RBS 2401 User's Guide

Due to continued progress in methodology, design and manufacturing, the contents of this document are subject to revision without notice.

Contents

This page is intentionally left blank

1 Introduction

The RBS 2401 is a pico base station intended for indoor installation. It is equipped with two low power transceivers and an optional omnidirectional antenna.

The small dimensions mean indoor coverage for GSM 900, GSM 1800 and GSM 1900 with a minimum of space required.

This User's Guide contains instructions for installation, tests, and maintenance of the RBS 2401.

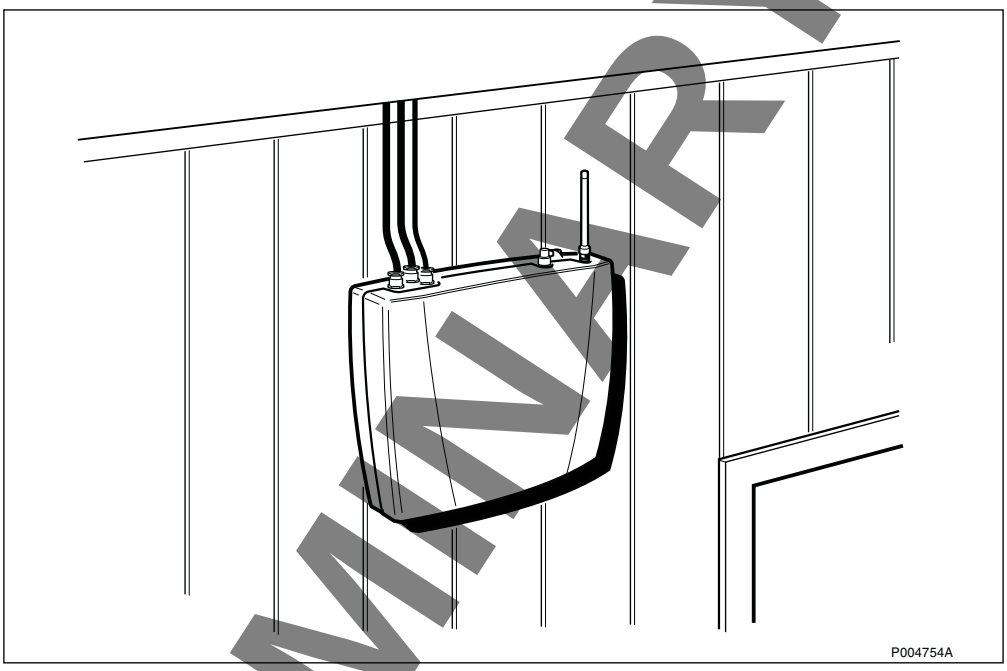


Figure 1 RBS 2401 mounted on a wall

1.1 Competence Requirements for Work with RBS 2401

In order to do the installation, test, and maintenance work according to this manual, the work shall be done by a skilled person.

Note: Local safety regulations may require that all work (installation, repair, revision, etc.) with high-voltage equipment must be done by a qualified or certified electrician only.

Competence Requirements for Installation

- Basic workshop mechanics background.
- Able to read assembly drawings, and cable drawings.
- A basic knowledge about electrical matters.
- Basic understanding of technical English.

Competence Requirements for Test and Maintenance

- Well experienced radio and mobile telephone communication technician.

- A basic knowledge of Ericsson materials.
- Good understanding of technical English.

1.2 Release History

Except editorial changes such as correction of spelling, grammar, and layout, this manual has been revised as follows:

1.2.1 R1A to R2A

- Information affecting several chapters:
  - Information about HDSL module included.
  - Information about AGW included.
- Chapter “Safety” modified.
- Chapter “Maintenance and Spare Parts”:
  - Section “Fault Localisation” extended.
  - Section “Preventive Maintenance” added.
- Chapter “Glossary” modified.

2 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.

2.1 Warnings

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

Figure 2 Hazard symbol

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

DANGER

Danger means that an accident may occur if the safety precautions are neglected. This type of accident is likely to be fatal.

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 3 Radio frequency radiation

Figure 4 Electrical hazard

Figure 5 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.

2.2 Notes

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

2.3 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) such as 25072 (goggles in the Common Tool Kit LTT 601 044/1) 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.

2.3.1 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 MΩ 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.

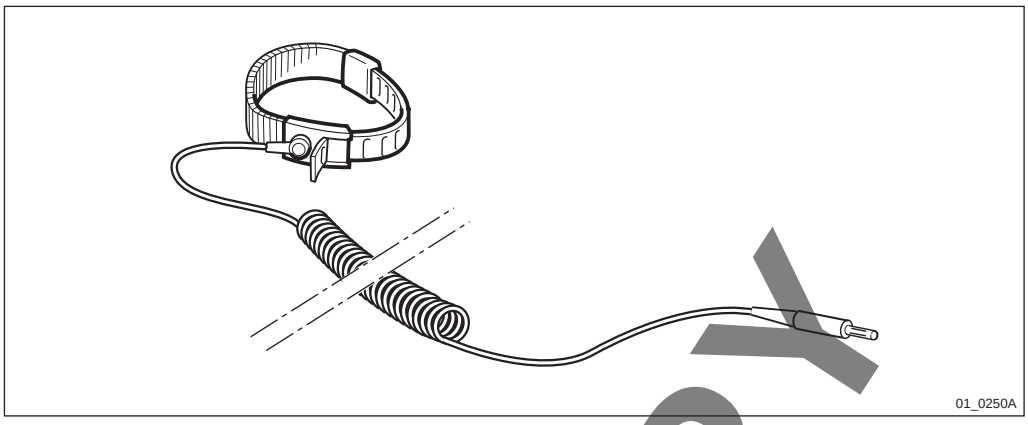


Figure 6 ESD wrist strap LYB 250 01/14

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.

2.4 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.

2.4.1 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

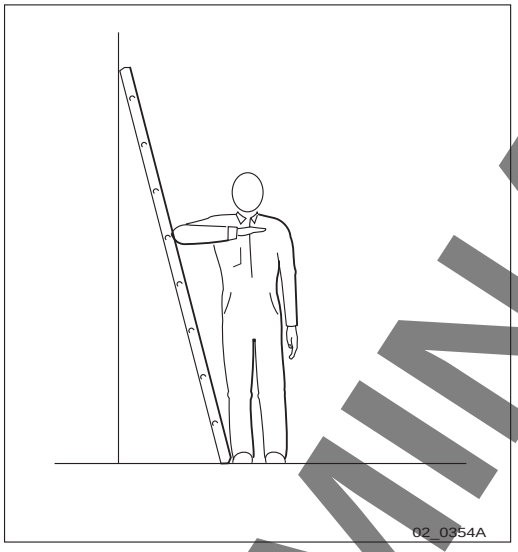


Figure 7 Checking the angle

- 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 8 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.

2.5 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.

2.6 Other Hazards

Fire

WARNING

Fire may spread to neighboring 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.

This page is intentionally left blank

3 Site Planning and Product Data

3.1 Site Requirements

3.1.1 Preconditions

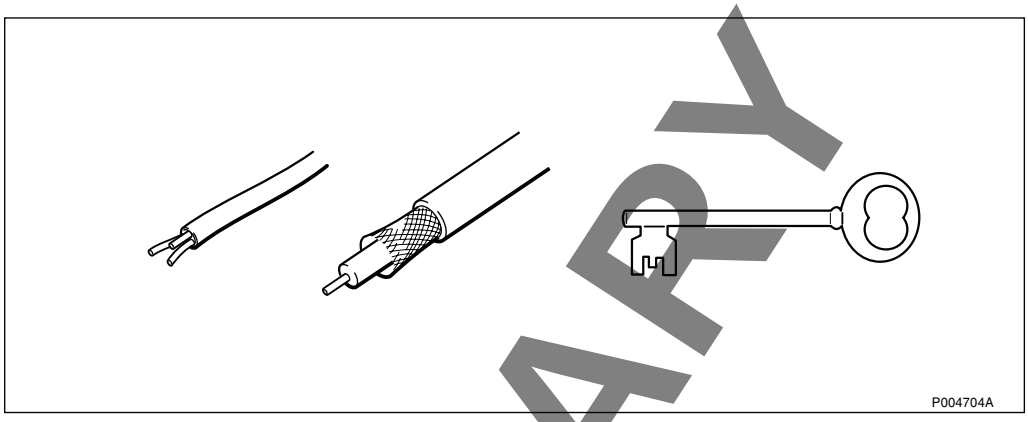


Figure 9

- Access to AC mains power.
- Access to transmission network.
- Access to site premises.

3.1.2 Environmental requirements

Required Space for Service

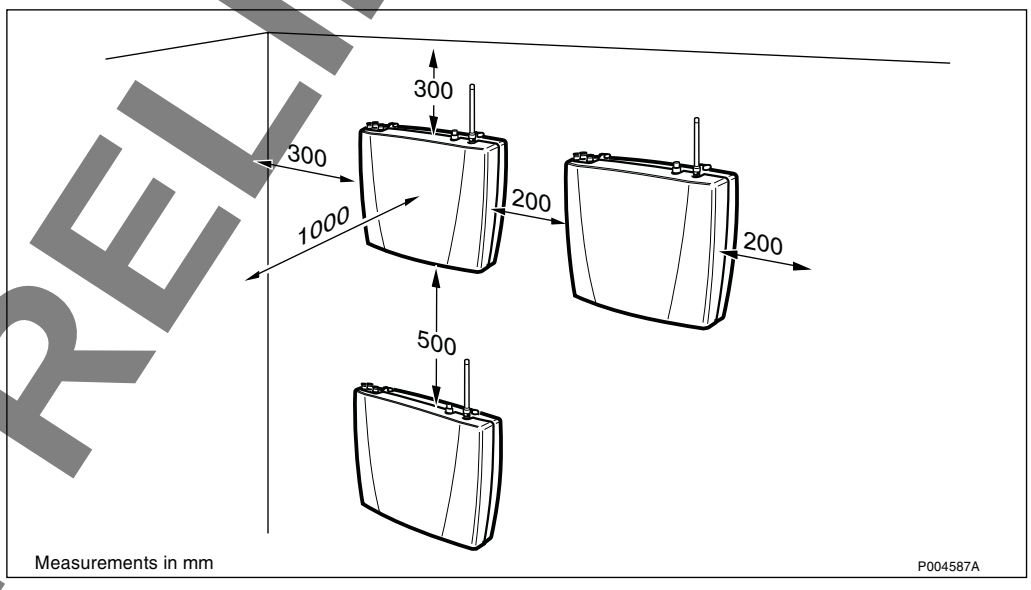


Figure 10

Climatic Endurance

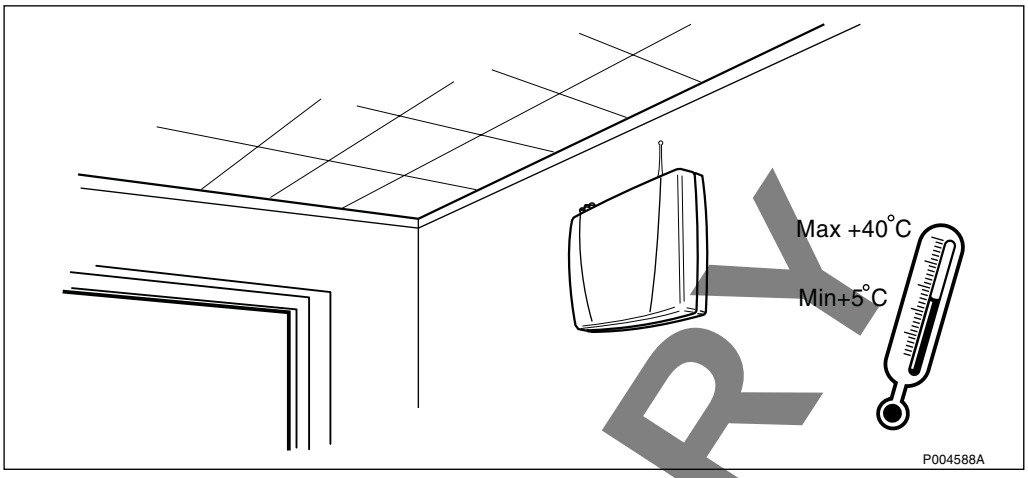


Figure 11

3.1.3 Antenna System

There are two alternatives:

- External antenna (if available)
- Omnidirectional antenna (optional)

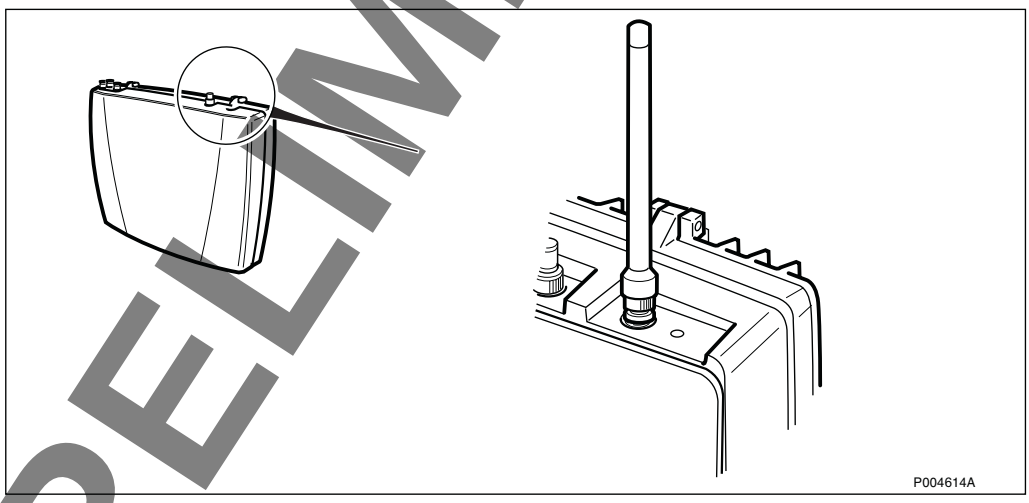


Figure 12 RBS 2401 with omnidirectional antenna (optional) mounted

3.2 Product Data RBS 2401

3.2.1 Main Units

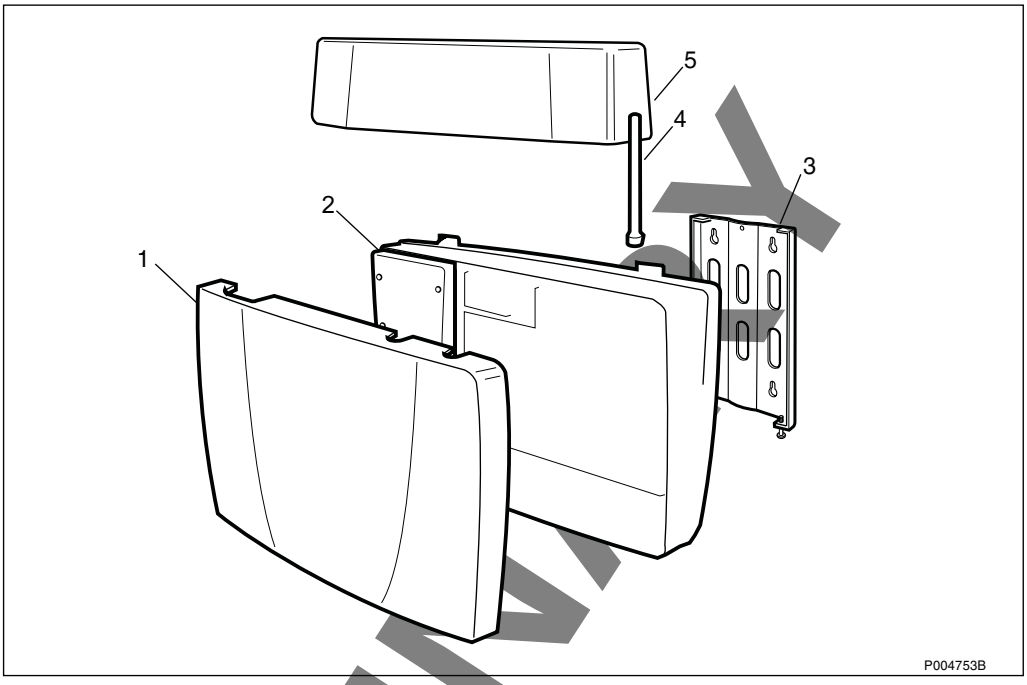


Figure 13 RBS 2401 main units

1 Front cover

2 Radio cabinet

3 Wall bracket

4 Omnidirectional antenna (Optional)

5 HDSL module or AGW (Optional)

3.2.2 Technical Data

Dimensions and Weight

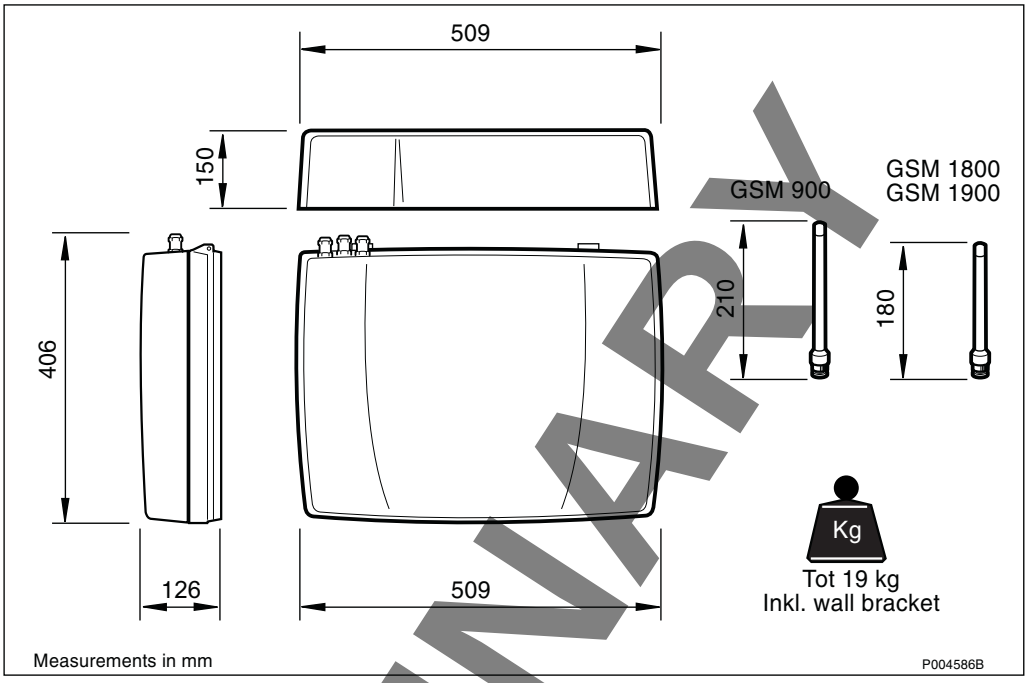


Figure 14

Temperature and Humidity Limits

	Operation	Transport	Storage
Temperature	+5 to +40 °C	-40 to +70 °C	-25 to +55 °C
Rel. humidity	10 to 85 %RH		

Soundless Operation

RBS 2401 does not make any noise when in operation.

Resistance against Vibrations

The RBS 2401 withstands vibrations below 0.2 g.

Power Supply

Mains voltage, single-phase:

100 - 127 V AC ±10 %, 60 Hz ±8 %

200 - 250 V AC ±10 %, 50 Hz ±10 %

200 V AC ±10 %, 60 Hz ±8 %

RBS 2401 is automatically adapted to any voltage within the operating range 100 - 127 V AC, and 200 - 250 V AC.

Power Consumption

Power consumption: <83 VA.

AC Mains Connection

Type of connection: Clamp terminal 2 x max. 2.5 mm^2, and screw terminal used for protective earth.

Cable gland capacity: ∅ 16 mm.

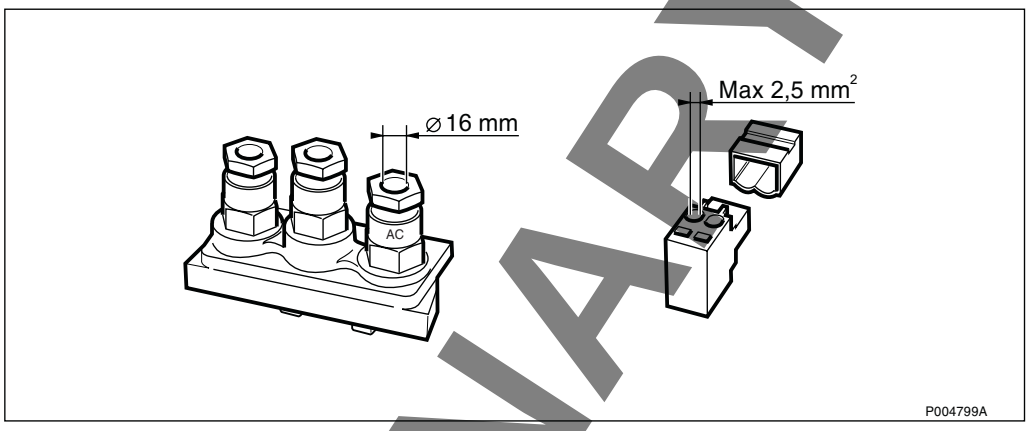


Figure 15

AC Mains Limiting Values

Table 1 AC mains limiting values

Frequency	Short circuit current	Inrush current/phase (typical 10 ms)
50 Hz	max. 50 A	< 5 kA
60 Hz	max. 60 A	< 5 kA

3.2.3 Transmission

Transmission Cables

RBS 2401 can be connected to transmission interface G.703 type E1, using two coaxial cables 75 Ω or four-wire twisted pair 120 Ω.

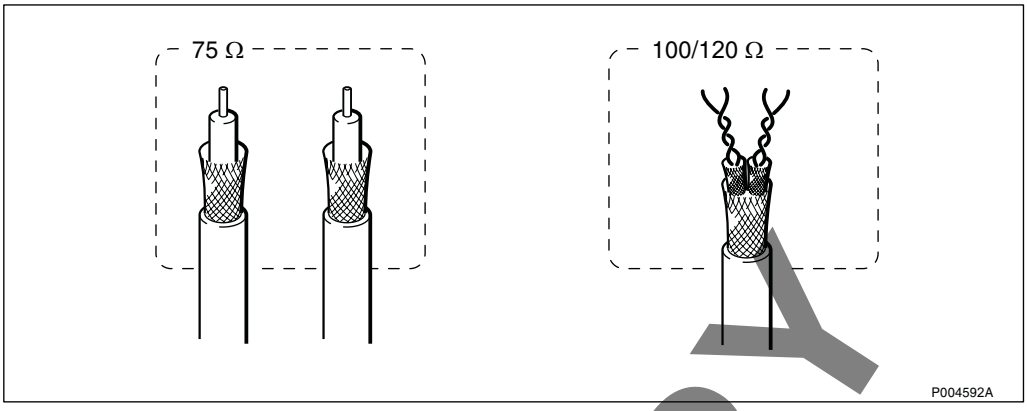


Figure 16

For E1 transmission interfaces, different impedances are used depending on network operator or application:

- Unbalanced coaxial cable, impedance 75 Ω
- Balanced twisted pair cable, impedance 120 Ω

For T1 transmission interfaces a balanced twisted pair cable with impedance 100 Ω is required.

Interfaces

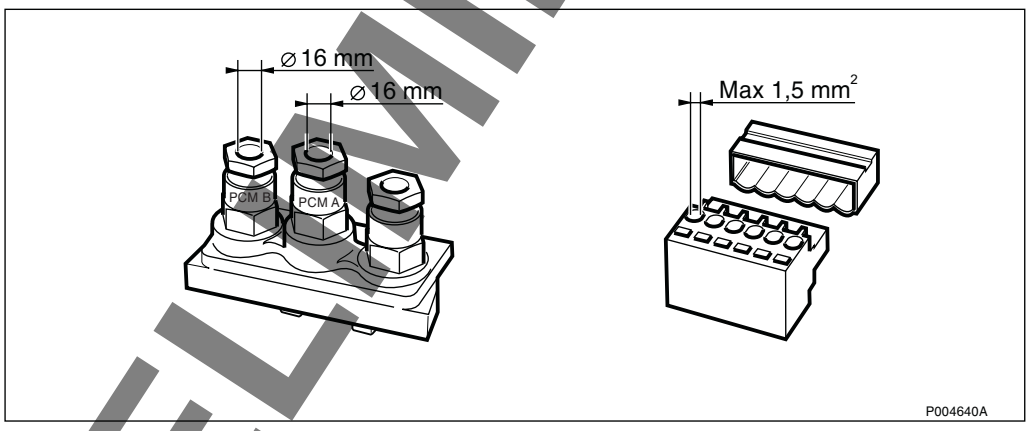


Figure 17

RBS 2401 is equipped with four transmission ports:

- PCM-A IN
- PCM-A OUT
- PCM-B IN
- PCM-B OUT

Type of connection: Two clamp terminals, each 6 x max. 1.5 mm^2.

Note: According to type approval, max. allowed PCM cable dimension: ∅ 0.4 mm.

Cable gland capacity: ∅ 16 mm.

Cascade Connection

Master RBS and four Extension RBSs connected in a cascade arrangement.

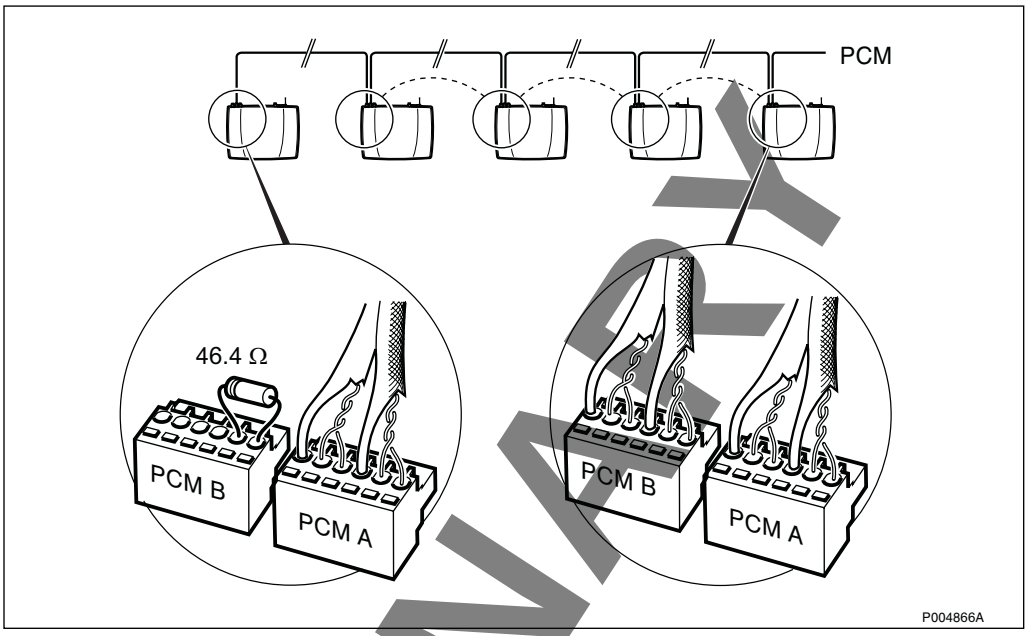


Figure 18

3.2.4 Omnidirectional Antenna (Optional)

Note: The omnidirectional antenna should not be used together with an HDSL module or AGW due to the risk of interference.

If an HDSL module or AGW is installed, an external antenna should be used.

Both TRXs of the RBS 2401 are connected to both antenna outputs.

Antenna connectors: 2 x TNC, coaxial.

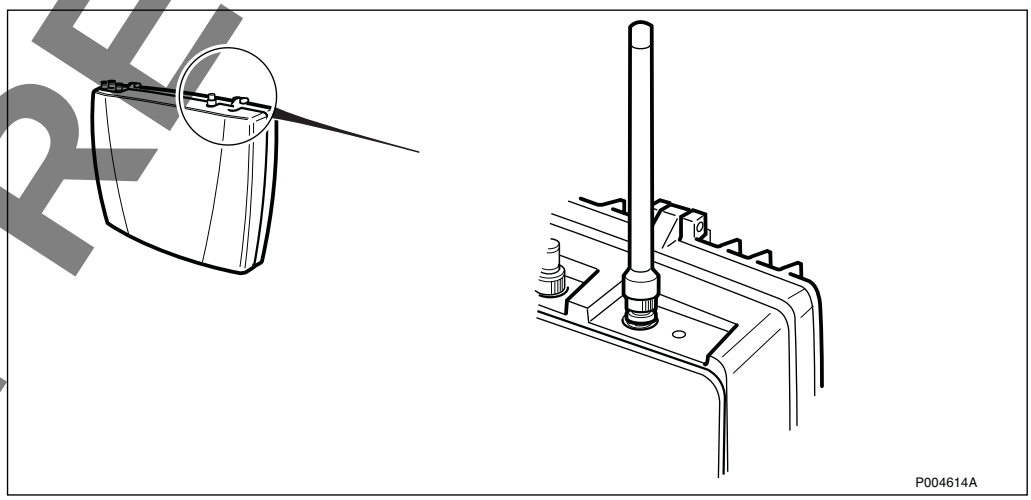


Figure 19 RBS 2401 with omnidirectional antenna

The antenna connector not used is terminated with a 50 Ω resistor.

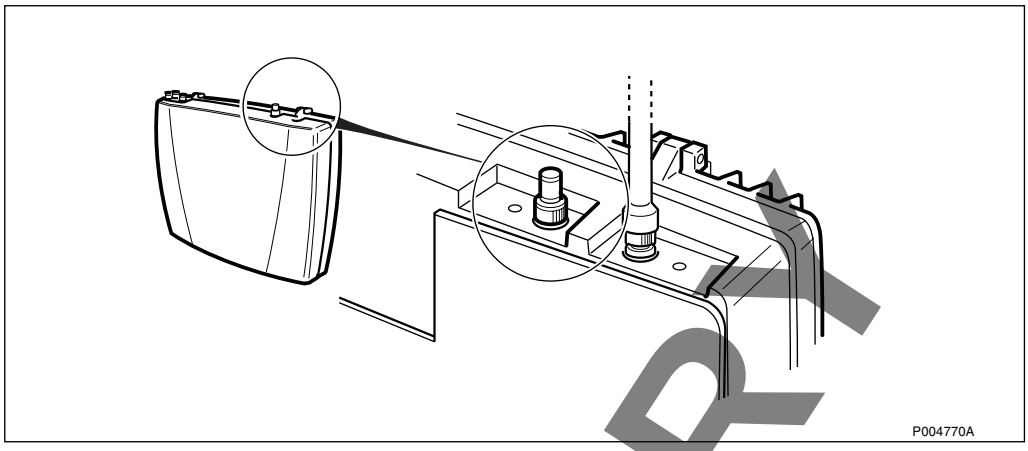


Figure 20 Unused antenna connector terminated

3.3 Product Data HDSL Module

Dimensions and weight

See Product Data for RBS 2401.

Temperature and Humidity Limits

Same limits as for RBS 2401.

Soundless operation

The HDSL module does not make any noise when in operation.

Resistance against vibrations

The HDSL module withstands vibrations below 0.2 g.

Power supply

+7 V DC +10% -15%, supplied by the radio cabinet

Power consumption

- Nominal 3.5 W.
- Maximum 5.5 W.

Interfaces

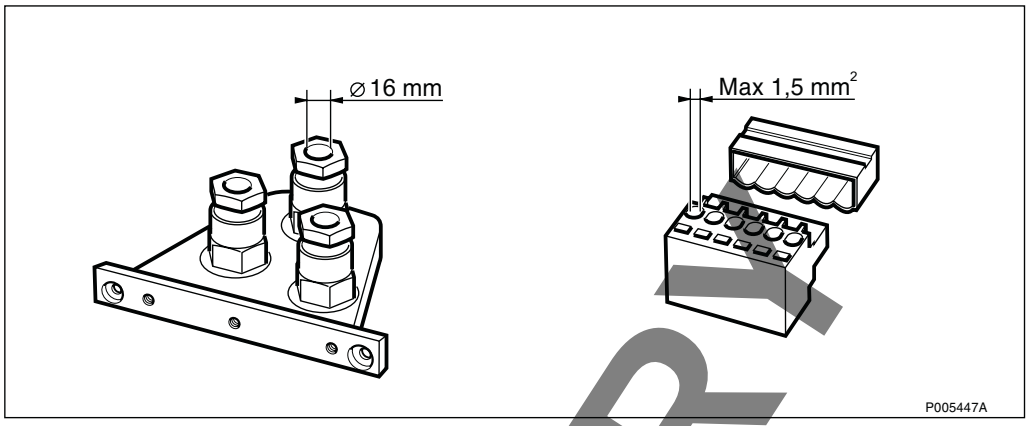


Figure 21

The HDSL module is equipped with two transmission terminals for G.703 E1 120 Ω.

The two terminals contains four transmission ports:

- PCM A IN
- PCM A OUT
- PCM B IN
- PCM B OUT

Cascade Connection

There are three cascade configurations possible.

Table 2

Configuration	PCM A	PCM B
1	HDSL 1 pair	HDSL 1 pair
2	G.703 E1 120 Ω	HDSL 1 or 2 pair
3	HDSL 1 or 2 pair	G.703 E1 120 Ω

3.4 Product Data AGW

Dimensions and weight

See Product Data for RBS 2401.

Temperature and Humidity Limits

Same limits as for RBS 2401.

Soundless operation

The AGW does not make any noise when in operation.

Resistance against vibrations

The HDSL module withstands vibrations below 0.2 g.

Power supply

+7 V DC +10% -15%, supplied by the radio cabinet

Power consumption

- Nominal 4.9 W.
- Maximum 5.7 W.

Interfaces

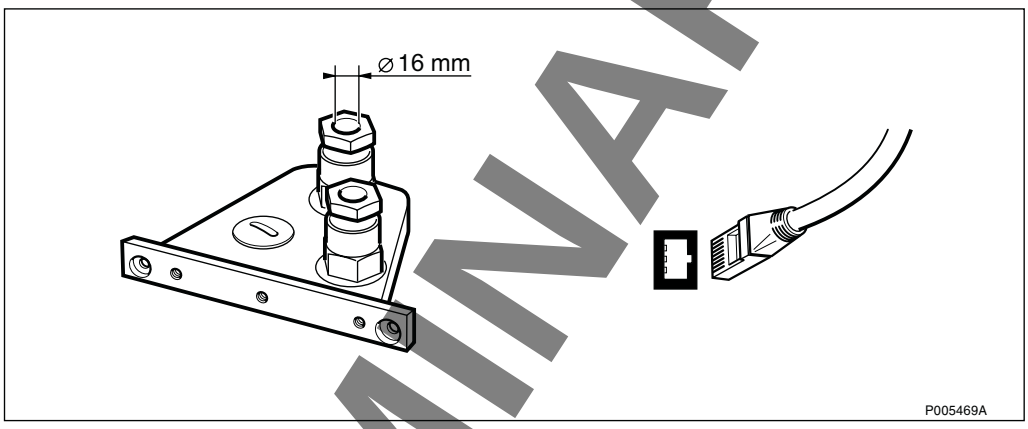


Figure 22

The AGW is equipped with one transmission terminal (modular for connection against Ethernet LAN).

Cascade Connection

It is not possible to arrange a cascade connection when using the AGW.

4 Installation and Tests

4.1 Tools and Instruments

Note: Only instruments that are year 2000 compliant may be used.

4.1.1 Tools for Installation

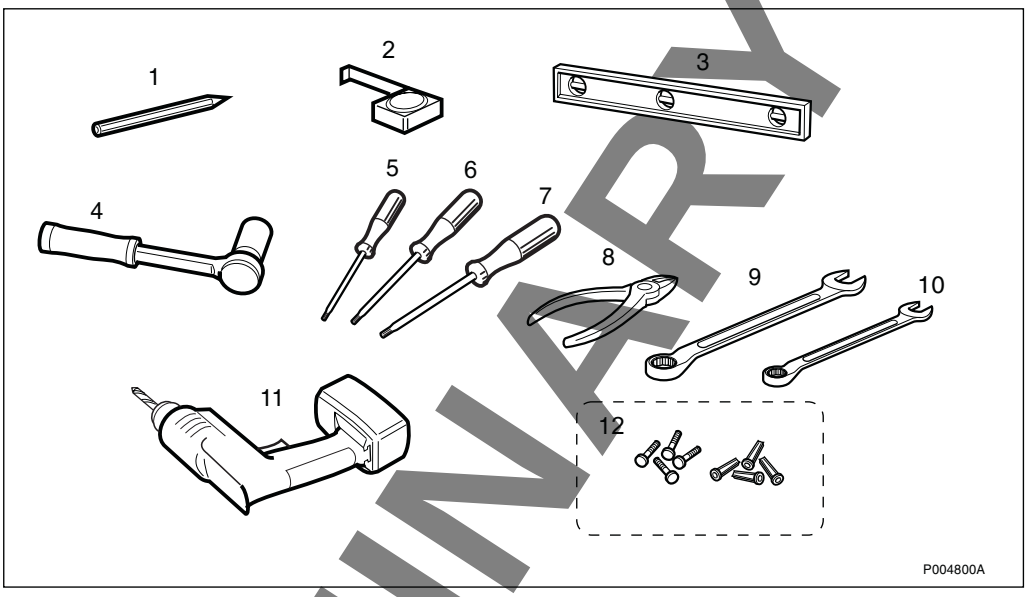


Figure 23

Table 3 Tools for installation

Item	Description	Product No.
1	Pencil	(1)
2	Measuring tape	(1)
3	Spirit level	(1)
4	Ratchet wrench with 3/8" socket set	(1)
5	Screwdriver, 3 mm wide	(1)
6	Screwdriver, TORX Tx10	(1)
7	Screwdriver,TORX Tx20	(1)
8	Side cutting plier	(1)
9	U-ring wrench	(1)
10	U-ring wrench	(1)
11	Cordless hammer drill machine tool set:	
	- 220 V	LTT 601 12/2
	- 115 V	LTT 601 12/1
12	Selection of screws and plugs for wall bracket	

(1) Included in LTT 601 045/3, Personal Installation Tool Kit.

4.1.2 Test Equipment

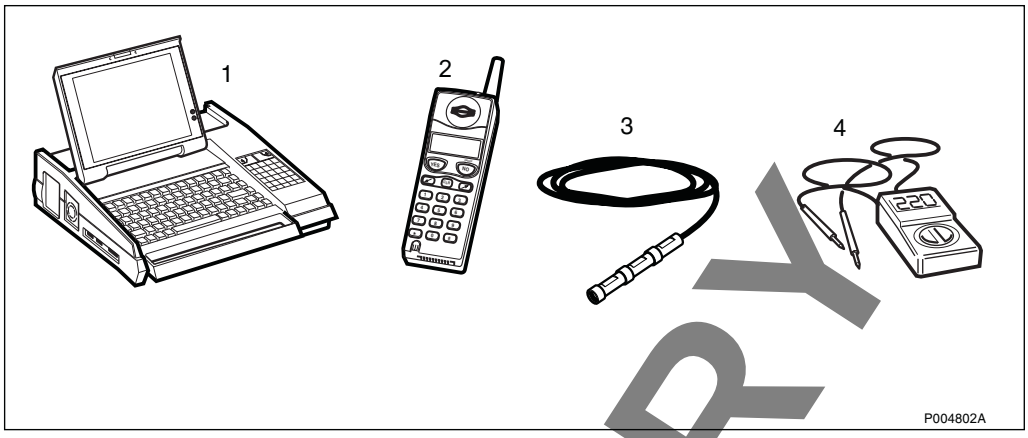


Figure 24

Table 4 Test equipment used for the different tests

Test	Test Equipment	
	Description	**Product Number**
AC Mains Test	Fluke 8060 Multimeter	LPK 102 024/1
Check IDB	OMT Kit	NTM 201 2161/1
MS Test Call with BSC simulator	BSCSim II Kit	LPP 106 35/04
	TEMS Kit for GSM 900	LPB 112 01/1
	TEMS Kit for GSM 1800	LPB 112 02/1
	TEMS Kit for Dual Band GSM 900/1800	LPB 112 12/1
	TEMS Kit for GSM 1900	LPB 112 03/1
	Cable Kit for MS Test Call	NTM 201 2216/1
	Mobile Station Cable	LPB 112 294/5(1)
Transmission Test	CB21 (Loop Forward/Backward connection board)	LPY 107 757/1
MS Test Call with BSC connection	TEMS Kit for GSM 900	LPB 112 01/1
	TEMS Kit for GSM 1800	LPB 112 02/1
	TEMS Kit for Dual Band GSM 900/1800	LPB 112 12/1
	TEMS Kit for GSM 1900	LPB 112 03/1
	Mobile Station Cable	LPB 112 294/5(1)

(1) Only for TEMS Dual Band GSM 900/1800

Using the OMT SW and TEMS SW

In order to minimise the tools required at site, a PC with the following minimum capacity is required:

- Intel 486 processor
- 66 MHz
- 16 MB RAM
- Microsoft Windows version 95/NT

Cable Kit NTM 201 2216/1

Cable kit for MS Test Call (T1) 1.5 Mbit/s and (E1) 2.0 Mbit/s.

Table 5 Cable kit NTM 201 2216/1

Item	Description	Qty
C27	MS cable	1
Ad21	Adapter	1
A21	Attenuator 30 dB, 2 W	3

TEMS Kits

Table 6 TEMS Kits

Description	Product Number
TEMS Kit GSM 900	LPB 112 01/1[(1)]
TEMS Kit GSM 1800	LPB 112 02/1[(1)]
TEMS Kit GSM 900/1800 Dual Band	LPB 112 12/1[(1)]
TEMS Kit GSM 1900	LPB 112 03/1[(1)]

[(1)] Included in the TEMS Kit:
- Test Mobile Phone
- User's Manual for TEMS software
- TEMS PC software on diskette
- TTL converter
- MS Cable
- Connector Cable

BSCSim II Kit LPP 106 35/04

Table 7 BSCSim II Kit LPP 106 35/04

Description	Product Number
BSCSim II Kit	LPP 106 35/04(1)

(1) Included in the BSCSim II Kit:

- BSCSim II platform
- BSCSim II application software
- Cable Kit
- User's Guide

4.2 Installation of Radio Cabinet

4.2.1 Installation Procedure Overview

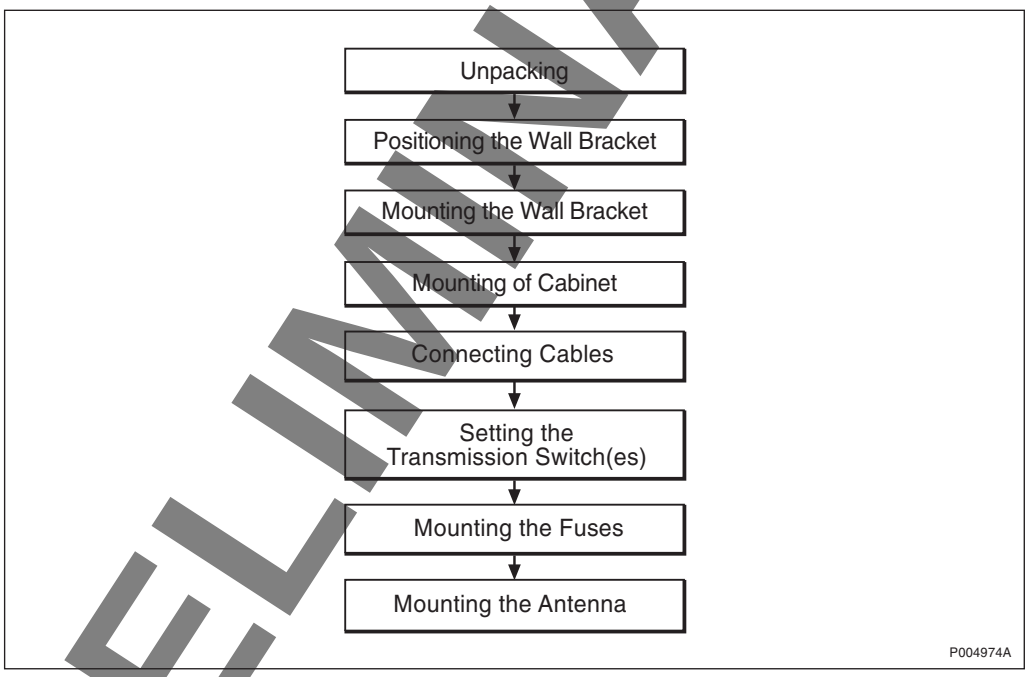


Figure 25

4.2.2 Unpacking

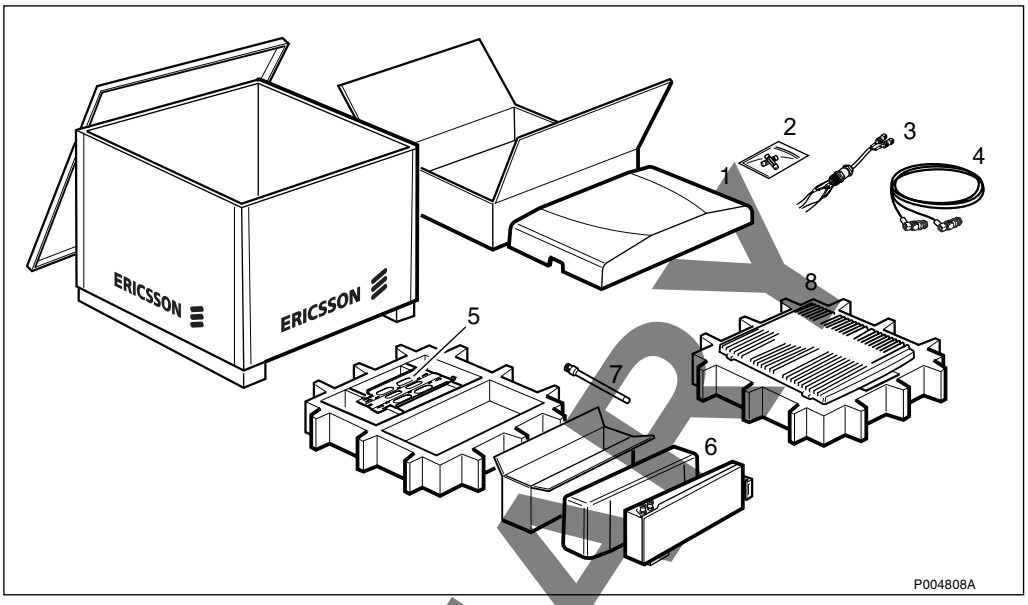


Figure 26

1 Front cover

2 Fuses and holder

3 PCM cable

4 Jumper cable (length = 1 m)

5 Wall bracket

6 HDSL module or AGW (Optional)

7 Antenna (Optional)

8 Radio cabinet

4.2.3 Mounting the Radio Cabinet

1. Find the correct position for the radio cabinet by defining the position of the reference screw for the wall bracket.

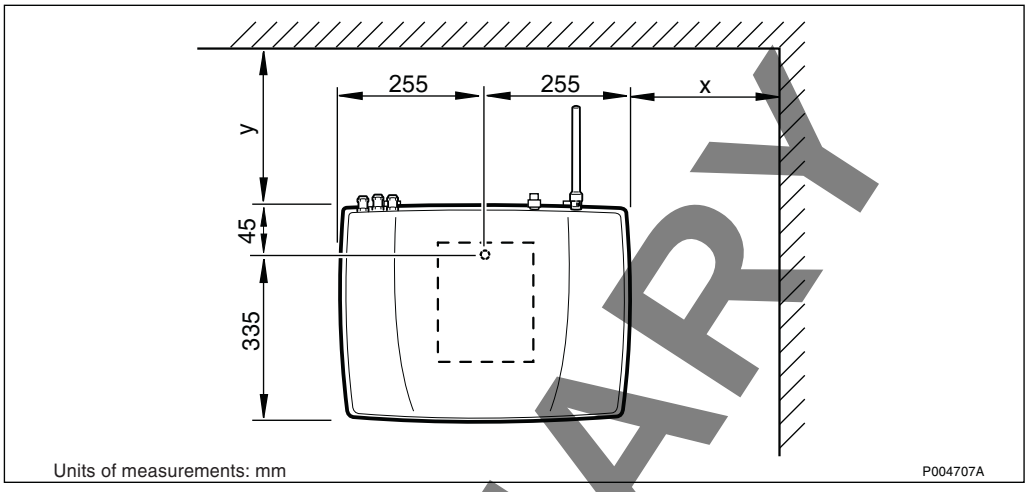


Figure 27 Defining the position of the radio cabinet in relation to the wall bracket reference screw

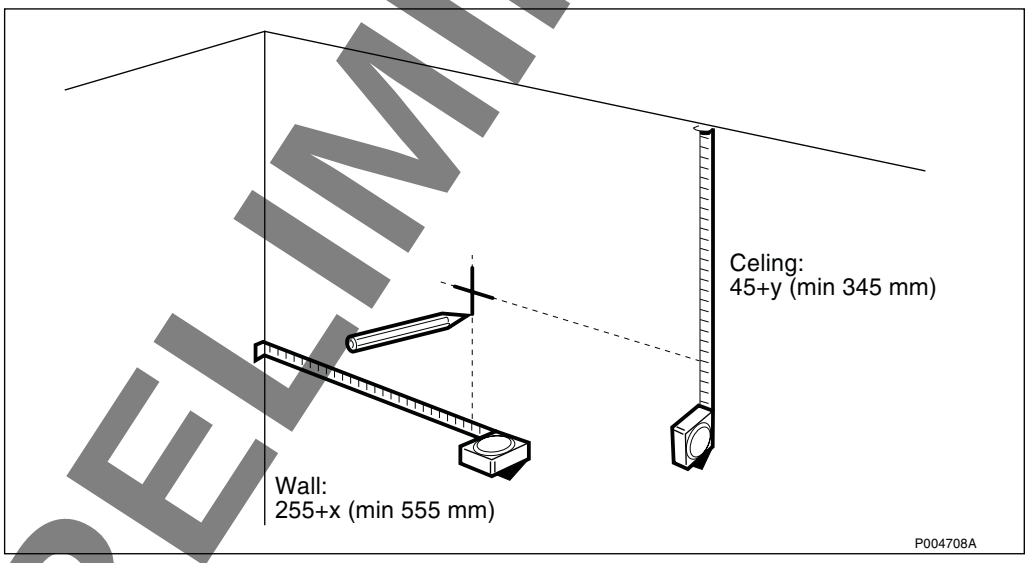


Figure 28 Marking out the position of the reference screw for the wall bracket

2. Place the wall bracket in position with the reference screw.

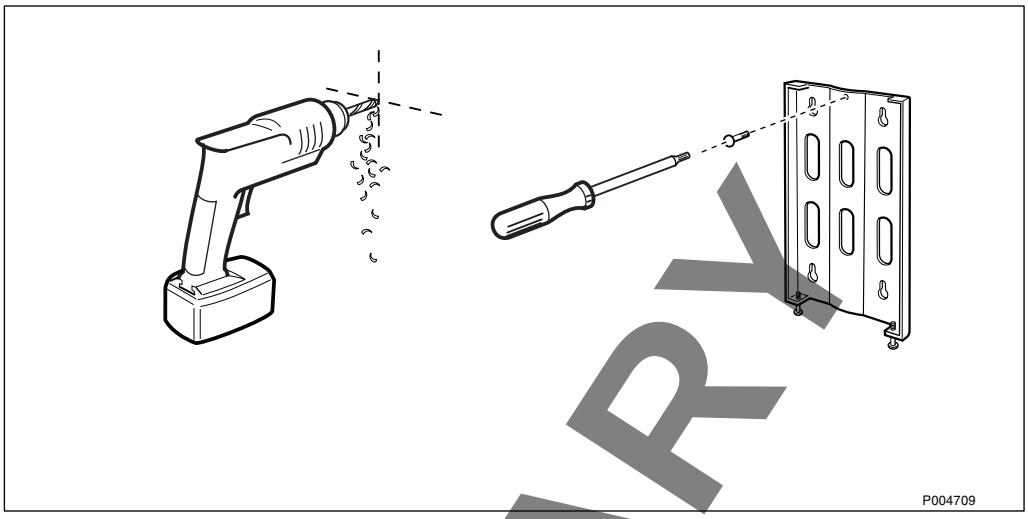


Figure 29

3. Level the wall bracket, and mark the holes for the four fastening screws.

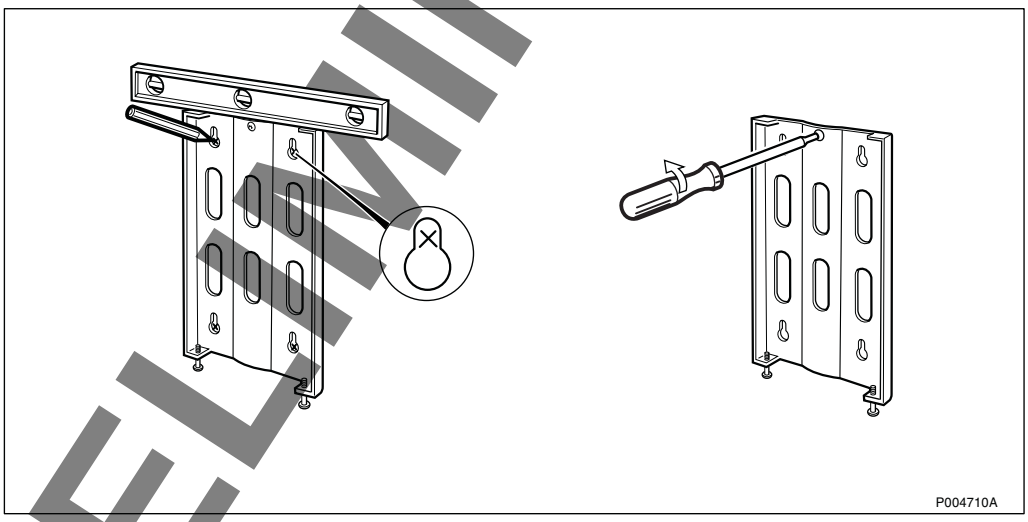


Figure 30

4. Mount the wall bracket.

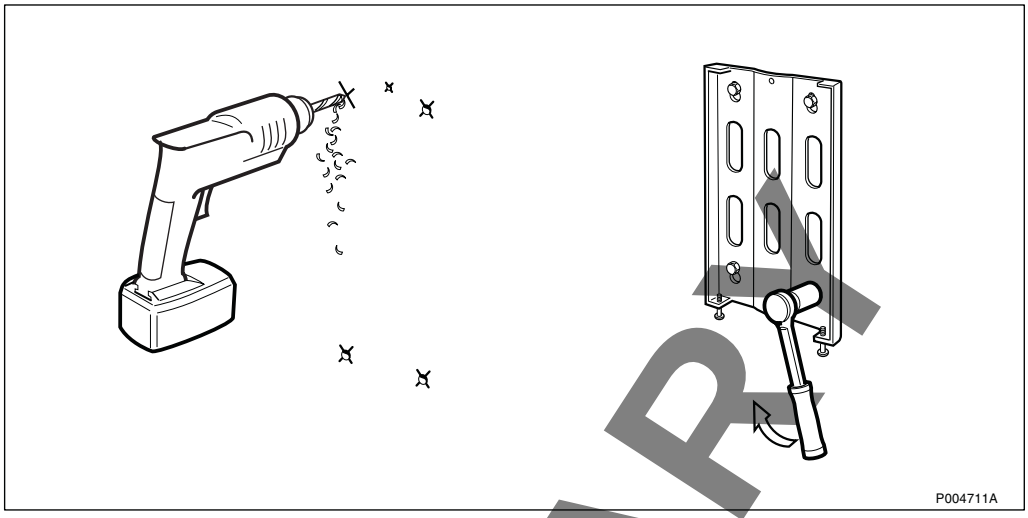


Figure 31

5. Mount the radio cabinet on the wall bracket.

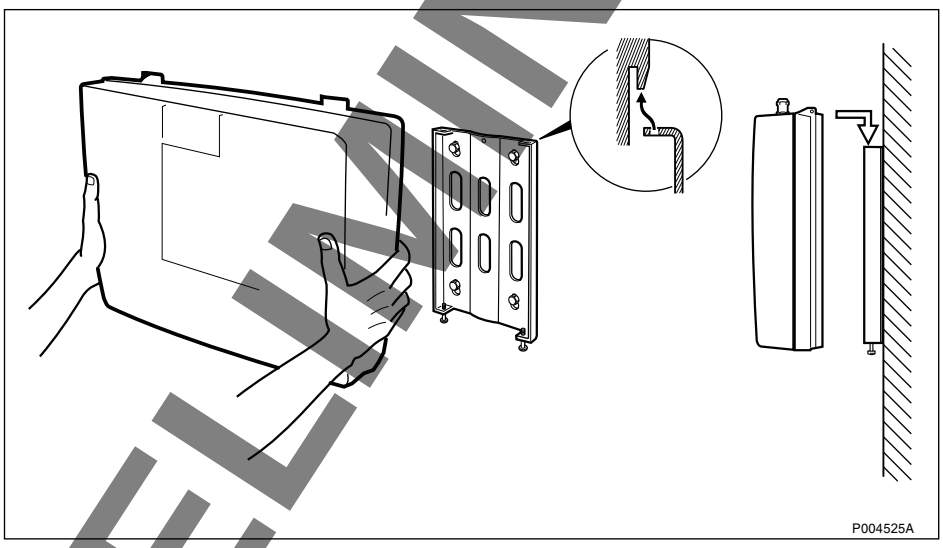


Figure 32

6. Secure the radio cabinet on the wall bracket with the two screws.

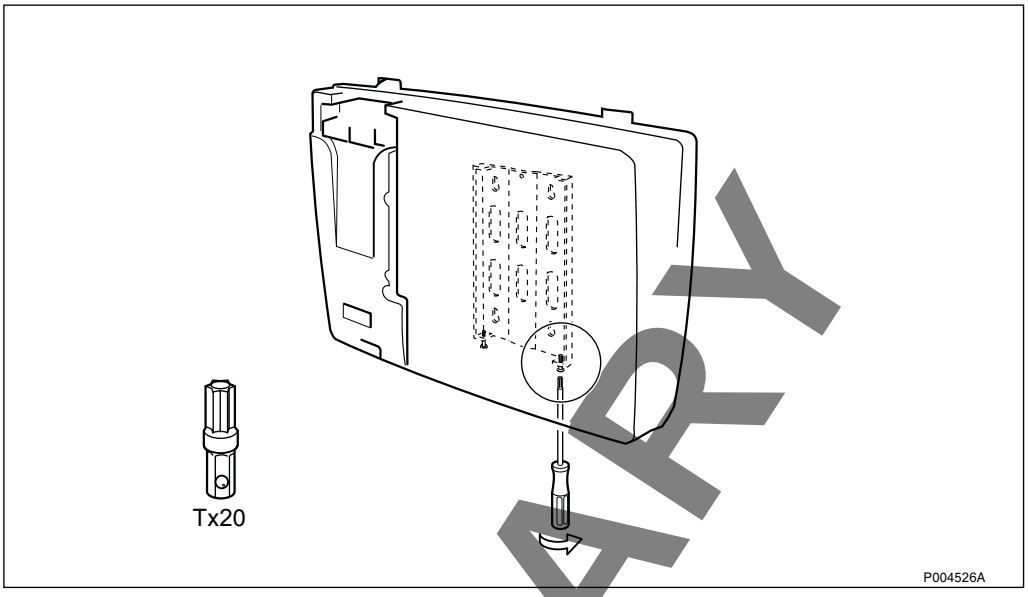


Figure 33

4.2.4 Connecting Cables

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.

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.

CAUTION

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

1. Remove the installation box cover.

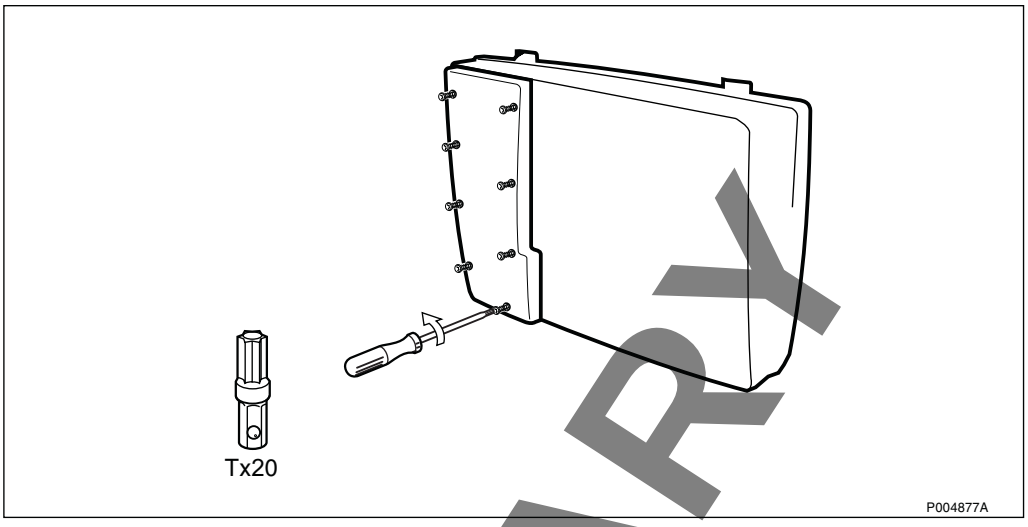


Figure 34

2. Connect the ESD wrist strap.

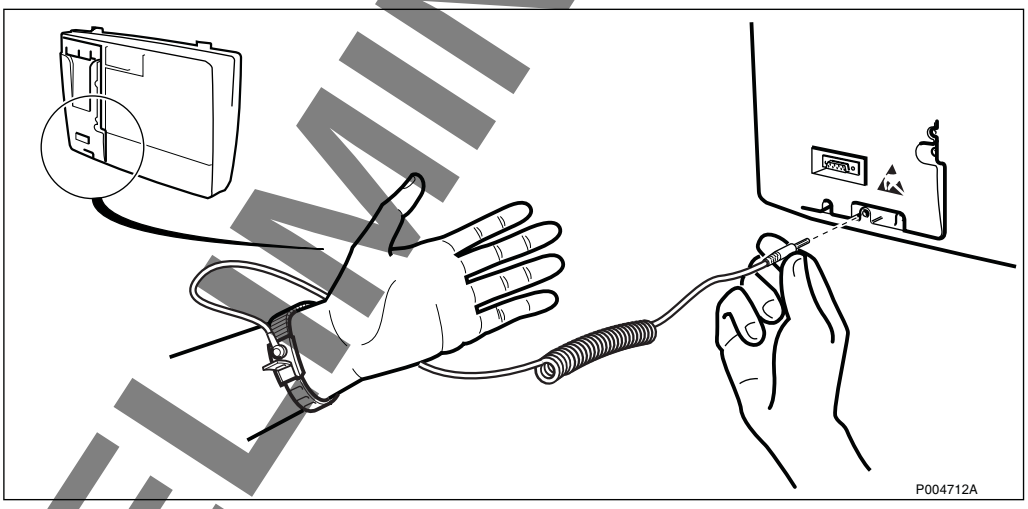


Figure 35

3. Dismount the cable gland plate

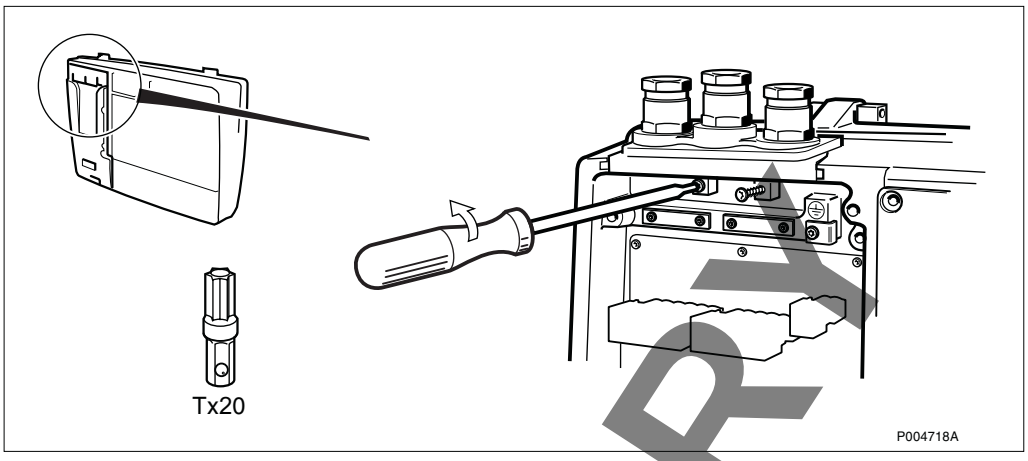


Figure 36

4. Dismount the earth clamp.

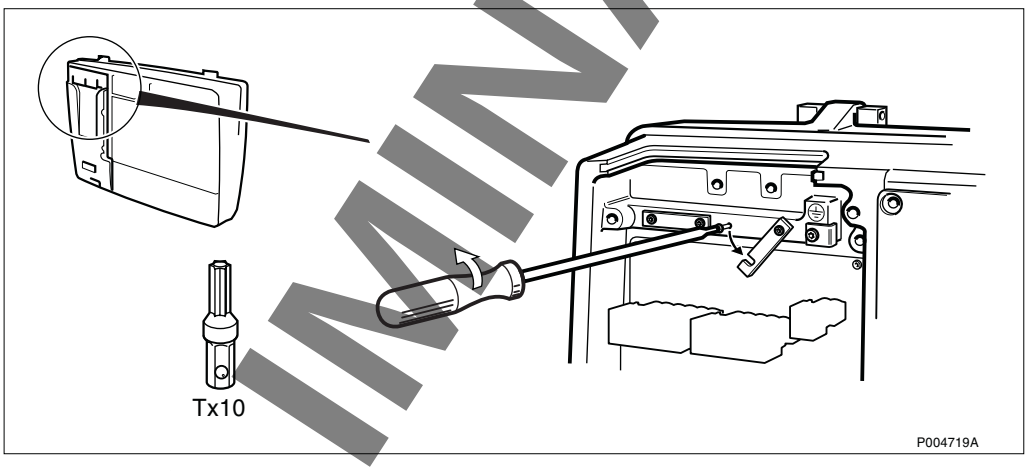


Figure 37

5. Unplug the terminal blocks.

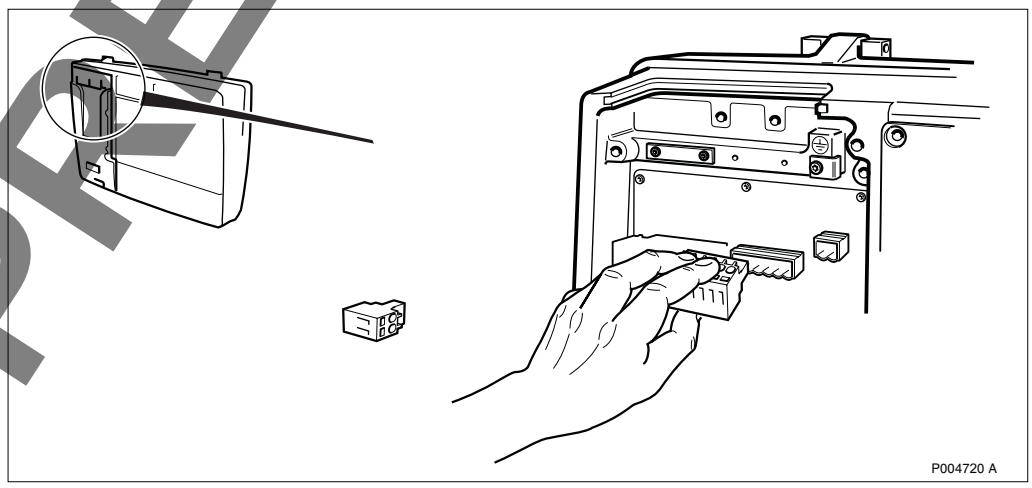


Figure 38

6. • If AGW is used: continue with Section 4.4 on page 59.
   • If HDSL module is used: continue with Section 4.5 on page 68.

   Otherwise continue with the steps below.

7. Thread on the cable gland parts.

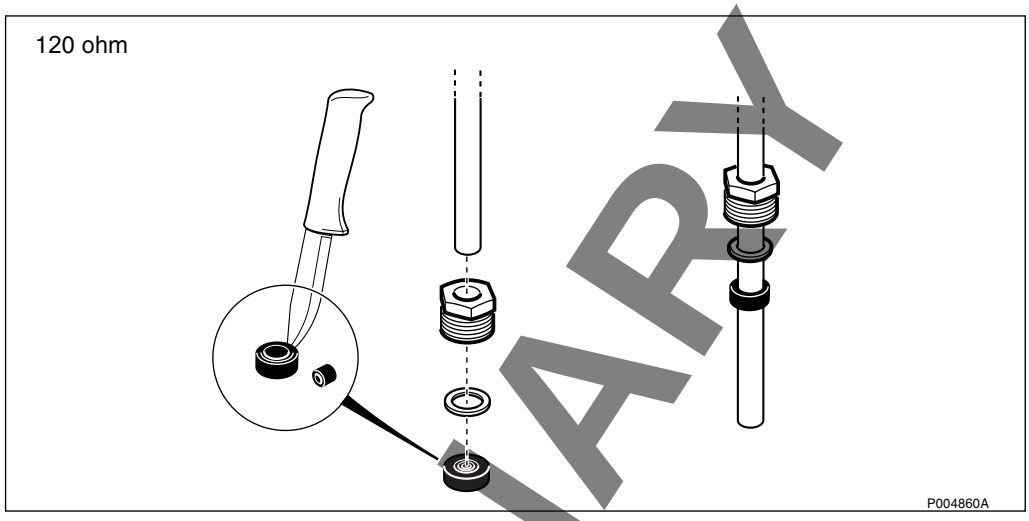


Figure 39

8. Strip the cable and the wires.

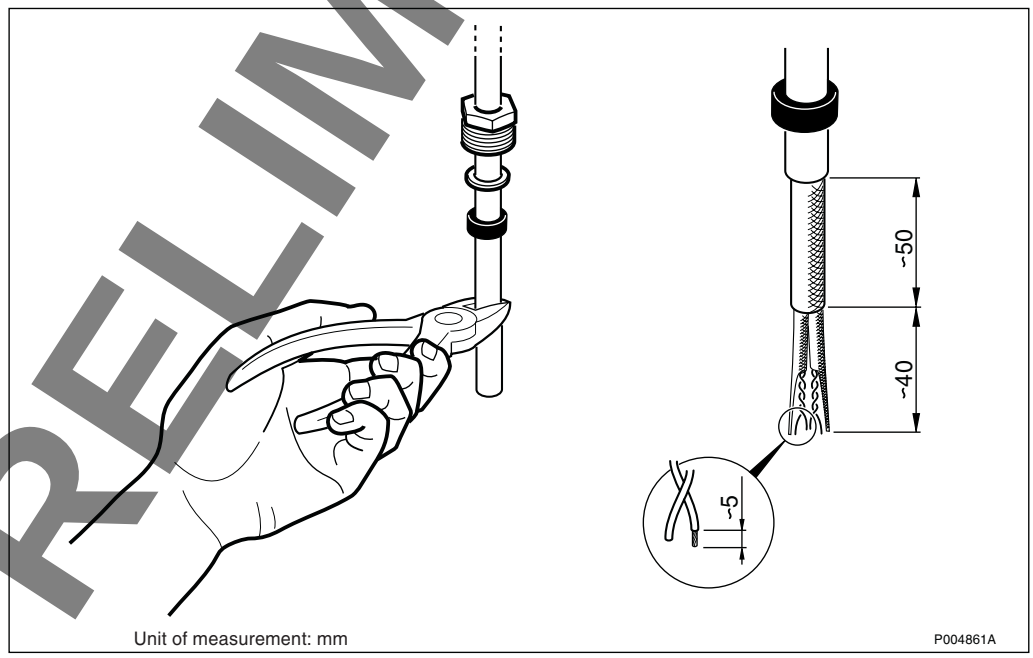


Figure 40

9. Run the 75 Ω, or 100/120 Ω, PCM cable through the cable gland.

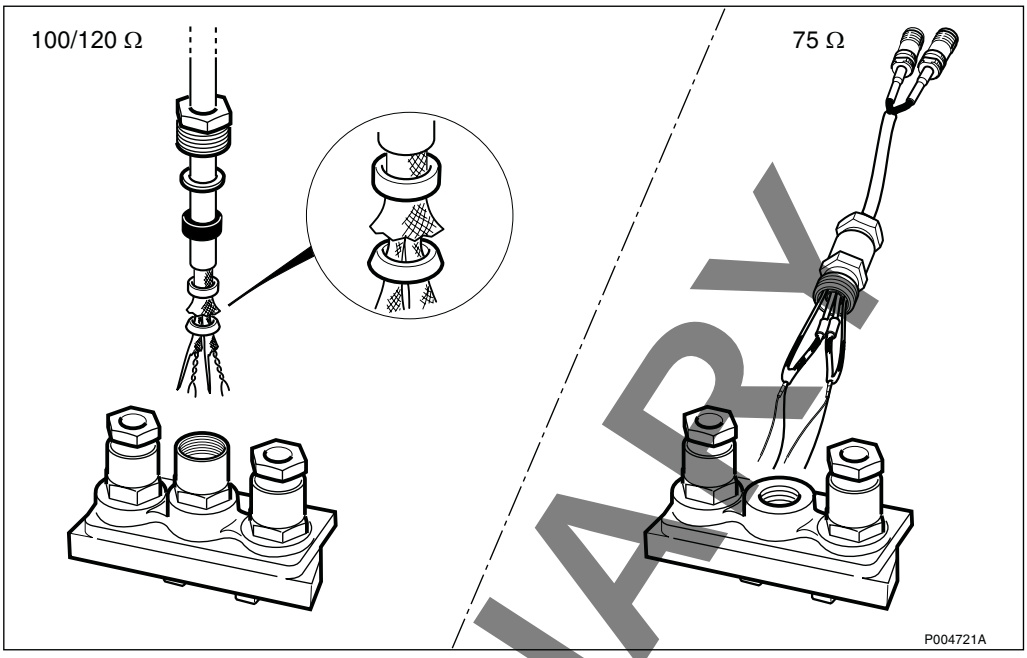


Figure 41

10. Connect the PCM cable.

    The 75 Ω connection cable is supplied with the RBS 2401.

Note: If another cable is used, it must be earthed. To do this, connect the PCM_OUT_N_LINE to PCM_OUT_GND.

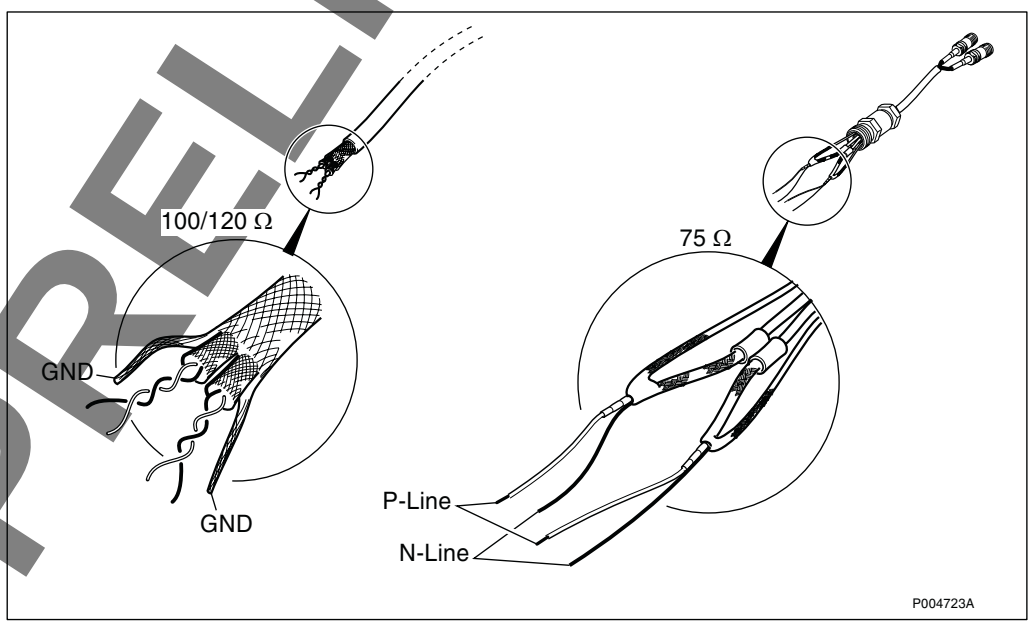


Figure 42 The 100/120 Ω twisted pair PCM cable, and the 75 Ω PCM connection cable with coaxial connectors

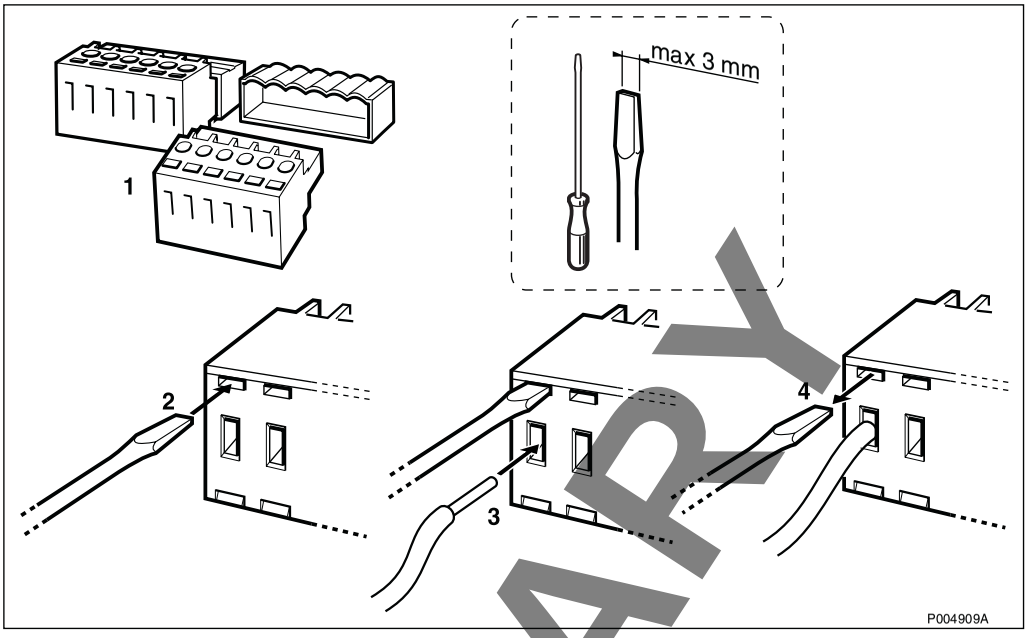


Figure 43 Recommended method when connecting wires

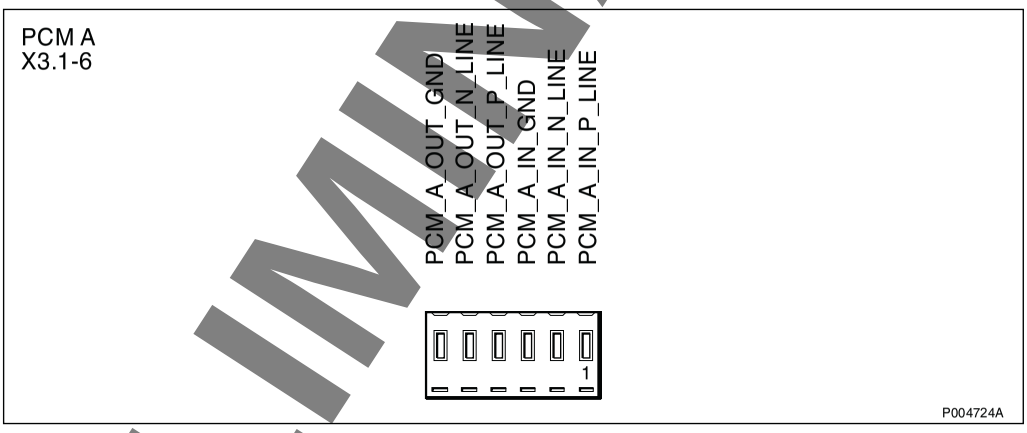


Figure 44 PCM-A cascade connection

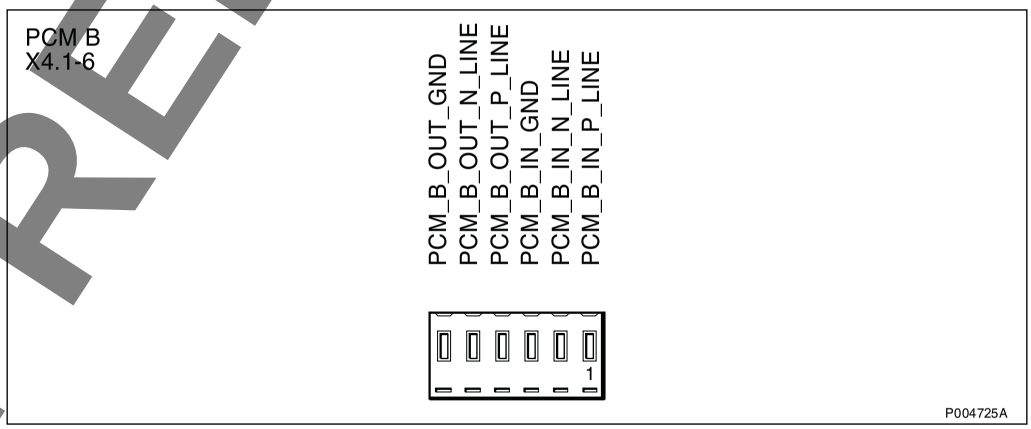


Figure 45 PCM-B cascade connection

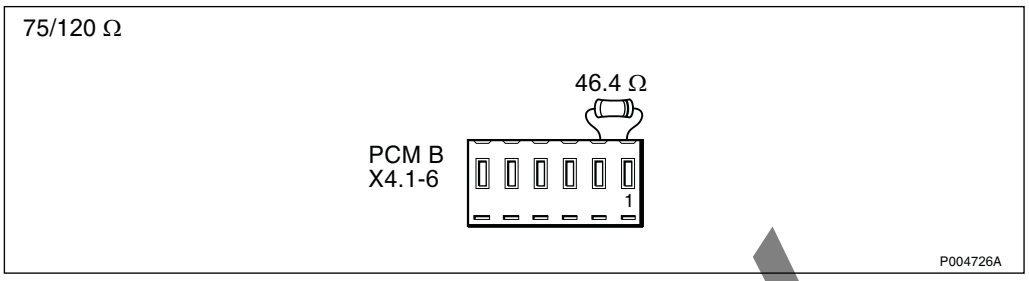


Figure 46 Stand Alone mode: PCM-B terminated with a 46.4 Ω resistor

11. Connect the AC mains cable.

Note: Connection to AC mains supply must be done by an authorised electrician.

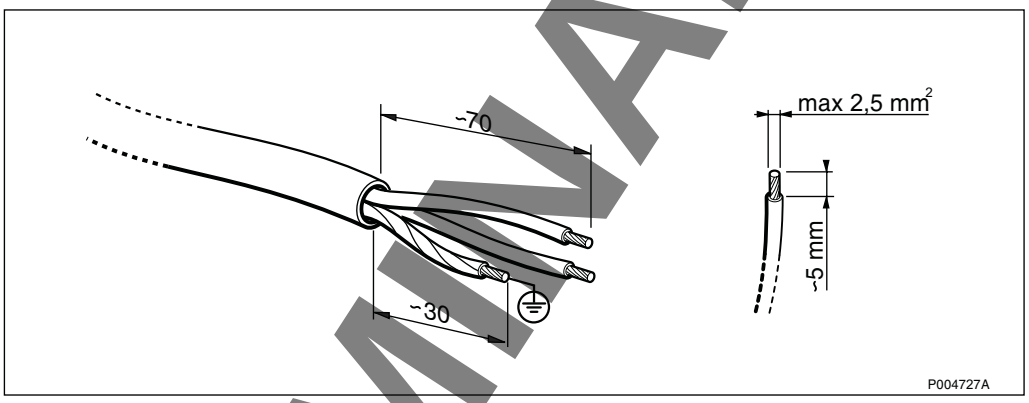


Figure 47 AC mains cable

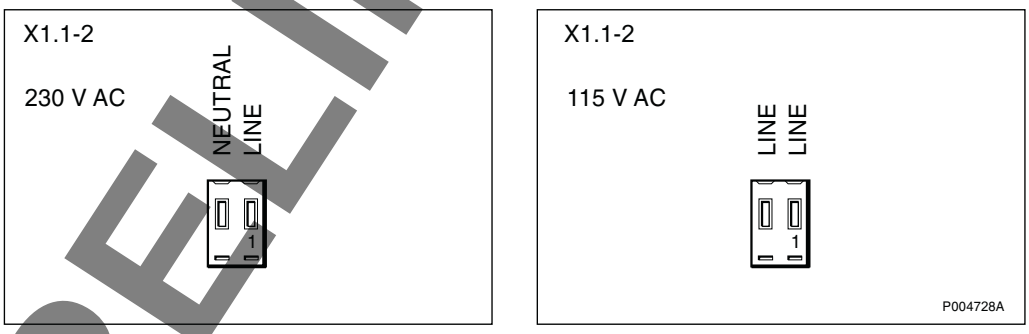


Figure 48 AC mains terminal

12. Remount the cable gland plate.

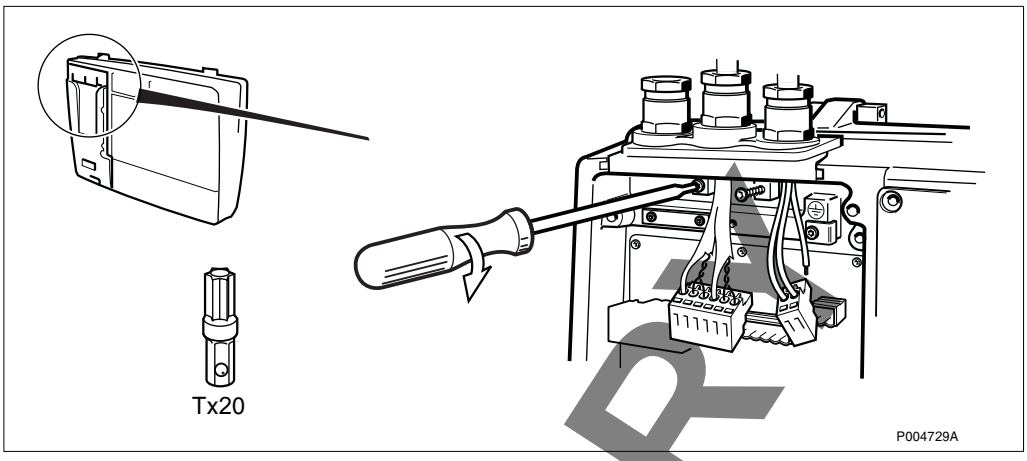


Figure 49

13. Connect the protective earth cable.

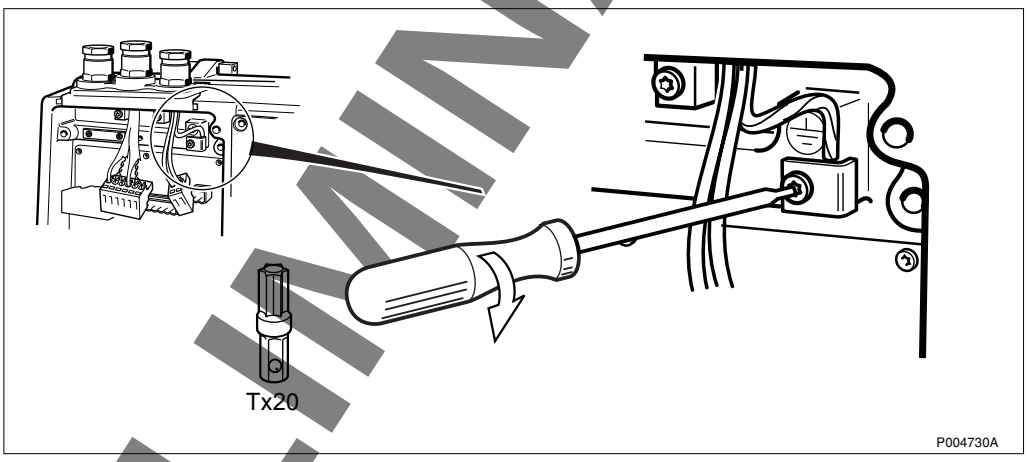


Figure 50

14. Plug in the terminal blocks.

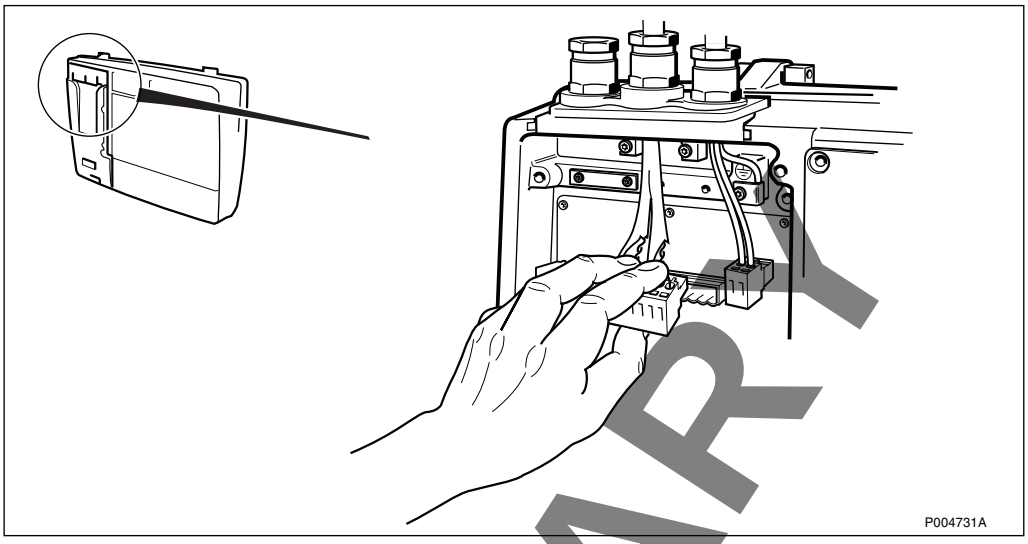


Figure 51

15. Mount the earth clamp.

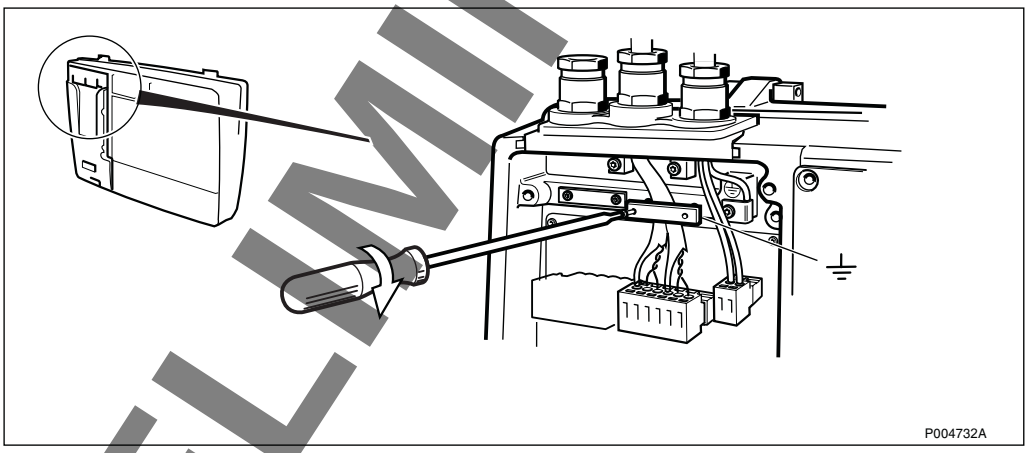


Figure 52

16. Tighten the cable glands.

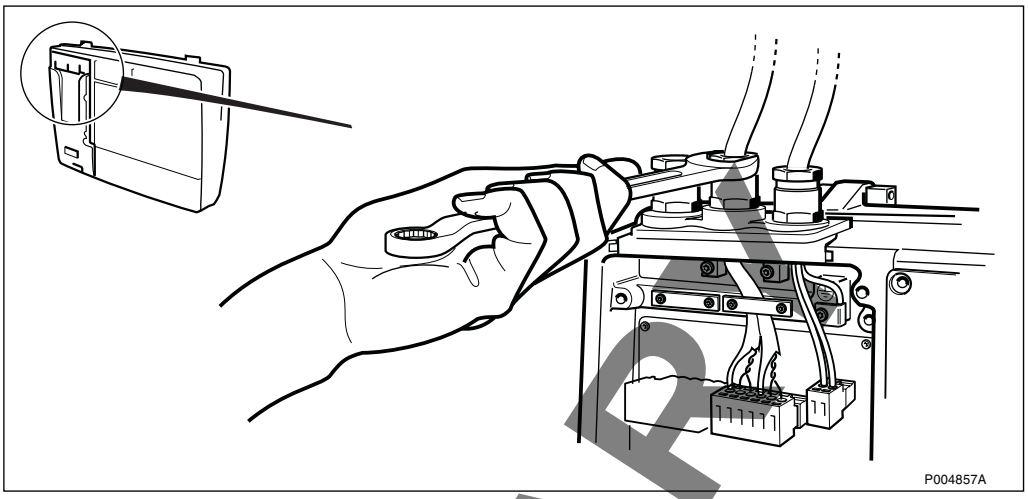


Figure 53

17. Set transmission alternative.

    (Not required for PCM-B when terminated)

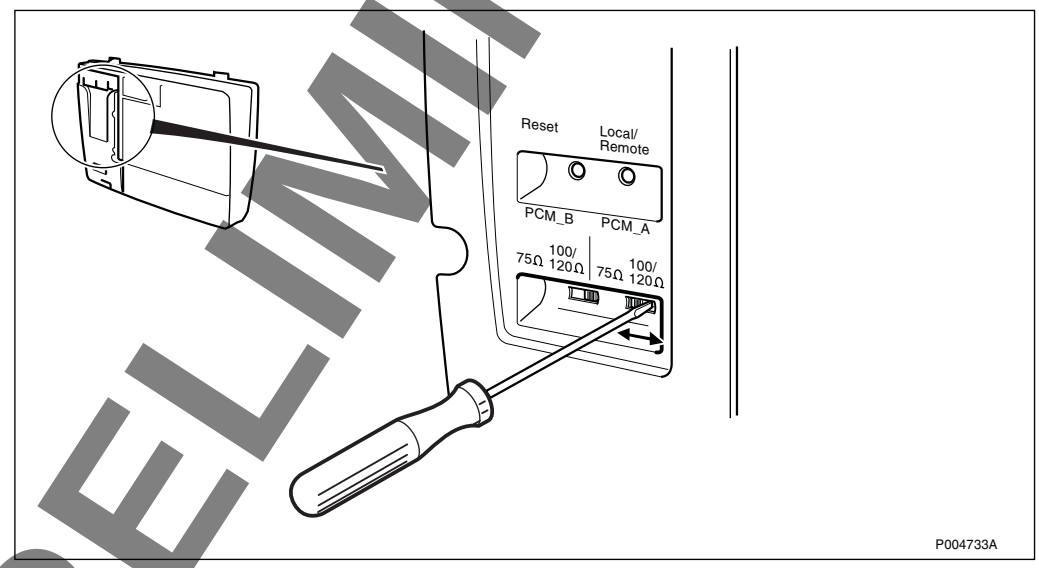


Figure 54

18. Insert the correct fuses in the fuse holder.

Note: Throw away the bag with the fuses not used (marked with wrong amperage).

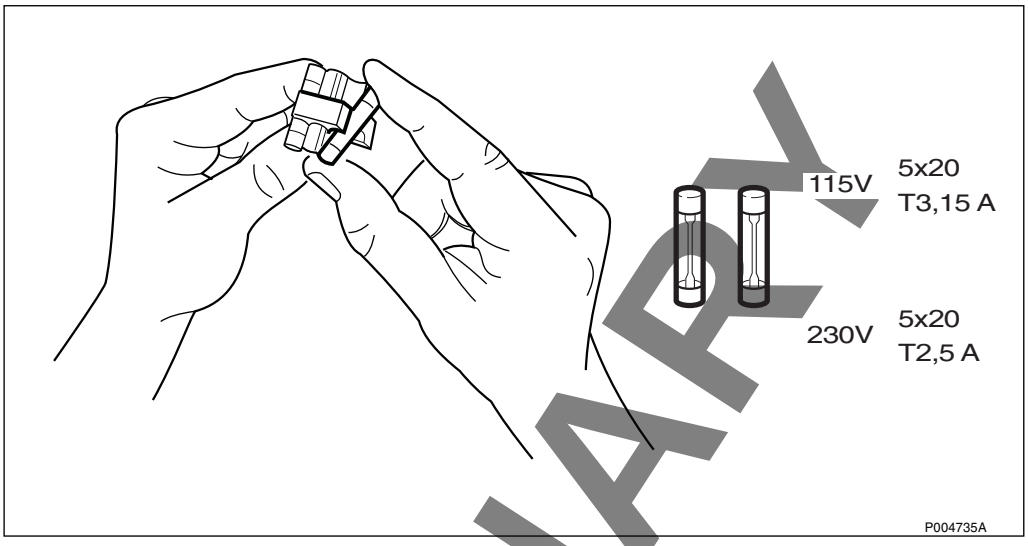


Figure 55

19. Insert the fuse holder in the fuse compartment.

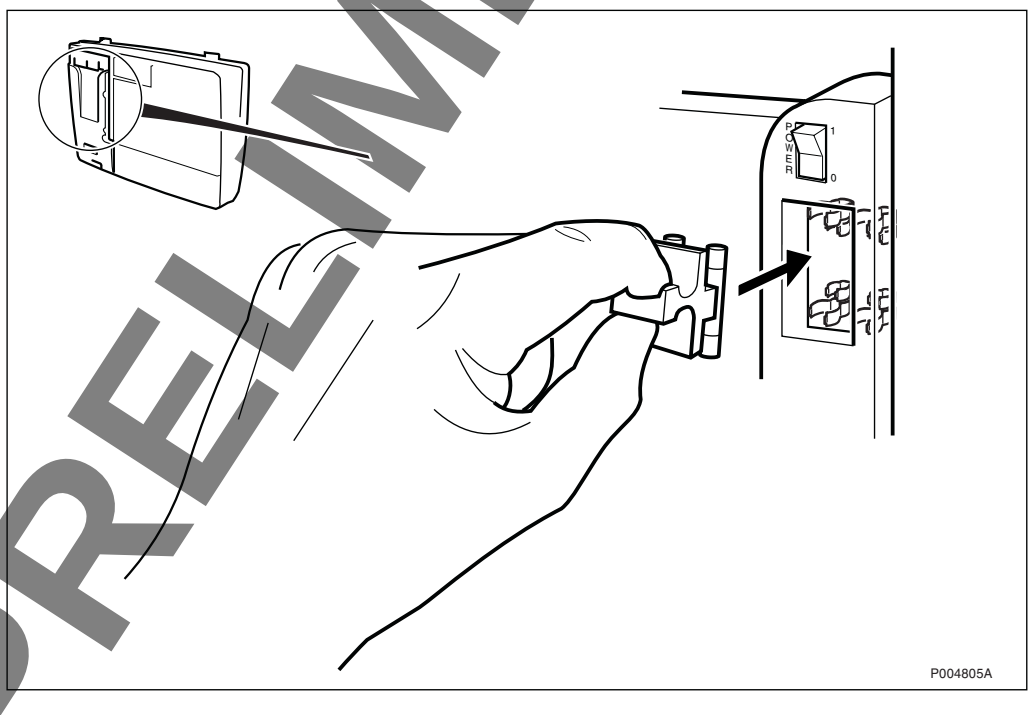


Figure 56

20. Mount the antenna.

    (If the RBS is to be tested now, perform the tests according to Section 4.3 Test of Radio Cabinet on page 51.)

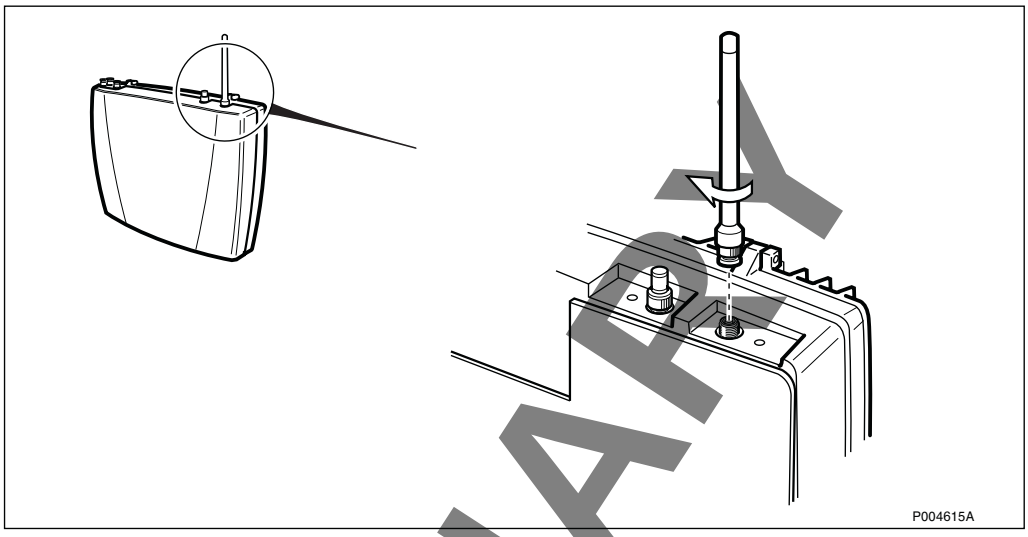


Figure 57

21. Mount the installation box cover.

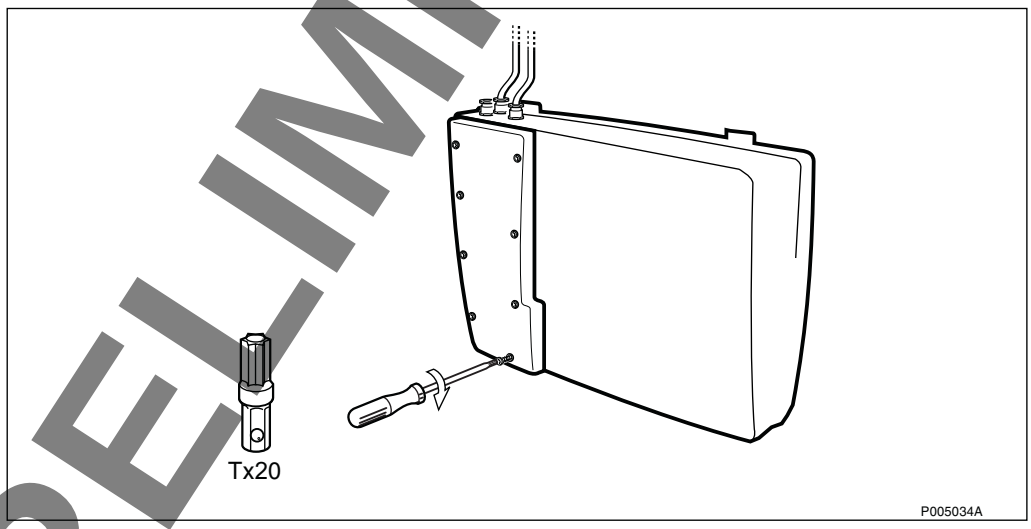


Figure 58

22. Mount the front cover.

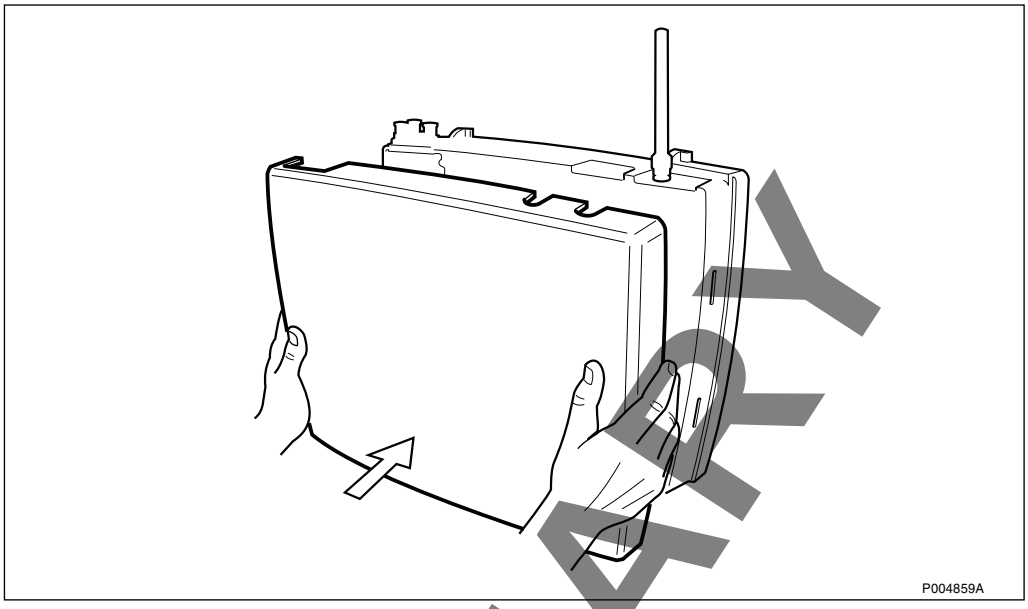


Figure 59

4.2.5 Extension and Reconfiguration

Cascading

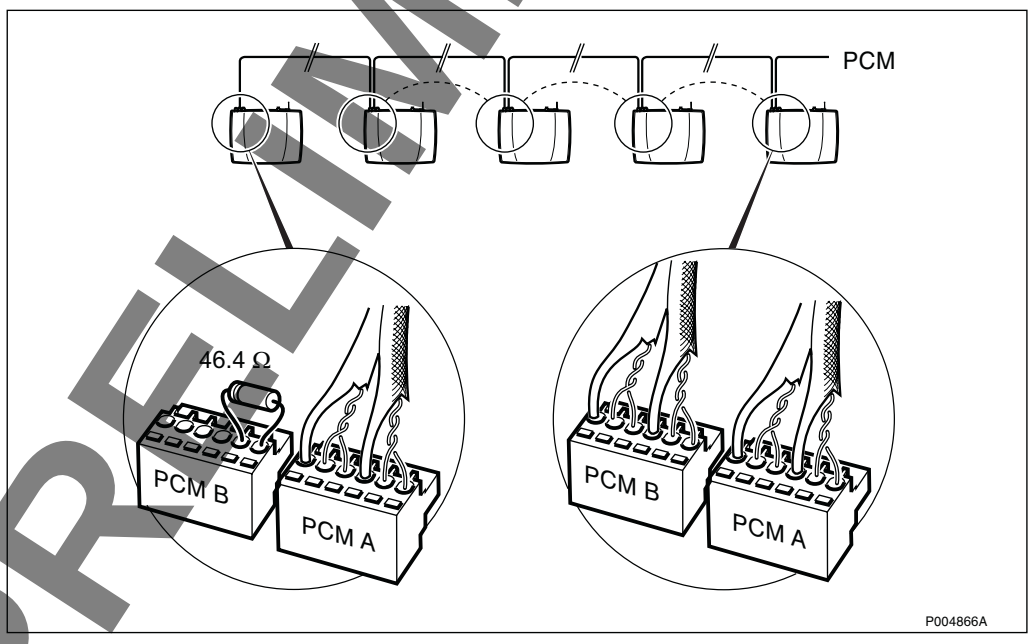


Figure 60 Cascade connection: Master RBS and four Extension RBSs (The 100/120 Ω connection shown)

Termination of the PCM Line

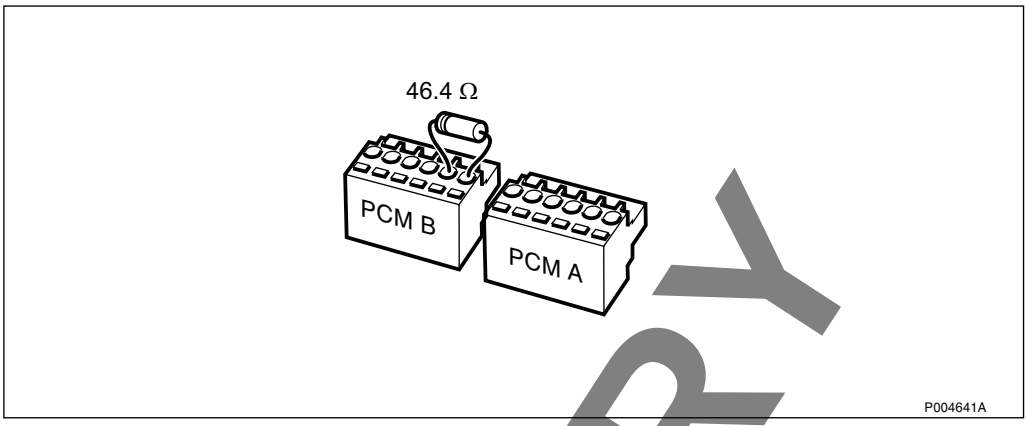


Figure 61 PCM-B terminated with a 46.4 Ω resistor

4.3 Test of Radio Cabinet

4.3.1 User Interface

Optical Indicators

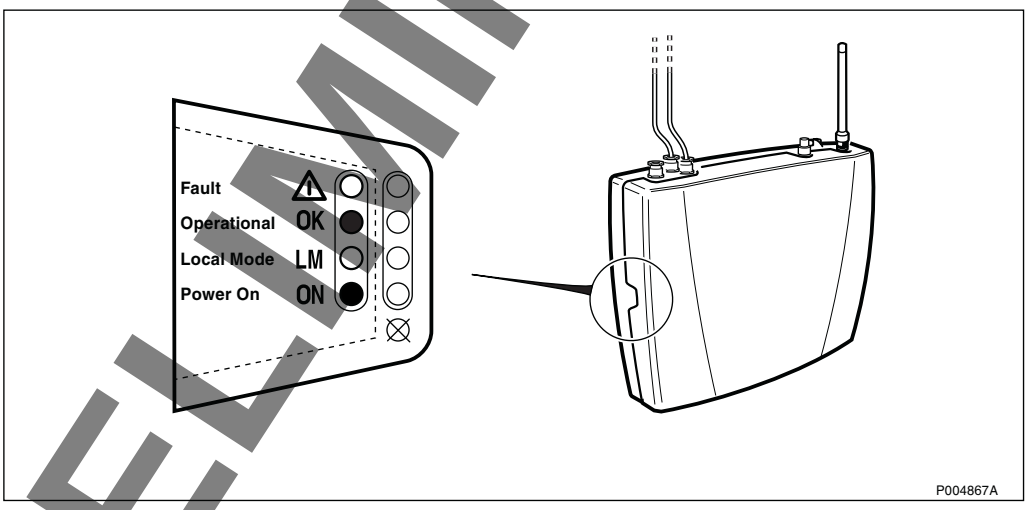


Figure 62

Symbols Showing LED Status

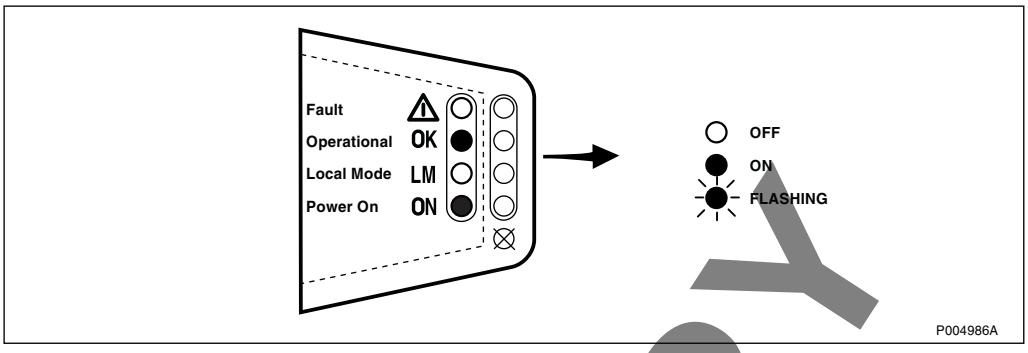


Figure 63

Switches and Connectors

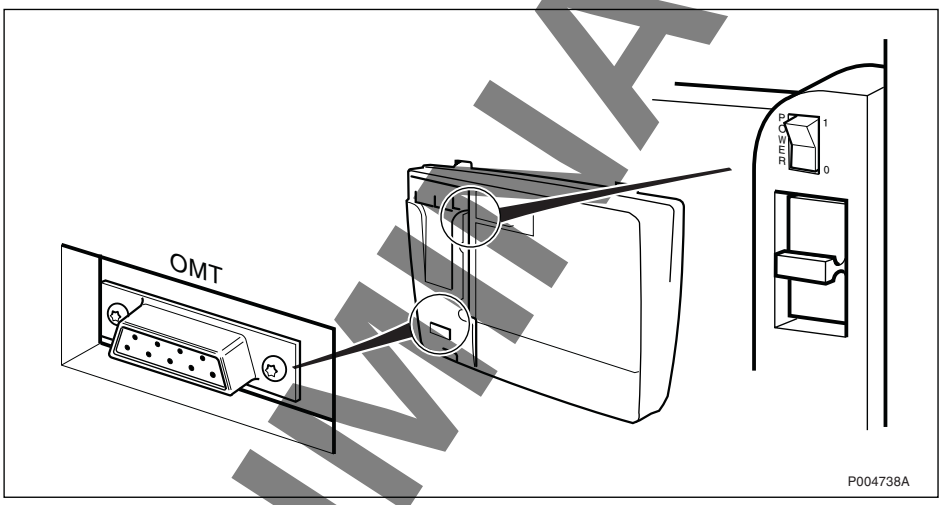


Figure 64

4.3.2 Test Procedure Overview

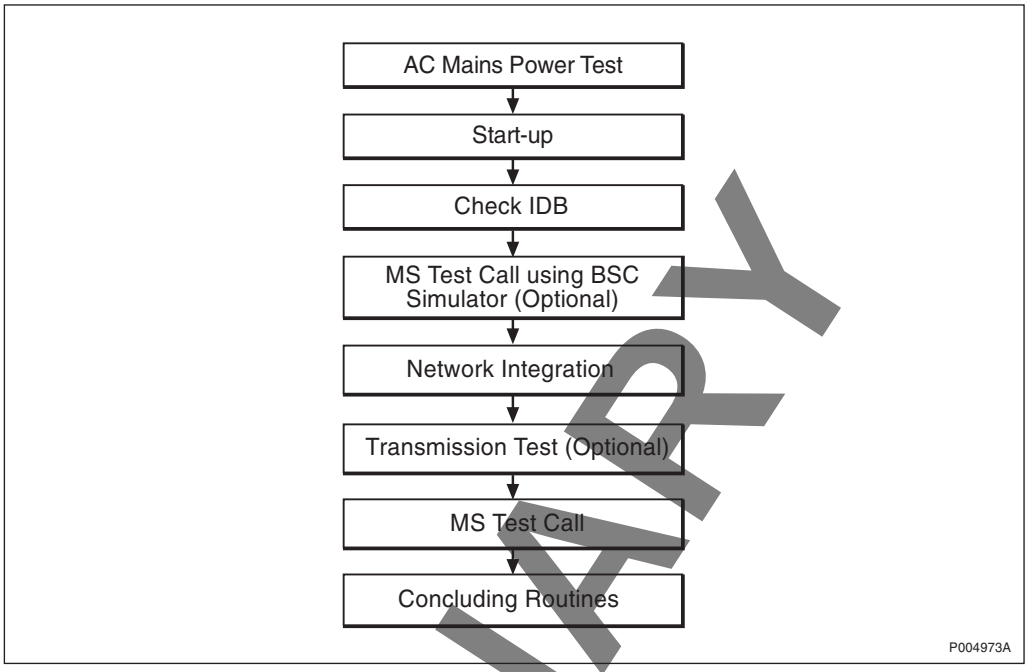


Figure 65

4.3.3 Test Procedure

AC Mains Test

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.

1. Switch on the AC mains power and measure the voltage on the mains terminal on the RBS.

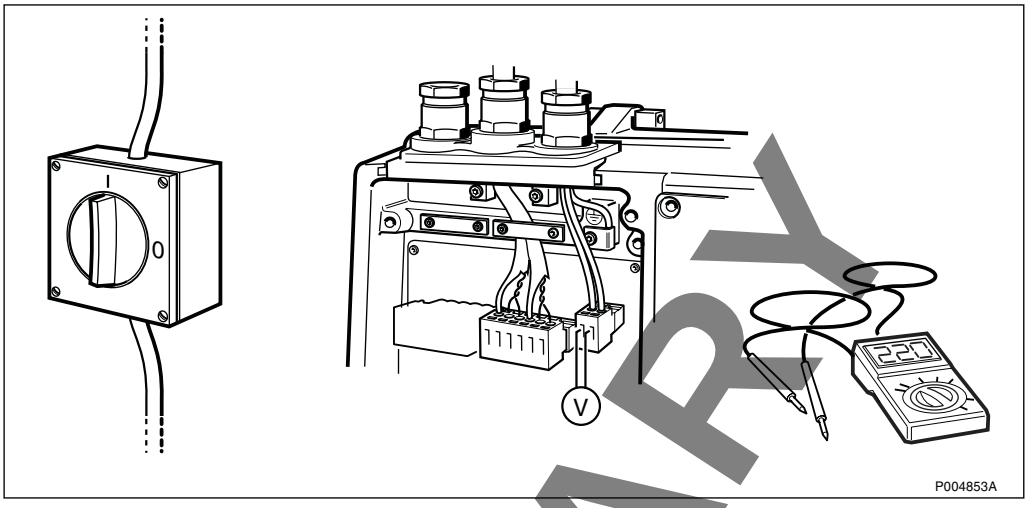


Figure 66

Start-up

1. Switch on the AC power.
2. Check that the status of the optical indicators are as shown in the picture below.

   During start-up the Local/Remote indicator is flashing, and turns off when contact with the BSC has been established.

   Wait for the start-up to complete. This could take 30 to 120 seconds.

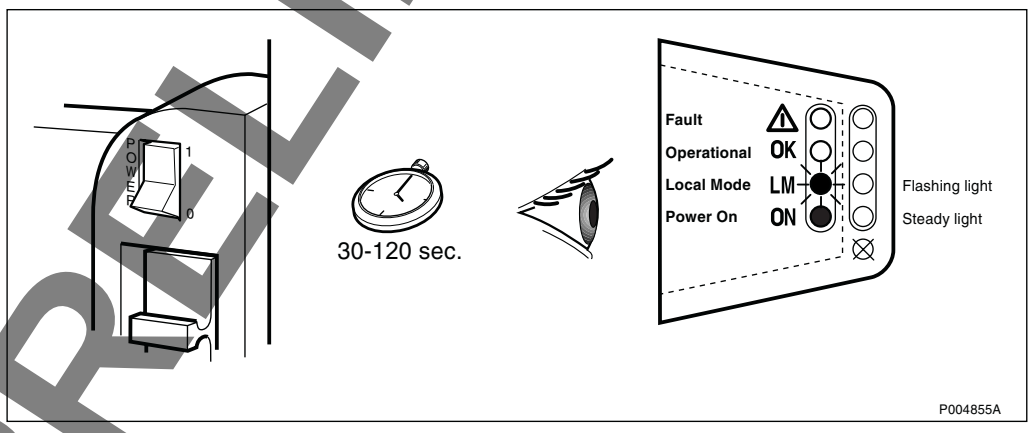


Figure 67

Check IDB

1. Set the RBS in Local mode.

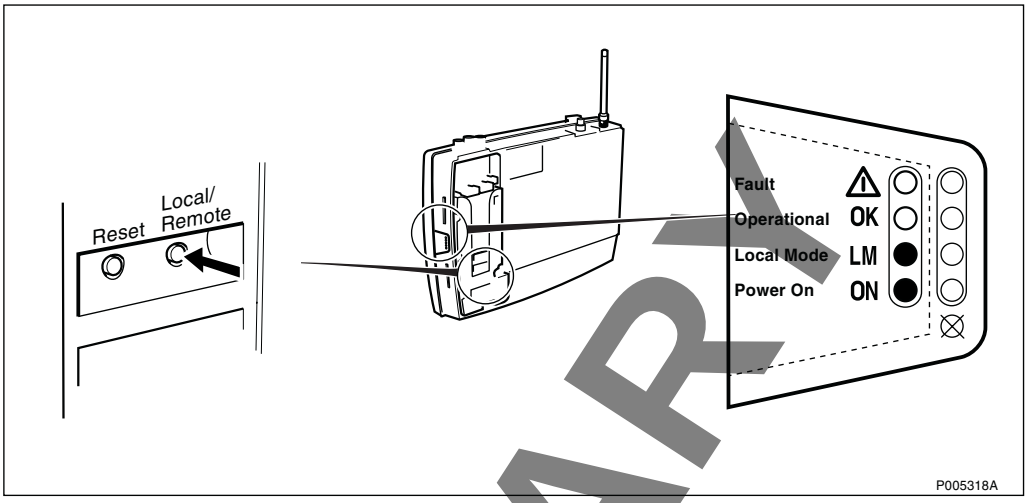


Figure 68

2. Connect the OMT.

   The BSC simulator, BSCSimII, is shown below, but any PC with OMT software (R7C or later) will do.

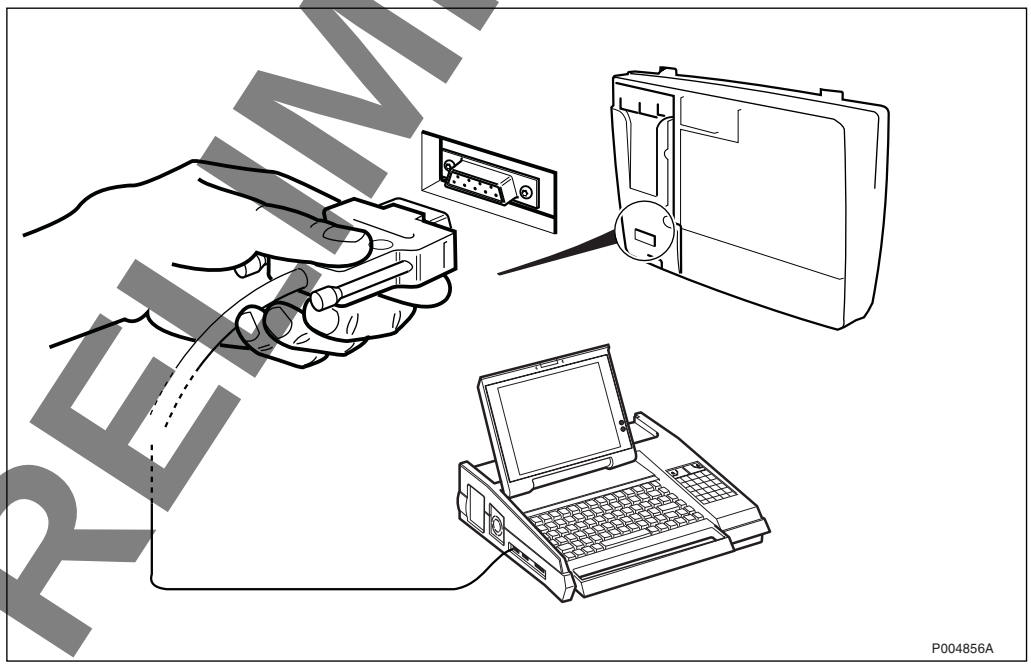


Figure 69 Connecting the OMT

3. Start the OMT, and check that the right IDB is installed.

   In addition to frequency, transmission alternative, and RBS type, the following parameters are to be checked:

- CRC-4
- LBO (T1)
- TNOM USE
- TNOM NODE ID
- TNOM TIMESLOT
- TEI (Cascade)

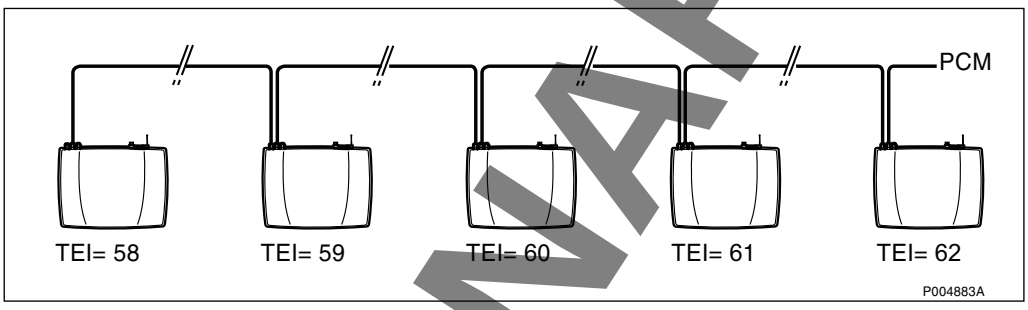


Figure 70

For further information, see *OMT User's Manual*.

MS Test Call using BSC Simulator (Optional Test)

This test is performed if no transmission network is available.

The test is passed when a test call has been made on one timeslot for each TRX.

1. Connect the cables according to Figure 71 on page 56 T1 (1.5) Mbit/s, or Figure 72 on page 57 E1 (2.0 Mbit/s)

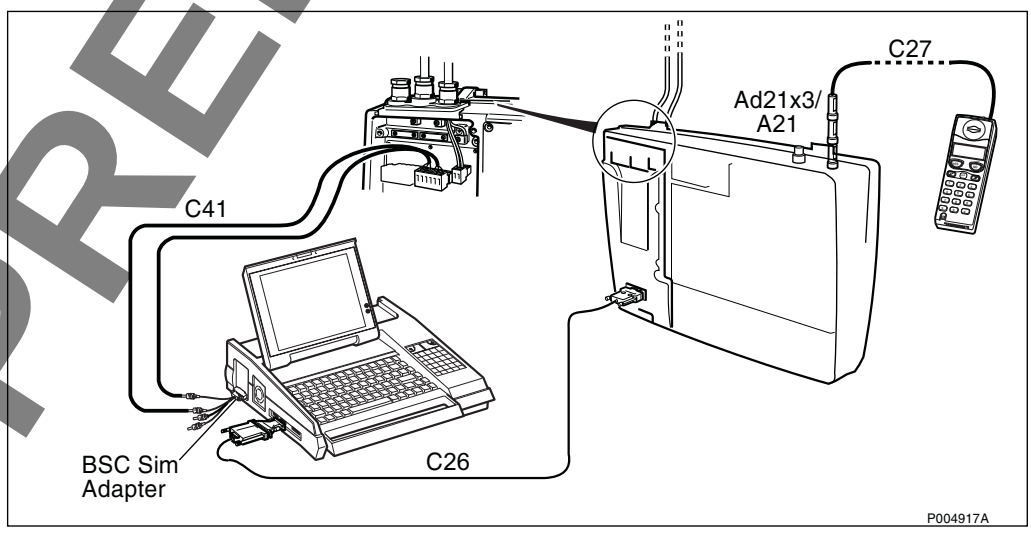


Figure 71 Test setup for T1 (1.5) Mbit/s

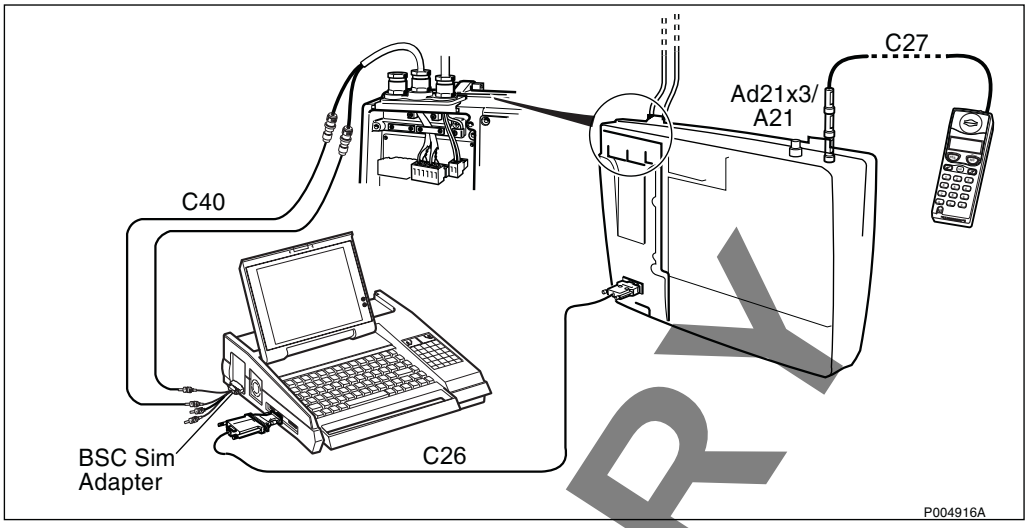


Figure 72 Test setup for E1 (2.0) Mbit/s

Network Integration Test

1. Request the BSC operator to send the Data Transcript for the site.
2. Make sure that the RBS is in Remote mode.

   If necessary, press the Local/ Remote button to change mode. The Local/Remote indicator starts flashing, and turns off when contact with the BSC has been established.

Transmission Test (Optional Test)

This test is performed if a transmission problem occurs, or if integration fails.

The test is only performed for the first RBS (Master RBS) that is directly connected to the BSC on PCM line.

1. Connect the PCM A terminal to the Loop Back socket on the Connection Board (CB21).

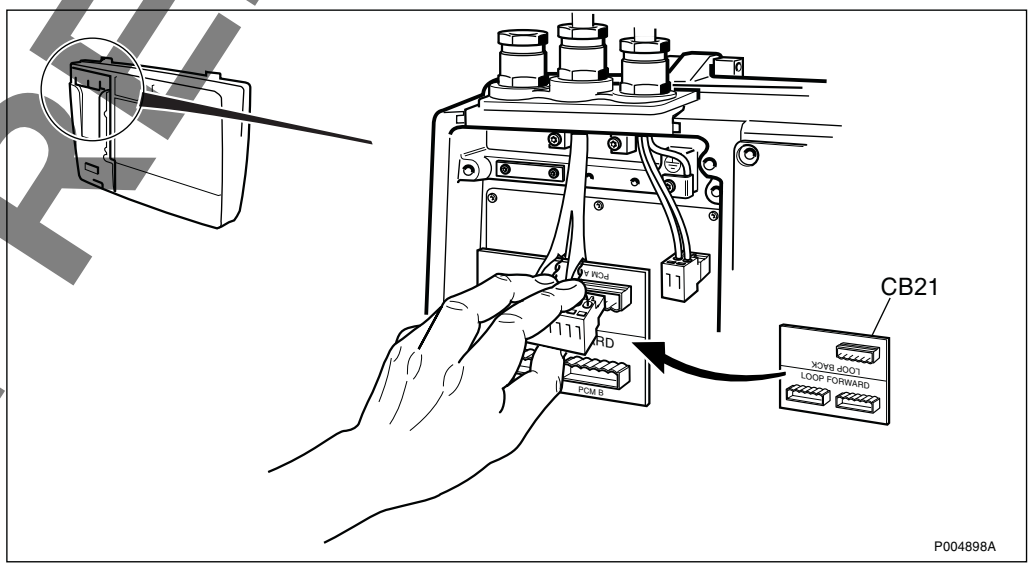


Figure 73

2. Request the BSC operator to check the digital path on the active RBLT.

MS Test Call

Two test calls are to be performed on each TRX: one to the mobile station, and one from the mobile station.

1. Connect the TEMS mobile as shown in the figure below.

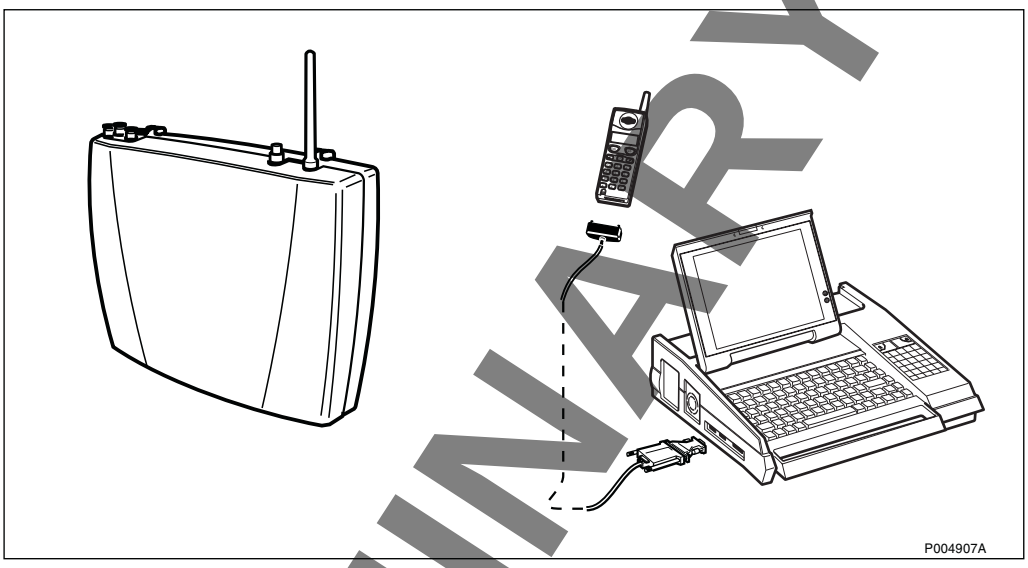


Figure 74 Test setup for MS test call

2. Start the TEMS program in Windows.
3. Select External Menu, and choose Enable Connections.
4. Select the communications port to which the test mobile is connected.

   Communication between the PC and the test mobile is initiated

Note: With the ARFCN it is possible to lock the test mobile on a specific TRX.

5. Request the BSC operator to check which one of the TRXs has been defined to carry the BCCH.
6. Choose Cell Selection in the Control Menu.
7. Enter the ARFCN for the TRXs that will be tested in the cell.
8. Select Target Frequency List and mark the frequencies.
9. Disable the handover button in the Cell Selection Menu.
10. Select Monitor/Status Information/Dedicated Channel. Information about the channels is displayed.
11. Make two test calls: one to the mobile station, and one from the mobile station. If two ARFCNs are entered, make calls until both ARFCNs are displayed in the Dedicated Channel window.

4.4 Installation and Test of Optional AGW

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.

4.4.1 Installation of AGW

1. Mount the AGW with six screws, two on each side, and two screws on the cable gland plate.

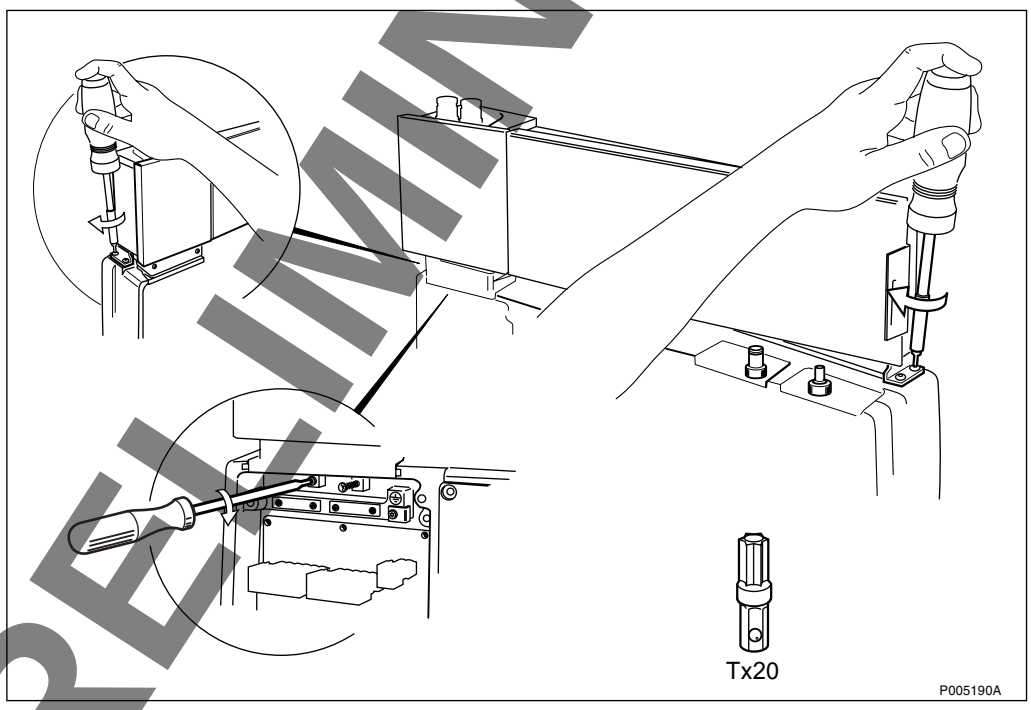


Figure 75

2. Remove the cover.

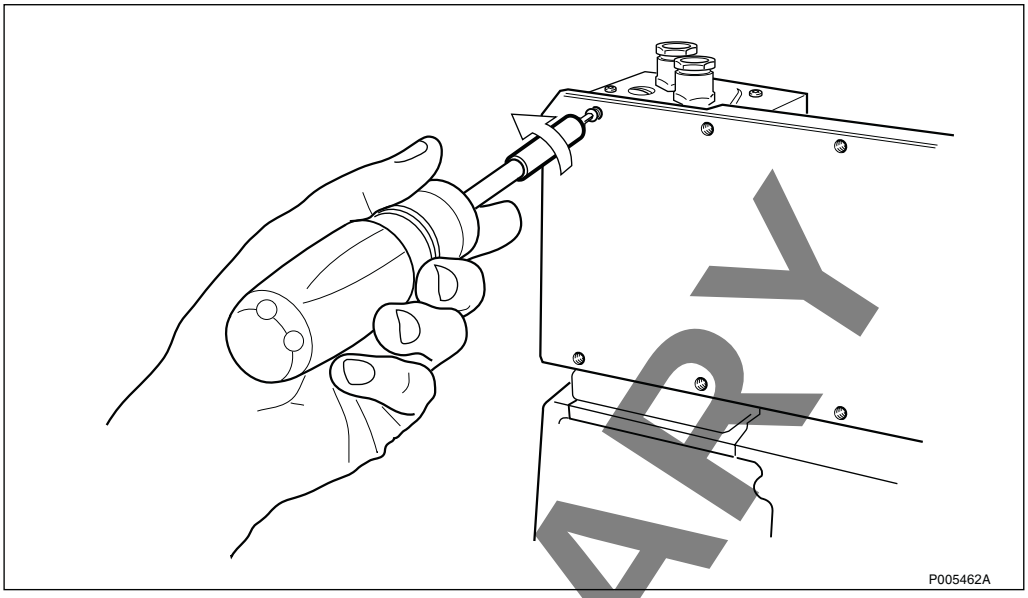


Figure 76

3. Connect the DC cable.

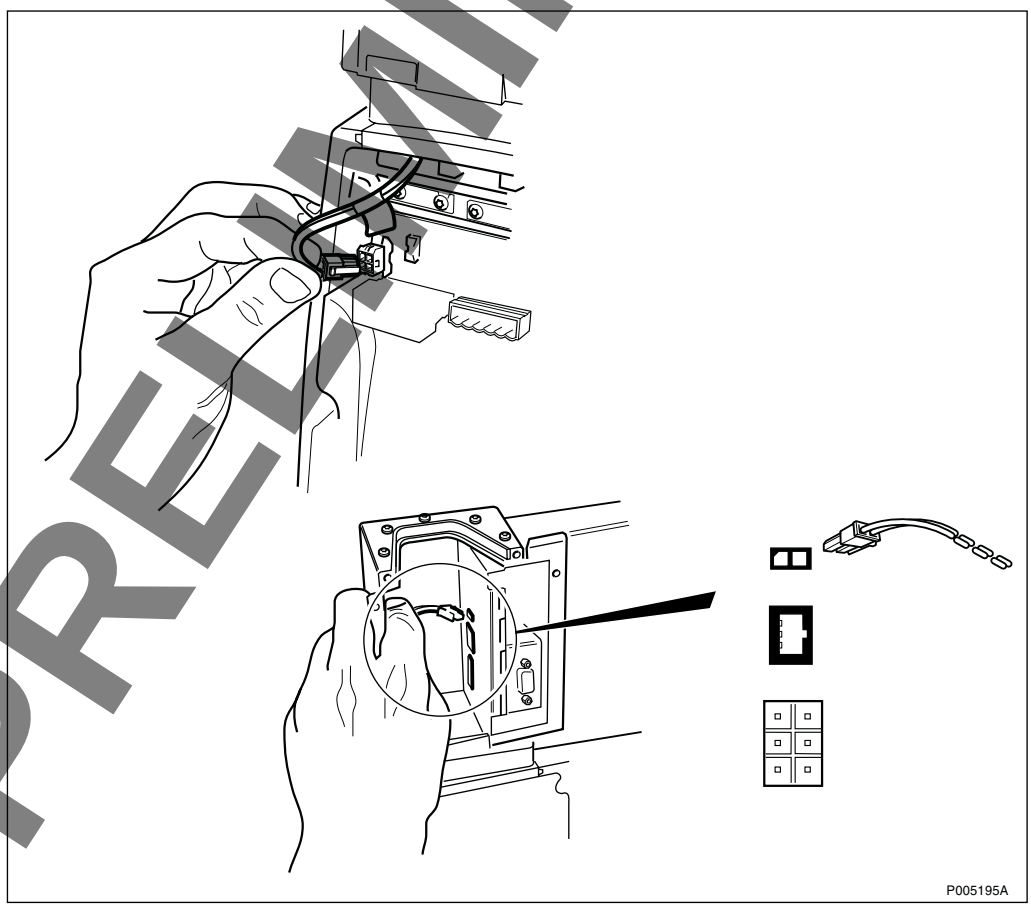


Figure 77

4. Plug in the transmission cable.

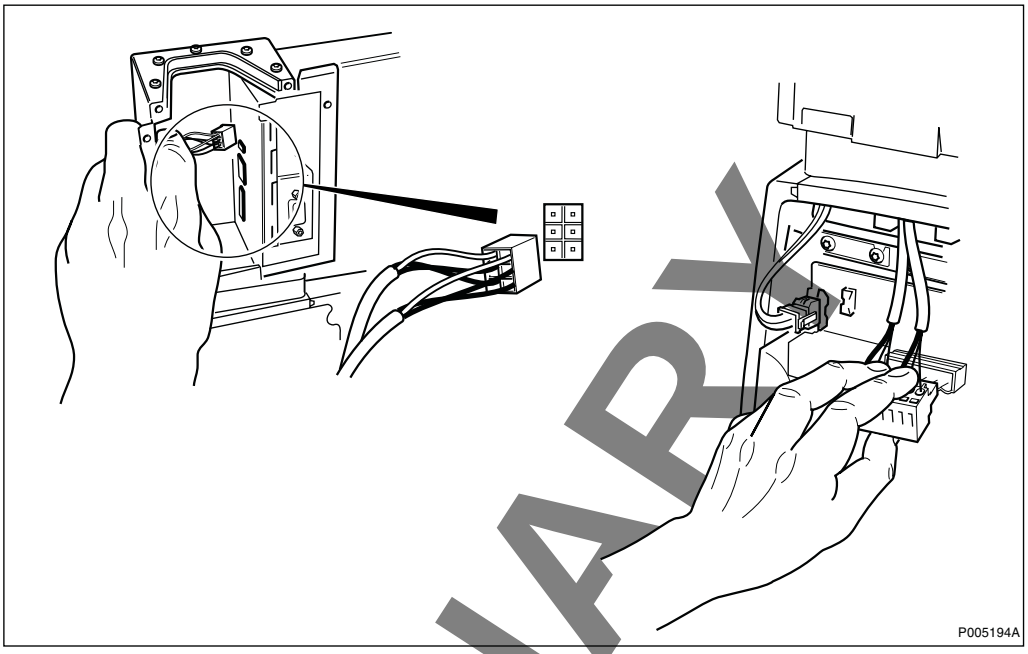


Figure 78

5. Strip the AC cable.

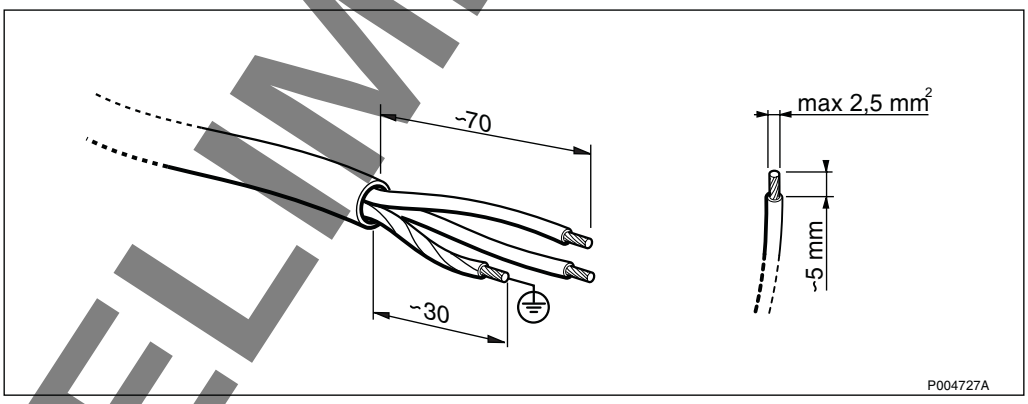


Figure 79

6. Run the AC cable through the cable gland.

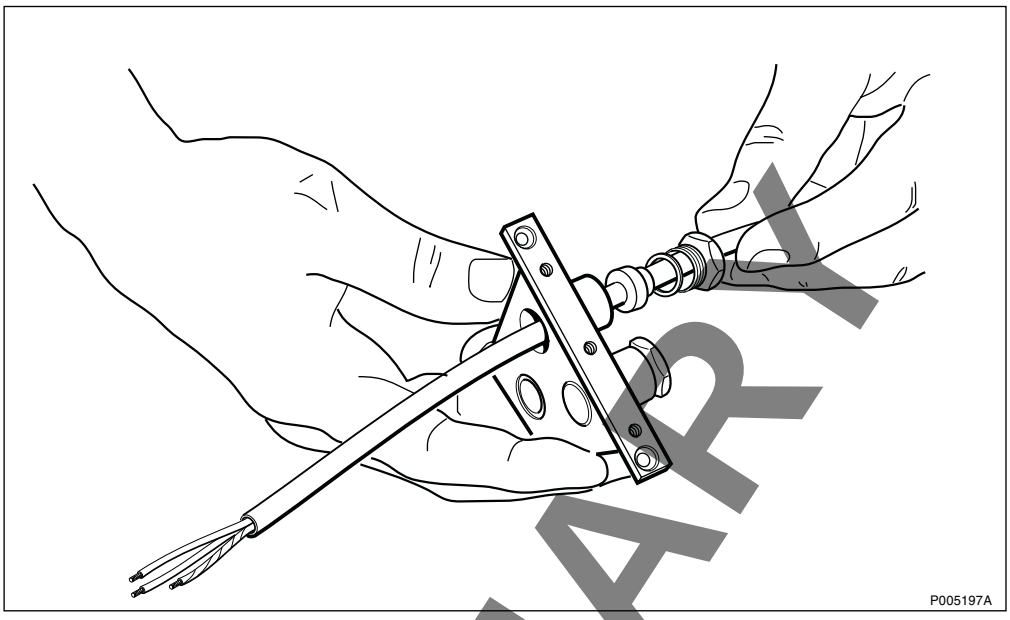


Figure 80

7. Connect the AC cable.

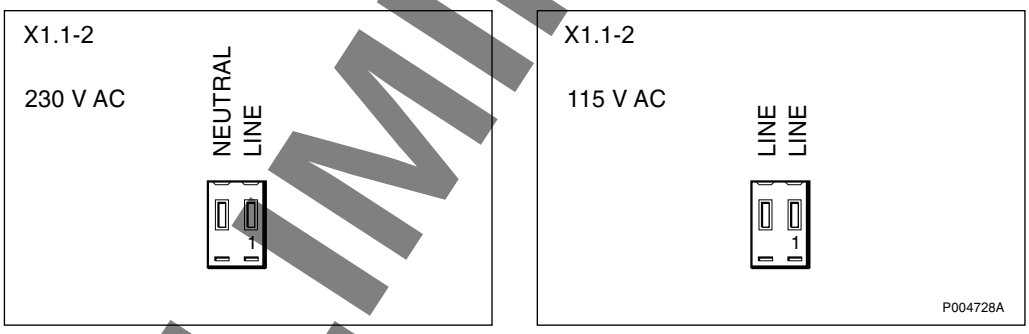


Figure 81

8. Connect the earth cable.

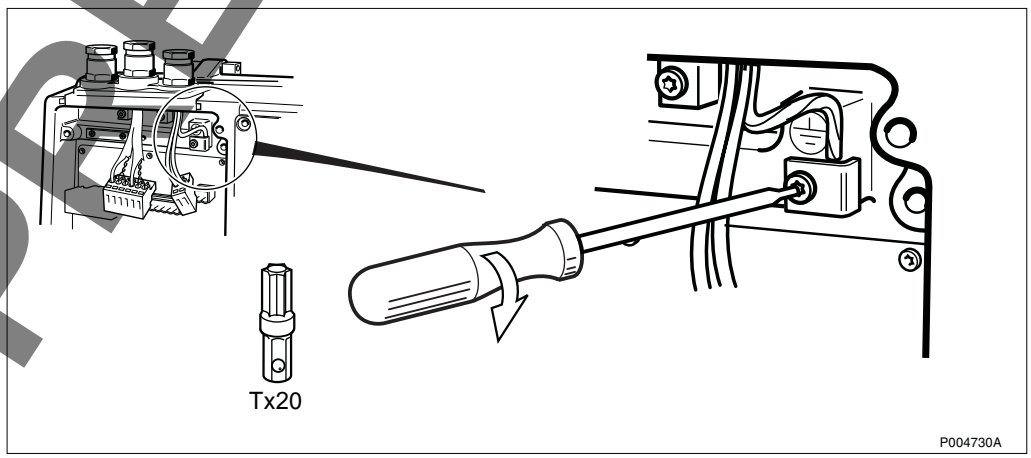


Figure 82

9. Run LAN cable through gland, and shrink on the modular connector.

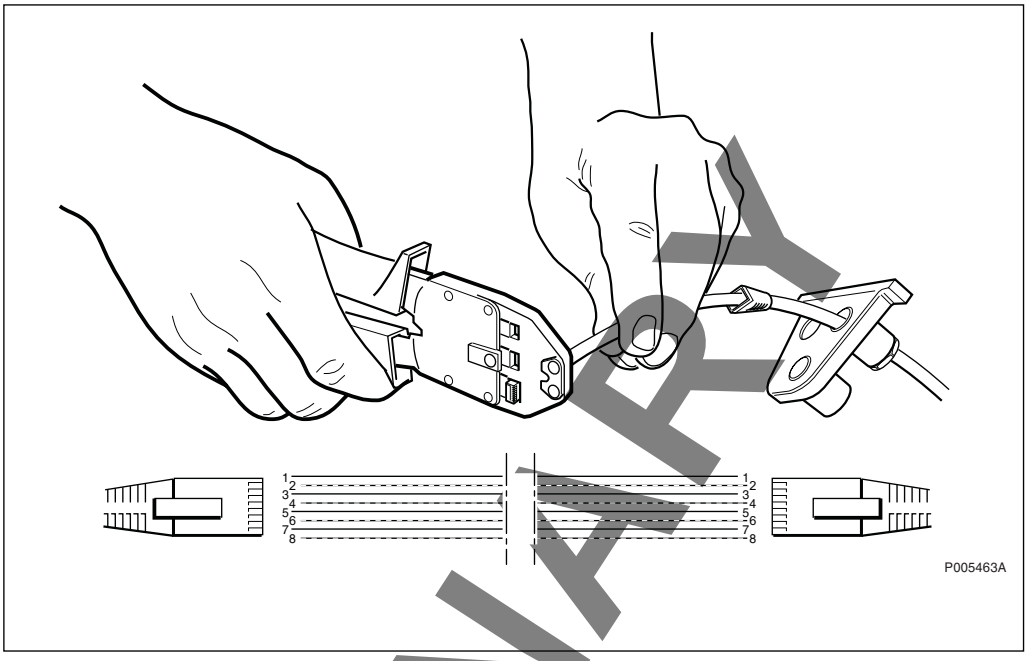


Figure 83

10. Plug in the LAN cable.

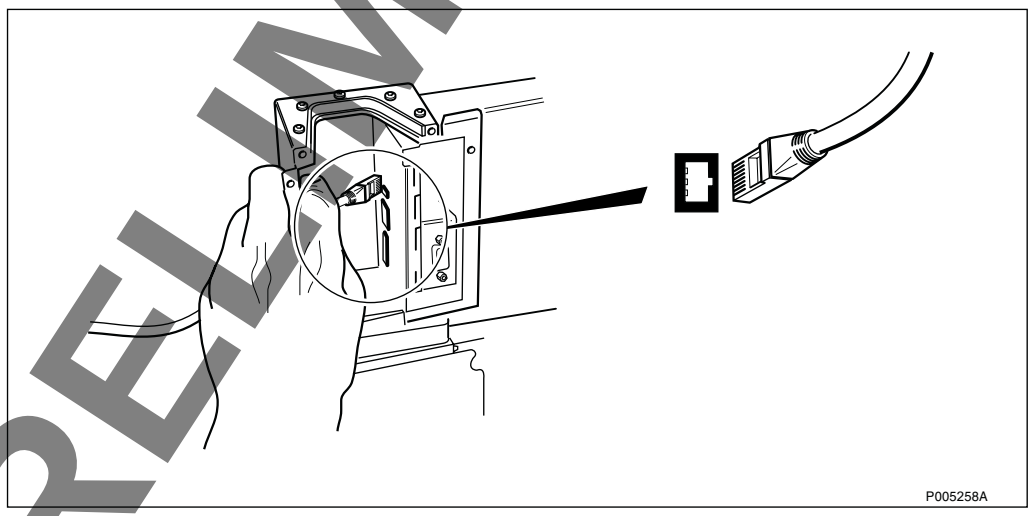


Figure 84

11. Remount the cover.

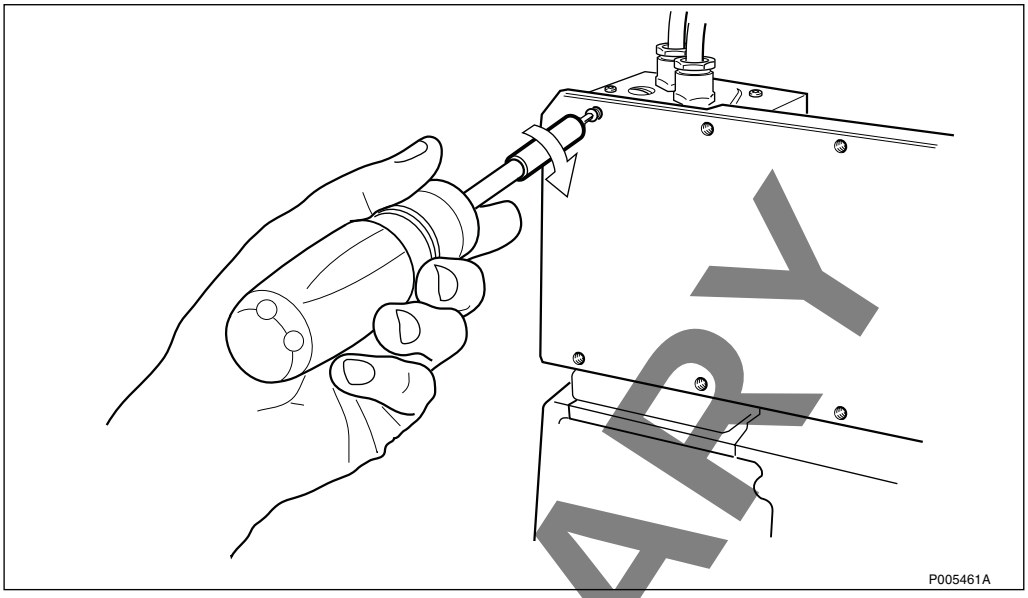


Figure 85

12. Tighten the cable glands.

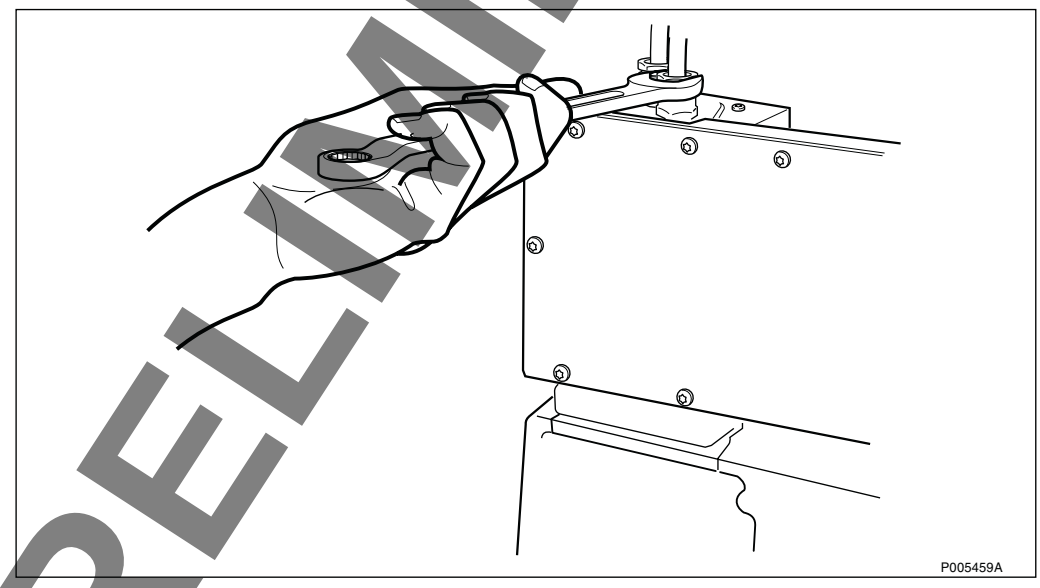


Figure 86

13. Connect external antenna cable(s).

    The antenna connector not used is to be terminated with a 50 Ω resistor.

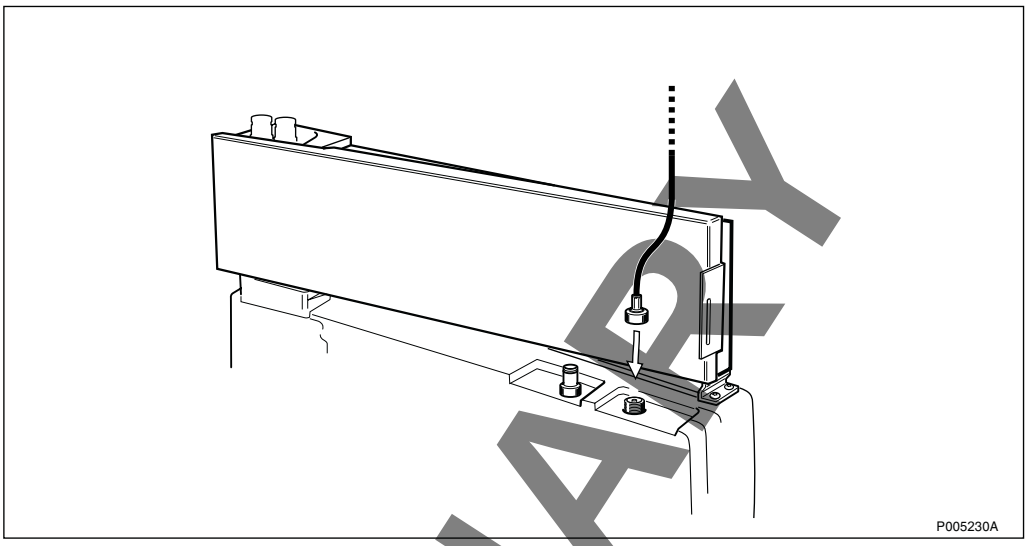


Figure 87

14. Remount the front cover on the AGW.

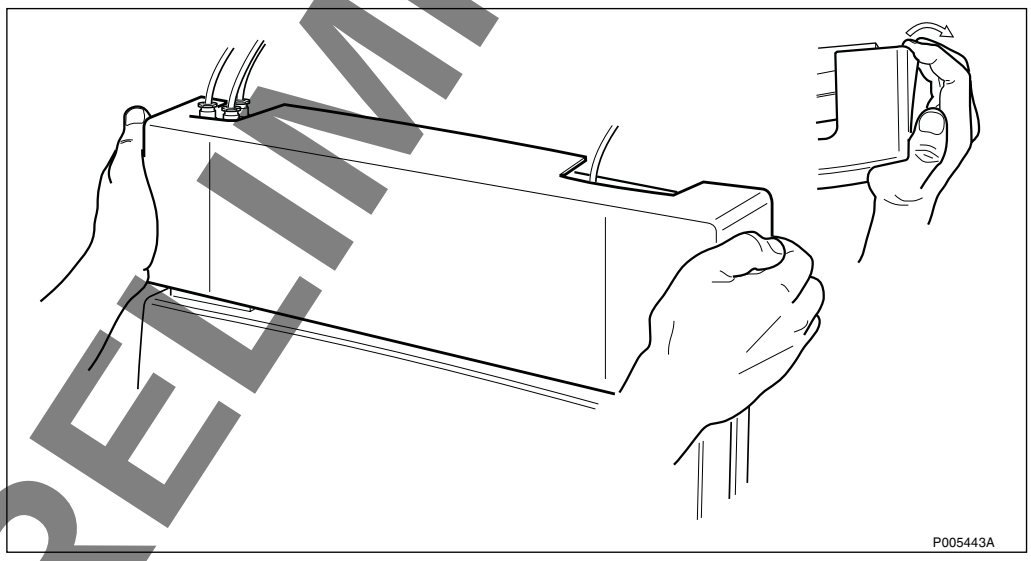


Figure 88

15. Mount the installation box cover.

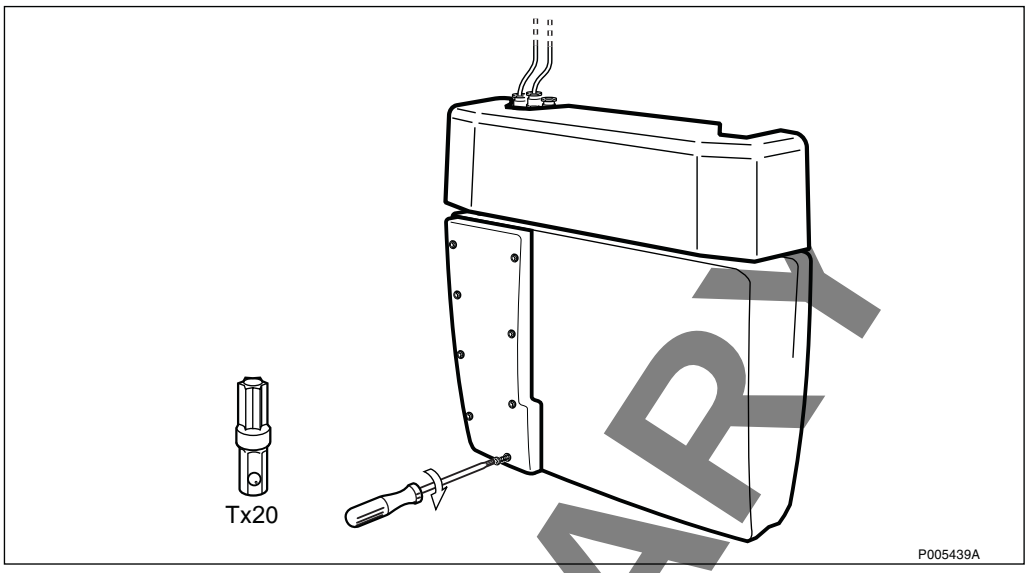


Figure 89

16. Set the transmission switches to 120 Ω.

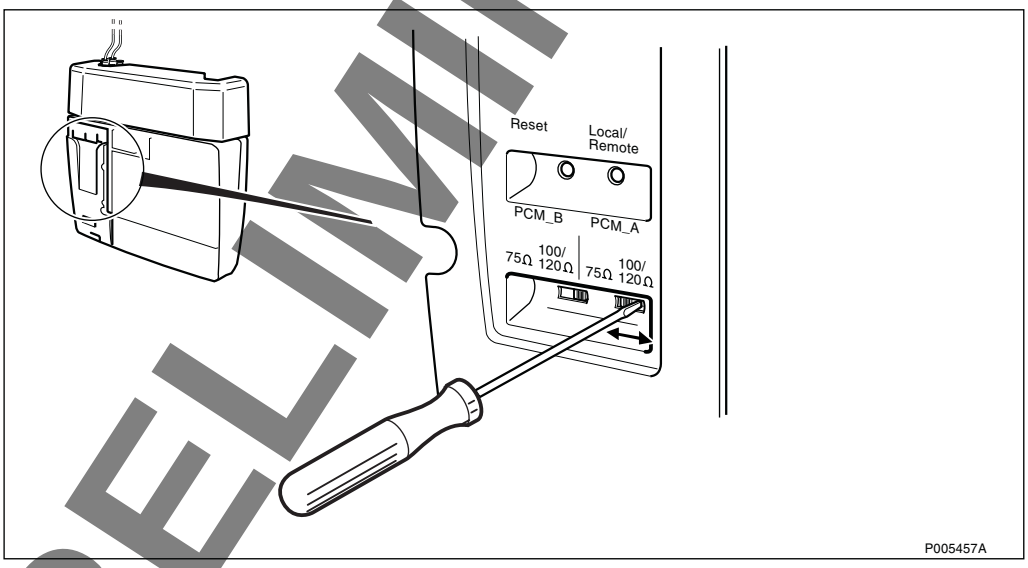


Figure 90

17. Install the fuses.

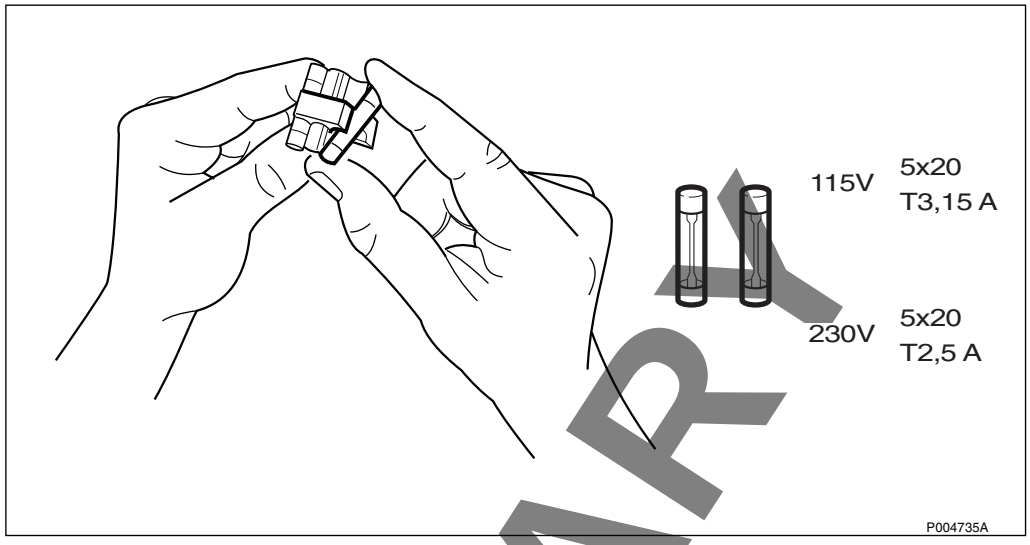


Figure 91

18. Insert the fuse holder in the fuse compartment.

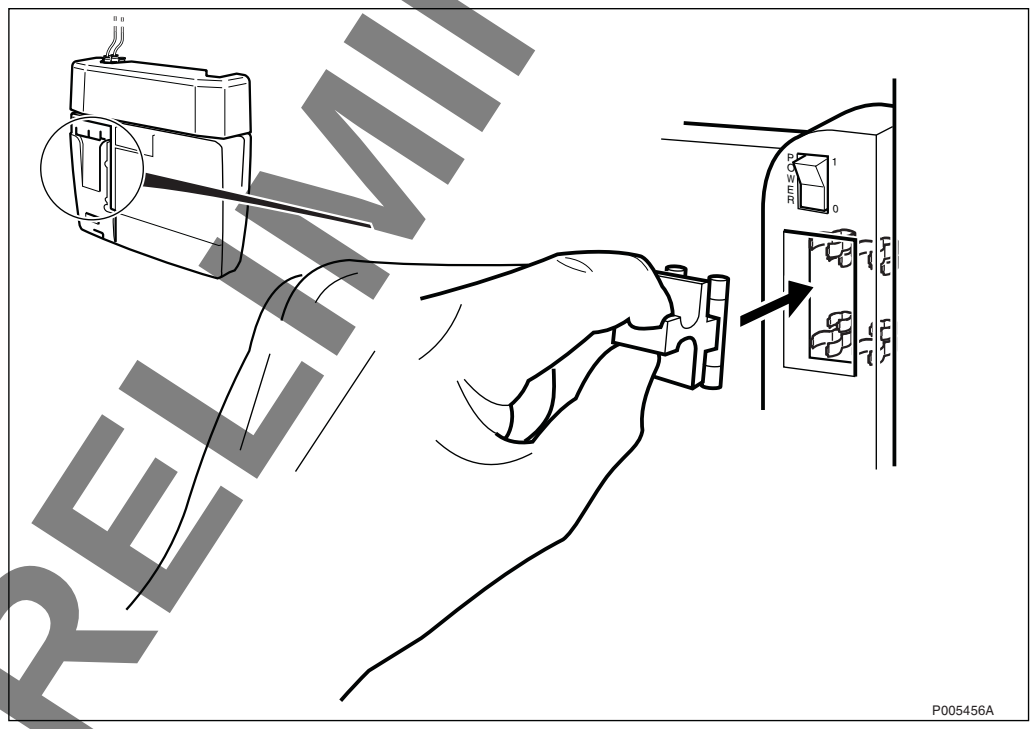


Figure 92

19. Mount the front cover.

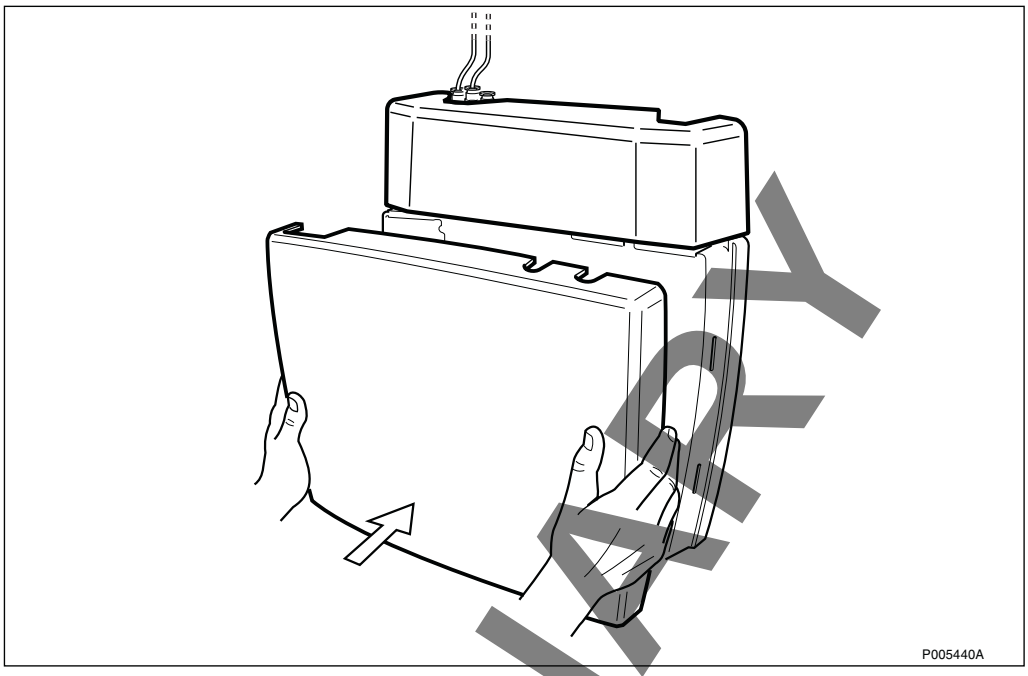


Figure 93

4.4.2 Test of AGW

T.b.d.

4.5 Installation and Test of Optional HDSL Module

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.

4.5.1 Installation of HDSL Module

1. Mount the module with six screws, two on each side, and two screws on the cable gland plate.

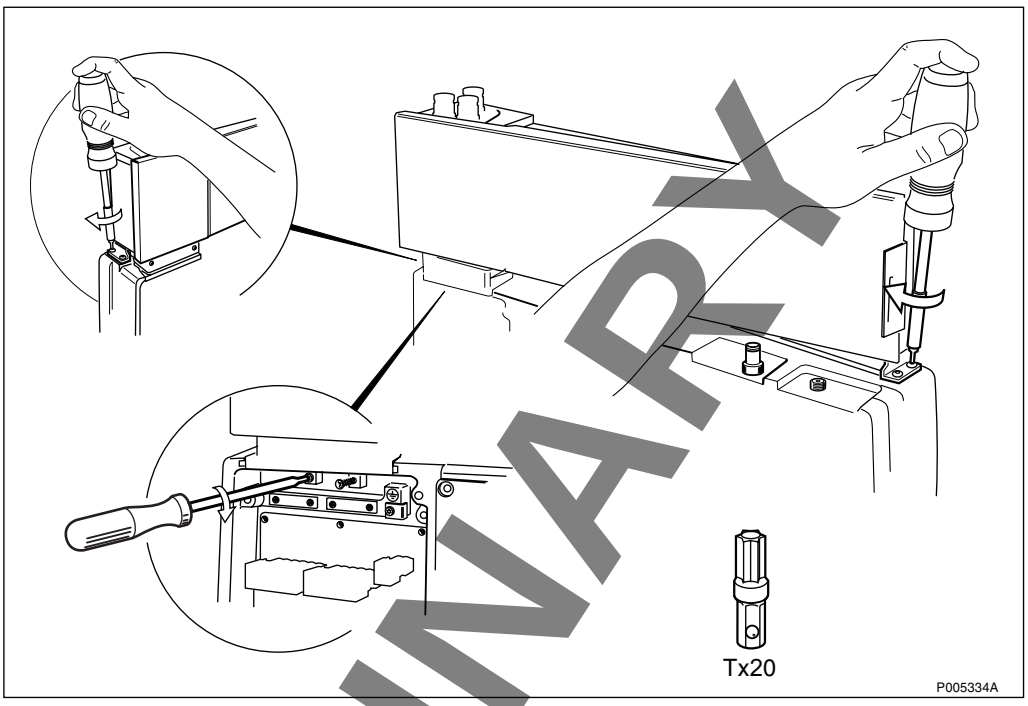


Figure 94

2. Remove the cover.

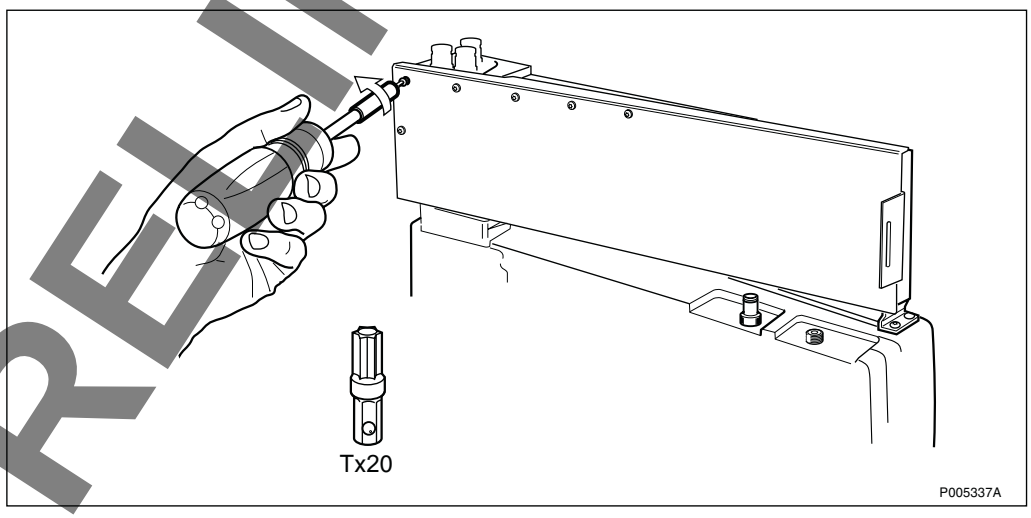


Figure 95

3. Connect the DC cable, and the transmission cables to the radio cabinet.

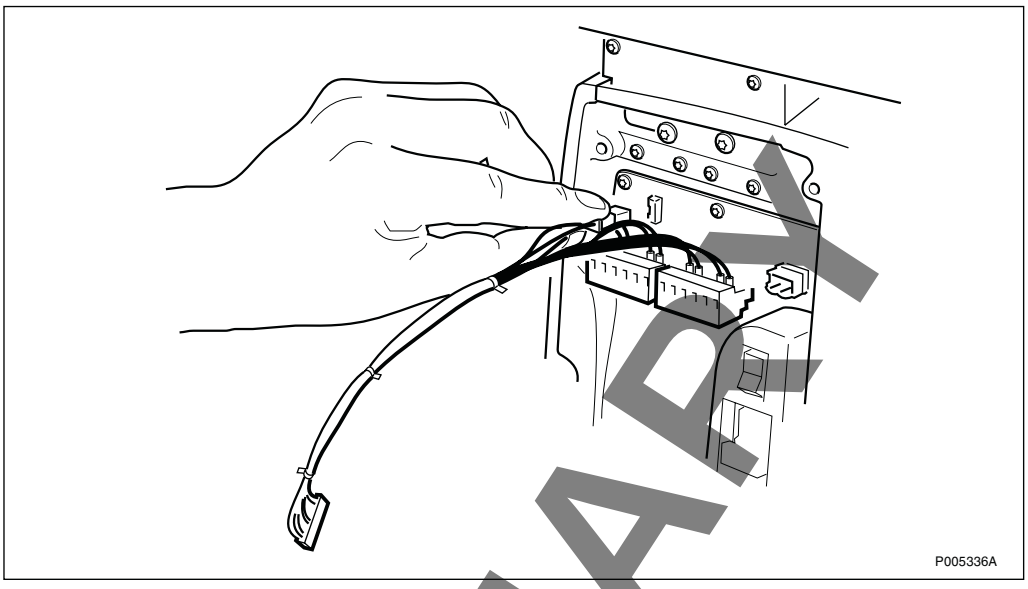


Figure 96

4. Run the transmission cables from the radio cabinet through the opening up to the module.

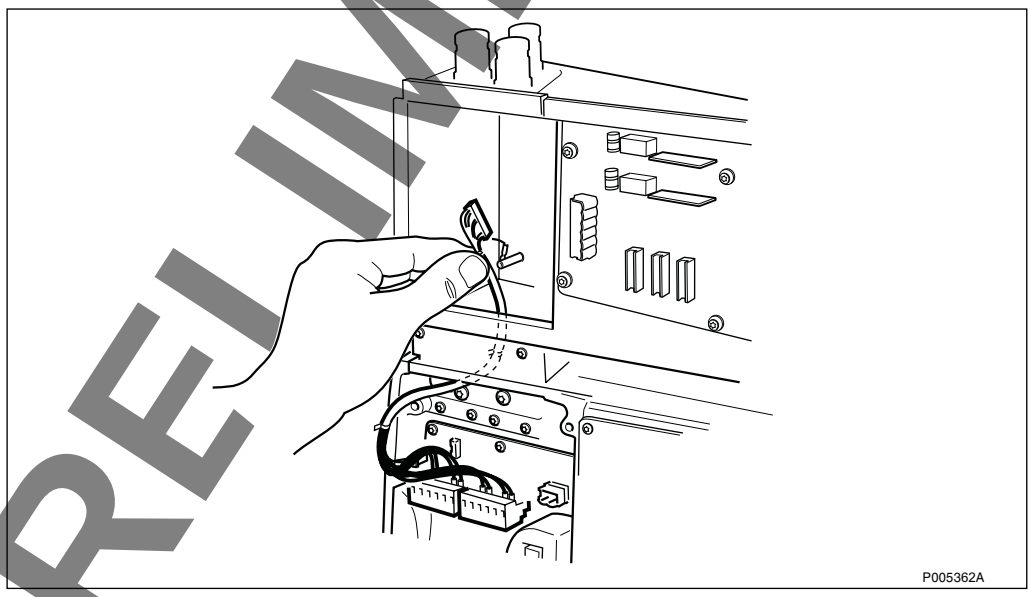


Figure 97

5. Strip the AC cable.

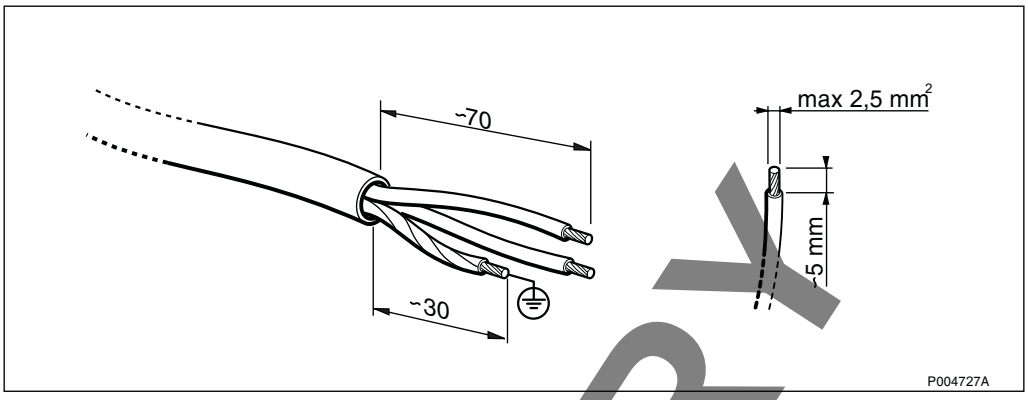


Figure 98

6. Run the AC cable through the cable gland.

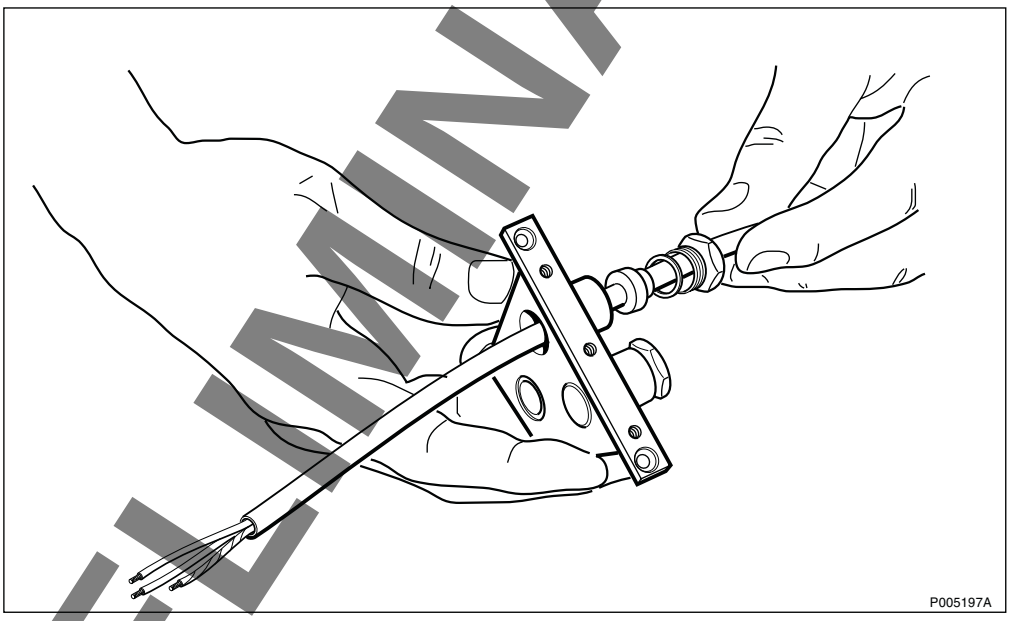


Figure 99

7. Connect the AC cable.

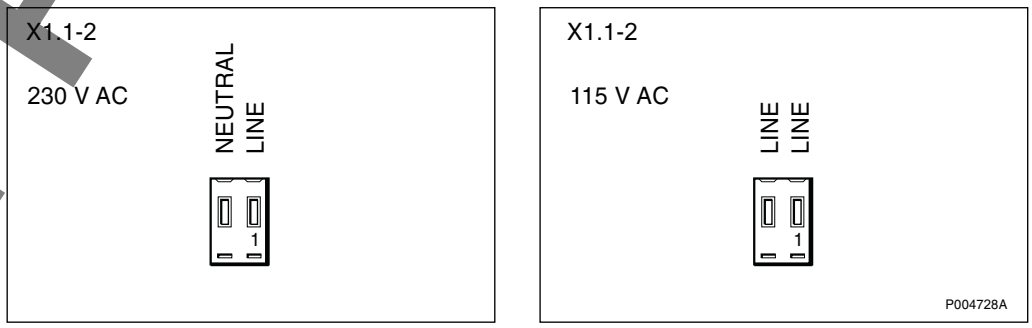


Figure 100

8. Connect the protective earth cable.

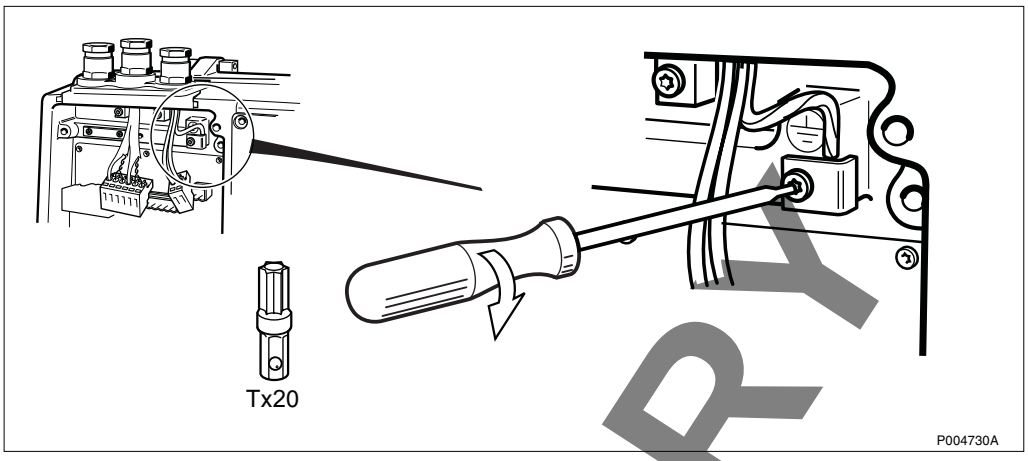


Figure 101

9. Connect the transmission cable to the socket corresponding to the configuration used. The three configuration options are shown on the inner side of the cover.

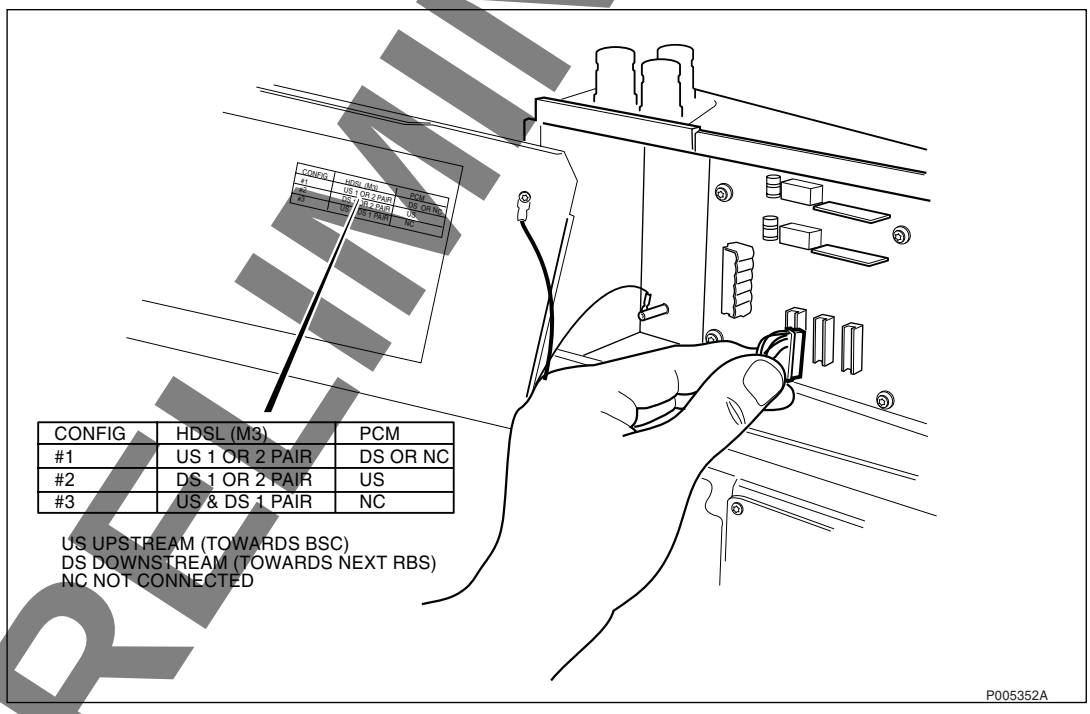


Figure 102

10. Set the DIP-switches. The tables below show the settings of the DIP-switches in different modes.

Table 8 The chain (cascading) mode strappings

Function	Switch position			Parameter value
	SW 1			
Topology	OFF			chain
	SW 2	**SW 3**		
Line rate of master modem in chain mode	ON	ON		2320 kbit/s
	OFF	ON		1168 kbit/s
	ON	OFF		592 kbit/s
	OFF	OFF		reserved
	SW 4	**SW 5**	**SW 6**	
Running number of RBS in the chain mode	ON	ON	ON	RBS number 1
	OFF	ON	ON	RBS number 2
	ON	OFF	ON	RBS number 3
	OFF	OFF	ON	RBS number 4
	ON	ON	OFF	RBS number 5
	OFF	ON	OFF	RBS number 6
	ON	OFF	OFF	RBS number 7
	OFF	OFF	OFF	RBS number 8
	SW 7			
Reserved in chain mode	ON			Not applicable
	SW 8			
Usage of external alarm	OFF			External alarms

Table 9 The point-to-point DXX proprietary mode strappings

Function	Switch position		Parameter value
	SW 1		
Topology	ON		point-to-point
	SW 2	**SW 3**	
Line rate in point-to point DXX proprietary mode	ON	ON	2320 kbit/s
	OFF	ON	1168 kbit/s
	ON	OFF	592 kbit/s
	OFF	OFF	reserved
	SW 4		
HDSL operation in point-to-point mode	ON		Proprietary mode
	SW 5		
Number of pairs in point-to-point DXX proprietary mode	ON		1 pair used
	OFF		2 pair used

	SW 6	
Protection in point-to-point proprietary mode	ON	No protection
	OFF	1 + 1 protection used
	SW 7	
Modem role in point-to-point mode	ON	HDSL Master
	OFF	HDSL Slave
	SW 8	
Usage of external alarm	OFF	External alarms

Table 10 The point-to-point ETSI compliant mode strappings

Function	**Switch position**		**Parameter value**
	SW 1		
Topology	ON		point-to-point
	SW 2	**SW 3**	
Line rate point-to point ETSI compilant mode	ON	ON	1 x 2 Mbit/s
	OFF	ON	2 x 1 Mbit/s asynchronous
	ON	OFF	2 x 1 Mbit/s synchronous
	OFF	OFF	2 x 1 Mbit/s partial
	SW 4		
HDSL operation in point-to-point mode	OFF		ETSI compliant mode
	SW 5		
Reserved in ETSI compliant mode	ON		Not applicable
	SW 6		
Reserved in ETSI compliant mode	ON		Not applicable
	SW 7		
Modem role in point-to-point mode	ON		HDSL Master
	OFF		HDSL Slave
	SW 8		
Usage of external alarm	OFF		External alarms

11. Connect the transmission cables to the PCM A and PCM B terminal on the module. Refer to the diagram below.

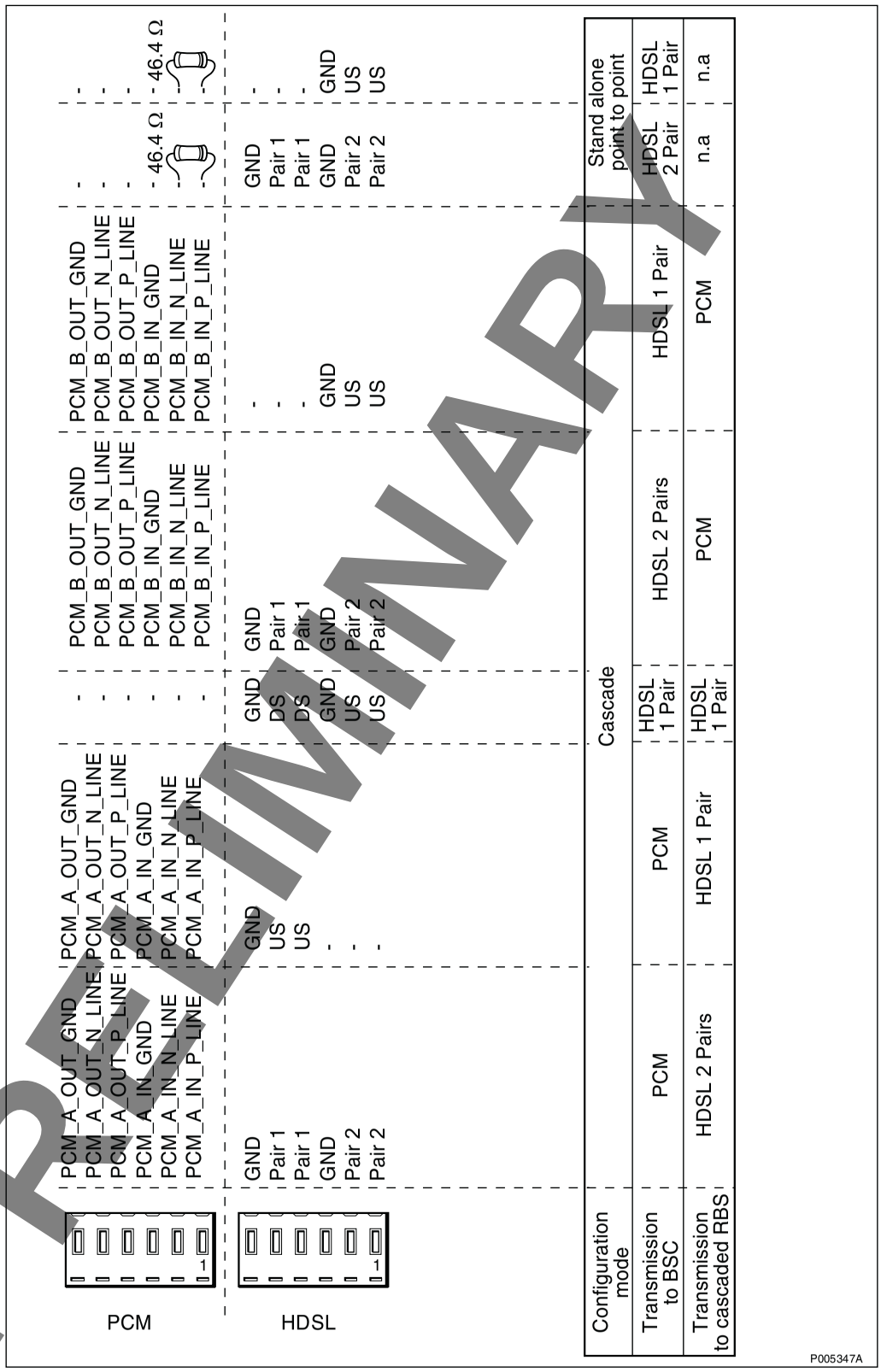


Figure 103

12. Remount the cover on the module.

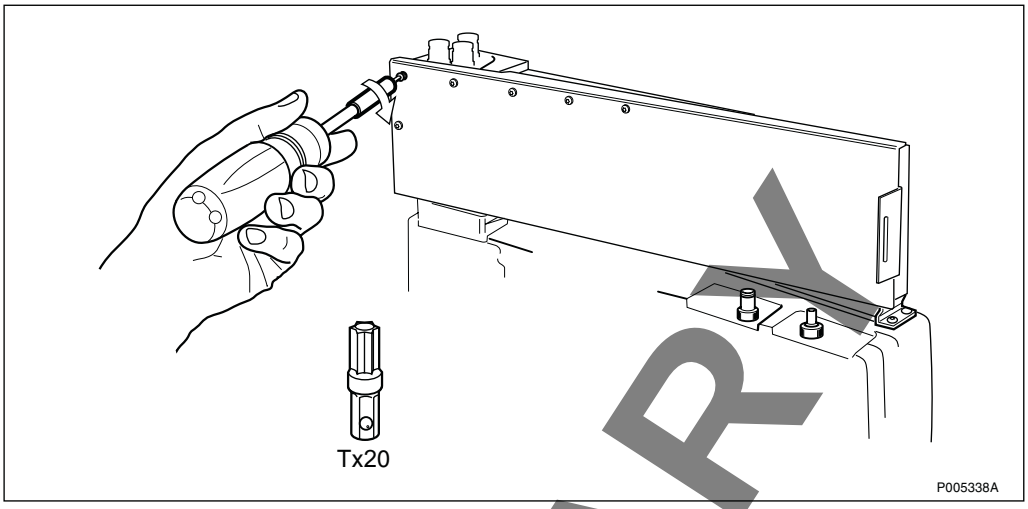


Figure 104

13. Tighten the cable glands.

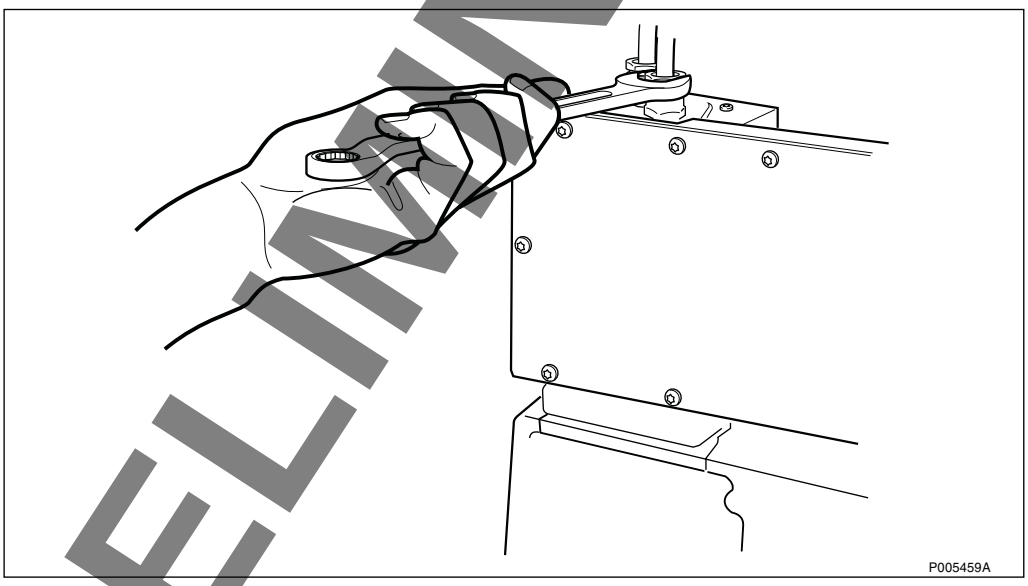


Figure 105

14. Connect external antenna cable(s).

    The antenna connector not used is to be terminated with a 50 Ω resistor.

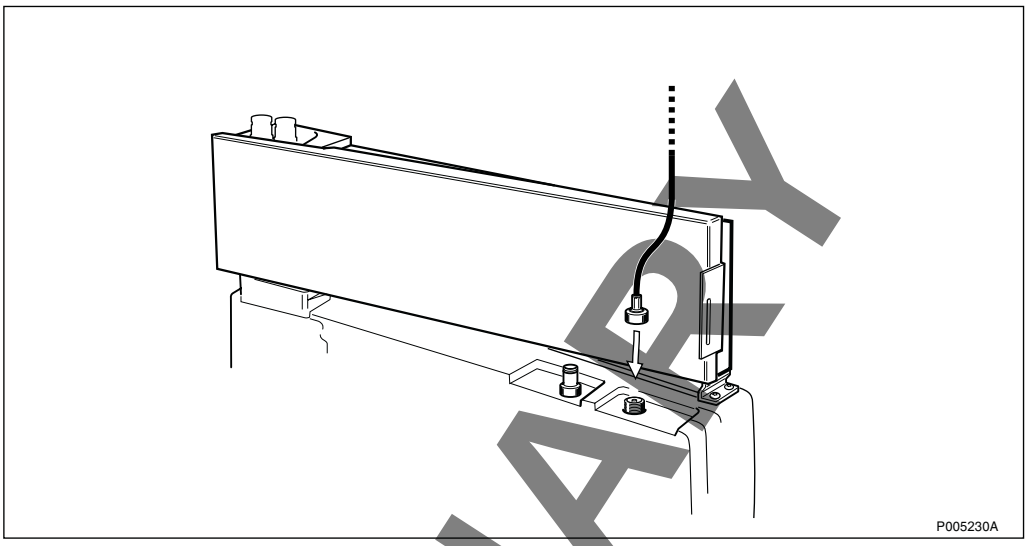


Figure 106

15. Remount the front cover on the HDSL module.

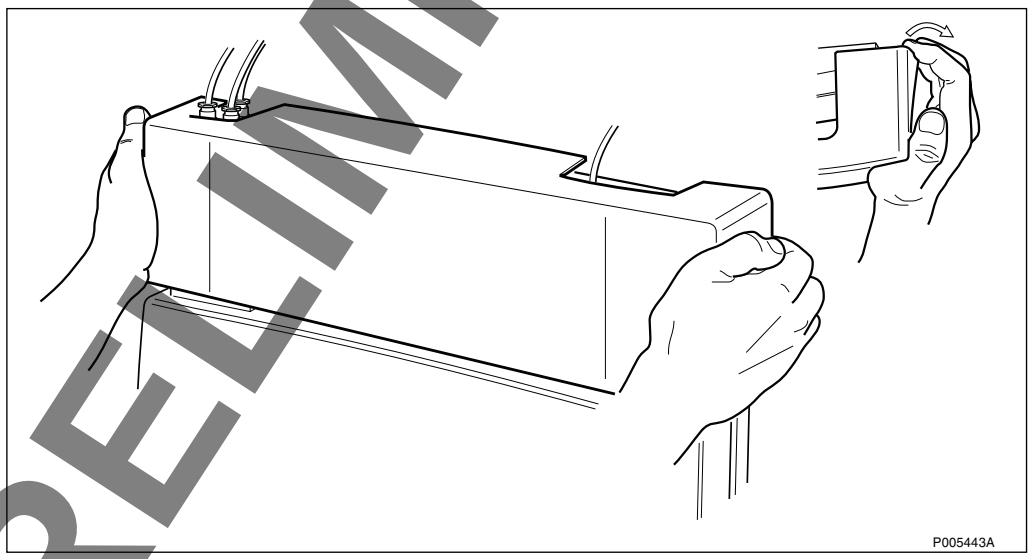


Figure 107

16. Set the transmission switches to 120 Ω.

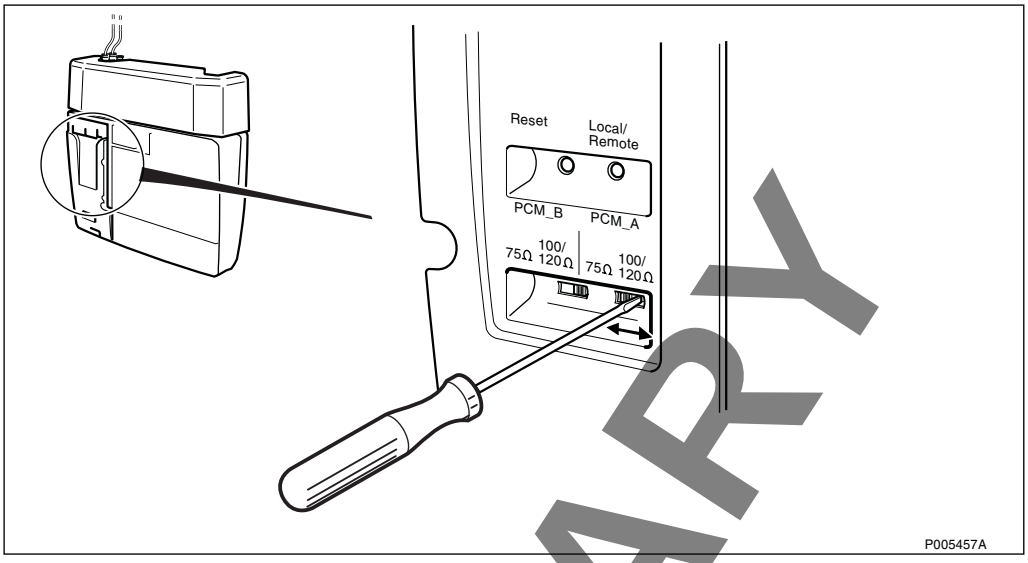


Figure 108

17. Install the fuses.

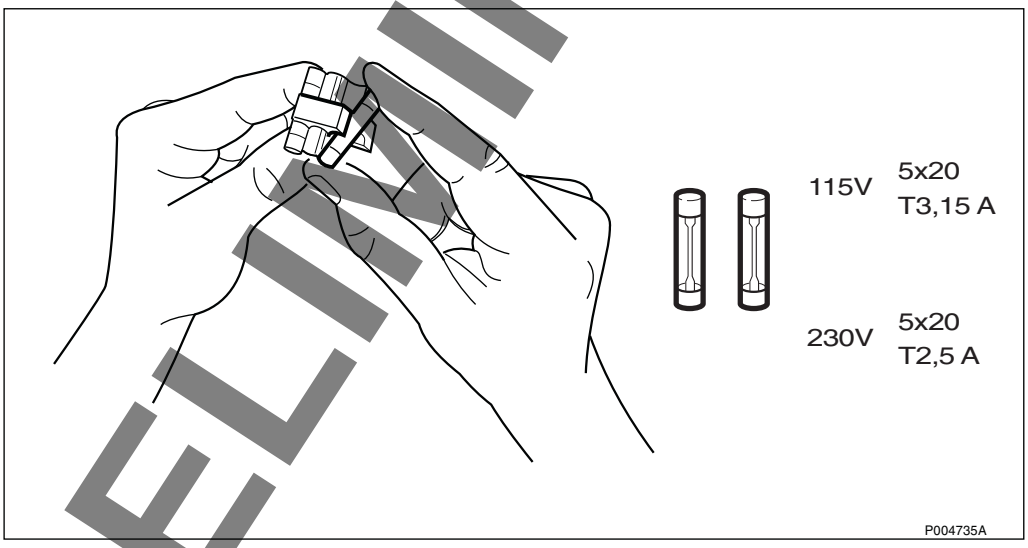


Figure 109

18. Insert the fuse holder in the fuse compartment.

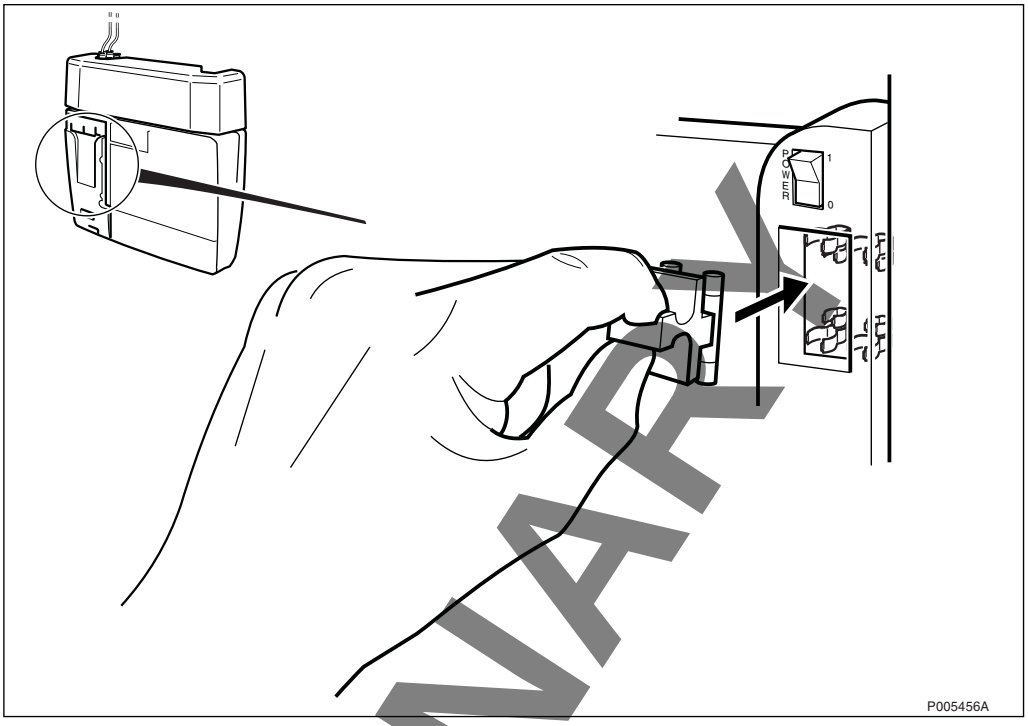


Figure 110

19. Mount the installation box cover.

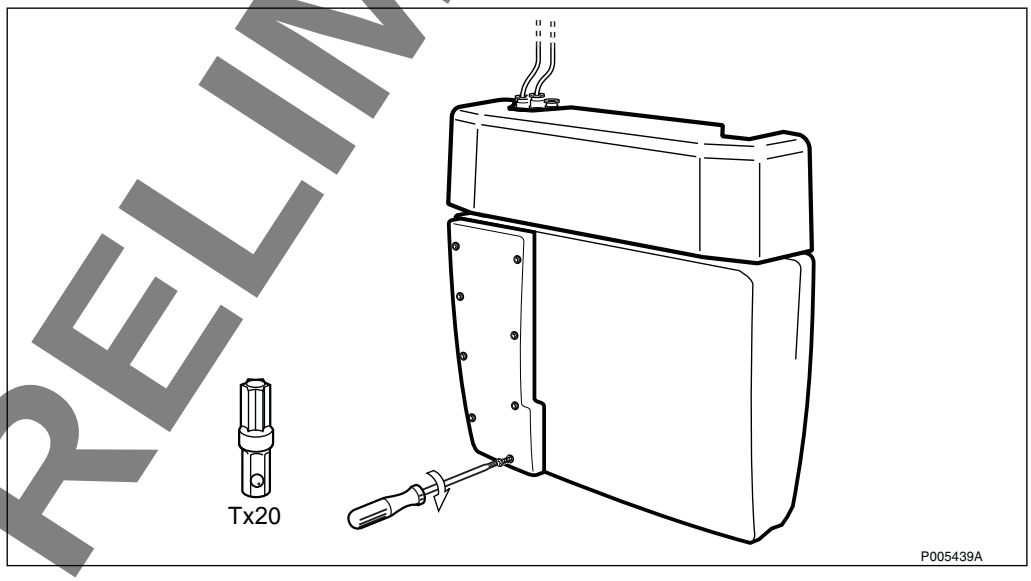


Figure 111

20. Mount the front cover.

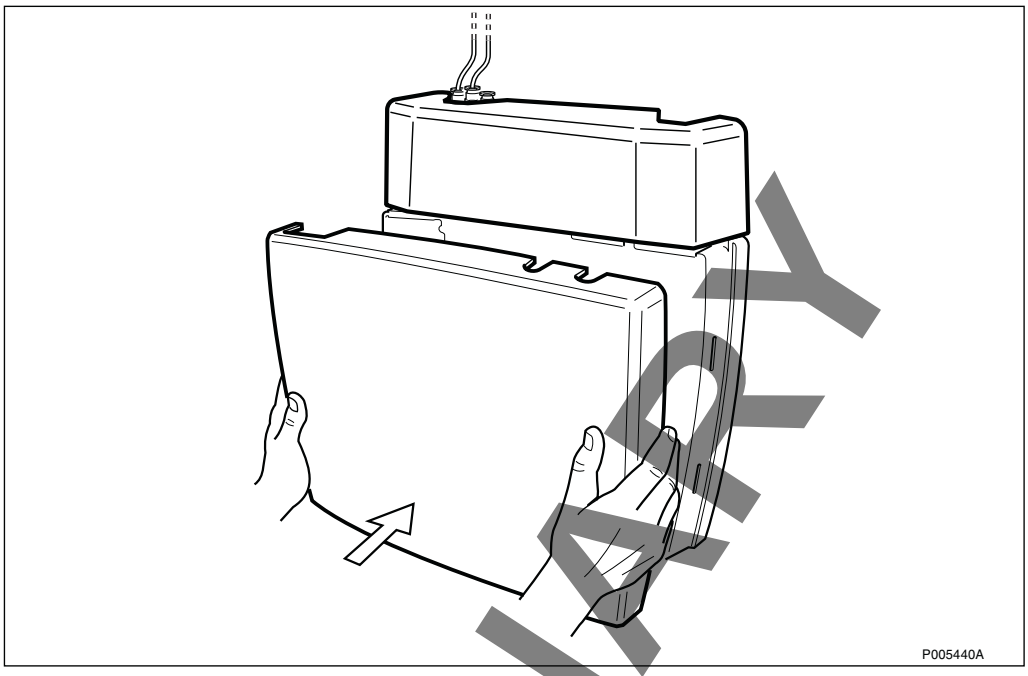


Figure 112

4.5.2 Test of HDSL Module

T.b.d.

4.6 Concluding Routines

The following checklist is not mandatory but strongly recommended. Local procedures and safety regulations must be evaluated and incorporated into this checklist.

If any check point is not OK, do not leave the site until the problem/ fault has been cleared or investigated.

Table 11 Checklist

Checklist	**OK**
1. LED indicator FAULT is OFF.	
2. LED indicator OPERATIONAL is ON.	
3. RBS 2401 is in Remote mode (Local mode indicator OFF).	
4. Backup copy of the RBS IDB saved on a diskette.	
5. LED status on HDSL module/AGW checked.	
Signature **Date**	

4.7 Test Record

Example of a test record that is to be filled in during the tests.

4.7.1 Site Data

Site name _____

Date _____

Site Hardware Status

Unit	Product No.	Serial No.	Rev.	Manufact. date
RBS 1				
- Radio cabinet				
- HDSL module				
- AGW				

4.7.2 Test Result

Visual Installation Check

OK	Remarks
☐	_____

Test Checklist

Test	OK	Failed	Remarks
- Start-up of RBS 1			
- Read IDB			
- Fault Status Reading			
- MS Test Call using simulator			

IDB Status

	ON	OFF
CRC-4 (E1)		

	ON	OFF
TNOM USE (1)		

TNOM TIMESLOT (1)	
TNOM NODE ID (1)	

(1) R7 and later

TEI Value

	TEI Value	
	Multidrop	**Stand Alone**
RBS 1		
RBS 2		
RBS 3		
RBS 4		
RBS 5		

LBO Parameter Settings (T1)

Short Haul

	RBS 1	RBS 2	RBS 3	RBS 4	RBS 5
LBO-A (feet)					
LBO-B (feet					

Long Haul

	RBS 1	RBS 2	RBS 3	RBS 4	RBS 5
LBO-A (dB)					
LBO-B (dB)					

Antenna Installation Test

Installation check

		Remarks
Visual check		
Antenna system used:		
- RBS 2401 omnidirectional		
- External		

MS Test Call using BSC Simulator (Optional test)

			RX Level		RX Quality		
		TS	DL	UL	DL	UL	TA
RX-A	TRX 1						
	TRX 2						

Mobile used for this test

Model _____

Rev. _____ Serial No. _____

Network Integration Tests

TEST CALL ON AIR INTERFACE					
TRX	**Cell ID**	**ARFCN**	**BSIC**	**MS Originated**	**MS Terminated**
1					
2					

Remarks

_____

_____

_____

PSTN TO MS CALL	

	OK	**Failed**	**Remarks**
HDSL module			
AGW			

4.7.3 Signatures

Responsible for Test Record

Name Date

_____

Customer Acceptance

Name Date

_____

4.7.4 Trouble Report

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.

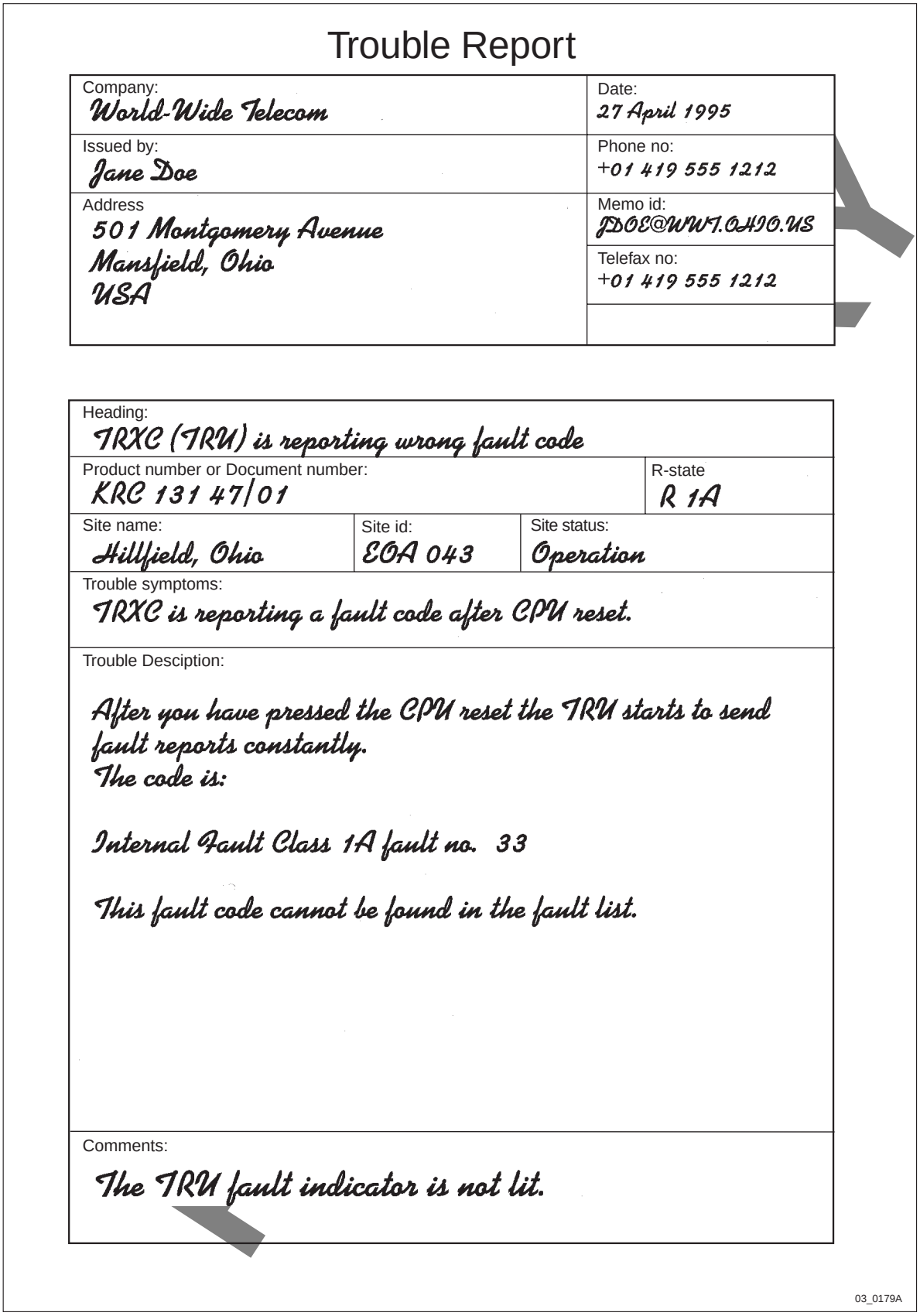
When writing a trouble report, always include as much information as possible. Write the trouble report as soon as possible, preferably at the RBS site. The next pages contain an example of a filled-in trouble report and a blank trouble report.

The trouble report should be sent to the nearest FSC (Field Support Center) 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.

Special Explanations

Product number	The product number can be found on the label of the unit. Example: KRC 131 47/01.
R-state	Revision state, found on the label of the unit after the product number. Example: R1A.
Site status	Can be “Installation Test” or “Operation”

Example of Filled-in Trouble Report



Trouble Report

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

Heading: TRXC (TRU) is reporting wrong fault code		
Product number or Document number: KRC 131 47/01		R-state: R 1A
Site name: Hillfield, Ohio	Site id: EOA 043	Site status: Operation
Trouble symptoms: TRXC is reporting a fault code after CPU reset.		
Trouble Desciption: 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.		
Comments: The TRU fault indicator is not lit.		

03_0179A

Figure 113 Example of filled-in trouble report

Trouble Report, Blank

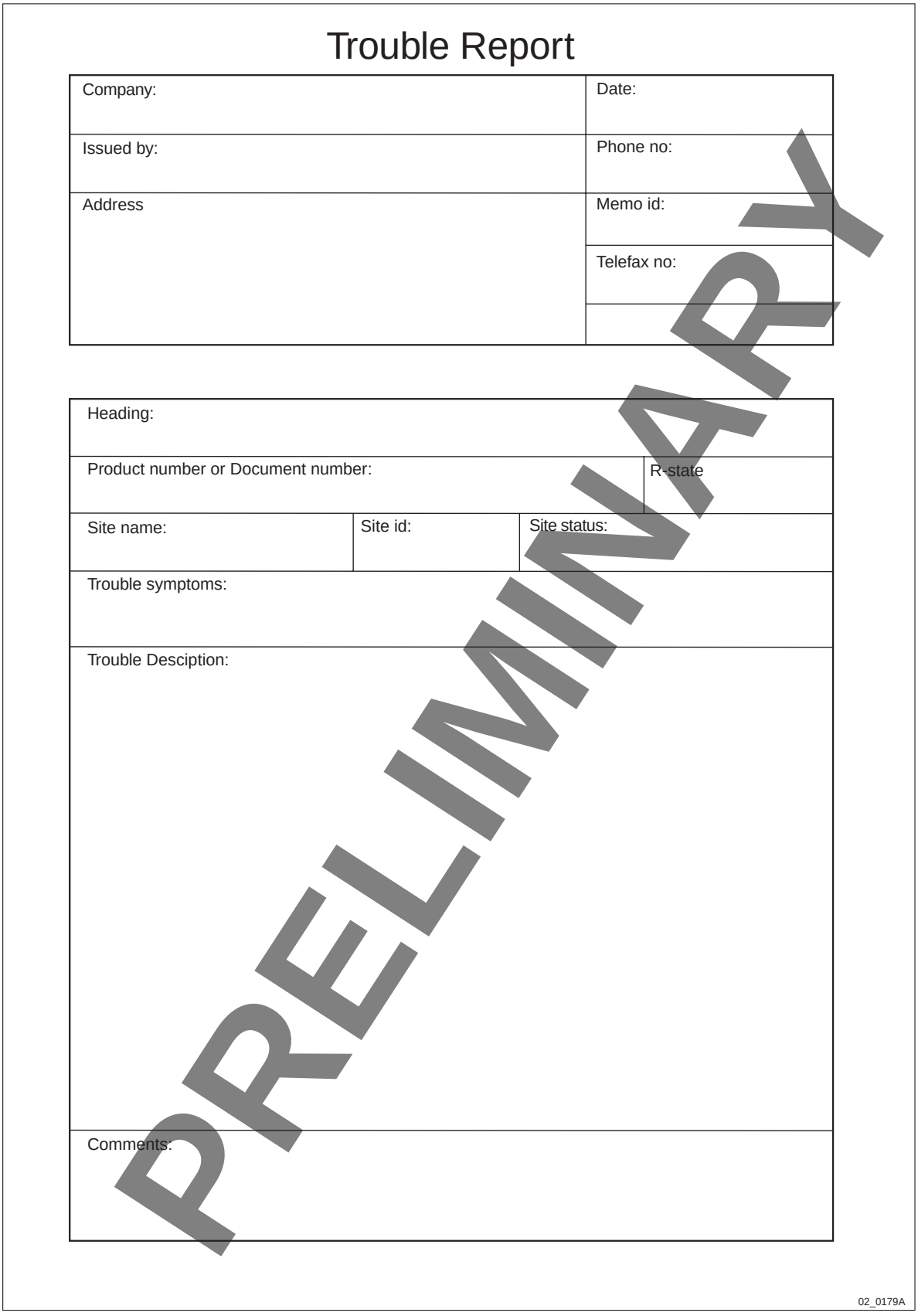


Figure 114 Trouble report, blank

4.7.5 Repair Delivery Note ‘‘Blue Tag’’

When a faulty unit is returned, it must always be accompanied by a repair delivery note. When the repair delivery note has been completed it must be attached to the faulty unit before sending it for repair.

The repair delivery note LZF 084 64 can be ordered from the local FSC. A description of how to fill in a repair delivery note is included in chapter Maintenance.

5 Maintenance and Spare Parts

5.1 Tools for Maintenance

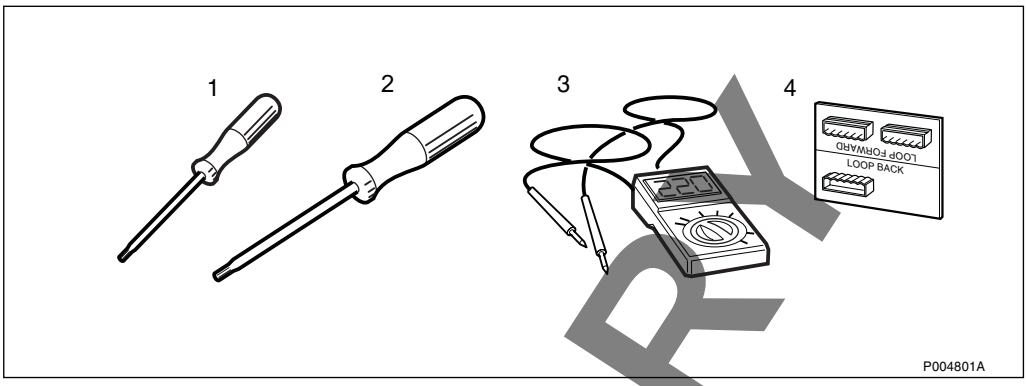


Figure 115

Table 12 Tools for maintenance

Item	Description	Product No.
1	Screwdriver, TORX Tx10	(1)
2	Screwdriver, TORX Tx20	(1)
3	Fluke 8060 Multimeter	LPK 102 024/1
4	CB21 (Loop Forward/Backward connection board)	LPY 107 757/1

(1) Included in LTT 601 045/3, Personal Installation Tool Kit.

5.2 Fault Localisation

5.2.1 Radio Cabinet

Explanation of LED Symbols

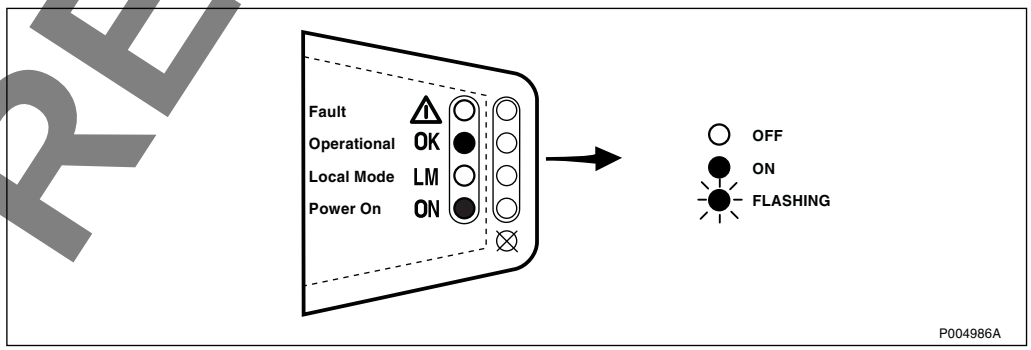


Figure 116

RBS 2401 Operational

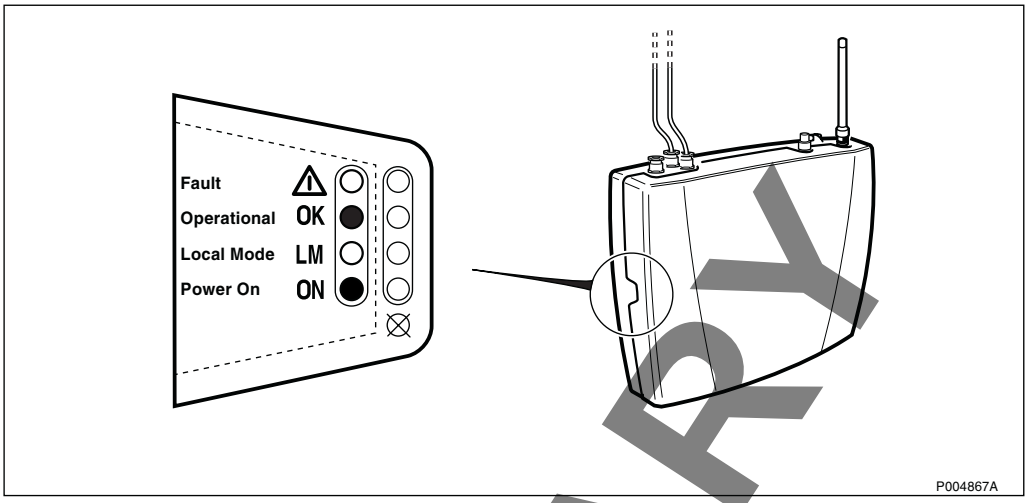
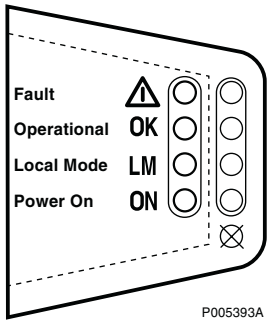
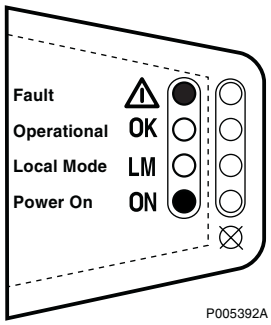
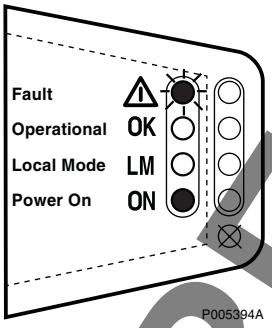


Figure 117 “RBS 2401 operational” indicated

Fault Tracing Guidelines

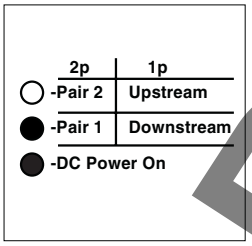
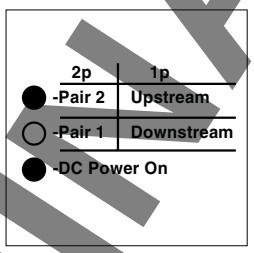
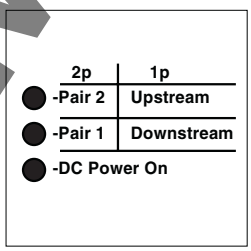
Table 13

LED status	Possible cause	Suggested action
 AC power fault	External power failure.	Check RBS status, see Table 18 on page 147.
	Fuse(s) blown.	Replace the fuses, see Section 5.3.2 on page 110.
	Cabinet faulty.	Replace the cabinet, see Section 5.3.1 on page 95.
	Running on Base application.	Use the OMT to monitor fault(s). Try to reload BTS software.
Internal fault	Cabinet HW fault.	Replace the cabinet according to instructions in chapter Maintenance.
	Running on Base application. The BSC is currently reloading BTS software.	Wait approximately one hour(do not press any button). Then, if the Fault LED is still flashing, try to reload BTS software manually or replace the cabinet.
Software fault	IDB is corrupt.	Reinstall IDB.

5.2.2 HDSL Module

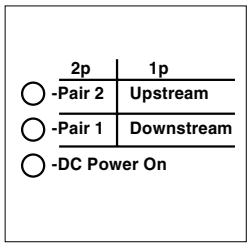
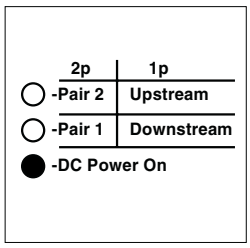
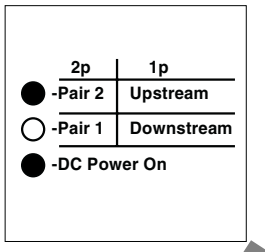
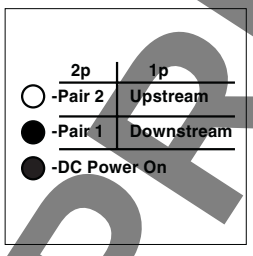
LED Indications when Operational

Table 14

Configuration	LED Status	Explanation
1 Pair (1p)	 P005400A	Downstream ON DC Power ON
1 Pair (1p)	 P005399A	Upstream ON DC Power ON
2 Pair (2p)	 P005401A	Downstream ON Upstream ON DC Power ON

Fault Tracing Guidelines

Table 15

LED status	Possible cause	Suggested action
 P005397A	Configuration 1 or 2 pair: • DC power failure.	• Check the small fuse located int the installation box close to the PCM B terminal. Refer to Section 5.3.5 on page 133.
 P005398A	Configuration 1 or 2 pair: • Link break.	• Check transmission Line(s).
 P005399A	Configuration 2 pair: • Pair 1: Downstream link missing	• Check transmission Line PAIR 1 Downstream link
 P005400A	Configuration 2 pair: • Pair 2: Upstream link missing	• Check transmission Line PAIR 2 Upstream link

5.2.3 AGW

Explanation of LED Indications

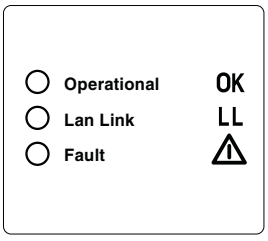
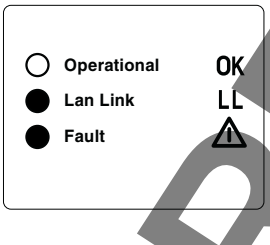
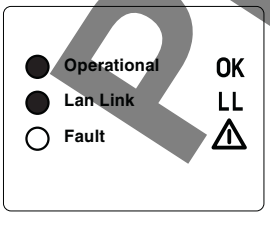
Table 16

LED	LED status		
	ON	**FLASHING**	**OFF**
Green	Power ON	See note(1)	Power OFF
Upper yellow, Downlink or Pair 1	Link operational	Filter tuning in progress.	Link break, or not in use.
Lower yellow, Uplink or Pair 2	Link operational	Filter tuning in progress.	Link break, or not in use.

(1) A faulty configuration (inconsistent settings of DIP switches) is indicated by all three LEDs flashing simultaneously.

Fault Tracing Guidelines

Table 17

LED status	Possible cause	Suggested action
	DC power failure.	Check the small fuse located int he installation box close to the PCM B terminal. Refer to Section 5.3.5 on page 133.
	Internal fault.	Replace the AGW according to instructions in Section 5.3.4 on page 124.
	LAN connection missing.	Check LAN connection, or possible network problem.

5.3 Corrective Action

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.

CAUTION

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

5.3.1 Replacement of Radio Cabinet

1. Remove the front cover.

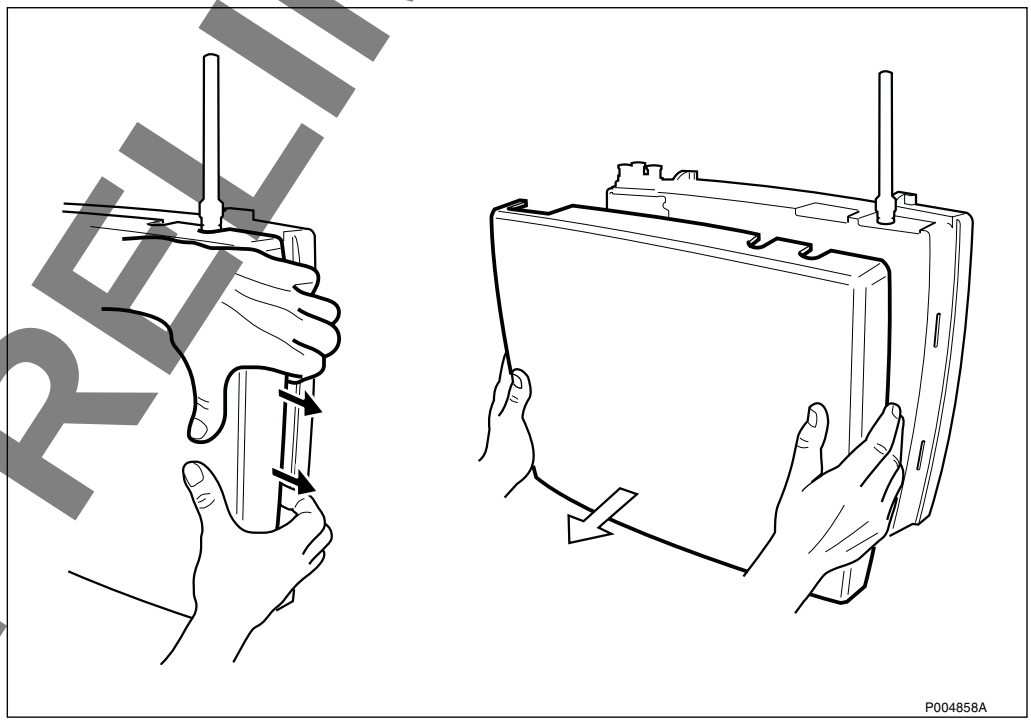


Figure 118

2. Remove the installation box cover.

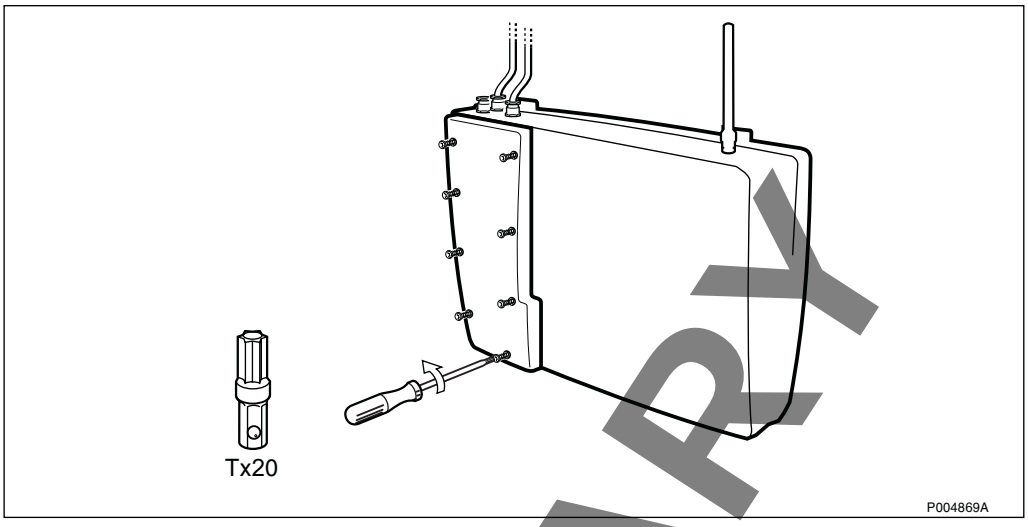


Figure 119

3. Press the Local/Remote button to set the RBS in Local mode.

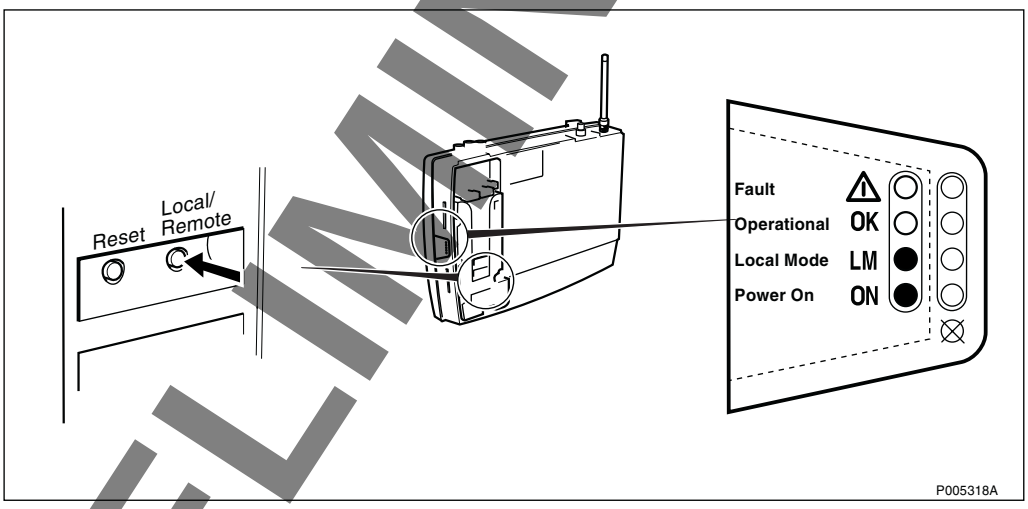


Figure 120

4. Switch off the AC mains power.

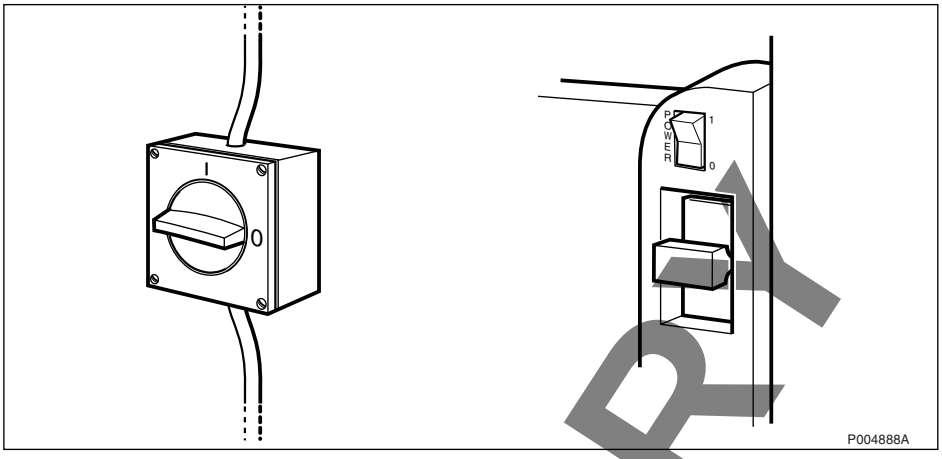


Figure 121

5. Connect the ESD wrist strap.

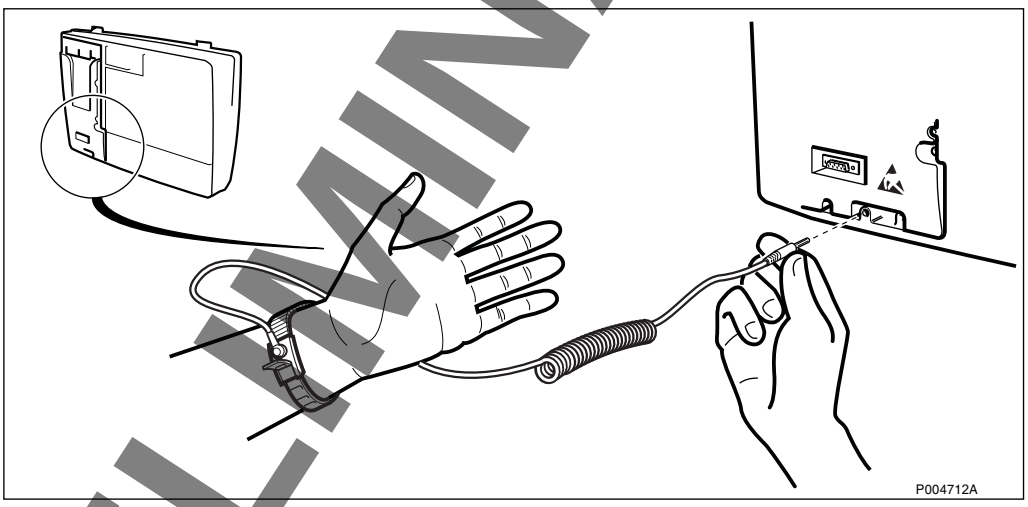


Figure 122

6. Remove the antenna

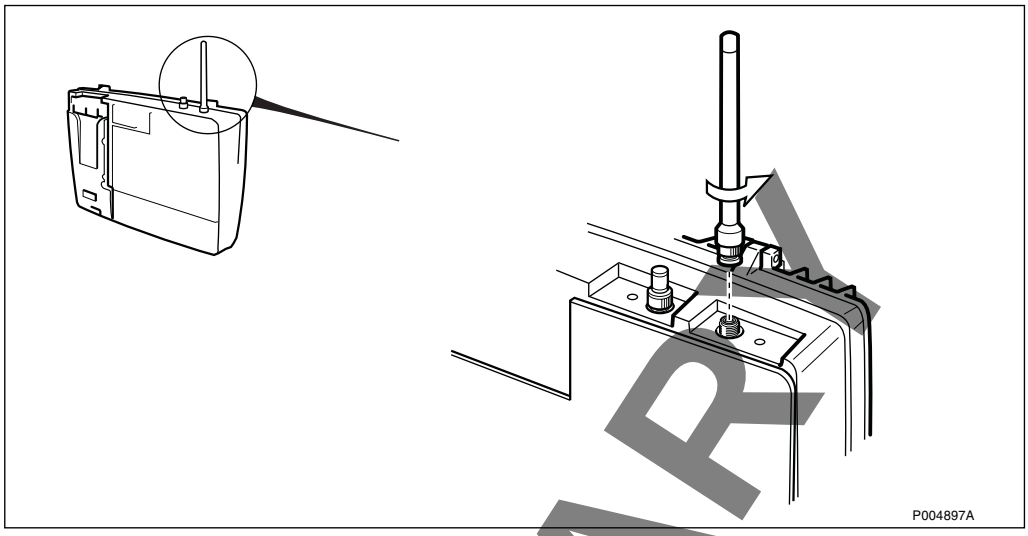


Figure 123

7. Loosen the earth clamp(s).

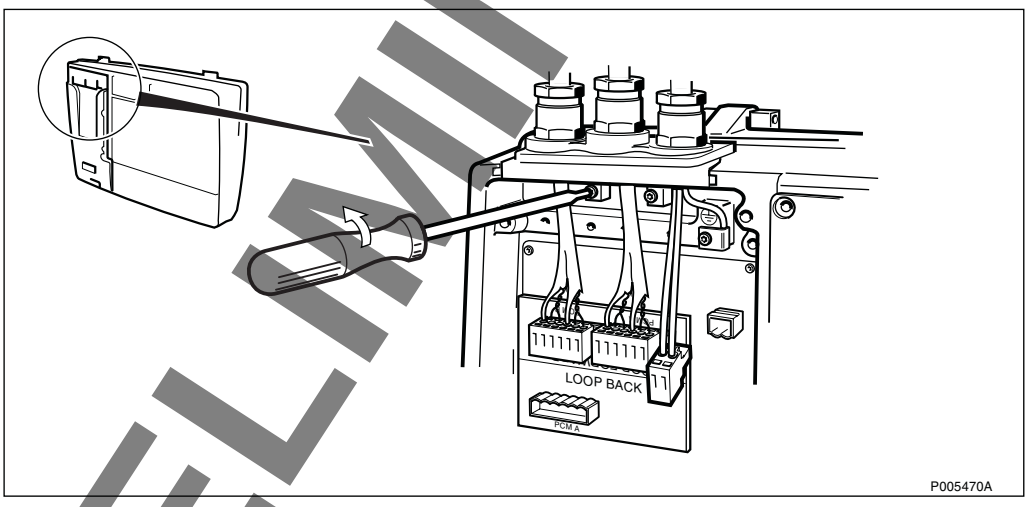


Figure 124

8. Move the PCM terminal(s) to the connection board CB21.

   The CB21 board can only be used if the transmission type is equal for PCM A and PCM B.

Note: If the RBS is cascaded, this step must be completed within 10 seconds, otherwise the PCM line will be lost.

If the RBS is not cascaded (PCM B has been terminated), it is not necessary to use the CB21 connection board.

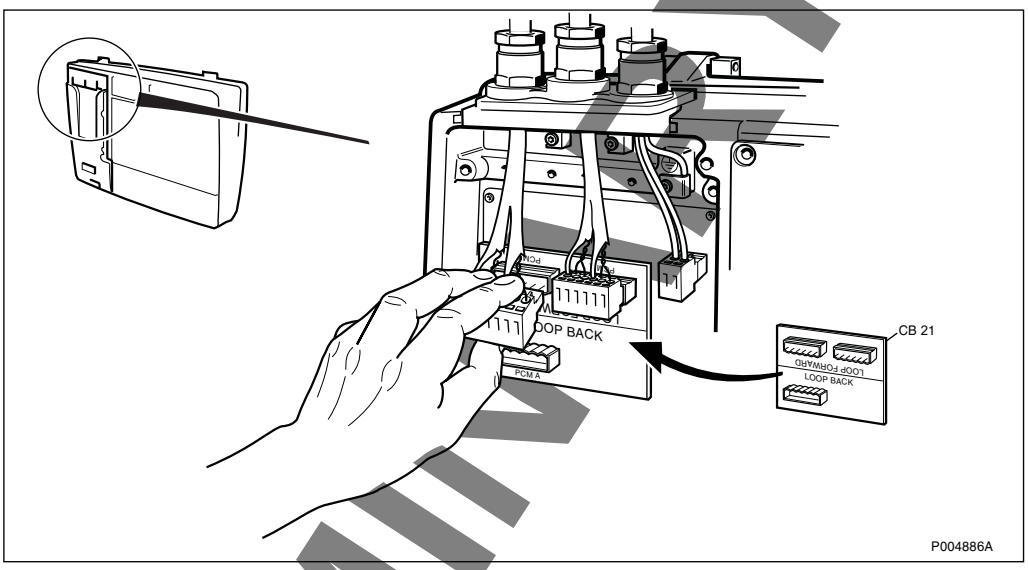


Figure 125

9. Unplug the AC terminal.

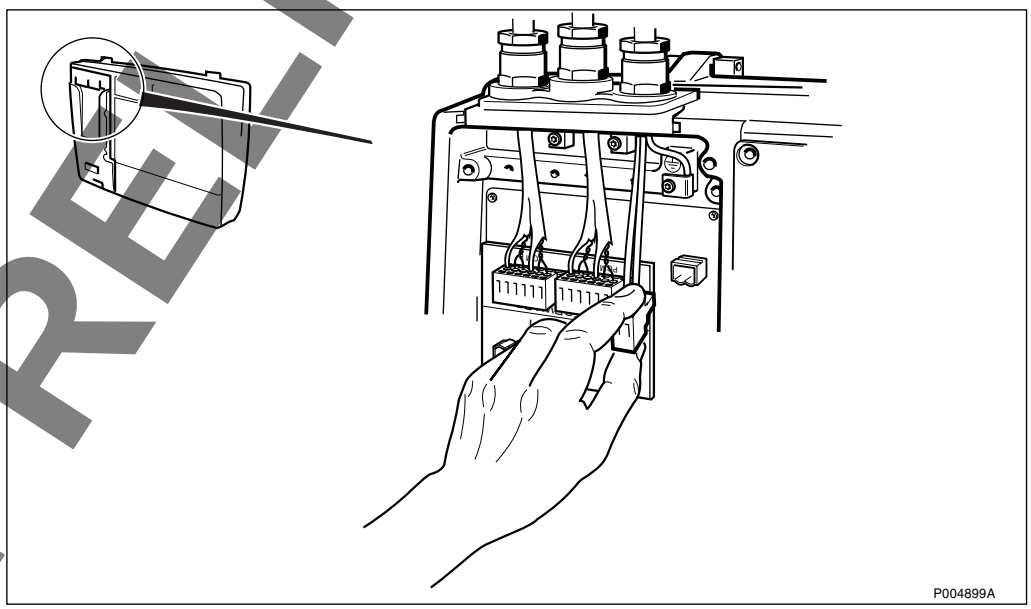


Figure 126

10. Disconnect the protective earth wire.

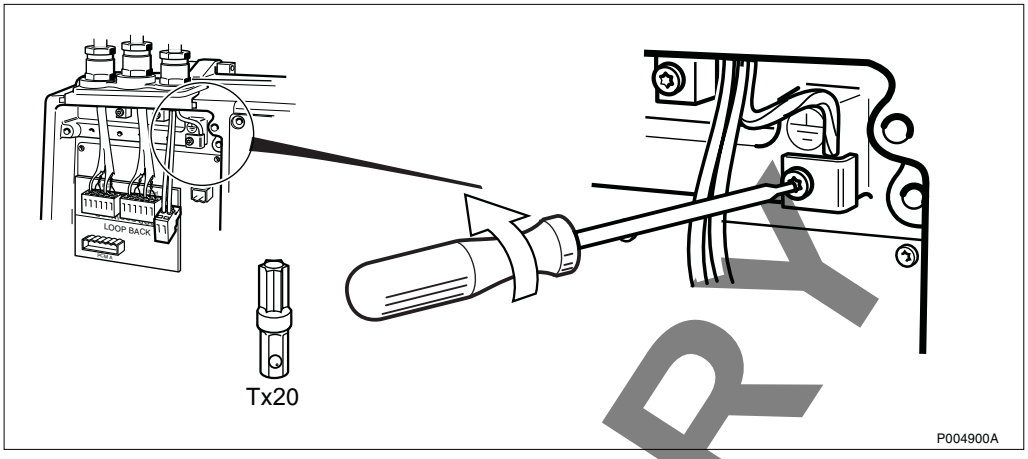


Figure 127

11. Loosen the cable gland plate.

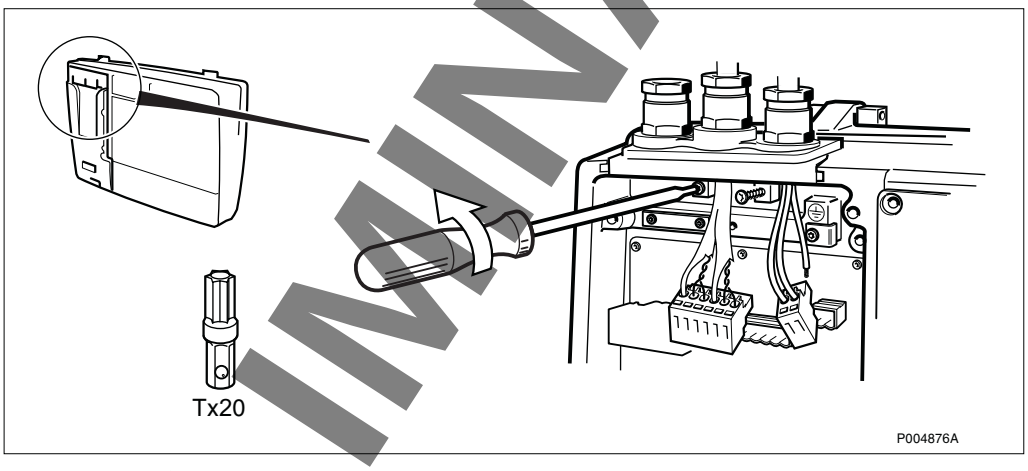


Figure 128

12. Disconnect the ESD wrist strap.

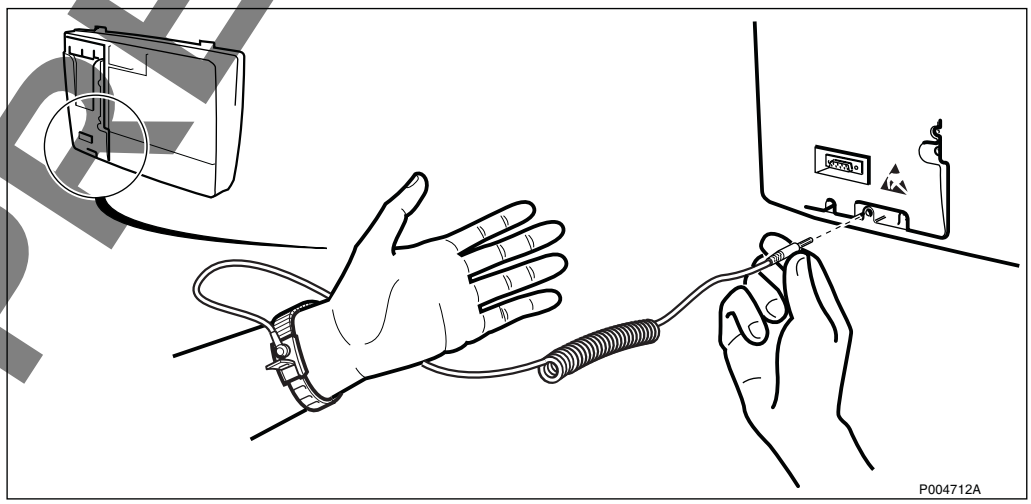


Figure 129

13. Loosen the two cabinet securing screws.

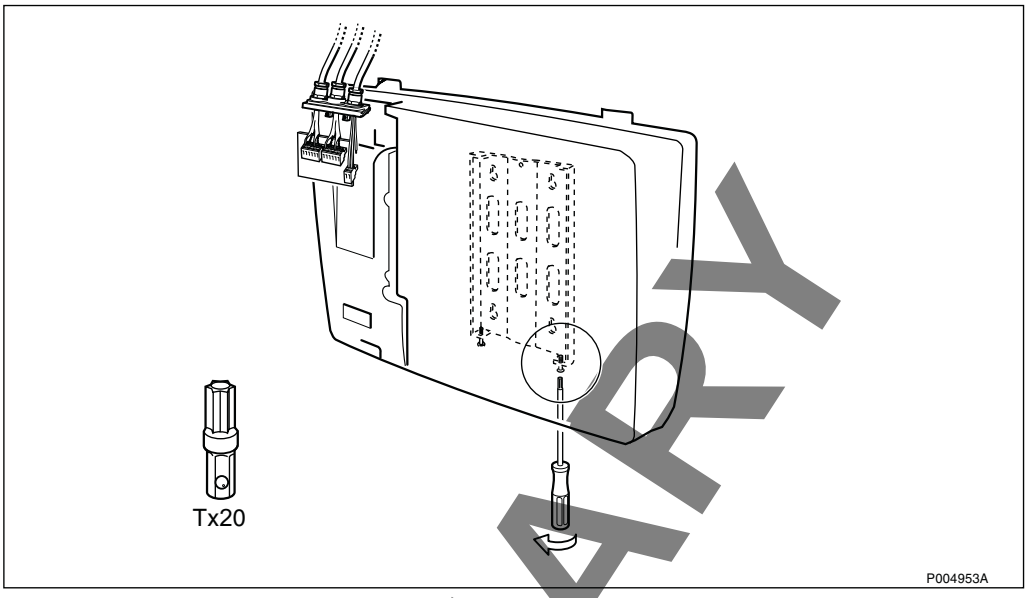


Figure 130

14. Remove the faulty cabinet, and mount a new cabinet.

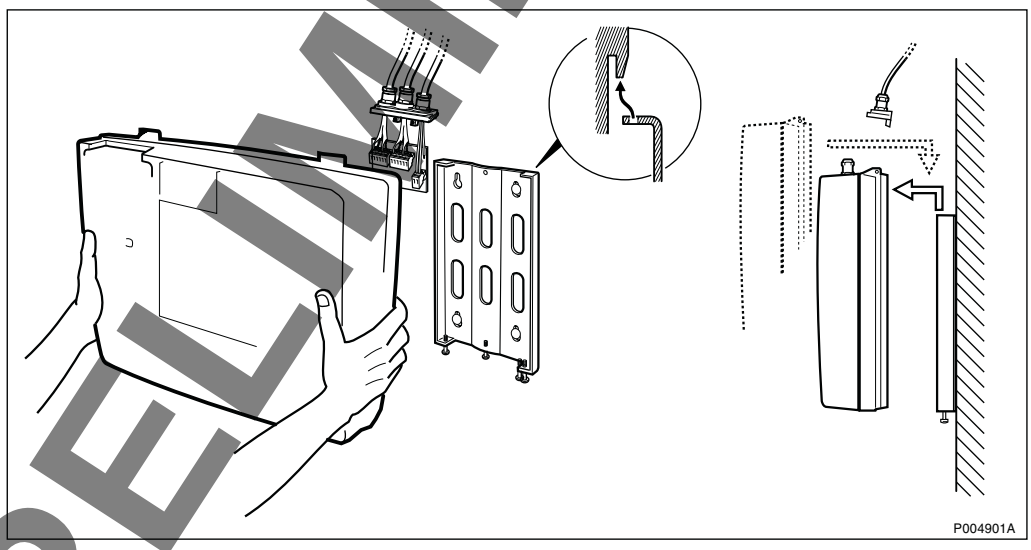


Figure 131

15. Secure the cabinet by tightening the two securing screws.

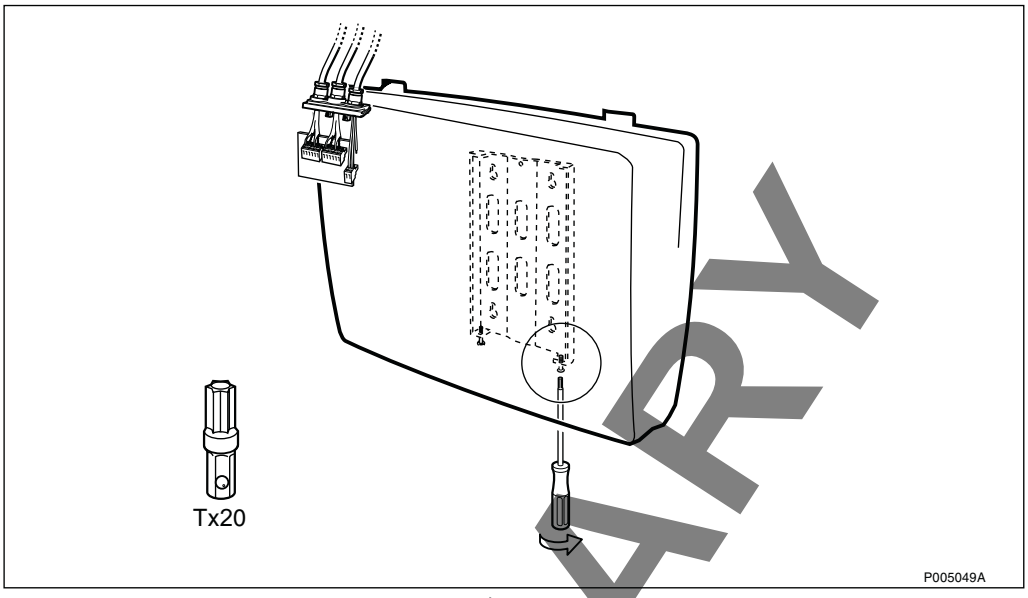


Figure 132

16. Loosen the eight fastening screws for the installation box cover.

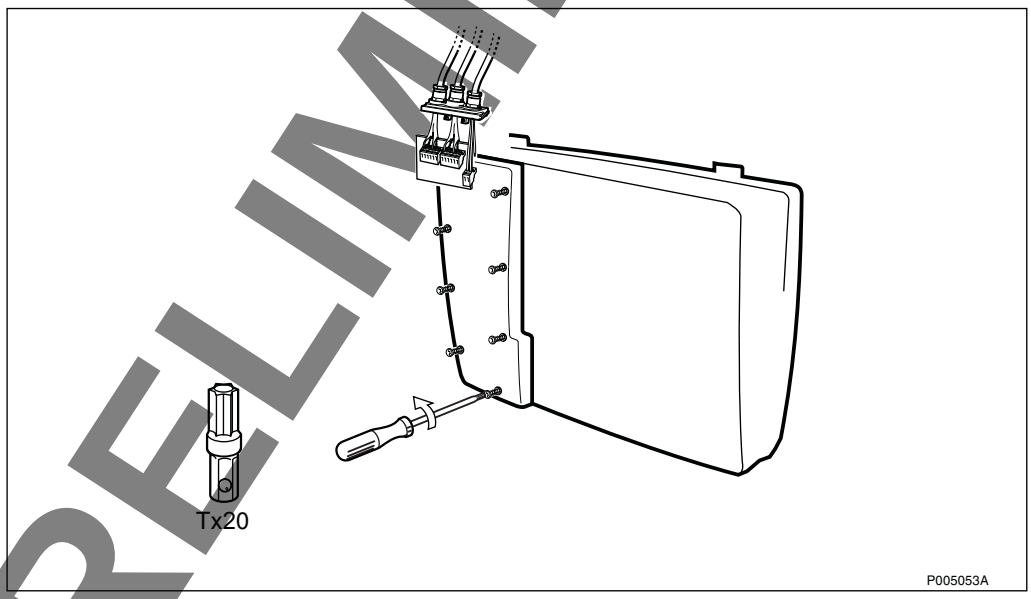


Figure 133

17. Connect the ESD wrist strap to the new cabinet.

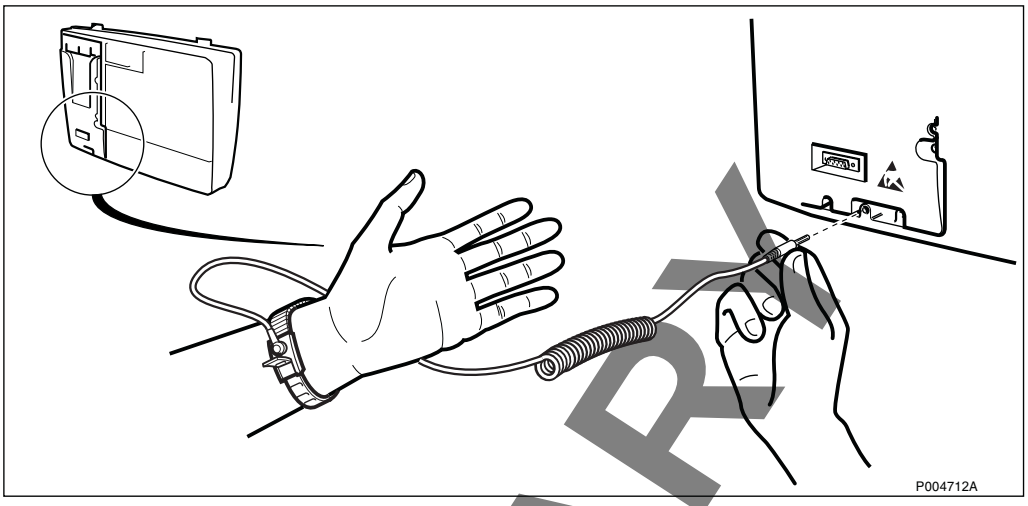


Figure 134

18. Dismount the cable gland plate on the new cabinet, and mount it on the faulty cabinet.

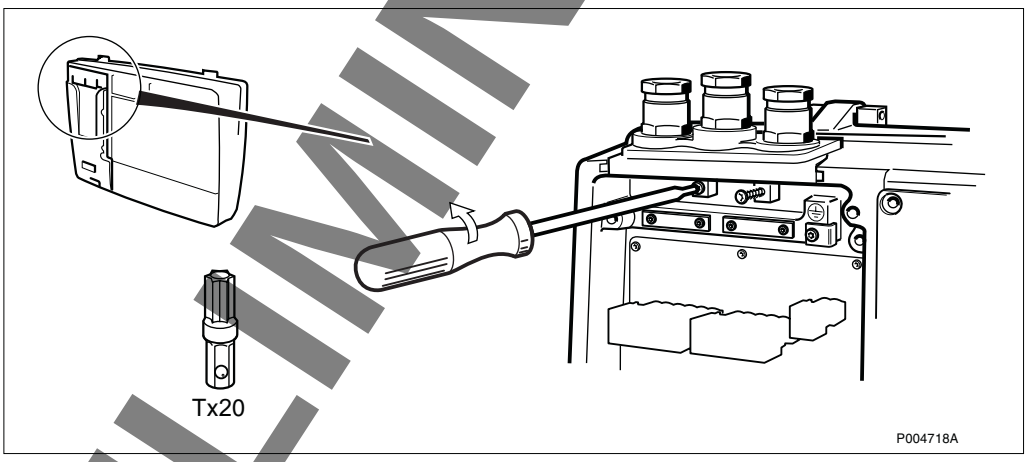


Figure 135

19. Mount the cable gland plate, with its cables, on the new cabinet.

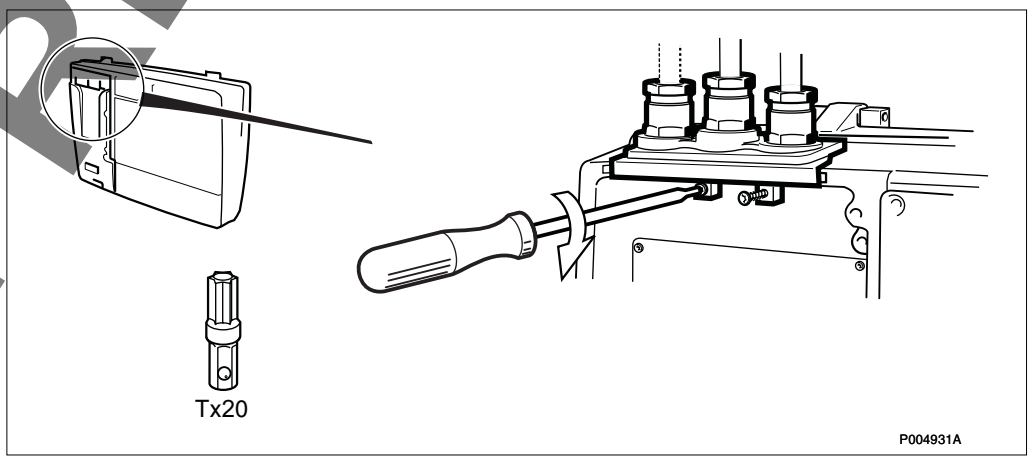


Figure 136

20. Connect the protective earth wire.

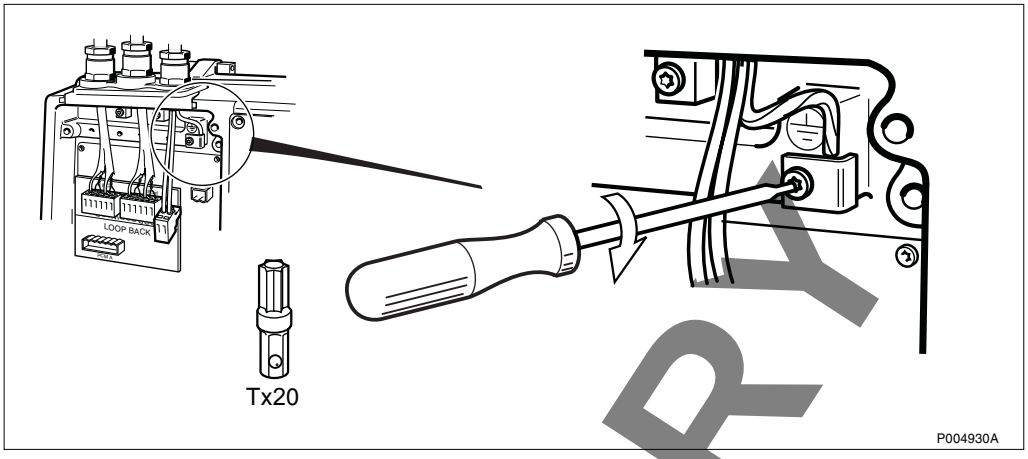


Figure 137

21. Plug in the PCM terminal(s), and the AC terminal.

Note: If the RBS is cascaded, this step must be completed within 10 seconds, otherwise the PCM line will be lost.

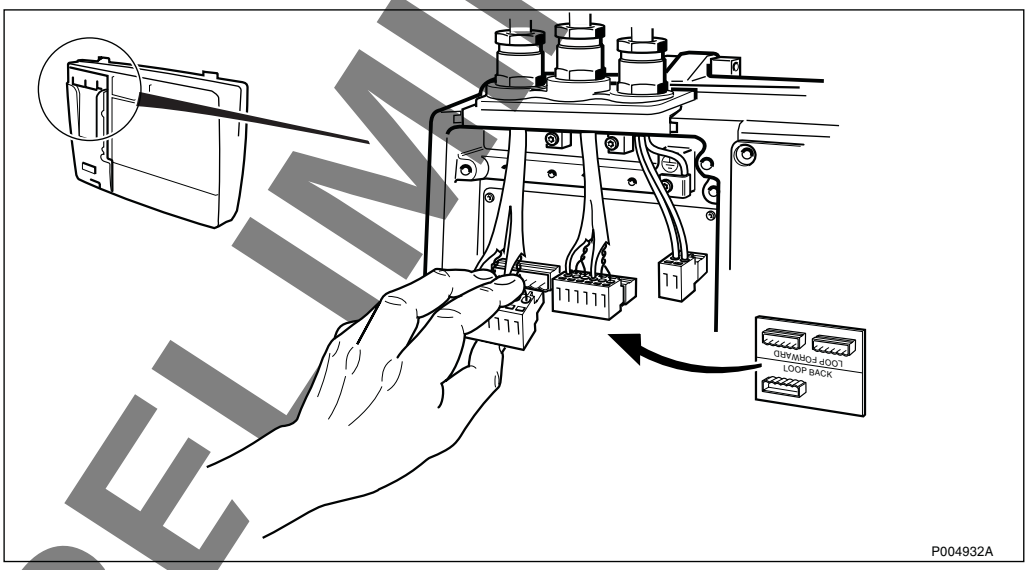


Figure 138

22. Fasten the earth clamp.

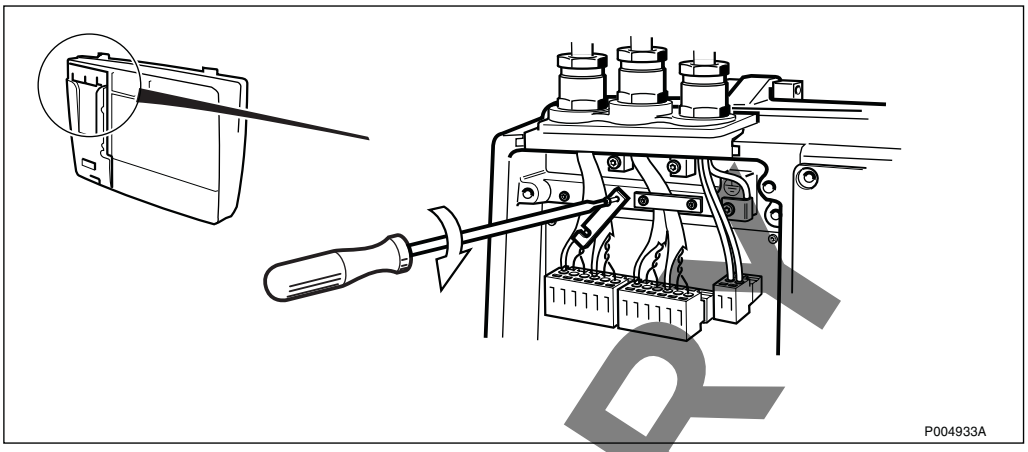


Figure 139

23. Mount the fuses in the fuse holder. Be sure to use the fuses intended for the actual mains voltage.

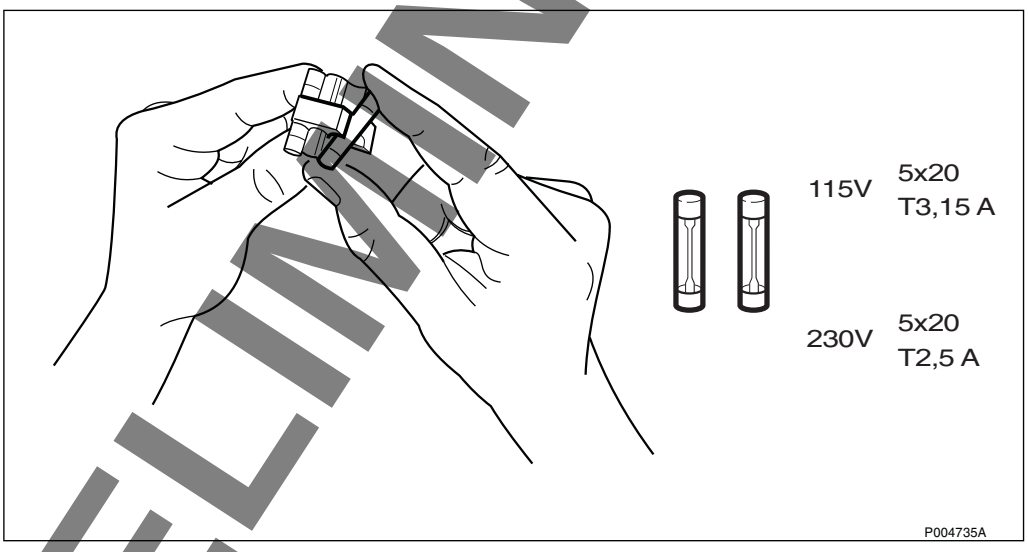


Figure 140

24. Insert the fuse holder in the fuse compartment.

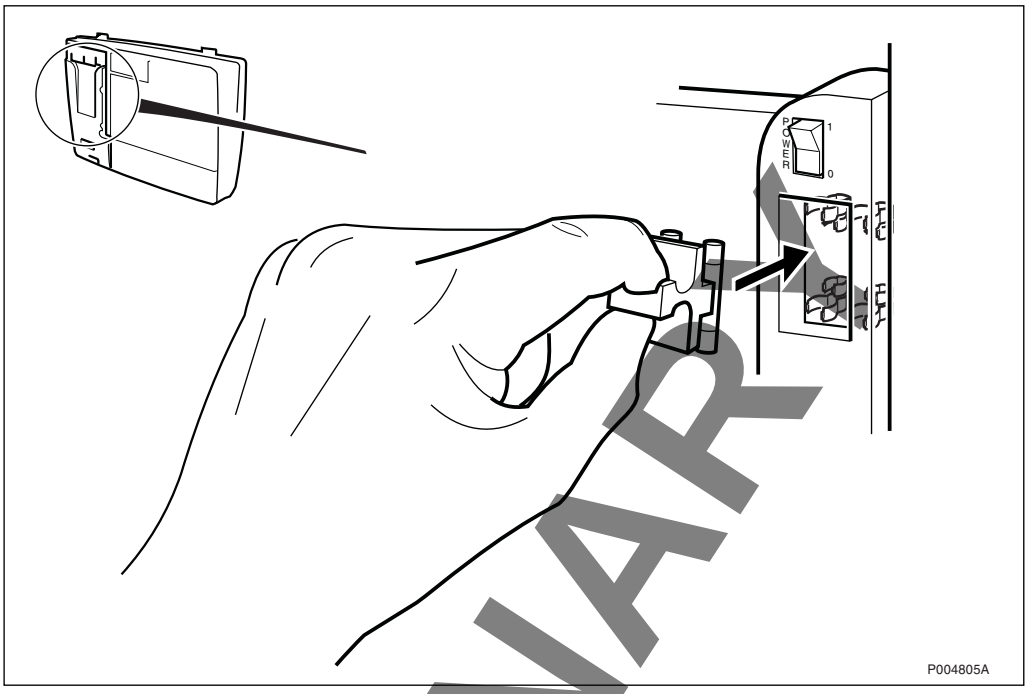


Figure 141

25. Mount the antenna.

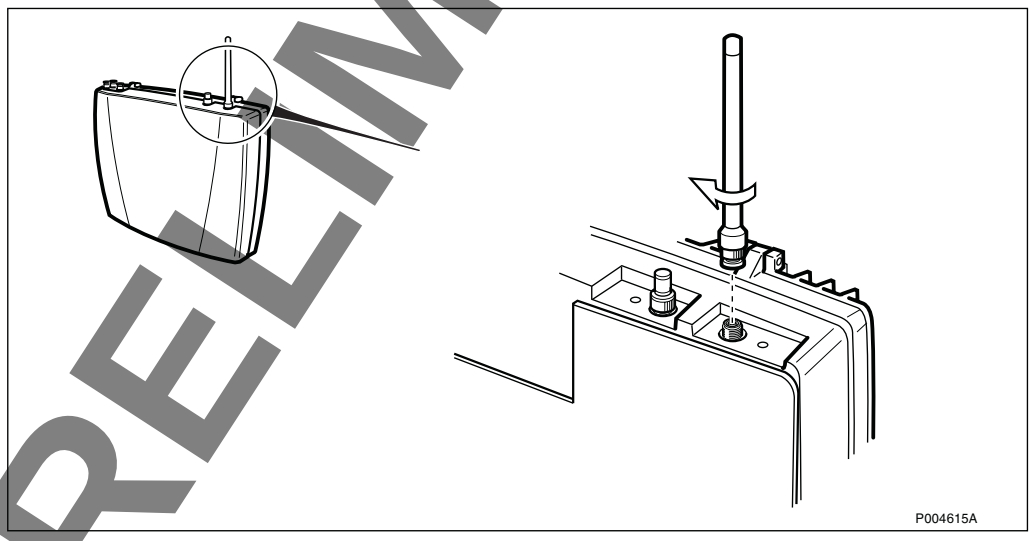


Figure 142

26. Switch on the AC mains power.

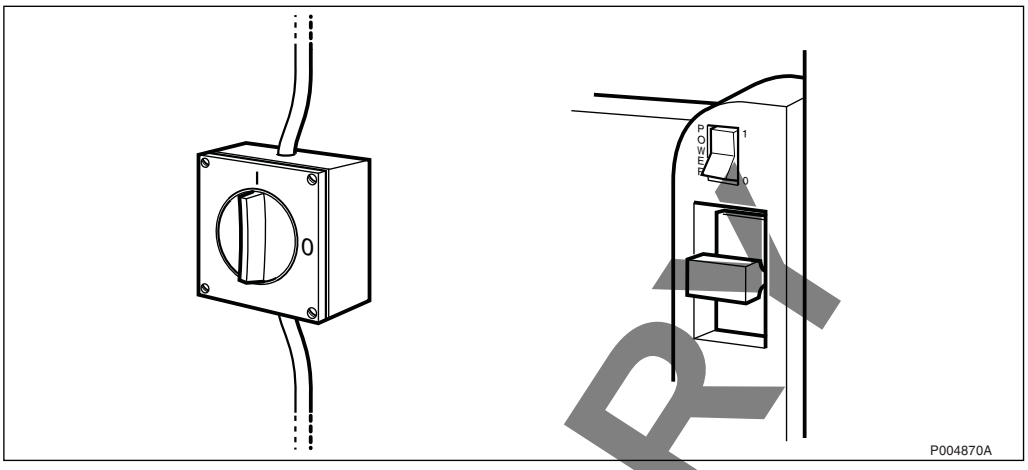


Figure 143

27. Set the RBS in Local mode.

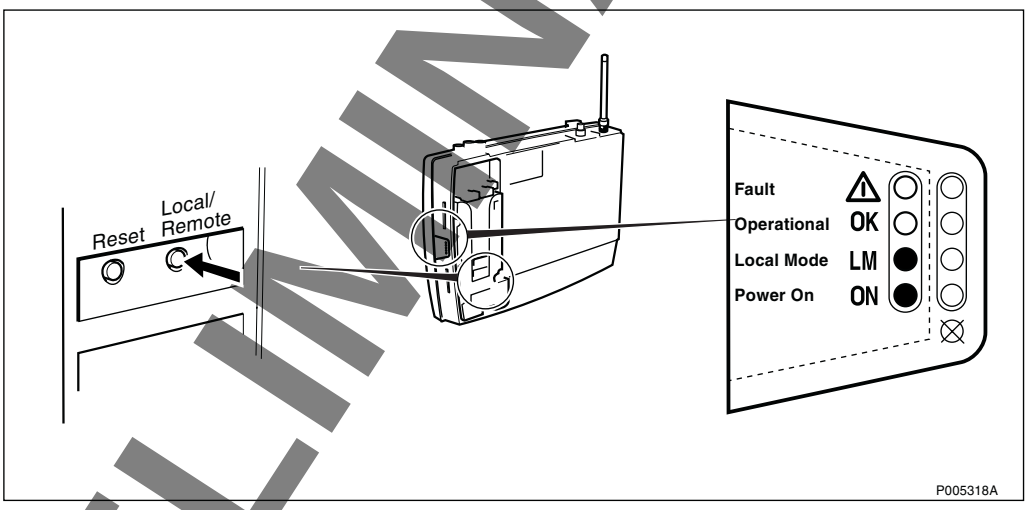


Figure 144

28. Connect the OMT.

    The BSC simulator, BSCSimII, is shown below, but any PC with OMT software (R7C or later) will do.

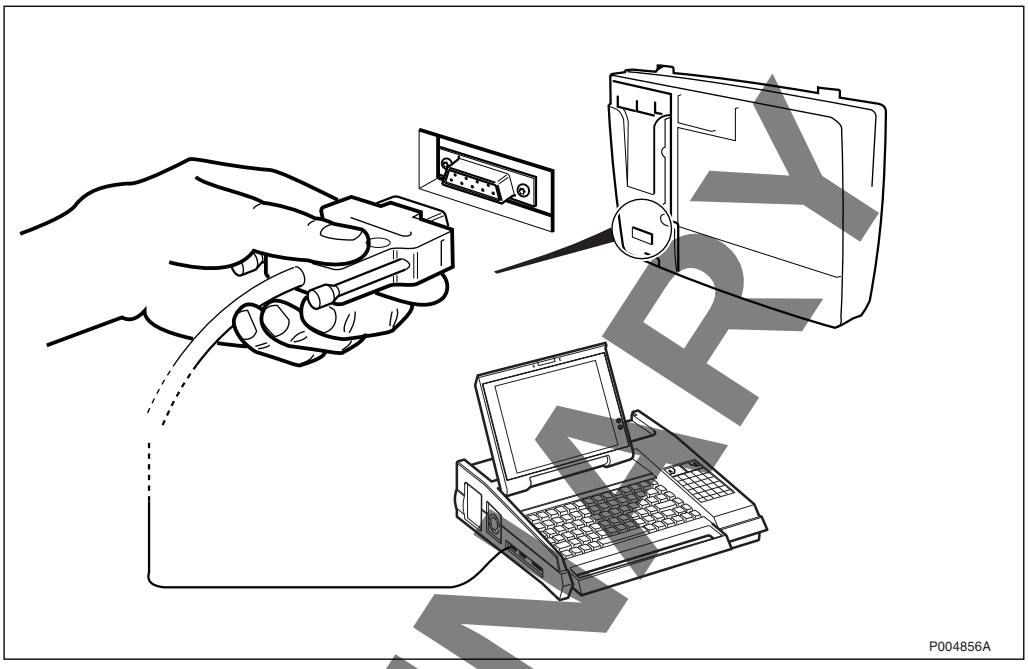


Figure 145 Connecting the OMT using BSCSimII

29. Start the OMT, and check that the correct IDB is installed.

    In addition to frequency, transmission alternative, and RBS type, the following parameters are to be checked:

- CRC-4
- LBO (T1)
- TNOM USE
- TNOM NODE ID
- TNOM TIMESLOT
- TEI (Cascade)

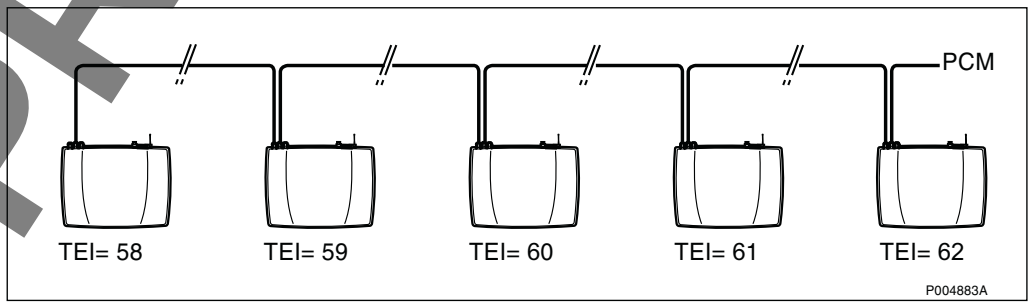


Figure 146

For further information, see *OMT User's Manual*.

30. Make an MS Test Call.

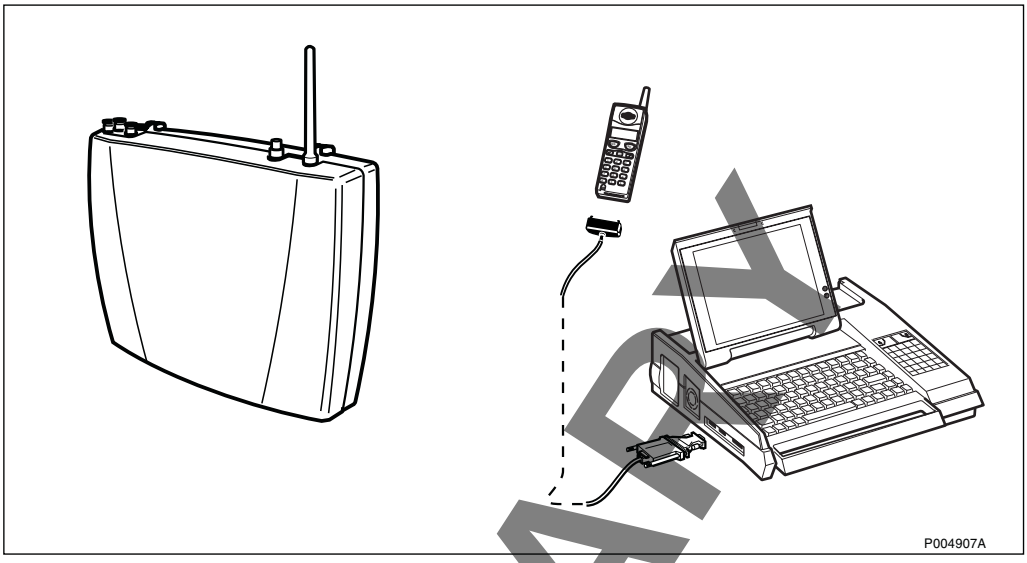


Figure 147

31. Press the Local/Remote button to set the RBS in Remote mode.

    Check that contact has been established with the BSC (The Local mode indicator is OFF).

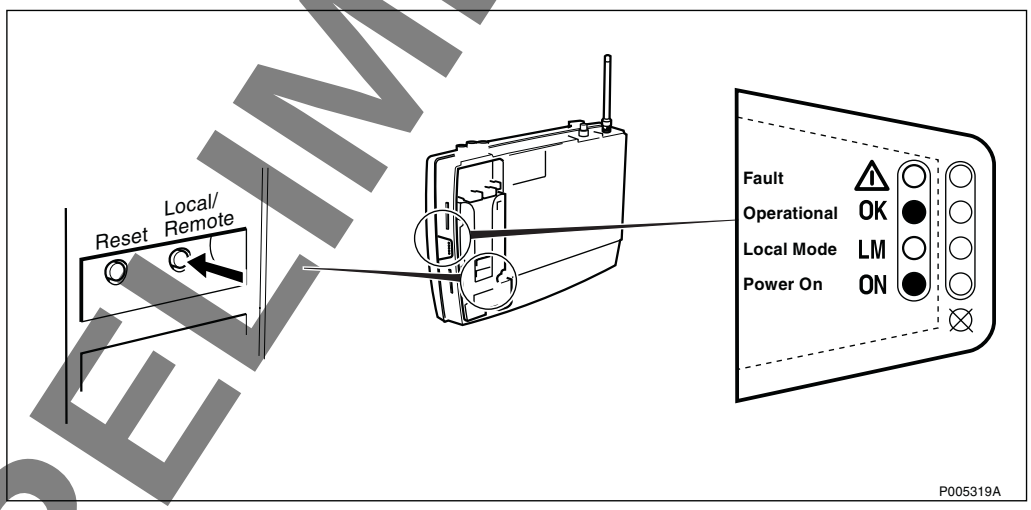


Figure 148

32. Mount the front cover.

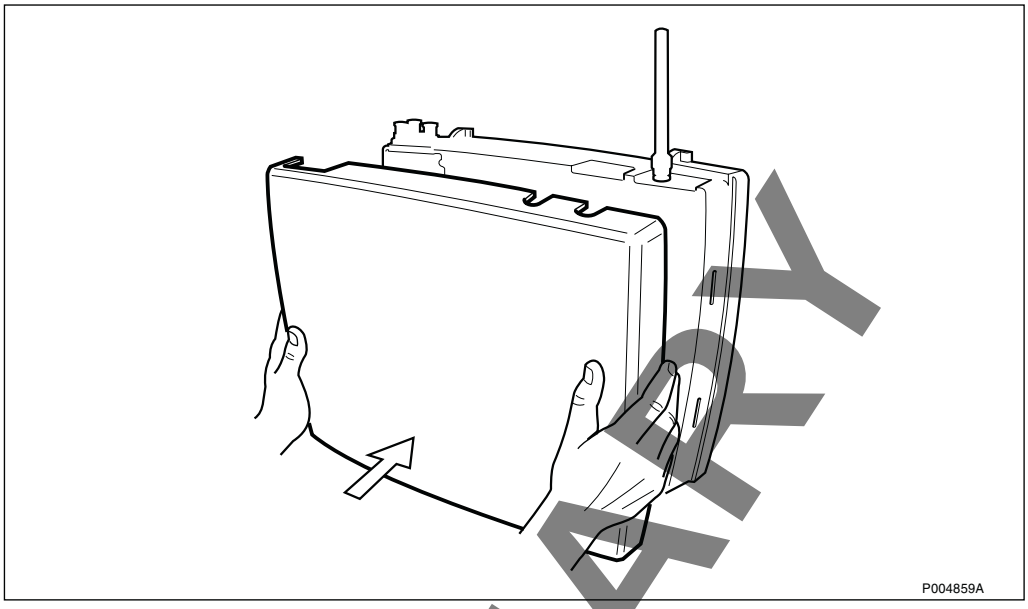


Figure 149

33. To finish the work, continue with section Section 5.5 Concluding Routines on page 147.

5.3.2 Replacement of Fuses in Radio Cabinet

Checking the Fuses

1. Remove the front cover.

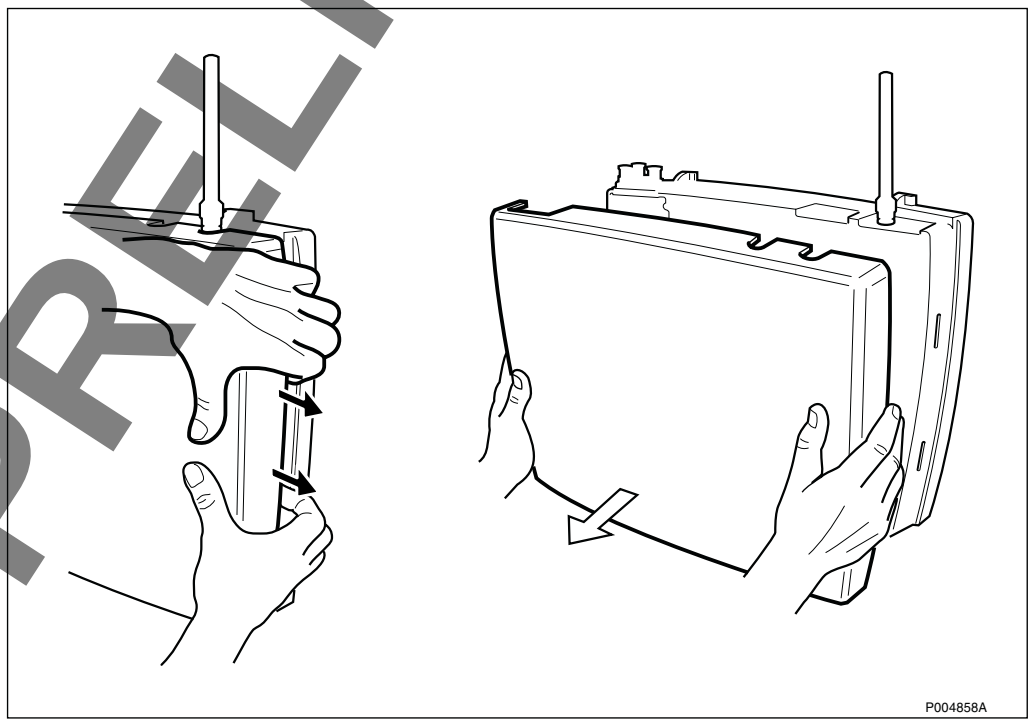


Figure 150

2. Remove the installation box cover.

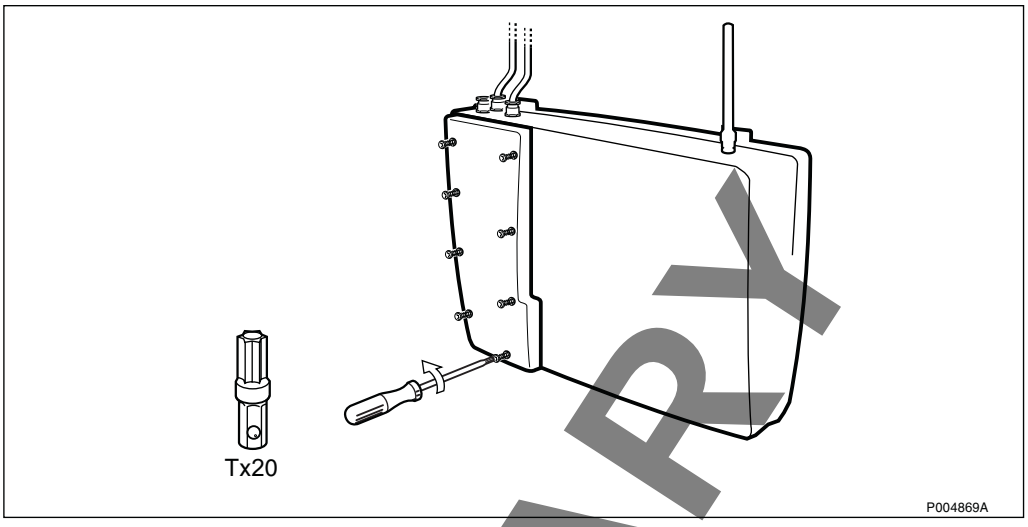


Figure 151

3. Make sure that the AC mains power is switched on.

   Measure on the AC terminal to verify that the RBS has voltage.

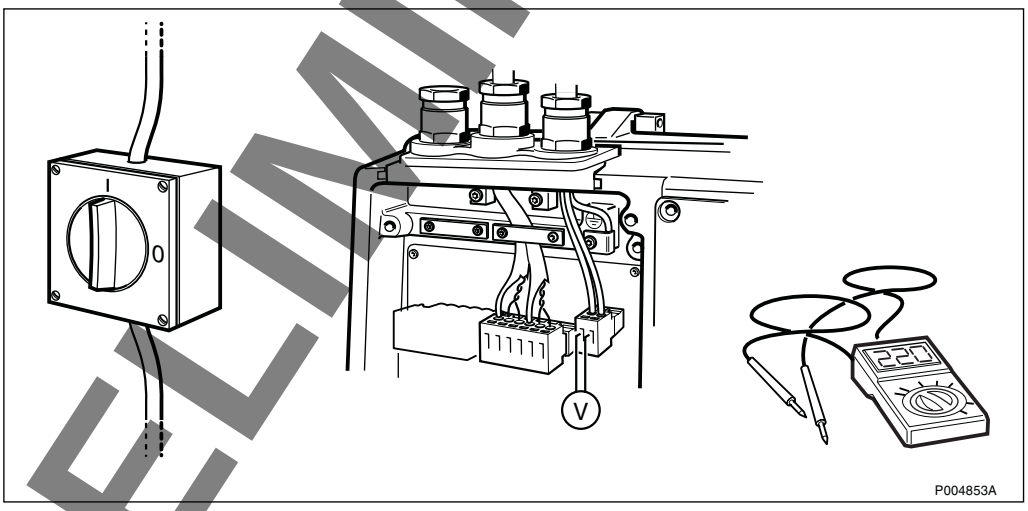


Figure 152

4. Switch off the AC power.

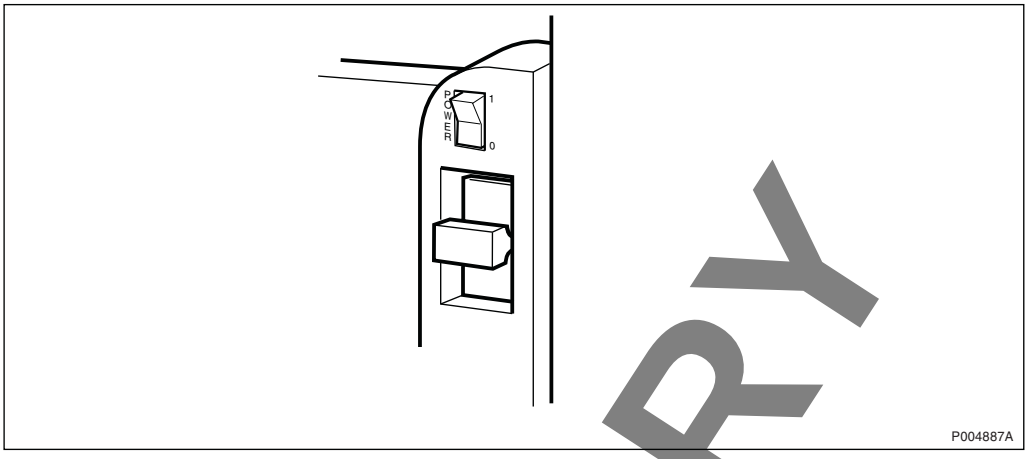


Figure 153

5. Pull out the fuse holder, and check the fuses with an ohmmeter.

   If the fuses are OK, replace the RBS according to instructions on Section 5.3.1 on page 95.

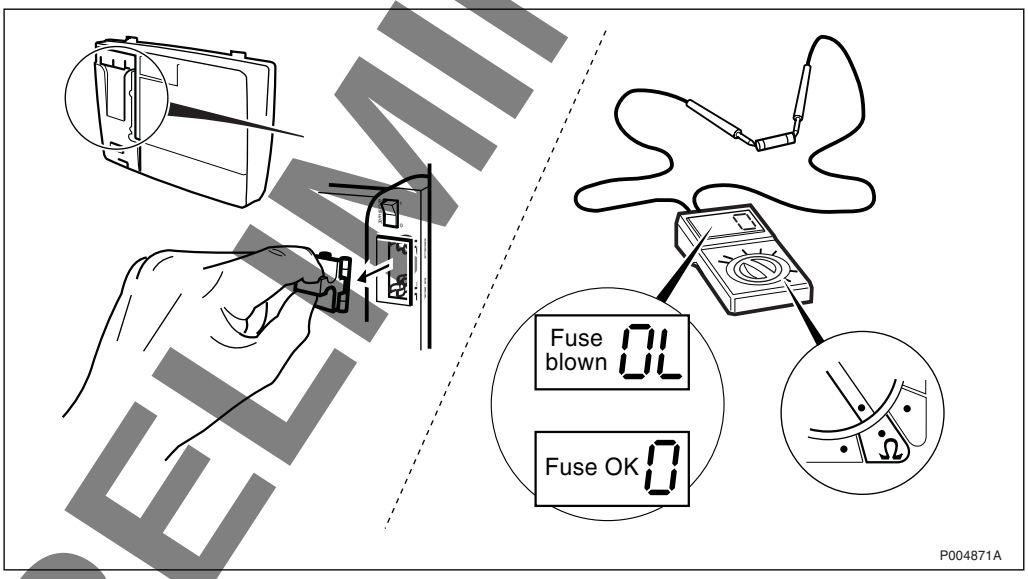


Figure 154

Replacing Fuses

6. Remove the blown fuse, and insert a new in the fuse holder.

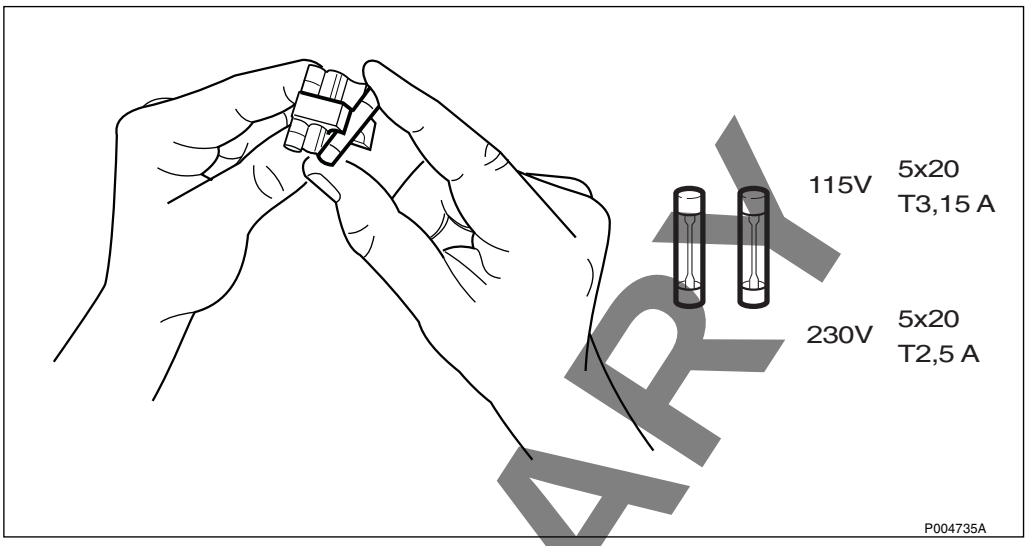


Figure 155

7. Insert the fuse holder in the fuse compartment.

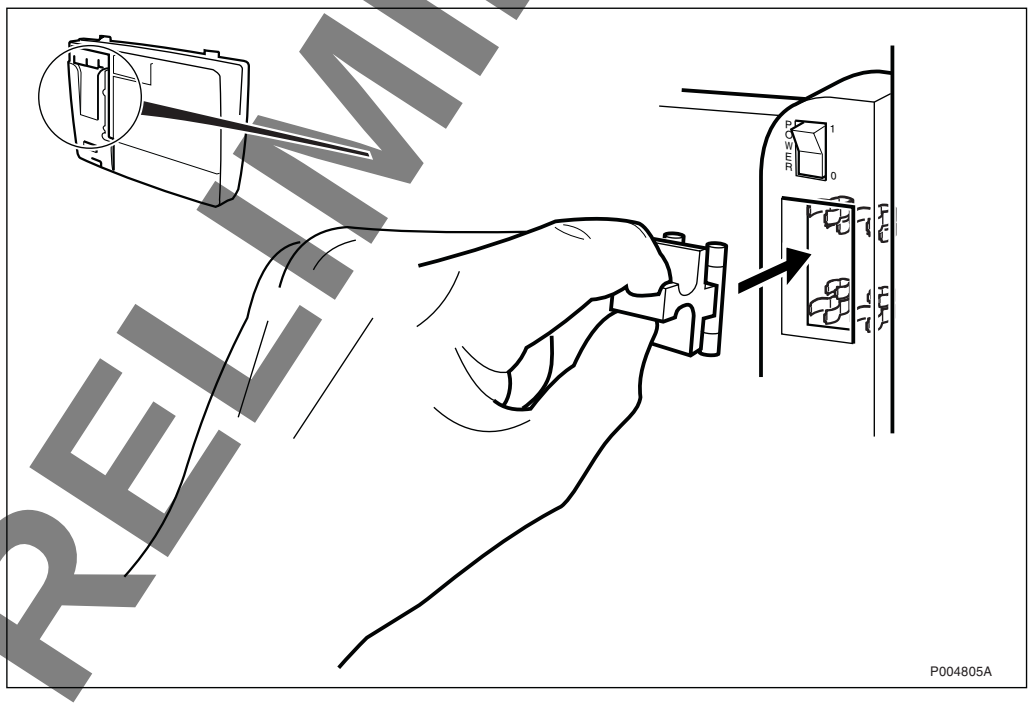


Figure 156

8. Switch on the AC power.

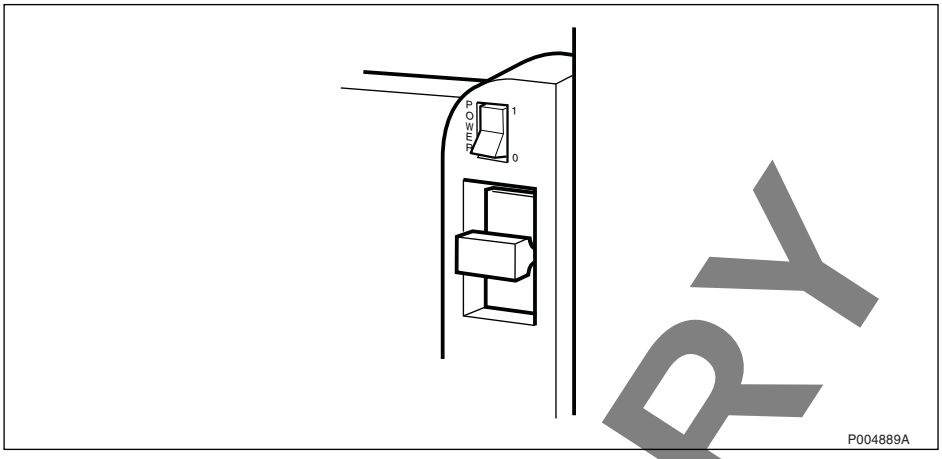


Figure 157

9. Check the status of the LED indicators to verify that the RBS is operational. If not, replace the cabinet according to instructions on Section 5.3.1 on page 95.

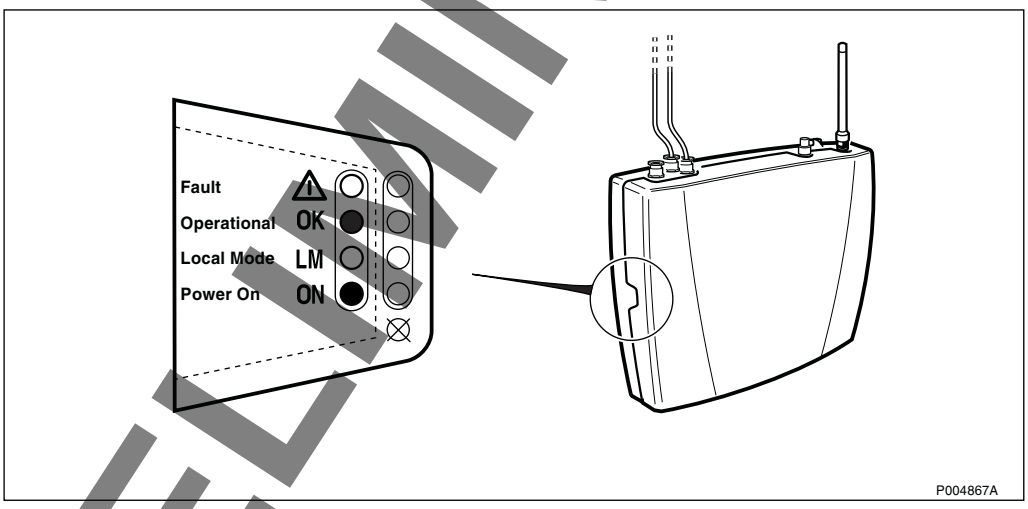


Figure 158

10. Mount the installation box cover and tighten the screws.

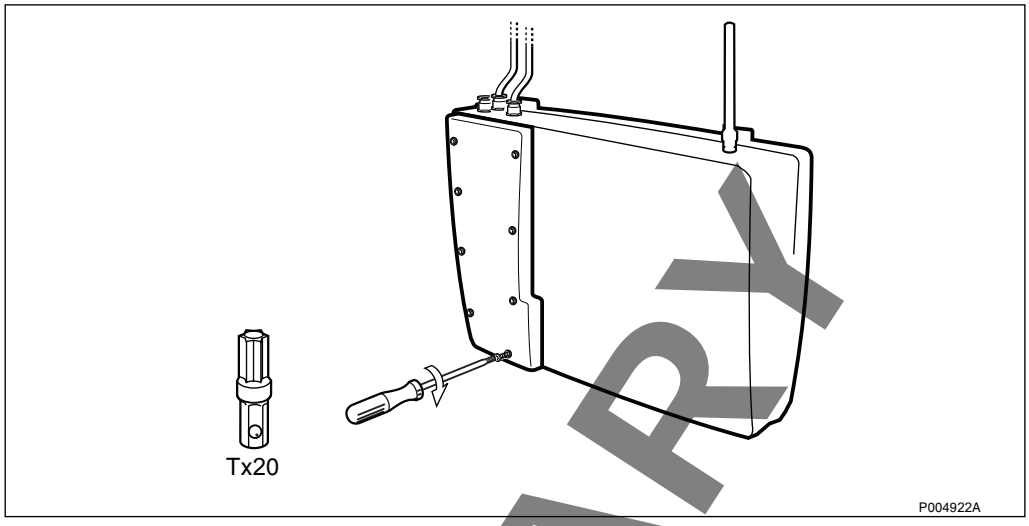


Figure 159

11. Mount the front cover.

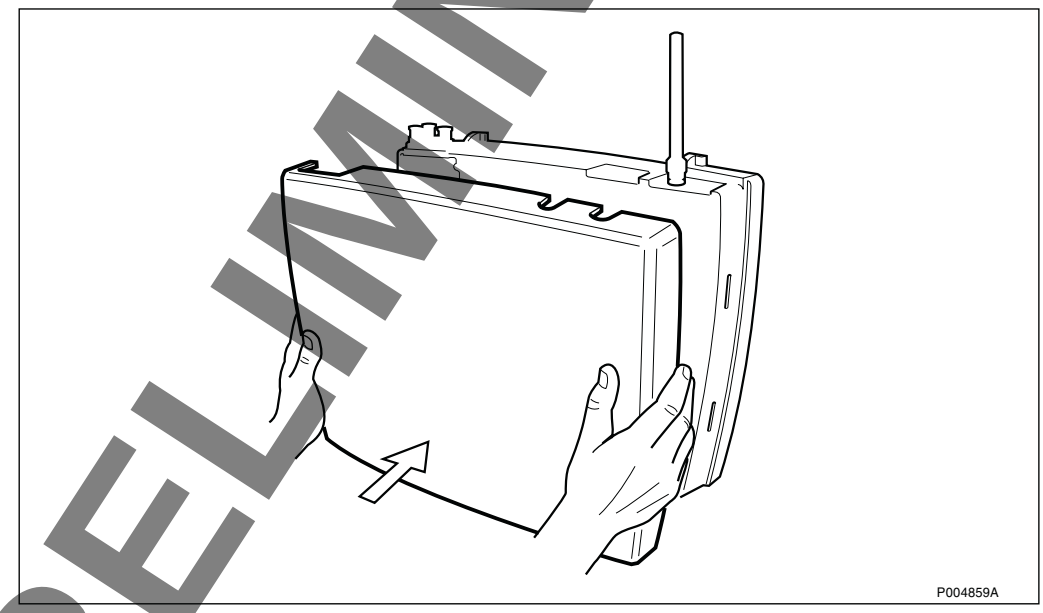


Figure 160

12. To finish the work, continue with section Section 5.5 Concluding Routines on page 147.

5.3.3 Replacement of HDSL Module

1. Remove the front cover on the radio cabinet.

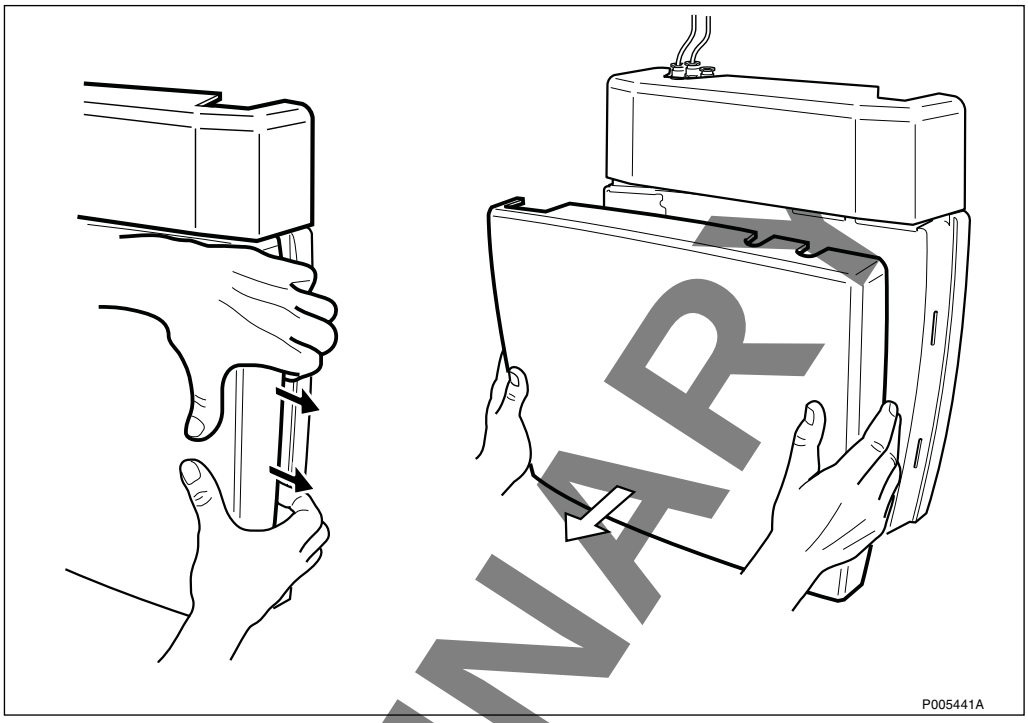


Figure 161

2. Remove the installation box cover on the radio cabinet.

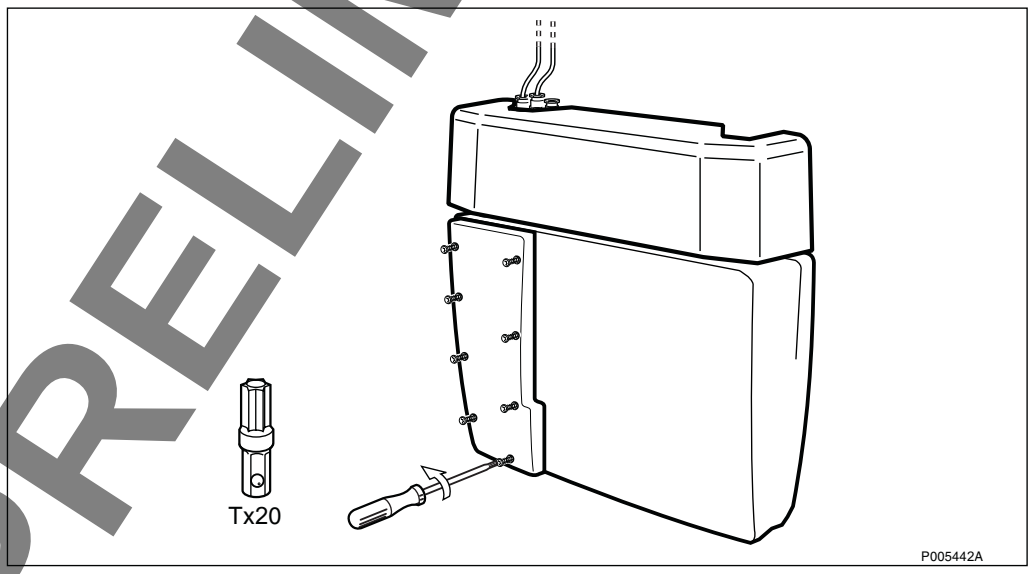


Figure 162

3. Press the Local/Remote button to set the RBS in Local mode.

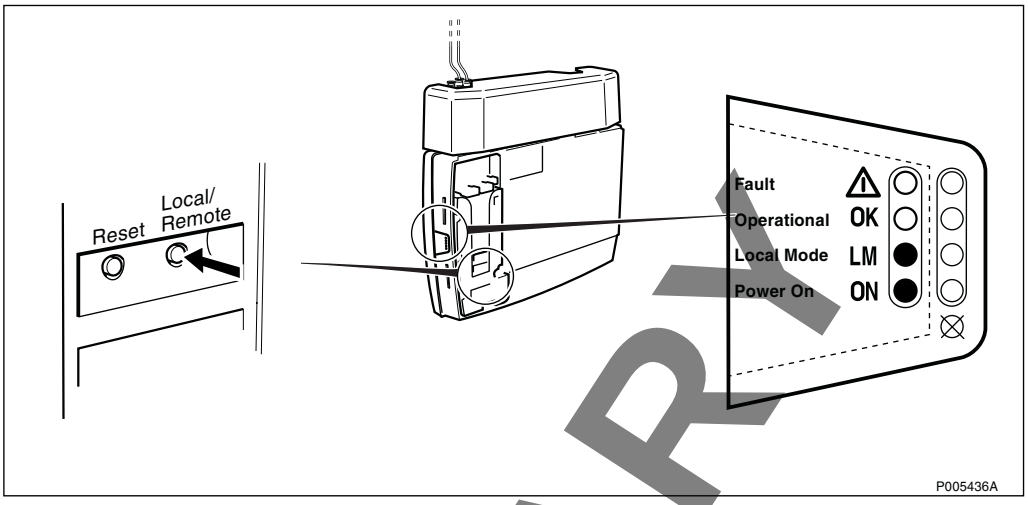


Figure 163

4. Switch off the AC mains power.

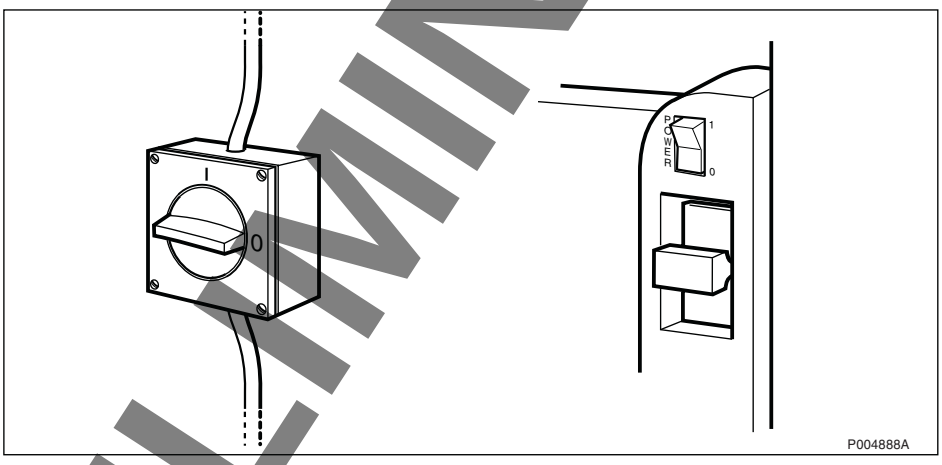


Figure 164

5. Connect the ESD wrist strap.

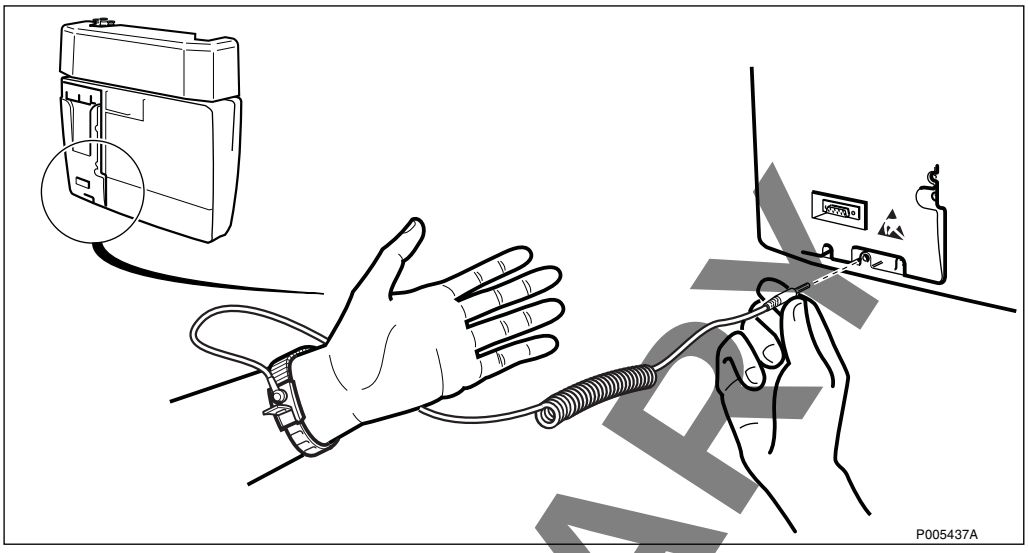


Figure 165

6. Remove the front cover on the module.

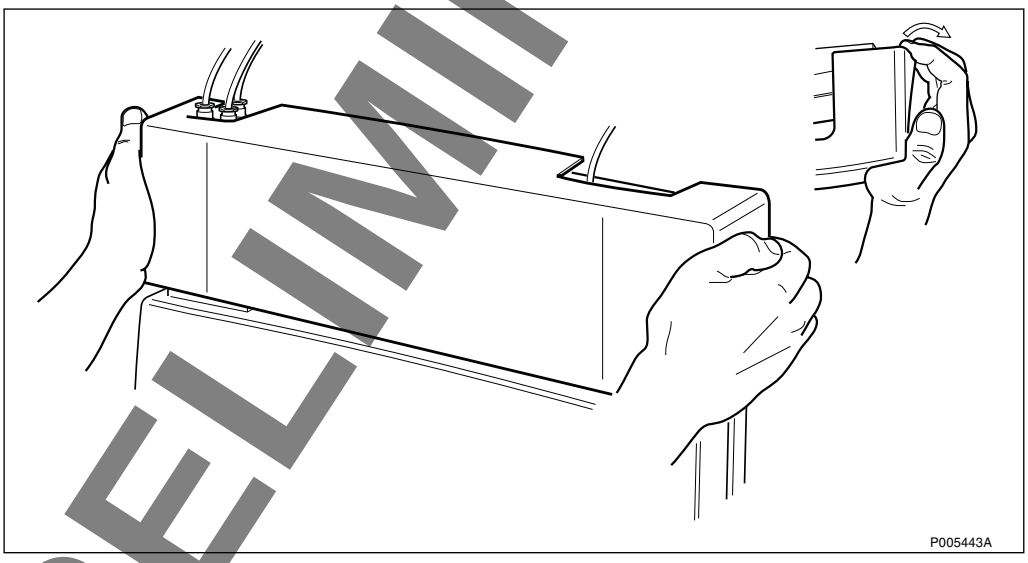


Figure 166

7. Remove the installation box cover on the module.

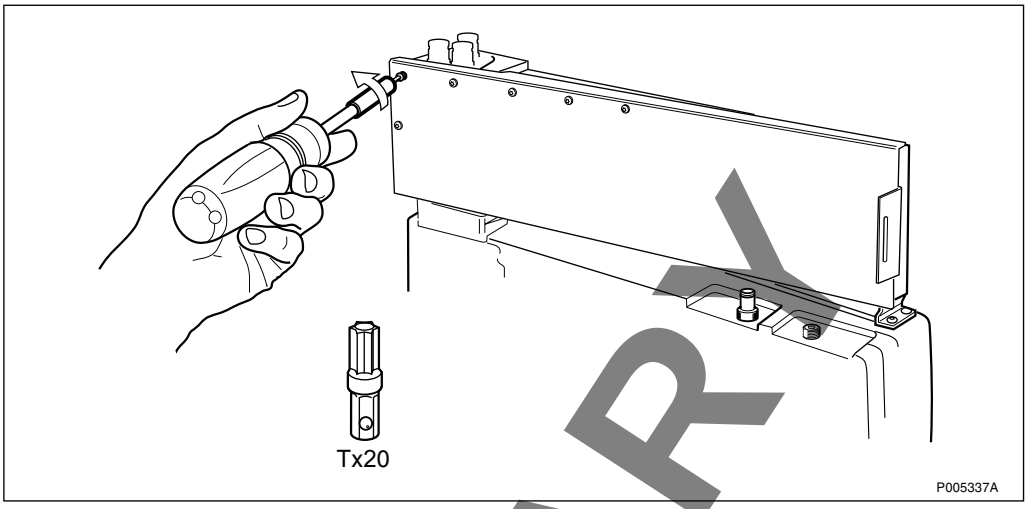


Figure 167

8. Disconnect the cables to the PCM terminals from the module (M1 and M2).

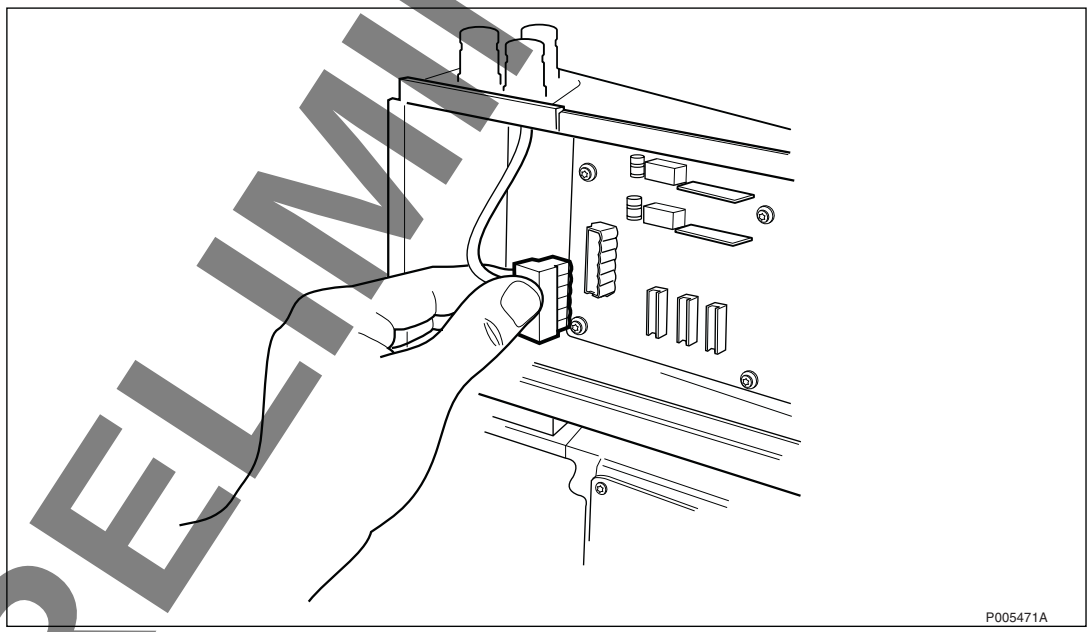


Figure 168

9. Disconnect the transmission cable from the radio cabinet (depending on configuration M2, M4 or M5).

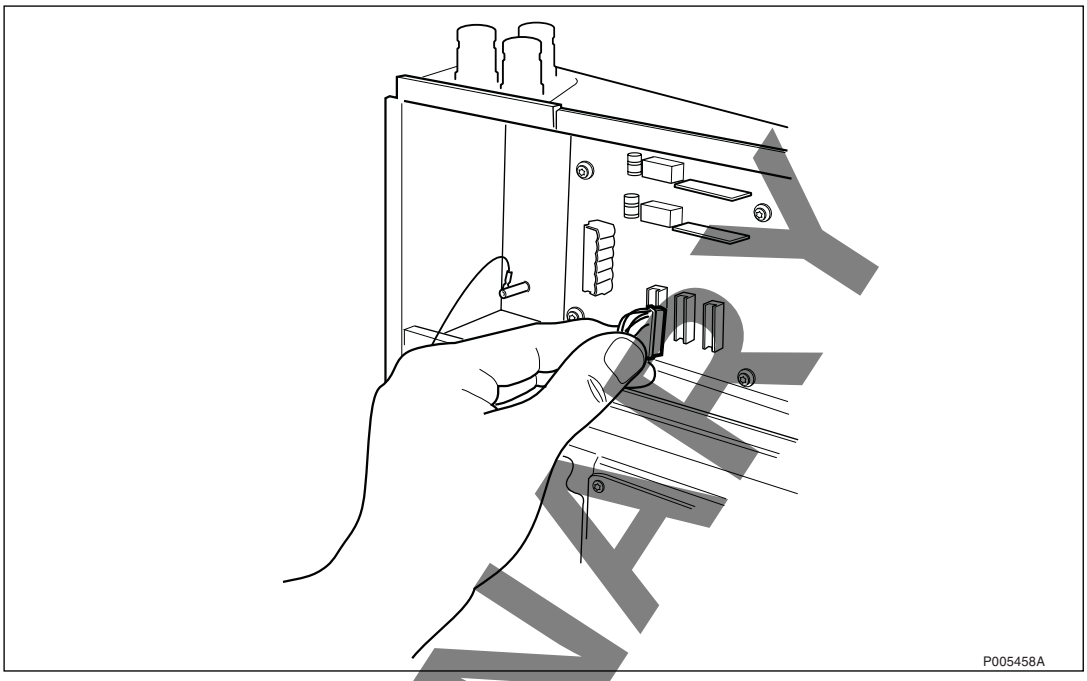


Figure 169

10. Loosen the two flange plates.

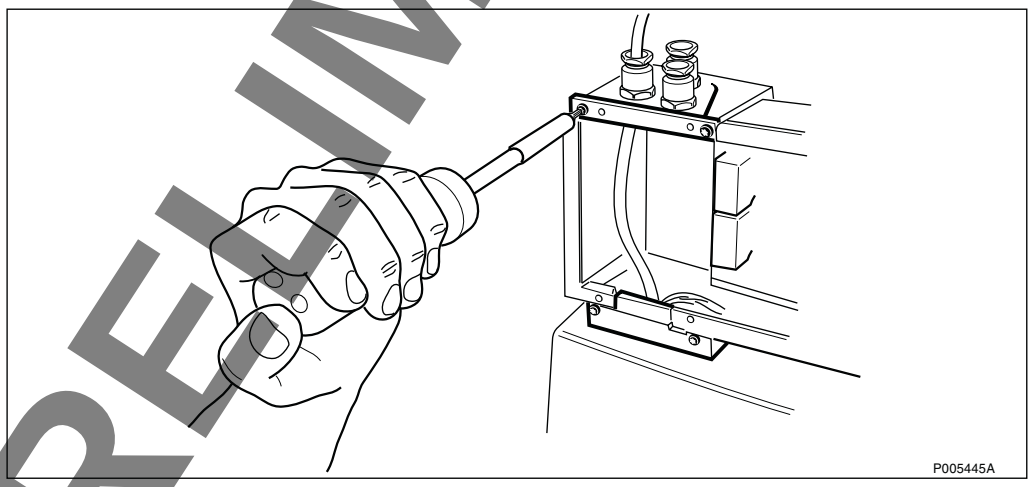


Figure 170

11. Loosen the six screws, two on each side, and two on the cable gland plate.

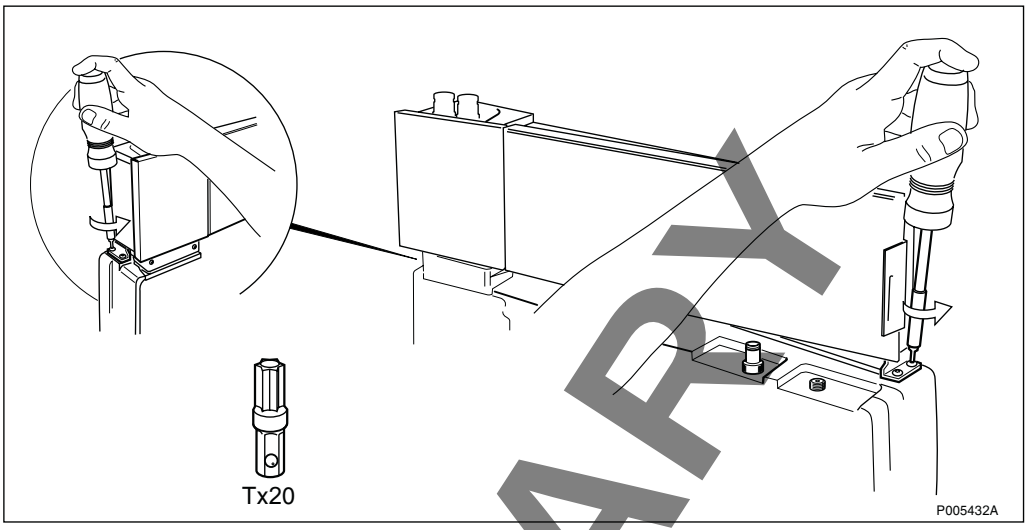


Figure 171

12. Carefully remove the module without damaging any cables.

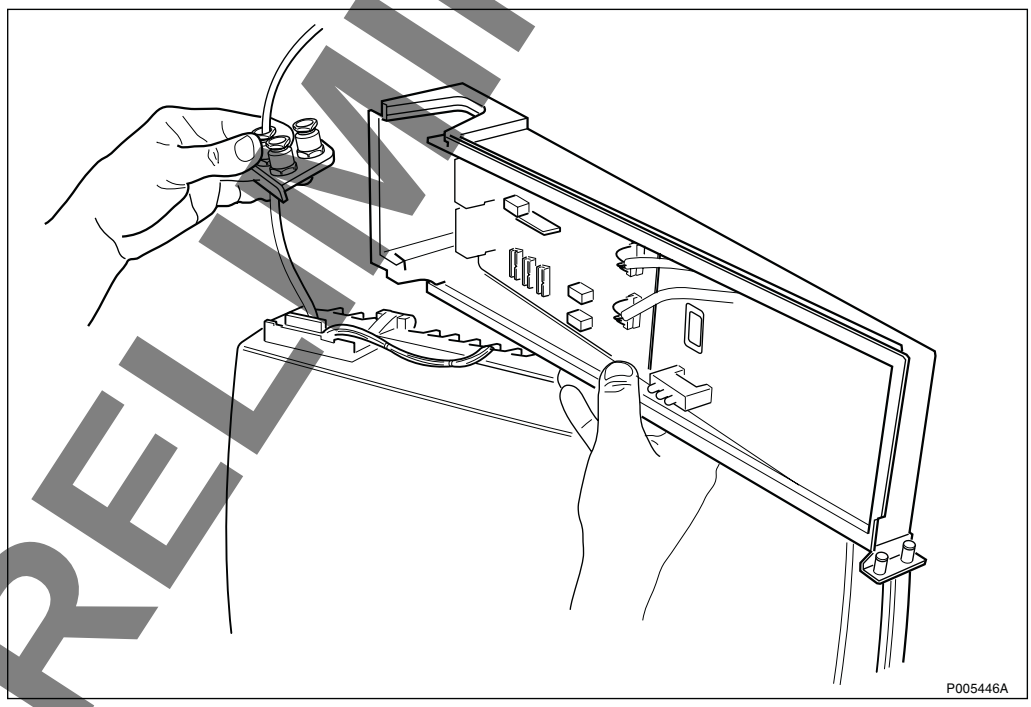


Figure 172

13. Configure the new HDSL module according to the configuration used for the replaced module.

    For further information on DIP-switch settings, refer to chapter Installation and Tests.

14. Install the new HDSL module (follow the steps above in reverse order).

15. Switch on the AC mains power.

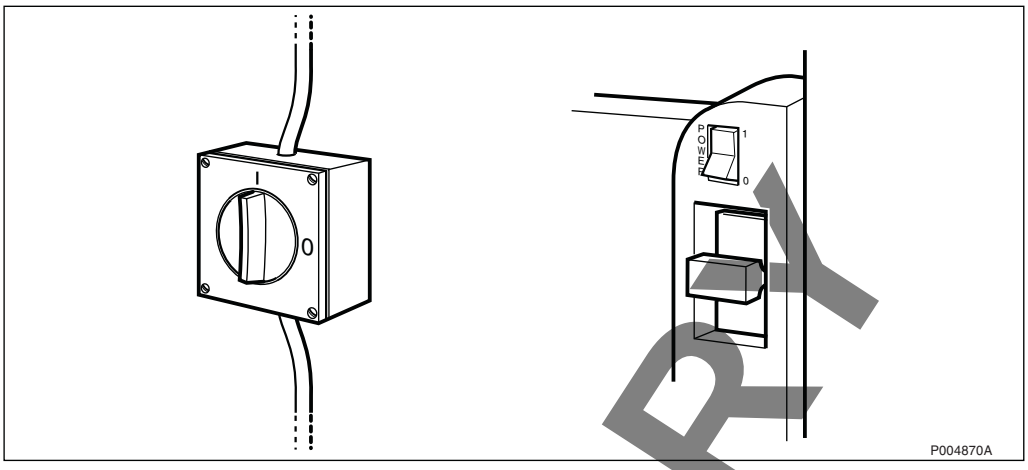


Figure 173

16. Press the Local/Remote button to set the RBS in Remote mode.

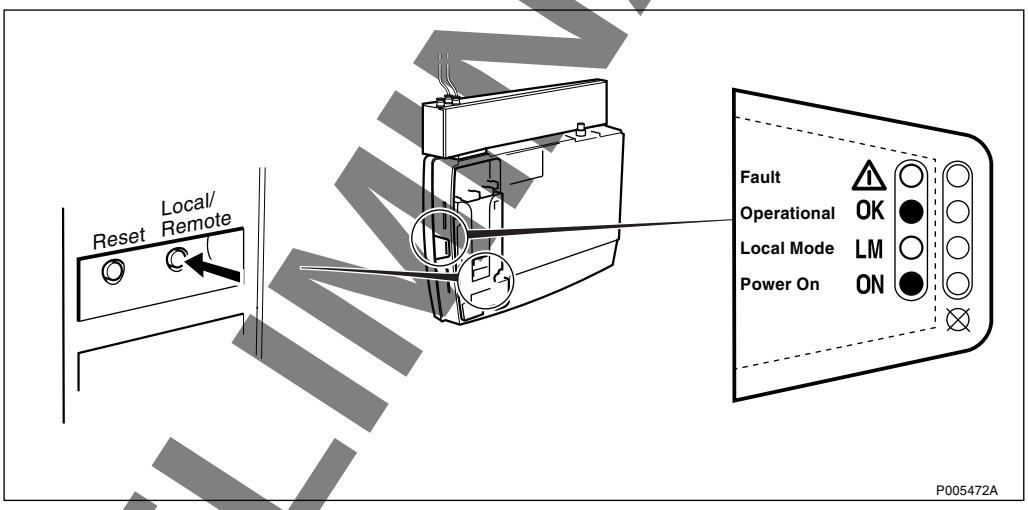


Figure 174

17. Remount the front cover on the module.

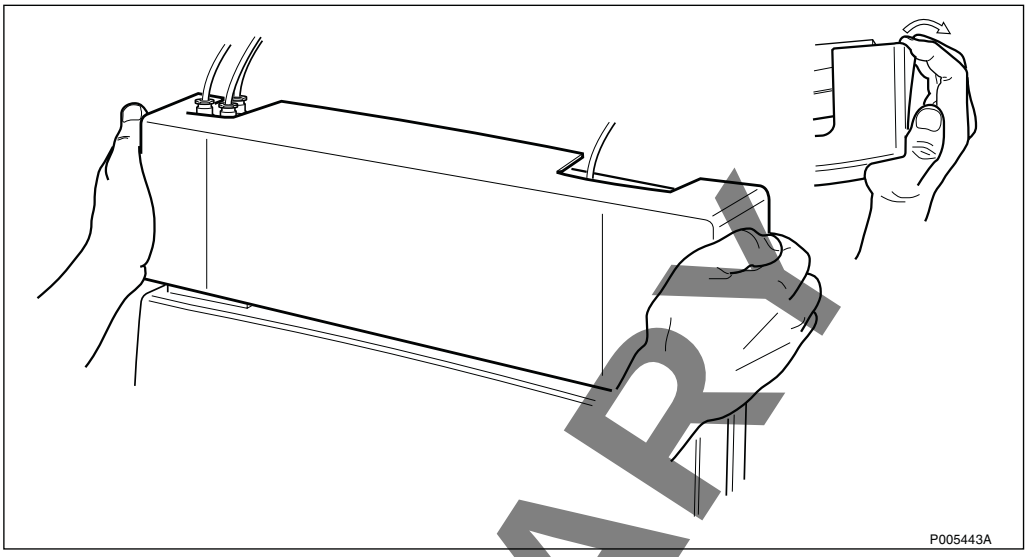


Figure 175

18. Remount the installation box cover on the radio cabinet.

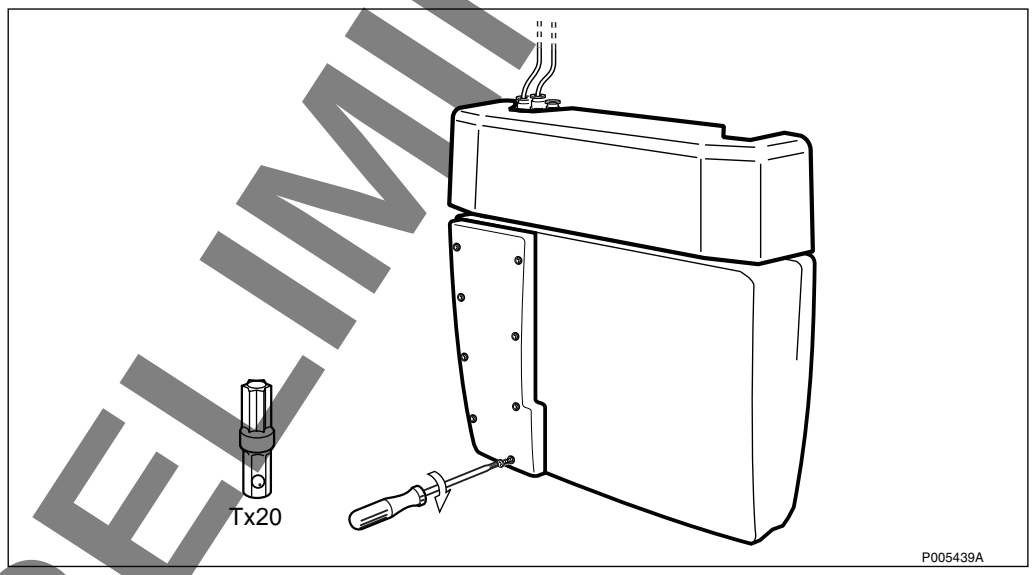


Figure 176

19. Remount the front cover on the radio cabinet.

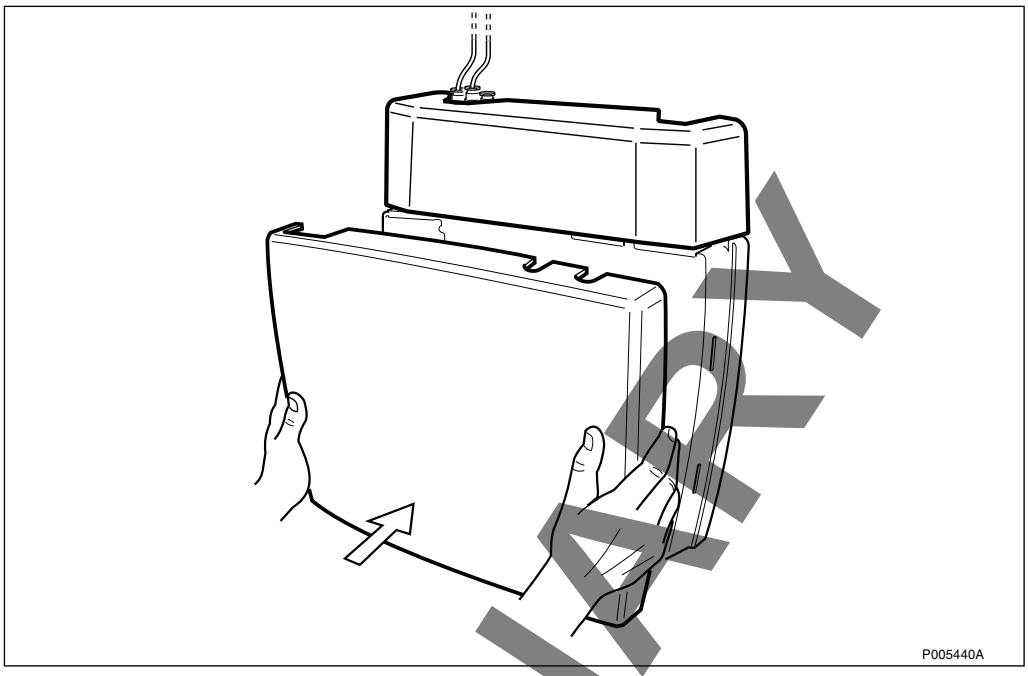


Figure 177

20. Check the status of the RBS, see Table 18 on page 147.

5.3.4 Replacement of AGW

1. Remove the front cover on the radio cabinet.

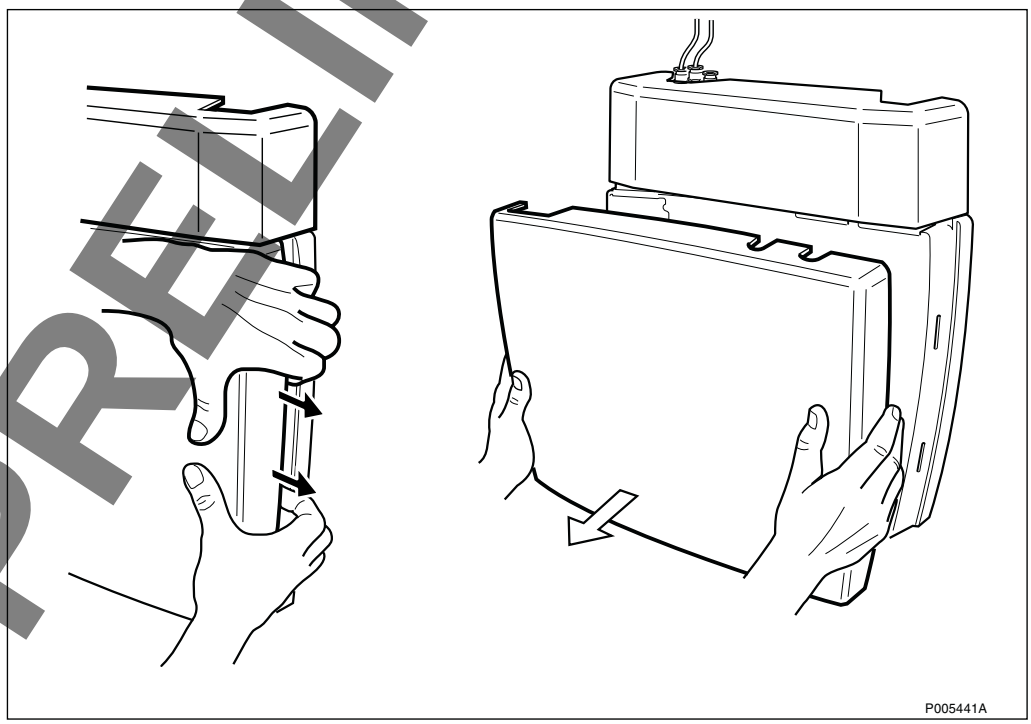


Figure 178

2. Remove the installation box cover on the radio cabinet.

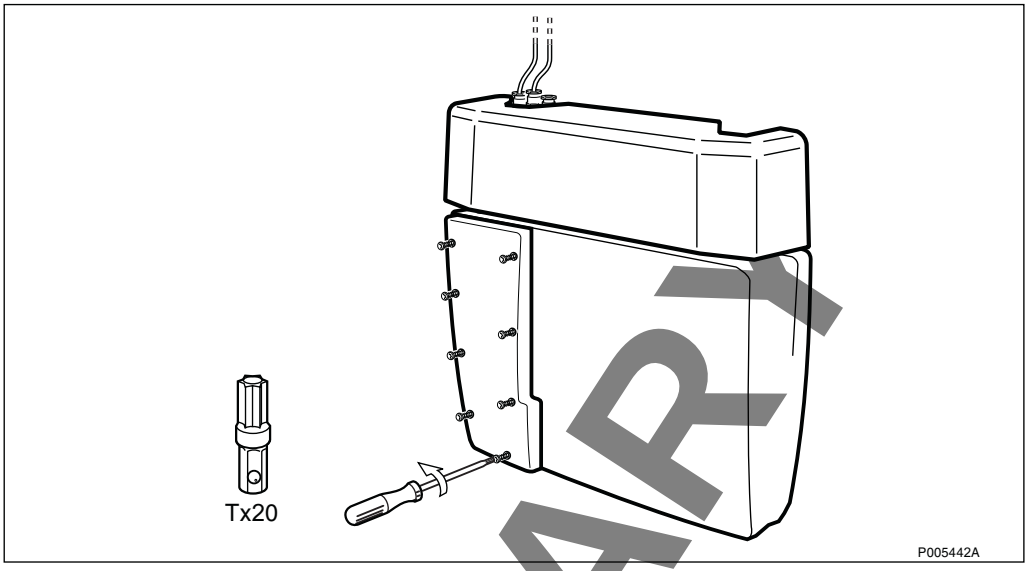


Figure 179

3. Press the Local/Remote button to set the RBS in Local mode.

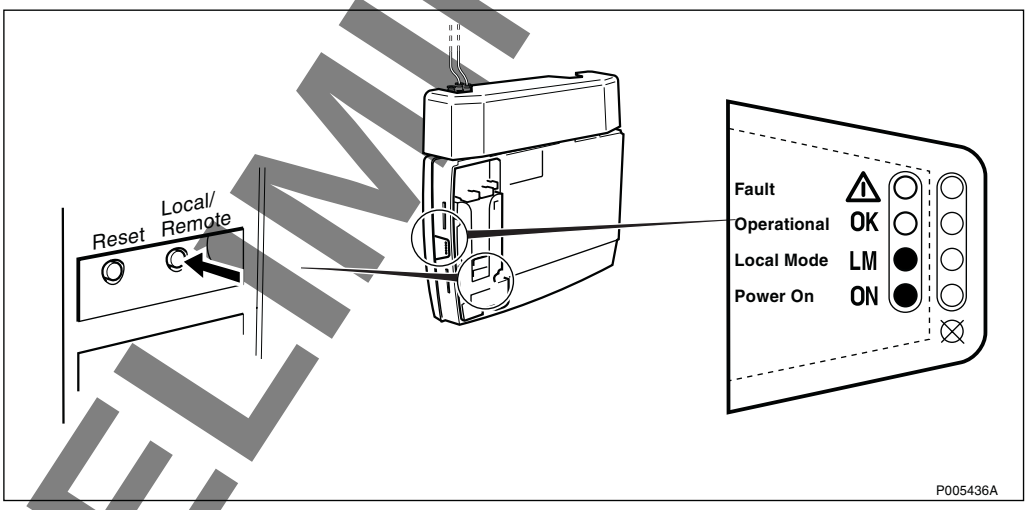


Figure 180

4. Switch off the AC mains power.

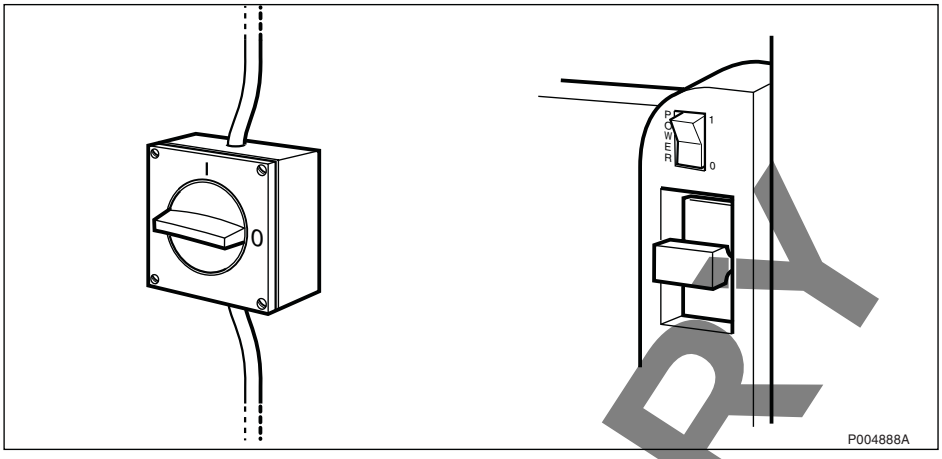


Figure 181

5. Connect the ESD wrist strap.

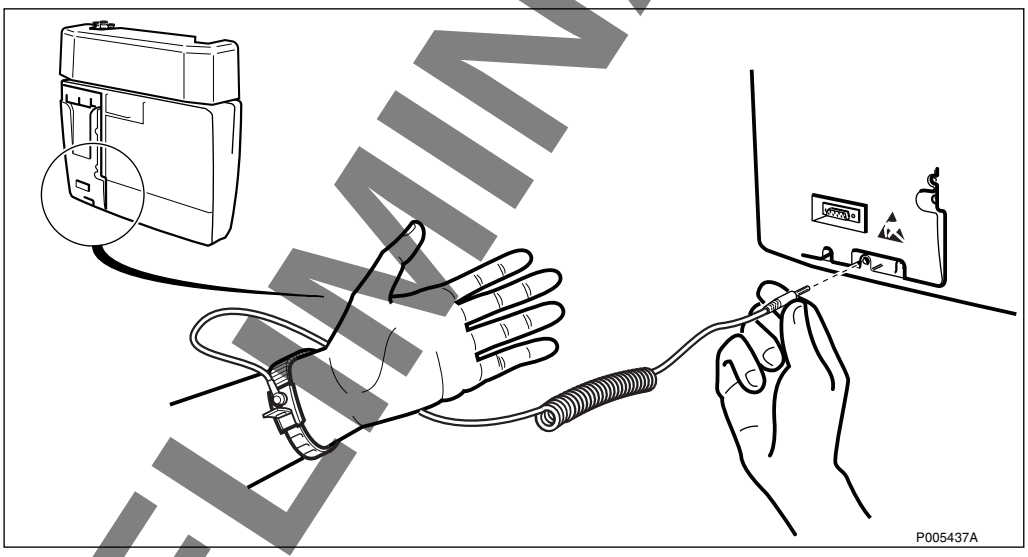


Figure 182

6. Remove the front cover on the AGW.

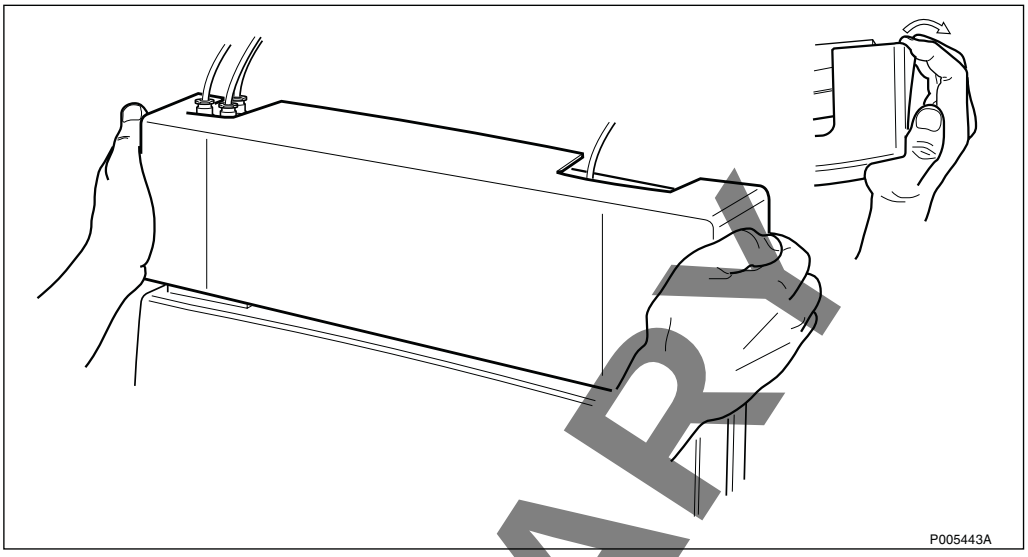


Figure 183

7. Remove the installation box cover on the AGW.

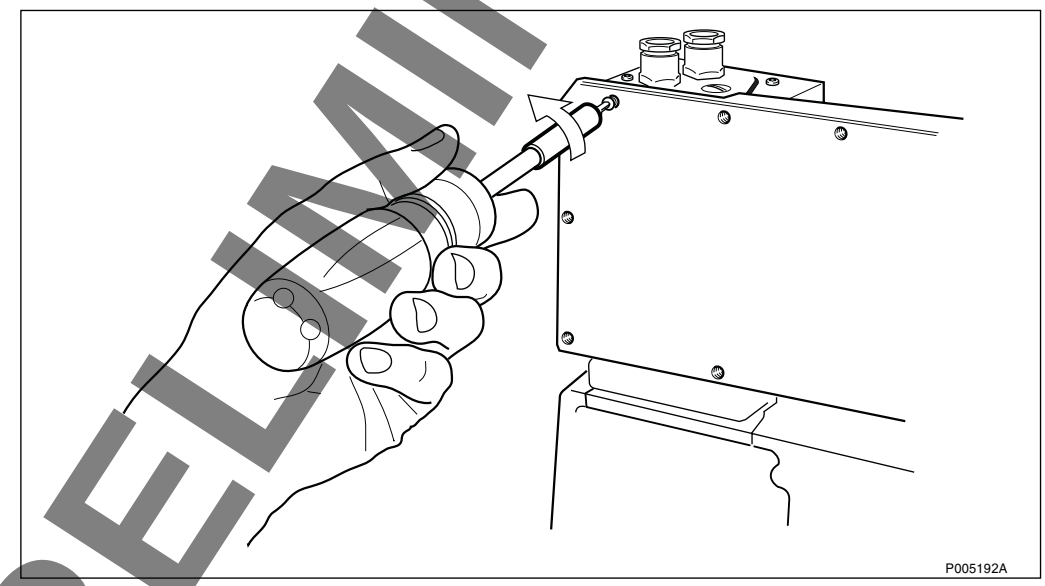


Figure 184

8. Disconnect the LAN cable to the AGW (Ethernet).

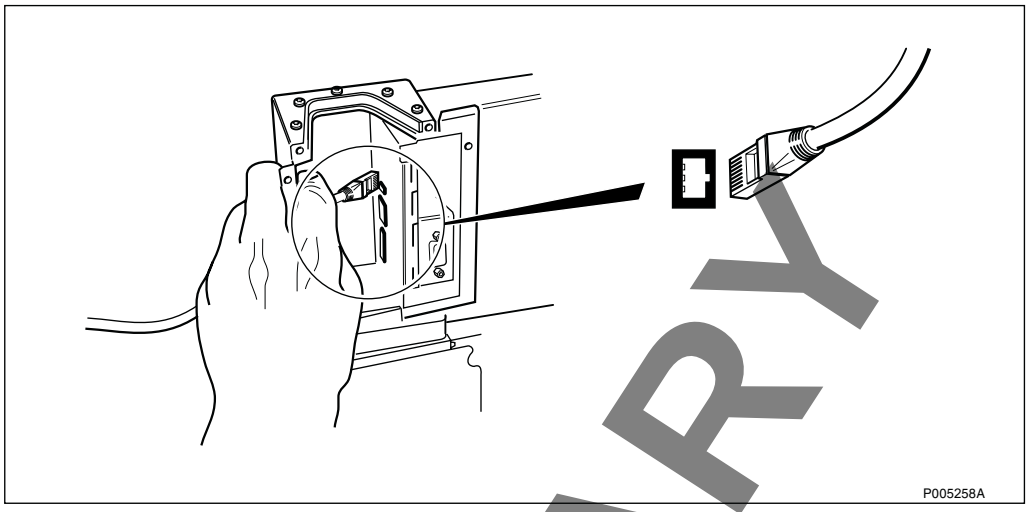


Figure 185

9. Disconnect the transmission cable from the radio cabinet (E1/T1).

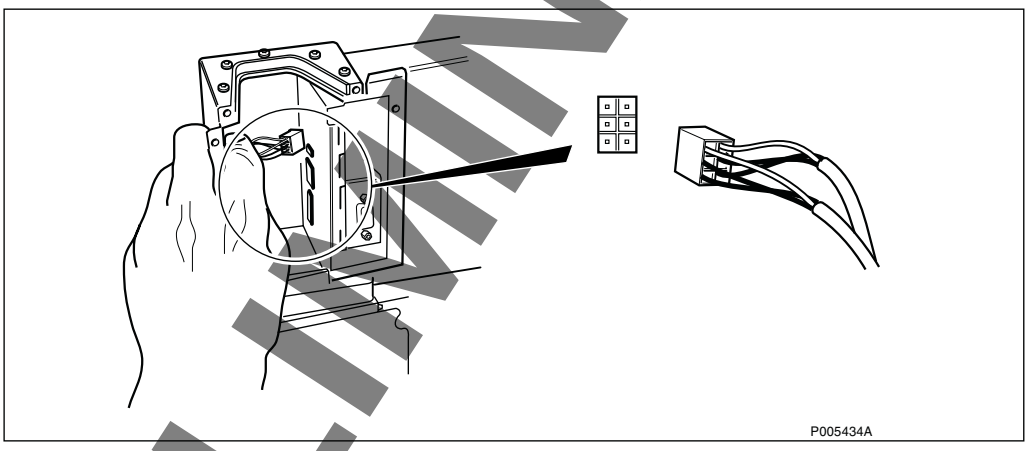


Figure 186

10. Disconnect the DC cable from the AGW (7 V DC).

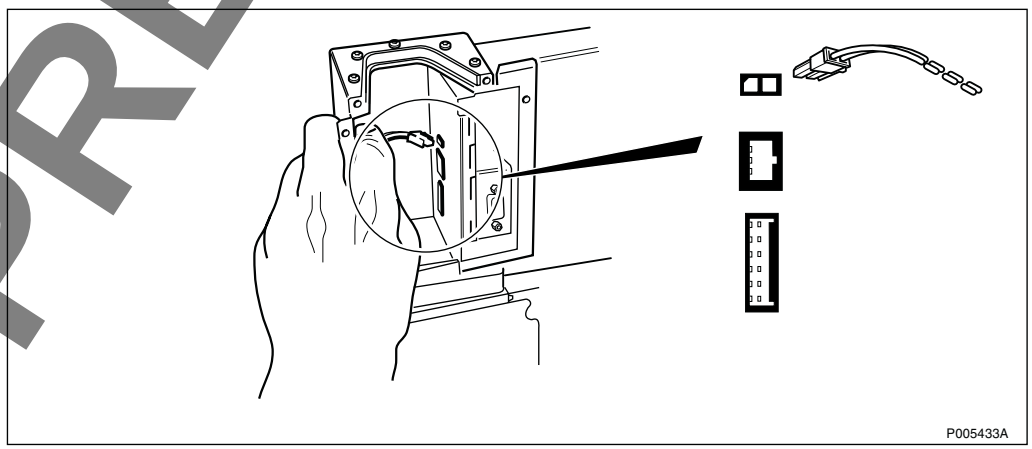


Figure 187

11. Loosen the two flange plates.

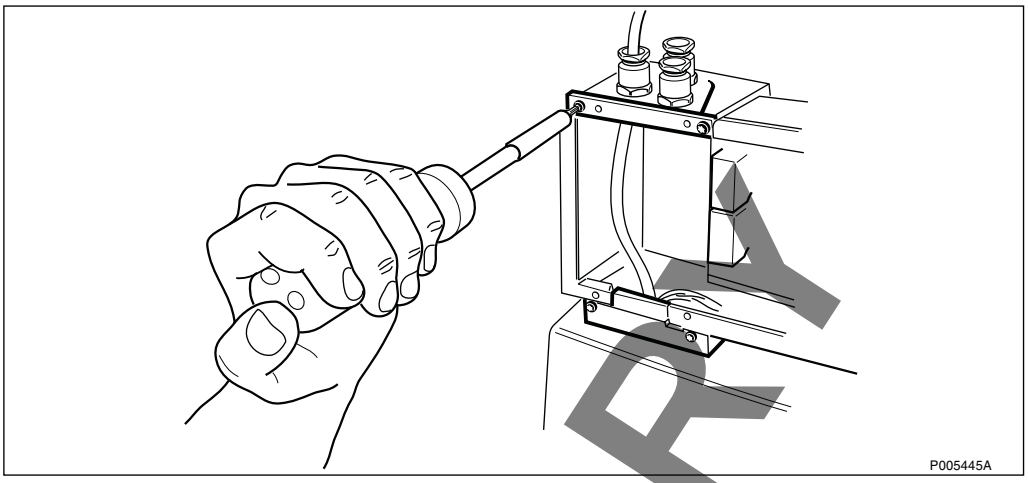


Figure 188

12. Loosen the six screws, two on each side, and two on the cable gland plate.

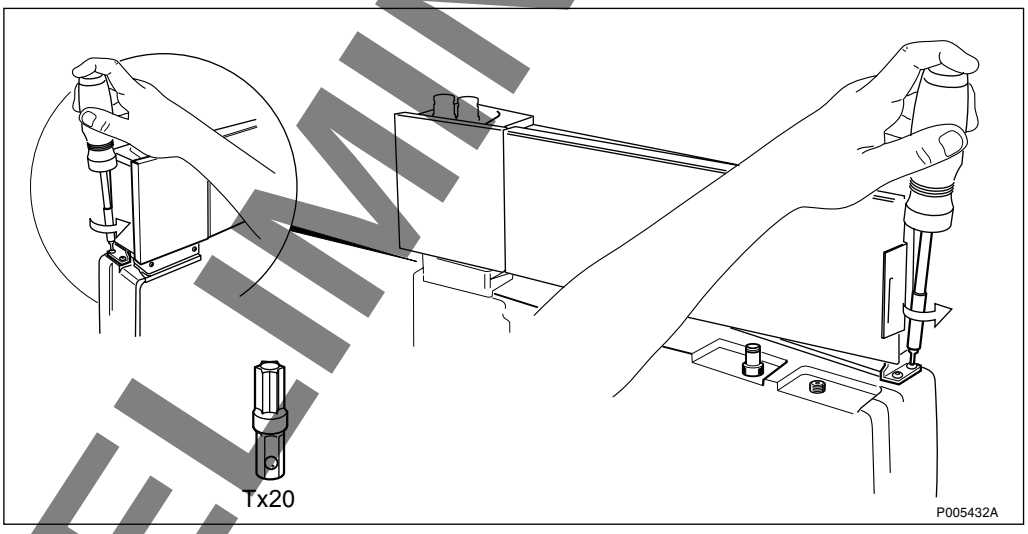


Figure 189

13. Carefully remove the AGW without damaging any cables.

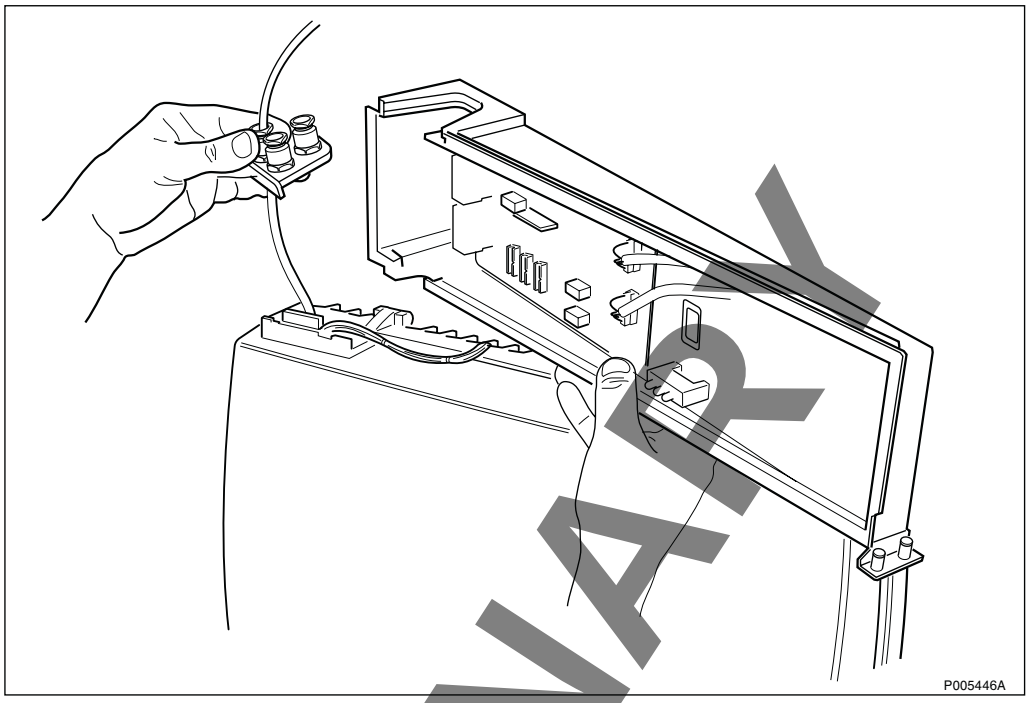


Figure 190

14. Install the new AGW (follow the steps above in reverse order).

15. Switch on the AC mains power.

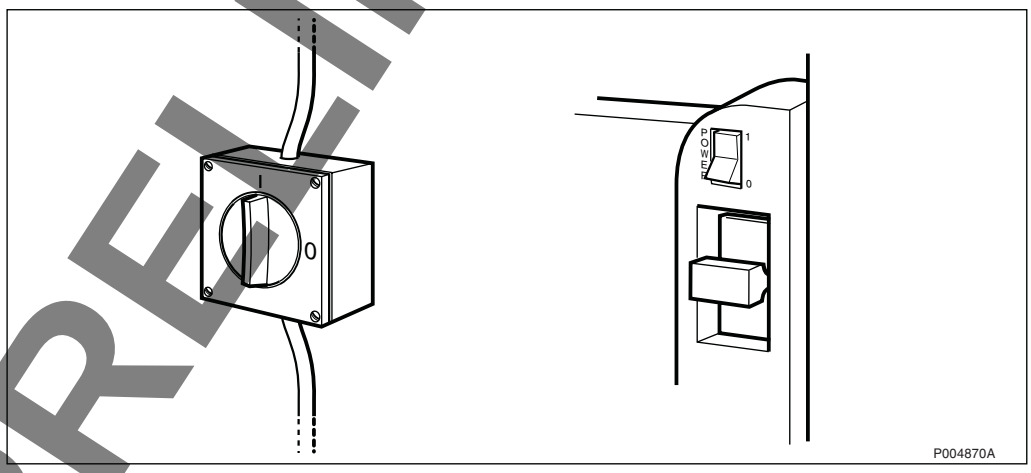


Figure 191

16. Press the Local/Remote button to set the RBS in Remote mode.

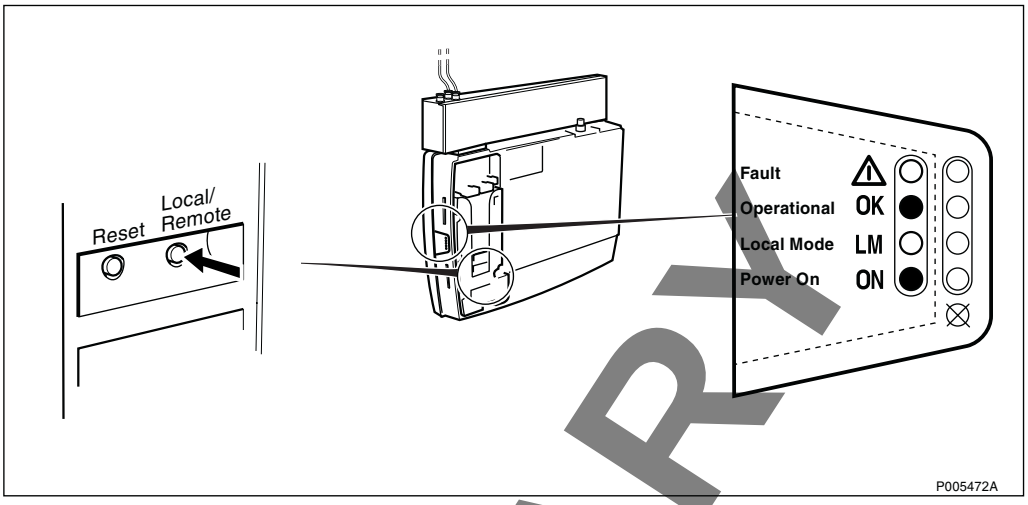


Figure 192

17. Remount the front cover on the AGW.

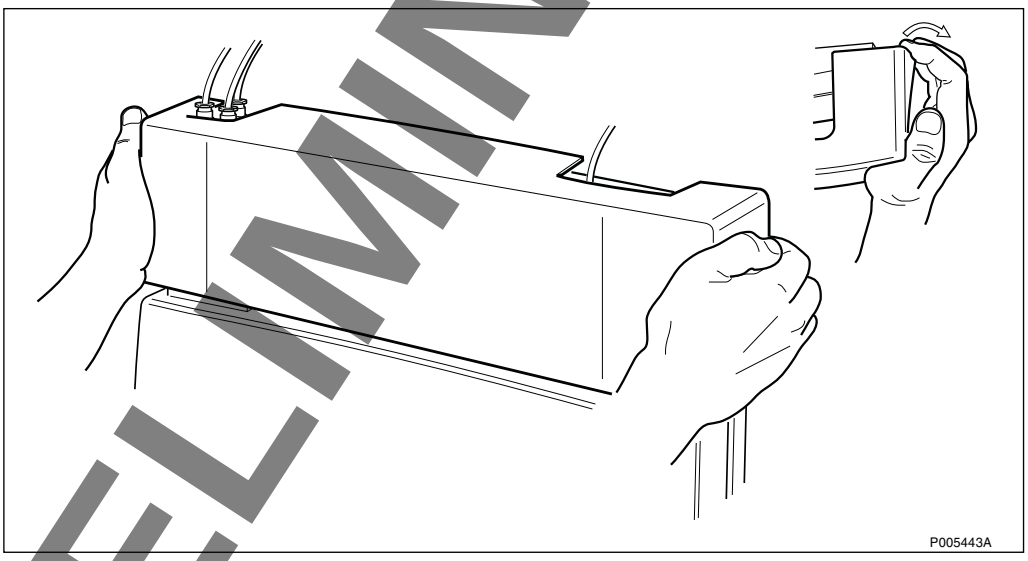


Figure 193

18. Remount the installation box cover on the radio cabinet.

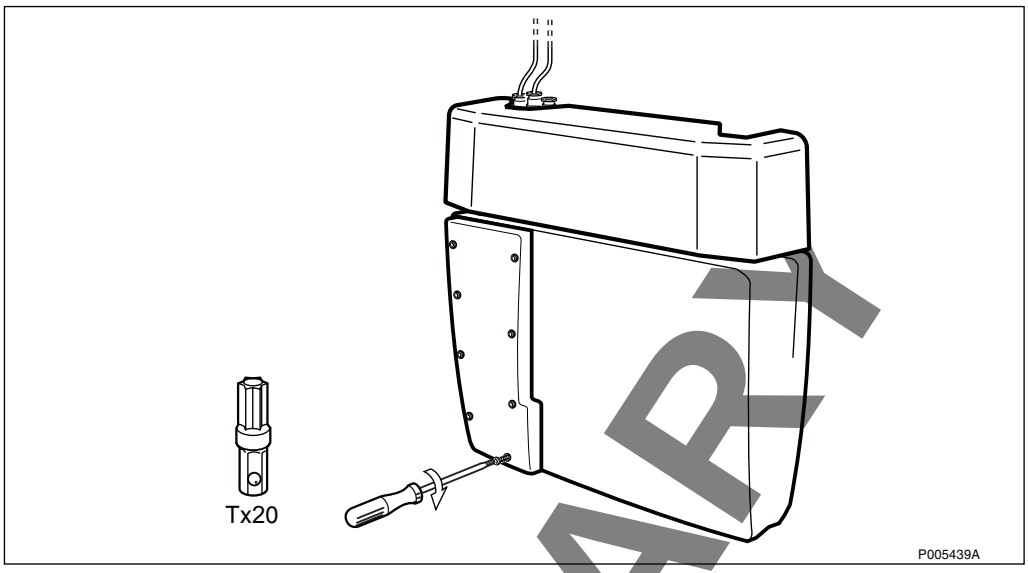


Figure 194

19. Remount the front cover on the radio cabinet.

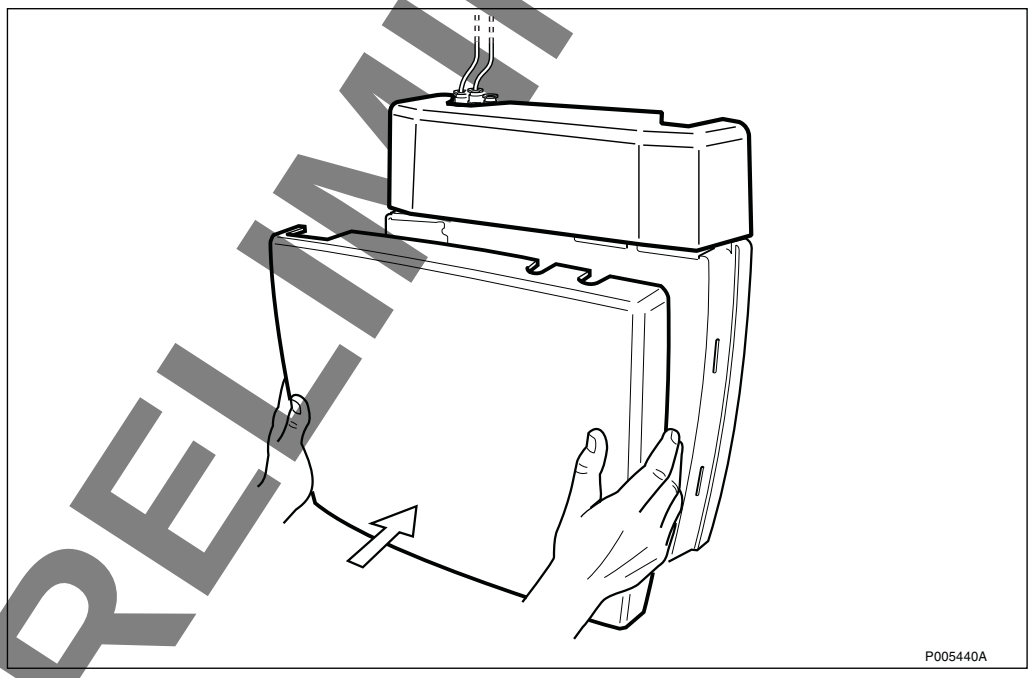


Figure 195

20. Check the status of the RBS with the new AGW, refer to Table 18 on page 147.

5.3.5 Replacement of Fuse for HDSL Module and AGW

1. Remove the front cover on the radio cabinet.

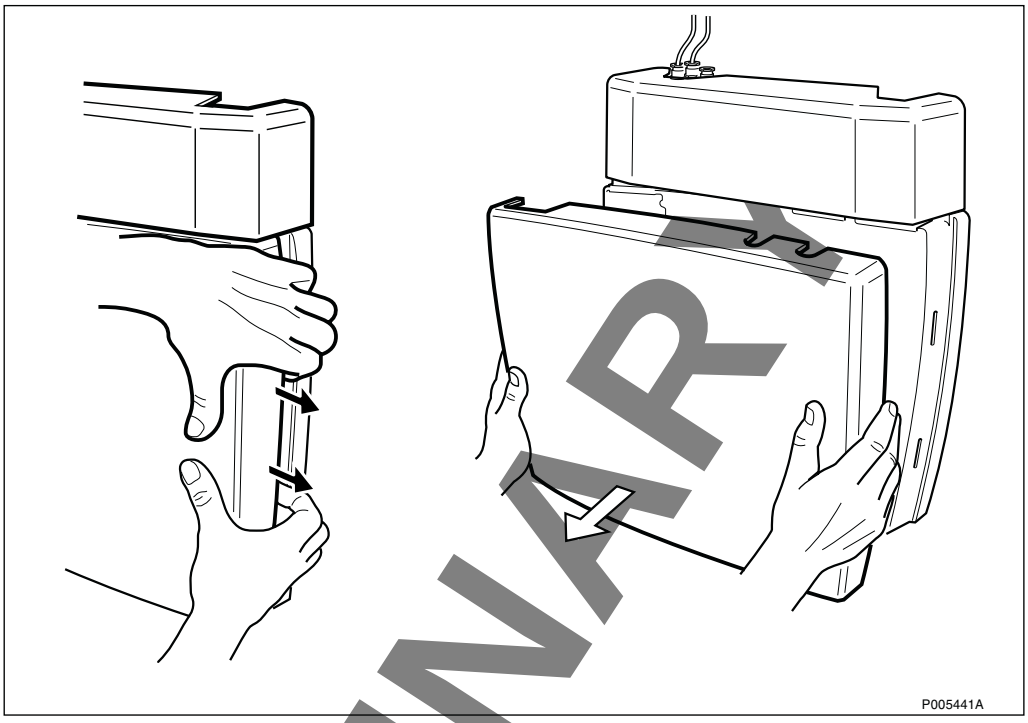


Figure 196

2. Remove the installation box cover on the radio cabinet.

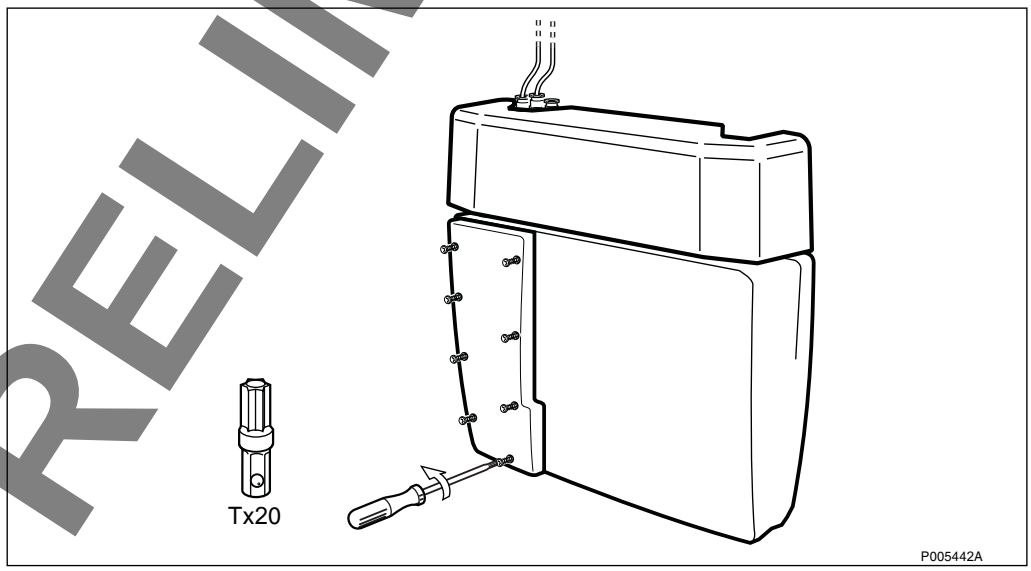


Figure 197

3. Press the Local/Remote button to set the RBS in Local mode.

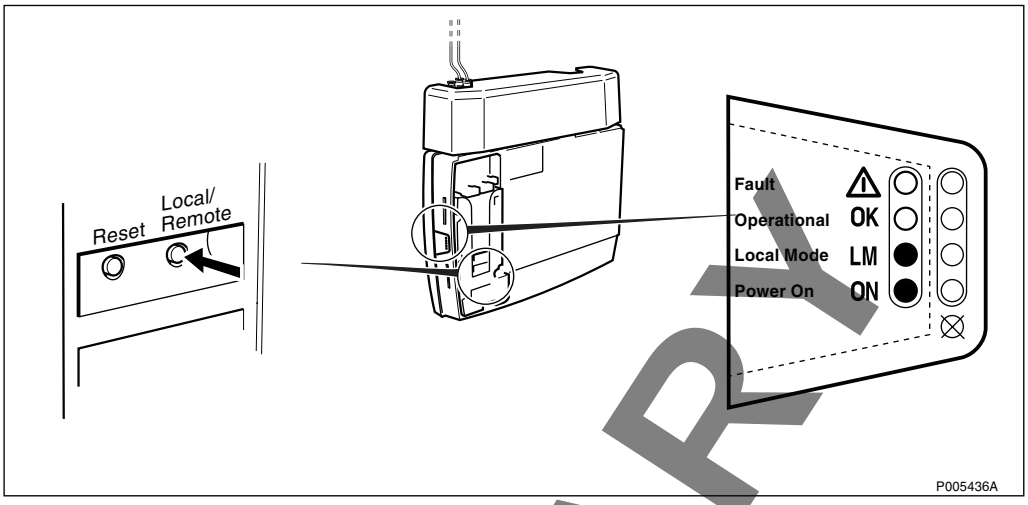


Figure 198

4. Switch off the AC mains power.

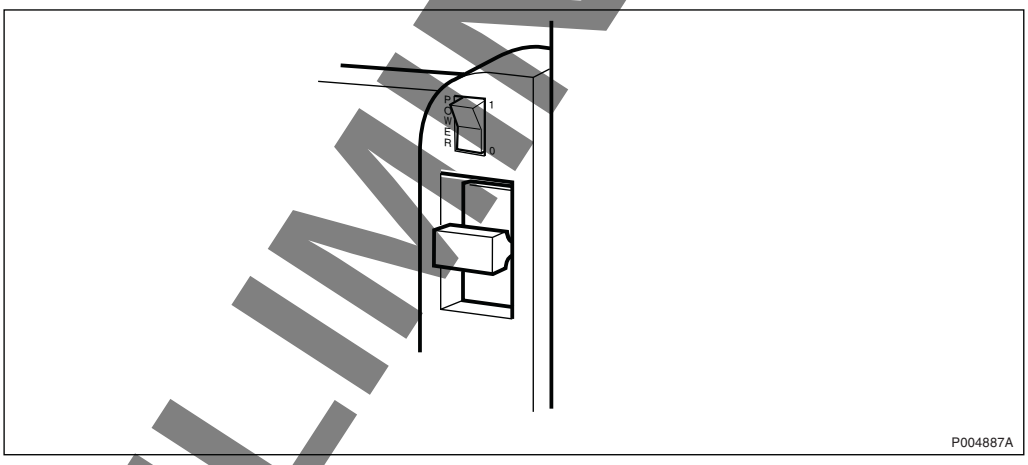


Figure 199

5. Connect the ESD wrist strap.

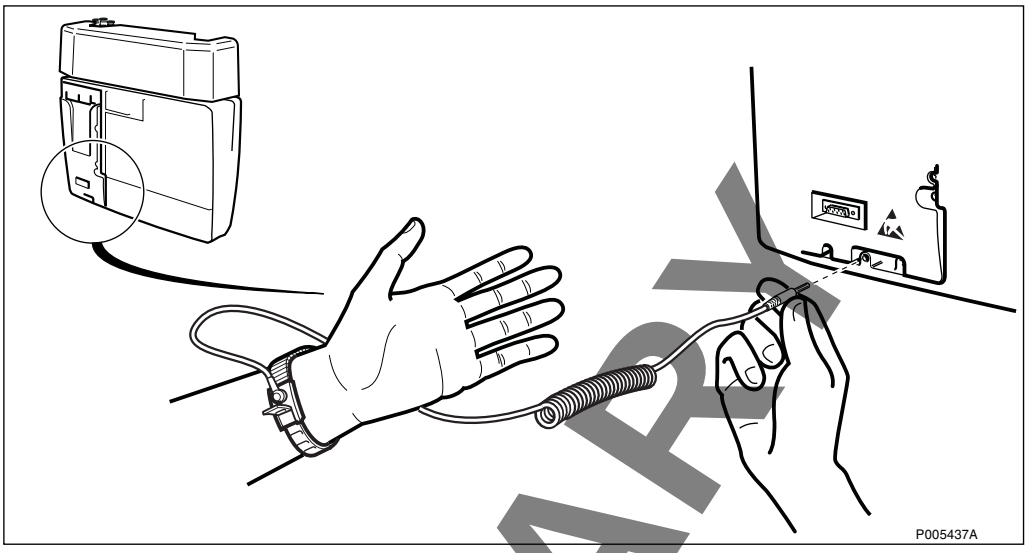


Figure 200

6. Remove the 3.15 A fuse and replace it with a new one. Use a nose cutting plier, or similar.

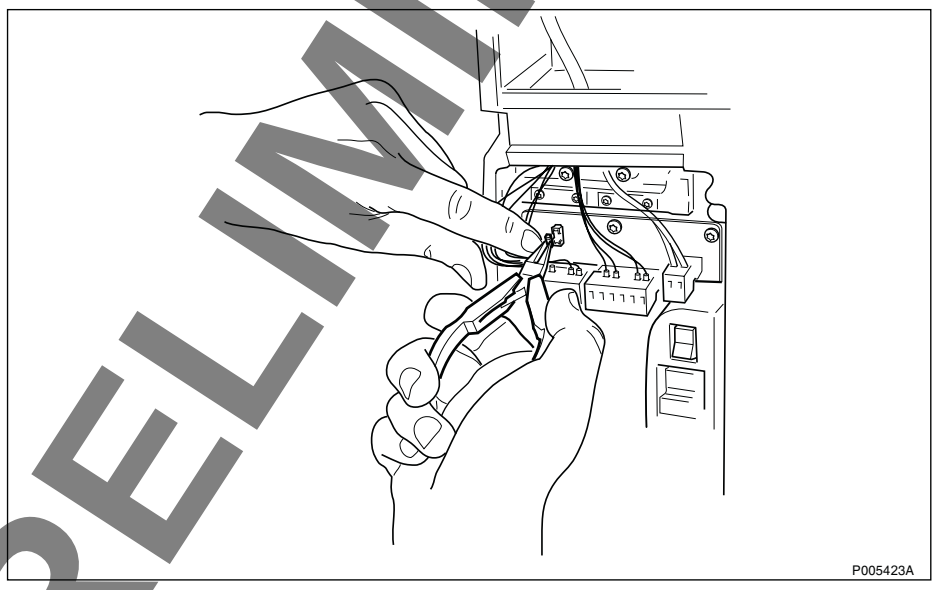


Figure 201

7. Switch on the AC mains power.

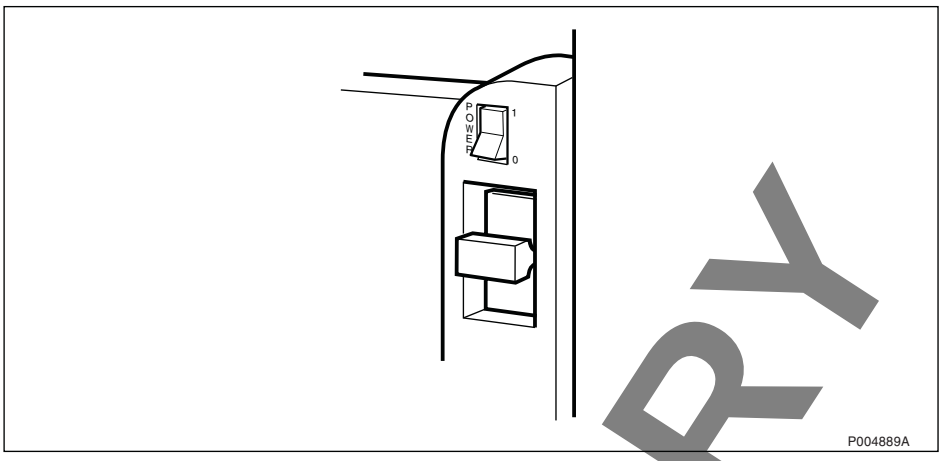


Figure 202

8. Press the Local/Remote button to set the RBS in Remote mode.

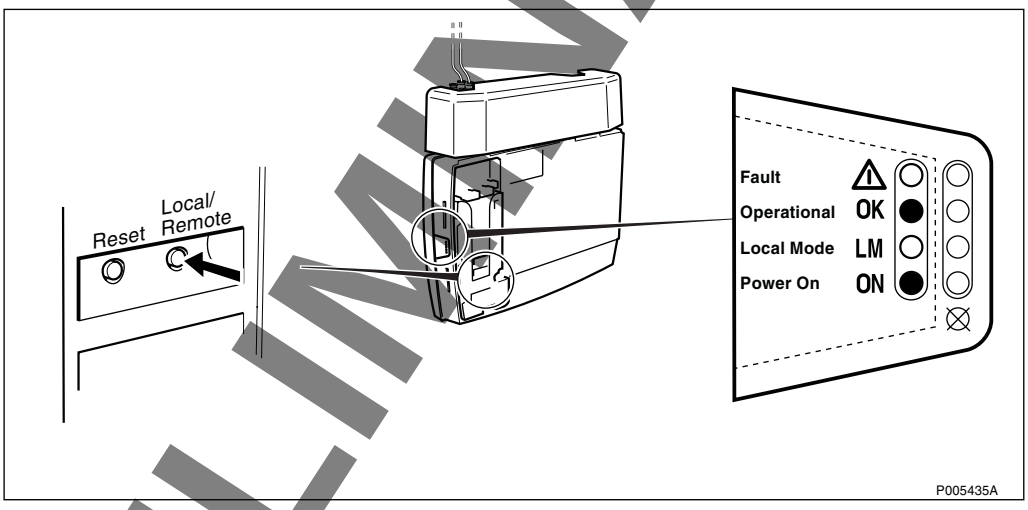


Figure 203

9. Remount the installation box cover on the radio cabinet.

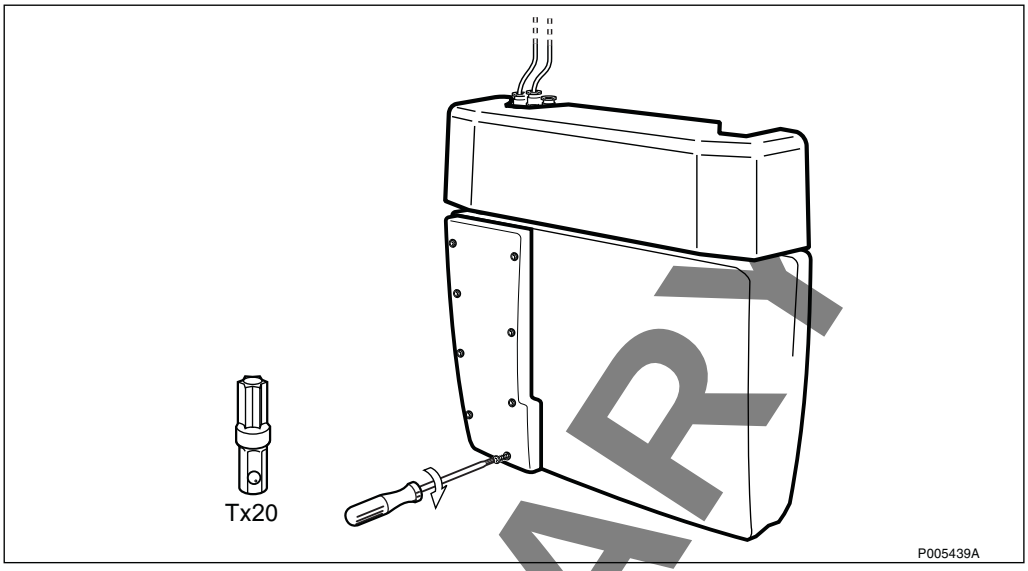


Figure 204

10. Remount the front cover on the radio cabinet.

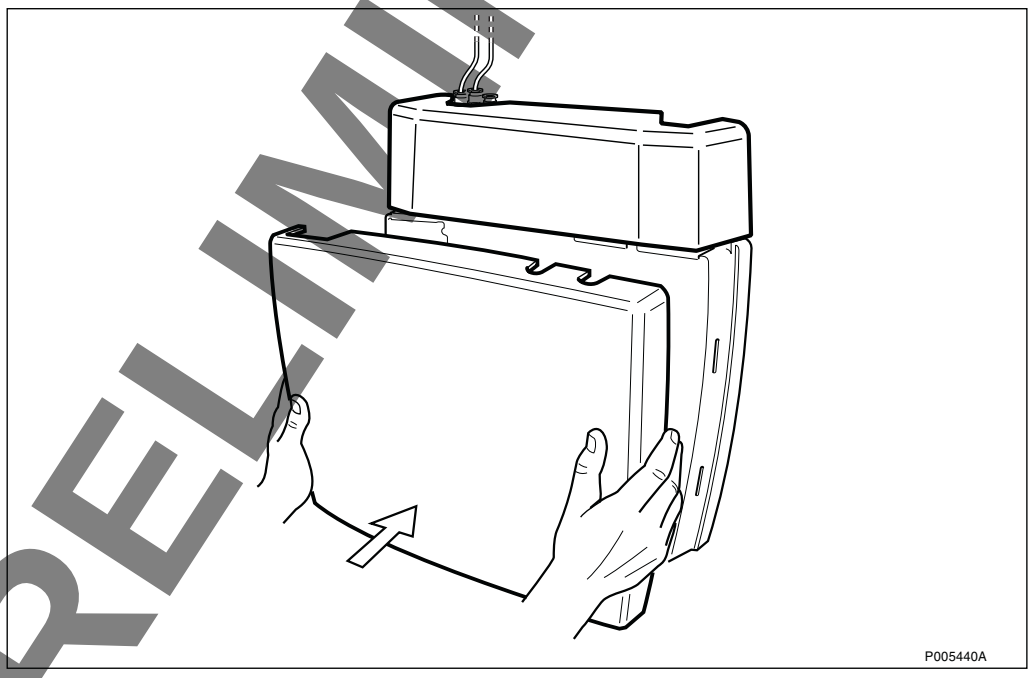


Figure 205

11. Check the status of the RBS, refer to Table 18 on page 147.

5.4 Preventive Maintenance

Replacement of the CPI board is the only preventive maintenance action required.

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.

CAUTION

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

Replacement of the CPI board

1. Remove the front cover on the radio cabinet.

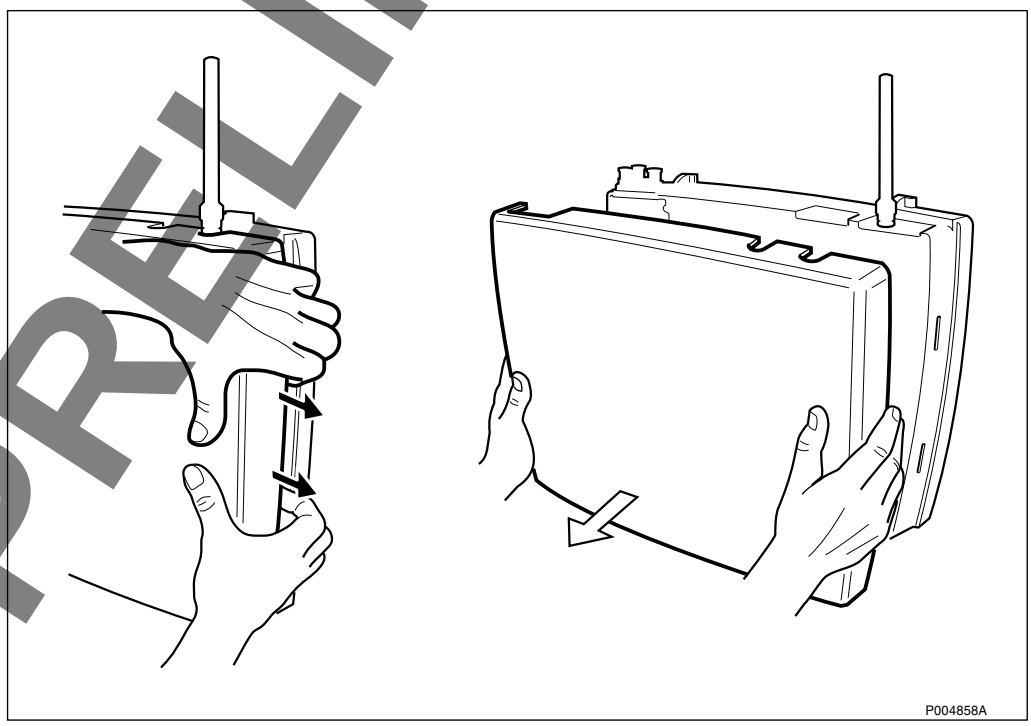


Figure 206 Removing the front cover

2. Remove the installation box cover on the radio cabinet.

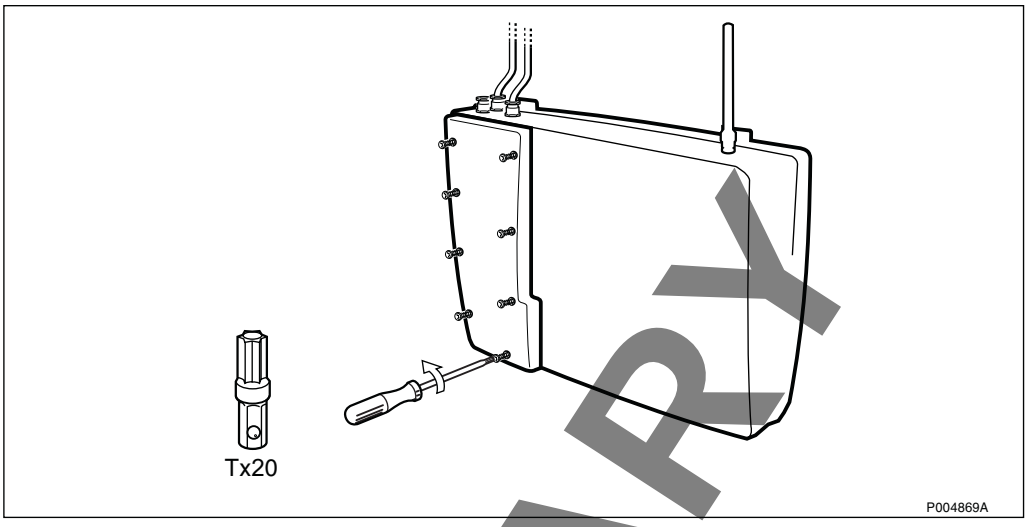


Figure 207 Removing the installation box cover

3. Press the Local/Remote button to set the RBS in Local mode.

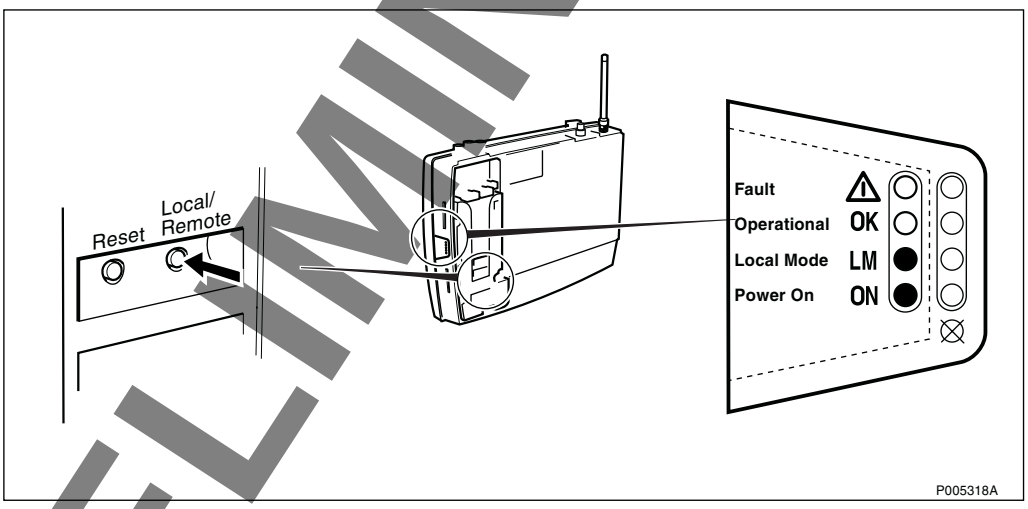


Figure 208

4. Switch off the AC mains power.

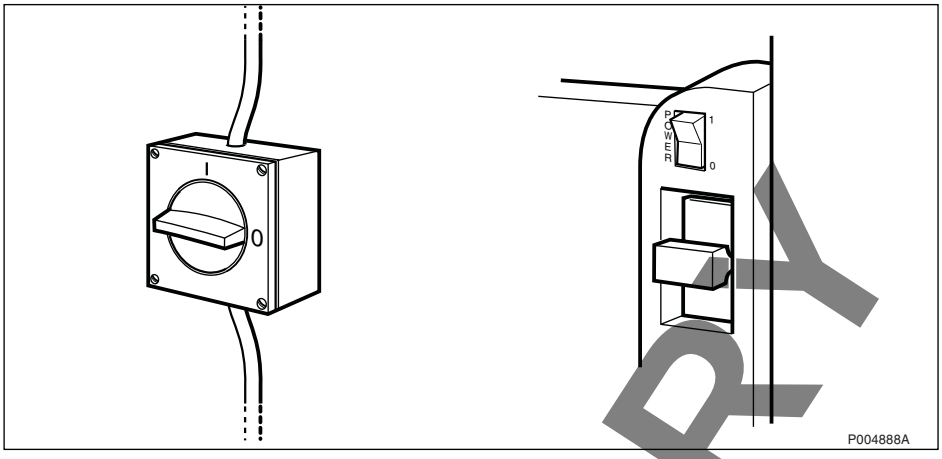


Figure 209

5. Connect the ESD wrist strap.

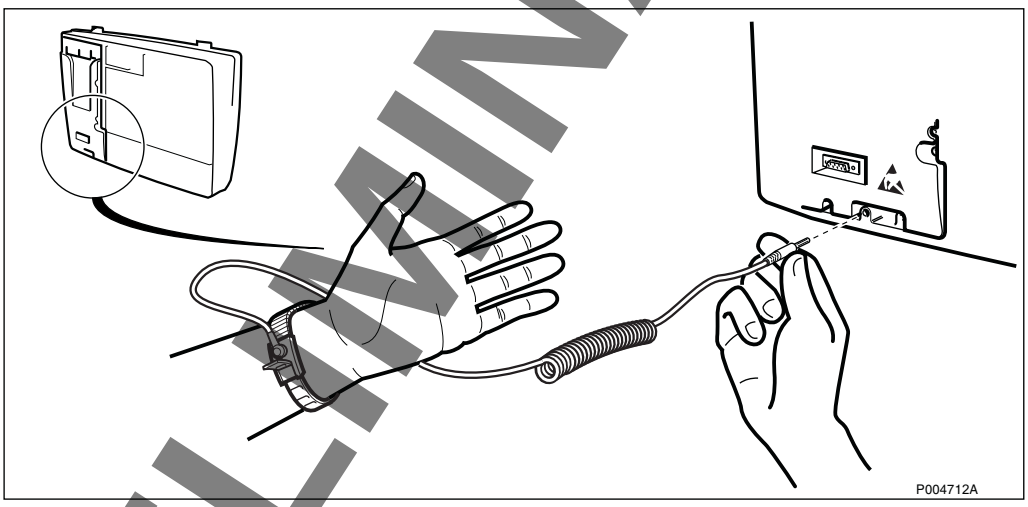


Figure 210

6. Remove the protective cover.

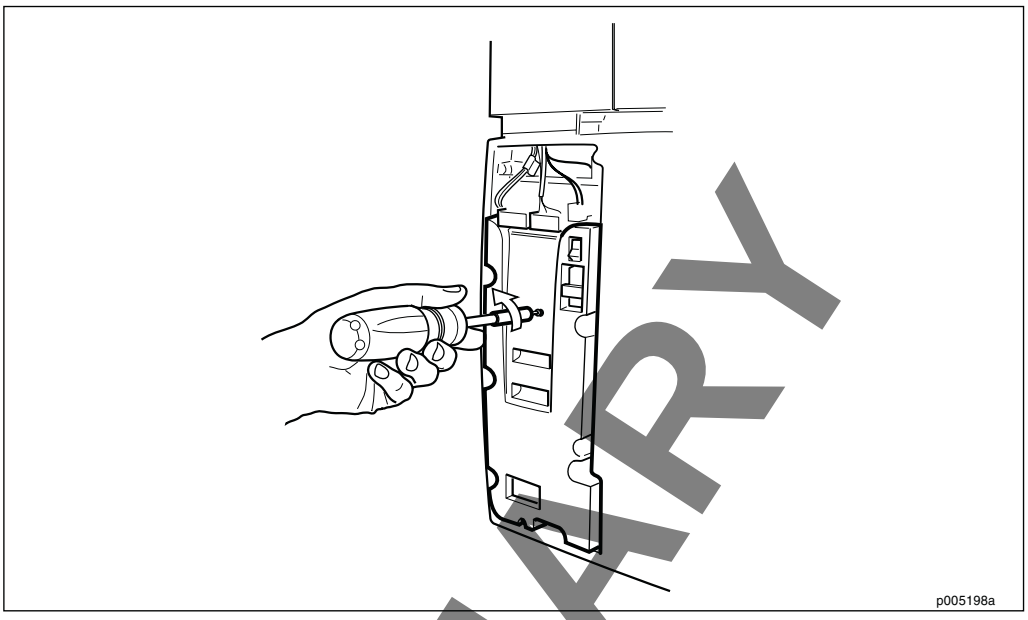


Figure 211

7. Disconnect the cables from the CPI board.

8. Unscrew the distance screw.

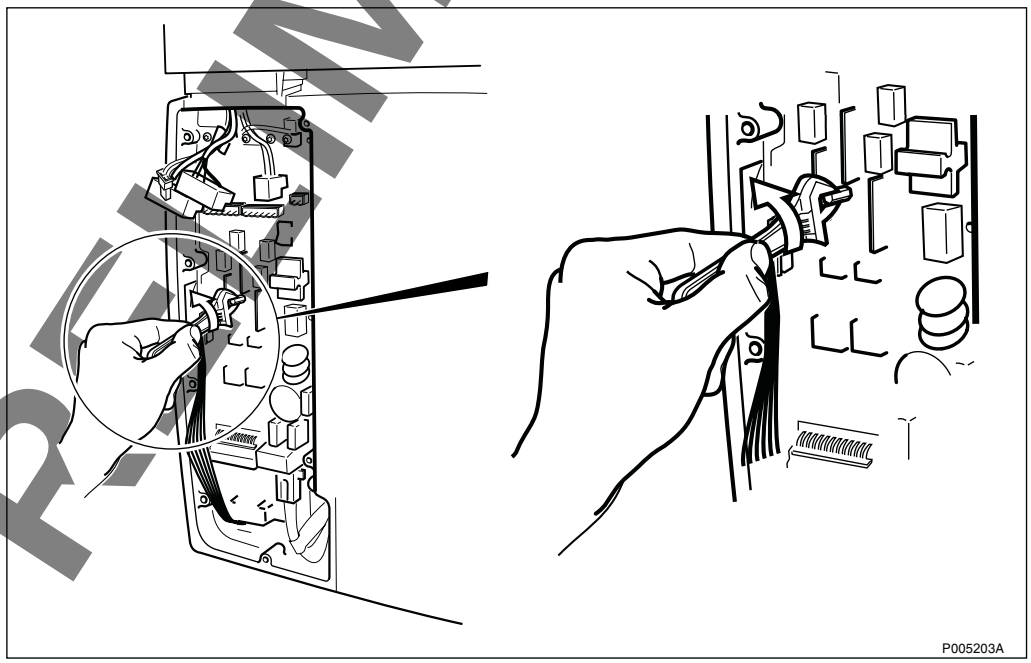


Figure 212

9. Unscrew all screws.

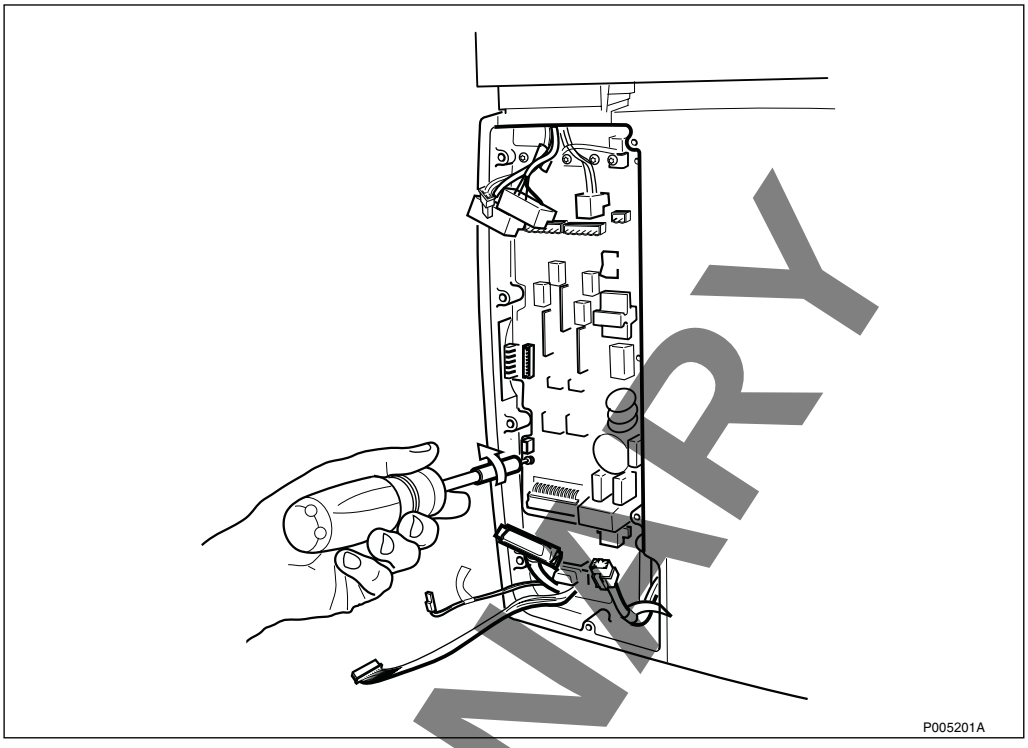


Figure 213

10. Remove the CPI board. Be careful not to damage the LEDs.

11. Mount the new CPI board and tighten all screws, including the distance screw.

12. Connect the cables to the CPI board.

13. Remount the protective cover.

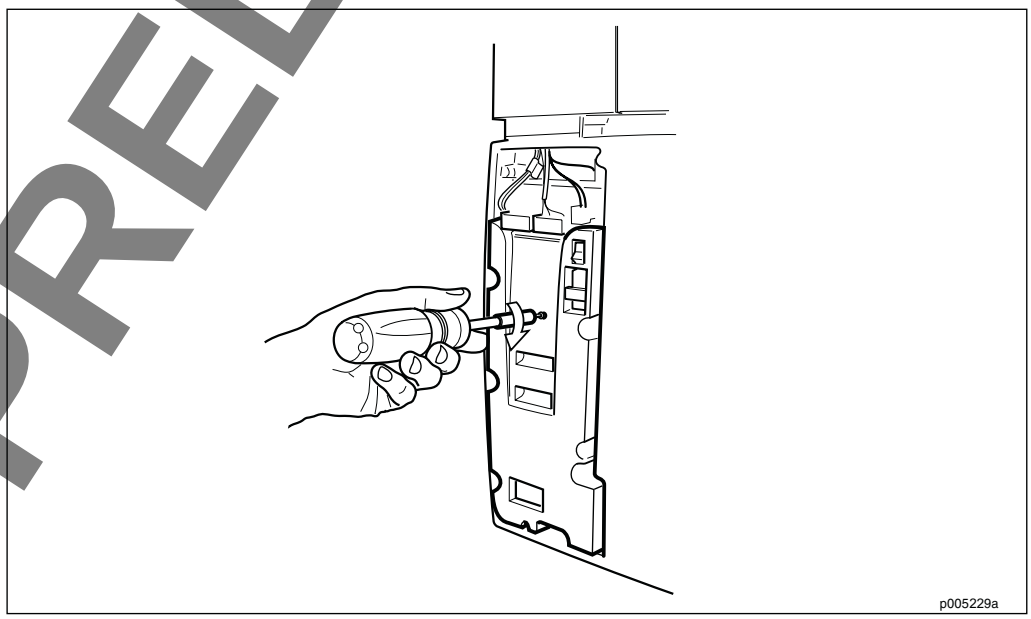


Figure 214

14. Set the transmission switches.

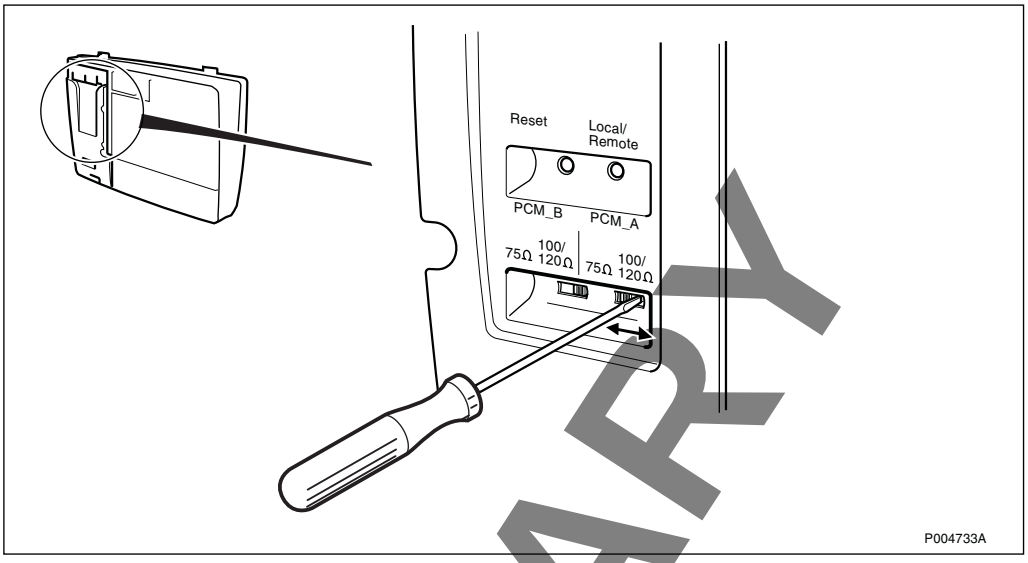


Figure 215

15. Mount the fuses in the fuse holder. Be sure to use the fuses intended for the actual mains amperage.

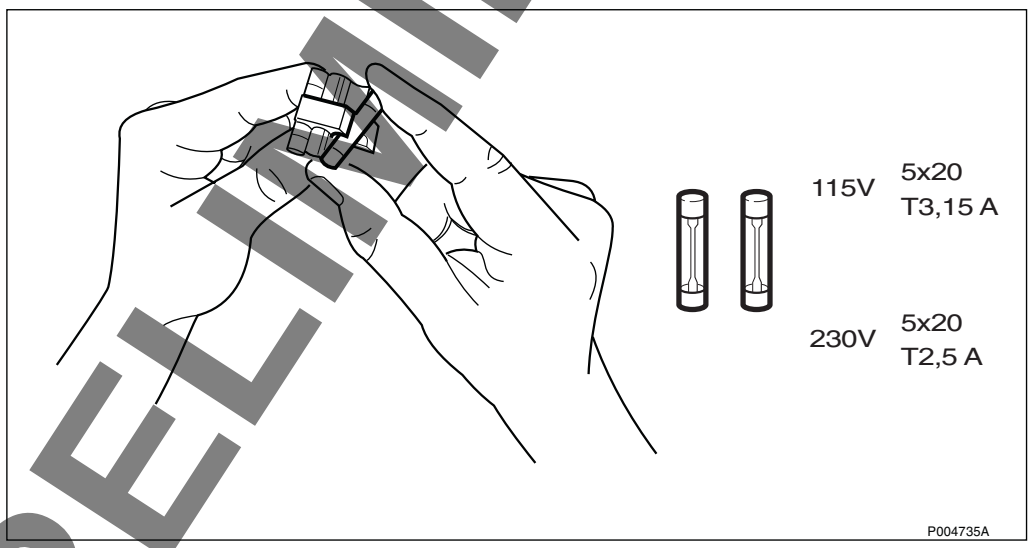


Figure 216

16. Insert the fuse holder in the fuse compartment.

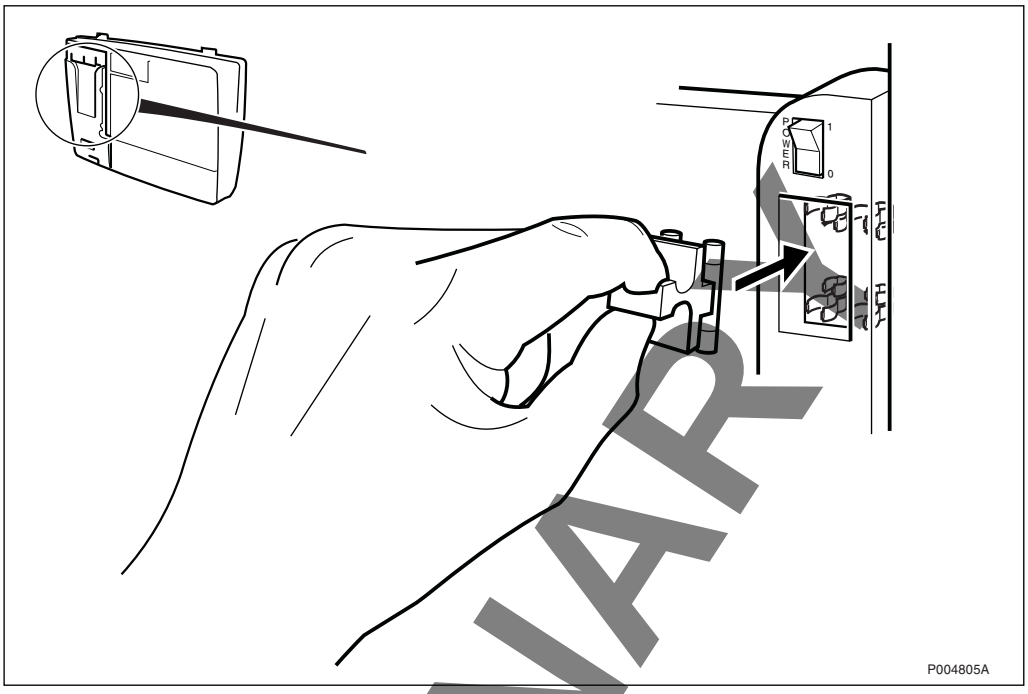


Figure 217

17. Disconnect the ESD wrist strap.

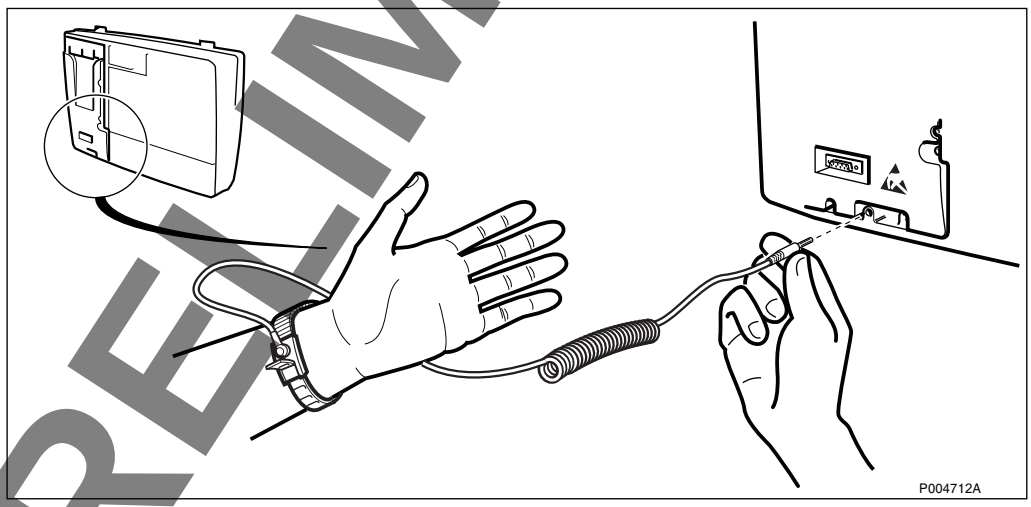


Figure 218

18. Switch on the AC mains power.

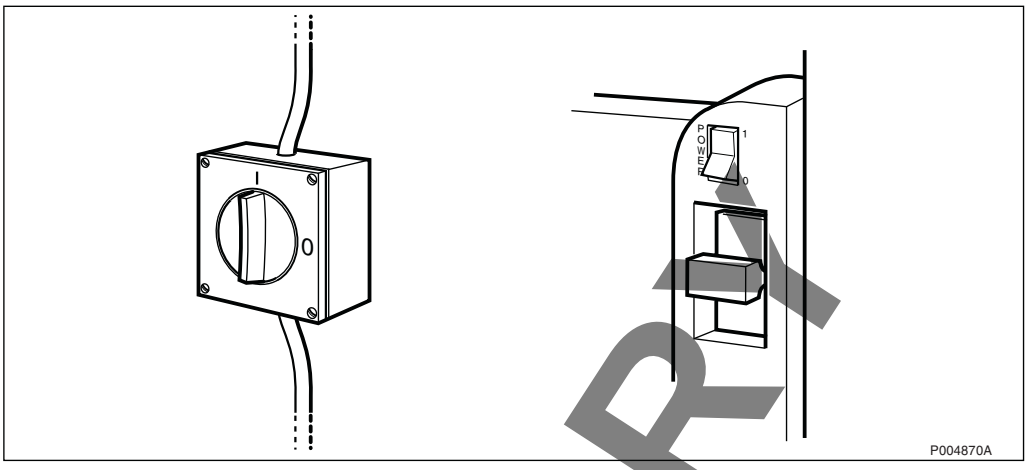


Figure 219

19. Press the Local/Remote button to set the RBS in Remote mode.

    Check that contact has been established with the BSC (The Local mode indicator is OFF).

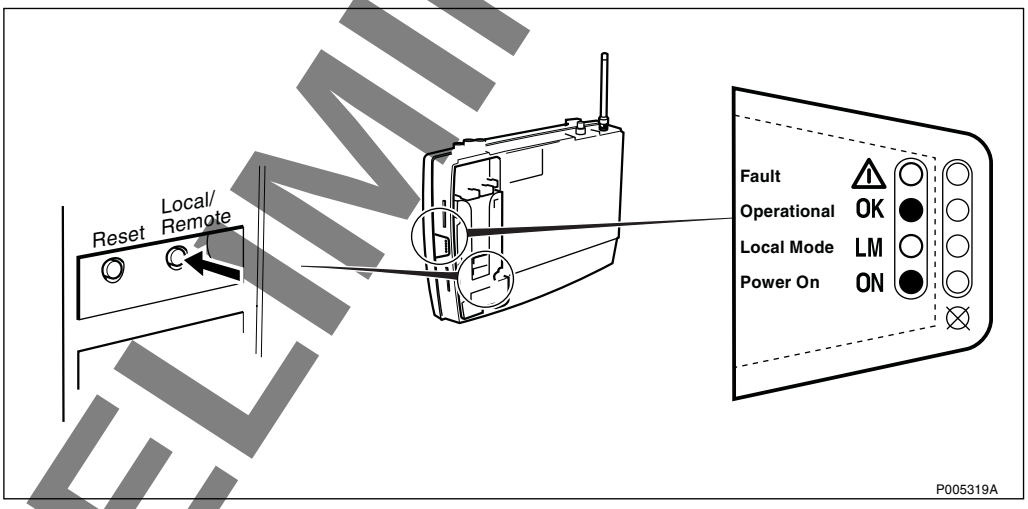


Figure 220

20. Remount the installation box cover on the radio cabinet.

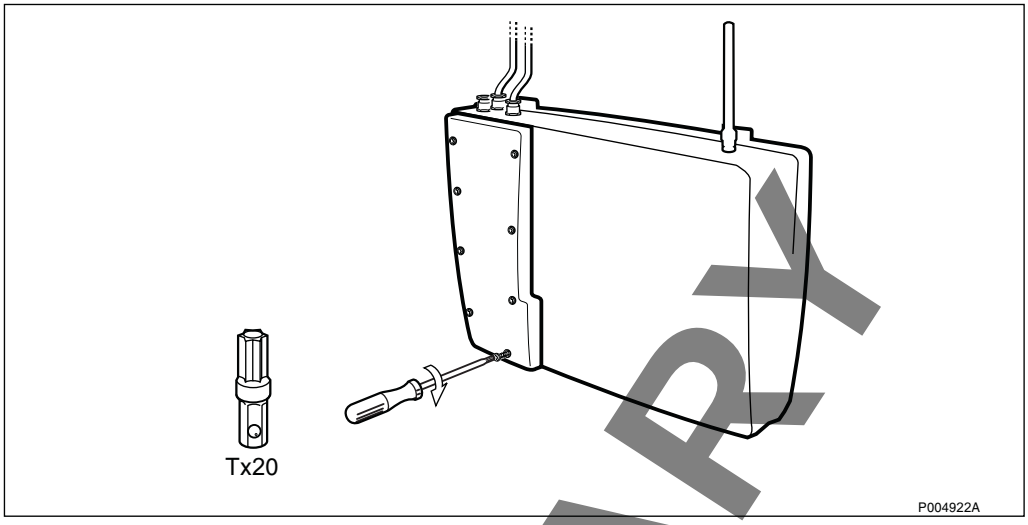


Figure 221

21. Remount the front cover.

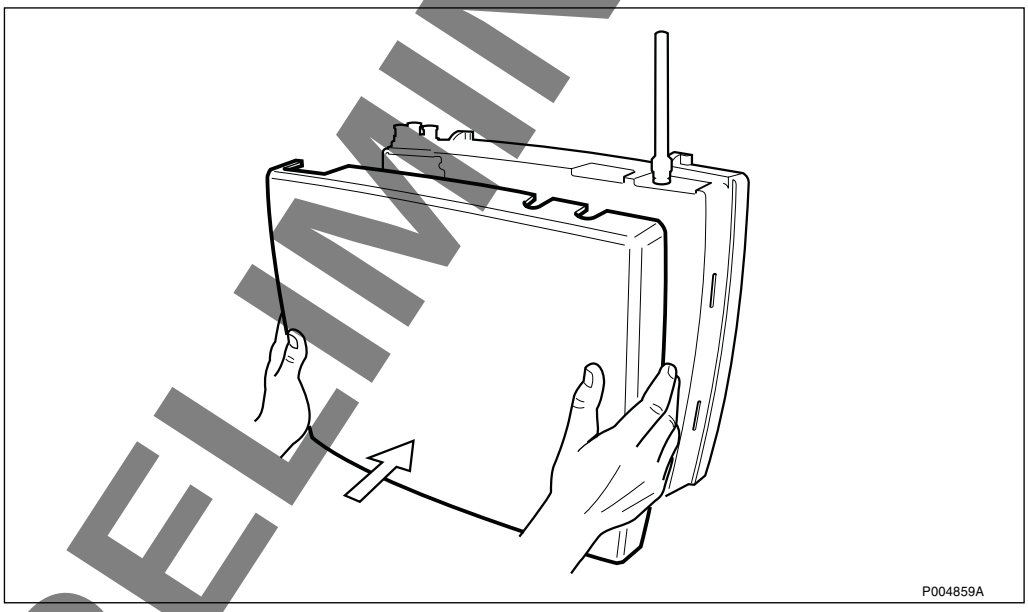


Figure 222

5.5 Concluding Routines

The following checklist is not mandatory but strongly recommended. Local procedures and safety regulations must be evaluated and incorporated into this checklist.

If any check point is not OK, do not leave the site until the problem/ fault has been cleared or investigated.

Table 18 Checklist

Checklist	**OK**
1. LED indicator FAULT is OFF.	
2. LED indicator OPERATIONAL is ON.	
3. RBS 2401 is in Remote mode (Local mode indicator OFF).	
4. Backup copy of the RBS IDB saved on a diskette.	
5. LED status on HDSL module/AGW checked.	
Signature **Date**	

5.5.1 Transport of a Faulty Unit

The faulty unit should be transported in the same packaging materials as the spare unit was delivered in.

5.5.2 Report of Finished Work

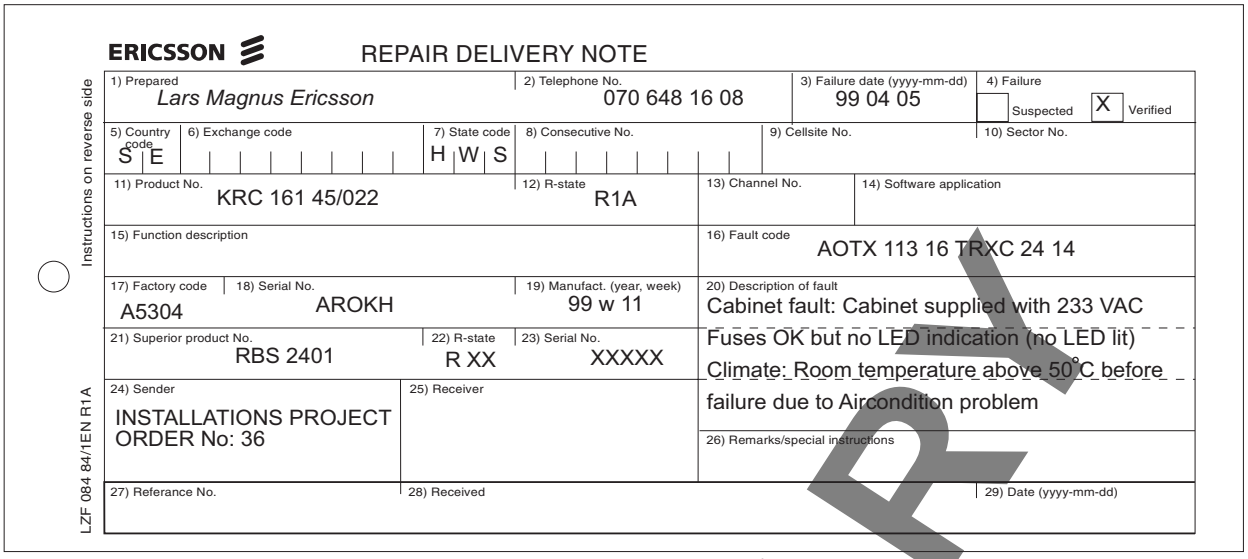
When a maintenance procedure has been completed, a report should be written including a detailed description of actions taken, all observations made in accordance with local routines for work orders, site log-book, etc.

5.5.3 Repair Delivery Note - “Blue Tag”

When a faulty unit is returned, it must always be accompanied by a repair delivery note. When the repair delivery note has been completed it must be attached to the faulty unit before sending it for repair.

The repair delivery note LZF 084 64 can be ordered from the local FSC. A description of how to fill in a repair delivery note follows below.

Note: Add as much information as possible to Field 20 on the Repair Delivery Note to make it easier for the repair center.



P005033A

Figure 223 The "Blue tag"

OMT fault log — If there is a OMT fault log, it should be sent in with the "Blue Tag" on the faulty unit.

The following explanations to the Repair delivery note are also given on its reverse side.

Field		Instructions	Examples
1)	Prepared	Service technician's name	
2)	Telephone No.	Service technician's phone number	+ 46 8 757 0000
3)	Failure date (yyyy-mm-dd)	Date when failure occurred	1995-05-16
4)	Failure	Mark with an X if failure is Suspected or Verified	
5)	Country code	Two letter country code	AB
6)	Exchange code	Exchange code, alpha and numeric indicators	123CDE
7)	State code	Status when failure occurred: T = New unit failed during installation or test R = Repaired unit failed during installation or test S = Unit in service when failure occured	
8)	Consecutive No.	Consecutive number, numeric indicators	12345
9)	Cellsite No.	Cellsite number, alpha and numeric indicators	HU32

Field		Instructions	Examples
10)	Sector No.	Cellsite sector number, alpha and numeric indicators	A1
11)	Product No.	Product number of faulty unit	ROF 123 456/1
12)	R-state	Revision state of faulty unit	R1A
13)	Channel No.	Channel number, only filled in on request	799
14)	Software application	Software application, only filled in on request	R2A
15)	Function description	Function description	ETC, TRM
16)	Fault Code	Received from OMT	
17)	Factory code	Code for manufacturing factory	A53 for Ericsson Gavle in Sweden
18)	Serial No.	Serial number of faulty unit	ABC123456
19)	Manufact. (year, week)	Manufacturing date	9412
20)	**Description of fault**	Switch fault code, short description of problem	341
21)	Superior product No.		
22)	R-state		
23)	Serial No.		
24)	Sender	Sender	ENZ, CEA
25)	Receiver	Receiver	ERA HWC, EPA RLC
26)	Remarks/special instructions	Used for any special attentions or instructions	
27)	Reference No.		
28)	Received	Receiver's nam	
29)	Date (yyyy-mm-dd)	Receiving date	1995-05-16

This page is intentionally left blank

03_021

Figure 224

5.6 Spare Parts

5.6.1 Classification of Spare Parts

The spare parts are divided into three classes:

Recommended for customer stock (Repairable)

These parts that are intended to be replaced on site, and sent to an Ericsson Repair Centre for repair.

Recommended for customer stock (Not repairable)

These parts that are not repairable, intended to be replaced on site and then disposed.

Not recommended for customer stock

These parts are available when needed.

5.6.2 Recommended Spare Parts

Exploded View

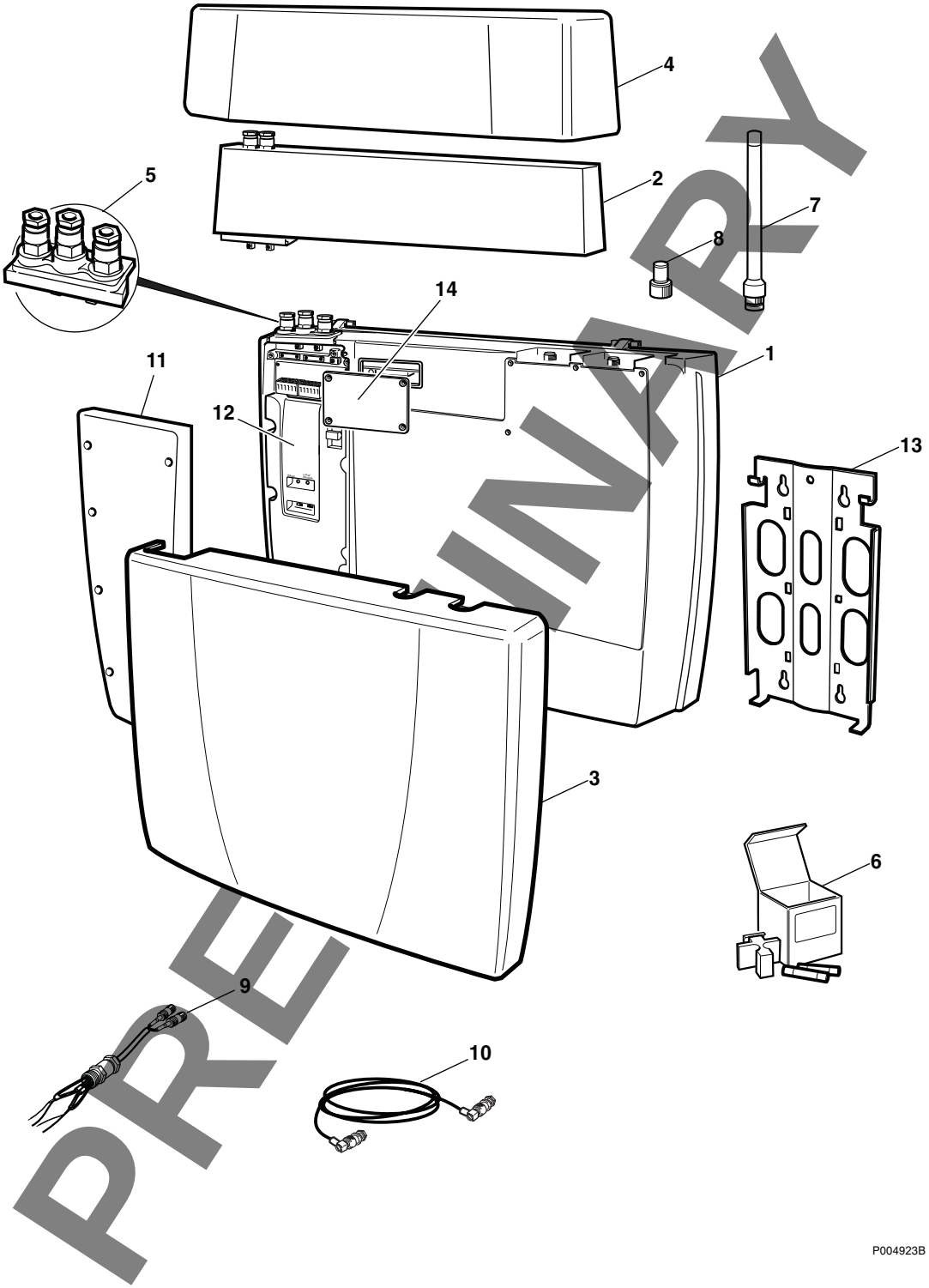


Figure 225

Spare Parts for Customer Stock (Repairable)

Table 19

Pos	Product No	Product Name	System standard	Number of TRX	Transm interface	Intern synch	Encr
1(1)	KRC 161 45/022	Radio Unit	GSM 900	2	E1	N	A5/1
1(1)	KRC 161 45/024	Radio Unit	GSM 900	2	E1	N	A5/2
1(1)	KRC 161 45/032	Radio Unit	GSM 900	2	T1	N	A5/2
1(1)	KRC 161 45/054	Radio Unit	GSM 1800	2	E1	N	A5/1
1(1)	KRC 161 45/056	Radio Unit	GSM 1800	2	E1	N	A5/2
1(1)	KRC 161 45/064	Radio Unit	GSM 1800	2	T1	N	A5/2
2	KDU 137 50	AGW					
2	ZAT 759 27/1	HDSL module					

(1) Including Pos 3, 5, 8, 11, 12, 14.

Spare Parts for Customer Stock (Not Repairable)

Table 20

Pos	Product No	Product Name	Description
3	SDF 105 34/1	Cover	Front cover for radio unit
4	SDF 105 39/1	Cover	Cover for HDSL module and AGW
5	NTZ 112 1037/1	Spare parts set	Gland plate with cable bushing
6	NTZ 112 1037/2	Spare parts set	Fuses 2.5 A, 200-250 V, fuse holder (20 pcs/set)
6	NTZ 112 1037/3	Spare parts set	Fuses 3.15 A, 100-127 V, fuse holder (20 pcs/set)
7	KRE 101 1833/2	Antenna unit (GSM 900)	
7	KRE 101 1850/2	Antenna unit (GSM 1800)	

Other Available Parts

Table 21

Pos	Product No	Product Name	Description
8	NTZ 112 1037/4	Spare parts set	50 Ω, 1 W, TNC plug termination (5 pcs/set)
9	RPM 518 974/2	Cable with connector	Cable with connector (PCM-B coax. 75 Ω)
10	RPM 119 079/1	Cable with connector	Jumper cable for external antenna.
11	SDD 513 0081/1	Cover lid	Installation box cover
12	SDF 105 35/1	Cover	Touch guard for CPI
13	SEB 114 110/1	Wall attachment	Mounting bracket
14	SDD 513 0095/1	Cover lid	Cover lid for test connection.

This page is intentionally left blank

6 Glossary

This glossary lists abbreviations and acronyms used in texts dealing with RBS 2401. Some basic terms and acronyms needed for cross-references are included in the list.

In the RBS manuals, terminology defined by Ericsson GSM System is used.

Terms and Abbreviations

An arrow -> is used to indicate a reference to another entry in this list.

Abis	GSM interface standard defining attributes of the communication between BSC and BTS.
AC	Alternating Current
AGW	Abis Gateway
ARFCN	Absolute Radio Frequency Channel Number
BCCH	Broadcast Control CHannel Downlink only broadcast channel for broadcast of general information at a base station, on a base station basis.
BSC	Base Station Controller GSM network node for control of one or more BTSs.
BSCSim	Base Station Controller Simulator
BSIC	Base Transceiver Station Identity Code
BSS	Base Station System GSM network logical unit comprising one BSC and one or more BTSs.
BTS	Base Transceiver Station GSM network unit operating on a set of radio frequency channels in one cell.
Cabinet	The physical housing of a base station.
Cascade connections	Connection of several cabinets by the PCM cable. Similar to serial connection. -> Cascading
Cascading	Connection of several cabinets by the PCM cable. Similar to serial connection. -> Cascade connections

CCCH	Common Control CHannel Channel combining the following common control channels: PCH Paging CHannel RACH Random Access CHannel AGCH Access Grant CHannel
Cell	An area of radio coverage identified by the GSM network by means of the cell identity.
CPI	Communication and Power Interface
dB	decibel
DC	Direct Current
DIP	DIgital Path The name of the function used for supervision of the connected PCM lines.
E1	Short for G.703 2048 kbit/s PCM link
EMC	Electro Magnetic Compatibility
ESD	ElectroStatic Discharge
FSC	Field Support Centre
GSM	Global System for Mobile communications International standard for a TDMA digital mobile communication system. Originally, GSM was an abbreviation for Groupe Special Mobile, which is a European mobile telecommunication interest group, established in 1982.
GSM 900	GSM system 900 MHz (generic)
GSM 1800	(GSM-based) Digital Communication System 1800 MHz (generic)
GSM 1900	(GSM-based) Digital Communication System 1900 MHz (generic)
HDSL	High bit rate Digital Subscriber Line
HW	HardWare
HWU	HardWare Unit An HWU consists of one or more SEs. An HWU is a functional unit within the RBS.

	The HWU is either active (equipped with a processor) or passive (without processor).
ID	IDentification
IDB	Installation Data Base
LAN	Local Area Network
LBO	Line Build Out
LED	Light Emitting Diode
Local mode	When the RU is in RU mode Local it is not prepared for BSC communication.
Local/Remote switch	Using the Local/Remote switch, an operator orders the RU to enter Local or Remote mode.
MHS	Modification Handling System Ericsson trouble report database
MS	Mobile Station
OMC	Operation and Maintenance Centre
OMT	Operation and Maintenance Terminal The OMT is a terminal that supports functions for handling the RBS on site. The terminal can be a portable PC.
Operation	Operation is the normal, everyday running of the RBS with full functionality.
PC	Personal Computer
PCM	Pulse Coded Modulations (used as a name for the G.703 transmission interface)
PSTN	Public Switched Telephone Network
RAM	Random Access Memory
RBS	Radio Base Station All equipment forming one or more Ericsson base stations. ->BTS
RBS 2000	New RBS generation
Remote mode	When the RU is in RU mode Remote, a link is established between the BCS and the central main RU.

R-state	Release state
RU	Replaceable Unit An RU consists of one or more HWUs. An RU may be replaced by another RU of the same type. The RU is the smallest unit that can be handled on site.
RX	Receiver
RXA	Receiver antenna branch A
RXB	Receiver antenna branch B
SW	SoftWare
SYNC	Synchronous
T1	Transmission facility for DS1 (1544 kbit/s).
TEI	Terminal Endpoint Identifier TEI is an identification code carried by a LAPD frame as a terminal connection endpoint within a Service Access Point (SAP).
TEMS	TEst Mobile Station
TG	Transceiver Group
TRX	Transceiver (combined transmitter and receiver)