NOKIA

DX 200

S11 Site Documentation for TCSM2

Installing the NEBS Upgrade Kit in BSC2(i) and TCSM2

Site Documentation

5000830-1.0_NOLSP

Contents

List of tables

List of figures

Summary of changes

Changes between document issues are cumulative. Therefore, the latest document issue contains all changes made to previous issues.

Issue 3-0

Installation instructions for Fastening Rails added.

Issue 2-0

Installation instructions for R2A1-T, DS192-S and CC19V-S added.

Issue 1-0

First approved version.

1 About this manual

This document describes how to install the NEBS kit into M92 mechanics; BSC2, BSC2i and TCSM2 network elements.

1.1 Prerequisites

Persons performing the upgrading work should have a good knowledge of DX 200 system and preferably have previous DX 200 BSC upgrading/expansion experience.

Installations should be done preferably to the non-operating network elements, or if the network elements are operating during low traffic, for example at night time to minimize any disturbances in traffic. Each stage of the extension work should be commenced only if conditions remain stable.

Caution

A wrist band ESD earthing device or a corresponding method and antistatic mats must be used when handling DX 200 hardware equipment.

1.2 Installation order

Installation for new deliveries

In new deliveries the racks (BSC2, BSC2i and TCSM2) are shipped without doors.

1. Install the all honeycombs with their support frames.
2. Install the doors, side plates, cabling rack (raised floor installation) and cabling conduit (raised floor installation).

Installation for existing deliveries

In old working network elements with older type doors the installation order is:

1. Remove the old doors, door beams, side plates, cabling rack (raised floor installation) and cabling conduit (raised floor installation).
2. Install the all honeycombs with their support frames.
3. Install the new doors, door beams, side plates, cabling rack (raised floor installation) and cabling conduit (raised floor installation).

1.3 How to use this manual

This manual provides the following information:

- Description of the NEBS kits (chapter 2)
- Installing the doors (chapter 3)
- Installing the honeycombs with their supporting frames (plates), installing the cabling rack and cable conduit for raised floor installation (chapter 4)
- Installing the grounding adapter (chapter 5)
- Installing the extra ESD stickers (chapter 6)
- Installing the honeycombs with their support frames into operating BSC2 (chapter 7)
- Installing the honeycombs with their support frames into operating TCSM2 (chapter 8)
- Illustrations and codes in figures (Appendix A)
- Enclosed documents including information on required honeycombs and the positions of the cartridges

1.4 Typographic conventions

The following table presents the conventions used in the manual.

Table 1. Typographic conventions.

Emphasized font	Indicates a reference to a manual, chapter or section, for example: See chapter 3 *Installation*
	Indicates a word or phrase that is emphasized, for example: term referring to *both* versions

1.5 Your comments

We are always interested to know whether our manuals provide the information you need. If you have any comments about this document or any other Nokia manual, please pass them on to your local Nokia sales representative.

2 Introduction to NEBS kits

2.1 NEBS kit for BSC2 (two racks)

The contents of the NEBS kit for BSC2 and BSC2i is listed in the table below:

Table 2. NEBS kit for BSC2 (two racks).

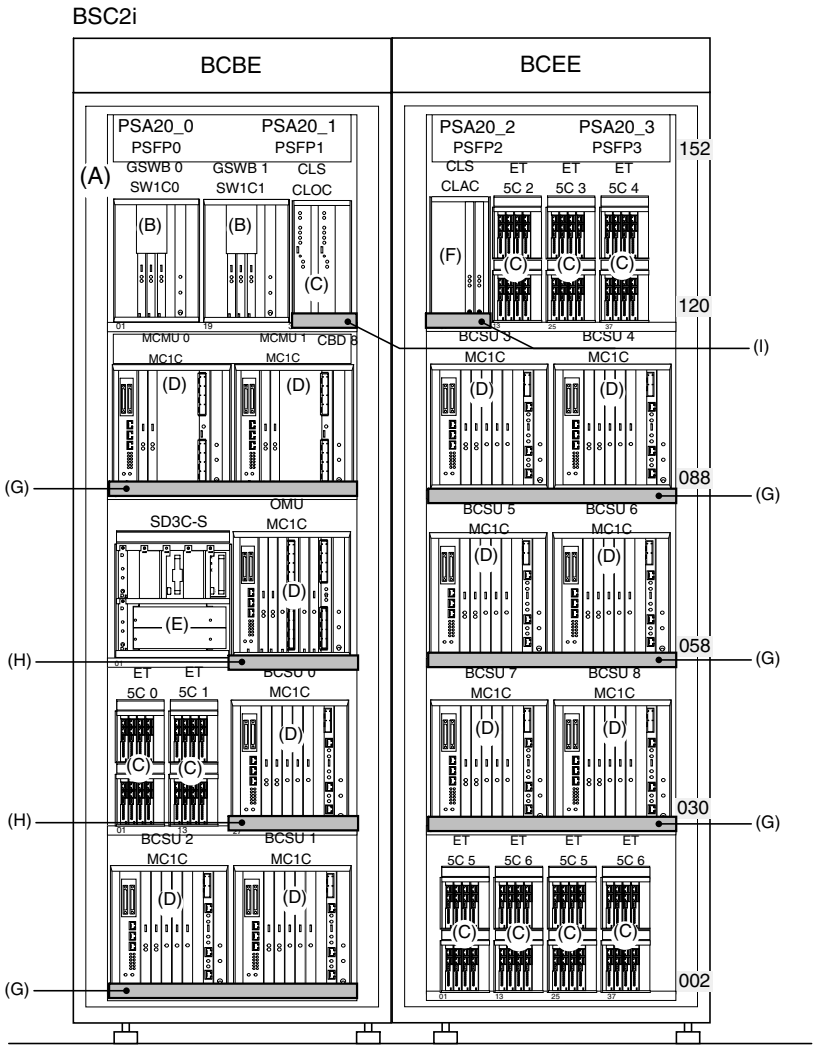
Code	Item	Name	Qty
NEBS3 Kit: 2000035	**NEBS3 Kit**	**NEBS3 Kit for BSC2A (two racks)**	
C104192	DS196E	Door Set 196 for earthquake	2
C29113	SP19A-T	Side Plate Set	1
2000034 Doc No. DN0196314	Installation Instructions	Installing the NEBS Upgrade Kit in BSC and TCSM2	1
7110419502 C104195	Installation Set ISFPNB 1)	Installation Set for Fire Protection according to NEBS in BSC	2
772250240	1) Included in Installation Set	Grounding Adapter	1
7710639810	1) Included in Installation Set	Fastening rail 1	2
7710639830	1) Included in Installation Set	Fastening rail 3	2
7710639860	1) Included in Installation Set	Fastening rail 6	5
Codes shown in Appendix A	1) Included in Installation Set	Honeycombs and Support Frames (plates)	Shown in enclosed document
762290100	ESD Sticker	ESD Stickers	200

Table 3. Cabling Rack R2A1-T with Door Set DS192-S (NEBS) for raised floor installation.

Code	Item	Name	Qty
2003181 C29271	R2A1-T	Cabling rack for raised floor installation	1
C29076	DS192-S	Door Set for cabling rackR2A1-T	2 doors

Table 4. Cable Conduit CC19V-S (NEBS) for raised floor installation.

Code	Item	Name	Qty
2003180 C29089	CC19V-S	Cabling conduit for raised floor installation	1



(A) NEBS Grounding Adapter

(B)	Honeycomb and Support Frame, Upper	(215x159x6,35mm)
	Honeycomb and Support Frame, Lower	(215x159x6,35mm)
(C)	Honeycomb and Support Frame, Upper	(215x98x6,35mm)
	Honeycomb and Support Frame, Lower	(215x98x6,35mm)
(D)	Honeycomb and Support Frame, Upper	(155x240x6,35mm)
	Honeycomb and Support Frame, Lower	(155x240x6,35mm)
(E)	Honeycomb and Support Frame, Upper	(215x219x6,35mm)
	Honeycomb and Support Frame, Lower	(215x219x6,35mm)
(F)	Honeycomb and Support Frame, Upper	(215x98x6,35mm)
	Honeycomb and Support Frame, Lower	(215x98x6,35mm)

(G) Fastening Rail 6 (7710639860)
(H) Fastening Rail 3 (7710639830)
(I) Fastening Rail 1 (7710639810)

Figure 1. Fire protection sets for BSC.

2.2 NEBS kit for TCSM2 (one rack)

The contents of the NEBS kit for TCSM2 is listed in the table below:

Table 5. NEBS kit for TCSM2 (one rack).

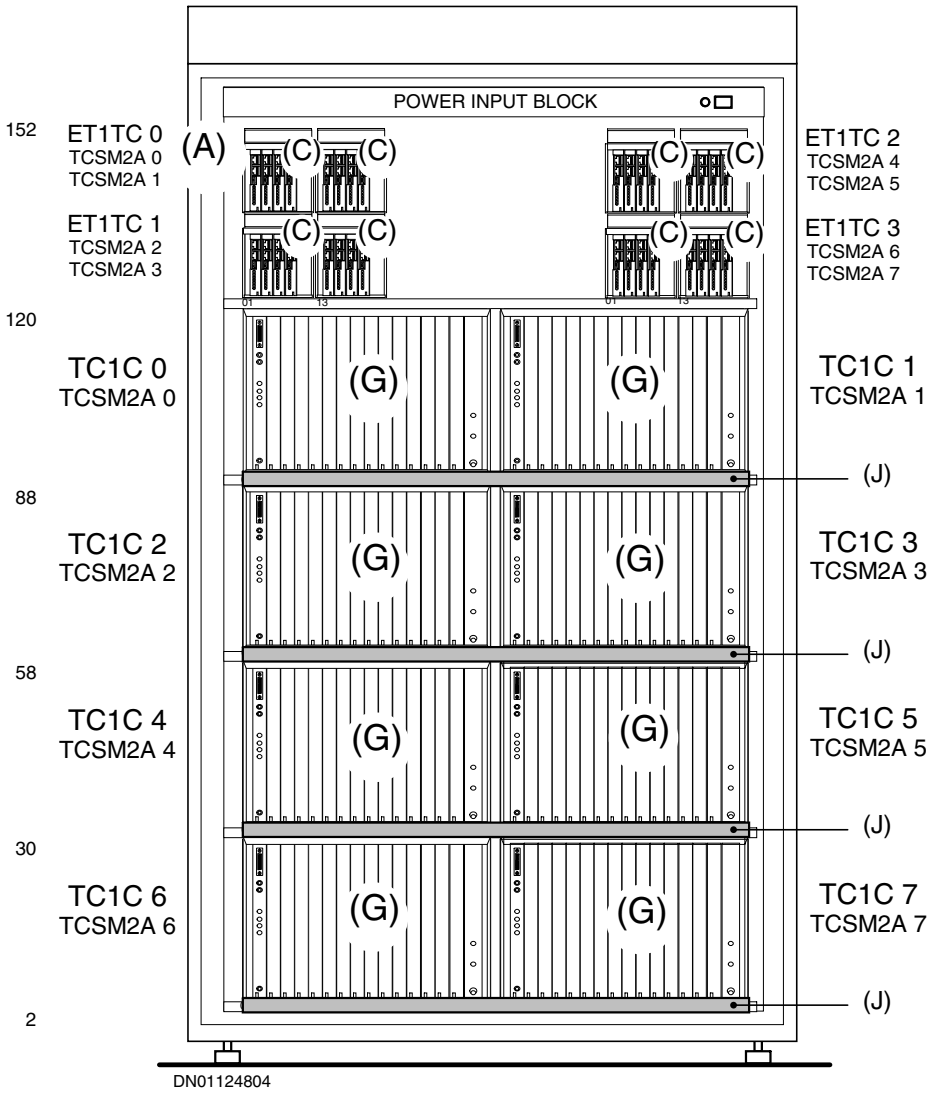
Code	Item	Name	Qty
NEBS3 Kit: 5000031	**NEBS3 Kit**	**NEBS3 Kit for TCSM2A (one rack)**	**Qty**
C104194	DS198E	Door Set 196 for earthquake	1
C29113	SP19A-T	Side Plate Set	1
2000034 Doc No. DN0196314	Installation Instructions	Installing the NEBS Upgrade Kit in BSC2(i)and TCSM2	1
C104196	Installation Set ISFPNT 1)	Installation Set for Fire Protection according to NEBS in TCSM2	1
772250240	1) Included in Installation Set	Grounding Adapter	1
7710639880	1) Included in Installation Set	Fastening rail 8	4
Codes shown in Appendix A	1) Included in Installation Set	Honeycombs and Support Frames (plates)	Shown in enclosed document
762290100	ESD Sticker	ESD Sticker	150

Table 6. Cabling Rack R2A1-T with Door Set DS192-S (NEBS) for raised floor installation.

Code	Item	Name	Qty
2003181 C29271	R2A1-T	Cabling rack for raised floor installation	1
C29076	DS192-S	Door Set for cabling rackR2A1-T	2 doors

Table 7. Cable Conduit CC19V-S (NEBS) for raised floor installation.

Code	Item	Name	Qty
2003180 C29089	CC19V-S	Cabling conduit for raised floor installation	1



(A) NEBS Grounding Adapter

(C) Honeycomb and Support Frame, Upper (215x98x6,35 mm)
Honeycomb and Support Frame, Lower (215x98x6,35 mm)

(G) Honeycomb and Support Frame, Upper (215x340x6,35 mm)
Honeycomb and Support Frame , Lower (215x340x6,35 mm)

(J) Fastening Rail 8 (7710 63 9880) for whole shelf with TC1C cartritges

Figure 2. Fire protection sets for TCSM2.

3 Installing the Doors DS196E and DS198E

Installation of the doors DS196E for BSC2(i) and DS198E for TCSM2 is described in the following section. The installation procedure is similar for both applications. The door set includes four doors: two left and two right hand doors.

3.1 Installing the doors

Install the the doors as described in the installation procedure and shown in the figure below.

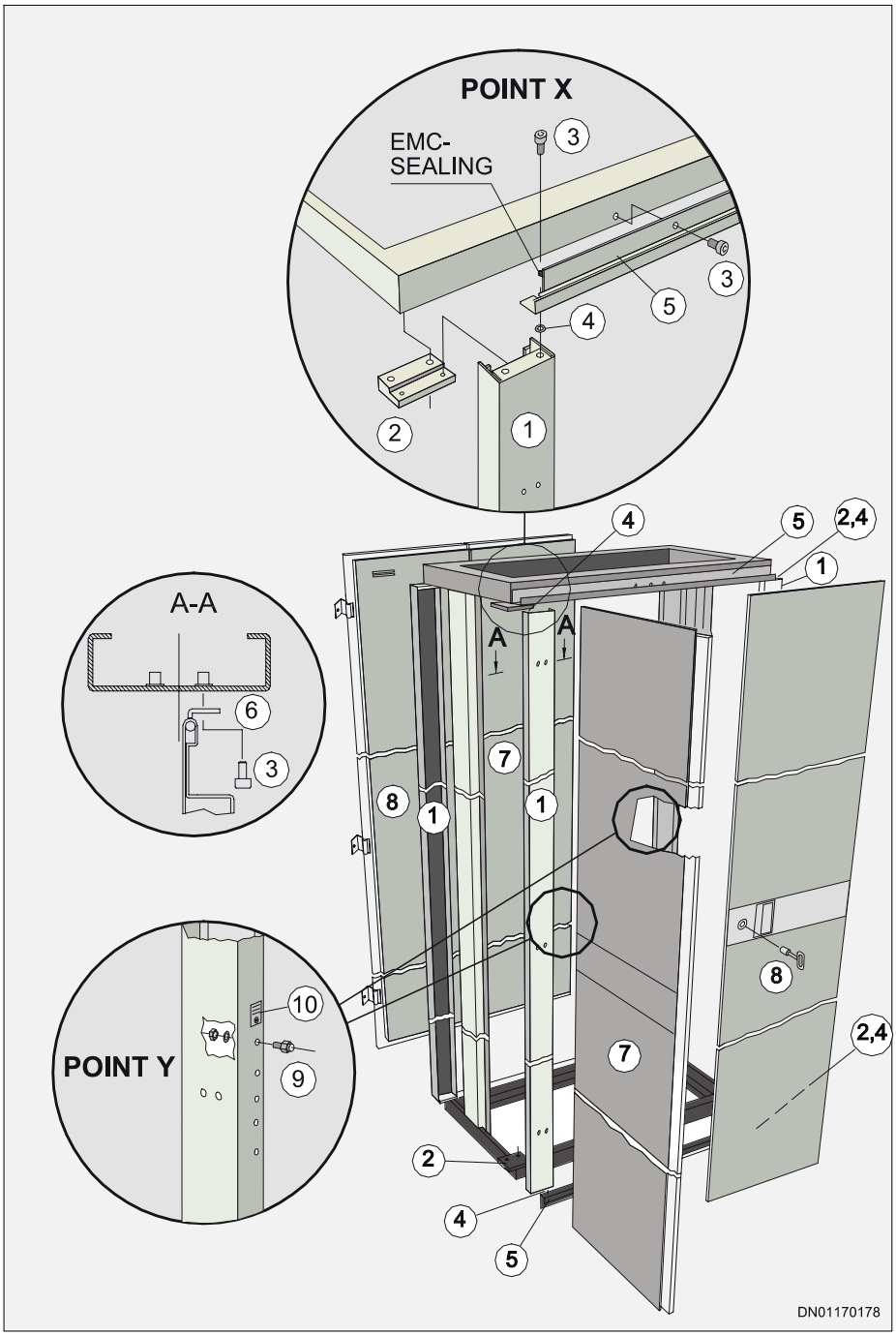


Figure 3. Mounting the doors.

Installation procedure

1. Attach the hinge beams (1) and the upper and lower bracket (5) with the mounting plates (2) to the rack body (Figure 3, point X).

2. Install a washer (4) between the bracket (5) and the mounting plate (2). Note that these washers are optional, and they are installed if the doors are too tight to open when closed.

3. Use hexagonal socket head screws to fasten the doors by the attached hinges (6) to the hinge beams (1), and make sure that the door equipped with a handle and a lock (8) comes to the right-hand side. Leave the screws a bit loose at first and close the doors. The doors close best when closed simultaneously

4. The sealing strips force the doors straight and into the correct position, you can help by moving the doors a little. When the doors are properly in place and closed, tighten the hexagonal socket head screws through the holes by the hinges.

5. Test that the doors open and close properly, and that they can be locked using the key. Note that the disturbance protection sealing requires a certain amount of pressure to be able to work efficiently, and so you are supposed to feel some resistance when closing the doors.

6. Once more, check that the sealings are clean and undamaged, and that the doors are in a linear position, i.e. that the gap between the doors is equally large both at the top and at the bottom. If necessary, adjust the doors again.

7. To complete the door installation, add the EBP connectors (9) and the stickers (10) to the left hinge beam, both at the front and the rear of the rack (Figure 3, point Y).

3.2 Installing the side plates SP19A-T

At both ends of each rack row, the DS196E and DS198E (NEBS) doors require SP19A-T side plates with conductive sealings (see the figure below). The side plates are similar for BSC2(i) and TCSM2 applications.

Install the side plates as described in the installation procedure and shown in the figure below.

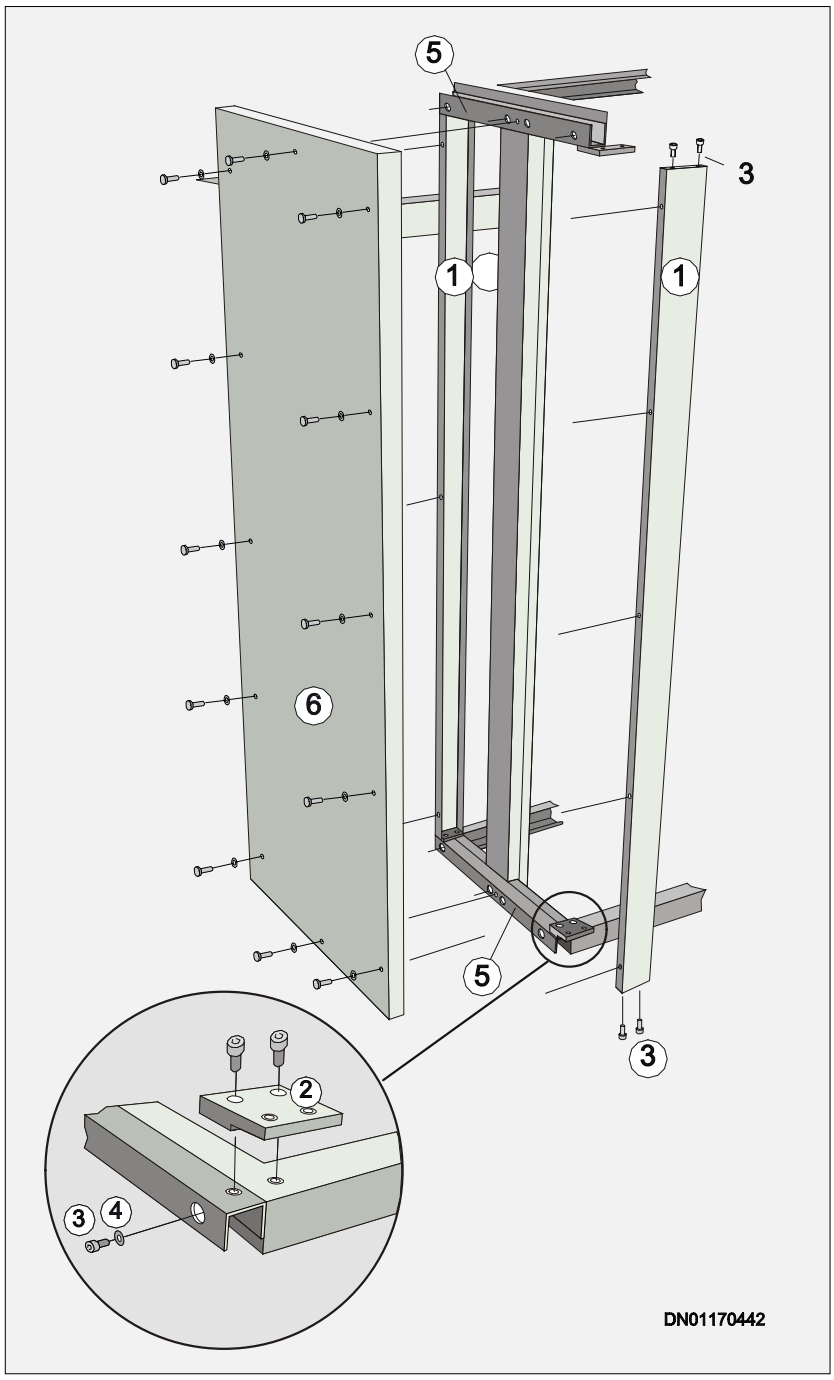


Figure 4. Mounting the side plate.

Installation procedure

1. Attach the upper and lower frame bars (5) to the rack body through the holes with hexagonal socket head screws (3) (4 + 4 screws).

2. Attach the mounting plates (2) to the frame bars with screws (3). These mounting plates (2) are also used for door installation.

3. Attach the side (6) plate with 12 screws to the door hinge beams (1) and upper and lower frame bars (5).

3.3 Installing the cabling rack R2A1-T for raised floor

The cabling rack R2A1-T can be installed to one side of a rack when the site cables are drawn under the floor in raised floor installations. The site cables here mean all those cables which must be grounded at the grounding elements, such as trunk (PCM) cables and modem cables. The power supply cables must be routed through the cable conduit CC19V-S. The cabling racks are similar for BSC2(i) and TCSM2 applications.

Install the cabling rack as described in the installation procedure and shown in the figure below.

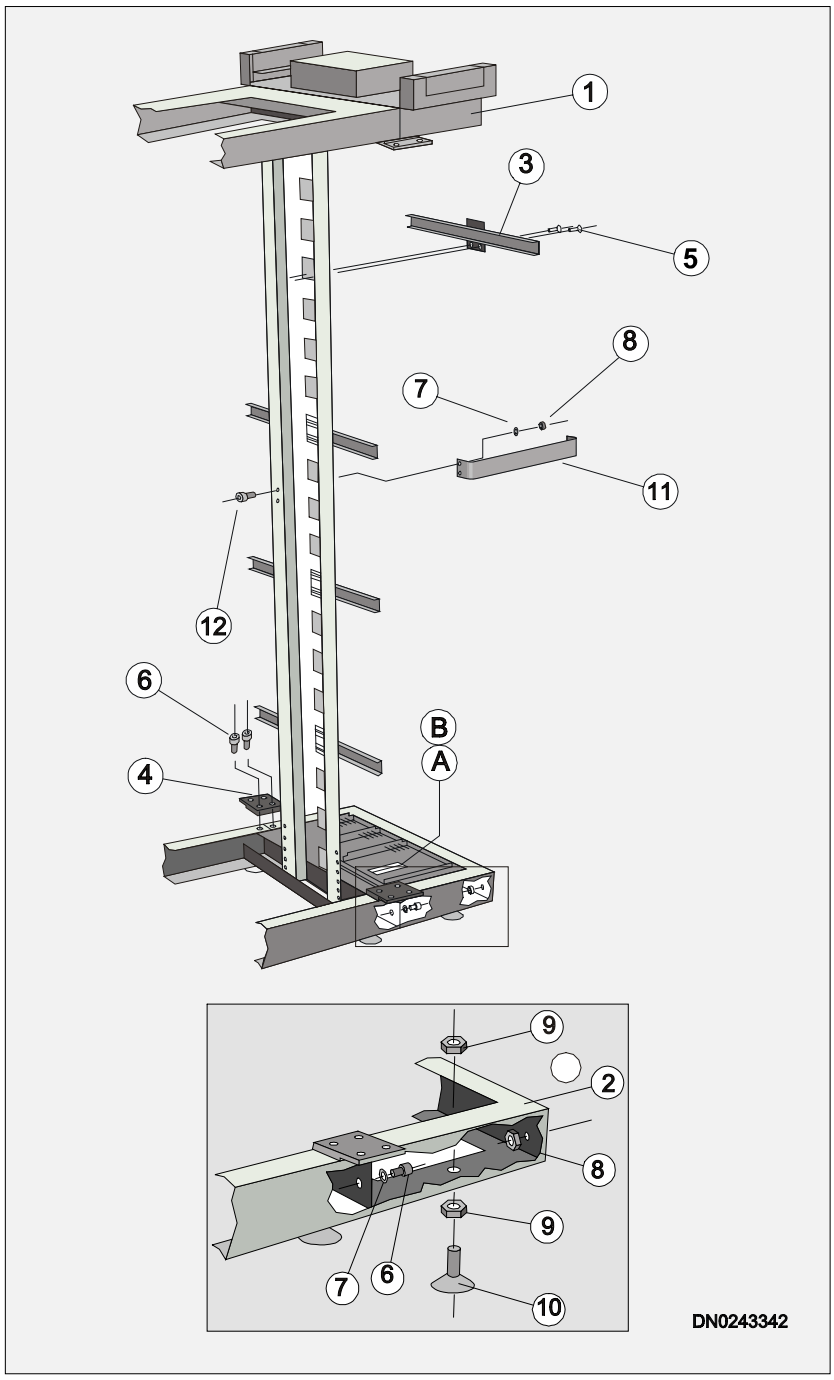


Figure 5. Mounting the cabling rack R2A1-T.

Installation procedure

1. Attach the upper frame (1) to the rack body through the holes with hexagonal socket head screws and washers (6, 7) (2 + 2 screws).

2. Attach the lower frame (2) to the rack body through the holes with hexagonal socket head screws and washers (6, 7) (2 + 2 screws).

3. Attach the adjustable foot (10) at the front and at the rear side with two hexagonal socket head nuts.

4. Attach the four mounting plates (4) to the lower and upper frame bars with hexagonal socket head screws (6). These mounting plates (4 + 4) are also used for the rack door installation.

5. Attach the hinge beams (2) (four altogether), as shown in Figure (6), to the mounting plates (4) with hexagonal socket head screws; two screws at both ends.

6. Attach the four mounting brackets (3) with hexagonal socket head screws (5), two screws for each bracket.

7. If the cabling rack R2A1-T is installed between two BSC2/TCSM2 racks, install the grounding strip (11) with hexagonal socket head screws (12) and nuts (8) and washers (7). One screw at each rack. If the cabling rack R2A1-T is at the end of the equipment row, do not install the grounding strip.

3.4 Installing the doors DS192-S for cabling rack R2A1-T

The cabling rack R2A1-T requires two doors DS192-S, one at the front and one at the rear side of the rack.

Install the doors to the cabling rack as described in the installation procedure and shown in the figure below.

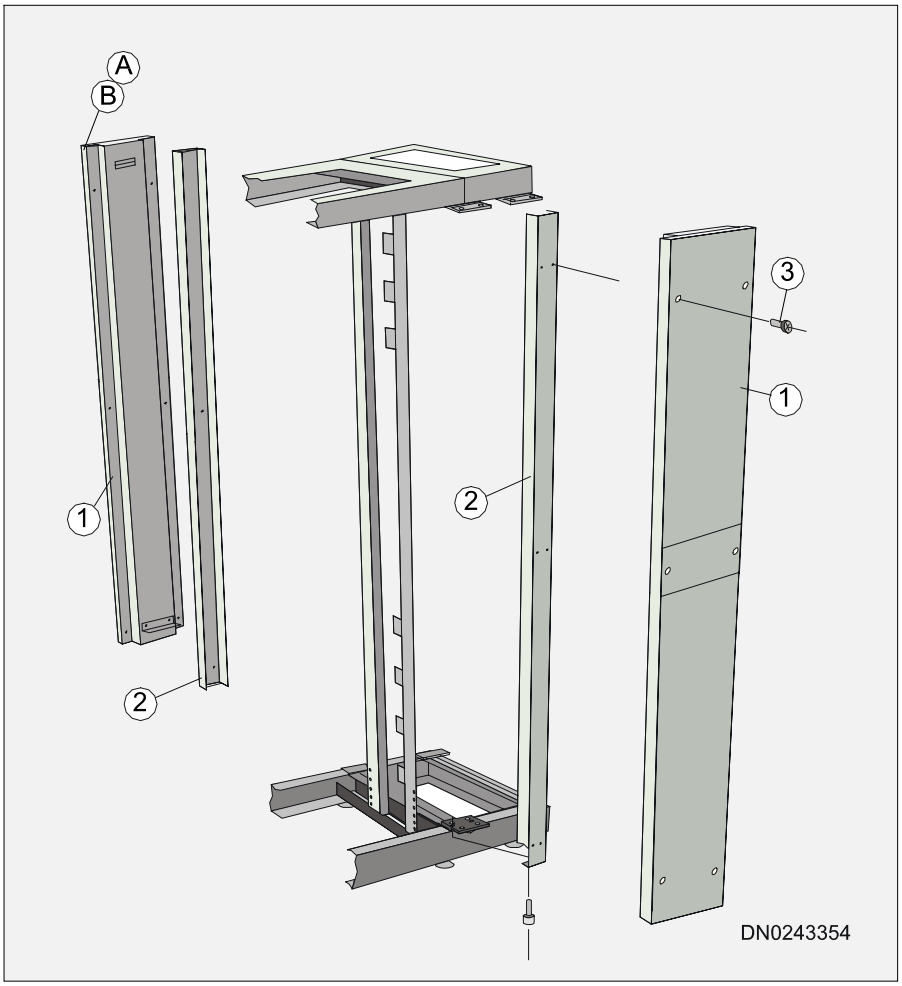


Figure 6. Mounting the door DS192-S to cabling rack R2A1-T.

Installation procedure

1. Attach the door (1) to the hinge beams (2) with six hexagonal socket head screws (3) at the front side of the rack.

2. Attach the door (1) to the hinge beams (2) with six hexagonal socket head screws (3) at the rear side of the rack.

3.5 Installing the cable conduit CC19V-S for raised floor

The cable conduit CC19V-S can be installed to one side of a rack when the power supply cables are drawn under the floor in raised floor installations. The cable conduits are similar for BSC2(i) and TCSM2 applications.

Install the cable conduit as described in the installation procedure and shown in the figure below.

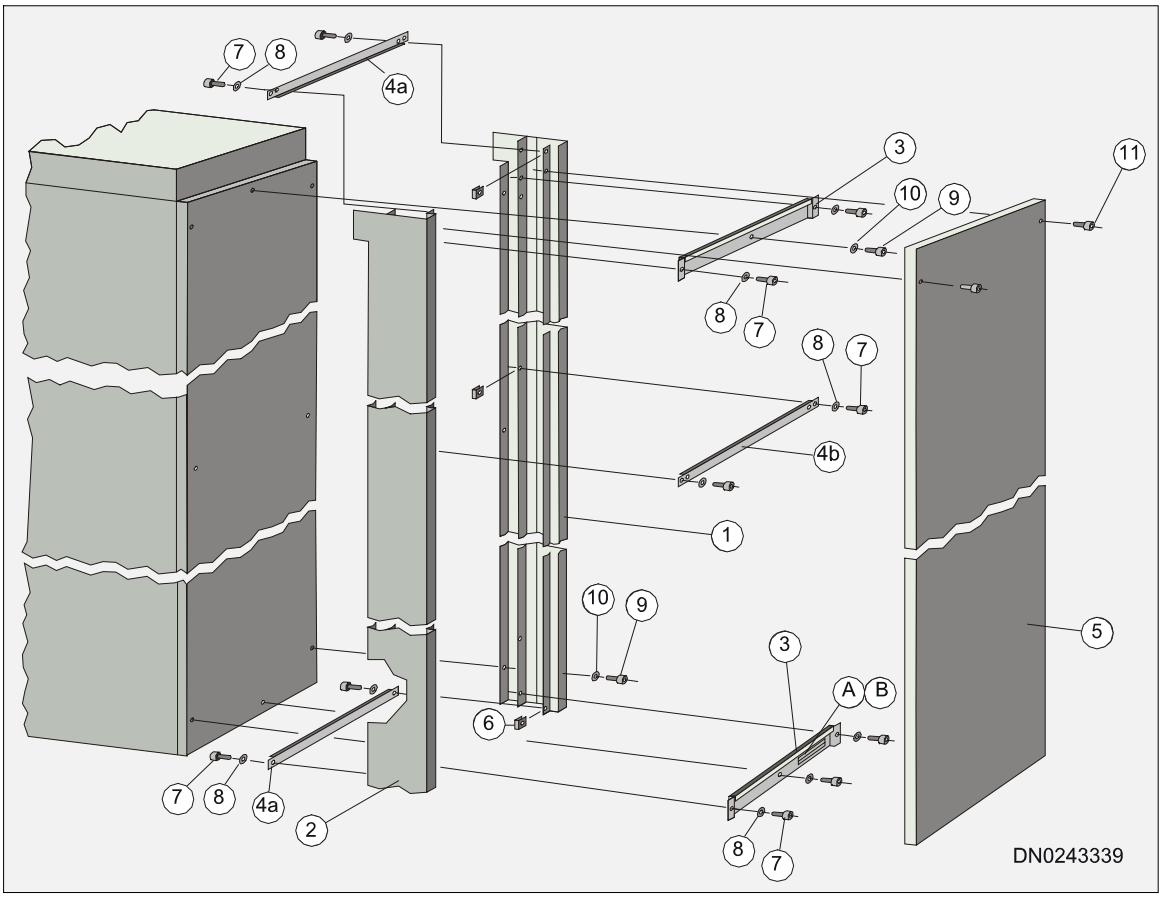


Figure 7. Mounting the cable conduit CC19V-S.

Installation procedure

1. Note that the side plate of the rack and the side beams (2) and the conduit mounting brackets (3) are attached with the same screws. If the side plate is already installed, remove the attachment screws (12 altogether).

2. Attach the upper and lower conduit mounting brackets (3) to the rack body with cross-head screws and washers (9, 10). One to the Three screws for each bracket.

3. Attach the right and left side beams (2) to the rack body with cross-head screws and washers (9, 10). Five screws for each side beam. hexagonal socket head screws and washers (7, 8).

4. Attach the right and left side beams (2) to the upper and lower conduit mounting brackets (3) with hexagonal socket head screws and washers (7, 8). Two screws for each side beam.

5. Attach two mounting brackets (4a) to the upper-outer and lower-outer corners of the beams with nut plates (6) and hexagonal socket head screws and washers (7, 8).

6. Attach four mounting brackets (4b) to the inner side of the beams with nut plates (6) and hexagonal socket head screws and washers (7, 8).

7. Attach two hexagonal socket head screws (11) for the end plate installation. Do not tighten these screws yet.

8. Mount the end plate (5): first slide the lower end to the mounting bracket and then the upper end holes through the mounting screws (11).

9. When the plate is on its place, tighten the screws through the holes at he upper end of the plate.

4 Installing the Fire Protection sets in BSC2(i)and TCSM2

The Installation Sets for Fire Protection according to NEBS are shown in Appendix A and in the enclosed documents:

4.1 Removing the cartridges for the honeycombs with support frame installation

When installing the honeycombs and their support frames the cartridges must be loosened to allow insertion of honeycombs under the cartridges. Handle the cartridges with care and check the cables if any of them must be removed from their connectors.

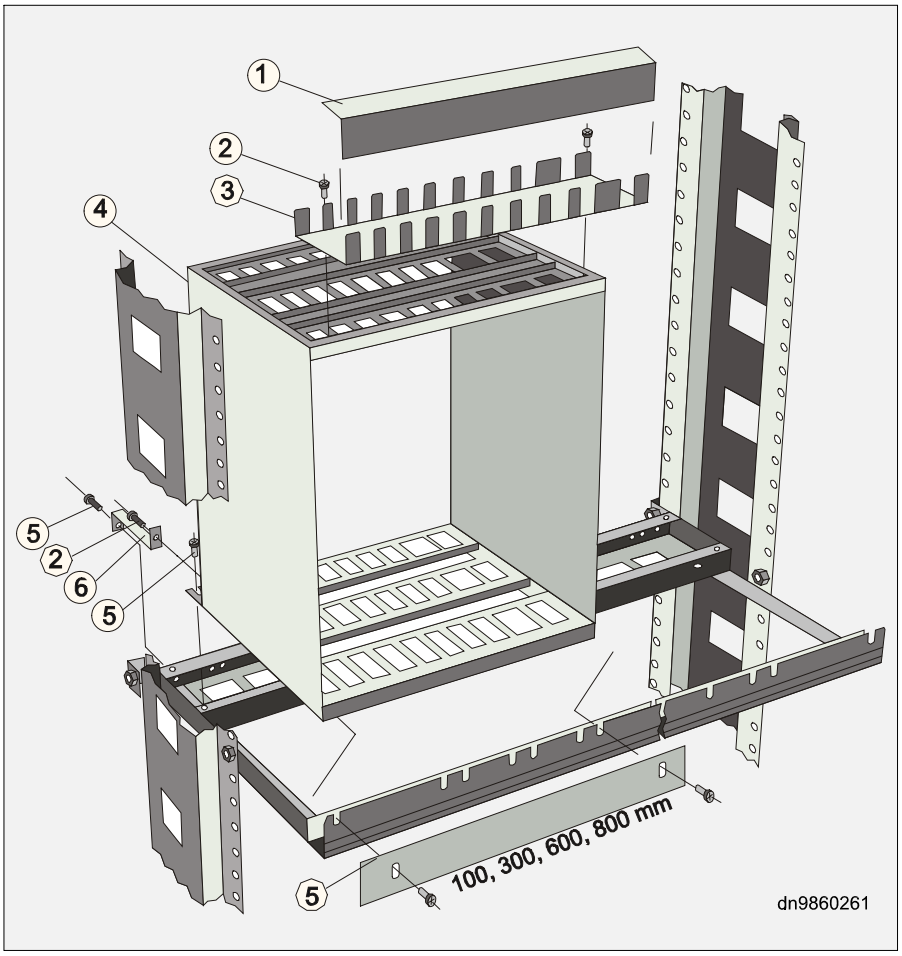


Figure 8. Removing and reinstalling the cartridge, example.

Installation procedure

1. Remove the cover plate (1) and cable through (3) by loosening the screws (2).

2. Remove the front attachment screws (5).

3. Remove the rear attachment screws and brackets (5, 2, 6). The brackets may vary in size and number in different cartridges.

4. Take the cartridge out of the shelf or lift the front side and insert the honeycomb with their support frames as described in sections below.

4.2 Installing the honeycombs with support frames, on top of cartridges

Install the honeycombs with support frames on top of the cartridges as described in the installation procedure and shown in the figure below.

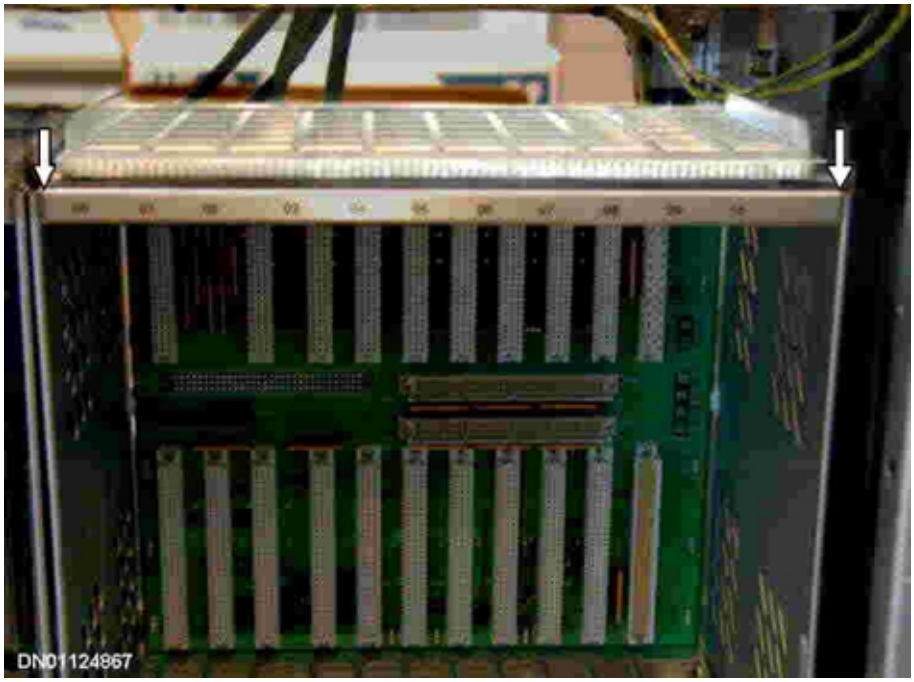


Figure 9. Installing the honeycombs with support frames on top of a cartridge.

Installation procedure

1. Remove the cartridge now or later when installing the honeycomb with its support frame under the cartridge.
2. Remove the label plate and cable trough on top of the cartridge. Remove the attachment screws (number of screws may vary) of the cable trough.
3. Insert the honeycomb with its support frame on top of the cartridge. Check that the frame sits nicely against the rear plate of the cartridge.
4. Install the cable trough on top of the support frame and secure them together with the attachment screws.

4.3 Installing the honeycombs with support frames, under the cartridges

Install the honeycombs with support frames under cartridges as described in the installation procedure and shown in the figure below. The support frames may be slightly different depending on the fixing method. Some frames have bendable “tongues” for attaching to the cartridge frame, and some are only inserted between the cartridge's bottom plate and the cartridge shelf structures.

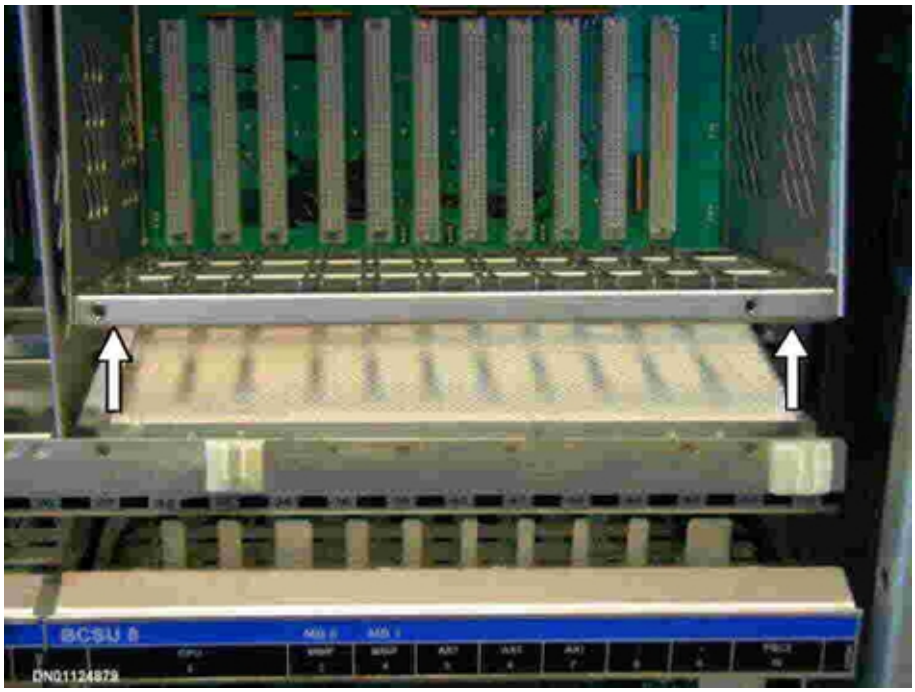


Figure 10. Installing the honeycomb with support frame under a cartridge.

Installation procedure

1. Remove the front and rear attachment screws and the related grounding brackets (number of screws may vary). Remove the cartridge (if required), or lift the front side to obtain a suitable passage for honeycomb insertion.

2. Insert the honeycomb with its support frame under the cartridge. Check when required that the orientation holes go through the screws potruding at the rear plate of the cartridge.

3. For those support frames with “tongues” (in MC1C and CLAC cartridges), bend them slightly to secure the installation, as shown in the figure below.

4. Reinstall the cartridge with its attachment screws.

5. Repeat the installation for all the cartridges in the BSC2(i)and TCSM2

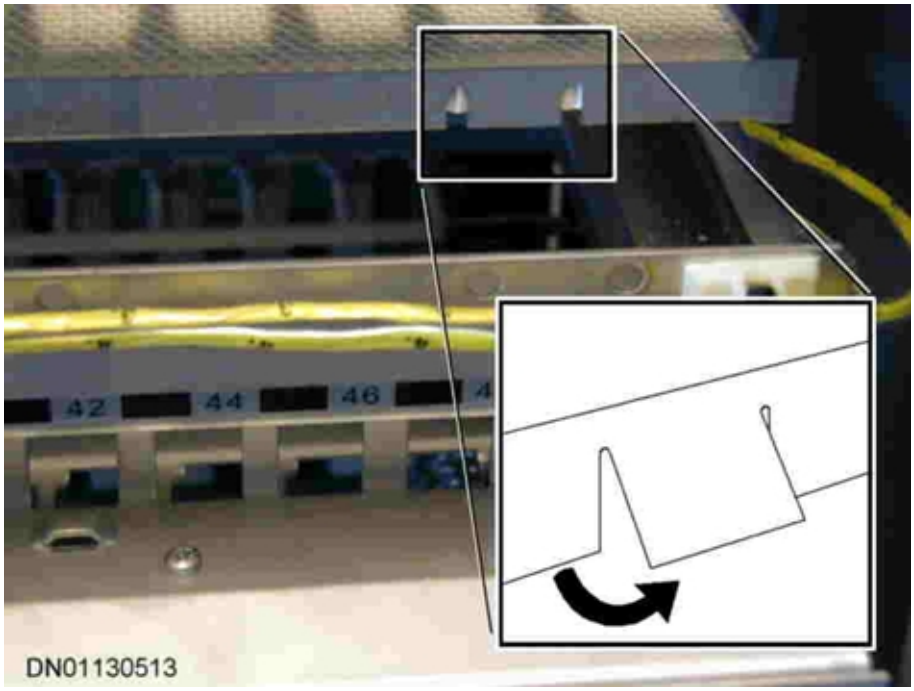


Figure 11. Bending the tongues in the honeycomb frames.

5 Installing the fastening rails

The NEBS kit includes fastening rails which can be mounted on the following cartridges in the BSC2i and TCSM2 racks (shown in Figures 1 and 2).

Install the fastening rails to the cartridges listed below as described in the installation procedure below and shown in Figure 8 above.

BSC2i rack BCBE

- Fastening rail 1, location 120.37; for CLOC cartridge only
- Fastening rail 3, locations 058.27 and 030.27; for OMU and BCSU 0 cartridges only
- Fastening rail 6, locations 088.01 and 002.01; for whole shelves with MCMU 0 + MCMU1 cartridges and BCSU 1 + BCSU 2 cartridges

BSC2i rack BCEE

- Fastening rail 1, location 120.01; for CLAC cartridge only
- Fastening rail 6, locations 088.01, 058.01 and 030.01; for whole shelves with BCSU 3 + BCSU 4, BCSU 5 + BCSU 6 and BCSU 7 + BCSU 8 cartridges

TCSM2 rack TC2E

- Fastening rail 8 locations 088.01, 058.01, 030.01 and 002.01; for whole TC1C (0-7) shelves with transcoder units 0 - 7.

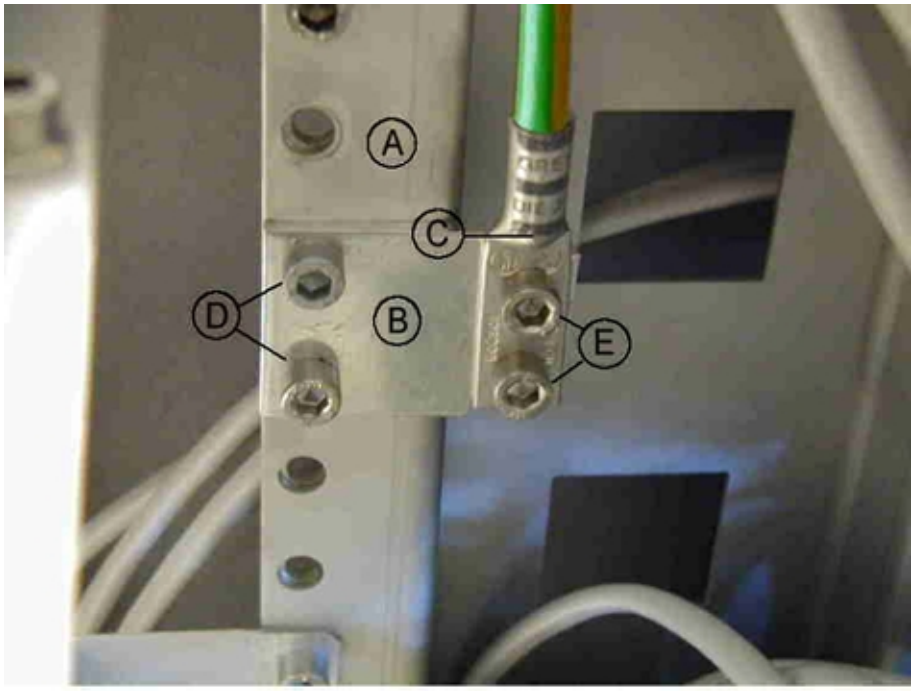
Installation procedure

1. Remove the screws at the lower front rail of the cartridge(s) on the shelf concerned, as shown in Figure 8.
2. Install the required fastening rail and tighten it with the screws so that the upper edge of the fastening rail overlaps the plug-in units installed in the cartridge(s).

6 Installing the grounding adapter

Install the grounding lug to the grounding bar as shown in the figure below.

Then install the grounding cable from the station to that grounding lug.



(A) Rack frame
(B) Grounding bracket
(C) Grounding lug (cable mounted)
(D) M6 Hex socket screws and nuts
(E) M6 Hex socket screws

DN 01124882

Figure 12. Installing the grounding adapter assembly.

Installation procedure

1. Install the grounding bracket (B) with two M6 hex socket screws (D) and nuts to the mounting holes in the rack frame (A).

2. Install the grounding lug (C)(cable crimped to it) to the mounting bracket (B) with two M6 hex socket screws (E).

7 Installing the ESD stickers on plug-in units

Attach the ESD sticker on front panel of each plug-in unit as shown in the figure below.

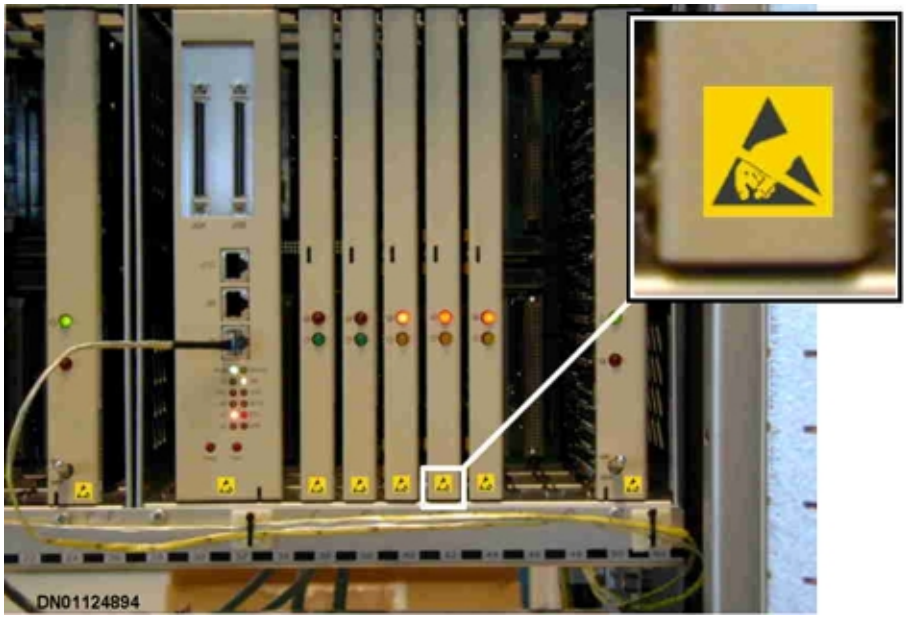


Figure 13. Installing the stickers on plug-in units.

8 Installing the honeycombs into the operating BSC2(i)

Though not highly recommended the honeycombs can be installed in the operating BSC2(i) connected to live network. This installation procedure must be performed with utmost care.

Installation procedure

- The 8+1 protected BSCUs: each BSCU can be set to a spare unit for installation.
- The 2n units MCMU and associated GSWB: first passive units and then switch the states.
- ETs in ETC cartridges ETC50-8: study the network solutions carefully, each cartridge contains 8 ET2E plug-in units and 16 ETs (1.5/2 Mbit PCMs) with connections towards transcoders TCSM2 (MSC) and base station transceivers, BTS.
- The OMU and associated SD3C-S: block and remove from configuration for installation. The honeycombs for the OMU and the SD3C-S can also be installed at the same time with the CLAC and CLOC installation (below), Sections 7.1 and 7.5.
- The CLS with CLOC and CLAC cartridges: act carefully, because the removal of CLS from the configuration shuts down the whole BSC and the associated BTSs and TCSM2s.

8.1 OMU installation

Disable the measurements and observations

The measurements must be disabled during the OMU upgrade, also NMS-links are blocked during the OMU upgrade. This needs to be done because disk updatings are prevented when OMU is not in use due the hardware changes. It is impossible to copy measurement files to disks when OMU is not working. Also NMS-links are blocked during the OMU upgrade.

All measurements should be stopped from NMS-WS. The command to check measurements and observation states from BSC is:

ZTPI,MEASUR;

ZTPI,OBSERV;

ZTPI,TRANSM;

Make sure that all the measurements with administrative state 'UNLOCKED' are turned to 'LOCKED'. Disable measurements by using NMS applications until all measurements and observations are inactivated.

Checking measurements and locking NMS links at OMU

Remote user access should be disabled, because it may disturb the upgrade. When all NMS-links are blocked, only local users can access the BSC. Therefore alarm situation must be followed locally and all alarm risen must be analyzed.

1. Check that all measurements and observations are transferred:

   ZIFI:OMU,MEASUR:S;

   ZIFI:OMU,OBSERV:S;

2. If there are files in FULL state, wait for 2 minutes and check again. Files can be put to the transferred state with MML command:

   ZIFS:OMU,MEASUR:1&&<file_cnt>:T;

   ZIFS:OMU,OBSERV:1&&<file_cnt>:T;

3. Check NMS-links to be blocked with command (digital or analog X.25):

   ZQSI;

4. Check NMS-links to be blocked with command (LAN connection):

   ZQLI;

5. Block all digital or analog X.25 NMS links with command:

   ZQSC:<link number>,LOC;

6. Block all CLNS connections to NMS with command

   ZQLG:<link number>::LOC;

7. Remember that after the NMS link has been blocked, no alarms will be forwarded to the NMS. The BSC alarms should therefore be followed up to keep track if any unexpected phenomenon occurs.

Copying the databases to disk

1. To copy the EQUIPM database to disk give the copy command:

   ZDBC:EQUIPM,0;

2. Check that the database states are normal and that they are consistent with both Winchester disks. Check these with commands:

   ZDBS:BSDATA,0;

   ZDBS:OEDATA,0;

   ZDBS:EQUIPM,0;

   ZDBS:WAGONS,0;

   ZDBD:OMU;

3. Make sure that there are no disk updatings in queue.

   ZDUQ;

   The values of SIMQUE and SEQQUE must be zero (0

Prevent database and disk updates

- Give commands:

  ZDBP:BSDATA,0:DISK;

  ZDBP:OEDATA,0:DISK;

  ZDBP:EQUIPM,0:DISK;

  ZDBP:WAGONS,0:DISK;

  ZDUP::NO;

Installing the honeycombs for OMU and OMU-SD SD3C-S

1. Change OMU to state SE-NH:

   ZUSC:OMU:TE;

   ZUSC:OMU:SE;

   ZUSC:OMU:SE;

2. Switch the OMU cartridge power off from the PSC3 power supply.

3. Switch the SD3C-S cartridge power off from the PSC1 power supply.

4. Install the honeycombs with their frames on top and under the OMU cartridge as described in chapter 4.

5. Install the honeycombs with their frames on top and under the SD3C-S cartridge (peripheral devices) as described in chapter 4.

6. Switch the SD3C-S cartridge power ON from the PSC1 power supply.

7. Switch the OMU cartridge power ON from PSC3 power supply. MML session is available after OMU CPU has restarted to SE-NH state. Restart can be monitored from service terminal connector of CP6LX.

8. Change OMU to state TE-EX and run the diagnostics.

   ZUSC:OMU:SE;

   ZUSC:OMU:TE;

   ZUDU:OMU:TE;

9. If diagnostics fail, follow the steps described in Diagnosis Reports (2.5 Alarm Reference Manual) manual. The diagnostics been passed, change the OMU state to WO-EX.

   ZUSC:OMU:WO;

Resume the database and disk updates

- To resume the database give the command:

  ZDUR;

ZDBR:BSDATA,0:DISK;

ZDBR:OEDATA,0:DISK;

ZDBR:EQUIPM,0:DISK;

ZDBR:WAGONS,0:DISK;

Unlocking analog or digital X.25 or LAN NMS links

1. Unlock the LAN connections to the NMS with command:

   ZQLG:

2. Unlock the digital or analog NMS links with command:

   ZQSC:

3. Start the GSM measurements which were active before the OMU installation procedure from the NMS.

8.2 BCSU installation

The execution time of this step is ten (10) minutes per BCSU. Thus, a fully configured BSC (1+8 BCSUs) BCSU upgrade step takes approximately 1.5 hours. Upgrade is installed using a spare BCSU for the HW upgrade and by making BCSU switchovers until every unit is upgraded.

Upgrading procedure

Remote user access should be disabled, because it may disturb the upgrade. When all NMS-links are blocked, only local users can access the BSC. Therefore alarm situation must be followed locally and all alarm risen must be analyzed.

1. Change the BCSU state from SP-EX to SE-NH

   ZUSC:BCSU,<index>:TE;

   ZUSC:BCSU,<index>:SE;

   ZUSC:BCSU,<index>:SE;

2. Switch the BCSU cartridge power off from the PSC3 power supply.

3. Install the honeycombs with their frames on top and under the cartridge as described in chapter 4.

4. Switch the BCSU Cartridge power ON from the PSC3 power supply.

5. Change the BCSU state from SP-EX to TE-EX:

   ZUSC:BCSU,<index>:SE;

   ZUSC:BCSU,<index>:TE;

6. Run diagnostics:

   ZUDU:BCSU,<index>;

7. Once the diagnostics have passed, change the BCSU state to SP-EX:

   ZUSC:BCSU,<index>:SP;

Repeat these steps for all BCSUs.

8.3 MCMU and GSWB installation

The execution time of this step is altogether (35) minutes per MCMU. At the same time the corresponding GSW (0 and 1) can be provided with the required honeycombs (15 minutes). Thus, a combined MCMU and GSW upgrade step takes approximately 1.5 hours. The upgrade set is first installed into the passive (spare) MCMU (0 or 1) and by making an MCMU switchover.

Upgrading procedure

1. Make sure that the active (SP-EX) MCMU retains its state by turning the side selection switch at the HWAT front panel (in OMU) to the required position (left = MCMU 0 active, switchover not allowed; middle = switchover allowed; right = MCMU 1 active, switchover not allowed)

2. Change the state of the passive MCMU (0 or 1) from SP-EX to SE-NH. Changing of the MCMU state also changes the state of the related GSWB (0 or 1).

   ZUSC:MCMU,<index>:TE;

   ZUSC:MCMU,<index>:SE;

ZUSC:MCMU,<index>:SE;

3. Switch the MCMU and GSWB cartridge power off from the PSC3 and PSC1 power supplies.

4. Install the honeycombs with their frames on top and under the MCMU and GSWB cartridges as described in chapter 4.

5. Switch the MCMU and GSWB cartridge power on from the PSC3 and PCS1 power supplies.

6. Change the MCMU state from SE-NH to TE-EX:

   ZUSC:MCMU,<index>:SE;

   ZUSC:MCMU,<index>:TE;

7. Run diagnostics:

   ZUDU:MCMU,<index>;

   If the result is OK, change the state to SP-EX:

   ZUSC:MCMU,<index>:SP;

8. Release the forced switchover by turning the side selection switch at the HWAT front panel (in OMU) to the middle position.

9. Change the MCMU state from SP-EX to WO-EX. Wait for 20 minutes to check the stability.

   ZUSC:MCMU,<index>:WO

10. Repeat steps 1-8 with the other MCMU (and GSWB).

8.4 ET5C (0-8) installation

Note that one ET5C cartridge contains eight ET2x plug-in units, that is 16 ETs, and all state changing actions must be performed for each ET. ET index = its PCM number.

Blocking the ETs

1. Block all the ETs (two ETs per plug-in unit, and up to 16 ETs) in the cartridge using commands:

ZUSC:ET,<index>:BL;

ZUSC:ET,<index>:TE;

ZUSC:ET,<index>:SE

2. Switch off the power from the whole cartridge by removing the corresponding fuses. A cartridge contains two shelves, and each is protected with a fuse; upper shelf's fuse is located at fuse unit PSFP 0 and lower shelf's at fuse unit PSFP 1. For more information, see manual *Installing the BSC and TCSM2*.

3. Install the honeycombs with their frames on top and under the cartridge as described in chapter 4.

4. Switch on the power for the whole cartridge by returning the corresponding fuses.

5. Change the working state of each ET (two ETs per plug-in unit, and up to 16 ETs) to TE-EX:

   ZUSC:ET<index>:SE;

   ZUSC:ET<index>:TE;

6. Change the working state to WO:

   ZUSC:ET<index>:WO;

8.5 Clock system CLOC and CLAC installations

Note

The CLS system in the BSC is not duplicated so when you remove the CLOC from the configuration the whole BSC shuts down, and the whole subnetwork (TCSM2s and BTSs) below it. Now when the BSC is down it is wise to install all the rest honeycombs required.

CLOC and CLAC installation

1. To shut down the whole BSC give the command:

ZUSS:SYM:C=DISK:F=IMM;

2. When the OMU has shut down and just when it starts the reset operation, switch the OMU cartridge power off from the PSC3 power supply.

3. Switch the SD3C-S cartridge power off from the PSC3 power supply.

4. Switch the power off from PSAs, turn two switches to OFF at the upper front panel of the BSC racks (BCBE and BCEE).

5. Install the honeycombs with their frames on top and under the cartridge as described in chapter 4.

6. Switch the power on at the PSAs

7. Switch the OMU cartridge power on at the PSC3 power supply.

8. Switch the SD3C-S cartridge power on at the PSC3 power supply.

9. The BSC will (should) recover automatically.

9 Installing the honeycombs into the operating TCSM2

Though not highly recommended the honeycombs can be installed in the operating TCSM2 connected to live network. The TCSM2s are functional units of the BSCs and therefore controlled by the BSCs though they may be placed in different sites. One TCSM rack accommodates eight (8) TCSM2 units and they may be controlled by different BSCs. Each TCSM2 includes one half of the ET1C cartridge and one TC1C cartridge. Note that one ET1C cartridge contains up to four (4) ET2x plug-in units for one BSC and up to four (4) ET2x plug-in units for another BSC. This installation procedure must be performed with utmost care.

Blocking the TCSM2

To block a TCSM2 unit connected to a BSC from the BSC give the remote commands:

ZUSC:TCSM,index:BL;

ZUSC:TCSM,index:TE;

ZUSC:TCSM,index:SE;

TC1C installation

1. Switch off the power from the TC1C cartridge by flicking the power switch on the PSC1 front panel to the down position.

2. Install the honeycombs with their frames on top and under the cartridge as described in chapter 4.

3. Switch the power on by flicking the switch on the PSC1 front panel to the up position. When the LAPD connection to the BSC is established, the TCSM2 checks the consistency of the TRCO software with the BSC at the start-up command. If the software in the BSC is a newer version or the checksum is different, the software is loaded automatically from the BSC.

4. Set the TCSM2 (TRCO) back to the working state using the BSC command:

   ZUSC: TCSM,index:WO;

ET1TC installation

The TCSM2 unit houses several ET2x plug-in units. Interface 0 of the ET2x0 is connected to the BSC and interface 1 of the ET2x0 and other ET2xs are connected to the MSC.

Note that one ET1TC cartridge houses ET2x plug-in units for two TCSM2 units; the upper shelf for one and the lower shelf for another.

In a TCSM2 configuration the ET2x plug-in unit's interface 0 is connected to the BSC and other interfaces to the MSC.

1. Switch off the power from the whole ET1TC cartridge by removing the corresponding fuses. An ET1TC cartridge contains two shelves, and each is protected with a fuse; upper shelf's fuse is located at fuse unit PSFP 0 and lower shelf's at fuse unit PSFP 1. For more information, see manual *Installing the BSC and TCSM2*.

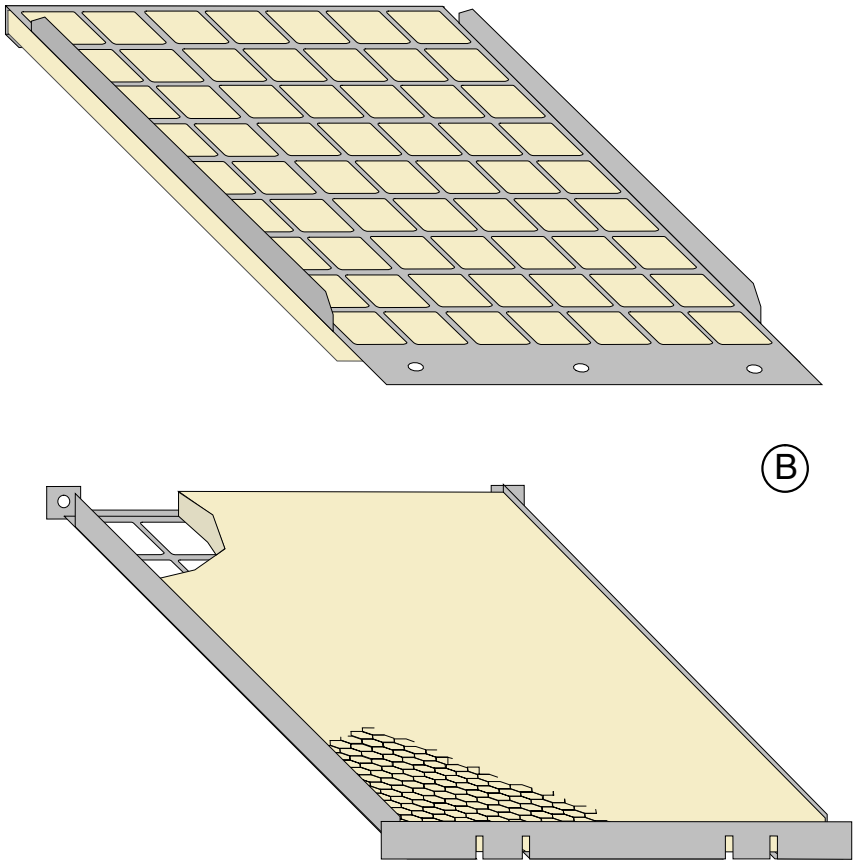
2. Install the honeycombs with their frames on top and under the cartridge as described in chapter 4.

3. Switch on the power for the whole cartridge by returning the corresponding fuses.

4. Set the TCSM2 (TRCO) back to the working state using the BSC command when the corresponding transcoder cartridge TC1C is also provided with honeycombs:

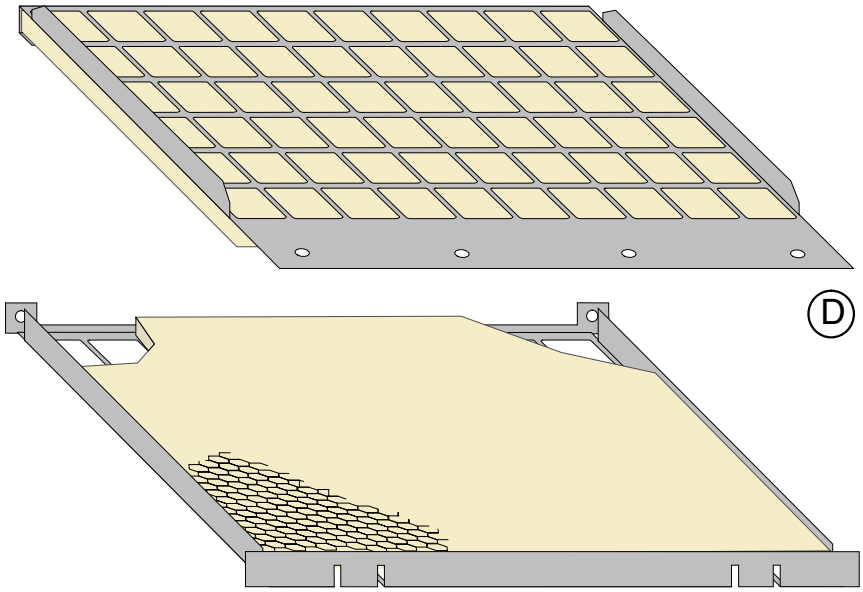
   ZUSC: TCSM,index:WO;

Appendix A. Honeycombs with frames used in BSC2(i) and TCSM2



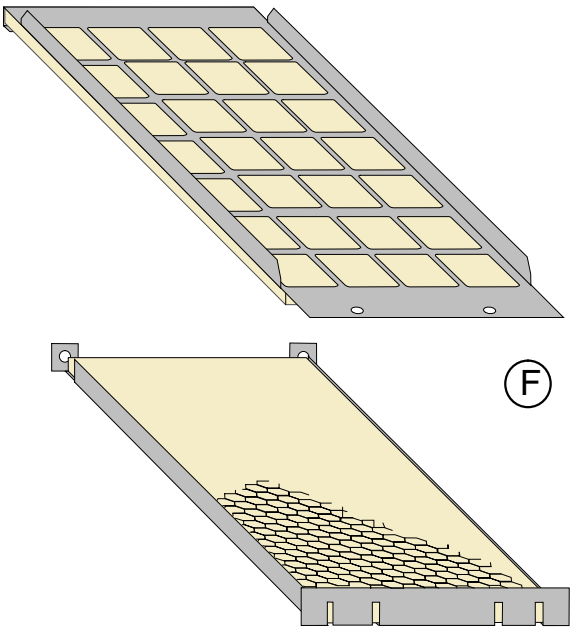
Cartridge SW1C:
Support Frame; upper 7710419510/CHD104195
lower 7710419520 /CID104195
Honeycombs 7710452300 /FPCV-12843

Figure 14. Honeycombs with frames for the SW1C cartridge used in the GSWB.



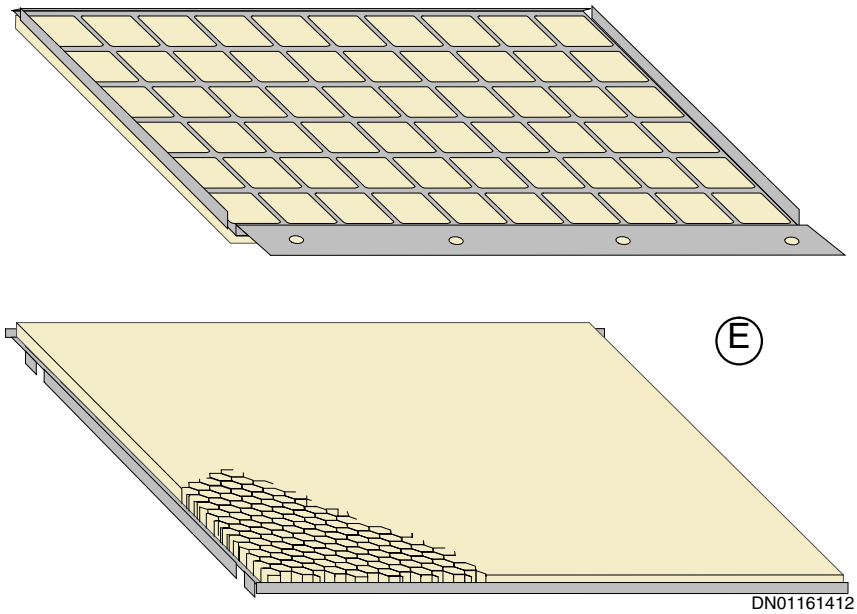
Cartridge MC1C:
Support Frame; upper 7710419530/CJD104195
lower 7710419540/CKD104195
Honeycombs 7710451900/FPCV-12792

Figure 15. Honeycombs with frames for the MSC1C cartridge used in the BCSUs.



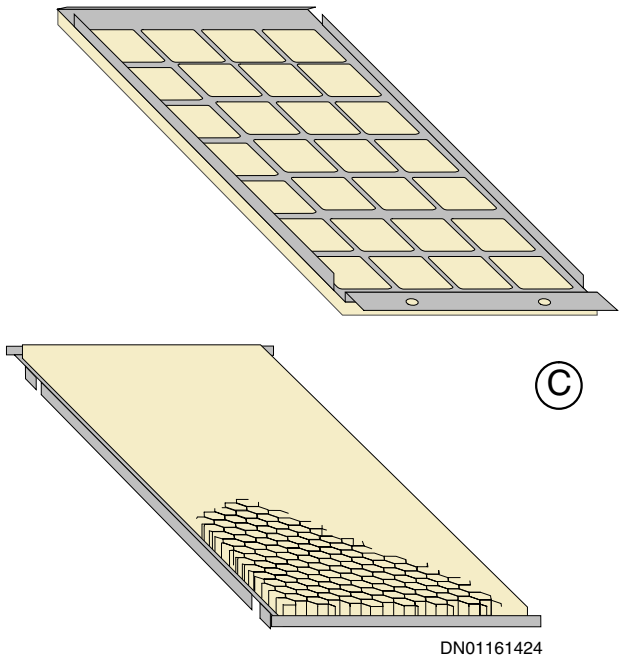
Cartridge CLAC:
Support Frame; upper 7710419550/CLD104195
lower 7710419560 /CQD104195
Honeycombs 7710452000/FPCV-12793

Figure 16. Honeycombs with frames for the CLAC cartridge used in the CLAC.



Cartridge SD3C-S:
Support Frame; upper 7710419600/CHD104196
lower 7710419610/CID104196
Honeycombs 7710452200/FPCV-12795

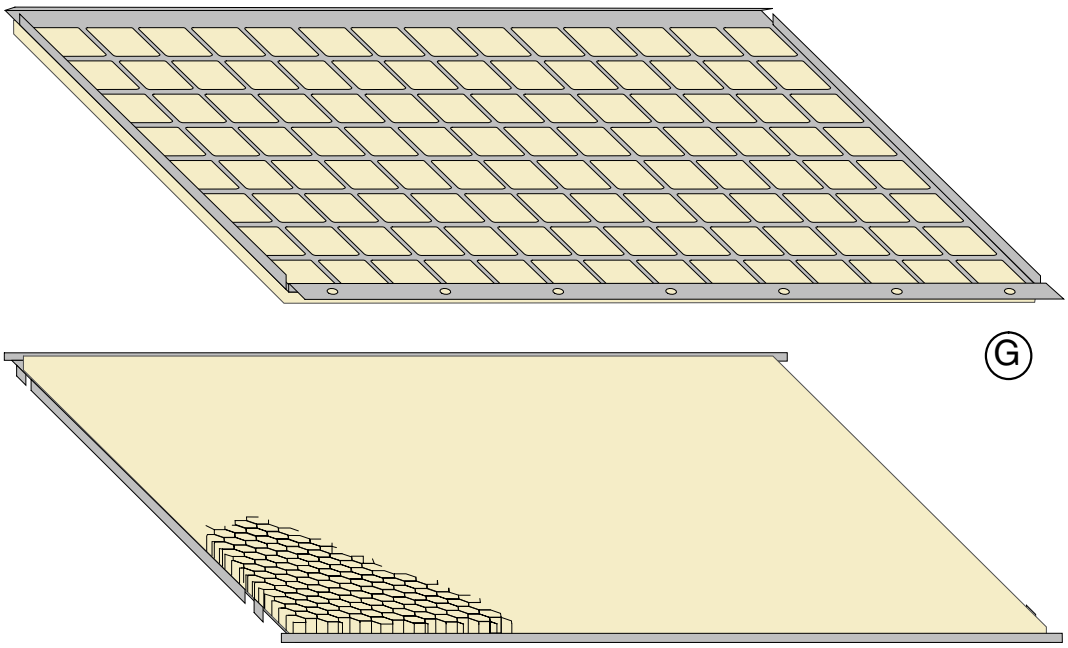
Figure 17. Honeycombs with frames for the SD3C-S cartridge used in the SD3C-S.



Cartridge ET1TC/ET5C/CLOC:

Support Frame;	upper	7710419620/CJD104196
	lower	7710419630/CKD104196
Honeycombs		7710452000/FPCV-12793

Figure 18. Honeycombs with frames for the cartridges used in the ET1TC (TCSM2), ET5C (BSC) and CLOC (BSC).



Cartridge TC1C:
Support Frame; upper 7710419640/CLD104196
lower 7710419650/CQD104196
Honeycombs 7710452100/FPCV-12794

Figure 19. Honeycombs with frames for the TC1C cartridge used in the transcoders TC1C (TCSM2).