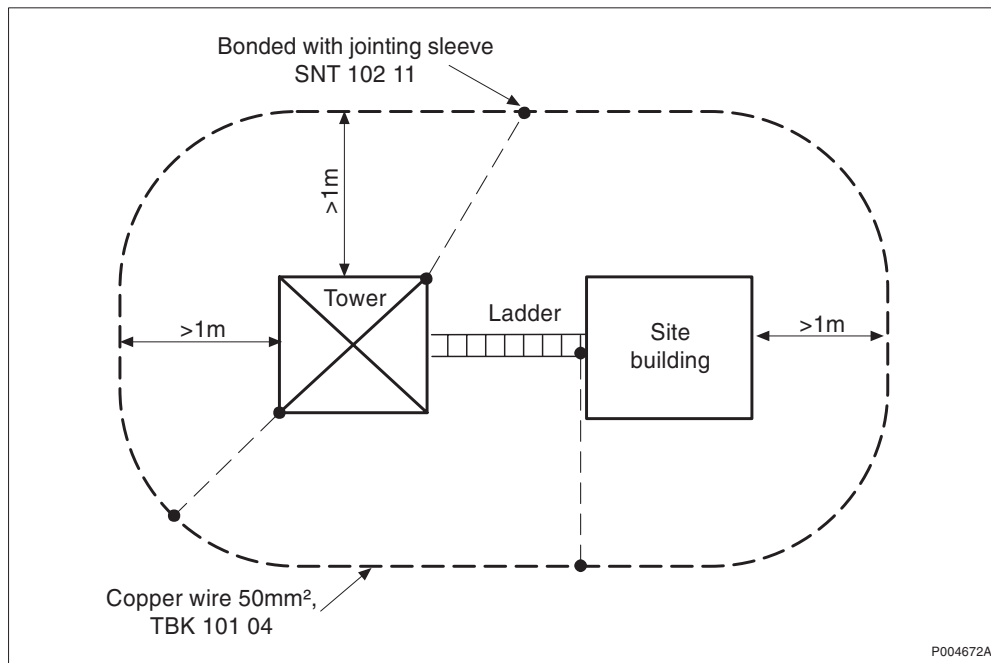


Figure 2 Typical ring earth electrode system on ground

2.3.2 On roof

1. Connect at least 16 mm² copper wires to the existing lightning protection system and to at least 2 mast/tower legs so that 2 paths to earth are always achieved.

Datum — Date	Rev	Dokumentnr — Document no
1999-09-30	F	1531-FCM 103 413/2 Uen

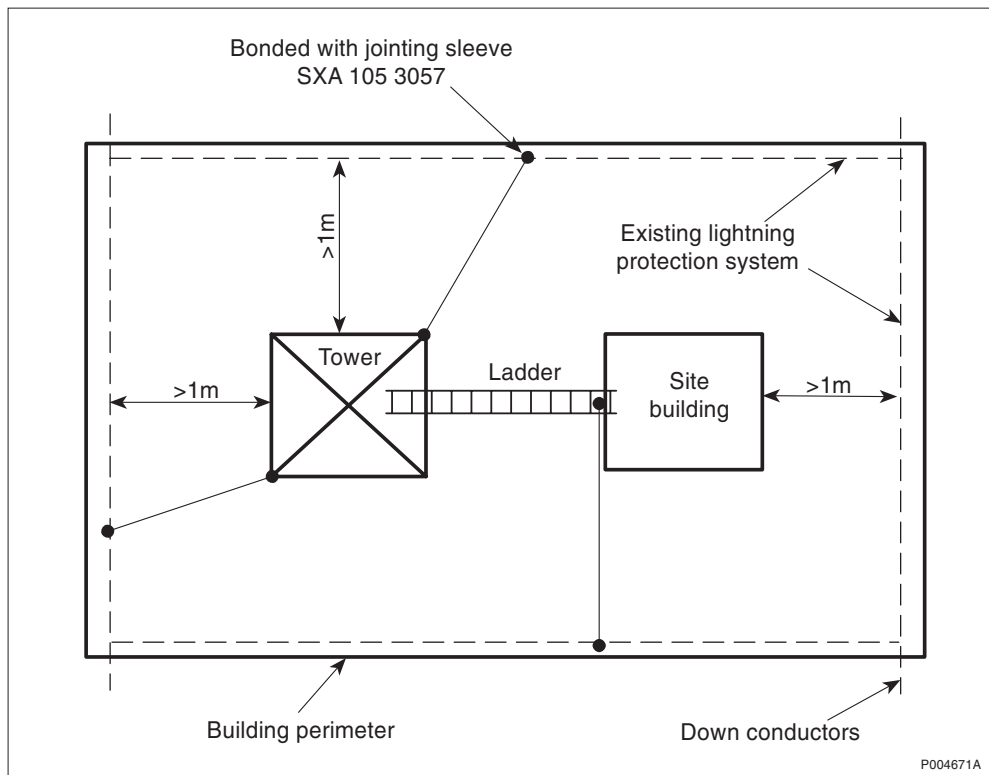


Figure 3 Typical ring earth electrode system on roof

Datum — Date	Rev	Dokumentnr — Document no
1999-09-30	F	1531-FCM 103 413/2 Uen

2.4 Ground Site Installation: Earthing Sets, Overview

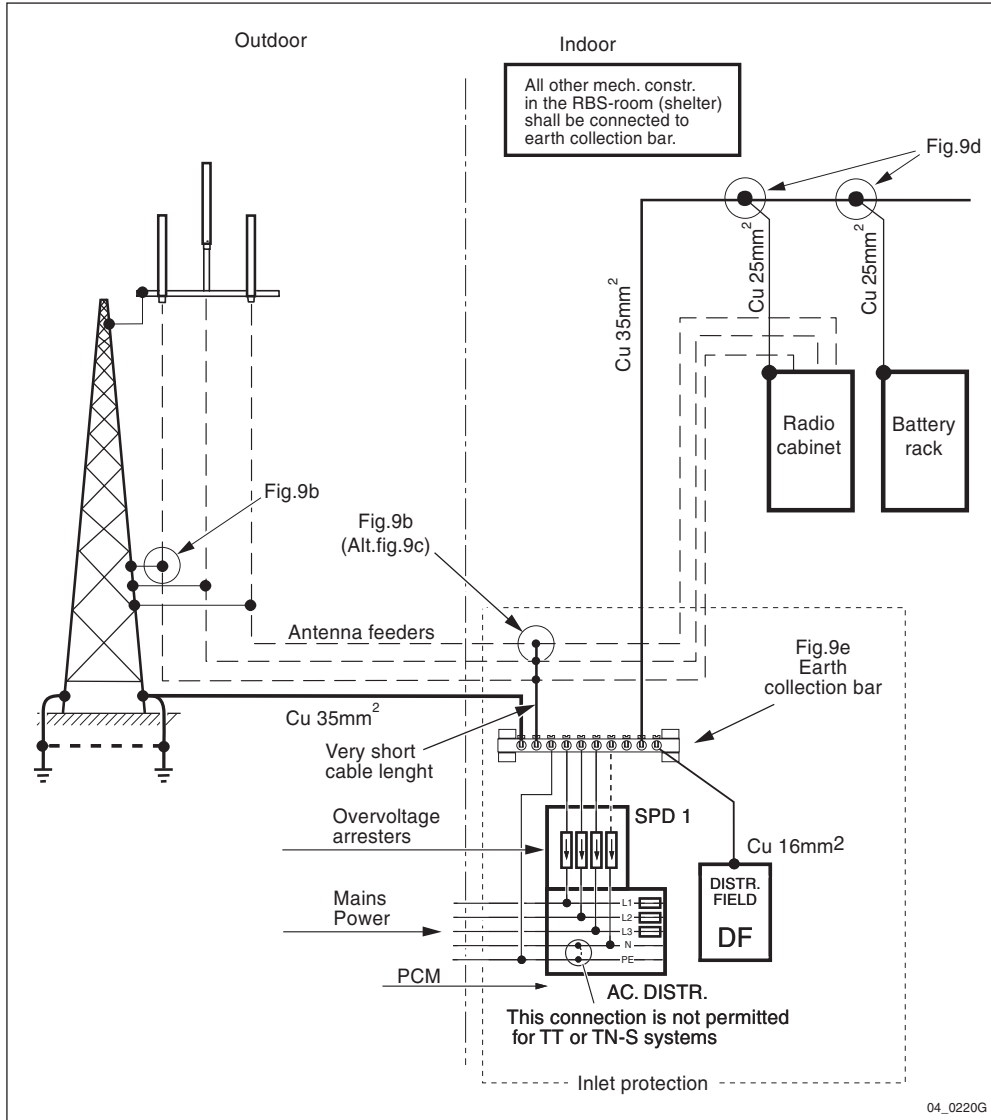


Figure 4 Indoor cabinet earthing system, block schematic

Datum — Date	Rev	Dokumentnr — Document no
1999-09-30	F	1531-FCM 103 413/2 Uen

3 Outdoor Cabinet Installation Example

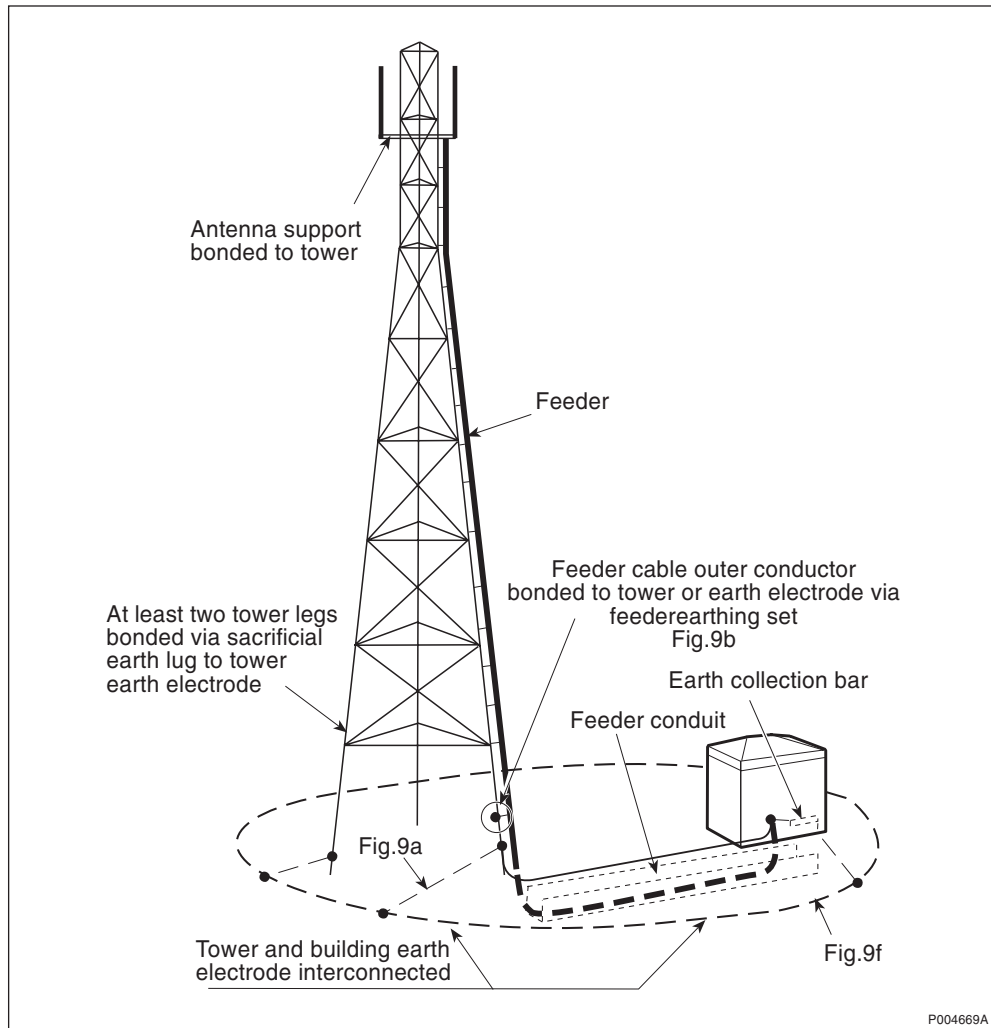


Figure 5 Earth electrode system connecting antennas, tower and outdoor cabinet

3.1 Earthing of Antennas

1. Earth the antenna(s) with at least 16 mm² copper wire if the antenna(s) are not earthed via the antenna support(s).

3.2 Earthing of Feeders

1. Bond the feeder outer conductor to the tower or earth electrode via the Outdoor Earthing Set NGT 211 04/1, NGT 211 03/2, SXA 105 3093 or NGT 211 03/4 before the feeder(s) leaves the mast/tower. See the following corresponding Installation Instructions.

Datum — Date	Rev	Dokumentnr — Document no
1999-09-30	F	1531-FCM 103 413/2 Uen

3.3 Ring Earth Electrode

3.3.1 On ground

1. Lay an earth electrode with a 50 mm² copper wire ≥ 0.5 m deep around the site (mast/tower included), see figure 6 and connect to at least 2 mast/tower legs so that 2 paths to earth are always achieved.

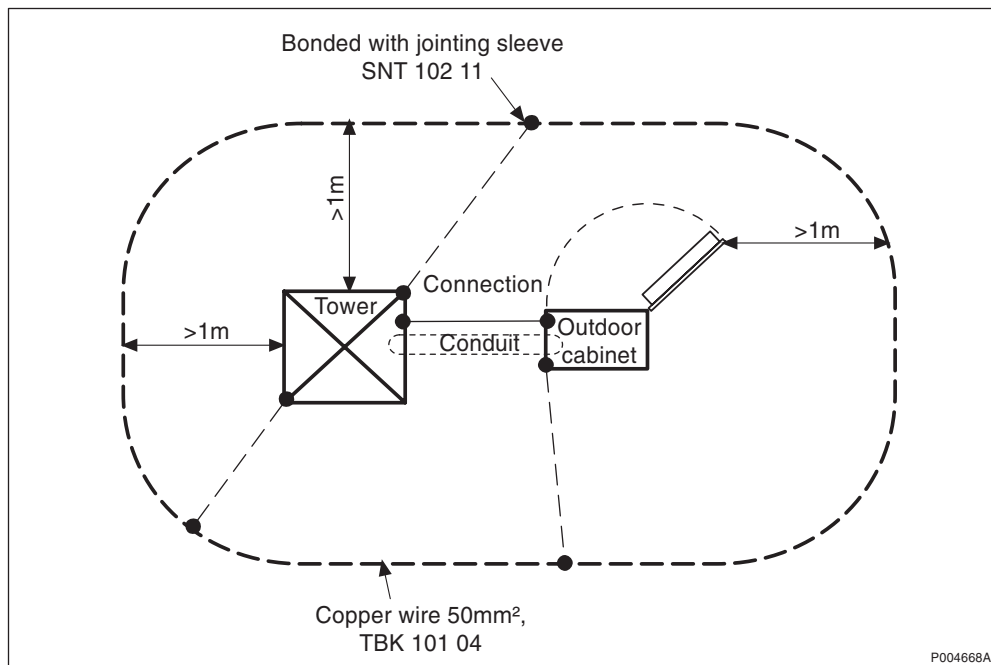
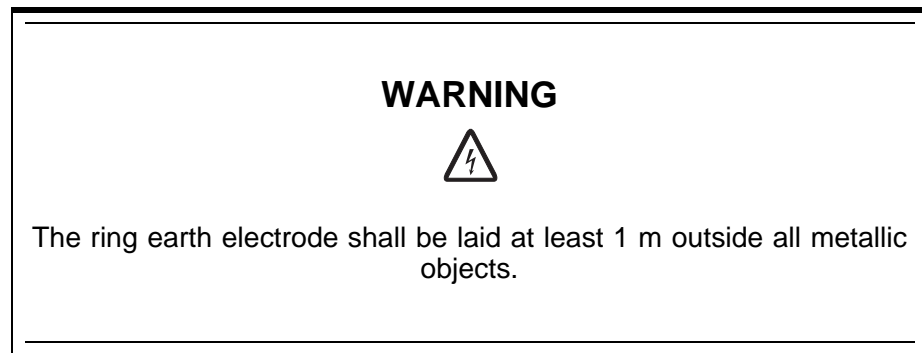


Figure 6 Typical ring earth electrode system on ground

3.3.2 On roof

1. Connect at least 16 mm² copper wires to the existing lightning protection system and to at least 2 mast/tower legs so that 2 paths to earth are always achieved.

Datum — Date	Rev	Dokumentnr — Document no
1999-09-30	F	1531-FCM 103 413/2 Uen

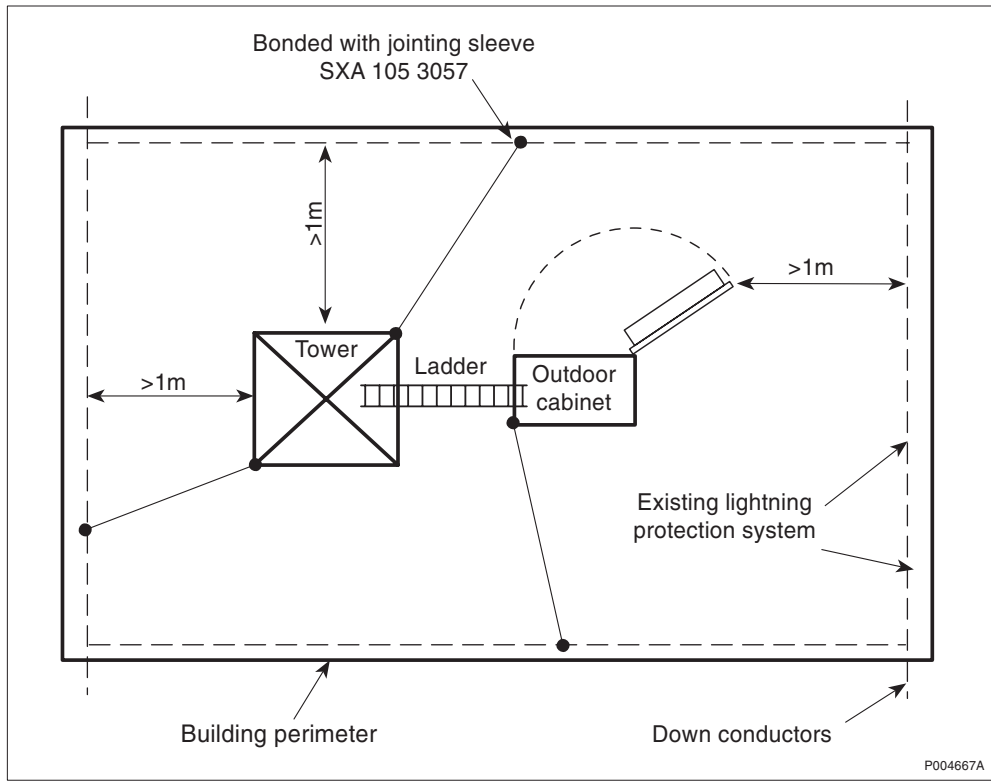


Figure 7 Typical ring earth electrode system on roof

Datum — Date	Rev	Dokumentnr — Document no
1999-09-30	F	1531-FCM 103 413/2 Uen

3.4 Roof Site Installation: Earthing Sets, Overview

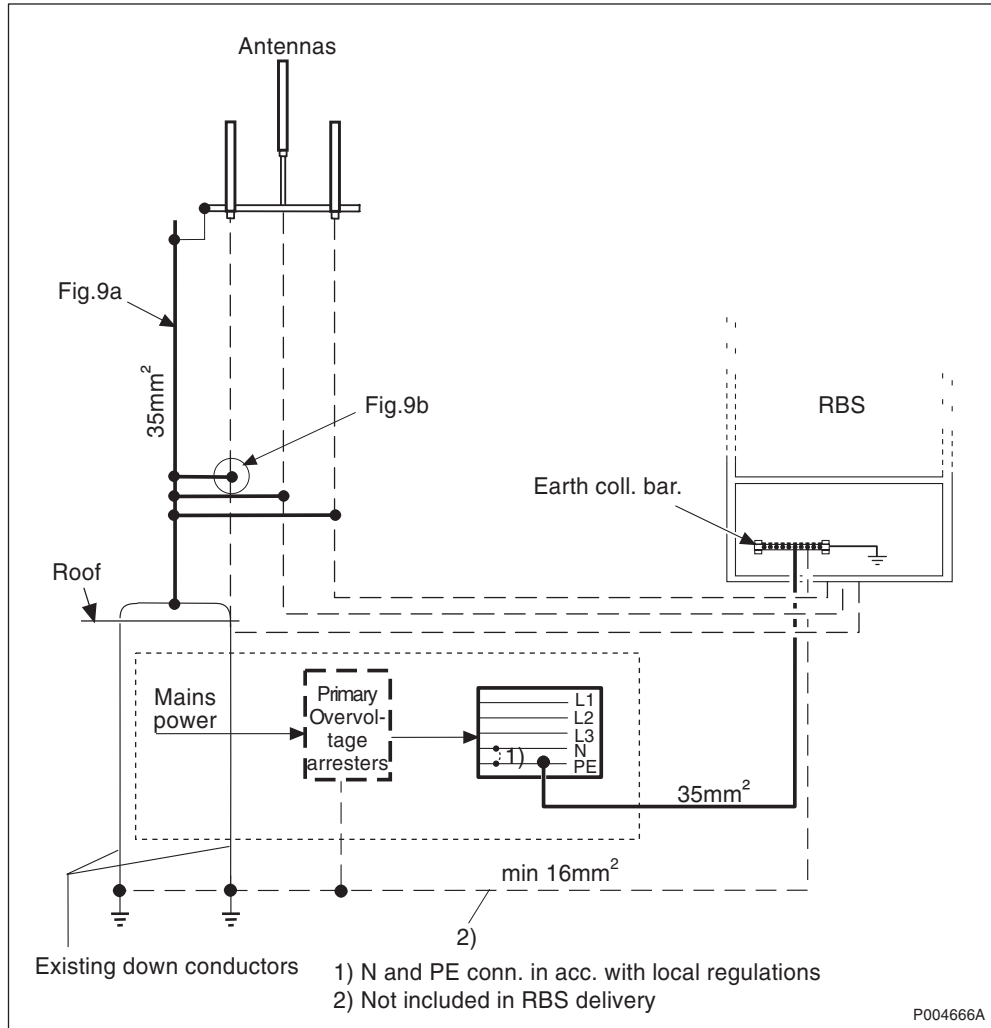
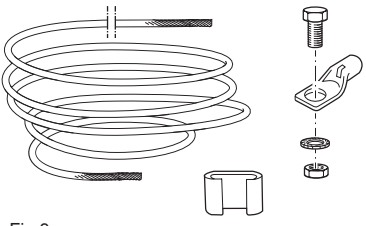
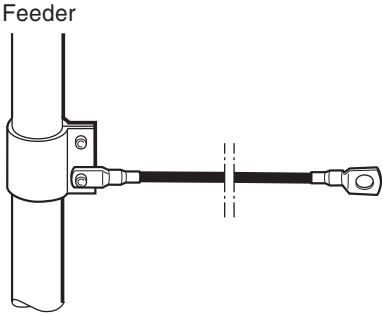


Figure 8 Outdoor cabinet earthing system, block schematic

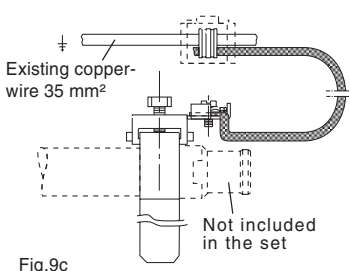
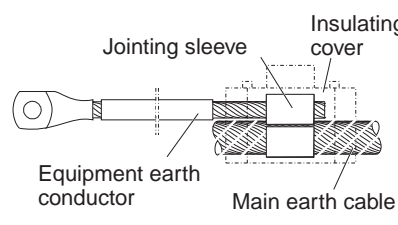
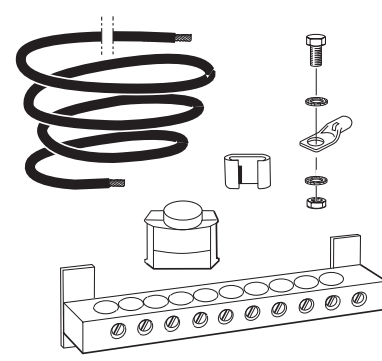
Datum — Date	Rev	Dokumentnr — Document no
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4 Earthing Sets, Details

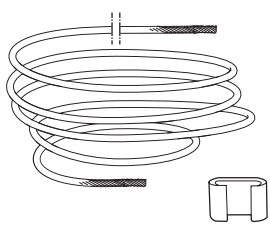
Table 1

Figure	Name and Function	Product number	See Document number
 <p>Fig.9a</p> <p>P004407A</p>	Outdoor Earthing Set	9/NTM 201 230/1 with 40 m 35 mm ² conn. cable	Installation Instructions: 1531-9/NTM 201 230/1 Uen and 1531-9/NTM 201 230/2 See also in Section 4: Directions for Use of Tools: 1553-LTT 601 86
 <p>Feeder</p> <p>Fig.9b</p> <p>P004523A</p>	Outdoor Earthing Sets for: 1/2", 3/8", 7/8", 1 1/4" and 1 5/8" feeders	NGT 211 04+	Installation Instruction: 1531-NGT 211 04+ Uen

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Figure	Name and Function	Product number	See Document number
 <p>Existing copper-wire 35 mm²</p> <p>Not included in the set</p> <p>Fig.9c</p> <p>P004409A</p>	<p>Indoor Earthing Set for 1/2", 7/8" and 1 5/8" feeder</p>	<p>NTM 201 219/1 with 2 m 25 mm² conn. cable</p> <p>NTM 201 219/2 with 2 m 16 mm² conn. cable</p>	<p>Installation Instruction:</p> <p>1531-NTM 201 219+ Uen</p> <p>See also in Section 4: Directions for Use of Tools:</p> <p>1553-LTT 601 86</p>
 <p>Jointing sleeve</p> <p>Insulating cover</p> <p>Equipment earth conductor</p> <p>Main earth cable</p> <p>Fig.9d</p> <p>12_0220A</p>	<p>Indoor Cabinet Earthing Set</p>	<p>5/NTM 201 201 with 2 m 25 mm² cable</p> <p>NTM 201 244/1 with 5 m 25 mm² cable</p>	<p>See also in Section 4: Directions for Use of Tools:</p> <p>1553-LTT 601 86</p>
 <p>Fig.9e</p> <p>13_0220A</p>	<p>Indoor Earthing Set</p>	<p>4/NTM 201 201 with 40 m 35 mm² conn. cable</p> <p>4/NTM 201 201/2 with 25 m 35 mm² conn. cable</p>	<p>Installation Instruction:</p> <p>1531-4/NTM 201 201+ Uen</p> <p>See also in Section 4: Directions for Use of Tools:</p> <p>1553-LTT 601 86</p>

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Figure	Name and Function	Product number	See Document number
 <p data-bbox="252 761 319 795">Fig. 9f</p> <p data-bbox="542 851 606 873">P004410A</p>	<p data-bbox="638 436 821 492">Outdoor Earthing Set</p>	<p data-bbox="845 436 1133 481">9/NTM 201 230/4 with 50 m 50 mm² conn. cable</p>	<p data-bbox="1157 436 1508 492">Product List: 131 22-9/NTM 201 230/4</p>

Uppgjord — <i>Prepared</i> SG/ERA/LRN/ZG NHg	Datum — <i>Date</i> 1999-02-11	Rev D	Dokumentnr — <i>Document no</i> 1531-9/NTM 201 230/2 Uen
Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Earthing Bar (Rod) 9/NTM 201 230/2

Contents		Page
1	General	2
2	Installation	2

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1 General

The tower often has an earth connection plinth near the tower leg.

Therefore check the Site Preparation Documentation to ascertain the responsibility for earth rod installation.

2 Installation

1.

Assemble the Earthing Bar (rod) 9/NTM 201 230/2 according to figure 1.

2.

Install the earthing bar outside the space to be protected at a depth of at least 0.5 m.

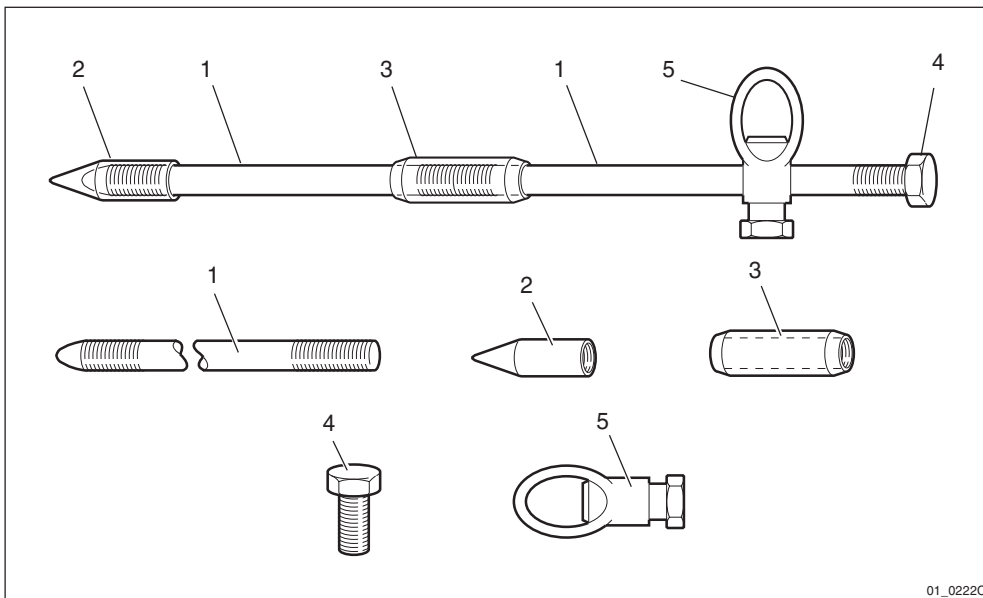


Figure 1 Earthing Bar 9/NTM 201 230/2

Datum — Date	Rev	Dokumentnr — Document no
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Table 1 Earthing Bar 9/NTM 201 230/2 details

Pos	PRIM title	Qty
1	Bar (rod l=1500; 5/8")	2
2	Tip	1
3	Jointing Box	1
4	Impact Cap	1
5	Terminal Clip (50 mm)	1

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leig-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

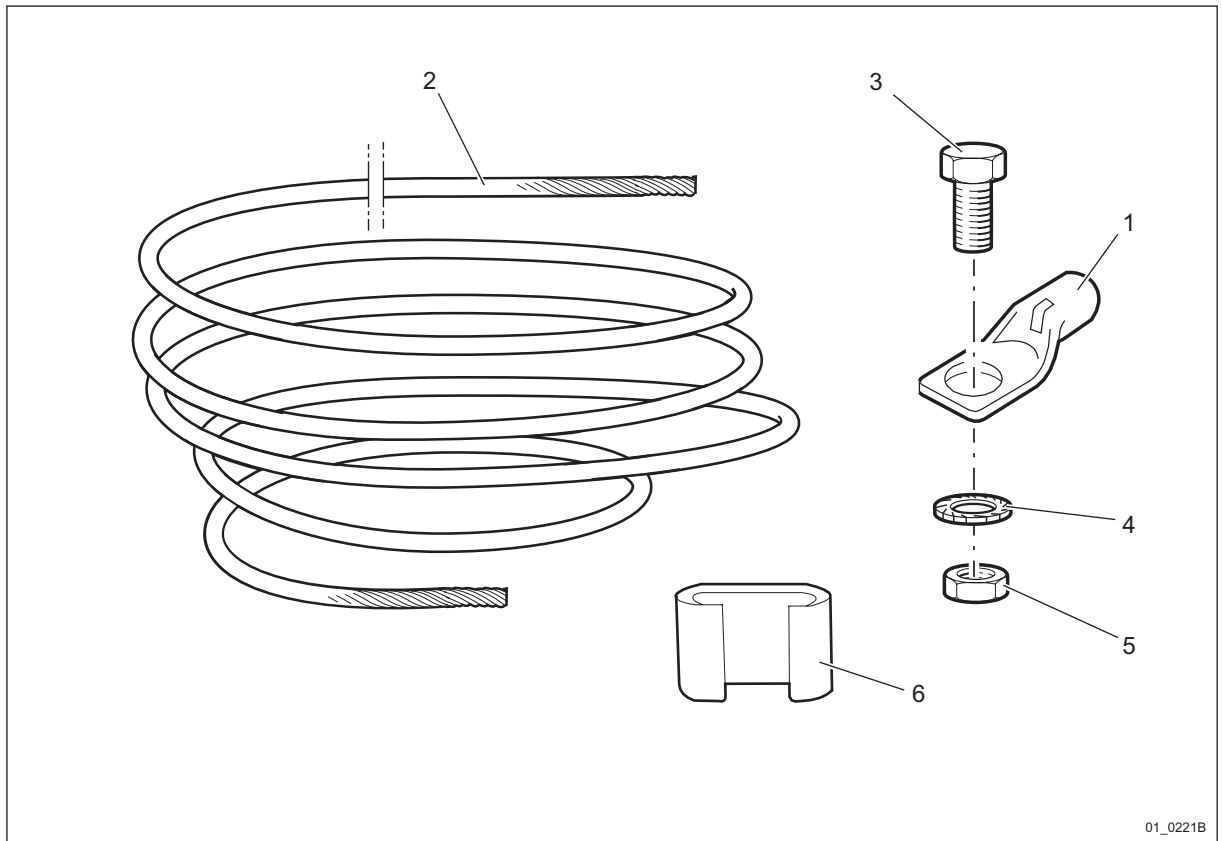
Installation of Earthing Set 9/NTM 201 230/1

Contents		Page
1	General	2
2	Installation	3
2.1	Earthing of Antennas	3
2.2	Earthing of Feeders	3

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1 General

This instruction describes how to install and connect the lightning conductor.



01_0221B

Figure 1 Earthing set 9/NTM 201 230/1

Table 1 Earthing set 9/NTM 201 230/1 details

Pos	PRIM title	Qty
1	Cable Lug	6
2	Flexible Conductor (35 mm ²)	40 m
3	Screw	6
4	Contact Washer	6
5	Nut	6
6	Branching Sleeve	6

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2 Installation

2.1 Earthing of Antennas

1. Connect the flexible conductor (pos 2) to the air termination on top of the tower or building.
2. Connect to the antenna support or directly to the tower if there is no air termination.

Make a solid joint by welding, brazing, screwing or crimping.

3. Run the flexible conductor along the antenna feeder downwards to an earth connection point near the tower leg or building and connect the conductor to the earth electrode or customer provided earth plinth.

Note To lead lightning effectively to earth, sharp bends on the flexible conductor must be avoided.

2.2 Earthing of Feeders

1. Install the earthing sets to the 1/2" or 7/8" feeders as described in the Installation Instructions 1531-NGT 211 04/1 and 1531-NGT 211 04/2 respectively.
2. Connect the earthing wire from the earthing set by crimping the earthing wire to the flexible conductor (pos 2) using the jointing sleeve (pos 6). For crimping, see Directions for Use 1553-LTT 601 86 in section 4.

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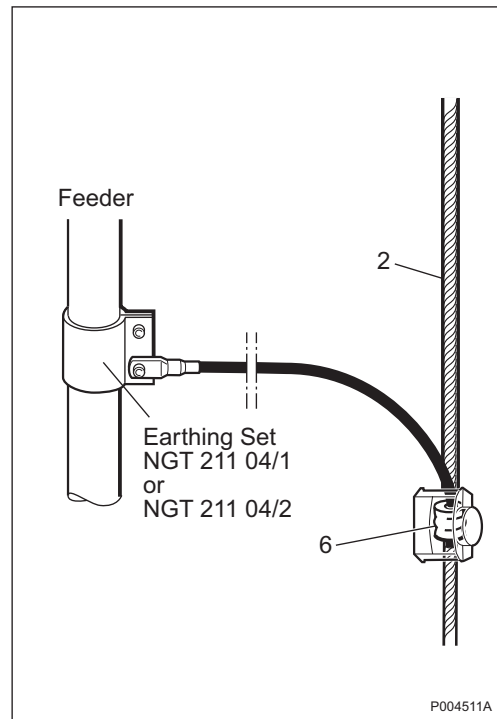


Figure 2 Connecting earthing sets to flexible conductor

Uppgjord — <i>Prepared</i>		Datum — <i>Date</i>	Rev	Dokumentnr — <i>Document no</i>
SG/ERA/LRN/ZG NHg		1999-02-11	A	131 22-9/NTM 201 230/4 Uen
Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>	Tillhör/referens — <i>File/reference</i>		
ERA/LRN/ZGC (Leif-Olof Fager)				

List of Earthing Set 9/NTM 201 230/4

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1 List of Earthing Set 9/NTM 201 230/4

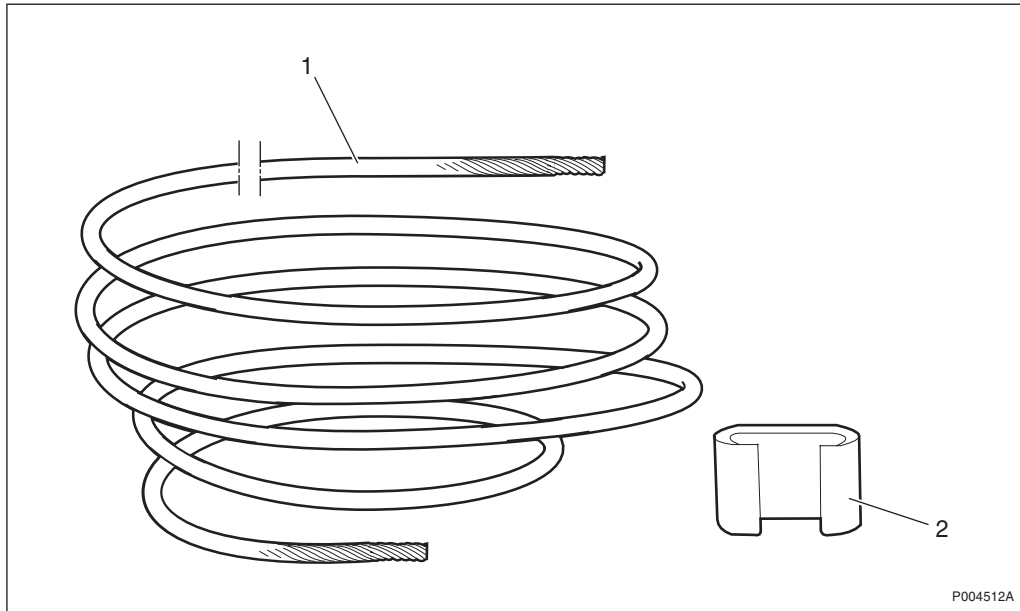


Figure 1 Earthing set 9/NTM 201 230/1

Table 1 Earthing set 9/NTM 201 230/4 details

Pos	PRIM title	Product no.	Qty
1	Flexible Conductor (50 mm ²)	TBK 101 04	50 m
2	Jointing Sleeve	SNT 102 11	10

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Earthing Sets to 1/2", 3/8", 7/8", 1 1/4" and 1 5/8" Feeders

Contents		Page
1	General	2
2	Installation Instructions	3

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1 General

These instructions apply for the earthing of the Kabelmetall Flexwell air dielectric coaxial cables.

The Flexwell cables are generally earthed via the terminations at both ends. With this earthing set it is also possible to earth Flexwell cables at any additional point, for example shortly before the cable leaves the mast at ground level.

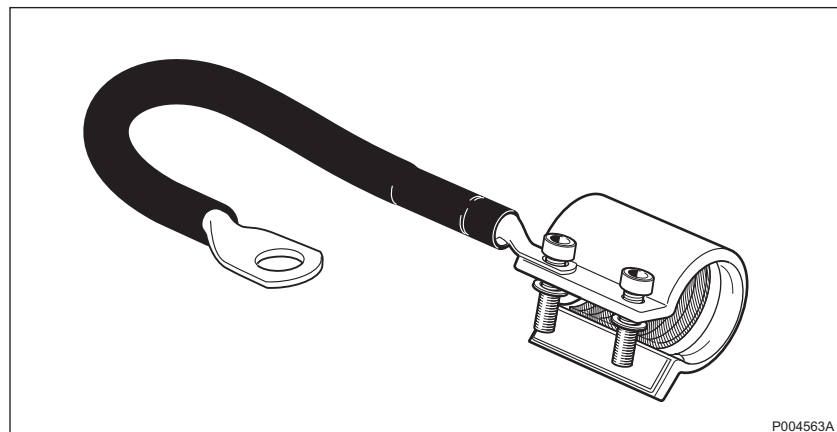


Figure 1 Earthing Sets NGT 211 04+

Table 1 Earthing Sets NGT 211 04+

Product number	for feeder
NGT 211 04/1	7/8"
NGT 211 04/2	1/2"
NGT 211 04/3	3/8"
NGT 211 04/4	1 1/4"
NGT 211 04/5	1 5/8"

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Table 2 Stripping Tools to be ordered separately

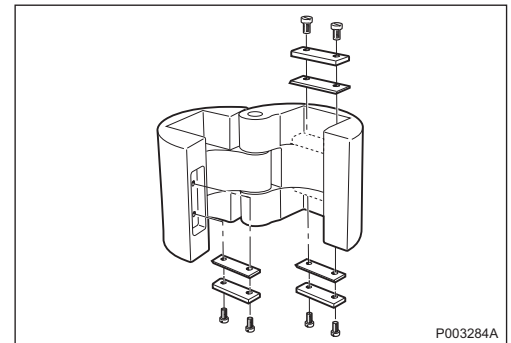
Product number	for feeder
LTT 601 14/4	1/2"
LTT 601 14/5	3/8"
LTT 601 14/1	7/8"
LTT 601 14/2	1 1/4"
LTT 601 14/3	1 5/8"

2 Installation Instructions

Note Only install the earthing set where the feeder cable runs straight.

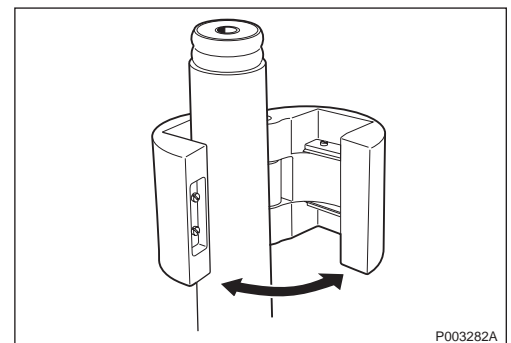
1.

Check that the blades are sharp enough. Otherwise change to the reserve blades included in the stripping tool.



2.

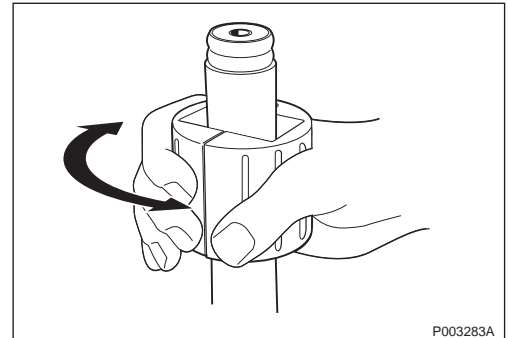
Place the Stripping Tool around the feeder.



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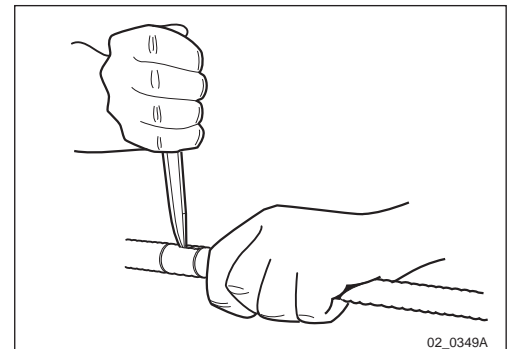
3.

To cut the feeder jacket; close the Stripping Tool and turn it 360 around the feeder.



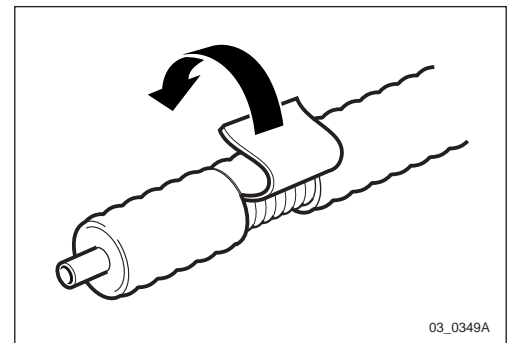
4.

With the knife cut through the 22 mm jacket to peel off. Be careful not to damage the outer conductor.



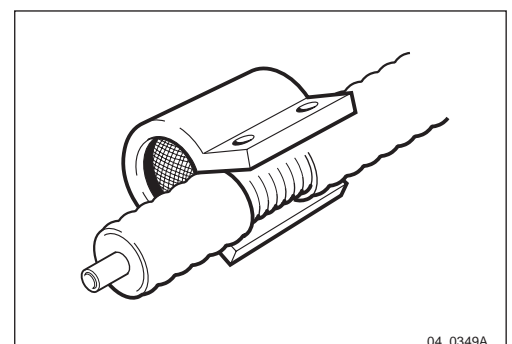
5.

Dismantle the feeder.



6.

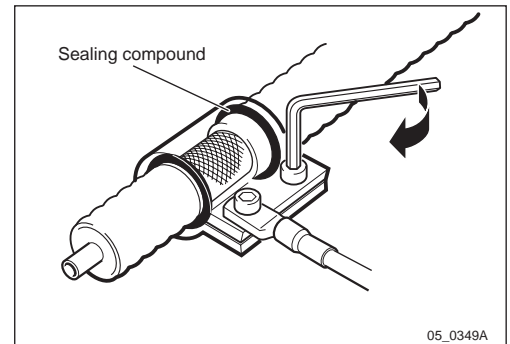
Remove the butyl protecting paper. Wrap and align the earthing set body around the dismantling.



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7.

Tighten the two M6 screws rigidly with the Allen key.



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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Earthing Set NTM 201 219/1-2 to Antenna Feeders Indoor

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1 General

This instruction describes how to connect the feeder connector to the 35 mm² Main Earthing Cable 4/NTM 201 201.

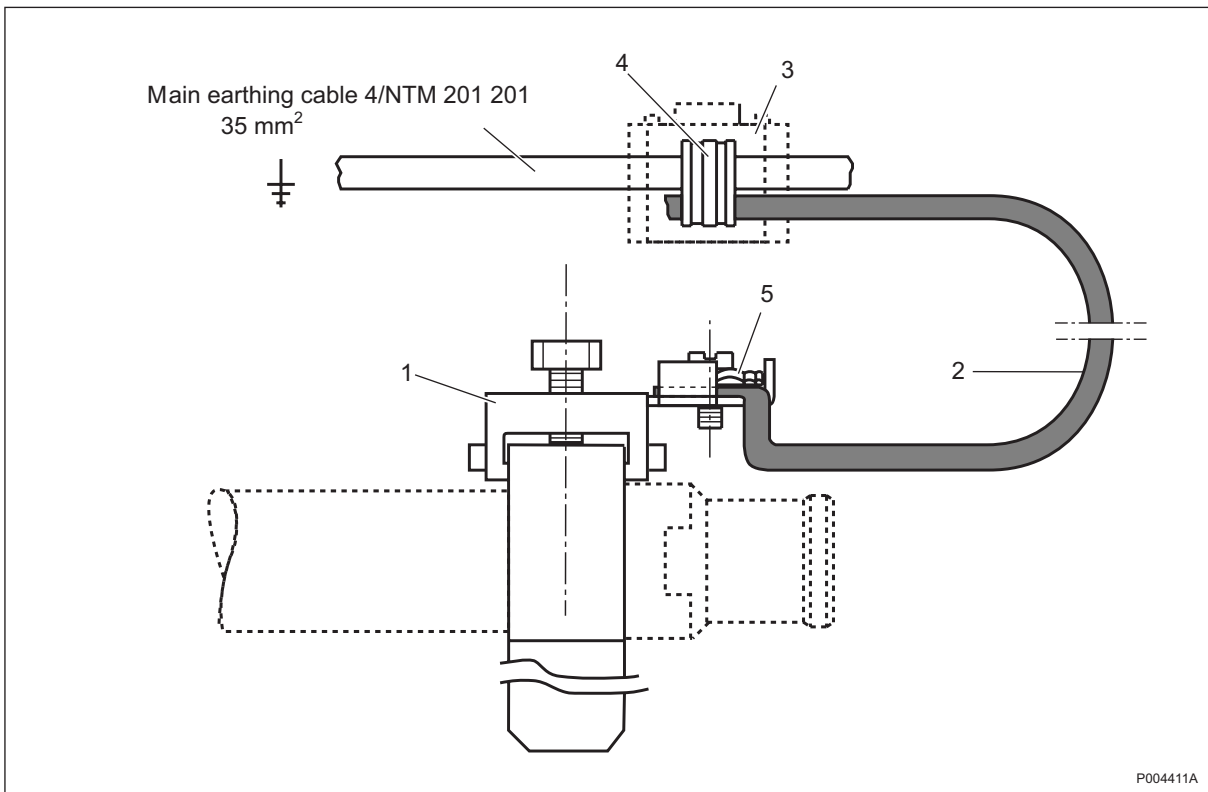


Figure 1 Details included in Earthing Sets for Antenna Feeders Indoors NTM 201 219/1 and NTM201 219/2

Table 1 NTM 201 219/1 and NTM 201 219/2 details

Pos	PRIM title	Qty
1	Hose clip	1
2	Cable (25 mm ²)	2 m
2	Cable (16 mm ²)	2 m
3	Insulating Cover	1
4	Jointing Sleeve	1
5	Cable Lug	1

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2 Installation

1. Lay the hose clip (pos 1) copper strip around the feeder connector back trough the slit of the hose clip.
2. Tighten the copper strip as much as possible and secure with the hose clip screw.
3. Cut the copper strip to appropriate length.
4. Crimp a cable lug (pos 5) on the cable (pos 2).
5. Screw the cable onto the hose clip.
6. Run the cable to the 35 mm² Main Earthing Cable 4/NTM 201 201 in the direction towards the Earth Bar NGT 210 01/10.
7. Crimp the two cables together with a jointing sleeve (pos 4) and apply an insulating cover (pos 3) over the crimping.

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

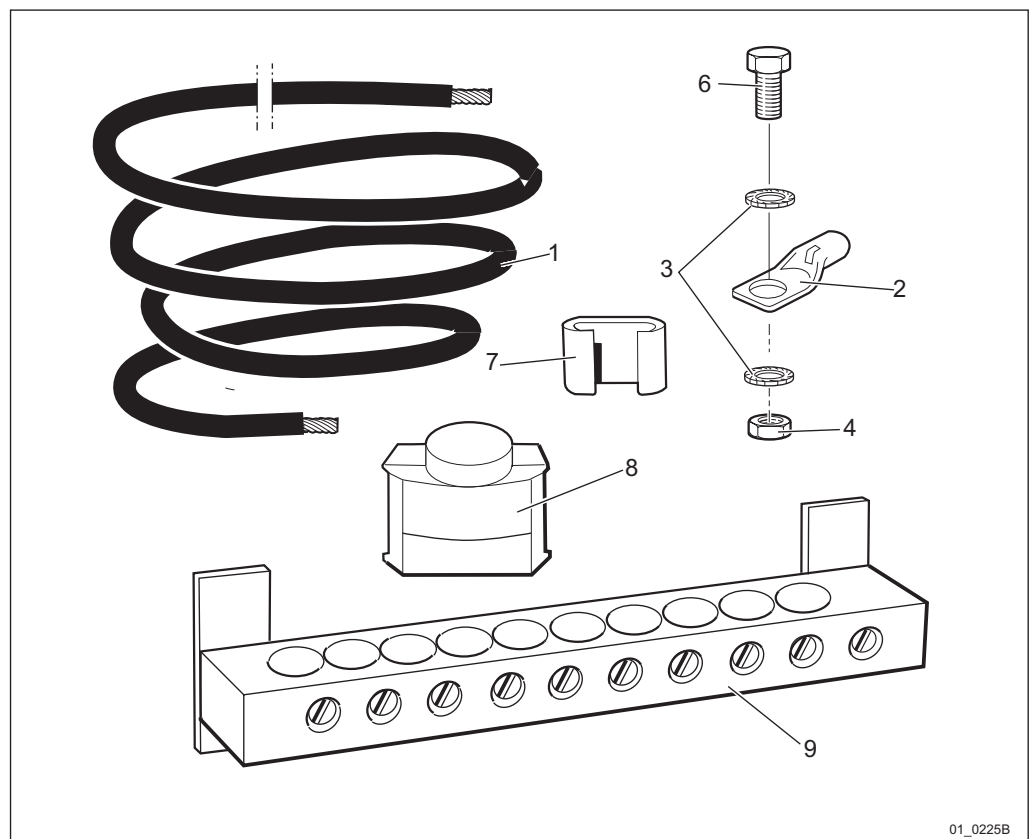
Installation of Earthing Cable, Indoor Set 4/ NTM 201 201 and 4/NTM 201 201/2

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1 General

This instruction describes how to install the indoor main earth cable and how to connect the equipment earth conductors to the main earth cable.



01_0225B

Figure 1 Details included in Earthing Cable Set 4/NTM 201 201 and 4/NTM 201 201/2

Table 1 4/NTM 201 201 and 4/NTM 201 201/2 details

Pos	PRIM title	Qty
1	Cable (35 mm ²)	40 m
1	Cable (35 mm ²)	25 m
2	Cable lug	8

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Pos	PRIM title	Qty
3	Contact Washer	10
4	Nut	10
5	Washer	10
6	Screw	10
7	Jointing Sleeve	8
8	Insulating cover	8
9	Earth Bar	1
10	Screw	2
11	Plug	2

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2 Installation

1. Install the Earth Bar NGT 210 01/10 (pos 9) immediately under the feeder inlet

Do not install another earth bar if it is already done by the customer.

2. Crimp a Cable Lug SNG 802 12 (pos 2) to the Cable TFK 100 509/00 (pos1)

3. Fasten the cable lug on the indoor ladder beginning from the most distant end in relation to the earth bar.

To make good contact, use a Contact Washer SCL 100 165/24 (pos 3) on each side of the ladder when screwing the cable lug to a ladder hole.

4. Lay the cable as straight as possible in the direction towards the Earth bar.

5. Cut the cable to correct length, strip the cable and connect to a screw terminal on the earth bar.

6. Secure the cable to the ladder by crossing plastic cable ties SET 103 03/0 around the cable and the ladder rungs.

7. Connect all site equipment to the cable:

for the battery rack use: 35 mm² earth conductor

for radio cabinet(s) and other equipment use: Earthing Set 5/NTM 201 201 with 2 m 25 mm² cable

or

Earthing Set NTM 201 244/1 with 5 m 25 mm² cable

8. Lay and crimp the equipment earth conductors (pos 1) to the main earth cable in the direction towards the earth bar, see figure 2.

Crimp with the Jointing Sleeve SNT 102 11 (pos 7) and shield the crimping with the Insulating Cover SXA 105 3120 (pos 8).

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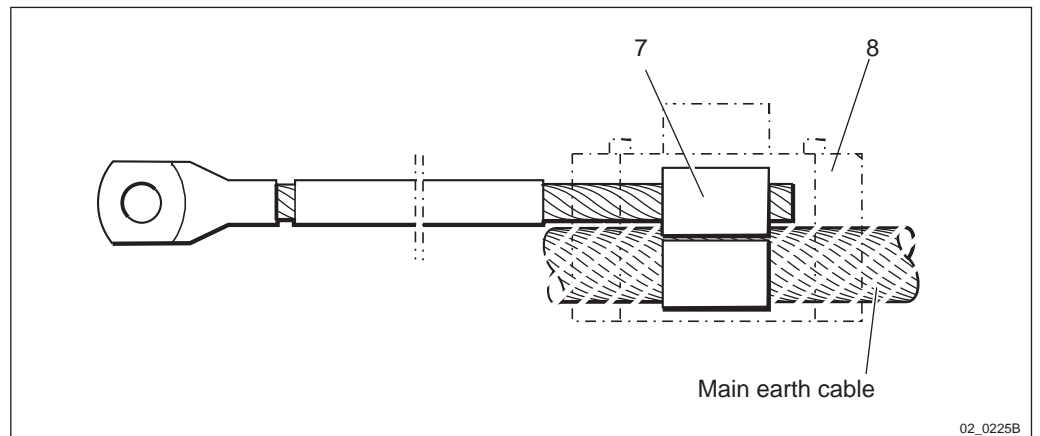


Figure 2 Crimping the equipment earth conductor 5/NTM 201 201or NTM 201 244/1 to the main earth cable

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Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

Antenna Equipment Installation Instructions

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1 Antenna Equipment Installation Instructions

Table 1

Sub-sect.	Installation Instructions	Product name/number	Notes
1	1531-FCM 103 413/1 Uen	Installation activity FCM 103 413/1	ant. mounting, laying of feeder(s) and conn. of jumpers
2	1531-NTM 201 215+ Uen 1531-6/NTM 201 230+ Uen 1531-NTM 201 234+ Uen	Clamps NTM 201 215/1-4 NTM 201 215/5 6/NTM 201 230/1-4 6/NTM 201 230/11,12 6/NTM 201 230/13,14 6/NTM 201 230/41-44 NTM 201 234/1 NTM 201 234/2 NTM 201 234/3 NTM 201 234/25	feeder clamps: 1/2" 10 mm feeder clamps: 7/8" 1 5/8" 1 1/4" 10 mm feeder clamps: 1/2" 10 mm 10 mm 7/8"

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Sub-sect.	Installation Instructions	Product name/ number	Notes
3	1531-RPT 403 206/1 Uen	Connectors 7/16 RPT 403 206/1	for feeder LCF1/2"
	1531-RNT 403 095/1 Uen	RNT 403 095/1	for feeder LCF7/8"
	1531-SXA 105 3082 Uen	SXA 105 3082	for feeder LCF1 5/8"
4	1531-NTM 201 207/1 Uen	Marking Sets NTM 201 207/1	feeder marking kit
	1531-NTM 201 239 Uen	NTM 201 239	feeder mark- ing kit, omni
	1531-NTM 201 240 Uen	NTM 201 240	feeder mark- ing kit, sector
5	1531-NTM 201 217 Uen	Cable Lead-in NTM 201 217	fire and wa- terproof bushing through wall
6	1531-NTM 201 2409/1Uen	Sealing Set NTM 201 2409/1	sealing of ex- terior connectors
7	1531-TSR 951 63/1+	Jumpers	installation of jumpers
		TSR 951 63/1	1 m
		TSR 951 63/2	2 m
		TSR 951 63/3	3 m

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Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

Installation of Antennas, Feeders and Jumpers

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1.2	Scope of Work	2
1.3	Antenna Job Training	2
1.4	Installation Preparation	2
2	Installation	3
2.1	Positioning Antennas	3
2.2	Installation of Antennas	3
2.3	Installation of Feeder(s)	6
2.4	Connection of Jumpers	11

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1 General

1.1 Working at Heights

WARNING



Some working areas involve the risk of accidents caused by falling objects.

1.2 Scope of Work

- Antenna job training
- Installation preparation
- Installation
 - Positioning antennas
 - Installation of antennas
 - Installation of feeder(s)
 - Connection of jumpers.

1.3 Antenna Job Training

The antenna subcontractors or operators shall have knowledge of:

- Antenna techniques (mounting etc)
- Ericsson material (handling, labeling etc.)

1.4 Installation Preparation

See Section 3, Site Installation Procedures

Note To avoid future transmission disturbances check that feeder and jumper ends are properly protected from water and dirt. This protection shall be strictly observed throughout the installation process.

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2 Installation

2.1 Positioning Antennas

See the specific Site Installation Documentation prepared by Installation Engineering and collected in the binder LZB/IPA xxx xxx for the site IPA xxx xxxx.

1. Check the following:
 - Correct position of antennas
 - Antenna directions checked by compass
 - Antenna tilting angles
 - Antenna angle from the wall in case of wall-mounted antenna
 - Reflections from buildings and other objects; a 120 degree sector shall be free from obstructions (buildings, walls and similar objects)
 - The combined horizontal distance and vertical distance
 - Height of antenna above roof
 - Recommended diversity distance
 - Minimum vertical separation of Tx and Rx antennas.
2. Contact and report to the Installation Engineering if the antenna layout is incorrect.

2.2 Installation of Antennas

1. Verify that antenna supports are installed. See the installation instructions enclosed in Section 7.
2. Hoist the antennas up to the antenna supports.

Note When hoisting antenna in foul weather conditions, it will be necessary to control antenna movement to avoid damage. Use ropes etc. for effective control.

3. Install the antenna(s) on the antenna support exactly vertical or with a specified offset.
4. Use the data specified in the Site Installation Documentation to set the antenna heading, height, vertical and horizontal separation.

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5. Connect one end of the antenna jumper(s) to the antenna(s), leaving the opposite end(s) open.

Note The open end shall be protected from moisture.

6. Clamp the jumper(s) to the antenna support.

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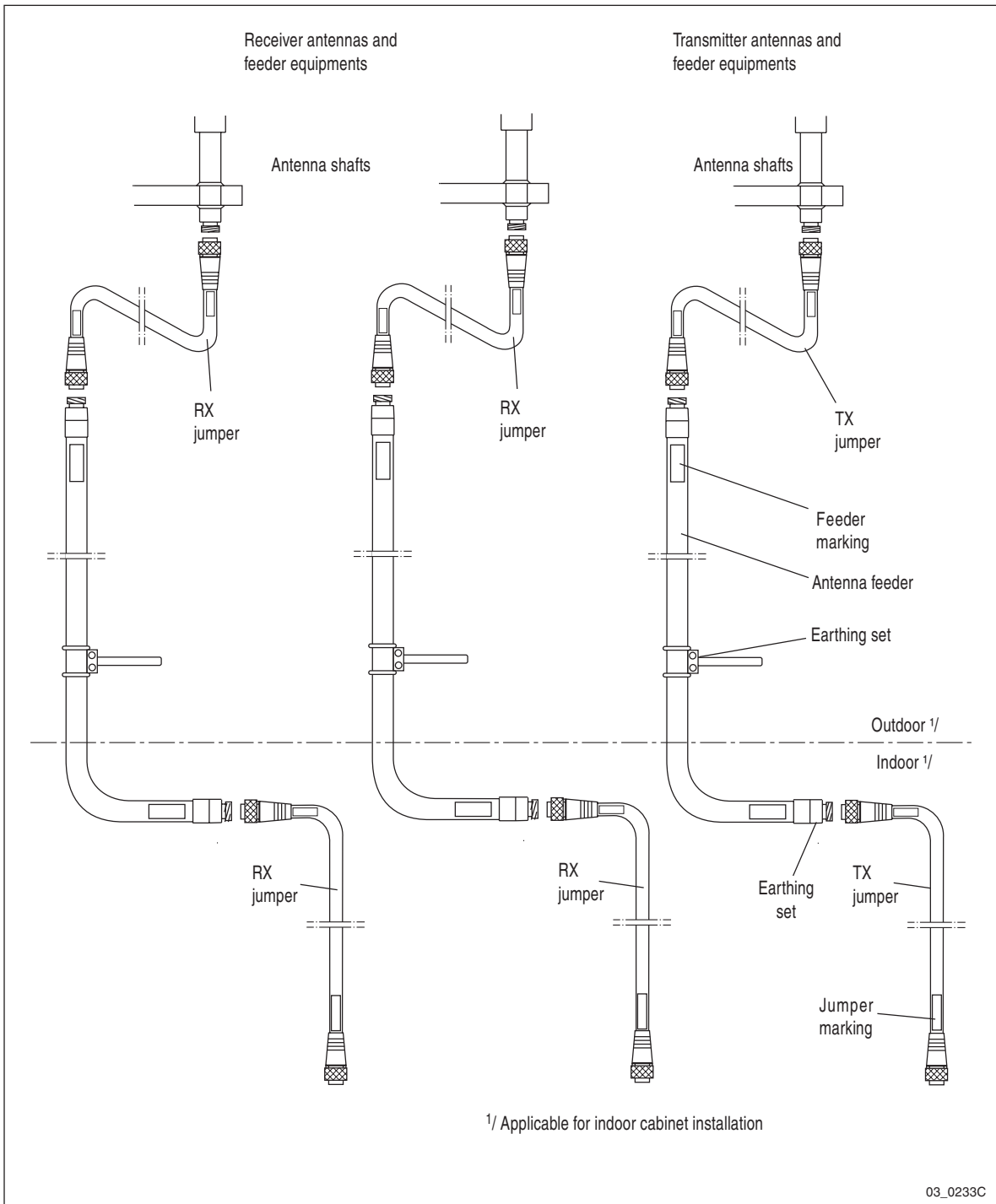


Figure 1 Feeders and jumpers general arrangements

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2.3 Installation of Feeder(s)

For outdoor and indoor general arrangements of feeders, see figure 1, Feeders and jumpers general arrangements.

Note Handle coaxial cables with care. Any damage may have an adverse effect upon transmission characteristics.

If the feeder cables or the feeder connectors are to remain temporarily unterminated, protect them from water and dirt by taping a polyethene bag or similar object around the cable ends.

1. Verify that the outdoor and indoor ladders (runs) or other feeder supports are installed and earthed. See the installation instructions in Sections 7 and 8.

2. Unpack the feeder.

Hang the cable drum on hydraulic cable jack stands, see Section 4, 131 22-LTT 601 97/2 Uen.

3. Mount the coaxial connector according to the Feeder Connectors Installation instructions enclosed in this section.

Note Ensure that all parts of the connectors are properly mounted and that appropriate tools are used for secure assembly.

4. Label the feeder at the upper connector according to the Marking Set Installation Instructions in this section.

5. Place the hoisting sling, 60 cm, pos 9 in the Antenna / Feeder Installation Tool Set LTT 601 97/1 on the feeder.

This is done by making a lifting sling knot (Prusik knot) around the feeder as shown in figure 3 left. After that it is essential to tight the knot as shown in figure 3 right.

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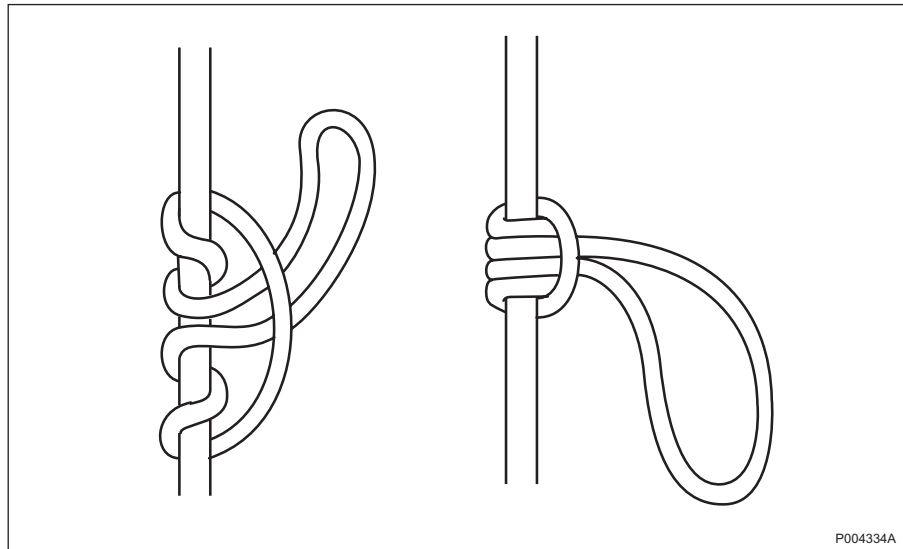
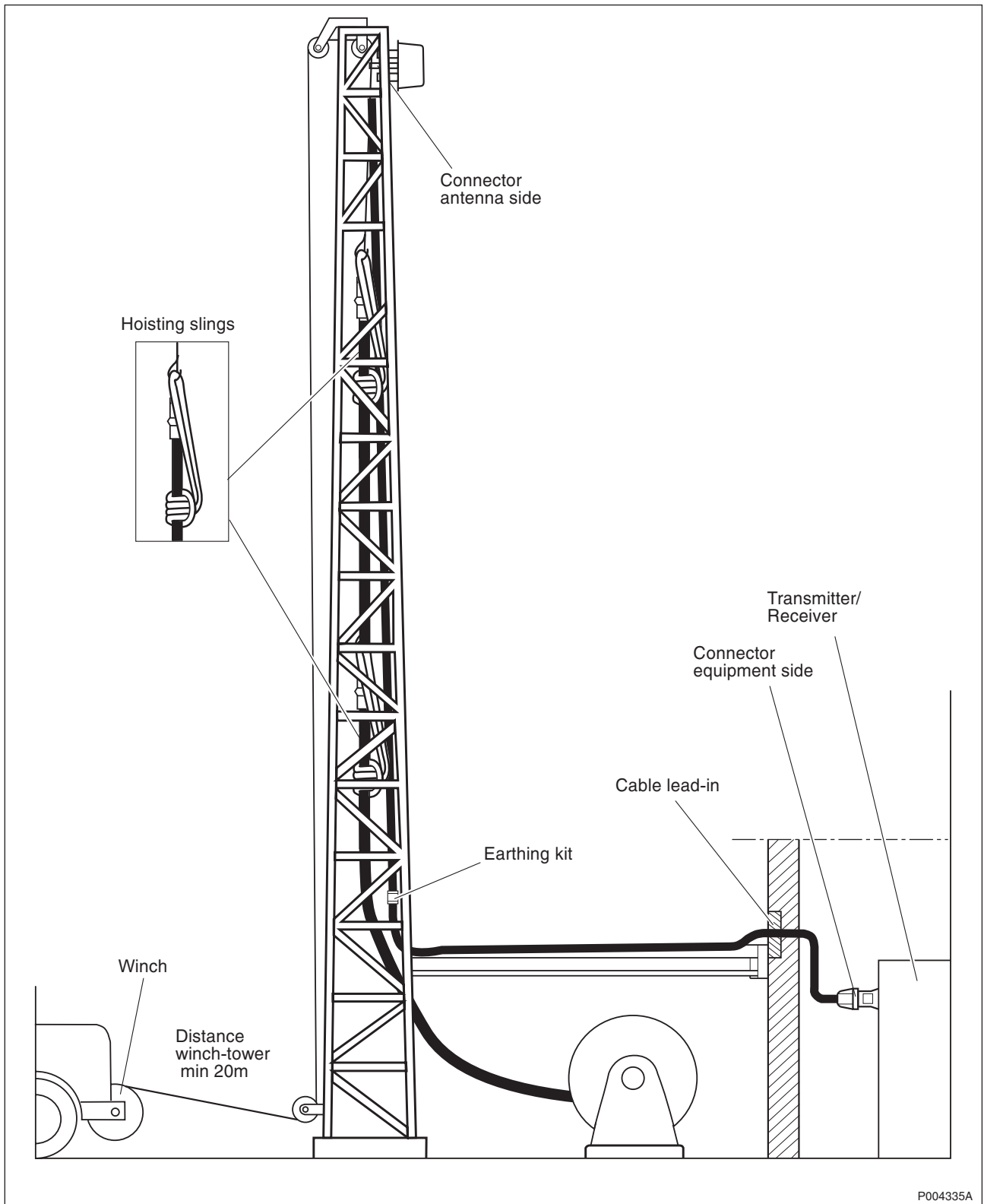


Figure 2 Feeder lifting sling knot

The number of slings is dependent upon the height of the tower/mast and thereby the length of the feeder to be hoisted. One sling per 70 m is recommended.

6. Hook up to the hoisting slings.
7. Hoist the feeder to the correct height, i.e. a height permitting the later connection of the antenna jumper.

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Figure 3 Hoisting the feeder in the tower

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8. Clamp the feeder as straight as possible to the tower/mast with a maximum distance between feeder clamps according to the Clamps Installation Instruction 1531-6/NTM 201 230+ in this section. Clamp intervals are dependent upon feeder dimension observing the minimum feeder bending radii in mm:

Minimum bending radii	with rebending	without rebending
For 1/2" cable	210	70
For 7/8" cable	360	120
For 1 5/8" cable	900	300

9. Cut a length of feeder of sufficient length, including additional length required for extra cable bends.

Note Hold the feeder at a downward sloping angle during cutting to keep the saw dust out of the inner conductor. Saw dust may have an adverse effect upon transmission characteristics.

Keep in mind that the length of the feeder depends on the predetermined length of the jumper to be connected to the RBS.

Do not cut the feeder too short! It will tempt to regain the length by overstretching the cable and/or making the prescribed bending radii to small.

10. Wrap tape around the cut end to protect the feeder from water and dirt.

11. Temporarily label the feeder.

12. Push the feeder through the wall or roof. The wall or roof shall have cable glands installed as described in Installation Instruction 1531-NTM 201 217 in this section.

Note The feeder shall have a bend, "drip-loop", (observe minimum bending radius) outside the wall or roof leading water off from the glands, see principles in figure 4.

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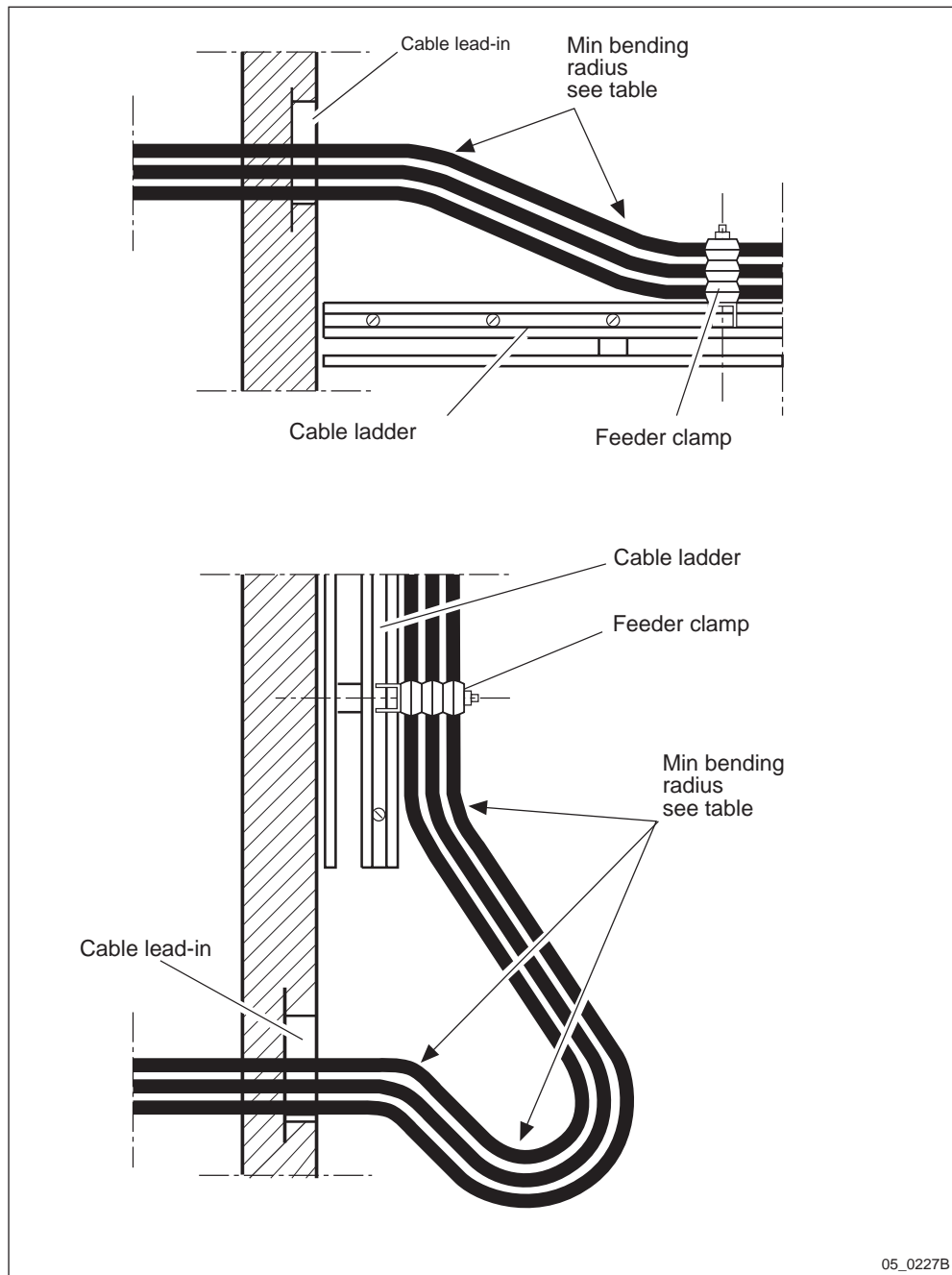


Figure 4 Examples of leading in feeders through wall from horizontal and vertical ladder

13. Repeat steps 1 to 10 for each feeder.
14. Cut the feeder to fit the connection to the cabinet jumper.

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15. Mount the coaxial connector according to the Feeder Connectors Installation Instructions enclosed in this section.
16. Perform a continuity test of feeders to ascertain that feeders are connected to the correct antenna. See the Directions for Use 1553-LTR 171 04 in Section 4.
17. Mount the outdoor and indoor earthing sets according to the installation instructions in Section 5.
18. Clamp the feeder(s) to the outdoor ladders, see Installation Instructions 1531-6/NTM 201 230+ in this section.
19. Fix the feeder(s) to the indoor ladders using cable-ties.
20. Seal the cable gland according to the Cable Lead-in Installation Instruction 1531-NTM 201 217 in this section.
21. Seal the feeder connectors according to the Sealing Set Installation Instruction 1531-NTM 201 2426 in this section.
22. Label the feeder(s) according to the Installation Instruction 1531-NTM 201 207/1 in this section.

2.4 Connection of Jumpers

For outdoor and indoor general arrangements of jumpers, see figure 1, Feeders and jumpers general arrangements.

Note Handle the jumpers with care. Any damage may have an adverse effect upon transmission characteristics.

If the jumpers are to remain temporarily unterminated, protect the connectors from water and dirt by taping a polyethene bag or similar object around the jumper ends.

1. Connect the antenna jumper and the cabinet jumper to the feeder. Observe, that the jumpers shall not be connected to the antenna and cabinet.

Note It is important to tighten the feeder and jumper connectors carefully.

A SiteMaster measurement of the feeder(s) shall now be made.

2. Connect the antenna jumper to the antenna. A SWR measurement of the antenna(s) shall now be made.

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For carrying out the SiteMaster and SWR measurements, refer to the Installation Manual for the actual Radio Base Station.

3. Connect the cabinet jumper to the cabinet.
4. Seal the jumper connectors according to the Sealing Set Installation Instruction 1531-NTM 201 2426 in this section.
5. Clamp the jumpers every 0.6 m.
6. Label the jumpers according to Installation Instruction 1531-NTM 201 207/1 in this section.

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Feeder Clamps for 1/2" and 10 mm Feeders

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1.2	Clamp 1/2": NTM 201 215/2 Set of Materials	3
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1 General

These clamps are used mainly for clamping feeders on masts/towers and on outdoor ladders.

The threaded rod (pos 3 and 4 in the tables below) comes in 4 different lengths. By changing the rod a number of clamps can be used on the same rod. The lengths of the rods are selected to make it possible to change a cable without having to disassemble the entire unit.

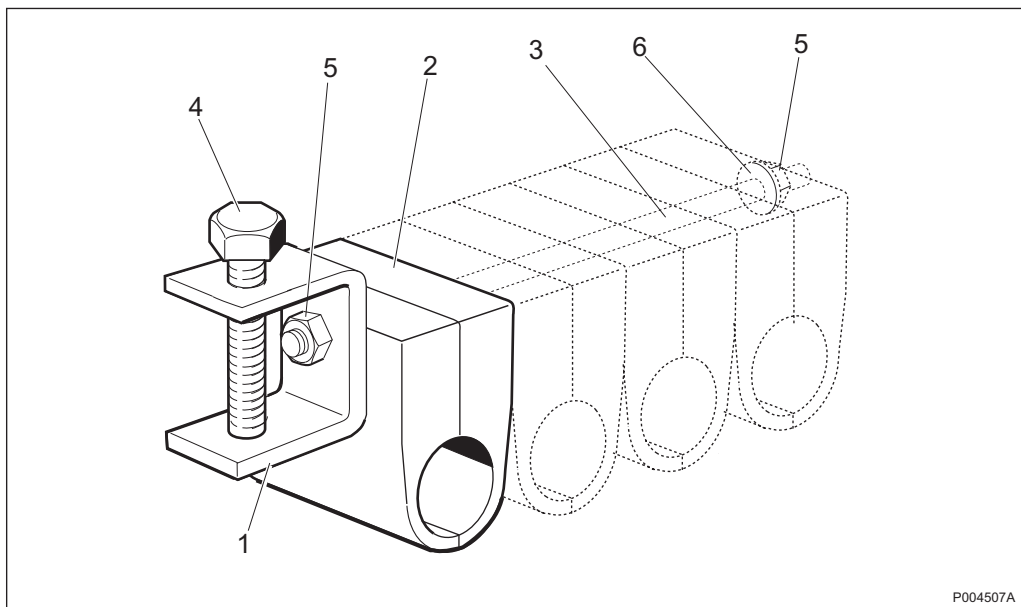


Figure 1 Clamp NTM 201 215+

1.1 Clamp 1/2": NTM 201 215/1 Set of Materials

Table 1 Set of Materials NTM 201 215/1 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/4	Clamp, 1/2"	1
3	SXA 105 2990/1	Threaded Rod (l=70 mm)	1
4	SBA 189 080/0400	Screw	1

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Pos	Product number	Description	Qty
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.2 Clamp 1/2": NTM 201 215/2 Set of Materials

Table 2 Set of Materials NTM 201 215/2 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/4	Clamp, 1/2"	2
3	SXA 105 2990/3	Threaded Rod (l=95 mm)	1
4	SBA 189 080/0400	Screw	1
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.3 Clamp 1/2": NTM 201 215/3 Set of Materials

Table 3 Set of Materials NTM 201 215/3 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/4	Clamp, 1/2"	3
3	SXA 105 2990/4	Threaded Rod (l=120 mm)	1
4	SBA 189 080/0400	Screw	1
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.4 Clamp 1/2": NTM 201 215/4 Set of Materials

Table 4 Set of Materials NTM 201 215/4 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/4	Clamp, 1/2"	4
3	SXA 105 2990/5	Threaded Rod (l=155 mm)	1
4	SBA 189 080/0400	Screw	1

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Pos	Product number	Description	Qty
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.5 Clamp 1/2" + 10 mm: NTM 201 215/5 Set of Materials

Table 5 Set of Materials NTM 201 215/5 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/6	Clamp, 10 mm	2
3	SXA 105 3055/4	Clamp, 1/2"	1
4	SXA 105 2990/3	Threaded Rod (l=95 mm)	1
5	SBA 189 080/0400	Screw	1
6	SBM 149 080	Nut, M8	2
7	SCA 103 080	Washer	1

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2 Installation

The following maximum distances between clamps for the outdoor part of the feeders are recommended:

Table 6

Feeder	Clamp	Max. dist. between clamps
10 mm	SXA 3055/6	0.6 m
1/2"	SXA 3055/4	0.6 m

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Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

Installation of Feeder Clamps for 7/8", 1 1/4", 1 5/8" and 10 mm Feeders

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1.5	Clamp 1 5/8": 6/NTM 201 230/11 Set of Materials	4
1.6	Clamp 1 5/8": 6/NTM 201 230/12 Set of Materials	4
1.7	Clamp 1 1/4": 6/NTM 201 230/13 Set of Materials	4
1.8	Clamp 1 1/4": 6/NTM 201 230/14 Set of Materials	5
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2	Installation	7

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1 General

These clamps are used mainly for clamping feeders on masts/towers and on outdoor ladders.

The threaded rod (pos 3 in the tables below) comes in different lengths. By changing the rod a number of clamps can be used on the same rod. The lengths of the rods are selected to make it possible to change a feeder without having to disassemble the entire unit.

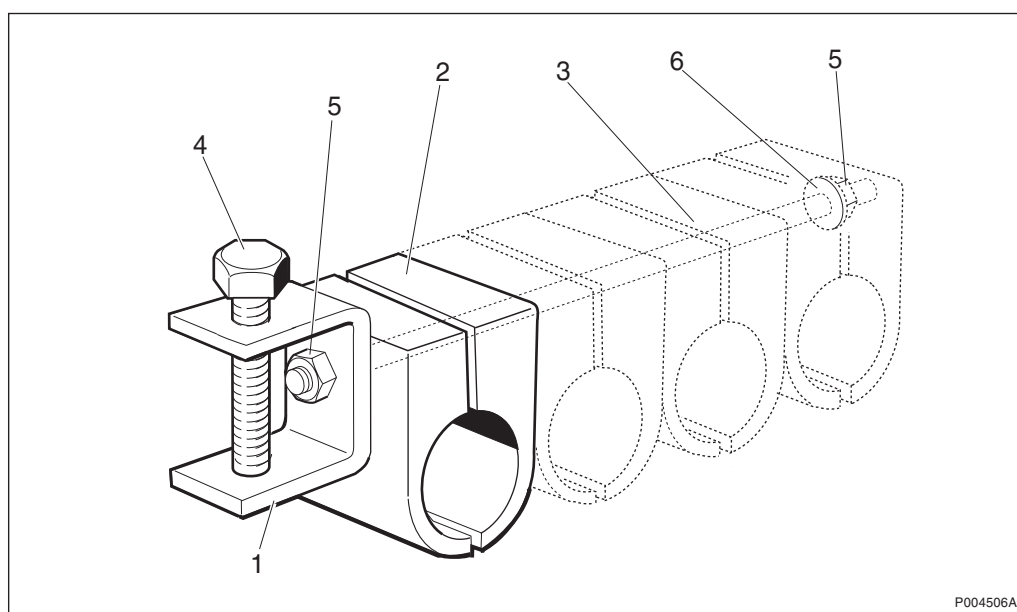


Figure 1 Clamps 6/NTM 201 230+

1.1 Clamp 7/8": 6/NTM 201 230/1 Set of Materials

Table 1 Set of Materials 6/NTM 201 230/1 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/2	Clamp, 7/8"	1
3	SXA 105 2990/2	Threaded Rod, (l=85 mm)	1
4	SBA 189 080/0400	Screw, M8	1

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Pos	Product number	Description	Qty
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.2 Clamp 7/8": 6/NTM 201 230/2 Set of Materials

Table 2 Set of Materials 6/NTM 201 230/2 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/2	Clamp, 7/8"	2
3	SXA 105 2990/4	Threaded Rod, (l=120 mm)	1
4	SBA 189 080/0400	Screw, M8	1
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.3 Clamp 7/8": 6/NTM 201 230/3 Set of Materials

Table 3 Set of Materials 6/NTM 201 230/3 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/2	Clamp, 7/8"	3
3	SXA 105 2990/6	Threaded Rod, (l=165 mm)	1
4	SBA 189 080/0400	Screw, M8	1
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.4 Clamp 7/8": 6/NTM 201 230/4 Set of Materials

Table 4 Set of Materials 6/NTM 201 230/4 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/2	Clamp, 7/8"	4
3	SXA 105 2990/7	Threaded Rod, (l=210 mm)	1
4	SBA 189 080/0400	Screw, M8	1

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Pos	Product number	Description	Qty
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.5 **Clamp 1 5/8": 6/NTM 201 230/11 Set of Materials**

Table 5 Set of Materials 6/NTM 201 230/11 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/3	Clamp, 1 5/8"	1
3	SXA 105 2990/4	Threaded Rod, (l=120 mm)	1
4	SBA 189 080/0400	Screw, M8	1
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.6 **Clamp 1 5/8": 6/NTM 201 230/12 Set of Materials**

Table 6 Set of Materials 6/NTM 201 230/12 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/3	Clamp, 1 5/8"	2
3	SXA 105 2990/6	Threaded Rod, (l=165 mm)	1
4	SBA 189 080/0400	Screw, M8	1
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.7 **Clamp 1 1/4": 6/NTM 201 230/13 Set of Materials**

Table 7 Set of Materials 6/NTM 201 230/13 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/3	Clamp, 1 1/4"	1
3	SXA 105 2990/4	Threaded Rod, (l=120 mm)	1
4	SBA 189 080/0400	Screw, M8	1

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Pos	Product number	Description	Qty
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.8 Clamp 1 1/4": 6/NTM 201 230/14 Set of Materials

Table 8 Clamp 6/NTM 201 230/14 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/3	Clamp, 1 1/4"	2
3	SXA 105 2990/6	Threaded Rod, (l=165 mm)	1
4	SBA 189 080/0400	Screw, M8	1
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.9 Clamp 10 mm: 6/NTM 201 230/41 Set of Materials

Table 9 Set of Materials 6/NTM 201 230/41 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/6	Clamp, 10 mm	1
3	SXA 105 2990/8	Threaded Rod, (l=45 mm)	1
4	SBA 189 080/0400	Screw, M8	1
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.10 Clamp 10 mm: 6/NTM 201 230/42 Set of Materials

Table 10 Set of Materials 6/NTM 201 230/42 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/6	Clamp, 10 mm	2
3	SXA 105 2990/1	Threaded Rod, (l=70 mm)	1
4	SBA 189 080/0400	Screw, M8	1

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Pos	Product number	Description	Qty
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.11 Clamp 10 mm: 6/NTM 201 230/43 Set of Materials

Table 11 Set of Materials 6/NTM 201 230/43 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/6	Clamp, 10 mm	3
3	SXA 105 2990/2	Threaded Rod, (l=85 mm)	1
4	SBA 189 080/0400	Screw, M8	1
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

1.12 Clamp 10 mm: 6/NTM 201 230/44 Set of Materials

Table 12 Set of Materials 6/NTM 201 230/44 details

Pos	Product number	Description	Qty
1	SXA 105 3056	Adapter	1
2	SXA 105 3055/6	Clamp, 10 mm	4
3	SXA 105 2990/40	Threaded Rod, (l=105 mm)	1
4	SBA 189 080/0400	Screw, M8	1
5	SBM 149 080	Nut, M8	2
6	SCA 103 080	Washer	1

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2 Installation

The following maximum distances between clamps for the outdoor part of the feeders are recommended:

Table 13

Feeder	Clamp	Max. dist. between clamps
10 mm	SXA 3055/6	0.6 m
14 mm	SXA 3055/1	0.6 m
1/2"	SXA 3055/4	0.6 m
7/8"	SXA 3055/2	0.8 m
1 1/4"	SXA 3055/5	1.0 m
1 5/8"	SXA 3055/3	1.2 m

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Feeder Clamps for 10 mm, 1/2" and 7/8" Feeders

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1 General

These clamps are used mainly for clamping feeders on masts/towers and on outdoor ladders prepared with mounting holes.

The threaded rod (pos 2 in the tables below) comes in different lengths. By changing the rod a number of clamps can be used on the same rod. The lengths of the rods are selected to make it possible to change a feeder without having to disassemble the entire unit.

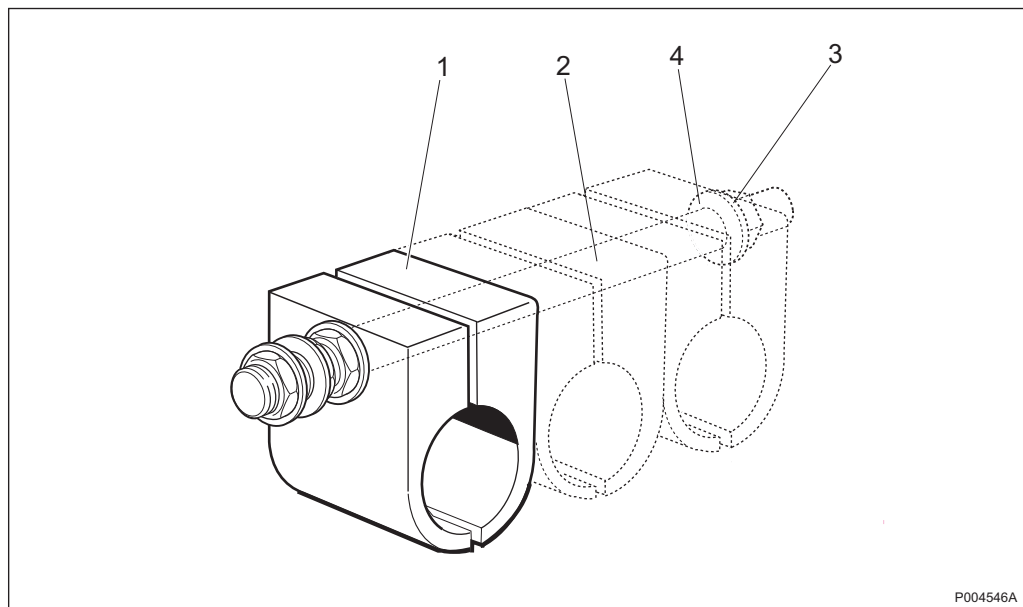


Figure 1 Clamps 6/NTM 201 230+

1.1 Clamp 1/2": NTM 201 234/1 Set of Materials

Table 1 Set of Materials NTM 201 234/1 details

Pos	Product number	Description	Qty
1	SXA 105 3055/4	Clamp, 1/2"	8
2	SXA 105 2990/2	Threaded Rod (l=85 mm)	4
3	SBM 149 080	Nut, M8	12
4	SCA 103 080	Washer	16

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1.2 Clamp 10 mm: NTM 201 234/2 Set of Materials

Table 2 Set of Materials NTM 201 234/2 details

Pos	Product number	Description	Qty
1	SXA 105 3055/6	Clamp, 10 mm	2
2	SXA 105 2990/2	Threaded Rod (l=85 mm)	1
3	SBM 149 080	Nut, M8	4
4	SCA 103 080	Washer	4

1.3 Clamp 10 mm: NTM 201 234/3 Set of Materials

Table 3 Set of Materials NTM 201 234/3 details

Pos	Product number	Description	Qty
1	SXA 105 3055/6	Clamp, 10 mm	3
2	SXA 105 2990/40	Threaded Rod (l=105 mm)	1
3	SBM 149 080	Nut, M8	4
4	SCA 103 080	Washer	4

1.4 Clamp 7/8": NTM 201 234/25 Set of Materials

Table 4 Set of Materials NTM 201 234/25 details

Pos	Product number	Description	Qty
1	SXA 105 3055/2	Clamp, 7/8"	2
2	SXA 105 2990/6	Threaded Rod (l=165 mm)	1
3	SBM 149 080	Nut, M8	4
4	SCA 103 080	Washer	4

Datum — Date	Rev	Dokumentnr — Document no
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2 Installation

The following maximum distances between clamps for the outdoor part of the feeders are recommended:

Table 5

Feeder	Clamp	Max. dist. between clamps
10 mm	SXA 3055/6	0.6 m
1/2"	SXA 3055/4	0.6 m
7/8"	SXA 3055/2	0.8 m

Uppgjord — <i>Prepared</i> SG/ERA/LRN/ZG NHg	Datum — <i>Date</i> 1999-04-29	Rev F	Dokumentnr — <i>Document no</i> 1531-RPT 403 206/1 Uen
Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Connector RPT 403 206/1 to 1/2" Feeder

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1 General

This Installation Instruction describes how to make a quick and reliable installation of the connector RPT 403 206/1 (Spinner) to a 1/2" feeder using a Trimming Tool.

2 Tools and Materials

- Feeder 1/2" TZC 500 15
- Connector RPT 403 206/1 with Plast 2000 tube SXA 105 3086
- Stripping tool
- Knife
- Hack saw
- Slide caliper
- Trimming tool 1/2" (Spinner)

Note Use the trimming tool with great care as the included knives are extremely sharp. Working gloves are recommended when using the tool!

- Working gloves
- 19 mm, 22 mm and 23 mm open-ended spanners
- Sealing Set NTM 201 2426
 - Tape, self-fusing NTA 201 03
 - Electrotape, PVC MPP 270 07/1

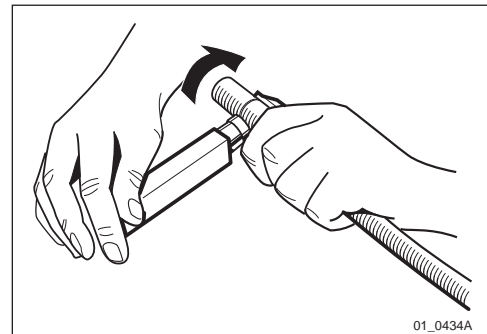
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3 Installation Instructions

3.1 Trimming of Feeder Cable

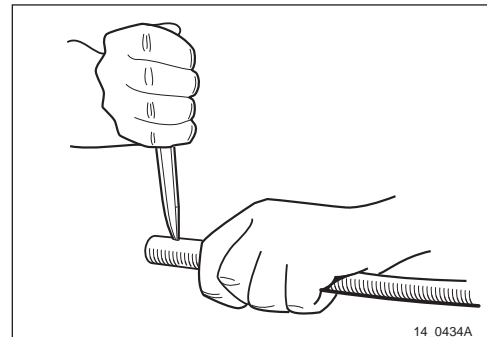
1.

Use a stripping tool to scribe a cutting line through the feeder jacket to peel off 50-55 mm from the feeder end.



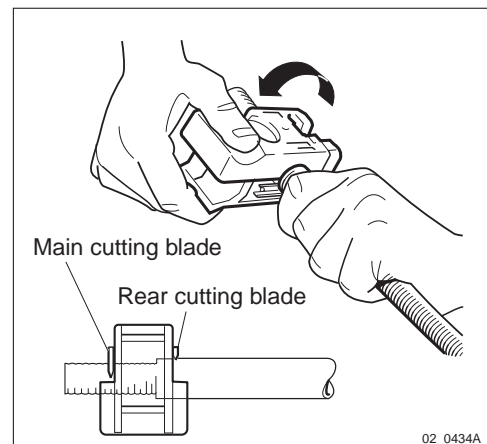
2.

With the knife cut through the 50-55 mm jacket to peel off and dismantle the feeder.



3.

Insert the trimming tool 1/2" around the feeder cable letting approx. 4 corrugations of the copper mantle stick out from the main cutting blade of the cutting tool.



4.

Close trimming tool housing observing that the rear jacket cutting blade will cut the jacket.

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5.

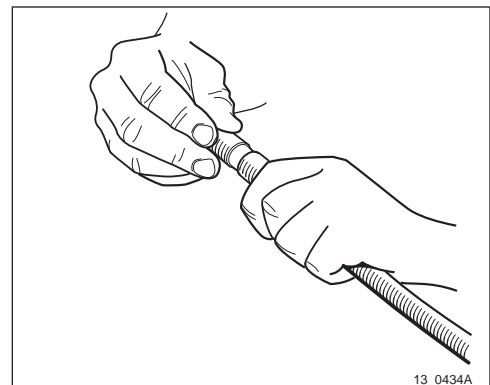
Hold the feeder cable and turn the trimming tool in direction of the arrow marked on the tool. Proceed until the housing is completely closed. To avoid deformation of the copper mantle do not squeeze the tool together.

As the position of the tool is controlled by the corrugation of the outer conductor copper mantle, the main cutting blade cuts the feeder exactly through the middle on top of a corrugation crest and further through the dielectricum to the inner conductor.

At the same time the rear jacket cutting blade makes a circular cut through the cable jacket 24 mm from the cable end.

6.

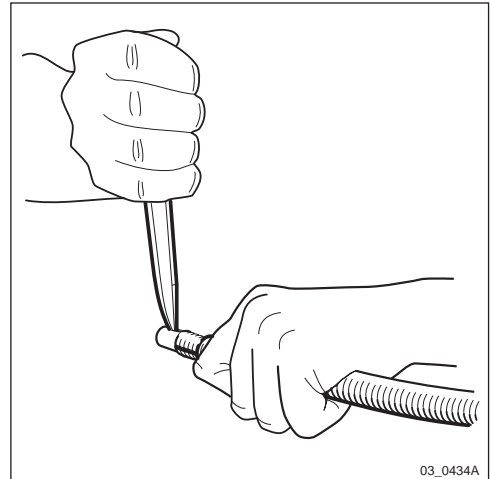
Remove the outer cut-through copper mantle ring thereby exposing the dielectricum ring to be removed.



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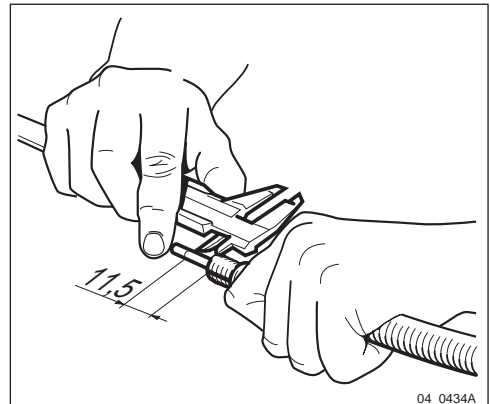
7.

Cut through and remove the dielectricum ring from the inner conductor.



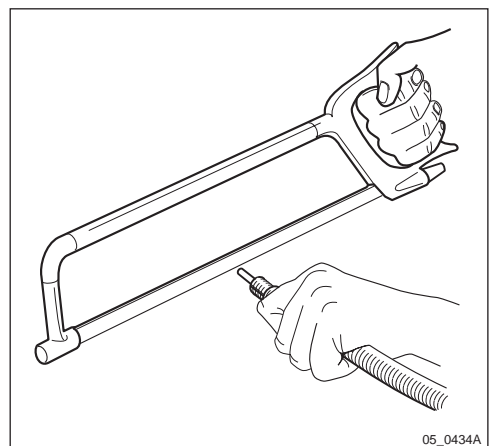
8.

Mark the inner conductor with the slide caliper so that 11.5 mm will protrude from the cable end.



9.

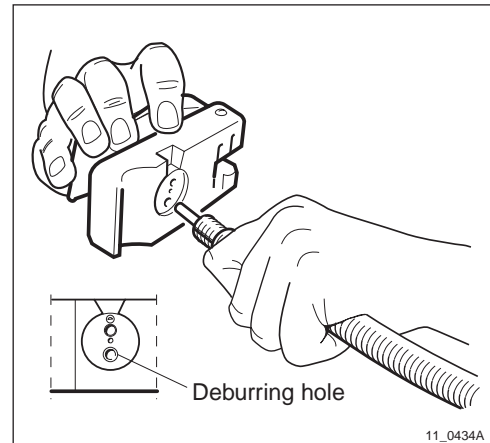
Cut off excess inner conductor with a hack saw.



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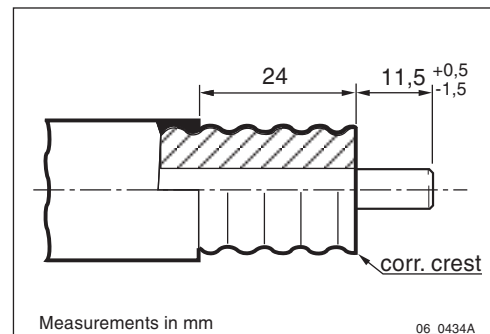
10.

Put the feeder inner conductor into the deburring hole of the Trimming Tool.



11.

Check the dimensions of the trimmed cable according to figure.



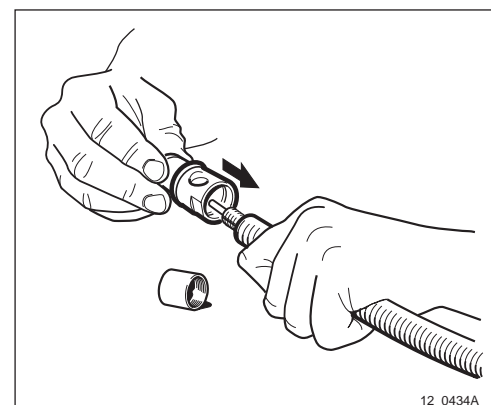
3.2 Mounting of Connector RPT 403 206/1

1.

Separate the connector head from the connector rear end.

2.

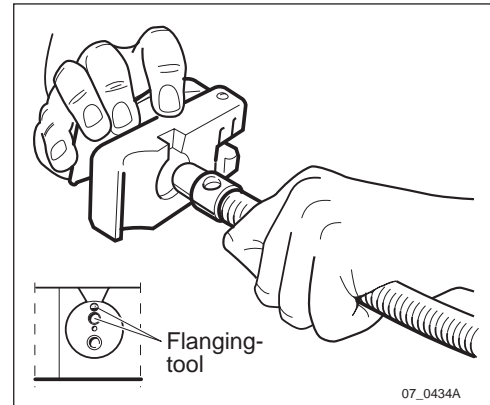
Slide the connector rear end onto the feeder cable until the connector contact sleeve snaps into first corrugation through of the cable.



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3.

Put the cable inner conductor into the flanging hole of the Trimming Tool.



Turn the tool a few times to the right and to the left.

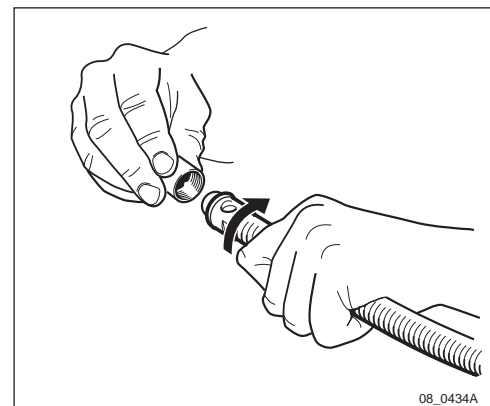
The end of the outer connector is now flanged and at the same time deformations, if any, are removed.

Check that there are no copper remnants left.

4.

Slide the connector key grip part forwards over the contact sleeve part.

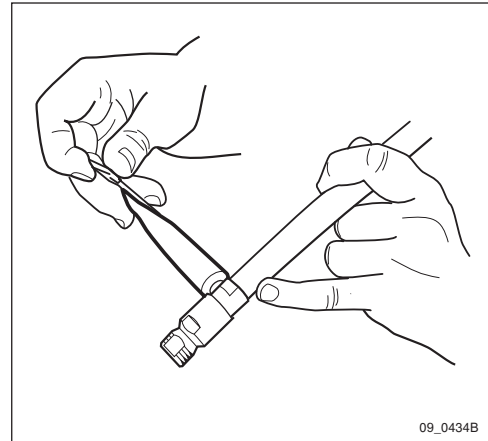
Holding the connector head fixed using the key grip, screw the connector rear end into the connector head with an approximate torque of 12 Nm.



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5.

Open the connector charging hole and press in Plast 2000 until plast is visible in the vent hole and penetrates between the connector and cable jacket. Seal the charging hole with the screw.



Note The Plast 2000 sealant is irritant to skin and eyes. Avoid contact with eyes.

3.3

Sealing of the connectors between two cables

For the use of Sealing Set NTM 201 2426, see the Installation Instruction 1531-NTM 201 2426 Uen.

Uppgjord — <i>Prepared</i> SG/ERA/LRN/ZG NHg	Datum — <i>Date</i> 1999-04-29	Rev G	Dokumentnr — <i>Document no</i> 1531-RNT 403 095/1 Uen
Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Connector RNT 403 095/1 to 7/8" Feeder

Contents		Page
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2	Tools and Materials	2
3	Installation Instructions	3
3.1	Trimming of Feeder Cable	3
3.2	Mounting of Connector RNT 403 095/1	5
3.3	Sealing of the connectors between two cables	6

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1999-04-29	G	1531-RNT 403 095/1 Uen

1 General

This Installation Instruction describes how to make a quick and reliable installation of the connector RPT 403 095/1 (Spinner) to a 7/8" feeder using a trimming tool.

2 Tools and Materials

- Feeder 7/8" TZC 500 17
- 2 Connectors RNT 403 095/1 with Plast 2000 tube SXA 105 3086
(=kit 5/NTM 201 230/1)
- Stripping tool
- Knife
- Hack saw
- Slide caliper
- Trimming tool 7/8" (Spinner)

Note Use the Trimming Tool with great care as the included knives are extremely sharp. Working gloves are recommended when using the tool!

- 2 pcs 30 mm open-ended spanners
- Working gloves
- Sealing Set NTM 201 2426
 - Tape, self-fusing NTA 201 03
 - Electrotape, PVC MPP 270 07/1

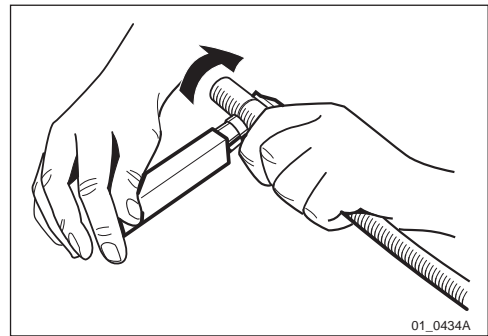
Datum — Date	Rev	Dokumentnr — Document no
1999-04-29	G	1531-RNT 403 095/1 Uen

3 Installation Instructions

3.1 Trimming of Feeder Cable

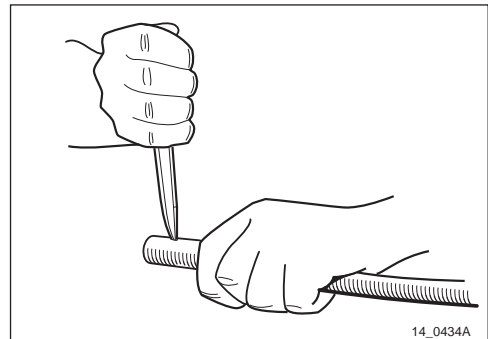
1.

Use a stripping tool to scribe a cutting line through the feeder jacket to peel off 50-55 mm from the feeder end.



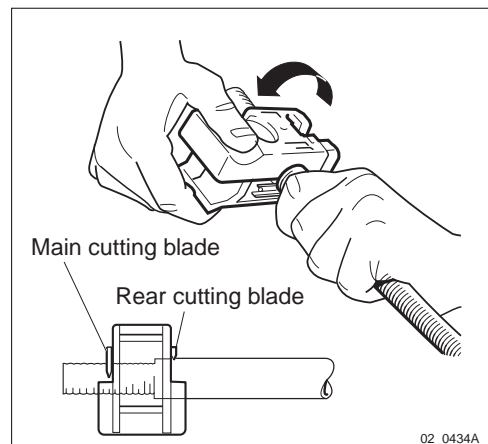
2.

With the knife cut through the 50-55 mm jacket to peel off and dismantle the feeder.



3.

Insert the Trimming Tool 7/8" around the feeder cable letting approx. 4 corrugations of the copper mantle stick out from the main cutting blade of the cutting tool.



4.

Close Trimming Tool housing observing that the rear jacket cutting blade will cut the jacket.

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5.

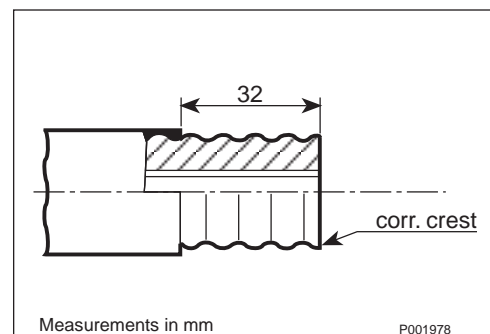
Hold the feeder cable and turn the trimming tool in direction of the arrow marked on the tool. Proceed until the housing is completely closed. To avoid deformation of the copper mantle do not squeeze the tool together.

As the position of of the tool is controlled by the corrugation of the outer conductor copper mantle, the main cutting blade cuts the feeder exactly through the middle on top of a corrugation crest and further through the dielectricum and the inner conductor.

At the same time the rear jacket cutting blade makes a circular cut through the cable jacket 32 mm from the cable end. Cut and peel of this jacket ring.

6.

Check the dimensions of the trimmed cable according to figure.



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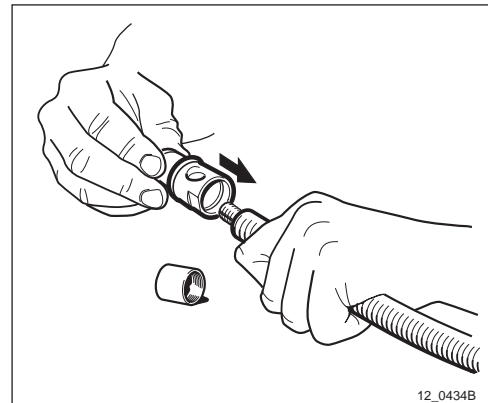
3.2 Mounting of Connector RNT 403 095/1

1.

Separate the connector head from the connector rear end.

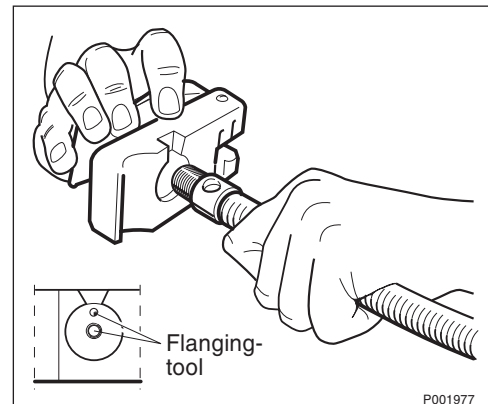
2.

Slide the connector rear end onto the feeder cable until the connector contact sleeve snaps into first corrugation through of the cable.



3.

Put the deburring pin of the Trimming Tool into the feeder inner conductor.



Turn the tool a few times to the right and to the left.

The inner conductor is now deburred. At the same time the outer conductor is flanged and deformations, if any, are removed.

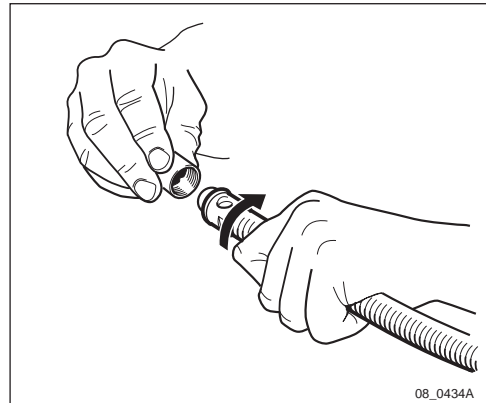
Check that there are no copper remnants left.

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4.

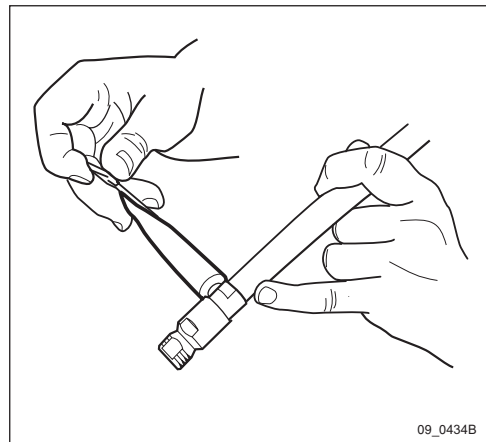
Slide the connector key grip part forwards over the contact sleeve part.

Holding the connector head fixed using the key grip, screw the connector rear end into the connector head with an approximate torque of 25 Nm.



5.

Open the connector charging hole and press in Plast 2000 until plast is visible in the vent hole and penetrates between the connector and cable jacket. Seal the charging hole with the screw.



Note The Plast 2000 sealant is irritant to skin and eyes. Avoid contact with eyes.

3.3

Sealing of the connectors between two cables

For the use of Sealing Set NTM 201 2426, see the Installation Instruction 1531-NTM 201 2426 Uen.

Uppgjord — <i>Prepared</i> SG/ERA/LRN/ZG NHg	Datum — <i>Date</i> 1999-04-29	Rev H	Dokumentnr — <i>Document no</i> 1531-SXA 105 3082 Uen
Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Connector SXA 105 3082 to 1 5/8" Feeder

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3.3	Sealing of the connectors between two cables	9

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1 General

This Installation Instruction describes how to make a quick and reliable installation of the connector SXA 105 3082 (Spinner) to a 1 5/8" RFS feeder (Kabelmetall) using the Tool Set, Feeder Preparation LTT 601 046/33.

2 Tools and Materials

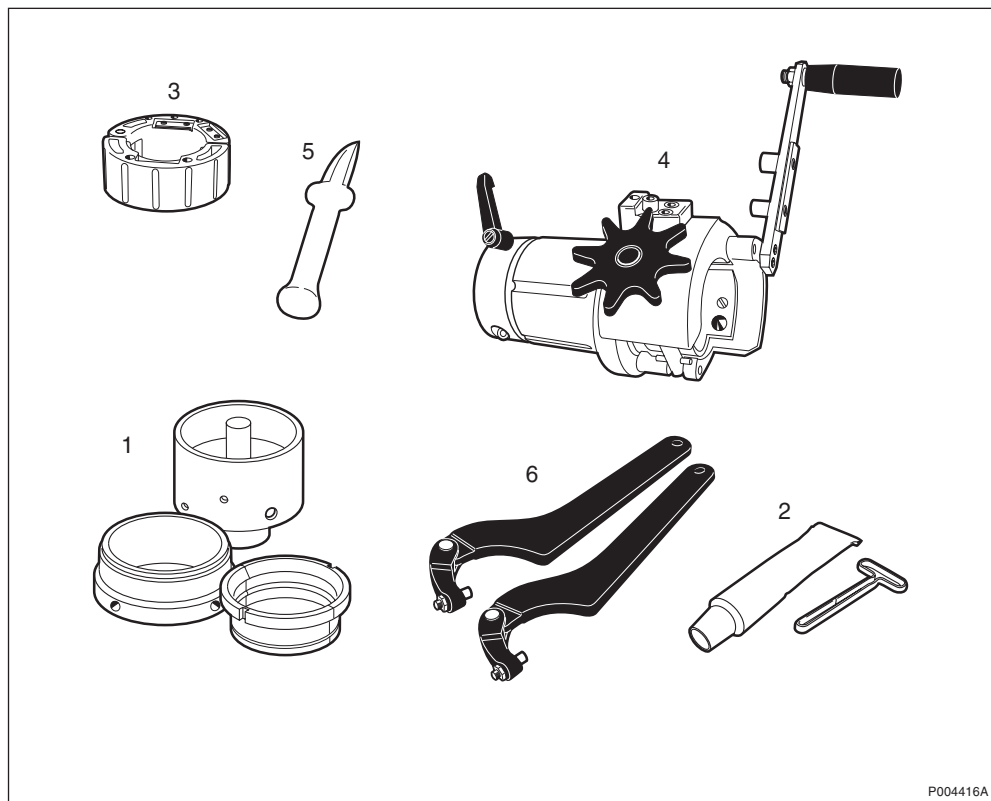


Figure 1 Connector SXA 105 3082 and mounting tools

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Table 1 1 5/8" RFS feeder, Connector SXA 105 3082 and mounting tools details

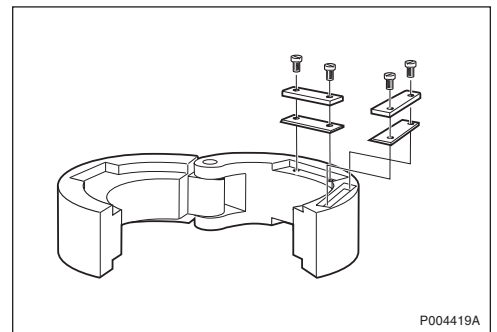
Pos	Description	Ericsson Prod. No.
1.	Connector kit including:	
2.	Plast 2000 tube	
		5/NTM 201 230/2 SXA 105 3082
	Tool Set, 1 5/8" Feeder Preparation including:	LTT 601 046/33
3.	Stripping Tool 1 5/8"	LTT 601 14/3
4.	Trimming Tool 1 5/8"	LTT 601 15/4
5.	Knife	LDK 102 12
6.	Poly hook spanners 90/5 (dia. 90 mm/ pin dia. 5 mm)	LTT 601 109

3 Installation Instructions

3.1 Trimming of Feeder Cable

1.

Open the Stripping Tool LTT 601 14/3 (pos 3). Check that the two blades are sharp enough. Otherwise change to the reserve blades included in the stripping tool.

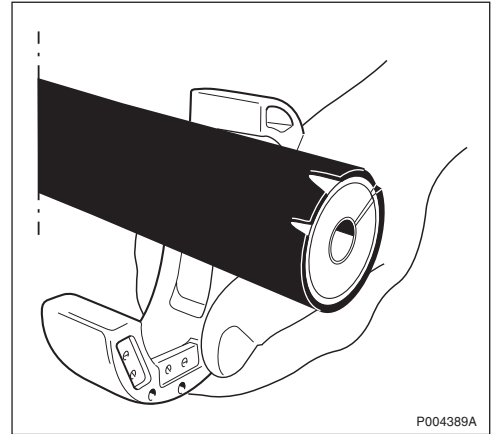


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2.

Place the stripping tool optionally around the feeder jacket.



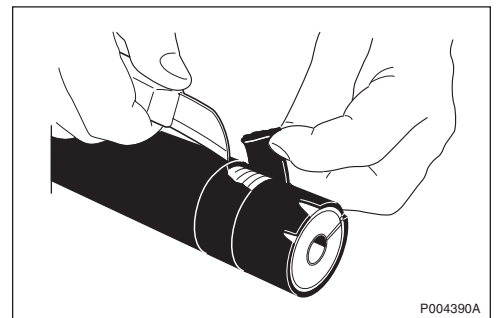
3.

Close the stripping tool tightly around the feeder and turn it several times until the jacket is cut through. Open and remove the stripping tool.

The feeder now has two cuts 20 mm apart encircling the jacket.

4.

With the knife cut through the 20 mm jacket to peel off. Be careful not to damage the outer conductor.



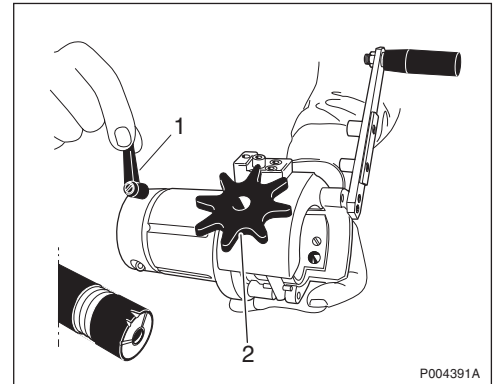
5.

Dismantle the feeder.

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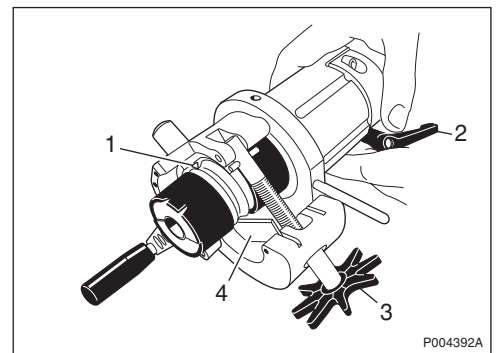
6.

Unscrew the clamping lever (1) and the feed handwheel (2) so that the feeder can be inserted in the trimming tool.



7.

Position the feeder so that the indexing pin (1) fits in the center of the first corrugation trough from what will become the feeder end.



Clamp the trimming tool to the feeder by means of the clamping lever (2).

Also turn the handwheel (3) until the main cutting blade (4) rests against the corrugation.

8.

Turn the crank in a clockwise direction and the outer and inner conductors are cut through by the main cutting blade.

At the same time the feeder jacket is cut through by the jacket blade in a correct distance from the feeder end.

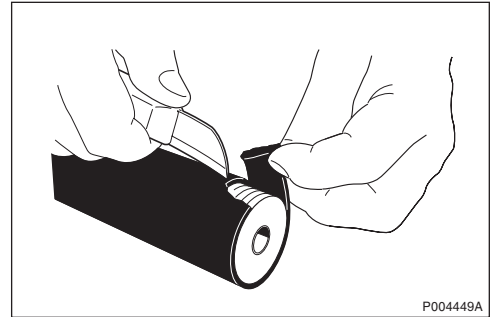
9.

Unscrew the clamping lever and the handwheel and remove the feeder.

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10.

With the knife cut through the jacket to peel off. Be careful not to damage the outer conductor.

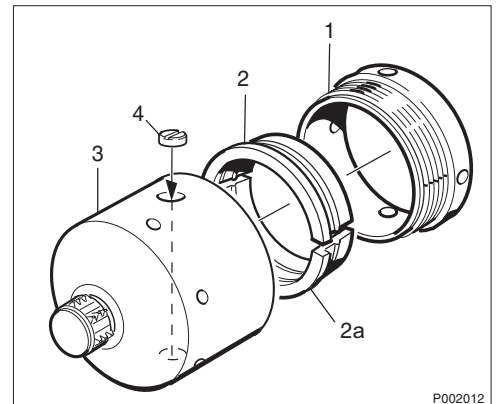


Now the feeder is correctly prepared for the mounting of the connector.

3.2 Mounting of Connector SXA 105 3082

1.

Separate the connector head (3) from the threaded ring (1) thereby exposing the collet halves (2) and (2a) held together by an O-ring (4).



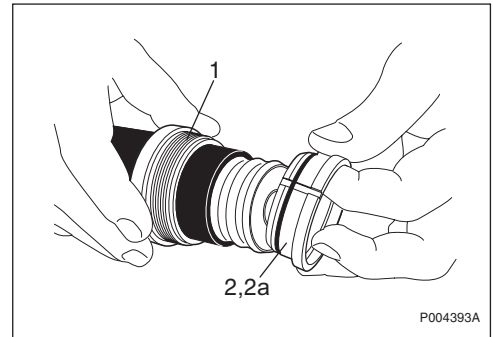
2.

Slide the threaded ring (1) onto the cable.

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3.

Insert the the collet halves (2) and (2a) in the outer corrugation of the cable according to figure and fix the two halves with the O-ring.

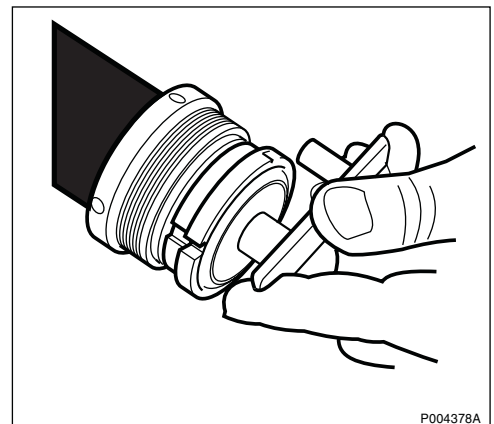


4.

Remove the sizing tool from the crank of the trimming tool.

5.

Insert the center pin of the sizing tool in the feeder inner conductor.



Widen the outer conductor by pressing and rotating the sizing tool.

Thereby the spike of the sizing tool is pressed between the cable dielectric and the outer conductor.

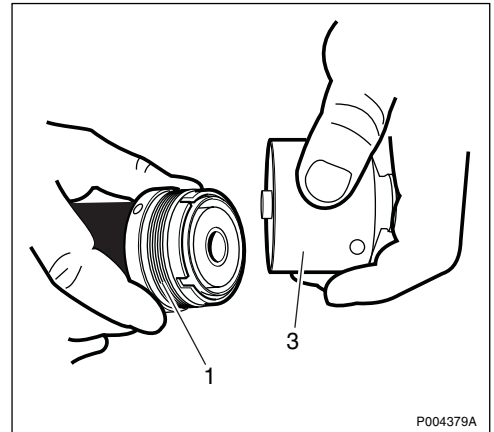
6.

Carefully debur and remove all metal particles from the sawing edges.

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7.

Slide the connector head (3) onto the prepared cable end, and screw together the connector head and the threaded ring (1) Torque approximately 40 Nm.

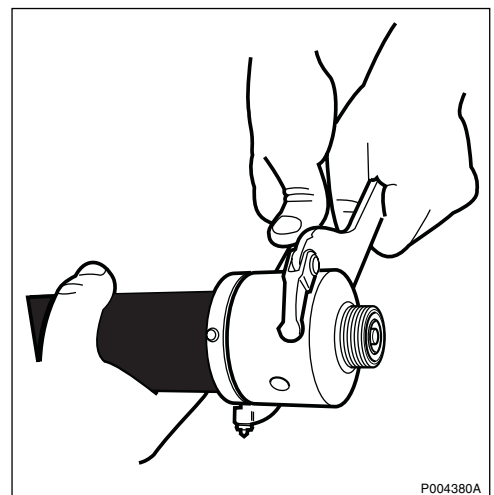


8.

Keep the connector head steady and turn the threaded ring only, using the hook spanners.

9.

It is essential to proceed the turning of the threaded ring until it is completely screwed into the connector head.



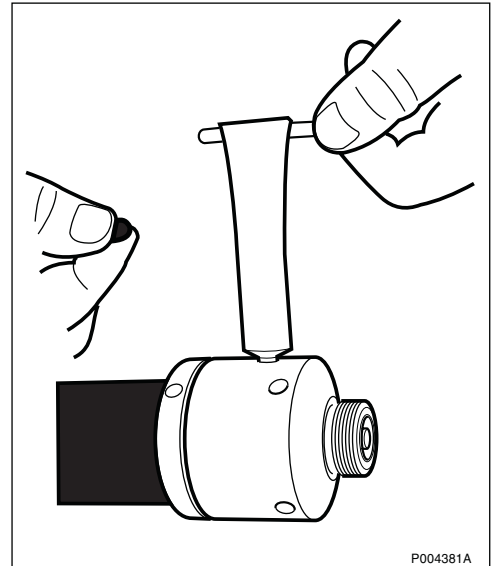
For this a considerable torque is needed (about 40 Nm).

This can be achieved by holding the poly hook spanners as shown in the figure.

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10.

Open the connector charging hole and press in Plast 2000 until plast is visible in the vent hole and penetrates between the connector and cable jacket. Seal the charging hole with the screw.



Note The Plast 2000 sealant is irritant to skin and eyes. Avoid contact with eyes.

3.3 Sealing of the connectors between two cables

For the use of Sealing Set NTM 201 2426, see the Installation Instruction 1531-NTM 201 2426 Uen.

Uppgjord — <i>Prepared</i> SG/ERA/LRN/ZG NHg	Datum — <i>Date</i> 1999-02-11	Rev E	Dokumentnr — <i>Document no</i> 1531-NTM 201 207/1 Uen
Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Marking Set NTM 201 207/1

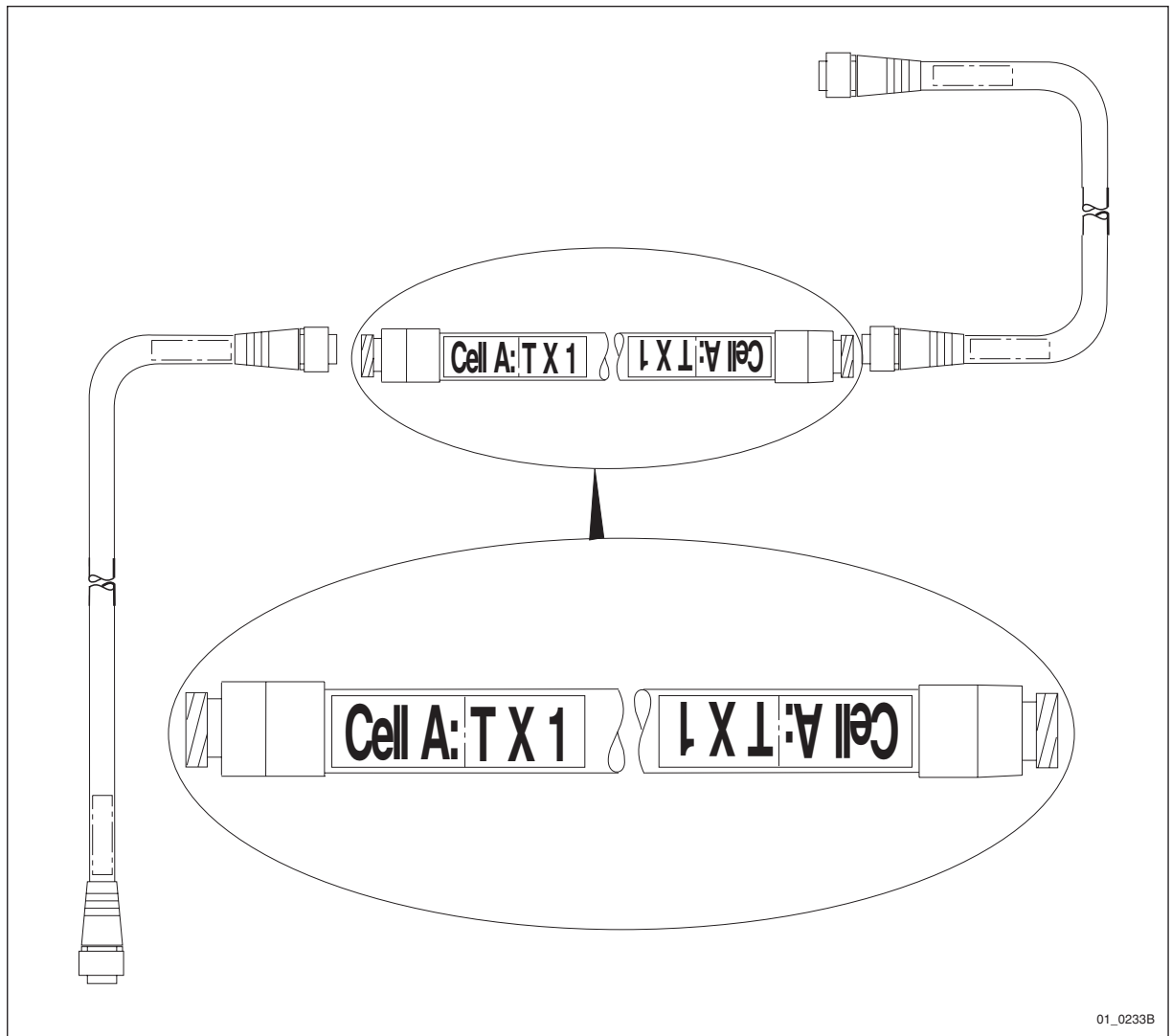
Contents		Page
1	General	2
2	Marking Principle	5
3	Installation	7
3.1	Labeling of Feeders	7
3.2	Labeling of Antenna and Cabinet Jumpers	7

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1 General

The labels are made up of self-adhesive yellow reflecting tape with black text.

They are delivered on 11 sheets, each sheet holding 10 or 12 labels. The labels are precut for easy use and with text as shown in figure 2.



01_0233B

Figure 1 Mounting of labels in Marking Set NTM 201 207/1

Table 1 Marking set NTM 201 207/1 details

Pos	PRIM title	Text	Qty
1	Marking Plate	Cell A	2
2	Marking Plate	Cell B	2

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3	Marking Plate	Cell C	2
4	Marking Plate	Cell O	2
5	Marking Plate	DX1	1
6	Marking Plate	DX2	1
7	Marking Plate	RXA	1
8	Marking Plate	RXB	1
9	Marking Plate	TX1	1
10	Marking Plate	TX2	1
11	Marking Plate	TX3	1

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1999-02-11	E	1531-NTM 201 207/1 Uen

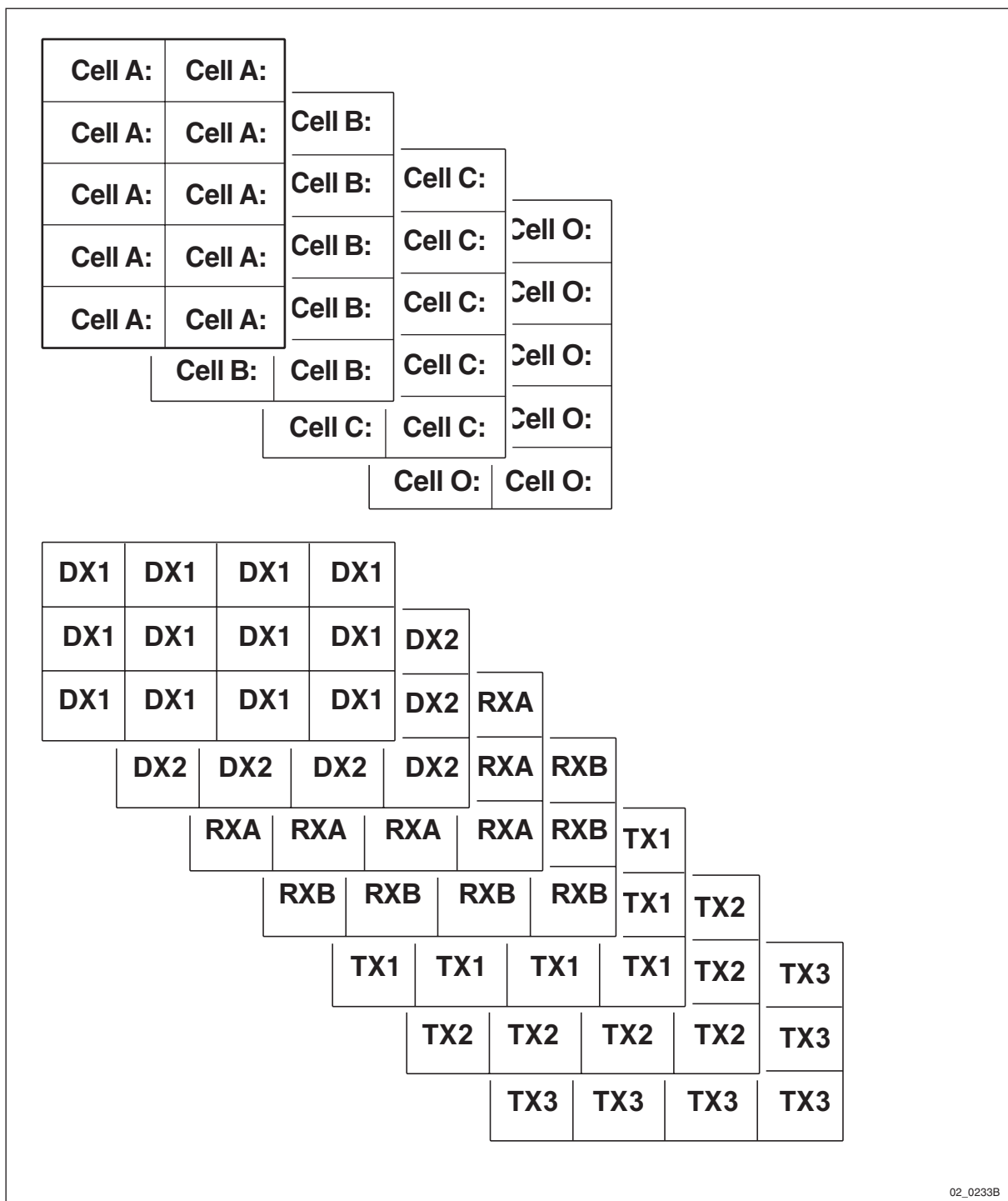


Figure 2 The layout of the marking plates in Marking Set NTM 201 207/1

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2 Marking Principle

Please observe, that there is only one label size for both feeder and jumper marking.

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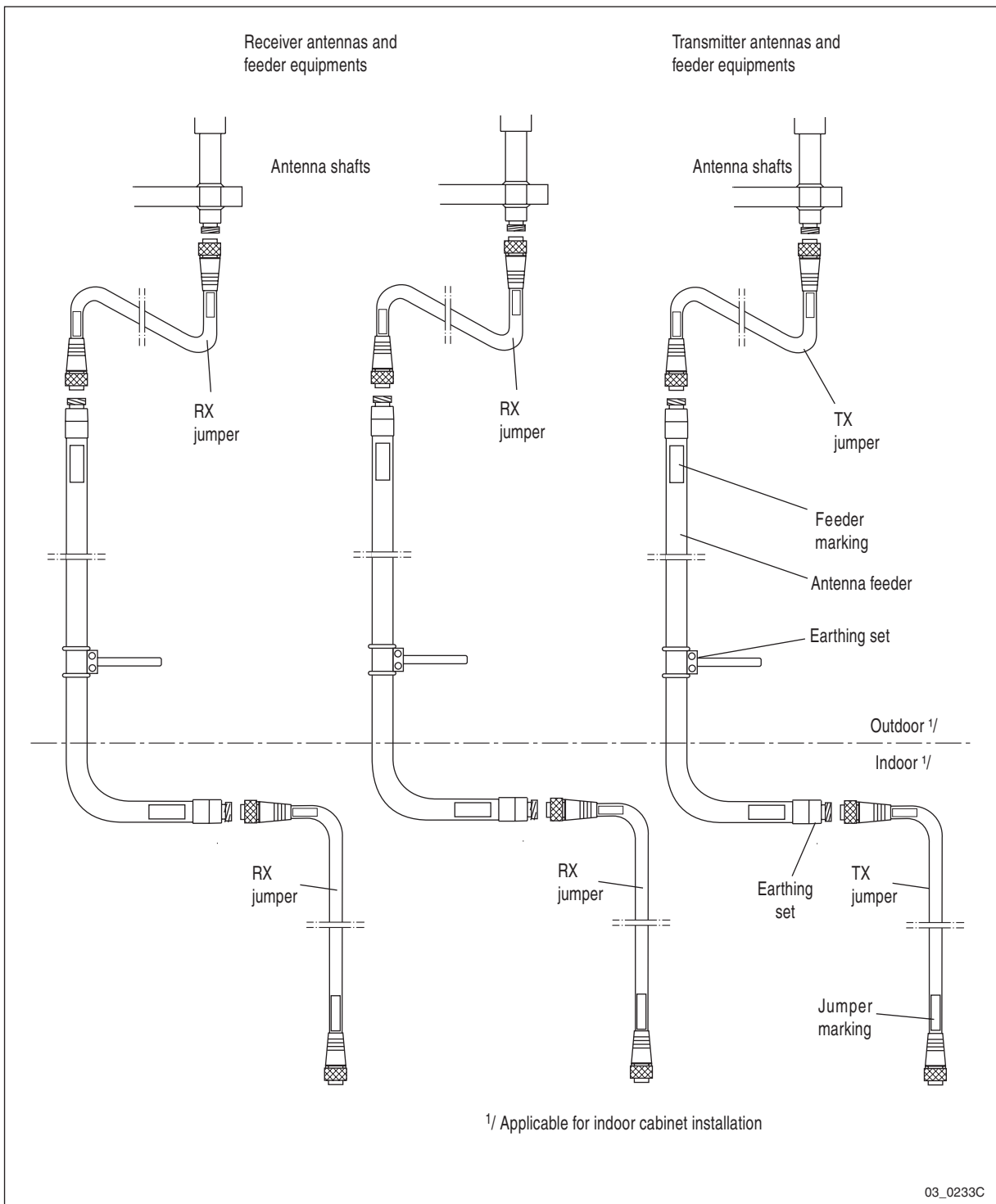


Figure 3 Marking principle of feeders and jumpers

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3 Installation

3.1 Labeling of Feeders

1. Label the feeders at each end beginning from the connectors. This means that the labeling of the connectors will be upside down in relation to each other, as indicated on figure 1.
2. Check that the labels are not obscured by other cabling.
3. Clean the feeder surface where a label is to be fastened with denaturated alcohol.
4. Check that the labels are correctly adhered, without wrinkles or creases.

3.2 Labeling of Antenna and Cabinet Jumpers

1. Corresponding jumper and feeder labels should be identical.
2. Label the jumpers at each end beginning from the connectors, see figure 1.
3. Clean the surfaces of the jumpers with denaturated alcohol, before attaching the labels.
4. Check that the labels are correctly attached, without wrinkles or creases.
5. Check that the labels are easy to read from the readers viewpoint. The labels must not be obscured by other cables, and it should not be necessary to twist the jumper to read a label.

Uppgjord — <i>Prepared</i> SG/ERA/LRN/ZG NHg	Datum — <i>Date</i> 1999-02-11	Rev D	Dokumentnr — <i>Document no</i> 1531-NTM 201 239 Uen
Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olod Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Marking Set NTM 201 239

Contents		Page
1	General	2
2	Installation	3
2.1	Labeling of Feeders	3
2.2	Labeling of Antenna and Cabinet Jumpers	3

Datum — Date	Rev	Dokumentnr — Document no
1999-02-11	D	1531-NTM 201 239 Uen

1 General

This marking set is intended for omni antenna installations.

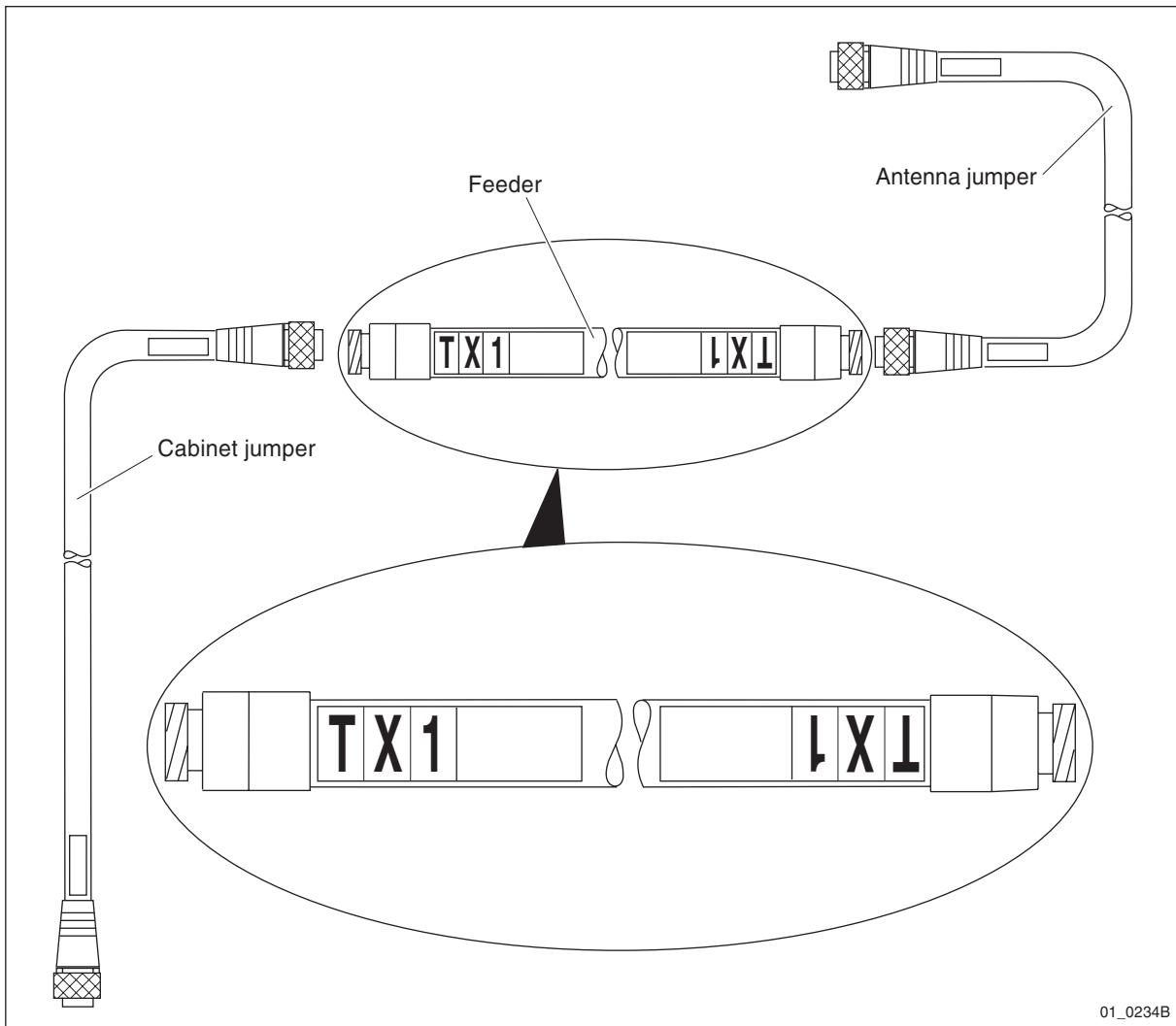


Figure 1 Mounting of labels in Marking Set NTM 201 239

The labels are made up of self-adhesive yellow reflecting tape with black text. They are delivered in a set of 72 characters with the following contents:

Table 1 Labels

Character	Quantity
R	12
T	12
X	24

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1	6
2	6
3	6
4	6

2 Installation

Please observe, that there is only one label size for both feeder and jumper marking.

2.1 Labeling of Feeders

1. Label the feeders at each end beginning from the connectors. This means that the labeling of the connectors will be upside down in relation to each other, as indicated on figure.
2. Check that the labels are not obscured by other cabling.
3. Clean the feeder surface where a label is to be fastened with denaturated alcohol.
4. Check that the labels are correctly adhered, without wrinkles or creases.

2.2 Labeling of Antenna and Cabinet Jumpers

1. Corresponding jumper and feeder labels should be identical.
2. Label the jumpers at each end beginning from the connectors as indicated on figure.
3. Clean the surfaces of the jumpers with denaturated alcohol, before attaching the labels.
4. Check that the labels are correctly adhered, without wrinkles or creases, to clean and dry cable surfaces.
5. Check that the labels are easy to read from the readers viewpoint. The labels must not be obscured by other cables, and it should not be necessary to twist the jumper to read a label.

Uppgjord — <i>Prepared</i>	Datum — <i>Date</i>	Rev	Dokumentnr — <i>Document no</i>
SG/ERA/LRN/ZG NHg	1999-02-11	D	1531-NTM 201 240 Uen
Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

Installation of Marking Set NTM 201 240

Contents		Page
1	General	2
2	Installation	4
2.1	Labeling of Feeders	4
2.2	Labeling of Antenna and Cabinet Jumpers	4

Datum — Date	Rev	Dokumentnr — Document no
1999-02-11	D	1531-NTM 201 240 Uen

1 General

This marking set is intended for sector antenna installations.

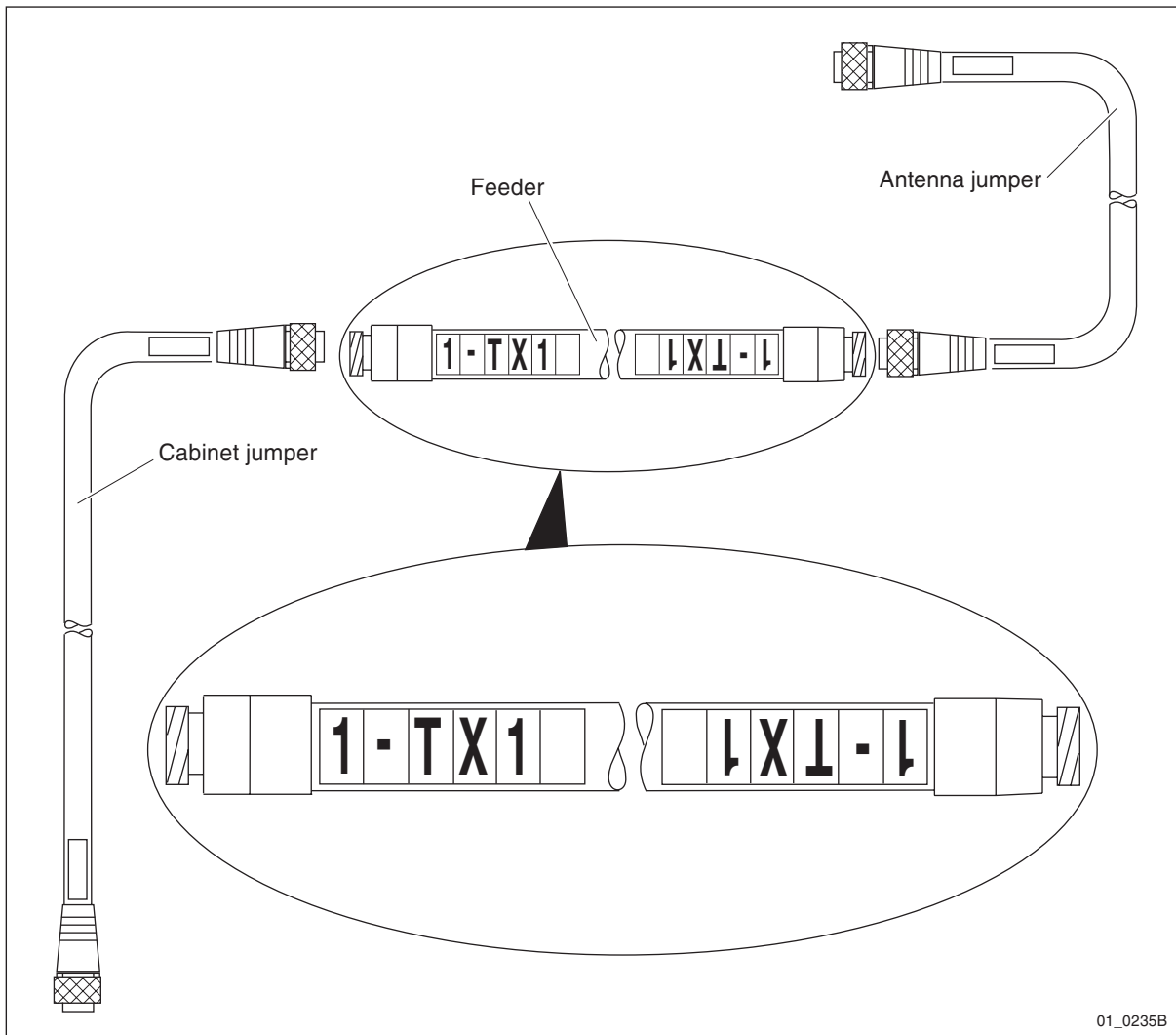


Figure 1 Mounting of labels in Marking Set NTM 201 240

The labels are made up of self-adhesive yellow reflecting tape with black text. They are delivered in a set of 225 characters with the following contents:

Table 1 Labels

Character	Quantity
R	18
T	27
X	45

Datum — <i>Date</i>	Rev	Dokumentnr — <i>Document no</i>
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1	33
2	33
3	24
-	45

Datum — Date	Rev	Dokumentnr — Document no
1999-02-11	D	1531-NTM 201 240 Uen

2 Installation

Please observe, that there is only one label size for both feeder and jumper marking.

2.1 Labeling of Feeders

1. Label the feeders at each end beginning from the connectors. This means that the labeling of the connectors will be upside down in relation to each other, as indicated on figure.
2. Check that the labels are not obscured by other cabling.
3. Clean the feeder surface where a label is to be fastened with denaturated alcohol.
4. Check that the labels are correctly adhered, without wrinkles or creases.

2.2 Labeling of Antenna and Cabinet Jumpers

1. Corresponding jumper and feeder labels should be identical.
2. Label the jumpers at each end beginning from the connectors as indicated on figure.
3. Clean the surfaces with denaturated alcohol, before attaching the labels.
4. Check that the labels are correctly attached, without wrinkles or creases.
5. Check that the labels are easy to read from the readers viewpoint. The labels must not be obscured by other cables, and it should not be necessary to twist the jumper to read a label.

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Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
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Installation of Cable Lead-in NTM 201 217

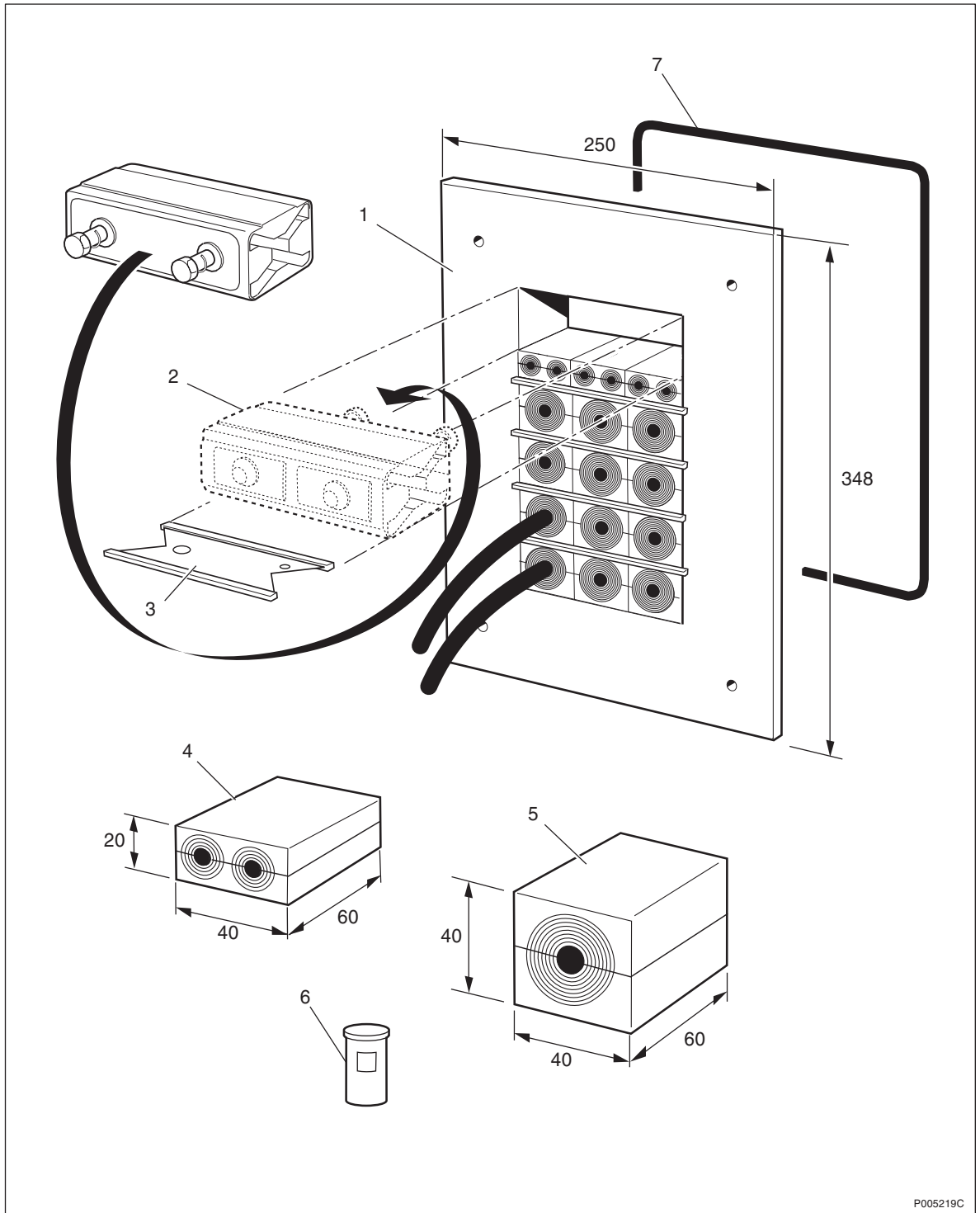
Contents		Page
1	General	2
2	Installation	5
3	Fire Protection	8

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1 General

By adapting rubber packings to feeder diameters and pressing them against a stable steel frame with a expandable rubber wedge or a compression tool when needed, a water and fireproof bushing through a wall or roof is obtained.

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Figure 1 Cable Lead-in NTM 201 217

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Table 1 Cable Lead-in NTM 201 217 details

Pos	Product number	PRIM title	Qty
1	1/NDM 401 01/2	Frame (G-frame)	1
2	2/NDM 401 01/2	Wedge	1
3	3/NDM 401 01	Stay-plate	5
4	5/NDM 401 01/15	RM 20 w40 (20x40x60 mm)	3
5	5/NDM 401 01/11	RM 40/10-32 (40x40x60 mm)	12
6	5/NDM 401 03/4	Lubricating Grease	1
7	6/NDM 401 01/3	Sealing Strip (15x6x1.2 m)	1

The Compression Tool 4/NDM 401 01 is included in the Tool Set,
RBS Cabinet LTT 601 96/1.

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2 Installation

1.

Take up a hole in the wall measuring 240 x 142.5 mm.

2.

Fit the frame into the hole from the outside of the site/cabinet with the flange pointing inwards the site/cabinet and fix the frame with screws using the four diam. 6 mm holes.

3.

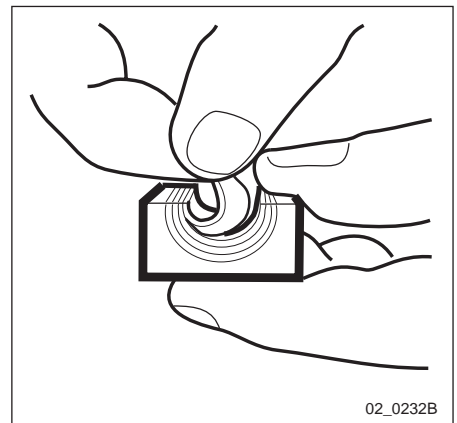
Put in the feeders/jumpers through the frame.

4.

Select the RM 20 and RM 40 modules needed and a 13 mm wrench.

5.

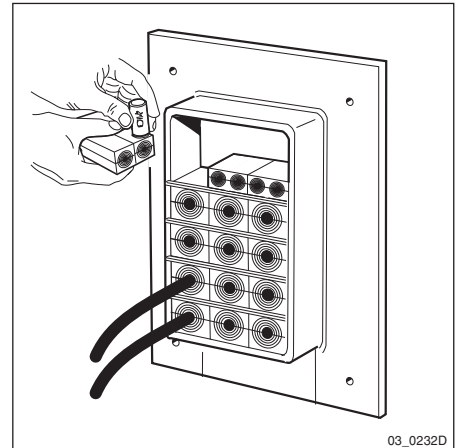
If necessary adjust the diameter of the RM 20 or RM 40 (pos 4 or pos 5) module by removing the rubber sheets until the cable fits. (Each sheet is 0.6 mm thick). Check the new diameter by trying the module at the transit spot.



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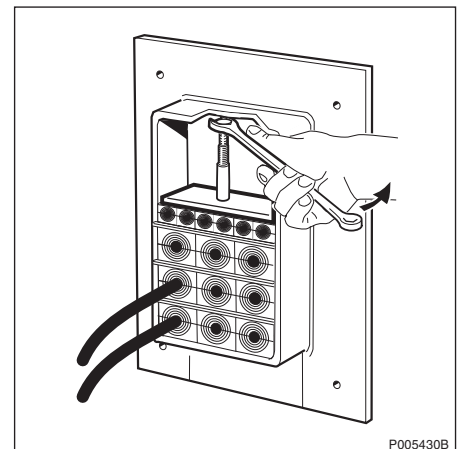
6.

Apply lubricant on the inside of the frame. Likewise, lubricate the exterior of the modules and drop them into place one by one. Top every full layer of modules with a stay plate (pos 3) with the exception of the last layer.



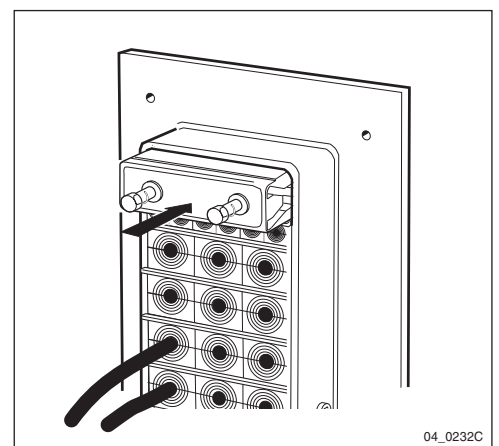
7.

To facilitate the compression of the modules around stiff cables the Compression Tool 4/NDM 401 01 can be used. This tool is included in the Tool Set, RBS Cabinet LTT 601 96/1.



8.

After the installation of the modules is ready, put in the wedge (pos 2) on top with the heads of the wedge bolts facing inwards the site building/cabinet. In this way a vandalproof installation is obtained.

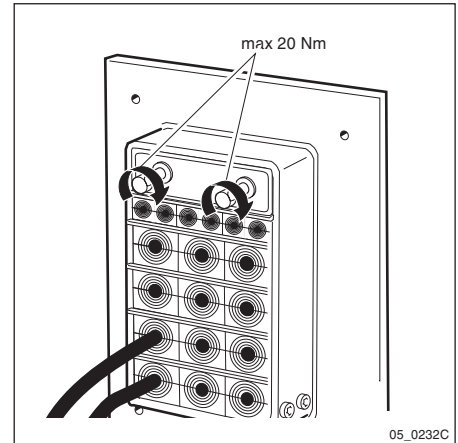


Note: Loosen the two bolts on the wedge slightly to facilitate the putting in of the wedge.

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9.

Tighten the two bolts on the wedge with a maximum force of 20 Nm for simultaneous compressing and sealing.



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3 Fire Protection

After the installation is done as described above a very good fire protection is obtained complying with several Swedish and foreign type approvals.

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Sealing Set NTM 201 2426

This Installation Instruction 1531-NTM 201 2426 Uen is productified as LZV 109 04/1

Contents		Page
1	General	2
2	Installation	3
2.1	Sealing of Connectors between two Cables	3
2.2	Sealing of Antenna Connector	5
2.3	Inspection	5

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1 General

All exterior connectors shall be sealed after antenna measurements are completed and acknowledged.

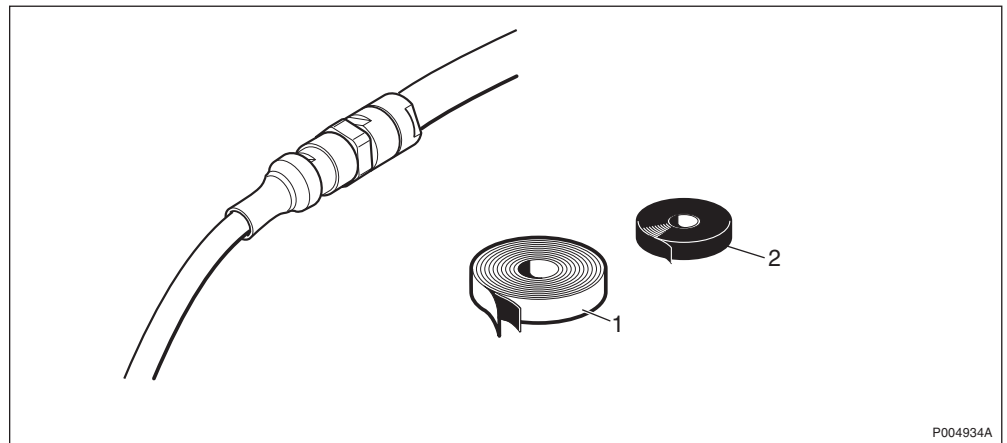


Figure 1 Sealing Set NTM 201 2426

Table 1 Sealing Set NTM 201 2426 details

Pos	Product no.	PRIM title	Qty
1	NTA 201 03	Tape, self-fusing, l=9.15 m; w=19 mm	1
2	MPP 270 07/1	Electrotape PVC, l=20.1 m; w=19 mm	1

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2 Installation

2.1 Sealing of Connectors between two Cables

2.1.1 Sealing with Self-fusing Tape NTA 201 03

1.

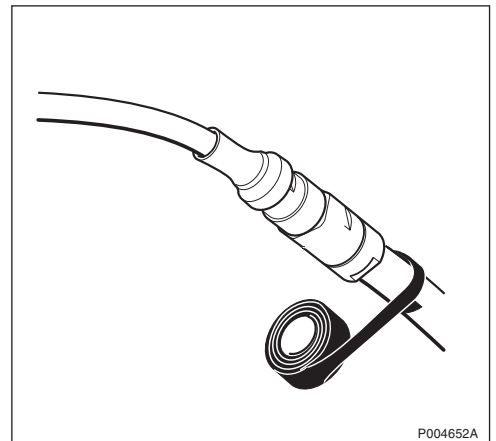
Perform the sealing at normal humidity and with clean and dry connectors to prevent the sealing from trapping moisture and dirt. Moisture and dirt may imply transmission disturbances.

2.

Remove the liner of Self-fusing Tape NTA 201 03 (pos1) during the application.

3.

Start to apply the self-fusing tape to the lower cable connector approximately 50 mm below the lower edge of the connector.

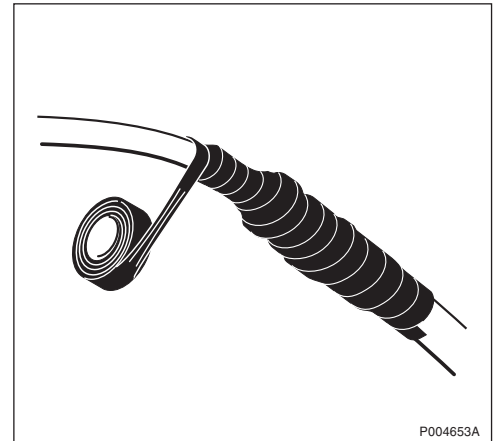


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4.

Vary the stretch of the self-fusing tape to accomplish a void-free application. To eliminate voids in critical areas stretch the tape just short to its breaking point. In less critical areas, use less stretch of the tape. Let each turn overlap the previous turn about 50 % to form a roof tile looking cover. Wrap upwards until the entire connector is well covered and to a point about 50 mm above the edge of the upper connector. Avoid leaving any step like appearances so that a proper sealing will be ensured with the self-fusing tape and also with the application of the Electrotape MPP 270 07/1 (pos 2) in 2.1.2 afterwards.

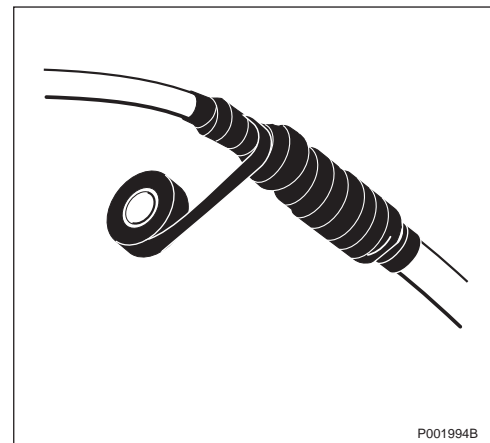


2.1.2

Covering the self-fusing tape with Electrotape, PVC MPP 270 07/1

1.

Apply two half overlapped, slightly stretched layers of Electrotape, PVC MPP 270 07/1 (pos 2), starting 30 mm below the lower end of the self-fusing tape, then upwards by extending 30 mm in front of the self-fusing tape on the other side and back. Each successive layer should extend 1-2 mm over the ends of previous layer on both sides. It is recommended to apply the two layers continuously.



2.

Cut off the tape with a knife to prevent undue tension and flagging.

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2.1.3 Sealing Quality Inspection

1.

Make sure that each turn overlaps the previous by at least 50%. Make sure that there are no folds or openings in the electrotape that can collect moisture.

2.2 Sealing of Antenna Connector

1.

For antennas with a chassis connector, follow the procedures described in 2.1, but continue wrapping onto the connector chassis

2.

If the antenna connector is mounted at the top of the antenna or in other places where water can run along the cable and onto the antenna: start the wrapping on the connector chassis and continue onto the cable. Each turn should form roof tiles to prevent water from entering connector or antenna.

2.3 Inspection

1.

Check that the final layer of turns form overlapping layers in the direction of possible water flow. Each turn should have an overlap of at least 50%

2.

Check that there are no folds or openings in the final layer.

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Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

Installation of LCF 1/2" Jumpers

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2	Description	2
2.1	Versions	2
3	Installation	2
3.1	Protection Caps	2
3.2	Bending	3
3.3	7/16 Connectors	4
3.4	Temperature range - Installation	4
3.5	Clamping	4

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1 General

This Installation Instruction describes how to make a reliable installation of the Jumper LCF 1/2" with Ericsson product number TSR 951 63/1+.

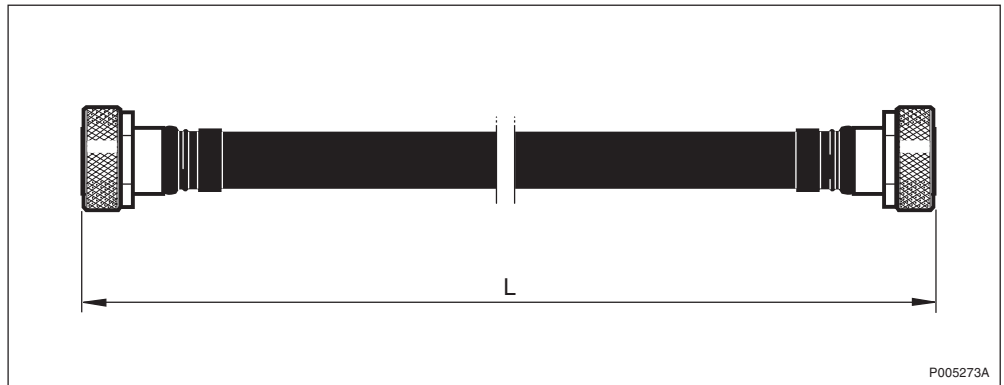


Figure 1 Jumper TSR 951 63/1+

2 Description

2.1 Versions

This jumper comes in three versions:

Table 1

Product number	Length in m between connectors
TSR 951 63/1	1
TSR 951 63/2	2
TSR 951 63/3	3

3 Installation

3.1 Protection Caps

1. Remove the protection caps from the jumper connectors just before installation of the jumpers

The protection caps protect the connectors from dirt, dust and damages. Impurity in the connector area can influence the intermodulation performance considerably.

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3.2 Bending

1. Form the jumper before the installation, taking into consideration radii and distances evident from the figure and values given below.

Note - Avoid torsion and buckling! Excess stress to the corrugated outer conductor can influence the jumper characteristics.

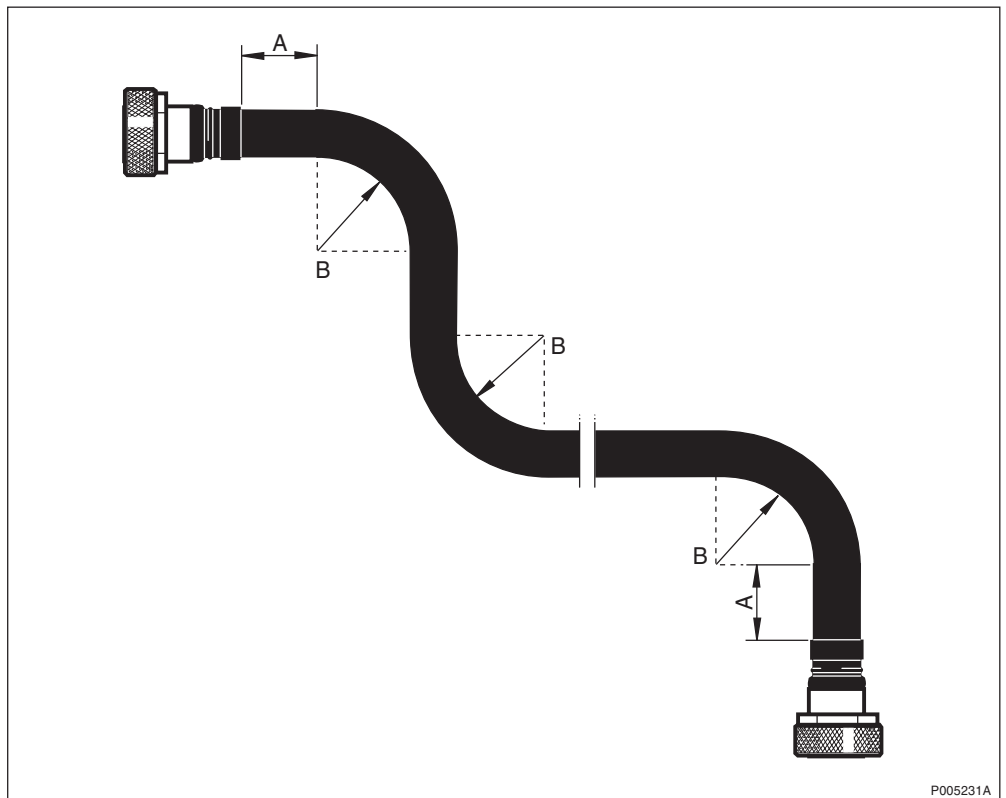


Figure 2 Jumper Bending Allowances

Table 2

Minimum dimensions in mm		
A=no bending allowed	B=single bending	R=repeated bending
50	200	$R > B$

2. Install the jumper stressfree.

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3.3 7/16 Connectors

A U-spanner, 27 mm shall be used for the connection to antenna, feeder and RBS cabinet.

The torque shall be 25-30 Nm.

3.4 Temperature range - Installation

-40° C/+60° C.

3.5 Clamping

1. Clamp the jumper for every 0.6 m distance.

Note Clamping is absolutely necessary to prevent vibration, in case of dynamic forces caused e.g. by wind.

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Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

1 Outdoor Installation Instructions

Table 1 Installation instructions

Sub-sect.	Installation Instructions	Product name/ number	Notes
1	1531-SXK 107 2125+ Uen	Antenna Support SXK 107 2125 SXK 107 2125/2 SXK 107 2125/3 SXK 107 2125/4	
2	1531-SXK 107 2127 Uen	Support Extension SXK 107 2127	extension arm to: SXK 107 2125+
3	1531-SXK 107 2128 Uen 1531-SXK 107 2130 Uen	Support for Tilted Antennas SXK 107 2128 SXK 107 2130	tilting turning
4	1531-SXK 107 2152+ Uen	Antenna Boom SXK 107 2152 SXK 107 2152/2 SXK 107 2152/3 SXK 107 2152/11 SXK 107 2152/12 SXK 107 2152/13	tower side
5	1531-NTM 201 294/1 Uen	Cable Ladder Outdoor NTM 201 294/1	includ. in Basic Equip- ment NTM 201 230

Uppgjord — <i>Prepared</i> SG/ERA/LRN/ZG NHg	Datum — <i>Date</i> 1999-02-16	Rev E	Dokumentnr — <i>Document no</i> 1531-SXK 107 2125+ Uen
Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Antenna Support SXK 107 2125

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2	Assembly on Ground	4
3	Mounting of Attachments	7
4	Mounting of Platform	10
5	Mounting of Guy Wires, Wire Attachment and Earthing Cables	12
6	Mounting of Antenna Support Pipes and Antennas	15
7	Installation Inspection	16

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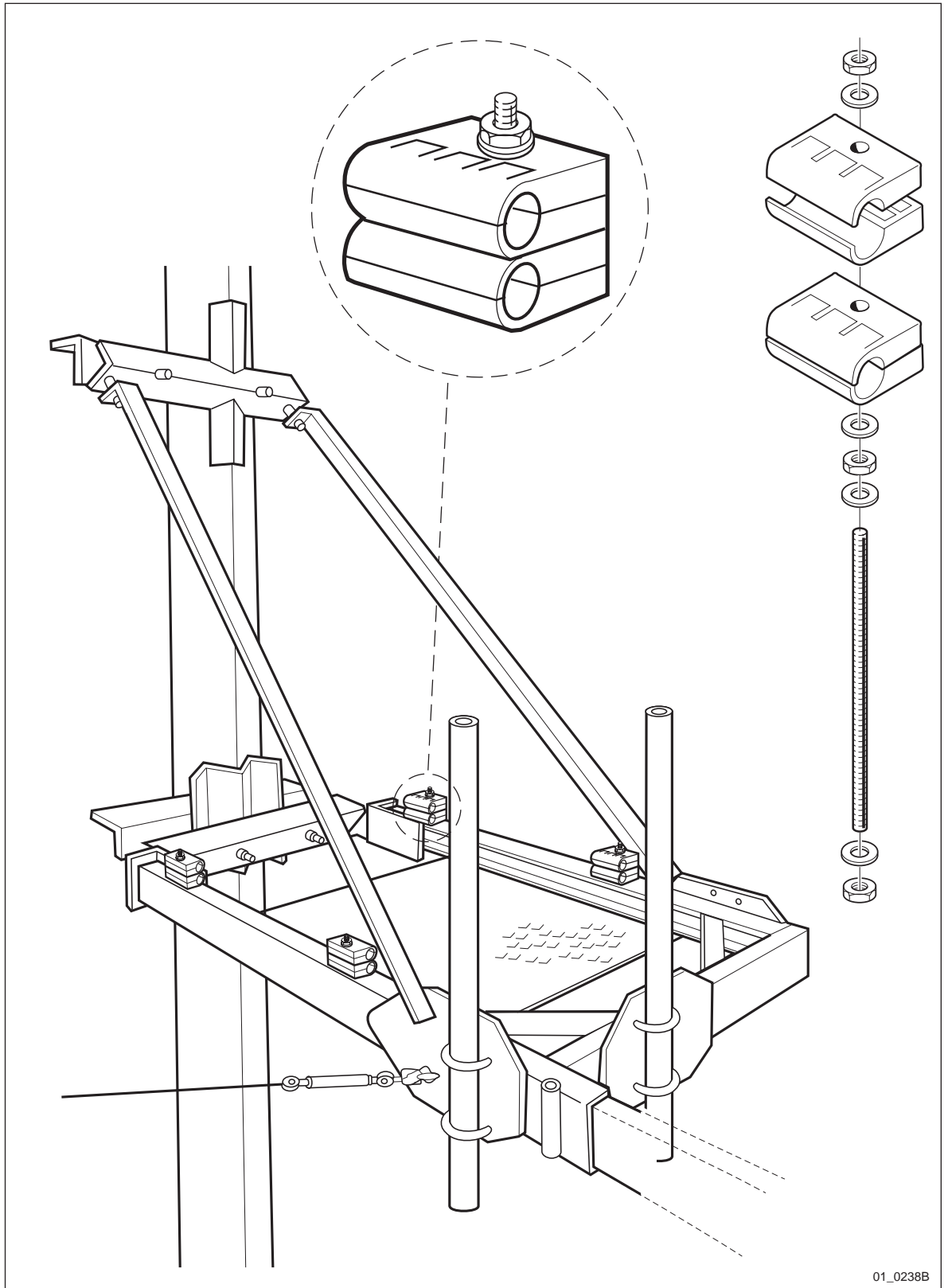
1 General

This antenna support comes in four versions to fit towers with legs constructed of angular or tubular profiles of various dimensions according to the following table:

Table 1 Antenna supports

Product number	Suitable for tower-leg (mm)
SXK 107 2125	L-profile 60x60 to 175x175
SXK 107 2125/2	L-profile 175x175 to 225x225 Tube Ø75 to Ø100
SXK 107 2125/3	Tube Ø100 to Ø200
SXK 107 2125/4	Tube Ø200 to Ø300

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Figure 1 Antenna Support SXK 107 2125

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2 Assembly on Ground

See figures 2, 3 and 4

1. Pre-assemble lower attachment, (pos 1) in figure 2, before it is used as a hinge on the platform.
2. Select suitable holes appropriate for the dimensions of the tower leg.
3. Mount pin bolt (pos 2) (2 pcs, $l = 210$ mm), to lower attachment.
4. Tighten the pin bolts and lock them with lock nuts (pos 5) (4 pcs).
5. Check that the lower attachment fits against the platform hinge.

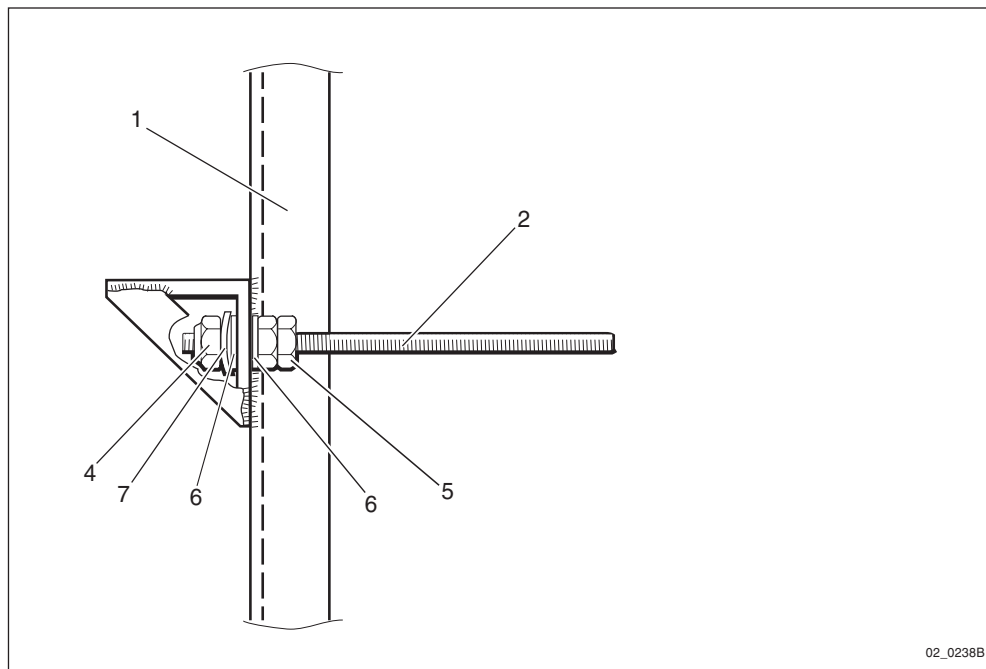


Figure 2

6. Upper attachment, (pos 1) in figure 3, is pre-assembled.
7. Mount pin bolts (pos 3) (2 pcs, $l = 140$ mm) intended to support the diagonal struts.
8. Mount pin bolts (pos) (2 pcs, $l = 240$ mm) intended to join the attachment to the holding bracket behind the tower leg.

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9. Select suitable holes appropriate for the dimensions of the tower leg.
10. Mount the pin bolts.
11. Tighten the pin bolts and lock them with lock nuts (pos 5) (8 pcs).
12. Thread a loose nut on the free end of each pin bolt.

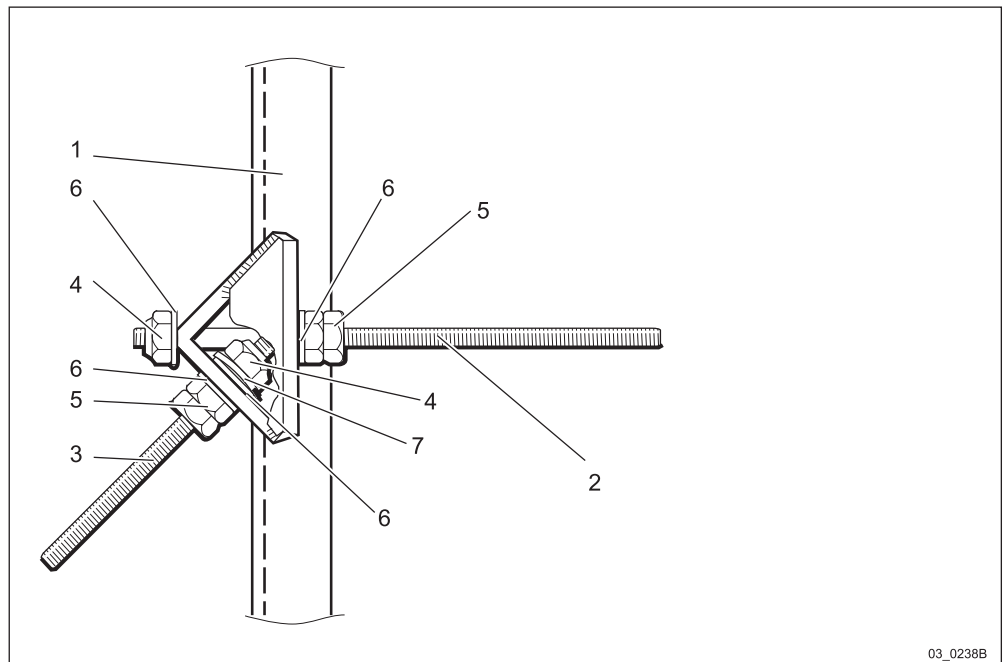


Figure 3

13. Mount a diagonal strut, (pos 2) in figure 4, to each side of the platform.
14. Mount the diagonal struts (pos 2) with the angle of the profile turned outwards from the platform. The struts are mounted with a screwed joint. The struts are mounted at a 45 degree angle to the platform.
15. Pre-assemble the following parts on the platform:
 - eye bolts (pos 3)
 - shackles (pos 4)
 - turnbuckles (pos 5)
 - guy wires (pos 6)
 - clamps for the antenna tubes (pos 7)

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16. Attach the guy wires, which are delivered in coils, to the pre-assembled platform.
17. Tighten nuts snugly against the surface. Follow up with a 45 degree turn (10 Nm).

This also applies to screw joints, diagonal struts and eye bolt nuts.

18. Prepare to hoist the pre-assembled platform by positioning a rope sling around the platform and just inside the diagonal struts.

Fix the rope sling properly so that the platform cannot fall while hoisting.

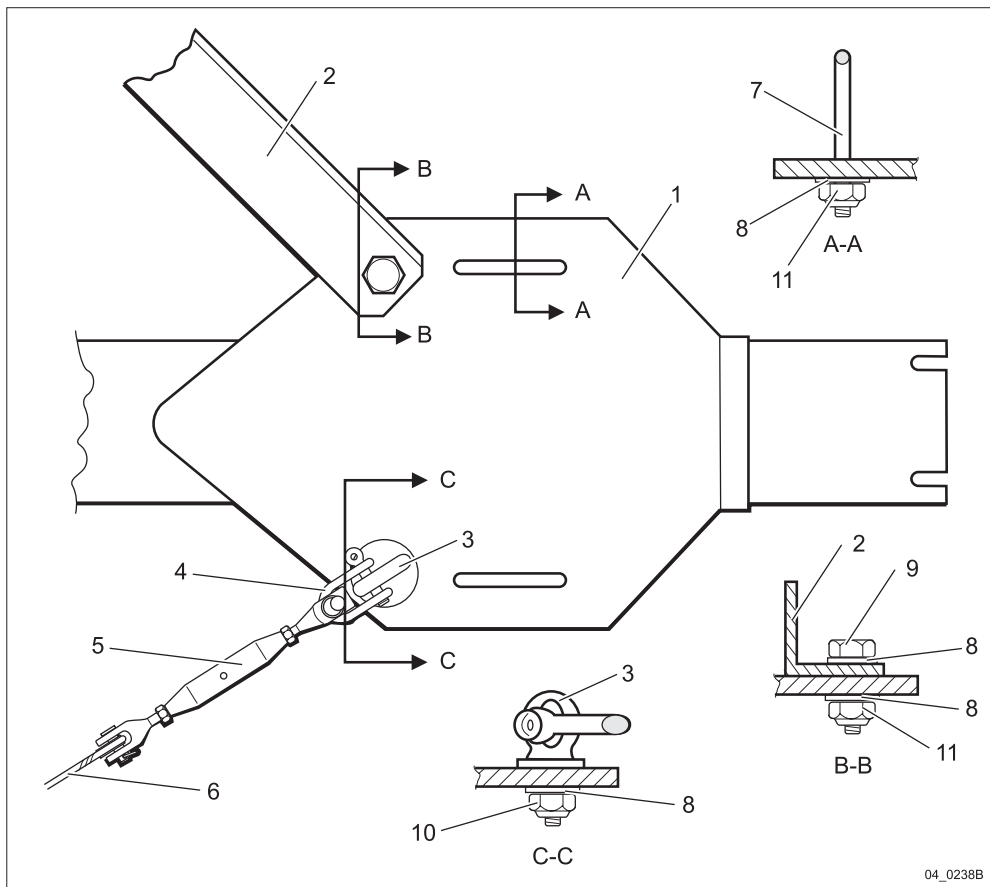


Figure 4

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3 Mounting of Attachments

See figures 5 and 6.

1. For work on the tower you will need the pre-assembled upper and lower attachments together with:
 - Holding brackets (pos 2)
 - Spacers (pos 3)
 - Washers and nuts (pos 4, 5, 6, 7 and 8)

in figure 5.
2. Determine the position on the tower leg where the lower attachment shall be installed.
3. Place the lower attachment in the proper position on the outside of the tower leg. Take care to position it correctly.
4. Mount two nuts and washers on the pin bolts. Place two spacers on the pin bolts and let them hang freely, see pos 9.
5. Position the holding bracket on the inside of the tower leg and onto the two pin bolts.
6. Mount a plain washer (pos 6) and a spring washer (pos 7) on each pin bolt.
7. Thread on a locking nut (pos 8) on each pin bolt and tighten the screw joint.
8. Tight the joint against the surface followed by a 120 degree turn (40 Nm).
9. Move the spacers (pos 3) in position close to the tower leg and locate the spacer in the most suitable position to cover the space between the tower leg and pin bolt.
10. Tighten with nut (pos 5).

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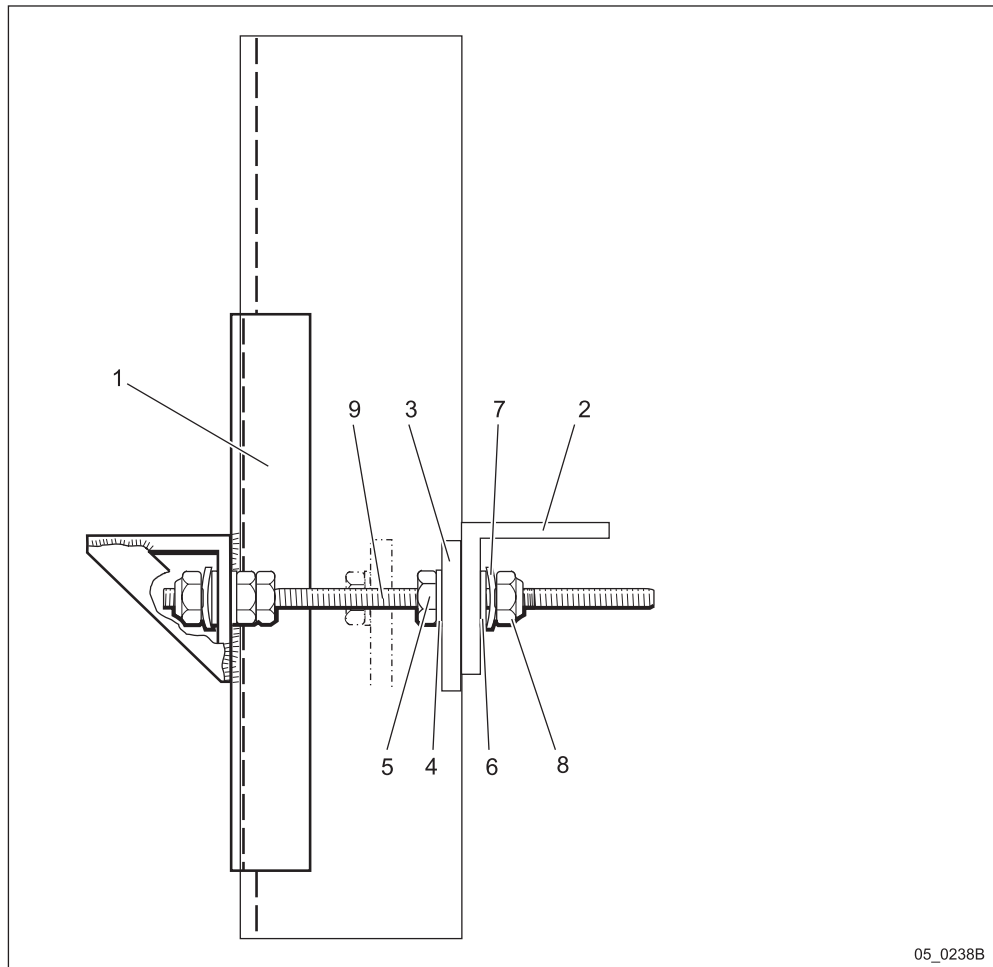
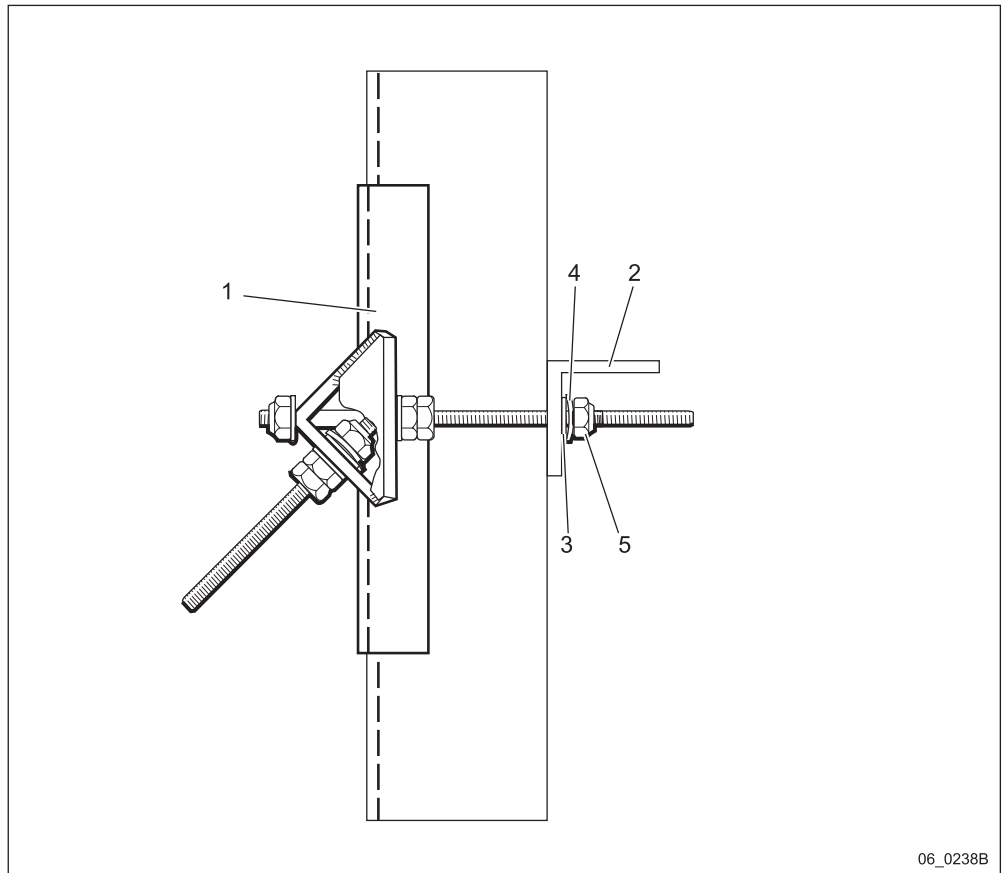


Figure 5

11. Measure approximately 900 mm upwards from the lower attachment and mark the tower leg. This is the position of the upper attachment.
12. Place the pre-assembled attachment on the outside of the tower leg, see figure 6.
13. Position the holding bracket on the inside of the tower leg onto the two pin bolts.
14. Mount a plain washer, pos 3, and a spring washer, pos 4, on each pin bolt.
15. Thread on a locking nut, pos 5, on each pin bolt and tighten the screw joint.

Do not tighten the joint completely; it shall be possible to adjust its position to fit to the diagonal struts.

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Figure 6

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4 Mounting of Platform

See figures 7 and 8.

1. Hoist the platform into a position where the hinge of the platform can be fitted onto the hinge of the lower attachment.
2. Mount two screws, (pos 3) in figure 7, when the hinge is fitted, together with the plain washers (pos 4) from the inside of the hinge.
3. Mount a plain washer (pos 4) and a locking nut (pos 5) onto both screws.

Wait to tighten the joint completely until the diagonal struts have been mounted on the upper attachment.

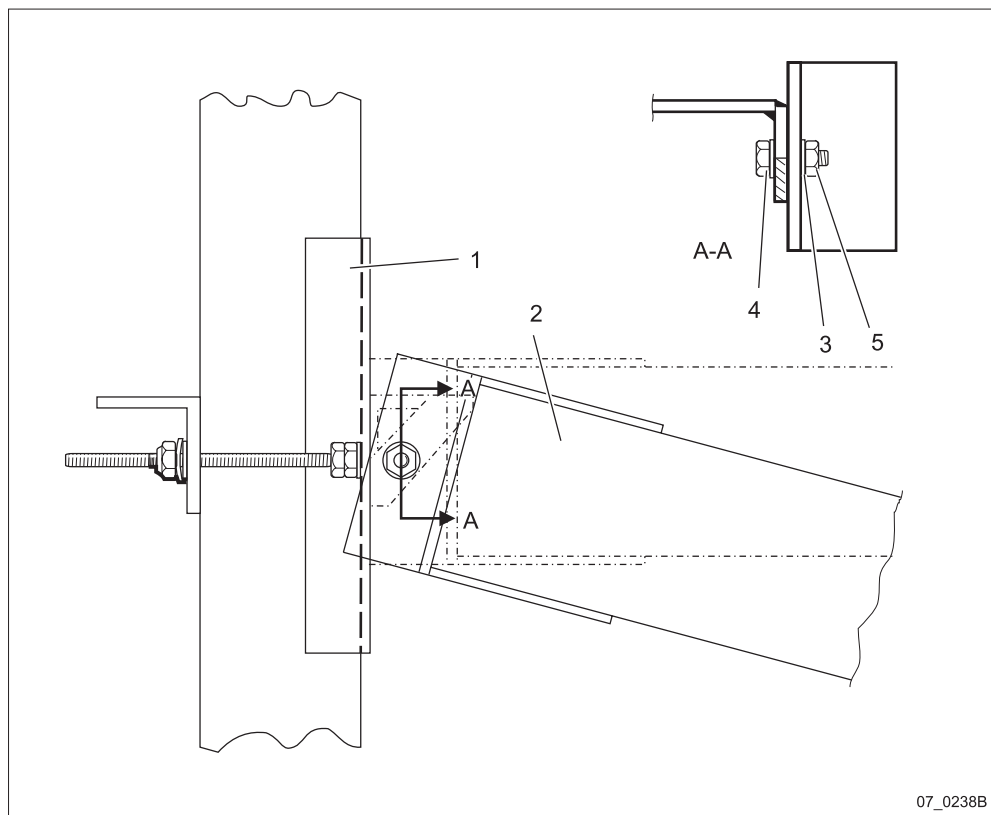


Figure 7

4. Raise the platform to a horizontal level.
5. Mount a plain washer, (pos 5) in figure 8, on each bolt before the pin bolts are fitted into the diagonal struts.

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6. Insert the bolts in the strut end plates.
7. Mount a plain washer (pos 5) and a locking nut (pos 4) on each pin bolt.
8. Tighten the locking nuts.
9. Tighten the screw joints when the height of the upper attachment has been properly adjusted and the platform is horizontal. Tightening procedure: tight against the surface followed by a 120 degree turn (40 Nm).
10. Make final platform adjustments by moving nuts 3 and 4 up or down on the pin bolts (check with a level).
11. Finally, tighten the screw joints in the platform hinge at the lower attachment.

Tightening procedure: tight against the surface followed by a 45 degree turn (10 Nm).

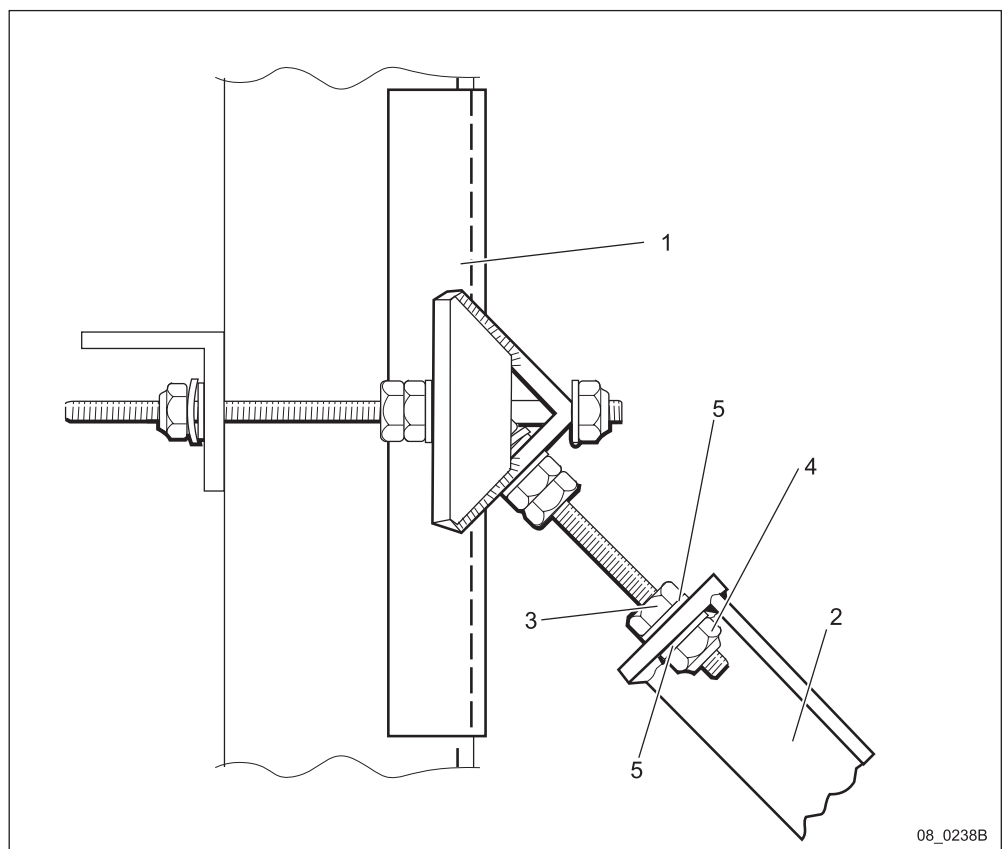


Figure 8

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5 Mounting of Guy Wires, Wire Attachment and Earthing Cables

See figures 9 and 10.

1. Mount guy wire attachments on two neighbouring tower legs before the attachment is brought up in the tower.
2. Open thimbles, (pos 5) in figure 9, with a pliers just enough to insert them into the holes in the attachment then close them again.
3. Mount the attachments in a position which gives a 15 to 30 degree downward angle from the horizontal level of the platform.

This angle may never be less than 15 degrees. The position of the attachment can be calculated by multiplying the horizontal distance between tower legs at platform level by a factor of 0.3

Example: tower width = 4 m, $4 \times 0.3 = 1.2$ m
i.e. 1.2 m below the platform level.

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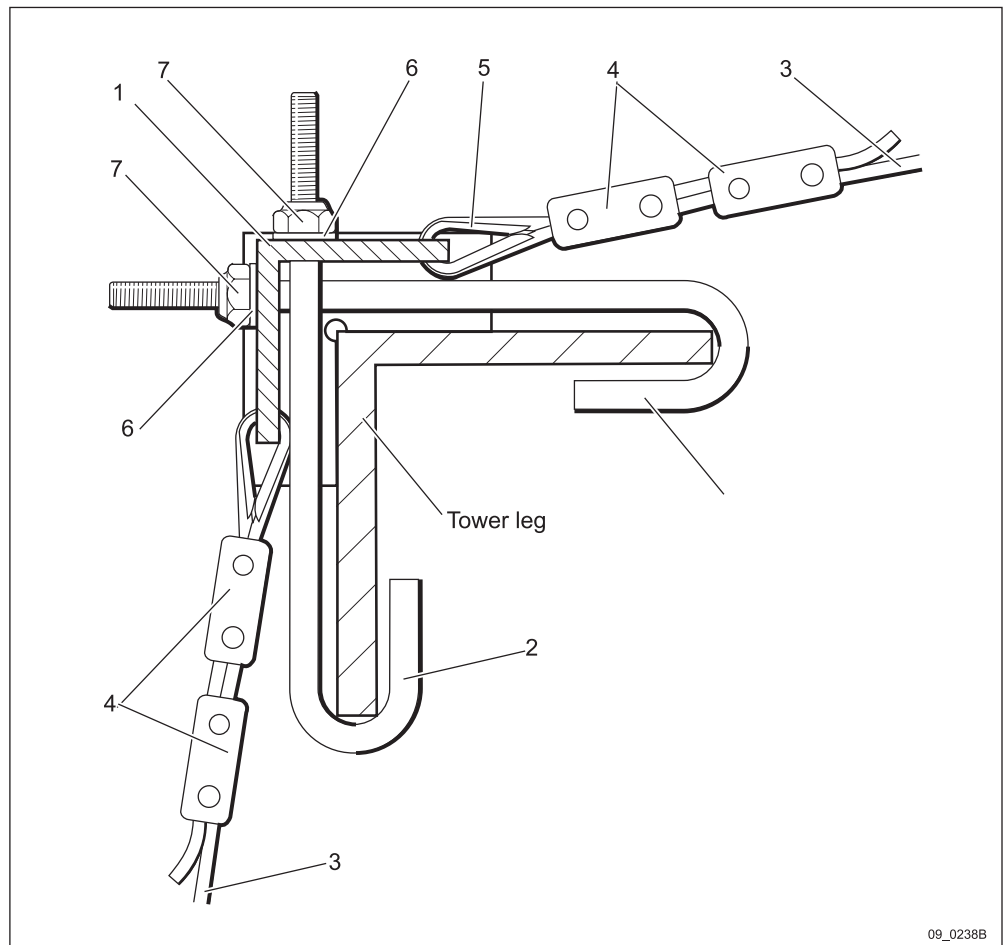


Figure 9

4. Check that both turnbuckles are fully extended before mounting guy wires.
5. Install a wire on each wire attachment, around the thimble, through the hole and lock with two wire grips.
6. Tighten the wires equally with the turnbuckles.
Correct tensile force of the wires is achieved when the wire sags 5 mm.
7. Lock turnbuckle and shackle with stainless steel wire, 1-2 mm in diameter, see figure 10.
8. Connect the earthing cable to the tower.

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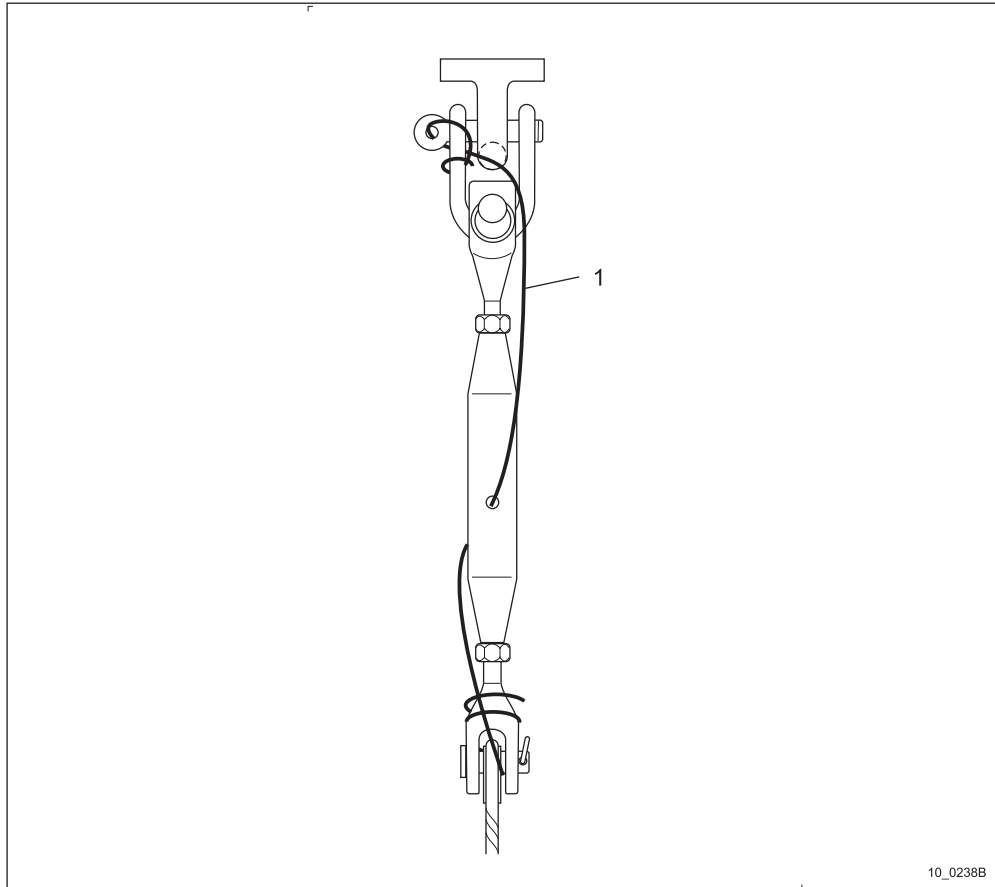


Figure 10

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6 Mounting of Antenna Support Pipes and Antennas

1. Mount the pipe in the previously assembled clamps on the platform. Suitable location of the pipe is selected dependent upon antenna design and desired antenna direction.
2. Tighten against the surface followed by a 45 degree turn (10 Nm).

Mounting of antennas is made according to antenna installation instructions.

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7 Installation Inspection

Inspection of the installation is performed when all parts have been mounted.

The following pos shall be inspected:

1. Check that all screw joints are complete according to installation instruction and figures.
2. Make a final check of tightening torques and tensile forces.
3. Check the form and positioning of the platform.
4. Check the entire antenna support if any damages have occurred while hoisting an assembly in the tower.

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Installation of Support Extension SXK 107 2127

Contents	Page
1 Mounting of Support Extension SXK 107 2127 to Antenna Support SXK 107 2125	2
2 Mounting of Antenna to Support Extension	3
3 Installation Inspection	4

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1 Mounting of Support Extension SXK 107 2127 to Antenna Support SXK 107 2125

One support extension is packed in each box.

1. Pre-install the U-clamps for antennas on ground.
2. Place a rope around the support extension to lift the support to the antenna platform SXK 107 2125.
3. Hoist the entire unit into location on the tower.
4. Fit the hinged end to the extension support and insert the axle into the hinge on the platform.
5. Keep the rope secured around the unit during the entire operation for safety reasons.
6. Fit the axle with a stainless steel washer on upper and lower ends and lock it with a split pin at both ends.
7. Check that the pin screws on the support extension fit into the slots of the lock plate on the platform.

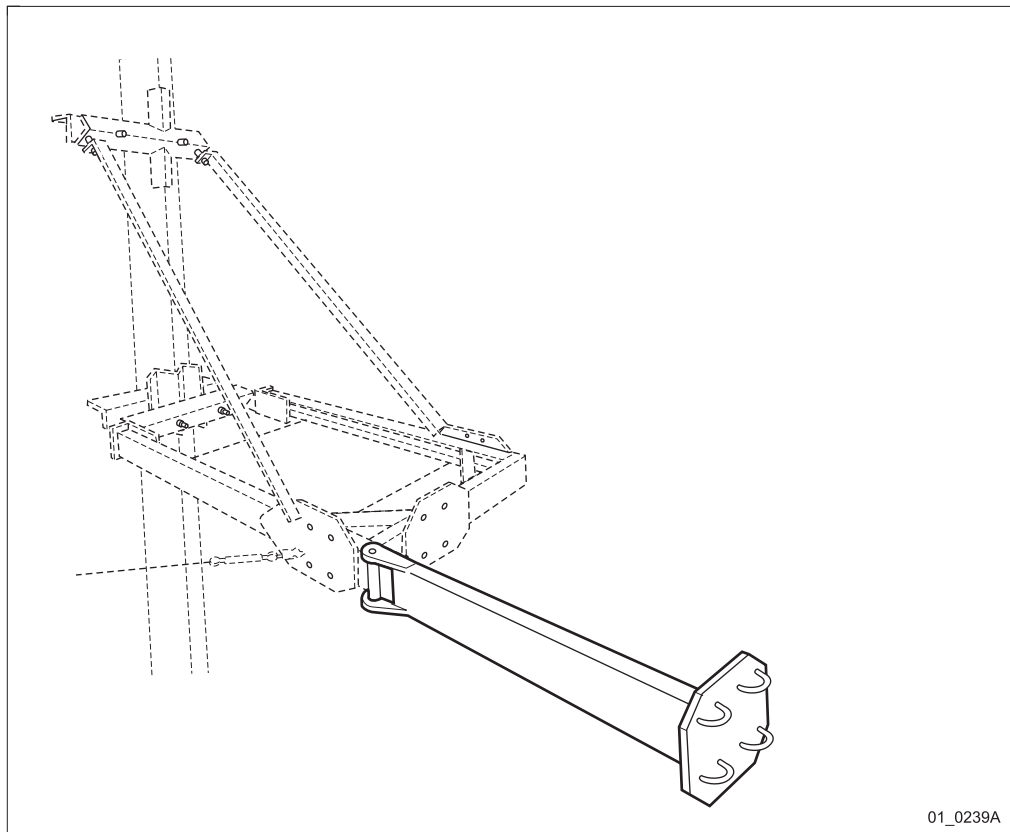


Figure 1 Support Extension SXK 107 2127

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2 Mounting of Antenna to Support Extension

1. Swing the support extension towards the platform and the tower. One antenna can be mounted upwards and one can be mounted downwards in the U-clamps.
2. Swing back the support to check the alignment of the antennas.
3. Tighten the U-clamps when the antennas are properly mounted and aligned. Tightening force: tight against the surface followed by a 45 degree turn (10 Nm).
4. Swing back the support to its final position and position the pin screws into the locking plate of the platform.
5. Place a stainless steel washer and a locking nut on each pin screw.
6. Tighten the joint. Tightening force: tight against the surface followed by a 45 degree turn (10 Nm).

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3 Installation Inspection

7. Check that the split pins are properly locked and that all screw joints are tightened.

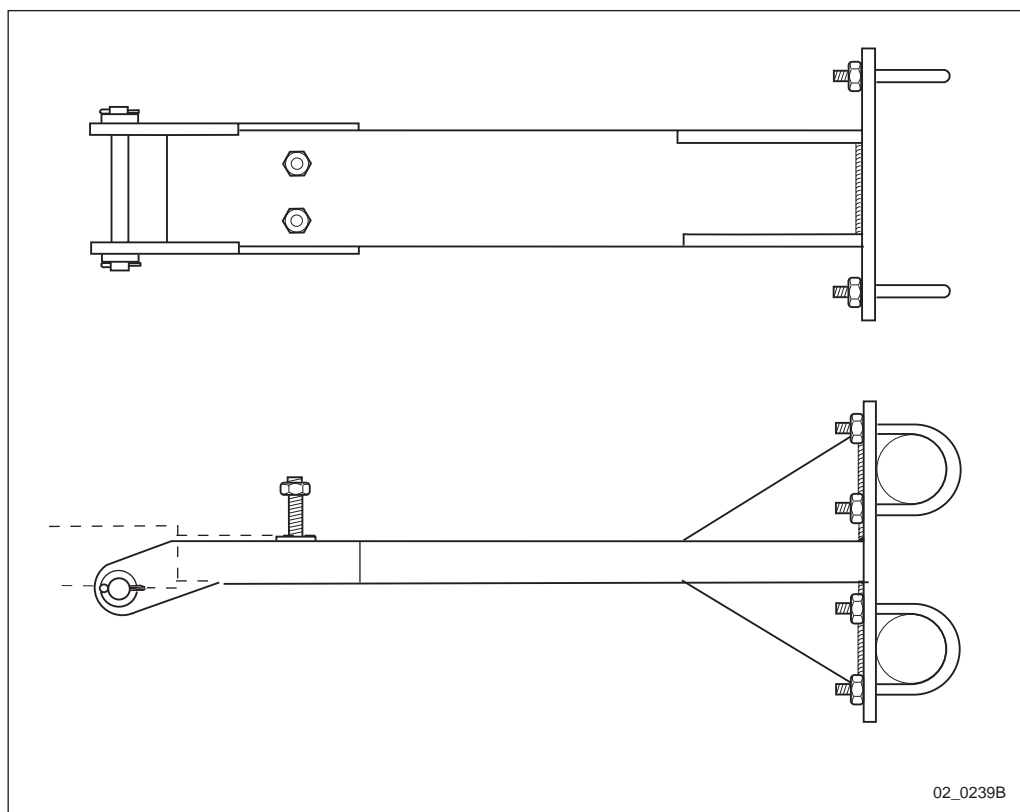


Figure 2

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Installation of Support for Tilted Antennas SXK 107 2128

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2	Mounting on Walls or Similar Objects	3
3	Mounting of Antenna or Antenna Support Pipe	4
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1 Mounting of Antenna Support SXK 107 2128

Three supports are packed in each box. The support is pre-assembled by the supplier and only four screws are needed to fix it to the antenna platform.

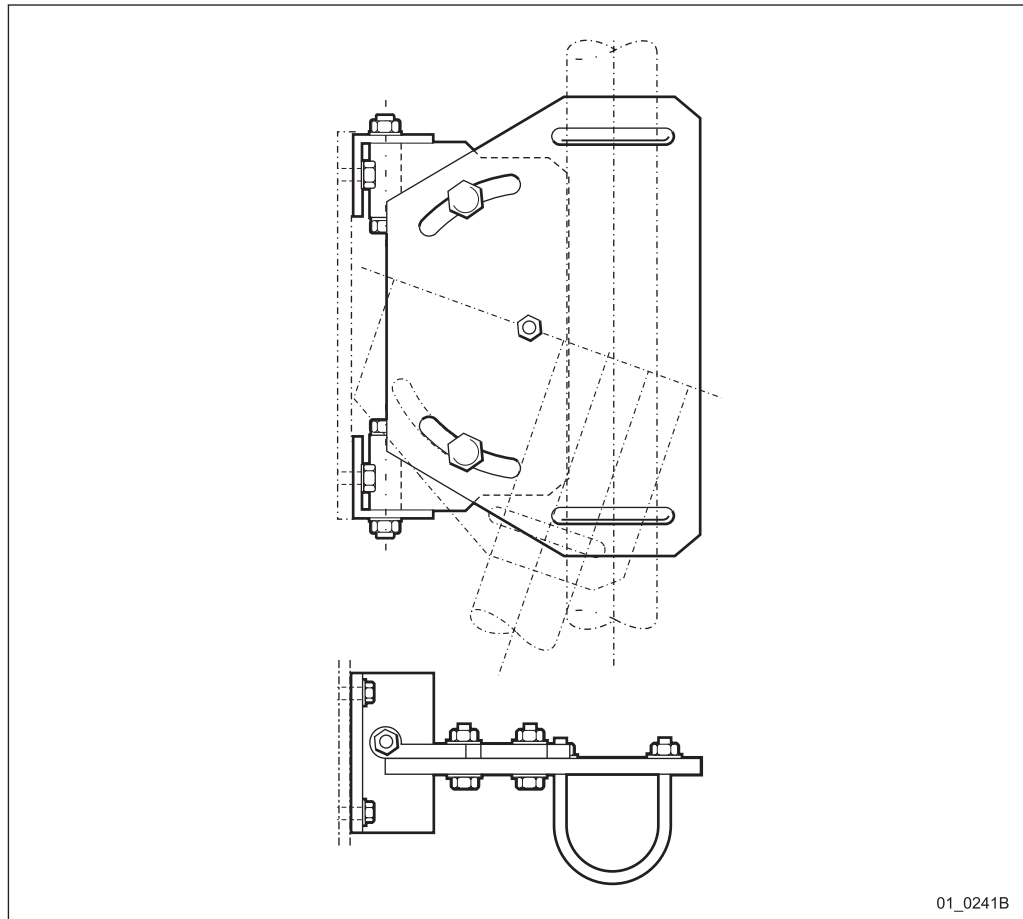


Figure 1 Support for tilted antennas SXK 107 2128

1. Take care to place a stainless steel washer between the aluminium surfaces and screw head or nut.
2. Tight against the surface followed by a 120 degree turn (40 Nm).

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2 Mounting on Walls or Similar Objects

Fixing parts are not delivered with the support.

1. Cover the contact surfaces with plastic tape and treat with tectyle when the support is mounted on a concrete wall, steel covered wall or any other steel surface.
2. Use expansion bolts, diameter 12 mm, made of stainless steel (or hot dip galvanized).

Pulling force on each bolt is less than 3 kN for specified antenna.
3. Use a stainless steel washer next to the aluminum as stated above.

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3 Mounting of Antenna or Antenna Support Pipe

1. Mount the antenna base or a support tube for the antenna in the mounted U-clamps.

The U-clamps are suitable for a 70 mm diameter tube.

2. Tighten the nuts when the antenna has been properly directed.

Tightening force: tight against the surface followed by a 45 degree turn (10 Nm).

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4 Installation Inspection

1. Check the alignment of the antenna.
2. Adjust by loosening the hinged joints if necessary.
3. Tighten all adjustable joints according to the following:
tight against the surface followed by a 120 degree turn
(40 Nm).
4. Check that all joints are tightened.

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Adjustable Antenna Support SXK 107 2130

Contents		Page
1	General	2
2	Mounting on Walls	3
3	Mounting of Antenna or Antenna Support Pipe	4
4	Installation Inspection	5

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1 General

The support is intended to be used in pairs mounted one below the other to support an antenna or antenna 70 mm diameter pipe. The distance from wall to pipe can be adjusted to compensate for irregularities on the wall.

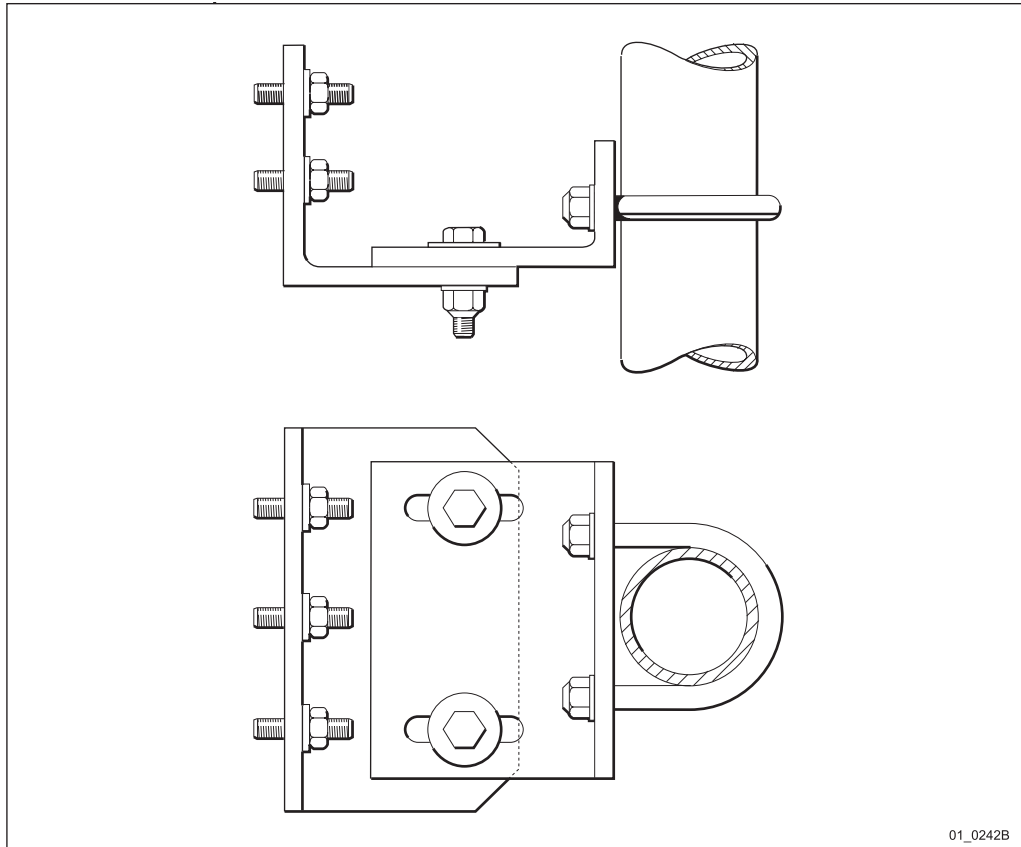


Figure 1 Adjustable Antenna Support SXK 107 2130

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2 Mounting on Walls

For mounting on a concrete wall, steel covered wall or any other steel surface, the contact surfaces are covered with plastic tape and treated with tectyl.

Fixing parts are not delivered with the support. Suitable fixings are expansion bolts, diameter 12 mm, made of stainless steel (or hot dip galvanised). It is necessary to use a stainless steel washer next to the aluminium.

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3 Mounting of Antenna or Antenna Support Pipe

1. Mount the antenna base or a support tube for the antenna in the mounted U-clamps.

The U-clamps are suitable for a 70 mm diameter tube.

2. Tighten the nuts when the antenna has been properly directed.

Tightening force: tight against the surface followed by a 45 degree turn (10 Nm).

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4 Installation Inspection

1. Check the vertical alignment of the antenna.
2. Adjust by loosening the joint if necessary.
3. Tighten the joint according to the following:
tight against the surface followed by a 120 degree turn (40 Nm).
4. Check that all nuts are tightened.

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Antenna Boom SXK 107 2152, /2–3, / 11–13

Contents		Page
1	General	2
2	Installing the Boom Mountings	4
3	Installing the Roller Holders	5
4	Assembly of the Antenna Boom on the Ground	6
5	Mounting of the Antenna Boom to the Boom Mountings	8
6	Installation Inspection	10

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1 General

This antenna support comes in six versions to fit towers with legs constructed of angular or tubular profiles of various dimensions according to the following table:

Table 1

Product number	Tower side 1-3 m	Tower side >3-5 m	Angular Profile, mm	Tubular profile, mm
SXK 107 2152	X		60-225	
SXK 107 2152/2	X			35-200
SXK 107 2152/3	X			200-300
SXK 107 2152/11		X	60-225	
SXK 107 2152/12		X		35-200
SXK 107 2152/13		X		200-300

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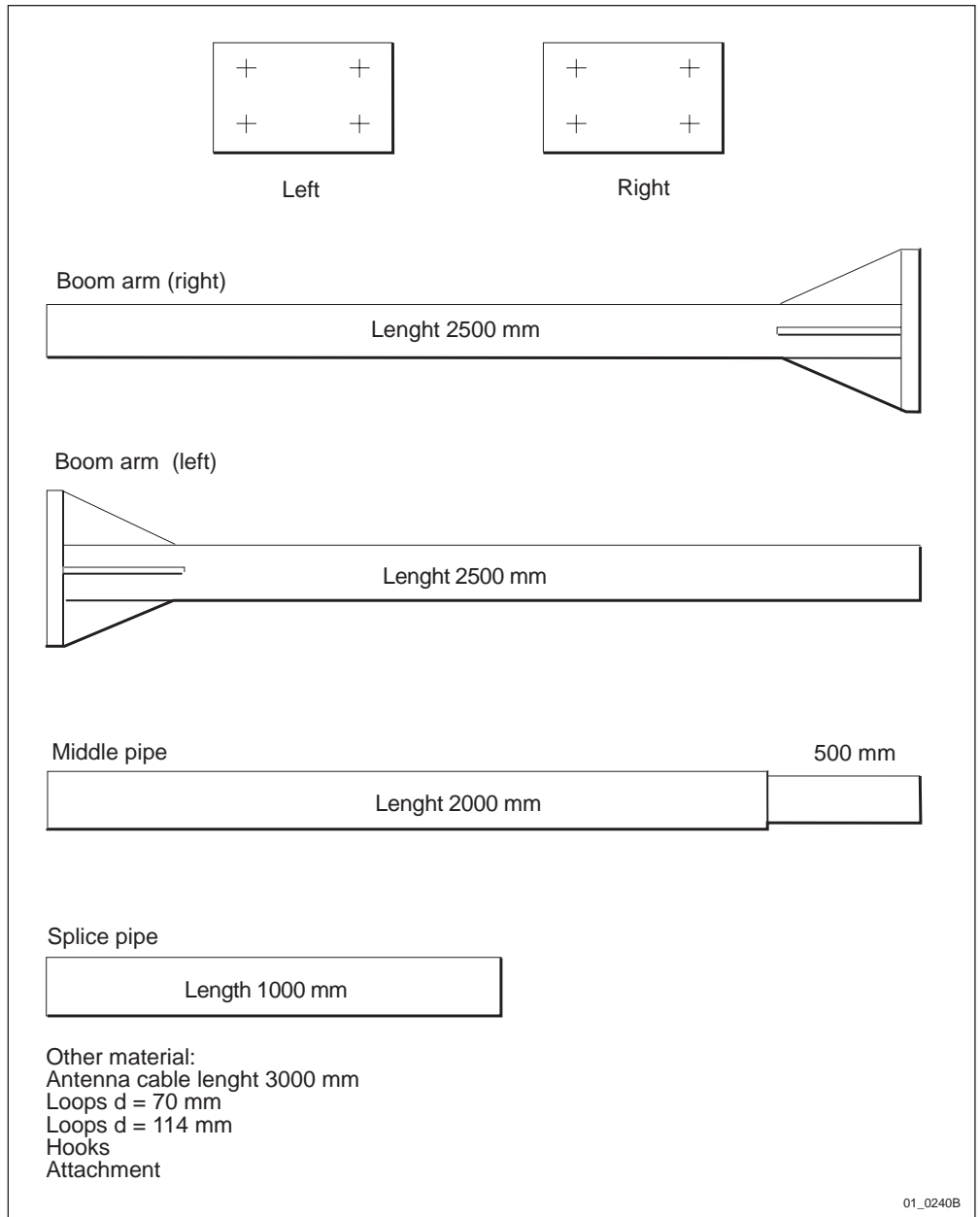


Figure 1 Antenna Boom SXK 107 2152, detail structure

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2 Installing the Boom Mountings

The boom mountings are fitted to the mast at the specified height. Each boom mounting has three tensioning hooks, see figure 2, item 2.

1. Position the boom mountings at the correct height before tightening, and space them equally as shown in figure 3.
2. When fitting the boom mountings make sure that the hooks have a proper grip around the leg flange. The boom mountings should fit properly against the tower legs.
3. Tighten the screws with a tension of 40 Nm.
4. Cut the upper hook end to a length of approximately 30 mm from the boom mounting. See figure 2.
5. Make sure that the hooks are at right angles to the tower legs, as shown in figure 2, if the legs of the tower have a slope of approximately 5 degrees.
6. Fasten the boom mountings securely.

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3 Installing the Roller Holders

1. Fit the roller holder on the bolts which are already fitted to the boom mounting.
2. Attach the roller holder to the lower bolts and lift it so that the top of the roller holder opens.

The lower holes on the roller holder are slotted so that the roller holder can be lifted up and out to accommodate the antenna boom.

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4 Assembly of the Antenna Boom on the Ground

1. Calculate the correct length of the middle pipe as shown in figure 7. This can be done when installing the boom mountings.

2. Measure the length of the tube against the middle pipe when the length of the middle pipe has been calculated.

3. Cut it as shown in figure 5.

The length of 2500 mm for the right and the left boom arms shall not be altered.

The joint between the boom arms and the joining tube should be approximately 500 mm inside the outer edges of the tower legs.

4. Grade the edges of the middle pipe after cutting.

The middle pipe has a plug-welded splice pipe fitted to one end.

5. Place both parallel booms on a flat surface so that the end plates of the arms face as shown in figure 5.

The brackets for the antenna tubes should be aligned in the same direction.

6. Slide the splice pipe into the other boom arm about 500 mm.

7. Check that the antennas are vertically aligned in relation to each other at both ends of the boom before drilling and riveting.

Drilling and riveting can be carried out if they are correct.

8. Drill the boom arm and join the tube while they are together.

Drilling and riveting shall be done on the ridges of the splice pipe as shown in figure 5 and figure 6.

Use a 6 mm drill to enlarge the 4 mm pilot holes.

9. Fit the adapter tube to both boom arms.

10. Fit the earth wire during pre-assembly on the ground.

This is attached using an M8 screw to one rib of the boom arm and the end plate.

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A capture line can be fastened to one end of the earth wire to facilitate assembly. This makes it easier to pull the earth wire to the mast so that it can be fastened when the boom has been located in its final position.

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5 Mounting of the Antenna Boom to the Boom Mountings

1. Use a lifting block to transport the pre-assembled antenna boom to its mountings.

The boom must be properly balanced when lifted to facilitate mounting.
2. Lift the boom into position between the rollers of the roller holder as shown in figure 8.

Make sure that the antenna boom is positioned at the center of the roller holder. An equal length should extend from both sides of the mast legs.
3. Keep the lifting gear attached to the antenna boom while the roller holders are closed and tightened against the boom mountings, as shown in figure 9.
4. Tighten the roller holder with a tension of 10 Nm. The lifting gear can then be detached.
5. Move the antenna boom alongside the mast to make the installation of the antennas and antenna tubes easier.

The antenna boom can be pushed back to the correct position once the antennas are installed.

Note Install the antenna jumper cables and earth wire before removing the roller holder and fastening the boom tightly to the boom mounting.

6. Fit the large clamps while holding the antenna boom in position. See figure 9 , item 4.
7. Apply the C wrench supplied in the tool kit to the holes in the boom and rotate the boom until the antennas are correctly positioned before tightening the nuts fully.
8. Tighten the clamp nuts with a tension of approximately 40 Nm.
9. Make sure that the screwed joints make good contact with the surface.
10. Remove the roller holder once the clamps referred to above are tightened.
11. Remember to put the washers and nuts back on the bolts used for the roller holder.

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These may be needed if readjustment of the roller holder is later required.

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6 Installation Inspection

1. Check that the joints between the boom arms and the adapter tube are 550 ± 30 mm inside the outer edge of the tower leg.
2. Check the tension of the screwed joints.
3. Check that the screwed joints make good contact with the surface.

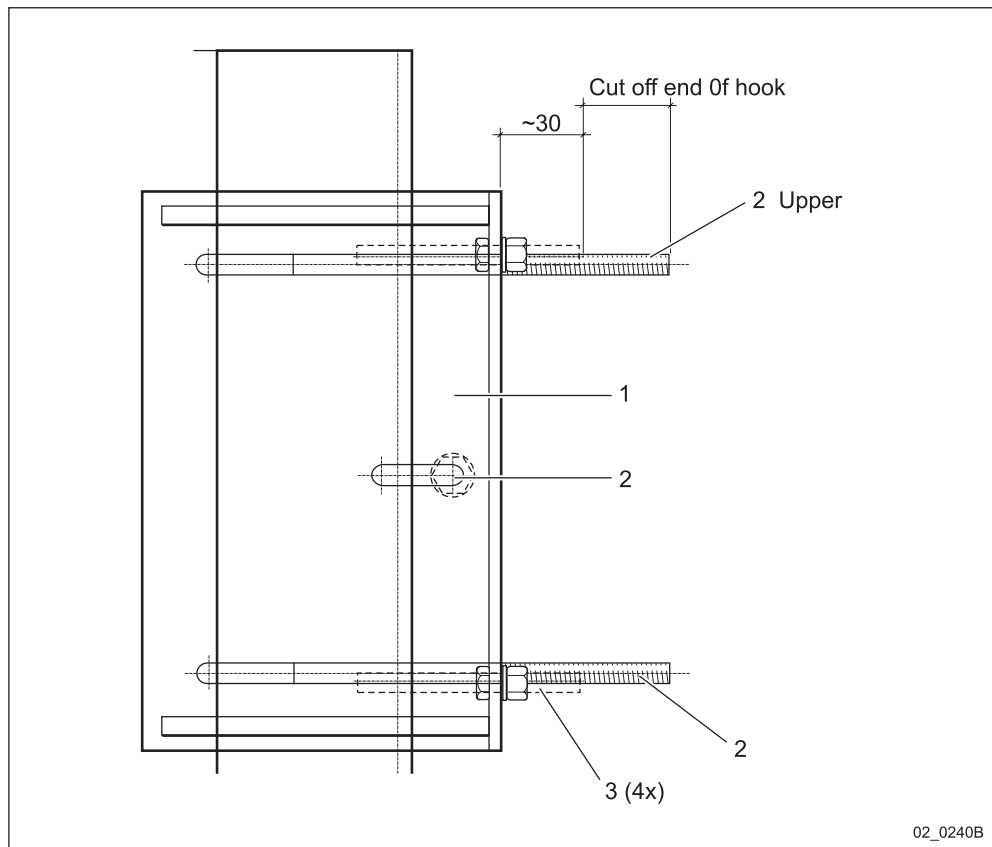


Figure 2 Assembly of boom mountings

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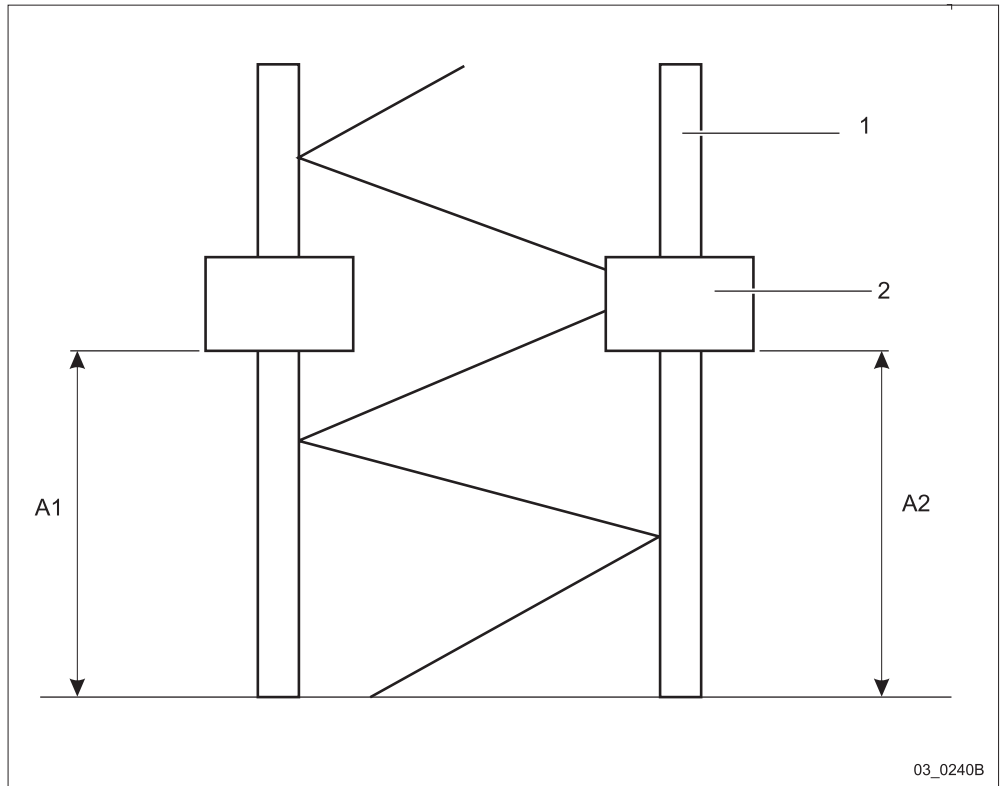
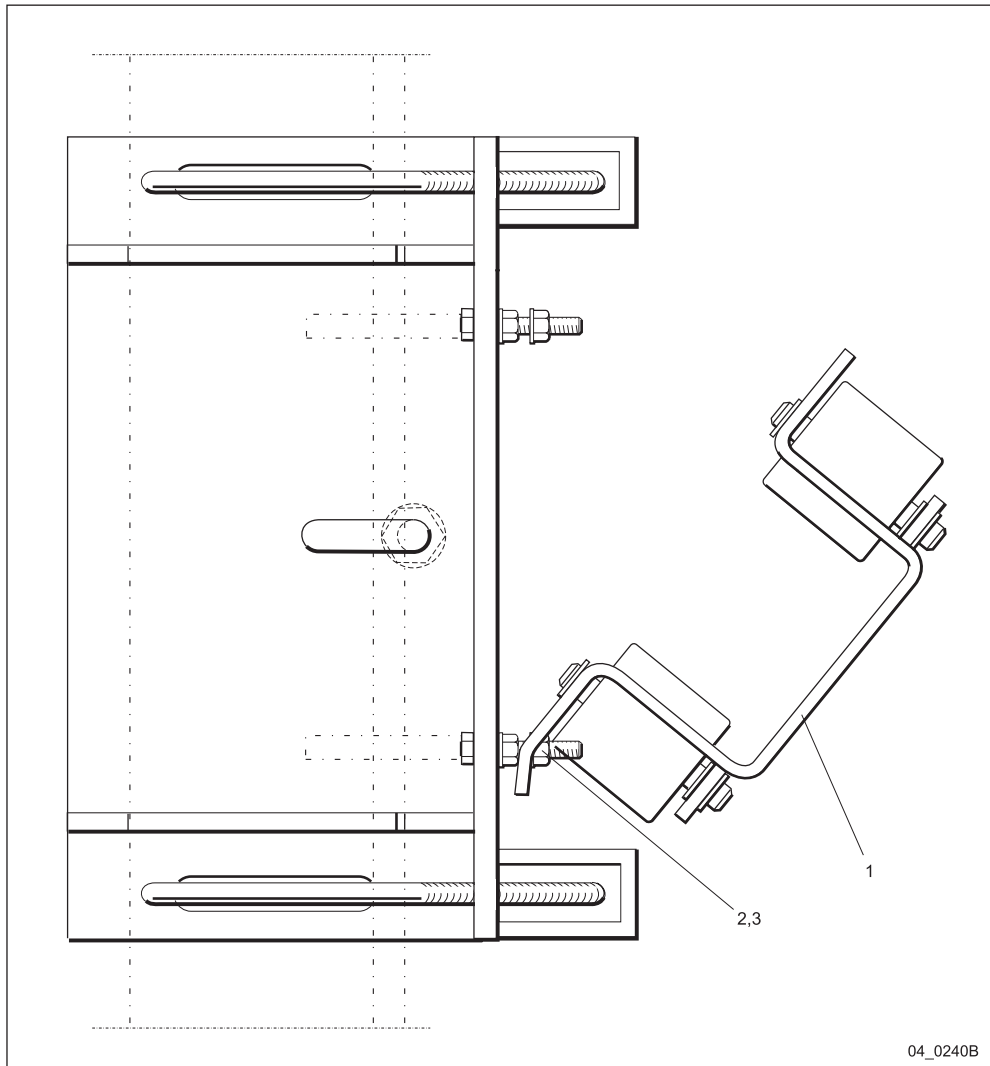


Figure 3 Placement of boom mountings on the mast (tower)

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Figure 4 Assembly of rolling holders (pos 1)

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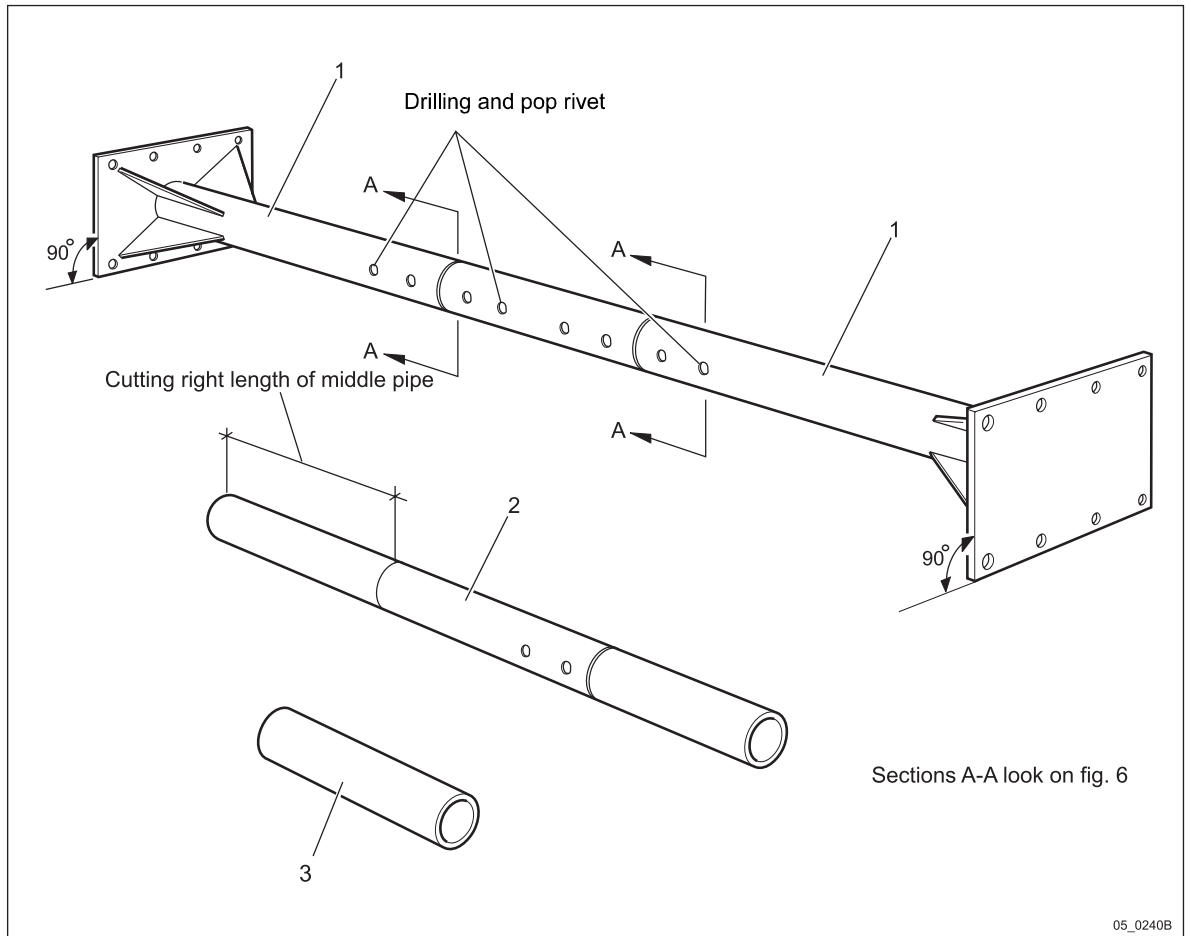
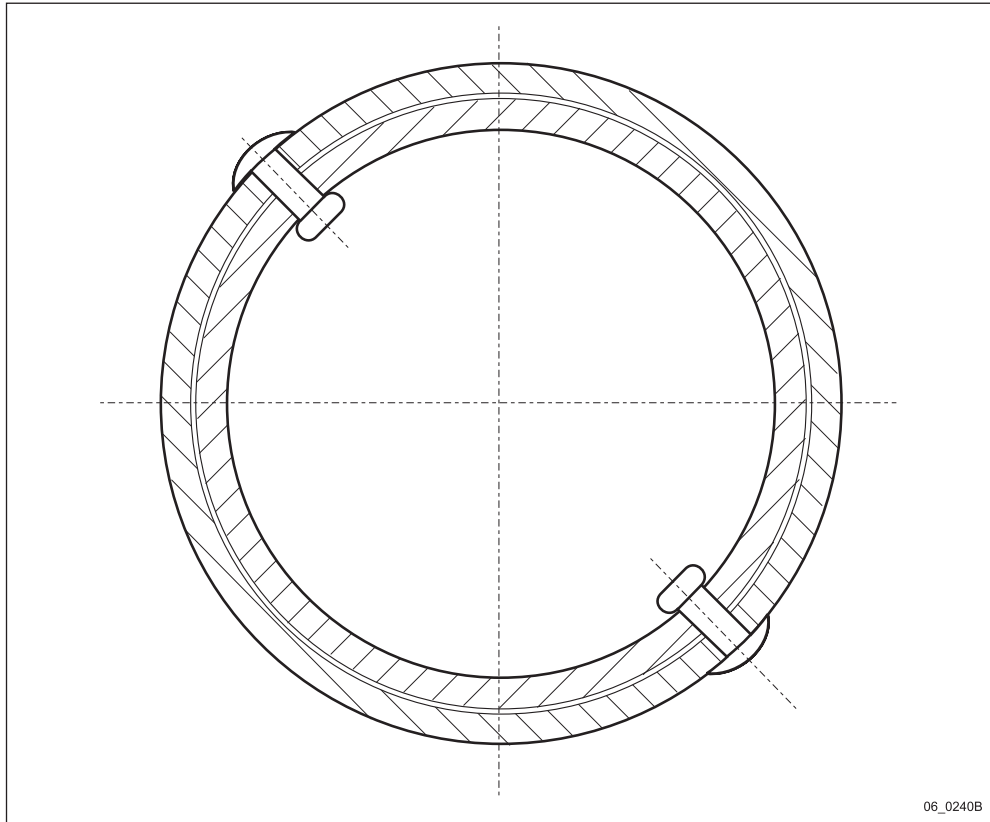


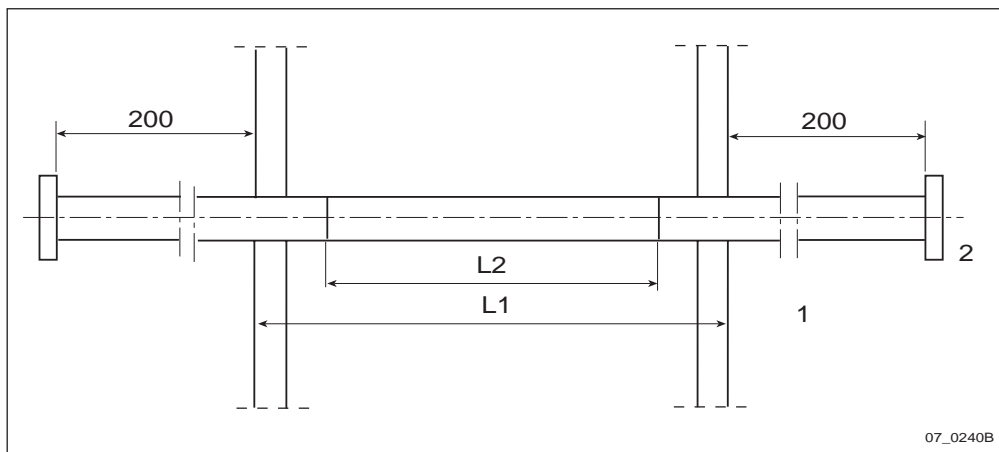
Figure 5 Assembly of the antenna boom on ground

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Figure 6 Section A-A of joint of antenna boom



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Figure 7 Calculation of the length of the middle pipe

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Reference:

L1 = Distance between outer corners of the tower

L2 = This length on middle pipe can be connected to the two boom arms

Example:

The tower width from the outer corners of tower legs is 1750 mm.

How long will the middle pipe be?

$L2 = L1 - 1000 \text{ mm}$

$L2 = 1750 - 1000 \text{ mm}$

$L2 = 750 \text{ mm}$

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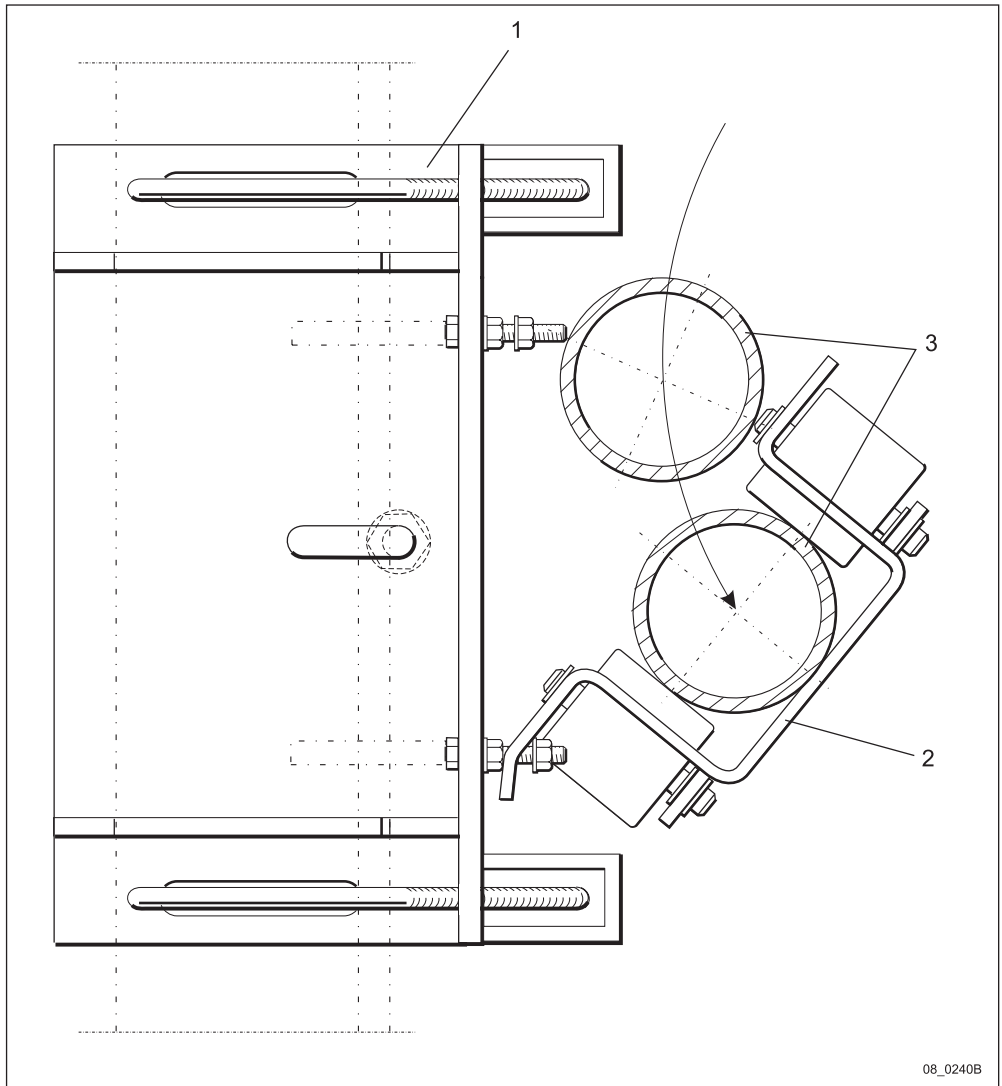


Figure 8 Insertion of antenna boom, pos 3 in the rolling holders, pos 2

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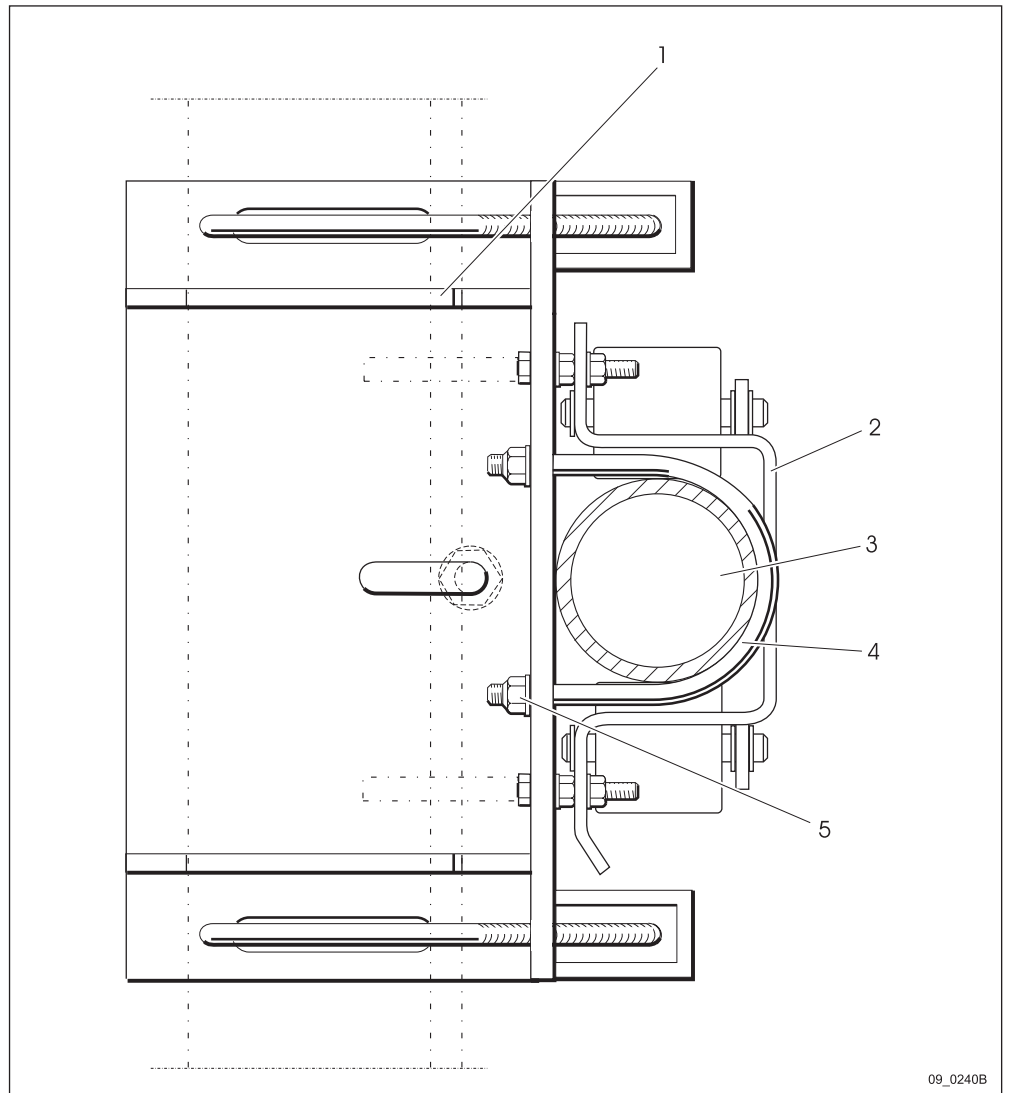


Figure 9 Insertion of the antenna boom into a 2-boom holder, pos 1, with the C wrench, pos 4. Pos 4, 4 pcs, with a diameter of 114 mm

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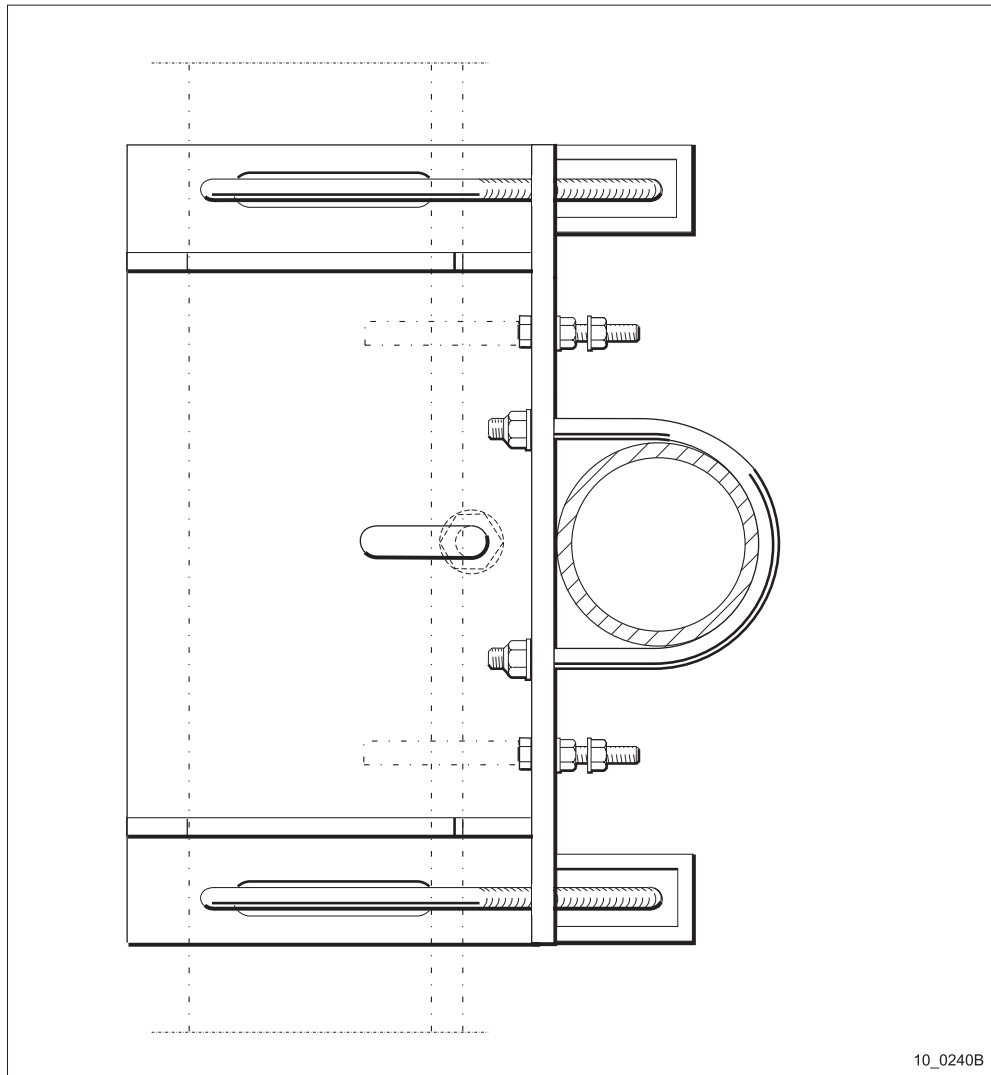


Figure 10 Final assembly of the antenna boom in the boom mountings

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Installation of Cable Ladder Outdoor NTM 201 294/1

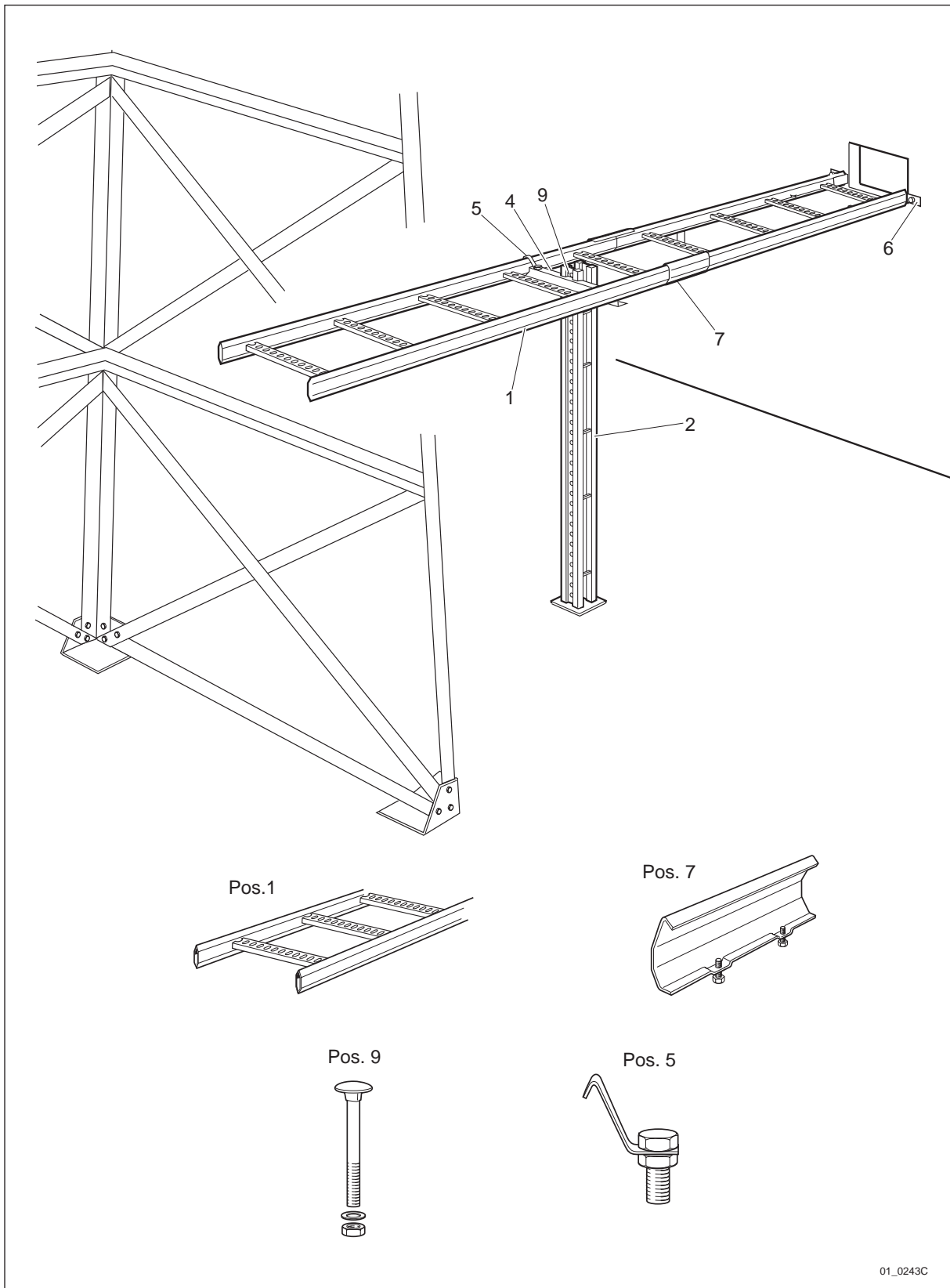
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3	Earthing of Cable Ladder	6

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1 General

The outdoor ladder is recommended for installation between the RBS room and the mast/tower. It is included in the Basic equipment NTM 201 230 together with the Earthing Set 9/NTM 201 230/1, Cable Lead-in NTM 201 217, all delivered in a single box.

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01_0243C

Figure 1 Cable Ladder Outdoor NTM 201 294/1 with some details

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Table 1 Ladder NTM 201 294/1 details

Pos	Qty	Product number	PRIM title
1	2	SXA 120 200	Ladder 3 m
2	1	SXA 120 202	Pendulum
3	6	SXA 120 9997	Bracket
4	1	SXA 120 208	Support Bracket
5	2	SXA 120 212	Locking Hook
6	6	SXA 120 9998	End Support
7	2	SXA 120 9999	Joint
8	2	SXA 120 204	Branch Hook
9	1	SXA 120 205	Screw Set M8x60+Nut
10	6	SXA 120 206	End Protection
12	2	NTM 201 257	Set of Materials

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2 Installation

1. Measure and mark where the End Support SXA 105 9998 (pos 6), see figure 2, will be placed on the building.
2. Install the end support with the Set of Materials NTM 201 257 (plug and screw, pos 12).

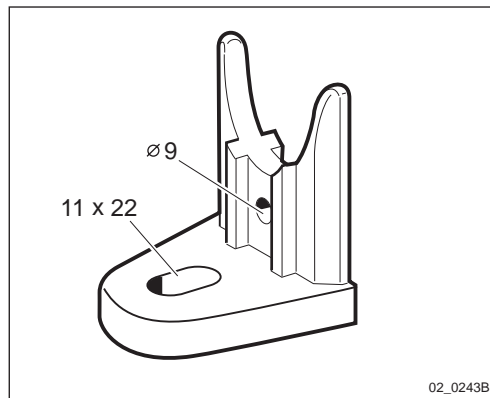


Figure 2 End Support SXA 120 9998

3. Measure and position a concrete plate for the Pendulum SXA 120 202 (pos 2).
4. Install the pendulum with the Set of Materials NTM 201 257 (pos 12) in the concrete plate.
5. Measure and mark where the cable ladder will be positioned on the tower. Check with a level that the cable ladder is mounted horizontally.

When joining the ladder to the tower, first place the pendulum as close to the tower as possible.

Secondly, clamp the ladder to a vertical ladder, if any, with the End Support SXA 120 9998 (pos 6) and the Adapter for Clamping SXA 105 3056 (not included in this ladder set).

Thirdly, use the End Support SXA 120 9998 and the Adapter for Clamping SXA 105 3056 to join the ladder with the members in the tower.

6. Attach the ladder to the pendulum with the Support Bracket SXA 120 208 (pos 4) and Screw Set SXA 120 205 (pos 9). Lock the supporting iron with the Locking Hook SXA 120 212 (pos 5).
7. Use the Joint SXA 120 9999 (pos 7) to join cable ladders.

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3 Earthing of Cable Ladder

See Installation Instruction 1531-9/NTM 201 230/1 in Section 5.

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SG/ERA/LRN/ZG Monika Ågren 850 467 24	1999-09-30	F	8/001 52-LZN 302 49 Uen
Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

1 Indoor Installation Instructions

Table 1 Installation instructions

Sub-sect.	Installation Instructions	Product name/ number	Notes
1	1531-NTM 201 231 Uen	Cable Ladder Indoor NTM 201 231	ladder, wall and ceiling mounted
2	1531- NTM 201 249/1 Uen 1531- NTM 201 249/3 Uen 1531-3/NTM 201 201/2 Uen	Distribution Frames, DF NTM 201 249/1 NTM 201 249/3 3/NTM 201 201/2	distr. frame conn. box distr. frame
3	1531-RPM 513 755+ Uen 1531-RPM 513 756+ Uen 1531-RPM 513 757+ Uen 1531-RPM 513 758+ Uen	Interface D-sub Conn. Items Sets RPM 513 755 RPM 513 756 RPM 513 757 RPM 513 758	for PCM cable 120 ohms for PCM cable 75 ohms for Power Conn. Cable +24V DC for PCM cable 100 ohms

Uppgjord — <i>Prepared</i> ERA/LRN/ZG	Faktaansvarig — <i>Subject responsible</i>	Nr — <i>No.</i>	1531-NTM 201 231 Uen		
Dokansv/Godk — <i>Doc respons/Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>	Datum — <i>Date</i> 1999-02-15	Rev B	File	

Installation of Indoor Ladder Set NTM 201 231

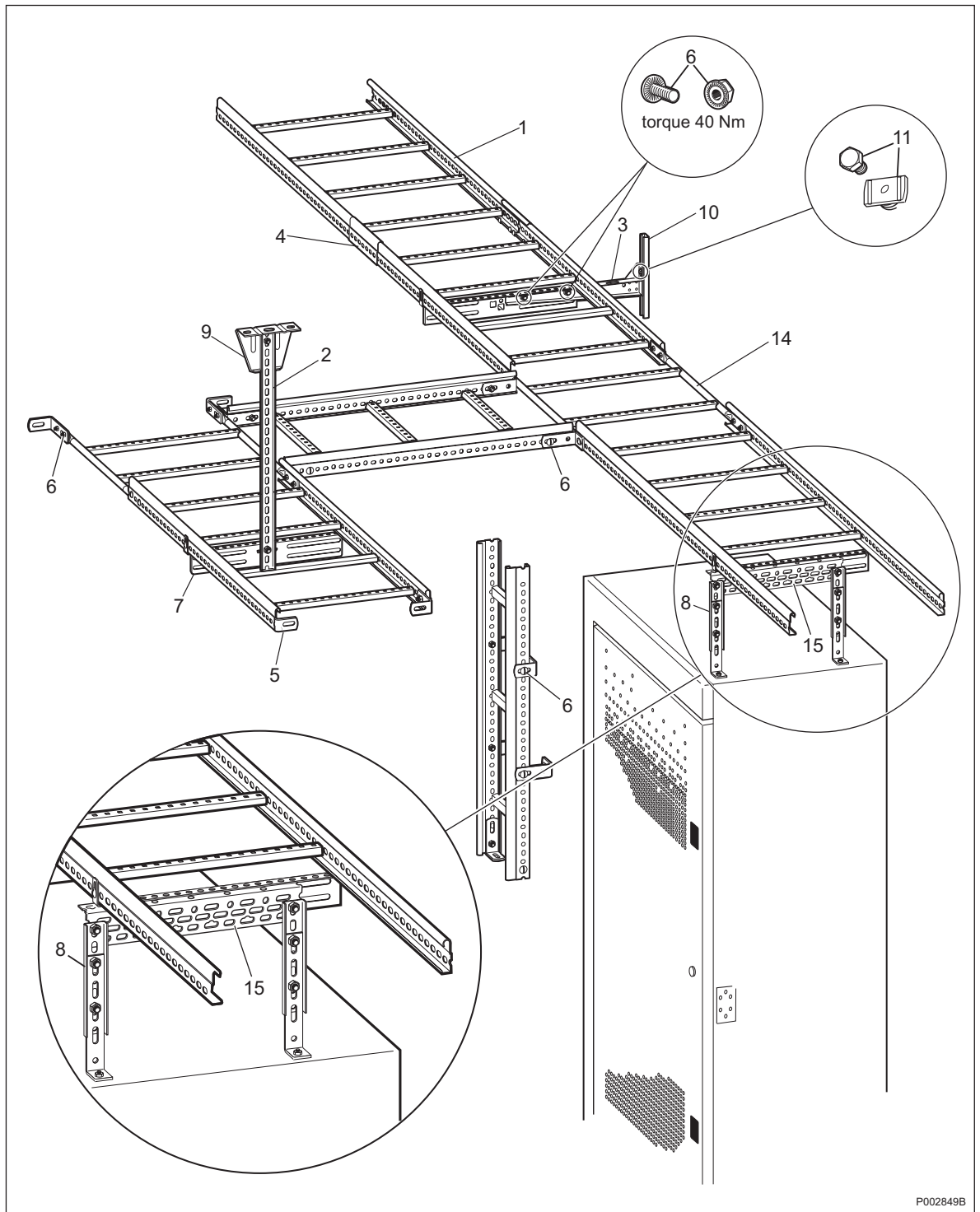
Contents		Page
1	General	2
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4	Running External Cabling on a Cable Ladder	7

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1 General

The Indoor Ladder Set NTM 201 231 is included in the Basic Indoor Kit NTM 201 201/9 which also includes Earthing Cable 4/NTM 201 201/2, General Installation Kit 7/NTM 201 201, Cable Kit 6/NTM 201 201/3 and Tube Kit NTM 201 218/3, all delivered in one box.

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Figure 1 Indoor ladder Set NTM 201 231 details

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Table 1 Indoor ladder Set NTM 201 231 details

Pos	Qty	Product number	PRIM title
1	6	SXA 105 6588/5	Cable Run (400 mm x 2.25 m)
2	4	SXA 105 7509/1	Pendulum (2 m)
3	6	SXA 105 7510/1	Wall Console
4	10	SXA 105 7512/1	Jointing Iron
5	25	SXA 105 7513/1	Angle Support
6	100	NTM 201 1784/1	Screw Set (M8x14+nut)
7	6	SXA 105 7514/1	Supporting Iron
8	6	SXA 105 7515/1	Cabinet Console Support
9	6	SXA 105 7516/1	Ceiling-fixing
10	6	SXA 105 7517/1	Wall Support Iron 41x21 mm, l=250 mm
11	10	NTM 201 1783/1	Screw Set (M10x20+spring loaded nut)
12	1	MTD 351 03	Finishing Laquer, non-flamable
13	5	NTM 201 257	Set of Materials
14	2	SXA 105 8350/1	Branching Junction, 400 mm
15	3	SXA 105 91 81/1	Cable Ladder Support Adaptor

2 Installation

1. Check that the cabinet room corresponds to the cable way drawings.
2. Obtain information from the cable way drawings regarding the cable lead-in in relation to cable ladder position.
3. Ensure that you have suitable fastening hardware (correct screws etc., for the wall material) to install the cable ladders.
4. Beginning at the cable lead-in, measure and mark where the Wall Consoles SXA 105 7510/1 (pos 3) and/or Ceiling-fixings SXA 105 7516/1 (pos 9) are to be mounted.

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- Mounting distance between wall consoles/ceiling fixings shall be no more than 2 m.
- Mounting height from floor level to top sides of wall consoles shall be a minimum of 2.2 m.
- Distance between cable ladder and ceiling shall be a minimum of 0.3 m.

5. Install the Wall support iron/ceiling fixings with suitable fastening hardware (see table 2).

Table 2 Installation fastening hardware

Pos	Item	Product number	Range of applications	Tools
1	Screw	SBH 126 162/03	Concrete/ bricks	Drill: 12 mm
	Plug	NSV 126 98 406		Depth: 70 mm
2	Screw	SBH 126 162/03	Wood	Drill: 4.5 mm Depth: 45 mm
3	Screw + Nut	NTM 201 1784/1	For Cable ladder	Torque wrench, 40 Nm

6. Mount and adjust the Wall Consoles SXA 105 7510/1 on the Wall support iron.
7. Place the Cable Run SXA 105 6588/5 (pos 1) on the wall consoles/ceiling fixings beginning at the cable lead-in.
8. Install Angle Supports SXA 105 7513/1 (pos 5) against the wall and the cable ladder end.
9. Remove 1-5 cm from the bottom rung of the ladder if it obstructs the cable lead-in. This is due to the feeder bending radius which requires 360 mm for a 7/8" feeder cable.
10. Use a spirit level to check that the ladder is level.
11. To join straight cable ladders, use Jointing Iron SXA 105 7512/1 (pos 4), place it on the cable ladder and fold in the locking tongue, see figure 2.

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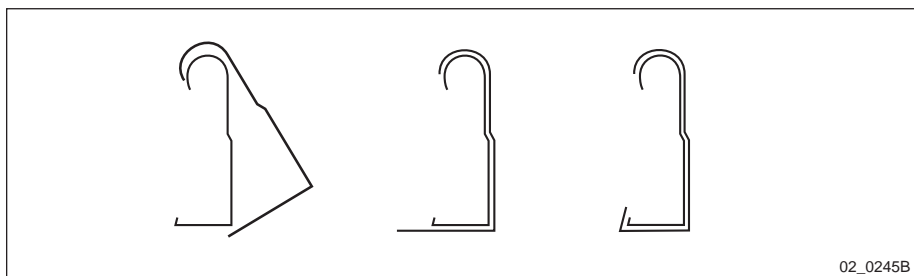


Figure 2 Mounting of Jointing Iron SXA 105 7512/1

12. When two ladders are at right angles, a Junction Set SXA 105 8350/1 (pos 14 and figure 3) is required.

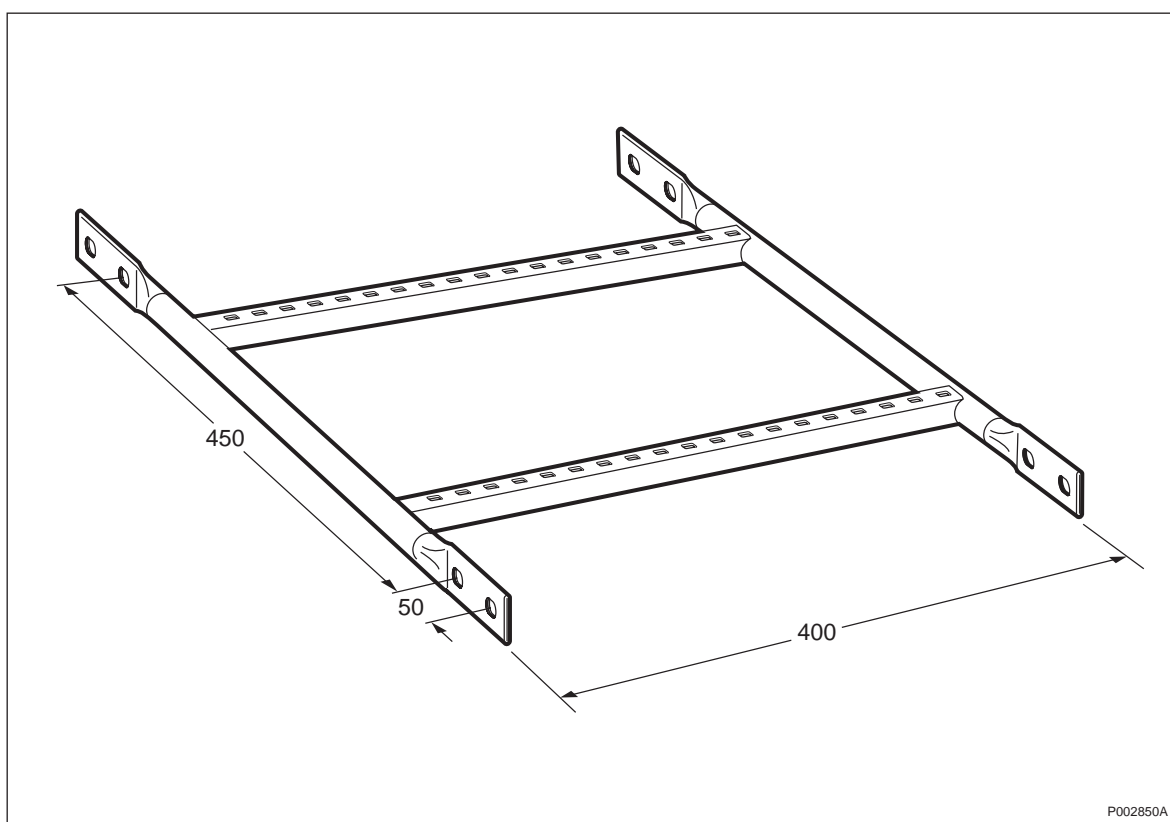


Figure 3 T-junction set SXA 105 8350/1

13. Use the Screw Set NTM 201 1784/1 (pos 6) for joining all parts in the ladder set.

The nut and the washer form one part. Both the over-side of the nut and the underside of the screw head are serrated.

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14. Tighten the nuts with a torque of 40 Nm (the torque wrench is included in the Personal Installation Tool Set LTT 601 045/3). The laquer of the ladder set details is thereby penetrated by the serration and the details electrically interconnected. No wire connections between the different parts in the set is therefore necessary.
15. Use Angle Supports SXA 105 7513/1 (pos 5) to join a horizontal and vertical ladder.
16. Generate an “as-built” drawing by updating the Cable Way Drawing.

3 Earthing of the Cable Ladder Installation

See Installation Instruction 1531-4/NTM 201 201+ in Section 5.

4 Running External Cabling on a Cable Ladder

In the following figure a recommended running of the cabinet external cabling on a cable ladder, width 400 mm is shown.

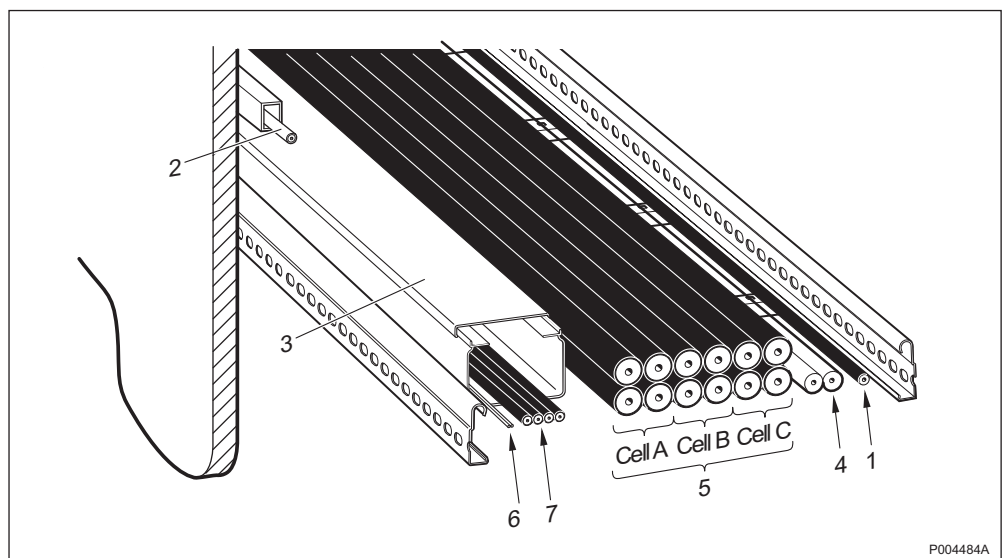


Figure 4 Recommendation of running external cabling

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Table 3

Pos	Description
1	Earth conductor 35 mm ²
2	Main power cables
3	Cable plastic tray with lid, width: 90 mm
4	Battery cables 70 mm ²
5	Antenna feeders 7/8"
6	Optical fibres
7	Signal cables

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

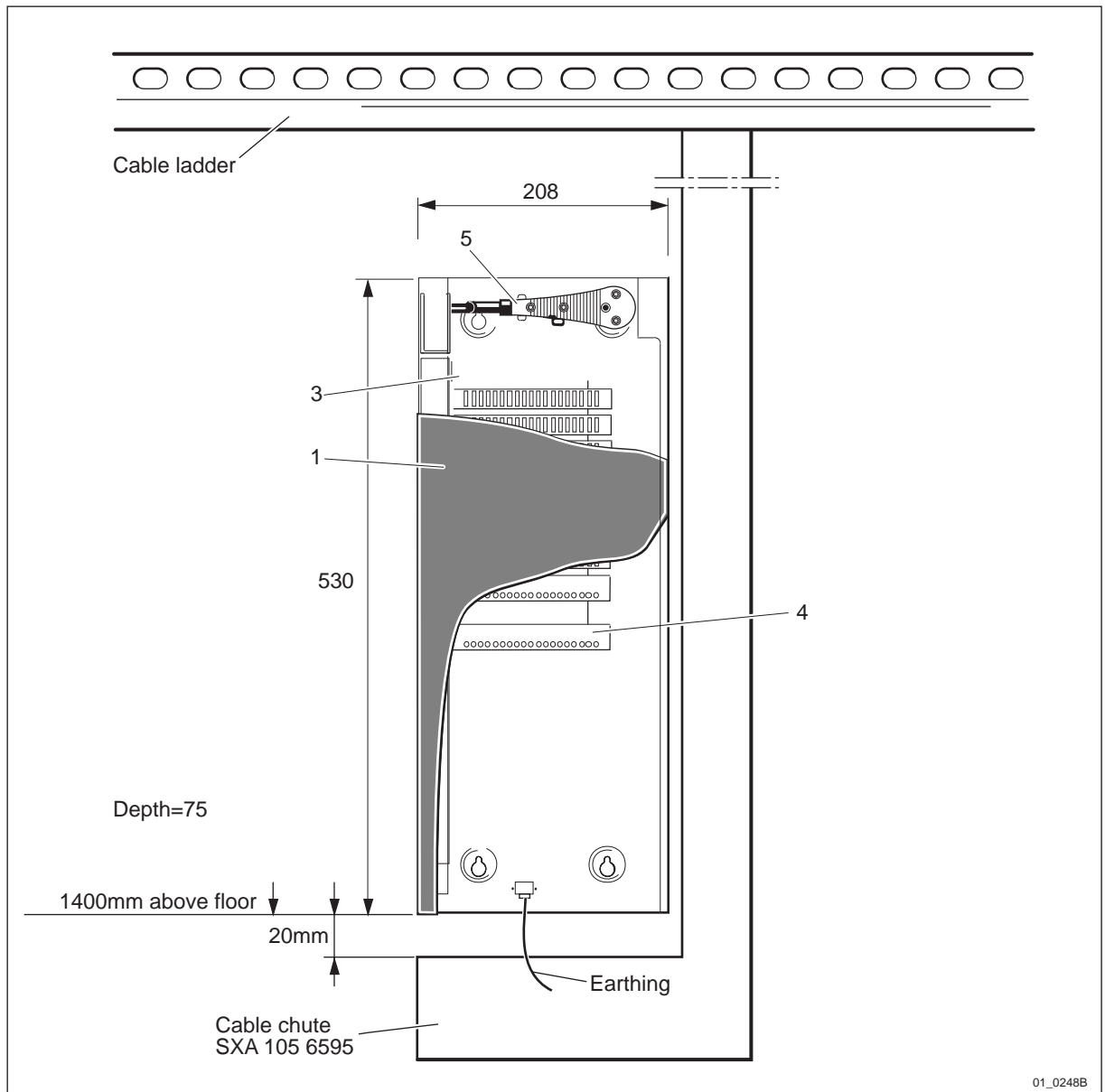
Installation of Distribution Frame NTM 201 249/1

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1	General	2
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3	Installation	5
3.1	Connection Box NBL 323 02/2	5
3.2	External Alarms Cable RPM 513 338	5

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1 General

The Distribution Frame Unit (DF unit) NTM 201 249/1 is an interface for the base station in- and output signals, i.e. BSC signals and RBS alarms.



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Figure 1 Distribution Frame unit NTM 201 249/1

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Table 1

Pos	Product number	PRIM title	Qty
1	NBL 323 02/2	Connection Box	1
2	NTM 201 206	Set of Materials	1
3	NER 251 01	Terminal Block, slot/slot	8
4	NER 251 51	Terminal Block, slot/screw	4
5	LSY 138 252	Connection Tool	1
6	TPK 541 02	Connecting Wire (10 m)	1
7	NTM 201 244/1	Earthing Set	1
8	769 338/1	Marking Plug, red	15

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2 Installation Preparation

1. Check that the following items are at hand:
 - Item 1: Pos. 1 Connection Box NBL 323 02/2
 - Item 2: Pos. 2-8 delivered in a separate box.
2. Check the position of the connection box from the Floor Plan Drawing.

If the positioning is unclear, contact Site Engineering for information.

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3 Installation

3.1 Connection Box NBL 323 02/2

1. Install the connection box according to the Floor Plan Drawing.
 - Minimum distance from floor to lower edge of box is 1.4 m.
 - Turn the connection box so that all cabling outputs are on the underside of the box.
 - Use a spirit level to align the box on the wall. Use suitable fastening screws depending on wall material to attach the box to the wall. Screws suitable for brick, concrete and wooden walls are delivered in the Set of Materials NTM 201 206 (pos 2).
2. Install the Cable Chute 6/NTM 201 201 according to figure 1.
3. Use the cable in the Earthing Set NTM 201 244/1, (pos 7) and connect one end to earth on the screw terminal in the connection box.

Connect the other end of the cable by crimping it in a C-clamp to the 35 mm² main earth Cable TFK 100 509/00 running to the Earth Collection Bar NGT 210 01.

3.2 External Alarms Cable RPM 513 338

Follow the instructions in the Site Installation Documentation for connecting the RBS alarms.

There are two alternatives:

- the use of 8 Terminal Blocks, slot/slot NER 251 01 together with one or two Terminal Blocks, slot/screw NER 251 51 for the customer.
- the use of 4 Terminal Blocks, slot/screw NER 251 51 without the use of Connecting Wire TPK 541 02 for cross-connection.

Use the Connection Tool LSY 138 252 (pos 5) for connecting the alarm wires to the terminal blocks, slot/slot. The alarm wires must be single-wire type.

Use Marking Plug, red 769 338/1 (pos 8) on slot/slot terminals for marking to prevent connection to occupied terminals. See the alarm diagrams in the Site Installation Documentation.

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1. Use a prefabricated External Alarms Cable RPM 513 338.

The cable has one end fitted with a connector and the other end free.

Total cable length is 15 meters.
2. Label the cable and connect the cable end with the connector to the cabinet.
3. Run the cable to the connection box and through its cable entry.
4. Strip the end of the cable as shown in figure 2.

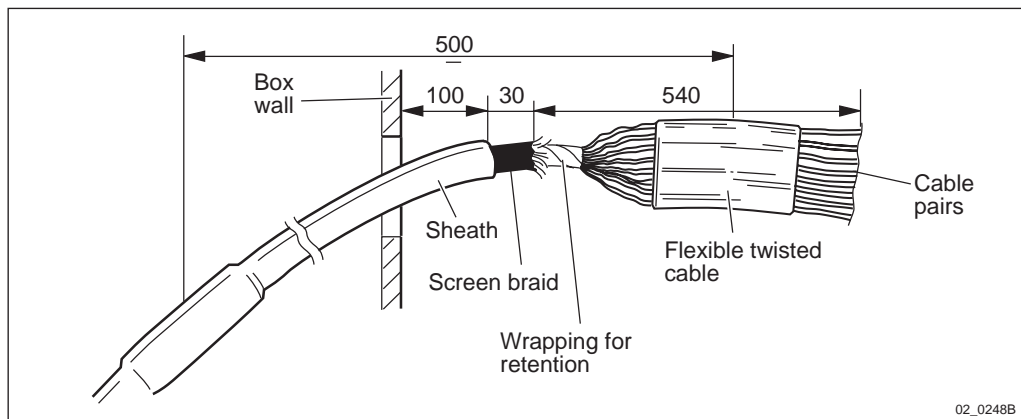


Figure 2 External alarms cable RPM 513 338

5. Split the cable, pairs 1-10 for connection to terminal block P1 (P3) and pairs 11-16 for connection to terminal block P2 (P4). Cut off excess length of the cable.
6. Start the termination on the lowest block.
7. Pass the conductors through the wire guide on the rear side of the block.
8. Make a loop of the conductors on the rear side of the block and fasten the block by snapping it into the Strip Holder NBH 123 32.
9. Distribute the wires over the connection slots according to the colour code for the cable (see IEC 189-2).
10. Position the Connection Tool LSY 138 252 against the slot and the wire, see figure 3, and press the tool firmly into the slot. The wire is now connected and cut at the same time. Remove the tool and the excess wire.

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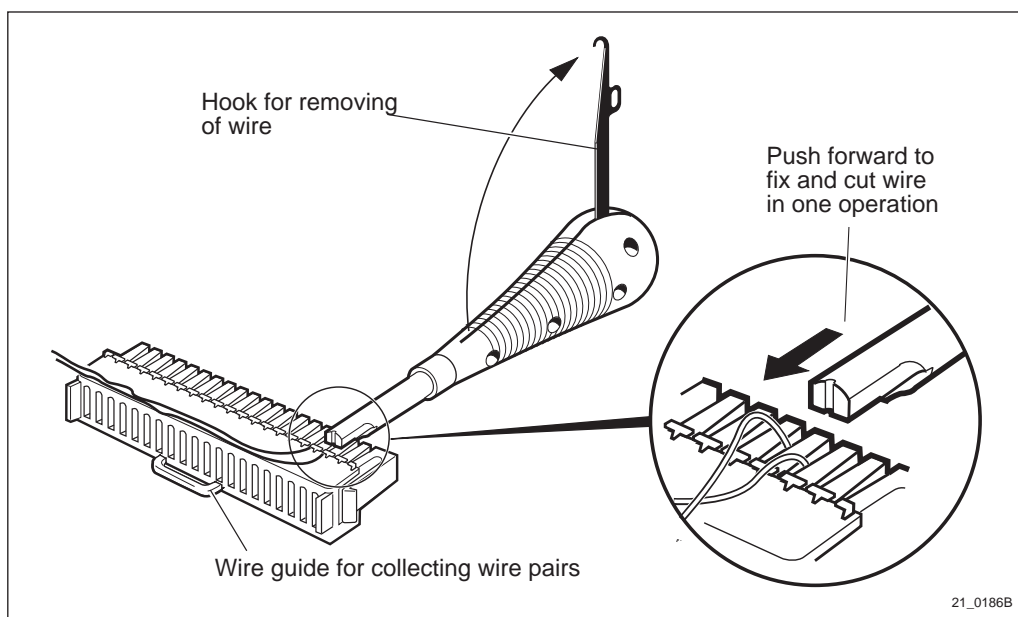


Figure 3 The use of Connection tool LSY 138 252

11. Connect the screen of the external alarms cable to earth.

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Connection Box NTM 201 249/3

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2.3	Connection of PCM and +24/-48V DC cables	8

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1 General

The Connection Box NTM 201 249/3 is an interface for the base station in- and output signals, i.e. BSC signals and RBS alarms. It consists of a wall-mounted Distribution Frame NBA 101 01 and mounting details as listed in Table 1.

Table 1 Connection Box NTM 201 249/3 details

Pos	PRIM title	Product number	Qty
1	Distribution Frame	NBA 101 01	1
2	Set of materials	NTM 201 206	1
3	Earthing set, indoor	NTM 201 244/1	1
4	Connection tool	LSY 138 252	1
5	Connecting wire, 2x0.5 mm ²	TPK 541 02	10 m

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1.1 Distribution Frame NBA 101 01

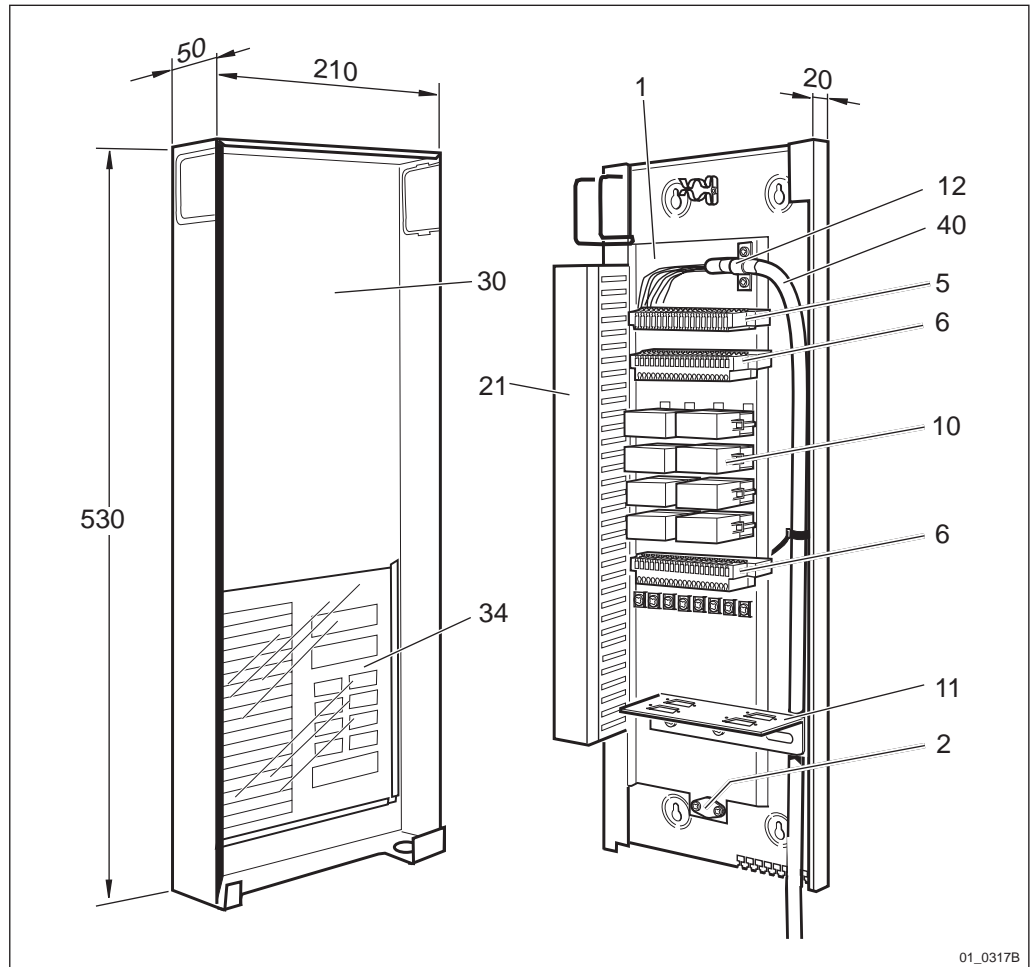


Figure 1 Wall mounted Distribution Frame NBA 101 01

Table 2 Distribution Frame NBA 101 01 details

Pos	PRIM title	Qty
1	Mounting Plate	1
2	Earthing Clip	1
3	Holder	3
4	Earth Bar	3
5	Terminal Block	1
6	Terminal Block	2
7	Clip	8
8	Strip	8

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Pos	PRIM title	Qty
9	Overvoltage Arrester	16
10	Overvoltage Arrester	8
11	Mounting Plate	1
12	Clamp	1
13	Screw M4x8	23
14	Screw	8
15	Holder	1
16	Screw M3.5x6.5	1
18	Label	1
20	Frame (for NBL 323 02/3)	1
21	Cable Chute	0.4 m
22	Washer	3
23	Jumper Wire	3 m
30	Cover (for NBL 323 02/3)	1
31	Covering Plate	2
32	Label Holder	1
33	Double Coated Tape	33 m
34	Label Card	1
35	Protection	1
36	Marking Plug (yellow)	6
40	Connection Cable	15 m
90	Box	1
91	Packing Bolster	
92	Cable Clamp	2
93	Label	1

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2 Installation

1. Check that the delivered materials are correct.

2.1 Mounting Plate

1. Check the position of the connection box from the Floor Plan Drawing.

If the positioning is unclear, contact Site Engineering for information.

2. Use the cable in the Earthing Set NTM 201 244/1 (pos 3 in table 1) and connect one end to the earthing clip 1 (pos 2 in table 2) on the mounting plate.

Connect the other end of the cable by crimping it in a C-clamp to the 35 mm² main earth Cable TFK 100 509/00 running to the Earth Collection Bar NGT 210 01.

2.2 Connection of RBS External Alarms Cable

Follow the detailed instructions in the Site Installation Documentation for connecting the RBS alarms.

1. Run the connection cable (pos 40 in table 2) to the mounting plate (pos1).
2. Cut the cable to suitable length i.e. the length shall be enough so that the most distant terminal block can be reached by the cable wires. This shall also include a loop of the cable wires on the rear side of the terminal block.
3. Pass the external alarms coming from the outside of the site building via the voltage arresters (pos 10) before the cable wires are connected to the terminal block.
4. Strip the end of the cable as shown in figure 2.
5. Fold back the cable screen braid and fix the cable by the clamp (pos 12) over the cable shield and to the mounting plate as shown.

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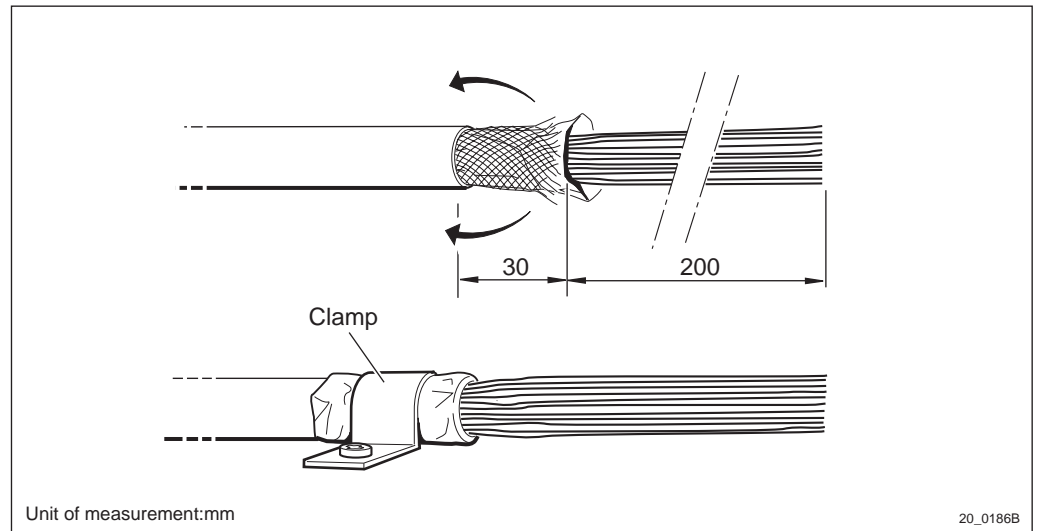


Figure 2 Alarm cable preparation

6. Fix the cable to the mounting plate using tie-wraps.
7. Distribute the wires over the connection slots of the terminal blocks 1 and 2 according to the colour code connection table for the external alarms cable in figure 3.

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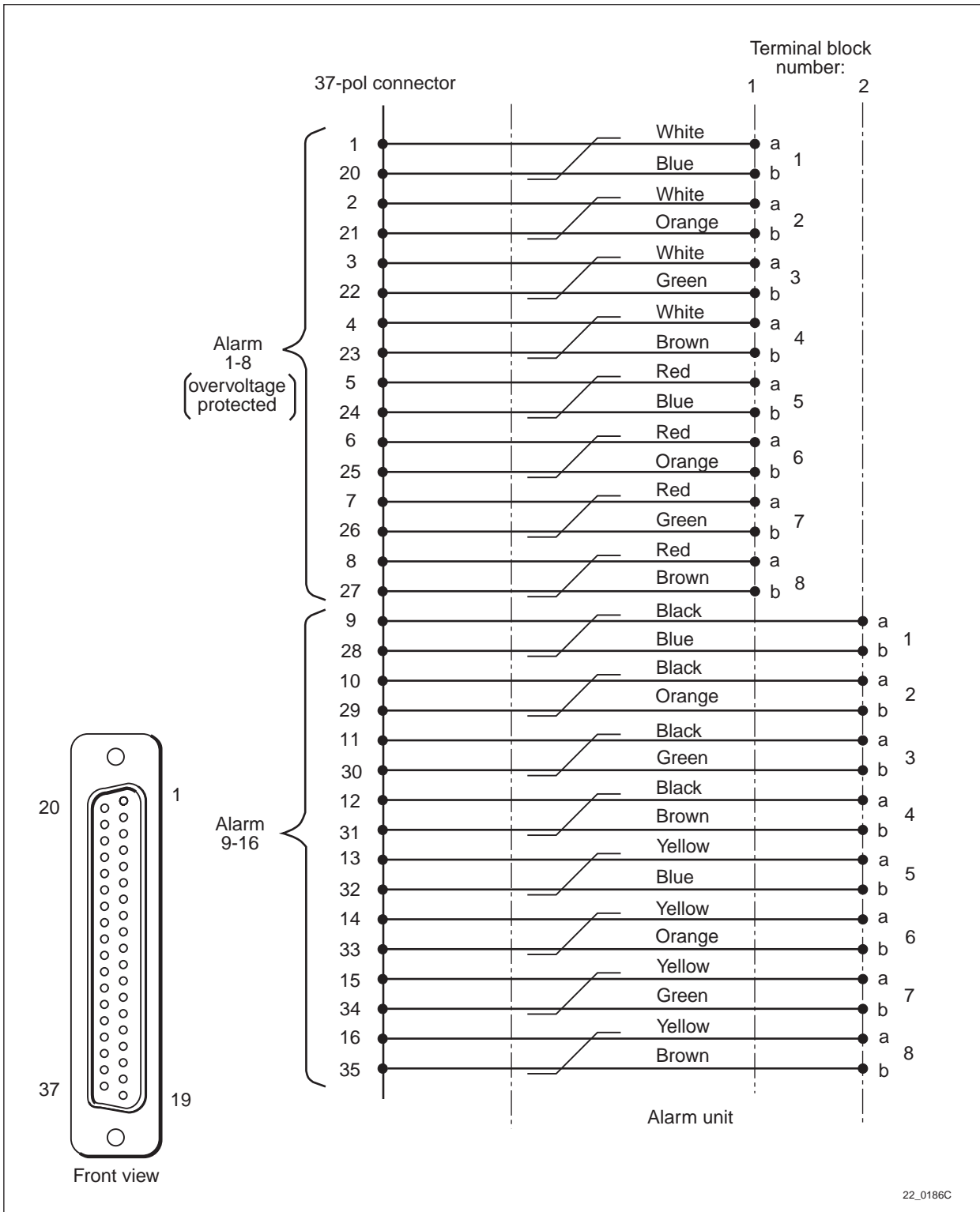


Figure 3 Connection of the connection cable (pos 40) to the terminal blocks 1 and 2

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8. Position the Connection Tool LSY 138 252 against the slot and the wire, see the figure below, and press the tool firmly into the slot. The wire is now connected and cut at the same time. Remove the tool and the excess wire.

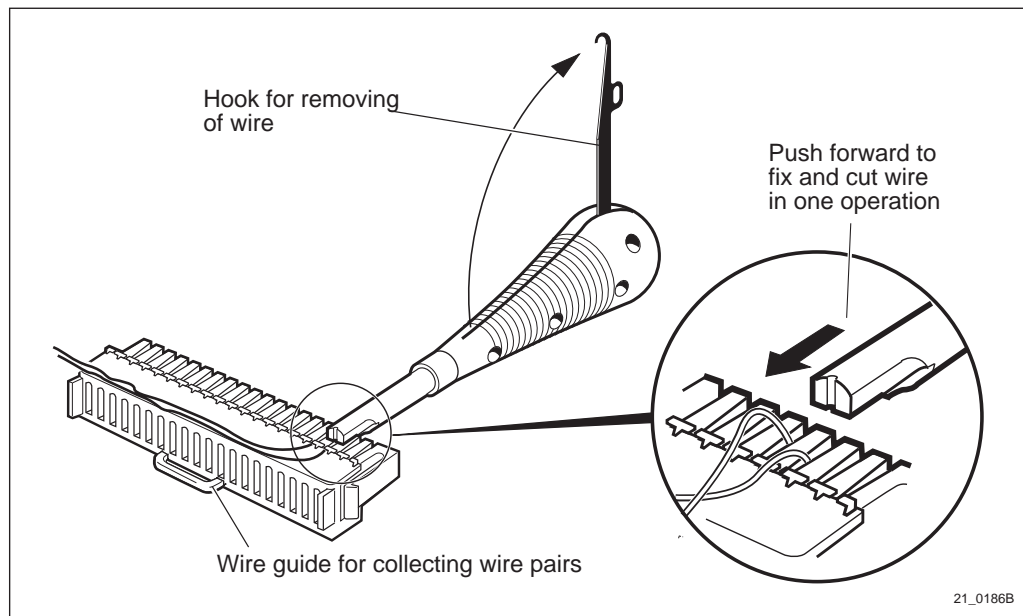


Figure 4 The use of Connection Tool LSY 138 252

9. Connect the 37-pole connector of the connection cable (pos 40) to the RBS.

2.3 Connection of PCM and +24/-48V DC cables

The mounting plate (pos 11) is used for mounting the PCM and +24/-48V DC connectors.

1. Mount the connectors according to figure 5 and table 2:

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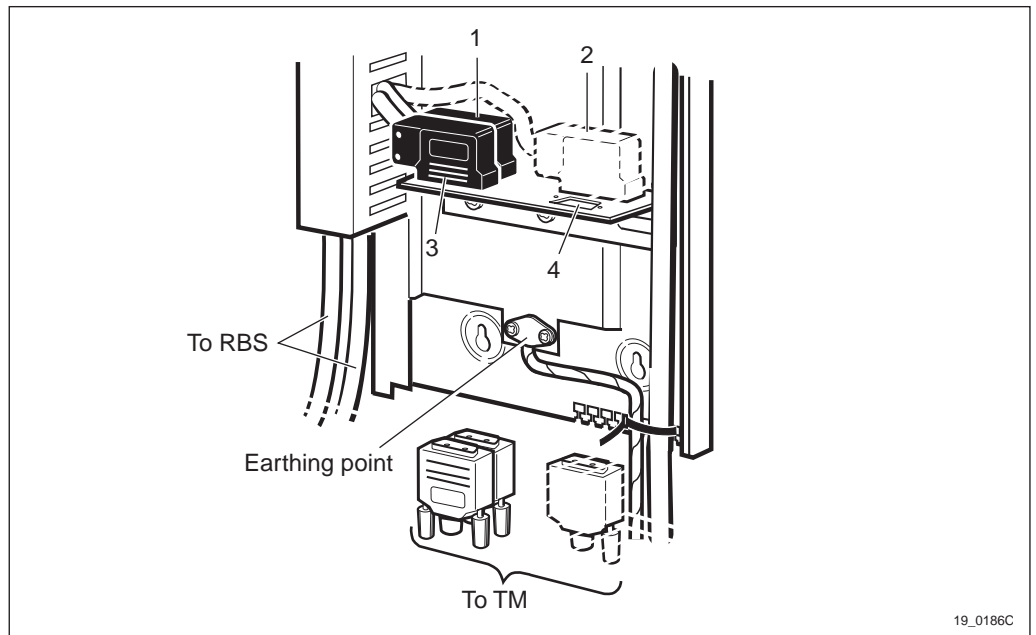


Figure 5 Mounting PCM and +24/-48V DC cables in the DF

Table 3

Mounting plate position marked	Cable function
1	PCM cable, G703-1
2	PCM cable, G703-2 (redundant)
3	+24V DC
4	Optional

2. Mount the cover (pos 30).

Uppgjord — <i>Prepared</i> SG/ERA/LRN/ZG NHg	Datum — <i>Date</i> 1999-02-16	Rev G	Dokumentnr — <i>Document no</i> 1531-3/NTM 201 201/2 Uen
Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

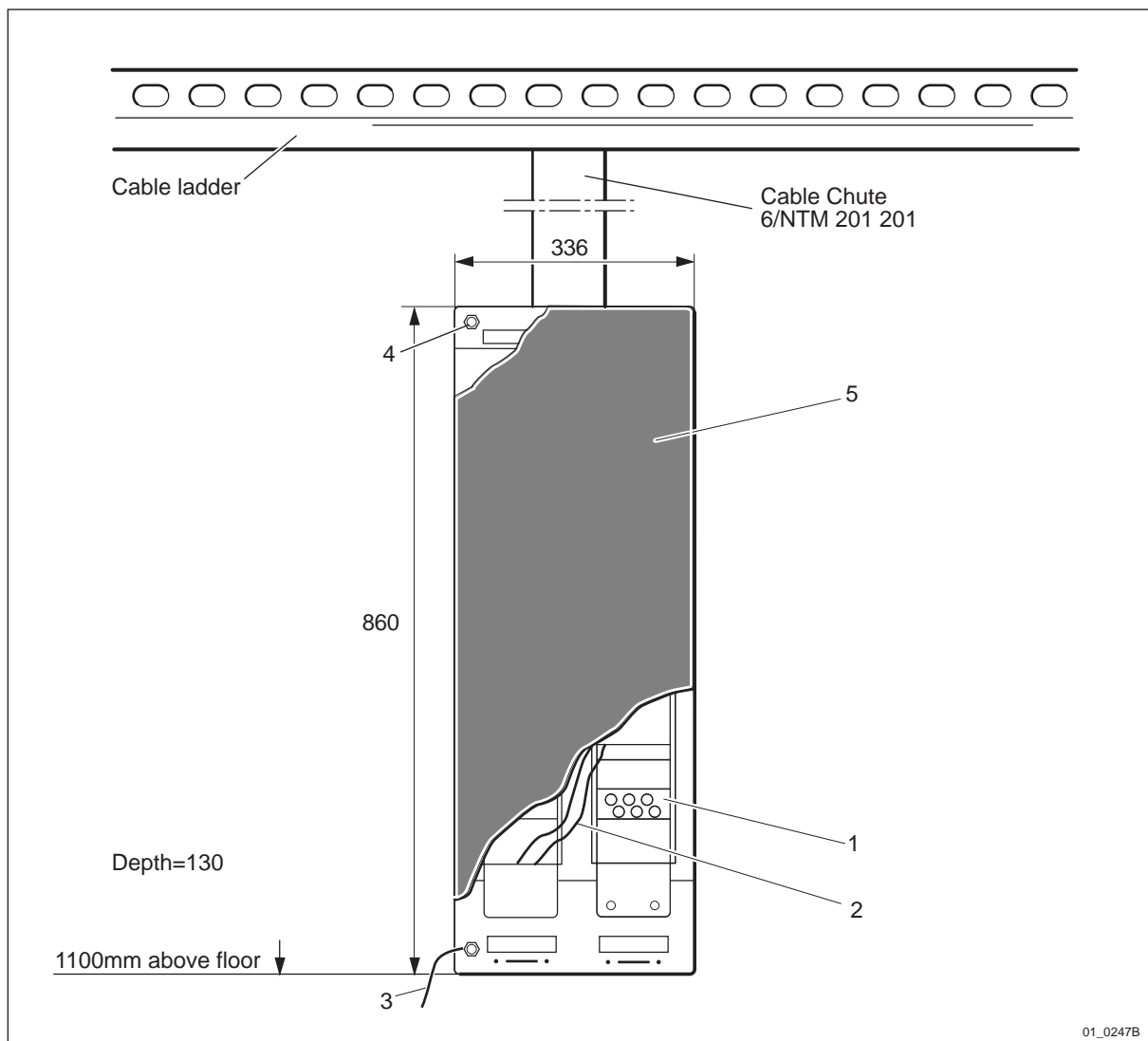
Installation of Distribution Frame Unit 3/ NTM 201 201/2

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1 General

The Distribution Frame Unit (DF unit) 3/NTM 201 201/2 is an interface for the base station in- and output signals, i.e. MSC signals and RBS alarms.



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Figure 1 Distribution Frame unit 3/NTM 201 201/2 for NTM

Table 1

Pos	Qty	Product number	PRIM title
1	1	SXA 105 2220	Connecting Plate
2	1	TPK 541 02	Connecting Wire
3	1	NTM 201 244/1	Earthing Set

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4	1	NTM 201 206	Set of Materials
5	1	NBL 323 06/2	Connection Box
6	1	LSY 138 252	Connection Tool
7	2	RPM 251 03/030	Cord with Plug

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1999-02-16	G	1531-3/NTM 201 201/2 Uen

2 Installation Preparation

1. Check that the following items are at hand:
 - Item 1: Pos. 5 Connection Box NBL 323 06/2
 - Item 2: Pos. 1-4, 6,7 delivered in a separate box.

2. Check the position of the connection box from the Floor Plan Drawing.

If the positioning is unclear, contact Site Engineering for information.

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3 Installation

3.1 Connection Box NBL 323 06/2

1. Install the connection box according to the Floor Plan Drawing.
 - Minimum distance from floor to lower edge of box is 1.1 m.
 - Turn the connection box so that the earthing terminal is at the lower left corner.
 - Use a spirit level to align the box on the wall. Use suitable fastening screws depending on wall material to attach the box to the wall. Screws suitable for brick, concrete and wooden walls are delivered in the Set of Materials NTM 201 206 (pos 4).
2. Install a piece of the Cable Chute 6/NTM 201 201 according to figure 1.
3. Use the cable in the Earthing Set NTM 201 244/1 (pos 3) and connect one end to earth on the screw terminal in the connection box.

Connect the other end of the cable by crimping it in a C-clamp to the 35 mm² main earth Cable TFK 100 509/00 running to the Earth Collection Bar NGT 210 01.
4. Mount the two Strip Holders NBH 123 32, included in the connection box set, to the support brackets. 32 terminal blocks can be mounted on each strip holder.
5. Connect earth cables from the strip holders to upper and lower bars.
6. Mount wire guide rings on the upper and lower bars.

3.2 Connection of Cables

3.2.1 General

All cables indicated in the Cable Distribution Diagram (193 18-IPA....) in the Site Installation Documentation shall be terminated in the DF unit.

Each cable has one end fitted with a connector and the other end free.

A terminal block is delivered with each cable as a separate object. The terminal block shall be mounted in the strip holder.

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1. Label the cable and connect the cable end with the connector to the cabinet.
2. Run the cable to the connection box, through the cable entry from above and to the terminal block position.
3. Start the termination on the lowest block.
4. Cut off excess length of the cable.
5. Strip the end of the cable.
6. Pass the conductors through the wire guide on the rear side of the block. See figure 2.

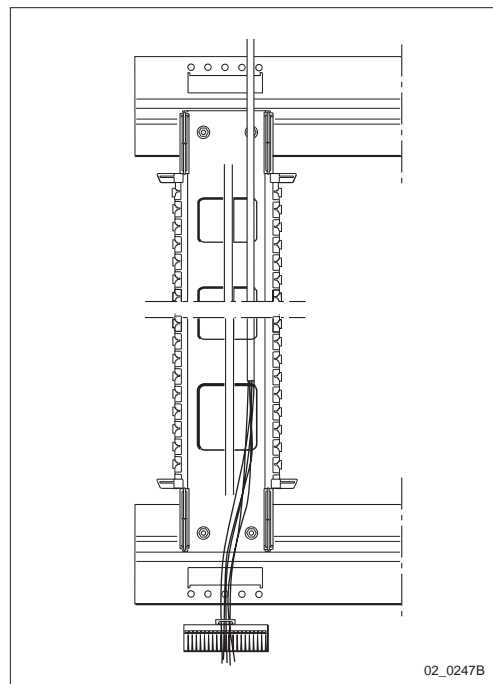


Figure 2

7. Make a loop of the conductors on the rear side of the block and fasten the block by snapping it into the block holder, see figure 3.

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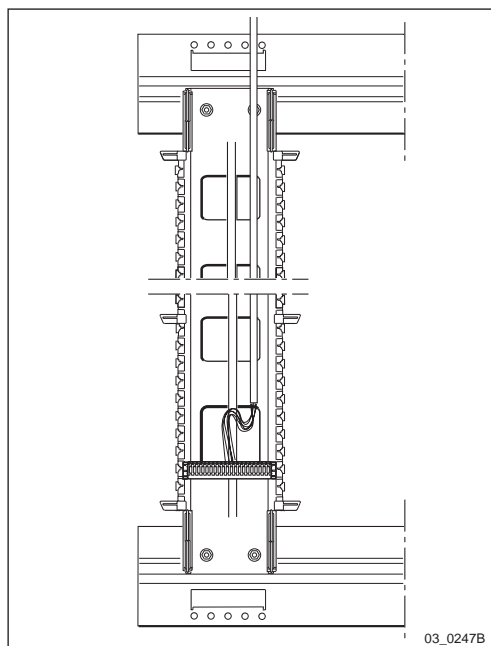


Figure 3

8. Distribute the wires over the connection slots according to the colour code for the cable (see IEC 189-2).
9. Position the Connection Tool LSY 138 252 against the slot and the wire, see figure 4, and press the tool firmly into the slot. The wire is now connected and cut at the same time. Remove the tool and the excess wire.

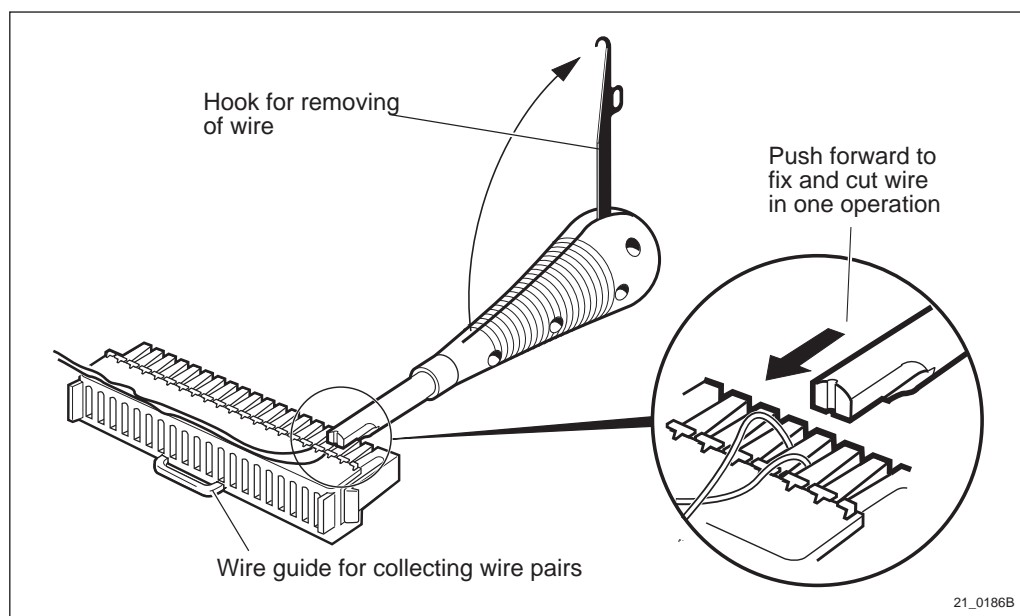


Figure 4 The use of Connection Tool LSY 138 252

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3.2.2 Cross connections

Cross connections can be made using wires with diameters 0.4 to 0.65 mm.

1. Connect the wires in the termination slots in the terminal block.
2. Guide the wires through the wire guide rings to the lower terminal block on the cross-connection side.

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Interface D-sub Connector Items Set to PCM Cable 120 Ω

Contents		Page
1	General	2
2	Materials	2
2.1	Cable between the RBS and Customer Interface	2
2.2	Interface D-sub Connector Items Set	2
3	Installation Instructions	3

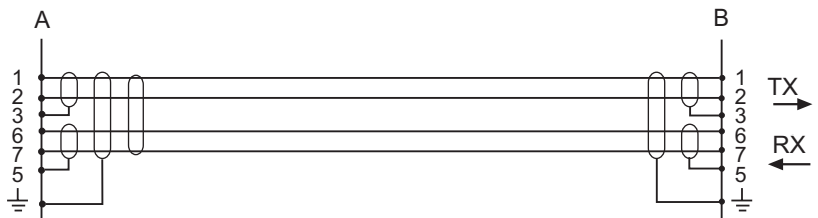
Datum — Date	Rev	Dokumentnr — Document no
1999-02-15	C	1531-RPM 513 755+ Uen

1 General

These instructions apply for the installation of a customer Interface Connector Items Set, intended for connection to a 120 Ω screened pair PCM cable.

2 Materials

2.1 Cable between the RBS and Customer Interface



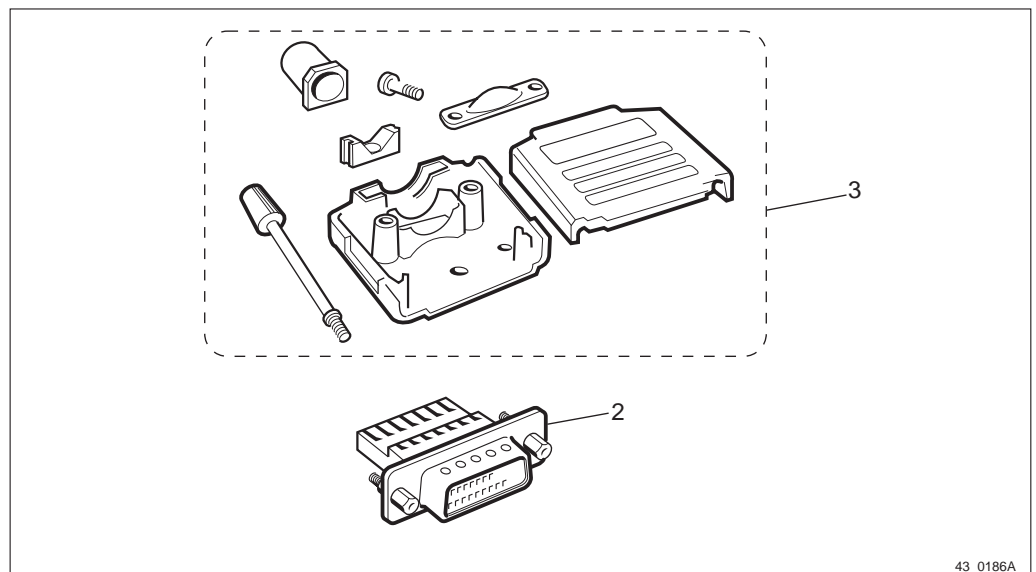
30_0186B

Figure 1 Screened pair cable RPM 513 755

The cable with product number RPM 513 755 comes in different lengths. This is indicated by adding /nnnnn after the product number. n...n is the length in mm.

2.2 Interface D-sub Connector Items Set

A matching connector items set is delivered together with the cable, see figure 2 and table 1.



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Figure 2 Interface connector items set

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Table 1 Interface connector items set

Pos	Qty	Product number	Designation
2	1	RPT 403 108/15	Connector
3	1	SDD 510 906/015	Housing

Recommended cable type: TEL 421 501.

Alternatively the following points should be taken into consideration:

- Cables should be solid or stranded (max 7 wires) of between 0.25 to 0.4 mm diameter.
- Individual conductor strands should be larger than 0.127 mm (.005 inch) in diameter.
- Contacts accept a maximum insulation thickness of 0.38 mm (.015 inch).

3 Installation Instructions

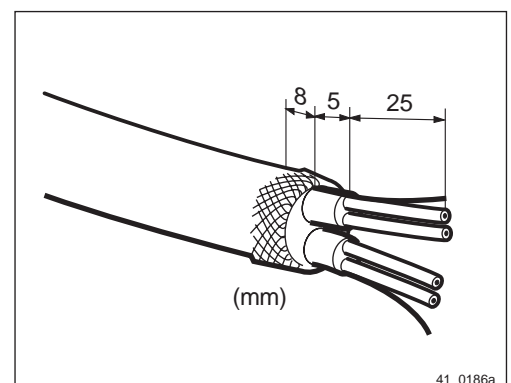
1.

Select and mount a suitable bending protection on the cable.

2.

Strip the cable jacket.

Fold back the outer screen over the cable jacket and adjust the length as shown in the figure.



3.

The inner screen should be insulated before applying contact or before an insulated conductor is soldered on to the inner screen.

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Separate all screens from each other to ensure, firstly, that the different screens of the cable do not come into contact with each other or, secondly, that there is no contact between the inner screen and housing.

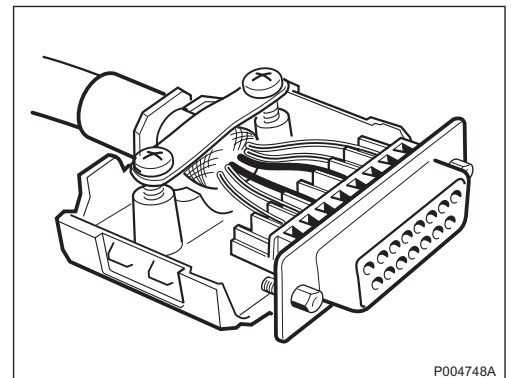
4.

Use crimping tool LSD 319 83 for connection of the cable conductors to the connector RPT 403 108/15. See instruction 1553-LSD 319 83.

See figure 1 for correct connector indexing.

5.

Select the lower part of a suitable strain relief in the housing details in pos. 3. Insert the strain relief in the lower half of the connector housing.



6.

Mount the connector in the lower half of the housing.

7.

Put the bending protection into its proper position in the housing.

8.

Mount the upper half of the strain relief over the cable screen.

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9.

Inspect the cable screen and insulation before the upper and lower halves of the connector housing are squeezed together.

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Interface D-sub Connector Items Set to PCM Cable 75 Ω

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1	General	2
2	Materials	2
2.1	Cable between the RBS and Customer Interface	2
2.2	Interface D-sub Connector Items Set	2
3	Installation Instructions	3

Datum — Date	Rev	Dokumentnr — Document no
1999-02-16	C	1531-RPM 513 756+ Uen

1 General

These instructions apply for the installation of a customer Interface Connector Items Set, intended for connection to a 75 ohm coaxial PCM cable.

2 Materials

2.1 Cable between the RBS and Customer Interface

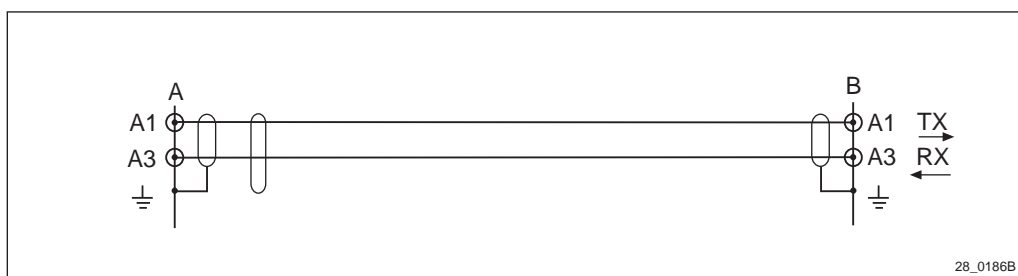


Figure 1 Coaxial Cable RPM 513 756

The cable with product number RPM 513 756 comes in different lengths. This is indicated by adding /nnnnn after the product number. n...n is the length in mm.

2.2 Interface D-sub Connector Items Set

A matching connector items set is delivered together with the cable, see figure 2 and table 1.

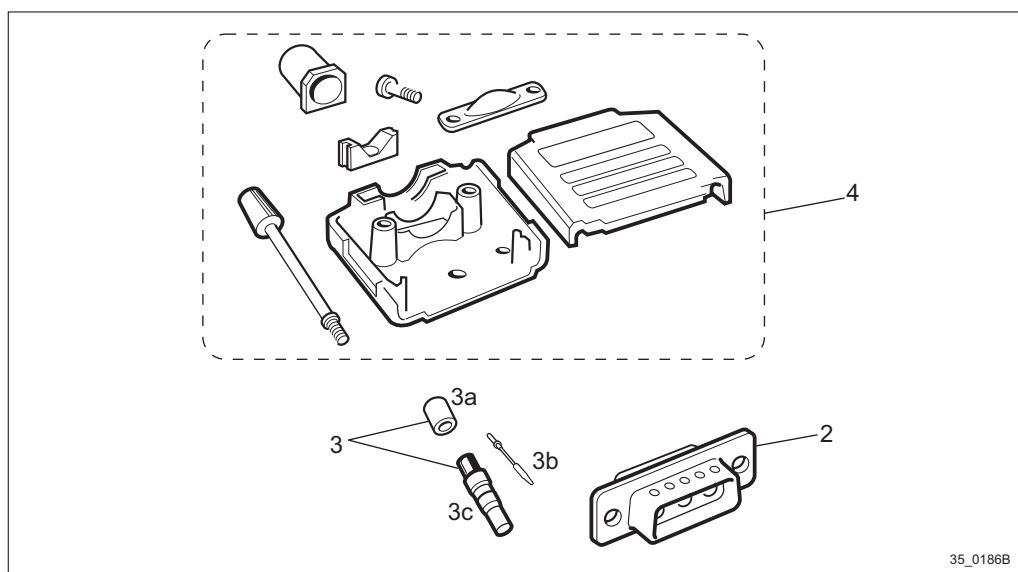


Figure 2 Interface Connector Items Set

Datum — Date	Rev	Dokumentnr — Document no
1999-02-16	C	1531-RPM 513 756+ Uen

Table 1 Interface Connector Items Set

Pos	Designation	Product number	Qty
2	Connector body	RPT 403 132/601	1
3	Connector	RPT 403 260/002	2
4	Housing	SDD 510 906/015	1

The Connector RPT 403 260/002 (pos 3) accepts 75 ohm coaxial cables with a diameter of 2.0 mm including the cable screen.

Recommended coaxial cable types for the connector:

Cable type	Product number
RG 179 B/U	TZC 751 01/2
RG 187 A/U	TZC 751 01
RG 179 B/U x2	TZE 101 14

3 Installation Instructions

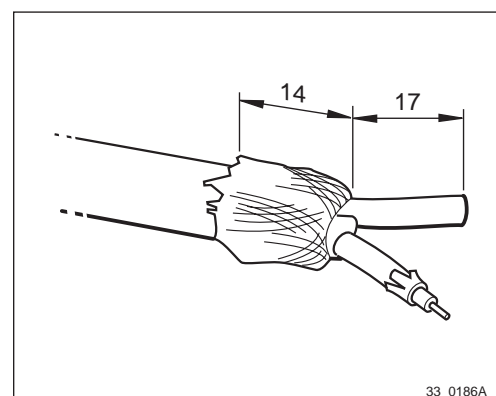
1.

Select and mount a suitable bending protection on the cable.

2.

Strip the cable jacket.

Fold back the outer screen over the cable jacket and adjust the length as shown in the figure.

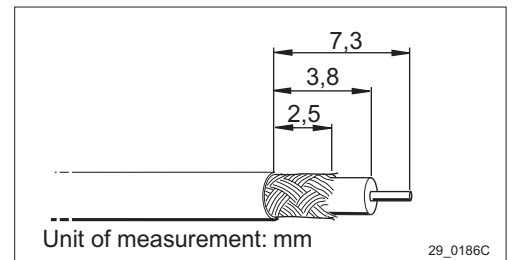


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3.

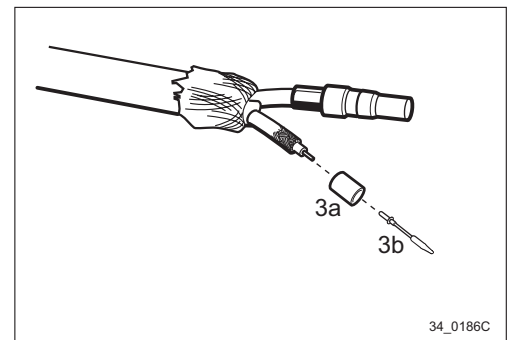
Prepare the inner cables to the measures shown in the figure.

The conductors of the inner cables are for soldering and the screens are for soldering or crimping.



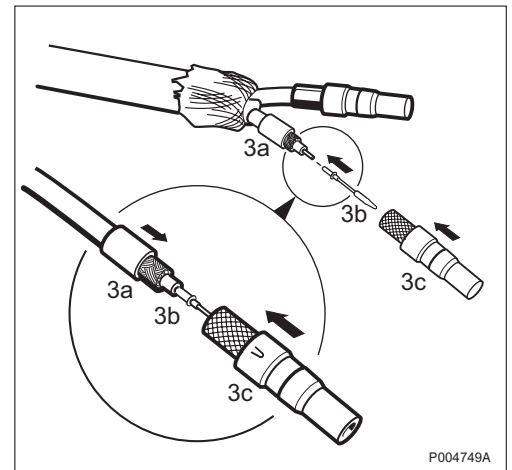
4.

Put on the outer crimping ring (pos 3a) of the Connector RPT 402 260/002 on the inner conductor cable end before the inner connector pin (pos 3b) is crimped to the inner conductor.



5.

Crimp the inner connector pin (pos 3b) to the inner conductor.



The crimping tool to be used is LTT 601 108 equipped with Press Die LSD 901 28 /1. The tool selector shall be set to 4.

Put the outer connector pin (pos 3c) until it is locked on the inner connector pin (pos 3b).

6.

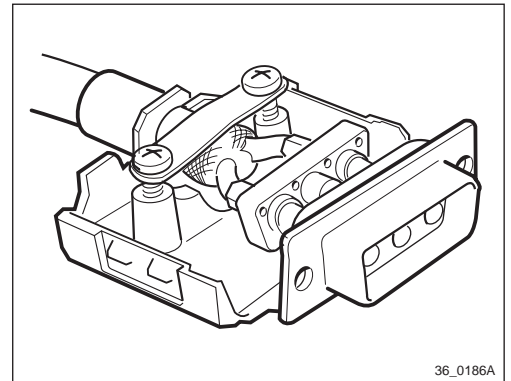
Datum — Date	Rev	Dokumentnr — Document no
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Crimp the outer ring (pos 3a) around the screen and the upper knurled grip of the outer connector pin (pos 3c).

The crimping tool to be used is LTT 601 16 equipped with Press Die LSD 901 27 /10. Crimp the ring in position B of the press die.

7.

Insert the connectors into the connector body (pos 2). See figure 1 for correct connector indexing. Select the lower part of a suitable strain relief in the housing details in pos 4 and insert it in the lower half of the connector housing.



Mount the connector body in the lower half of the housing.

Position the bending protection into its proper place in the housing.

Mount the cable strain relief over the cable screen.

8.

Check cable screen and insulation before the upper and lower halves of the connector housing are squeezed together.

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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Interface D-sub Connector Set to Power Connection Cable +24 V DC

Contents	Page
1 General	2
2 Materials	2
2.1 Cable between the RBS and Transmission DDF	2
2.2 Interface D-sub Connector Items Set	2
3 Installation Instructions	3

Datum — Date	Rev	Dokumentnr — Document no
1999-02-16	C	1531-RPM 513 757+ Uen

1 General

These instructions apply for the installation of a customer Interface Connector Items Set, intended for connection to a Power Connection Cable.

2 Materials

2.1 Cable between the RBS and Transmission DDF

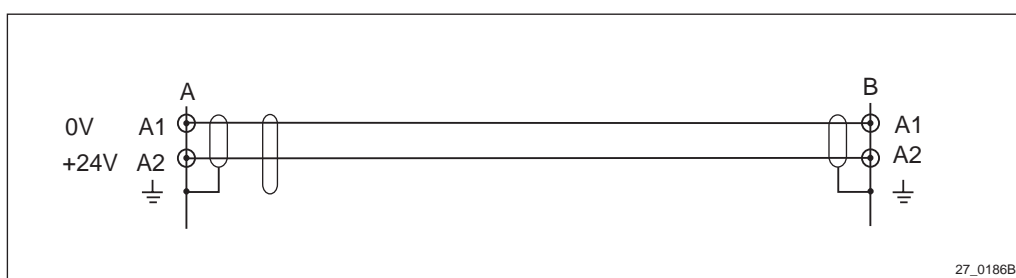


Figure 1 +24V DC Power Cable RPM 513 757

The cable with product number RPM 513 757 comes in different lengths. This is indicated by adding /nnnnn after the product number. n...n is the length in mm.

2.2 Interface D-sub Connector Items Set

A matching connector items set is delivered together with the cable, see figure 2 and table 1.

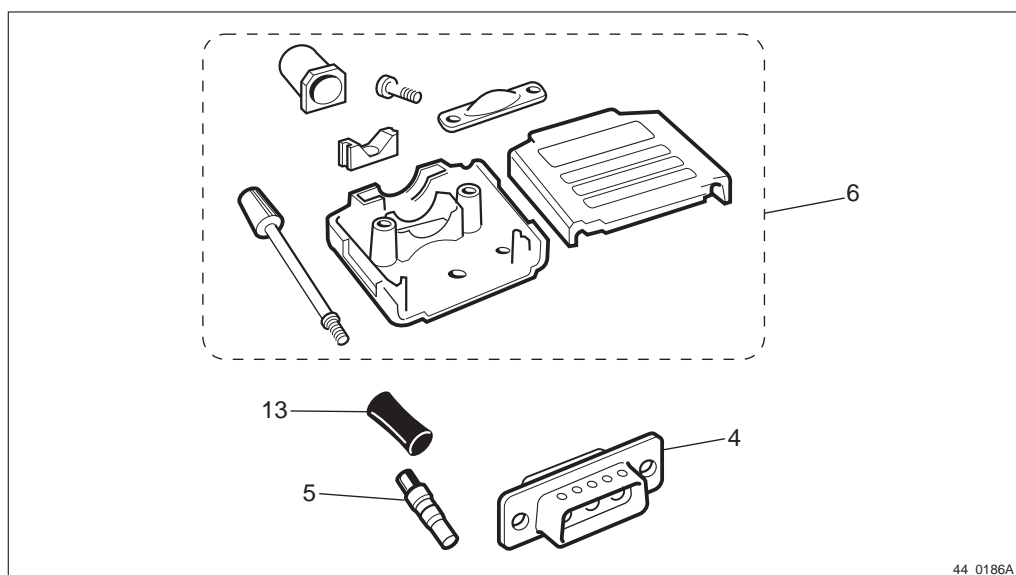


Figure 2 Interface Connector Items Set

Datum — Date	Rev	Dokumentnr — Document no
1999-02-16	C	1531-RPM 513 757+ Uen

Table 1 Interface Connector Items Set

Pos	Designation	Product number	Qty
4	Connector body	RPT 403 108/15	1
5	Connector	SND 109 28/04	2
6	Housing	SDD 510 906/015	1
13	Shrink Tube	MPB 121 095/0	2

The mating connector is suitable for a cable with stranded conductors and 6 mm² cross sectional area.

3 Installation Instructions

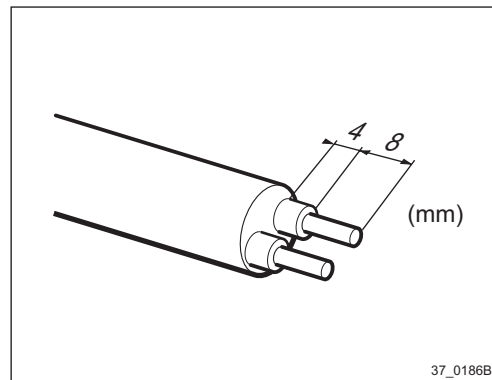
1.

Select and mount a suitable bending protection on the cable.

2.

Strip the cable jacket.

Adjust the length as shown in figure.



3.

Use the Crimping Tool LTT 601 99/1 to crimp the connector SND 109 28/04 to a stranded cable. The tool has a selector, marked SEL. NO., which shall be set to 3.

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4.

Protect the connector and the naked strand with shrinking tube before assembling the connector body.

5.

Insert the connectors into pos.4 Connector body. See figure 1 for correct connector indexing.

6.

Select the lower part of a suitable strain relief in the housing details in pos. 6. Insert it in the lower half of the connector housing.

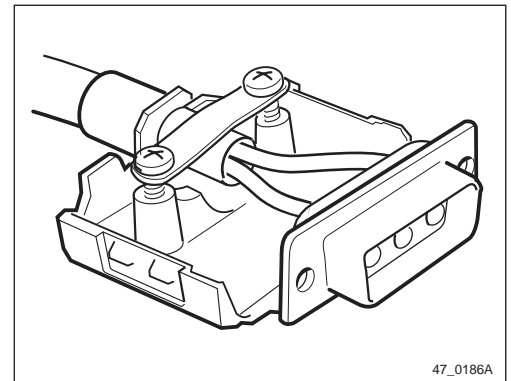
Mount the connector in the lower half of the housing.

Put the bending protection into its proper position in the housing.

Mount the upper half of the strain relief over the cable screen.

7.

Inspect the cable insulation before the upper and lower halves of the connector housing are squeezed together.



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Godkänd — <i>Approved</i> ERA/LRN/ZGC (Leif-Olof Fager)	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>

Installation of Interface D-sub Connector Items Set to PCM Cable 100 Ω

Contents		Page
1	General	2
2	Materials	2
2.1	Cable between the RBS and Customer Interface	2
2.2	Interface D-sub Connector Items Set	2
3	Installation Instructions	3

Datum — Date	Rev	Dokumentnr — Document no
1999-02-15	D	1531-RPM 513 758+ Uen

1 General

These instructions apply for the installation of a customer Interface Connector Items Set, intended for connection to a 100 Ω screened pair PCM cable.

2 Materials

2.1 Cable between the RBS and Customer Interface

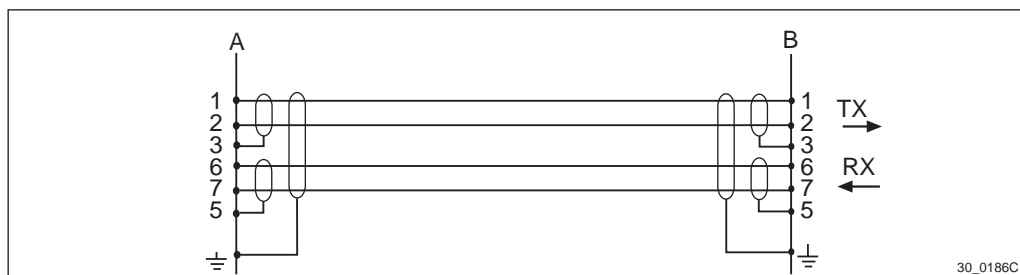


Figure 1 Screened pair cable RPM 513 758

The cable with product number RPM 513 758 comes in different lengths. This is indicated by adding /nnnnn after the product number. n...n is the length in mm.

2.2 Interface D-sub Connector Items Set

A matching connector items set is delivered together with the cable, see figure 2 and table 1.

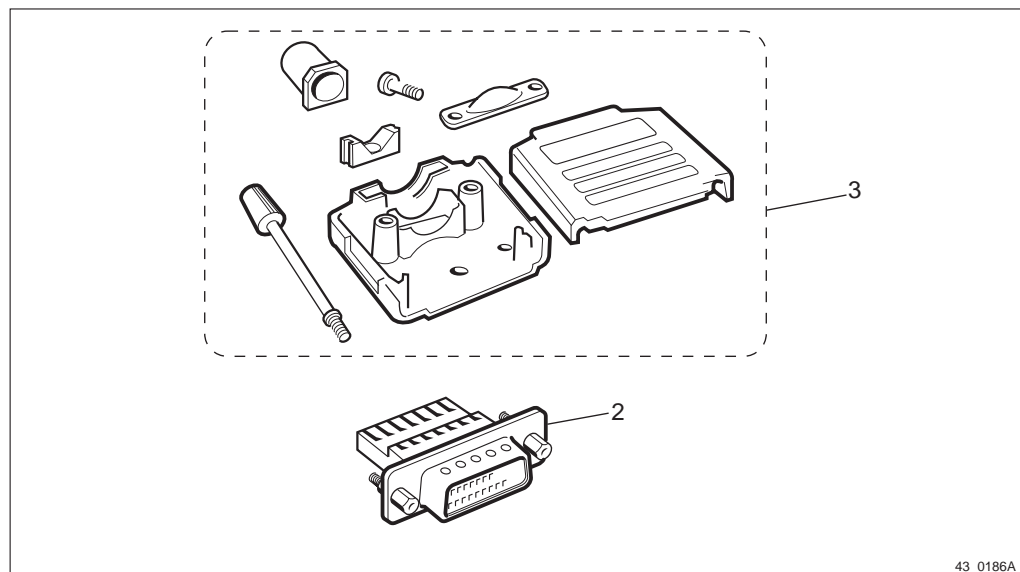


Figure 2 Interface Connector Items Set

Datum — Date	Rev	Dokumentnr — Document no
1999-02-15	D	1531-RPM 513 758+ Uen

Table 1 Interface Connector Items Set

Pos	Qty	Product number	Designation
2	1	RPT 403 108/15	Connector
3	2	SDD 510 906/015	Housing

Recommended cable type: TEL 421 601.

Alternatively, the following points should be taken into consideration.

- Cables should be solid or stranded (max 7 wires) of between 0.25 to 0.4 mm diameter.
- Individual conductor strands should be larger than 0.127 mm (.005 inch) in diameter.
- Contacts accept a maximum insulation thickness of 0.38 mm (.015 inch).

3 Installation Instructions

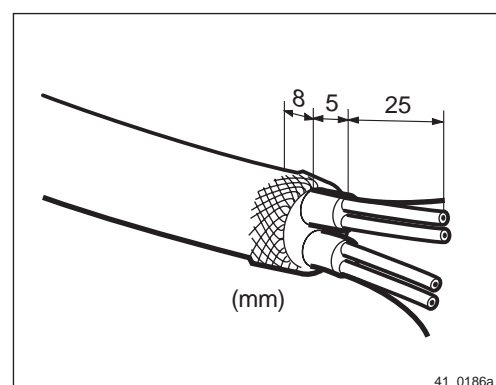
1.

Select and mount a suitable bending protection on the cable.

2.

Strip the cable jacket.

Fold back the outer screen over the cable jacket and adjust the length as shown in the figure.



3.

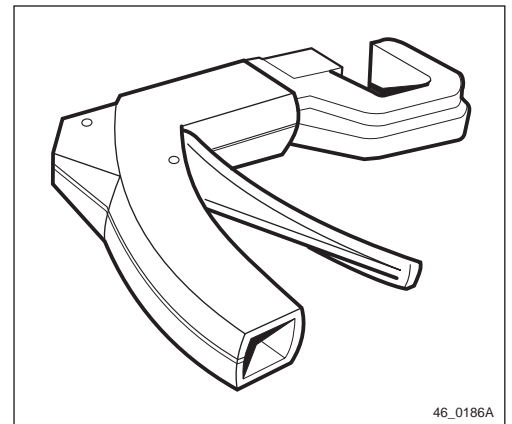
The inner screen should be insulated before applying contact or, before an insulated conductor is soldered on to the screen.

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Separate all screens from each other to ensure, firstly, that the different screens of the cable do not come into contact with each other or, secondly, that there is no contact between the inner screen and housing.

4.

Use crimping tool LSD 319 83 for connection of the cable conductors to the connector RPT 403 108/15. See instruction 1553-LSD 319 83.



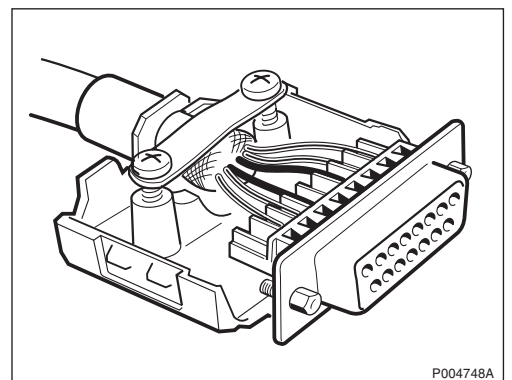
See figure 1 for correct connector indexing

5.

Select the lower part of a suitable strain relief in the housing details in pos. 3. Insert the strain relief into the lower half of the connector housing.

6.

Mount the Connector in the lower half of the housing.



7.

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Put the bending protection into its proper position in the housing.

8.

Mount the upper half of the strain relief over the cable screen.

9.

Inspect the cable screen and insulation before the upper and lower halves of the connector housing are squeezed together.

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Godkänd — <i>Approved</i>	Kontr — <i>Checked</i>		Tillhör/referens — <i>File/reference</i>
ERA/LRN/ZGC (Leif-Olof Fager)			

1 Glossary

Bending radius:

Without rebending:

When the cable has been bent to its minimum bending radius it must not be bent back as this could result in damage to the cable

With rebending:

This radius, which is not the minimum bending radius, allows repeated bending without damage to the cable.

Cabinet

Indoor cabinet:

Installed in a sheltered place, e.g. a special site building on the ground or on the roof of an existing building.

Outdoor cabinet:

Installed free-standing on the ground or on the roof of an existing building.

Crimping connection

Used to achieve a joint of good mechanical strength and satisfactory electrical connection which also is airtight

Feeder cables, Kabelmetal

CELLFLEX™

Foam polyethylene dielectric coaxial cables

COMFLEX™

Solid polyethylene dielectric coaxial cables

FLEXWELL™

Air dielectric coaxial cables

Mast/Tower

Mast:

Antenna mounting pole or framework stayed by wires

Tower:

Antenna mounting self-supporting framework.

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Radio Site Inspection Performed by the Installation Supervisor to ascertain that the site is ready for installation

Radio Site Installation Engineering Generates a Site Installation Documentation. After the installation an as built version called Site Design Documentation valid for a particular site is generated.

Radio Site Investigation Generates an investigation report after all factors with an influence on the project have been investigated. This report is the basis for an agreement with the customer of the confirmed system design.

Radio Site Preparation (Civil works) The scope of work to be done before pre- installation and installation.
The site preparation should be done by a civil works contractor, following the site requirements specifications.