Appendix CK

Subrack Installation Instructions

IMPORTANT *The subrack layout details displayed in this document are for reference only. The physical position information to install the subrack and accessories into the rack are given into section "Installation", "Subrack installation" chapter.*

Subrack Mechanical Structure

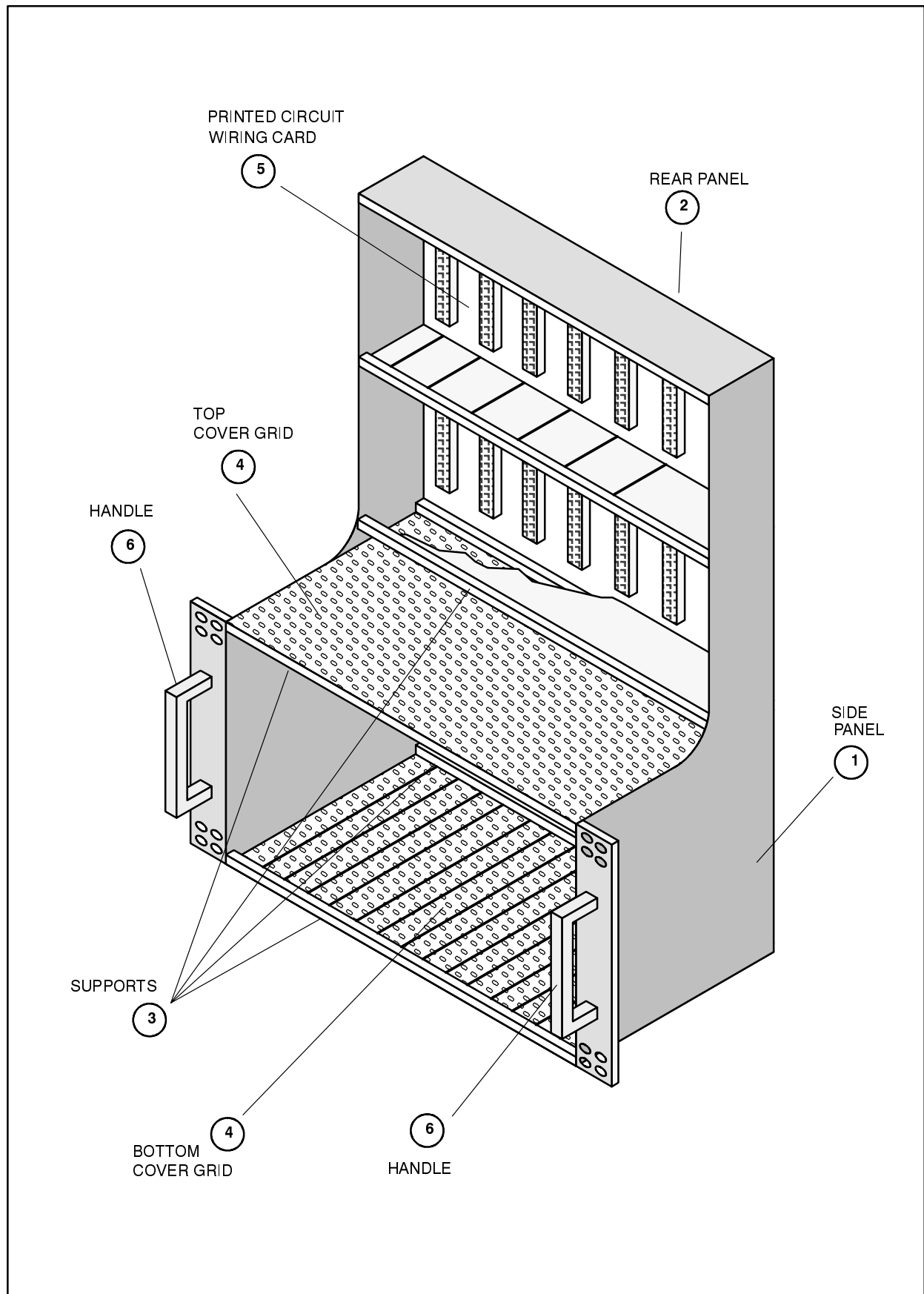The subrack is composed of the following mechanical parts:

1. two side panels;

2. one rear panel;

3. four supports;

4. two cover grid, top and bottom;

5. printed circuit wiring card(s);

6. two handles.

The anodized aluminium side panels, rear panel and supports are assembled using screws to form a load bearing structure. The top cover and base are metal grills riveted to the lateral supports and side panels.

The support surfaces provide electrical shielding and ventilation for the units.

A printed circuit wiring card for electrical connections between units is fitted to the rear panel.

Two or more metal handles are fitted on the front of the cabinet to facilitate removal and insertion of the subrack.

PRINTED CIRCUIT
WIRING CARD

(5)

REAR PANEL

(2)

TOP
COVER GRID

(4)

HANDLE

(6)

SIDE
PANEL

(1)

SUPPORTS

(3)

(4)

BOTTOM
COVER GRID

(6)

HANDLE

Fig. CK-1 *Example of mechanical structure of single-shelf subrack with double height connection side*

SIDE
PANEL
①

REAR PANEL
②

PRINTED CIRCUIT
WIRING CARD
⑤

SIDE
PANEL
①

SIDE
PANEL
①

TOP AND
BOTTOM
COVER GRID
④

③

SUPPORTS

⑥

HANDLES
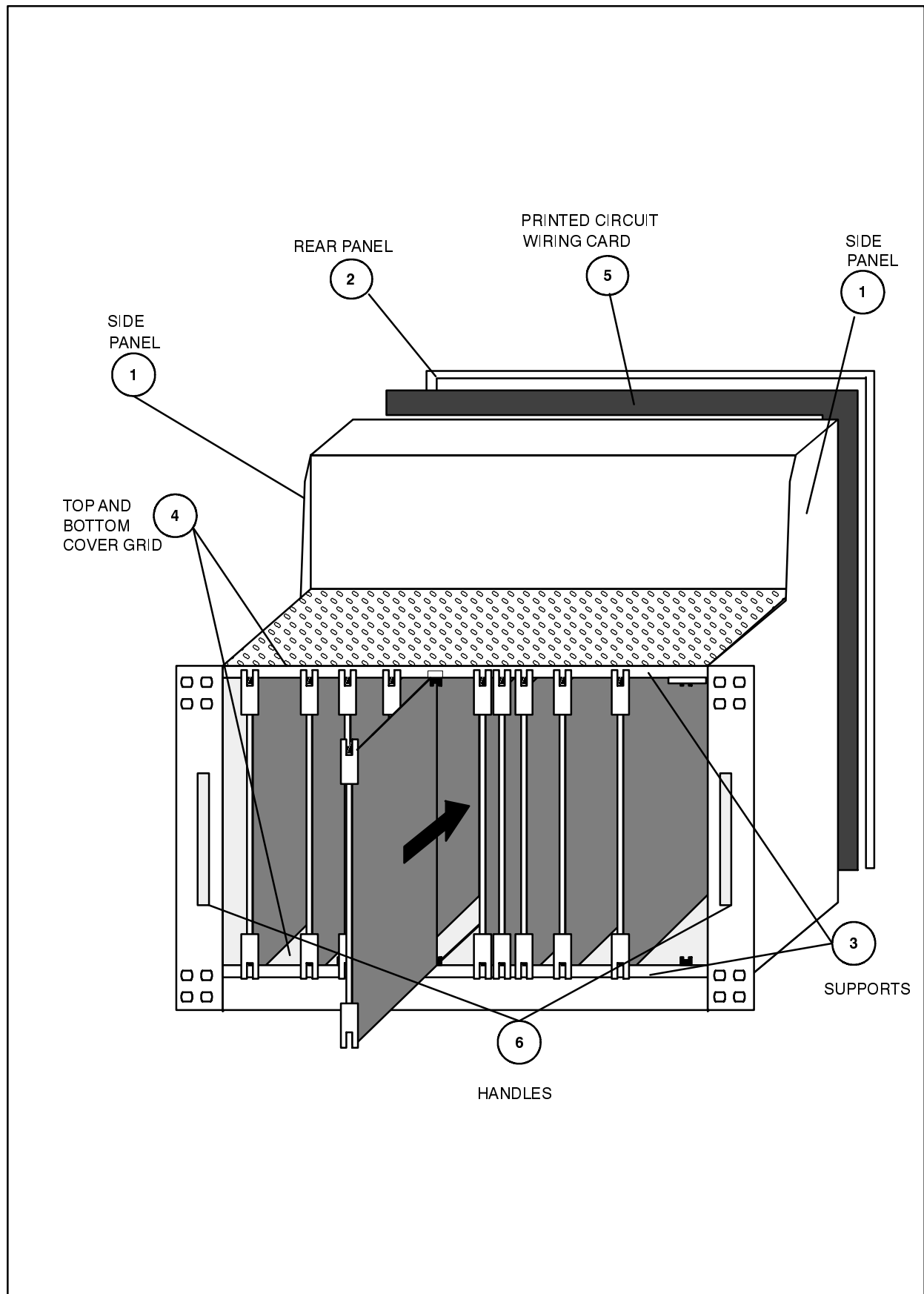
Fig. CK–2   *Examples of mechanical structure of single–shelf subrack*

Subrack Installation

Placing And Fastening Subracks In The Rack

Take out the four screws with spring washers and captive spring nuts, the two support plates with fixing screws and the ground cable supplied with the subrack (subrack installation kit).
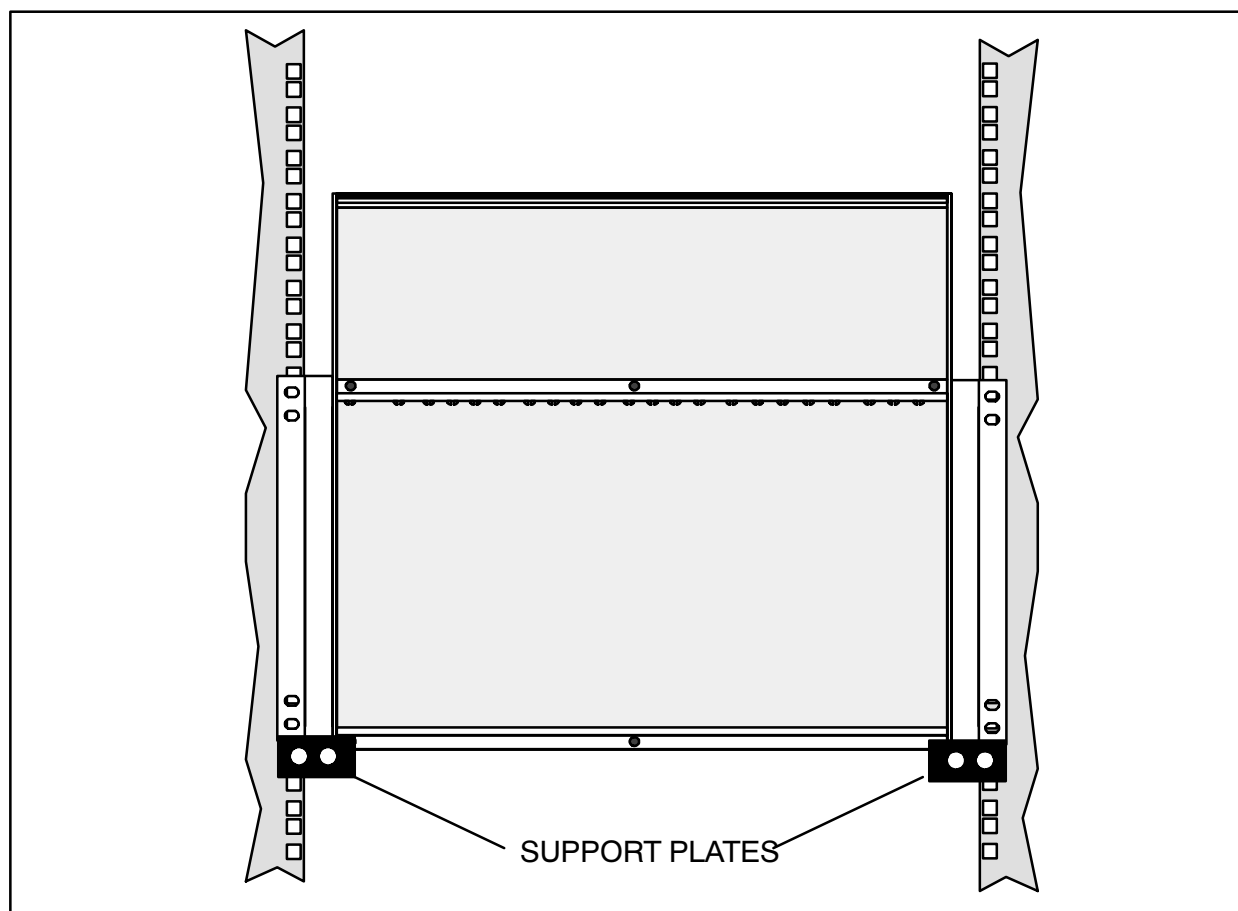
Fasten each support plate to the cabinet square holes (in vertical supports) located just below the square holes to be matched with the bottom round holes in the subrack adaptor brackets (see Fig. CK−3).

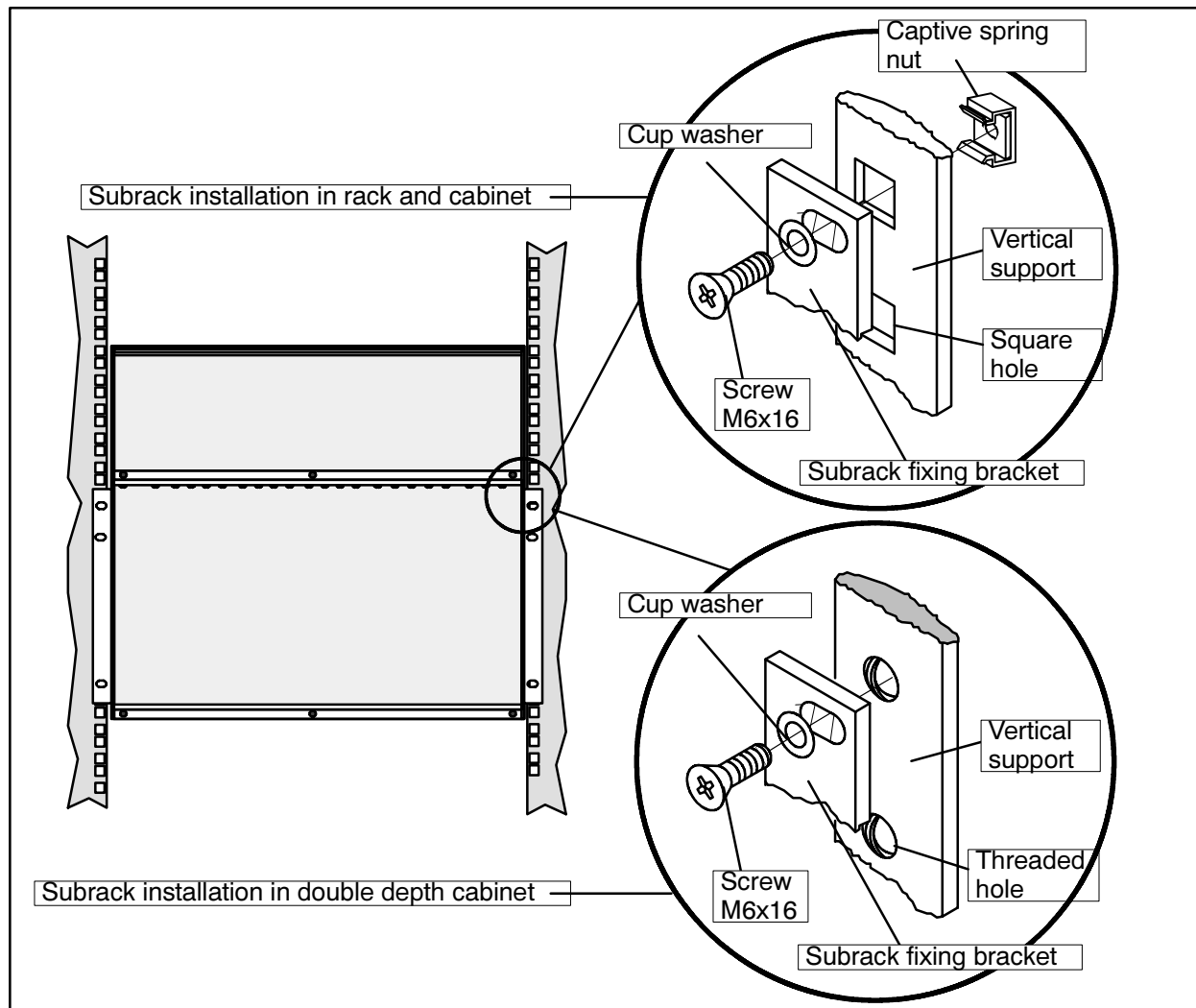Place the subrack in the cabinet so that it will rest on the support plates.

Fasten the subrack in position using the four screws, spring washers and captive nuts as shown in Fig. CK−4.

——————————— *If the subrack is installed in double depth cabinet, do not use the captive nuts since the holes on the vertical support are threaded.*

Remove the two support plates.

SUPPORT PLATES

Fig. CK−3   *Fastening support plates*

Subrack installation in rack and cabinet

Captive spring nut

Cup washer

Vertical support

Square hole

Screw M6x16

Subrack fixing bracket

Cup washer

Vertical support

Threaded hole

Screw M6x16

Subrack installation in double depth cabinet

Subrack fixing bracket

Fig. CK-4   *Fastening subracks in the rack*

Connect subrack to rack ground using the lugs on the right vertical support.

GROUND CONNECTORS

RIGHT VERTICAL SUPPORT
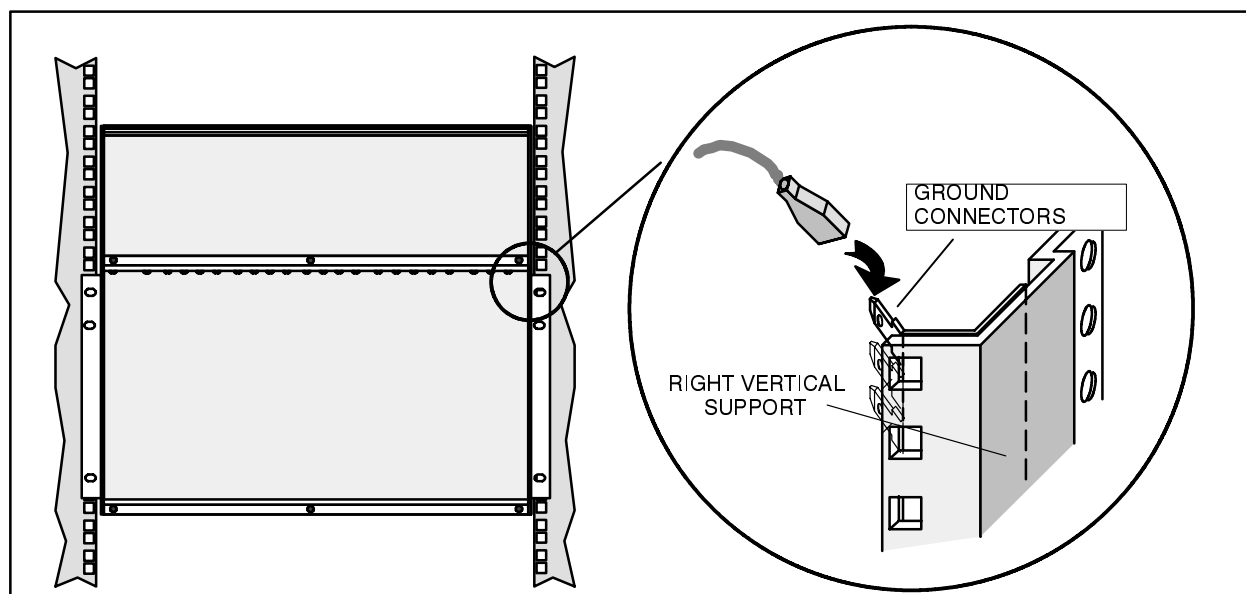
Fig. CK-5   *Connecting subrack to ground (rack side)*

Installation Of Cable Raceway

A cable raceway is supplied in the subrack installation kit for the cable routing and fixing.

The cable raceway is mounted, by means of four screws, the relevant spring washers and captive spring nuts, in the square holes of the rack just above the subrack.

Two different size of cable raceway are available according to the quantity of cables to be installed; Fig. 0.1–2 shows the single and double height raceways.
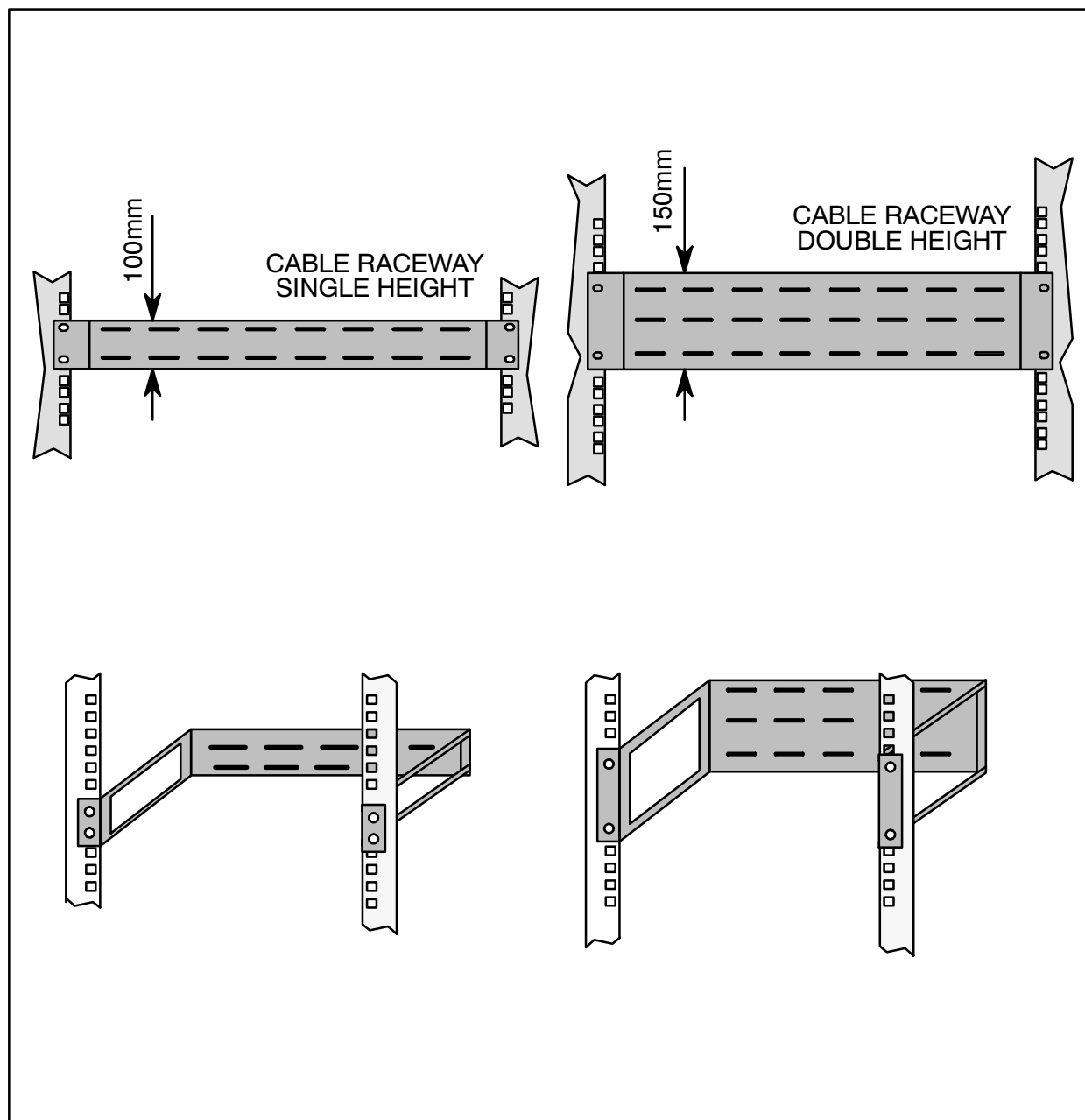
Fig. CK–6   *Installation of cable raceway*

Installation Of Optical Fiber (O.F.) Cables

By reference to the location of the optical distribution frame in the exchange, provide the necessary lengths of optical single–fiber cables terminated in FC/PC connectors[*] and suitably labelled on both ends.
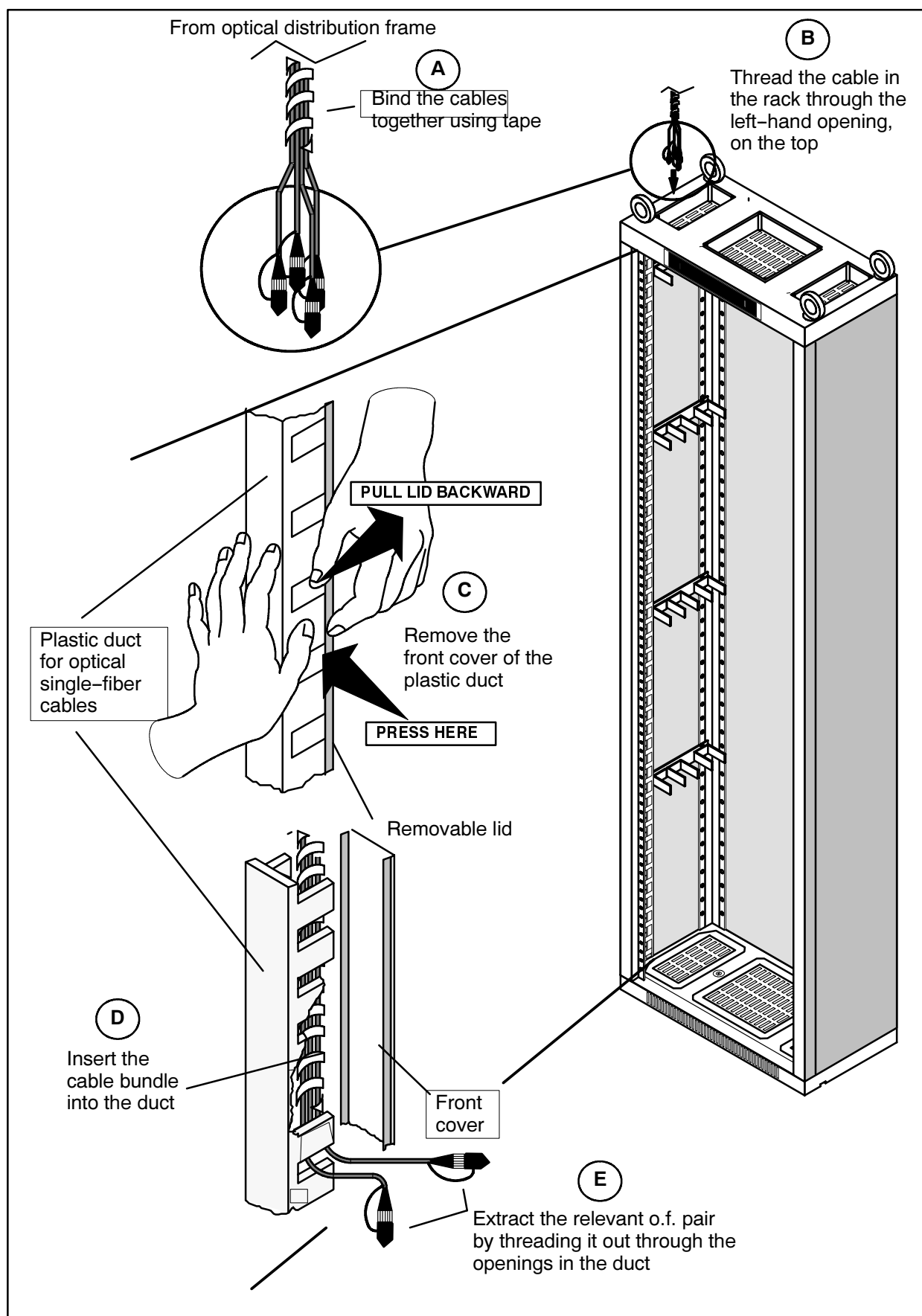
NOTE (*) **Check that anti–dust covers are fitted to the connectors; these covers are to be removed only just before inserting the optical connectors into their counterparts on the front of Optical units.**

Lay the o.f. cables as appropriate, i.e.:

IMPORTANT *The following precautions must be taken when working with optical fibers cables to avoid damage:*
– when dressing fibres take care not to exceed the minimum bend radius (typically 35mm)
– when making a connection , do not rotate the optical plug unnecessarily
– clean all optical plugs and couplings by an approved method before making any optical connection

a) on the overhead structure of the exchange, if they are to be inserted through the rack top..

b) or beneath the raised floor or in the cable ducts if they are to be inserted through the rack base.

1. Bind the cables together using tape (Fig. CK–7 **A**).

2. Thread the cable in the rack through the left–hand opening, on the top or in the base depending on how the cables have been laid. Fig. CK–7 **B** illustrates o.f. cable through the top opening.

3. Remove the front cover of the plastic duct on the left–hand side of the rack by proceeding as follows (see Fig. CK–7 **C**):

   – *while pressing inward with one hand the fixed section of the duct where the lid begins, with the fingers of the other hand, remove the lid by pulling;*

   – *repeat the above operation removing as many lids as necessary to uncover the duct length from the rack top or botton to the height of the subrack to the served by the optical cables. Start from the top or base of the rack according to whether the cables are run in the rack from the exchange structures or from a raised floor.*

4. Insert the cable bundle into the duct (see Fig. CK–7 **D**).

5. At the height of each subrack to be equipped with optical units, extract the relevant o.f. pair by threading it out through the openings in the duct (see Fig. CK–7 **E**).

6. Pay out sufficient length and place the o.f. pair orderly coiled on top and leave them coiled on of the subrack. The connection to the Optical units will be made after having inserted the Optical units and fitted the front panel to the subrack.

From optical distribution frame

A

Bind the cables
together using tape

B

Thread the cable in
the rack through the
left–hand opening,
on the top

PULL LID BACKWARD

C

Remove the
front cover of the
plastic duct

PRESS HERE

Plastic duct
for optical
single–fiber
cables

Removable lid

D

Insert the
cable bundle
into the duct

Front
cover

E

Extract the relevant o.f. pair
by threading it out through the
openings in the duct

Fig. CK–7   *Installation of optical single–fiber cables – entry through top opening*

Fastening Optical Fiber Raceway

When optical units are to be inserted in the subrack the optical single–fiber cables are brought to these units through a special raceway with covers. The raceway (with fixing screws) is supplied as an optional kit for the subracks.

Fasten the raceway to the cabinet square holes (in vertical supports) located just above the top fixing screws in the subrack adaptor bracket (see Fig. CK–8).

Remove the raceway covers and thread the optical cables in the raceway lock fins and then out of the raceway through the appropriate slots close to the optical units (see Fig. CK–9).

Refit back the covers on the raceway.

OPTICAL FIBER RACEWAY
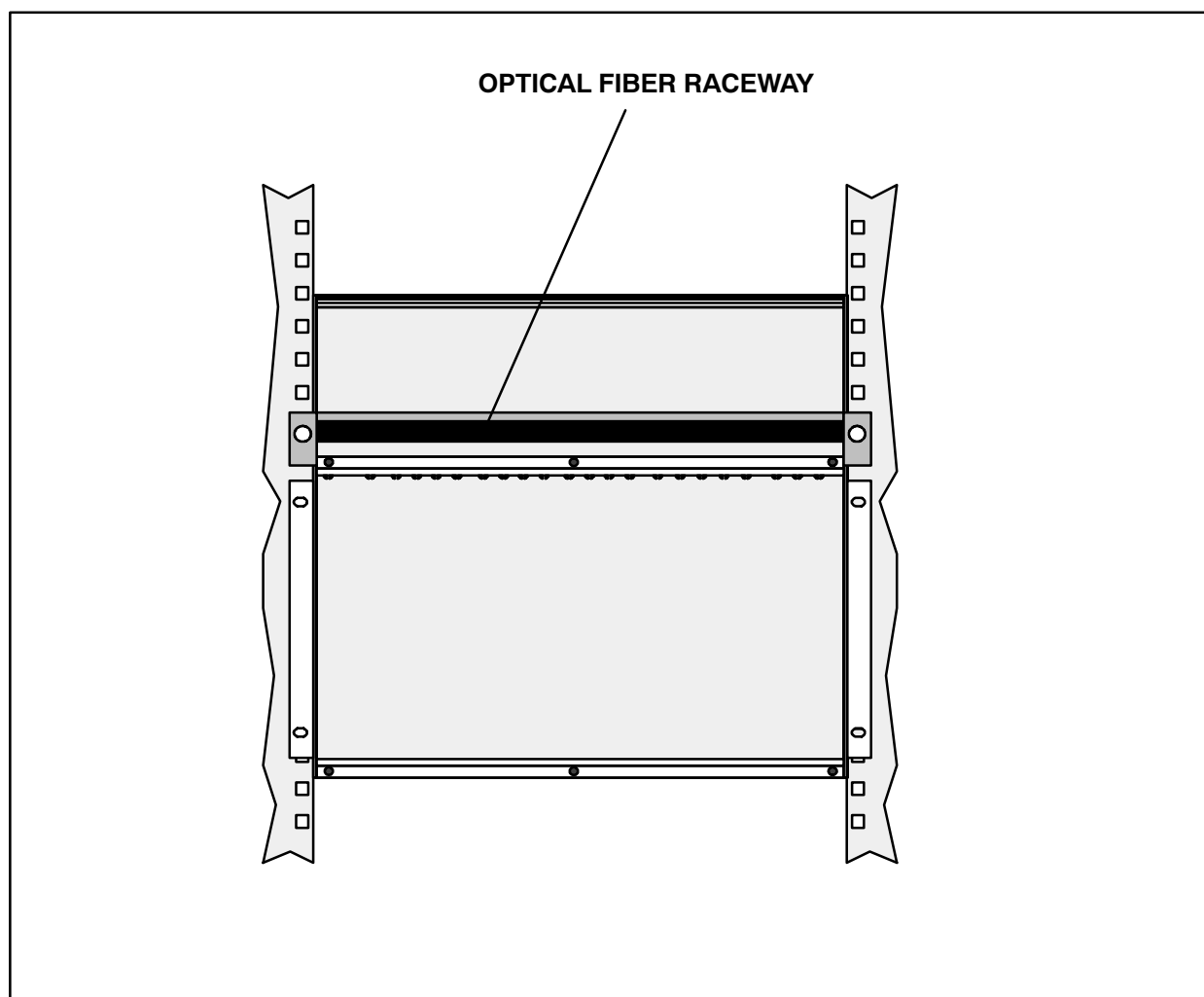
Fig. CK–8   *Fastening optical fiber raceway*

Remove the
raceway covers

Thread the optical
cables in the race-
way lock fins and
then out of the race-
way through the
appropriate slots
close to the optical
units
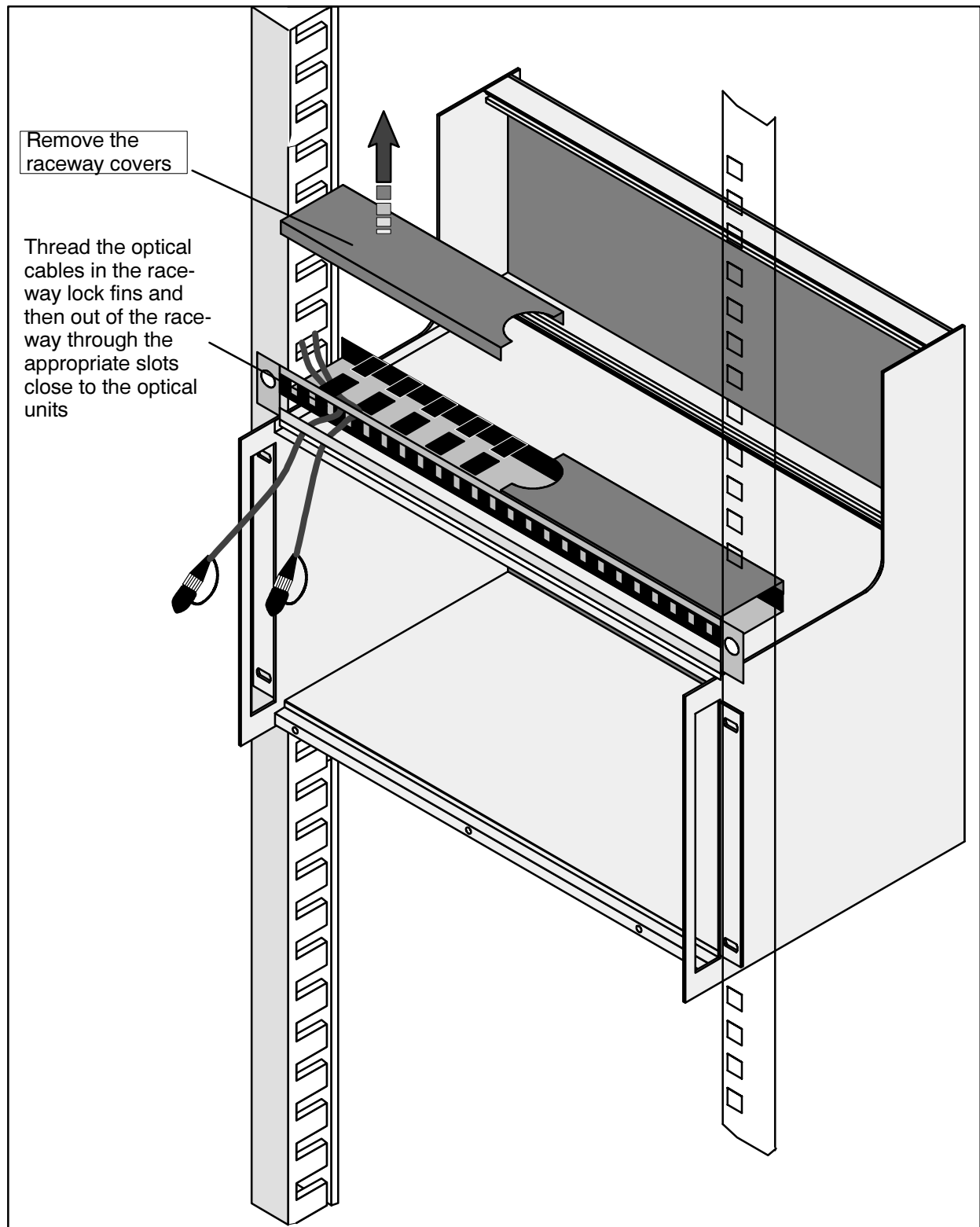
Fig. CK–9   *Provisional location of optical single–fiber cables*

Insert Unit In The Subrack

——————— *To determine the position of the units in the subrack, refer to the information supplied in Section 1 – Equipment Composition.*

Insertion and extraction of units/covers can be facilitated if the following instructions are observed.

There are two different kind of unit:

– *Unit with front panel and insertion/extraction plastic clasps (Fig. CK–11)*

– *Unit without front panel and with extraction plastic clasps (Fig. CK–12)*

Unit with Front Panel and Insertion/Extraction Plastic clasps.

1. Insert the unit or the cover in the first position on the right of the subrack (Fig. CK–10) by sliding it into the plastic guides (Fig. CK–11 **A**) keeping the two insertion clasps in horizontal position (Fig. CK–11 **B**).

2. Fully fit the unit pressing the two insertion clasps towards the front panel (Fig. CK–11 **C**) and make sure that the unit connector is correctly inserted in the subrack connector (Fig. CK–11 **D**).

3. Press the unit or the cover on the right side of the subrack, with the left hand, in order to compress the finger (Fig. CK–10 **a** and **b**) and, at the same time, fix the unit or the cover in position by tightening the two knurled bolts on the front panel with the right hand (Fig. CK–11 **E**).

4. Insert the other units and covers from the right side to the left side of the subrack, with the same method, following the compositions rules of the system. Do not press the last unit to insert on the right side.

5. Where equipment is not fully equipped, insert the corresponding cover assy.

6. Before to extract a unit or a cover, make sure that the knurled bolts on the front panels of the units and of the covers of the subrack are tightened. The unit or the cover are extracted by undoing the two knurled bolts (Fig. CK–11 **F**) and turning the two clasps from the inside towards the outside (Fig. CK–11 **G**).

IMPORTANT *Tight the two knurled bolts only when they are perfectly perpendicular to the front panel.*

Labels in figure: a, b, Unit finger, Subrack finger
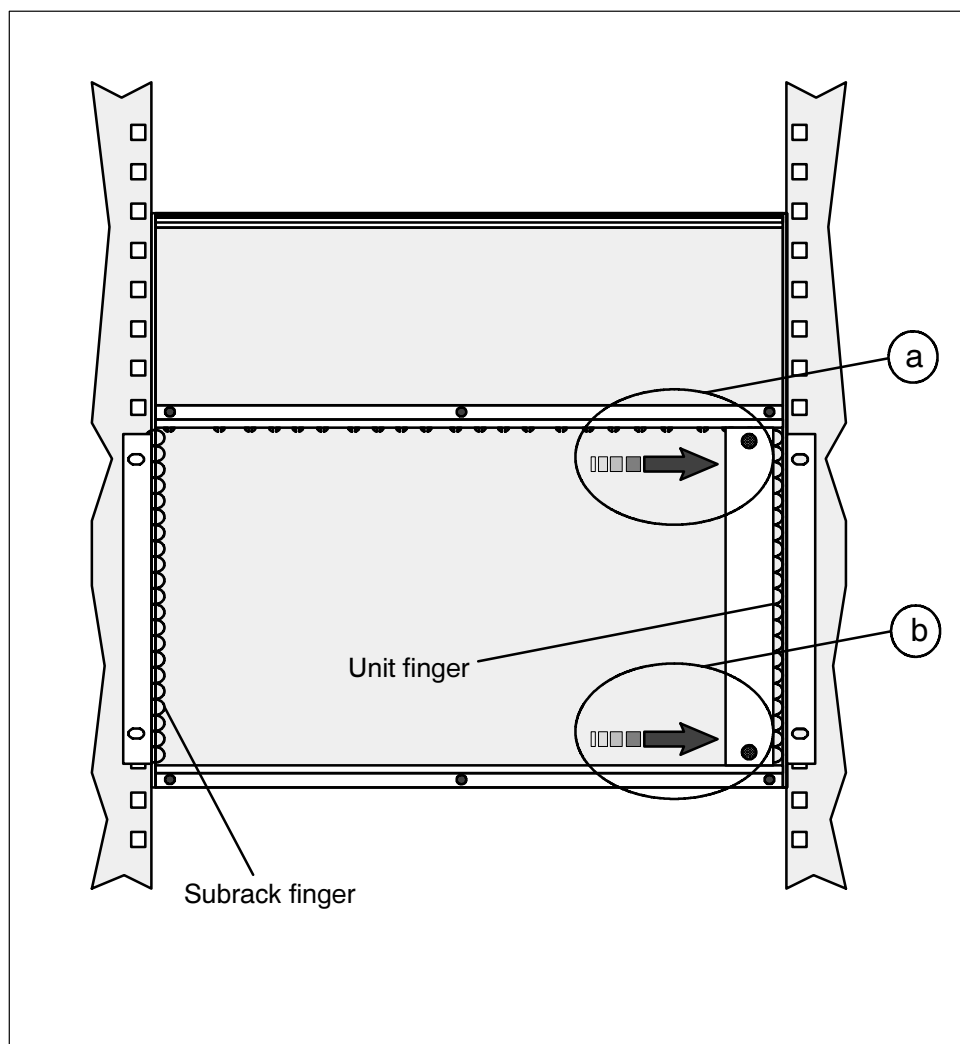
Fig. CK–10   *Unit fitting*

Unit without Front Panel and with Extraction Plastic clasps.

1. Insert the unit in the correct position by sliding it into the plastic guides (Fig. CK–12 **A**).

2. Fully fit the unit pressing the two extraction clasps (Fig. CK–12 **C**) and make sure that the unit connector is correctly inserted in the subrack connector (Fig. CK–12 **D**).

3. The unit is extracted by turning the two clasps from the inside towards the outside (Fig. CK–12 **G**).
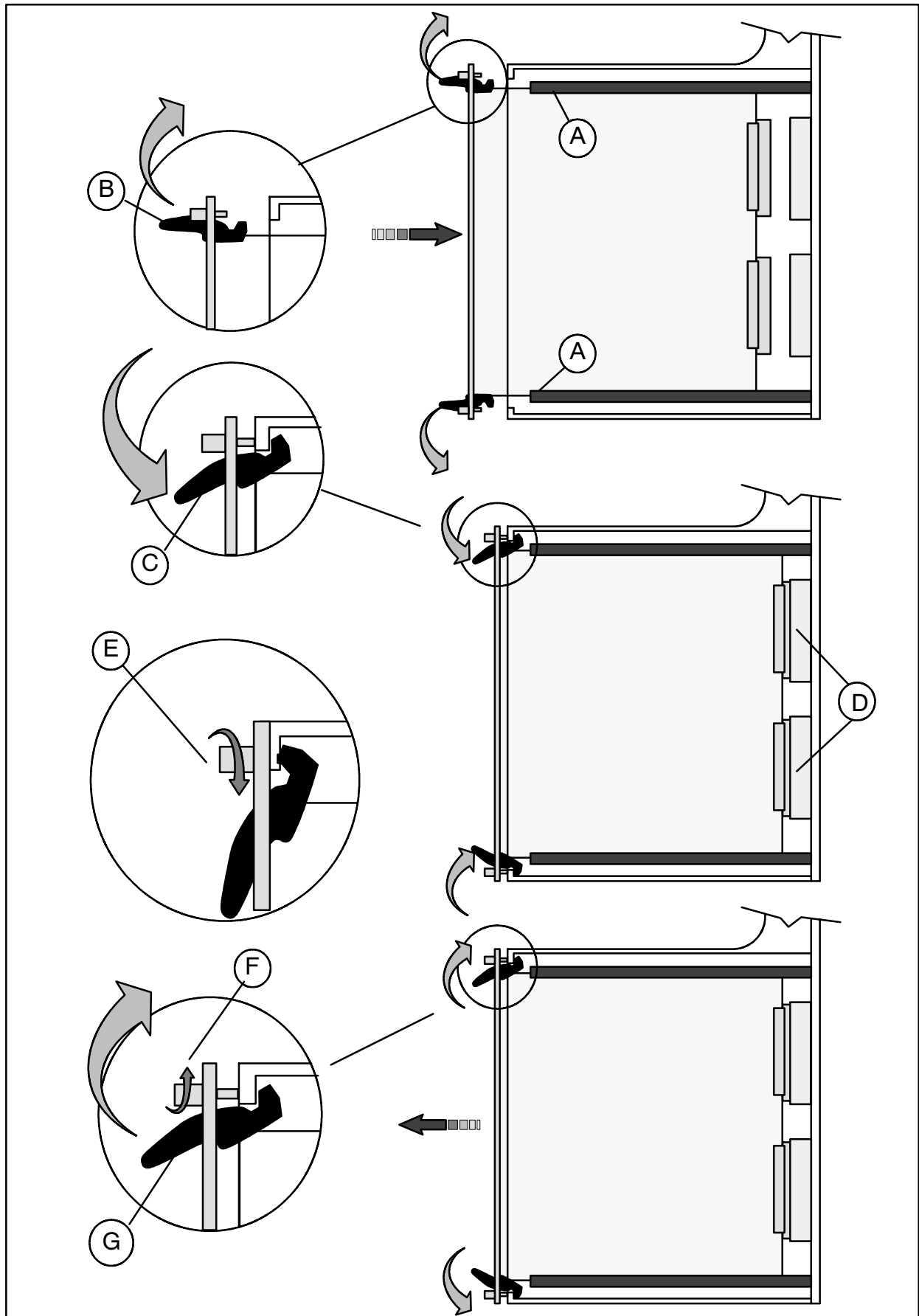
Fig. CK–11   *Inserting the plug–in circuit units*
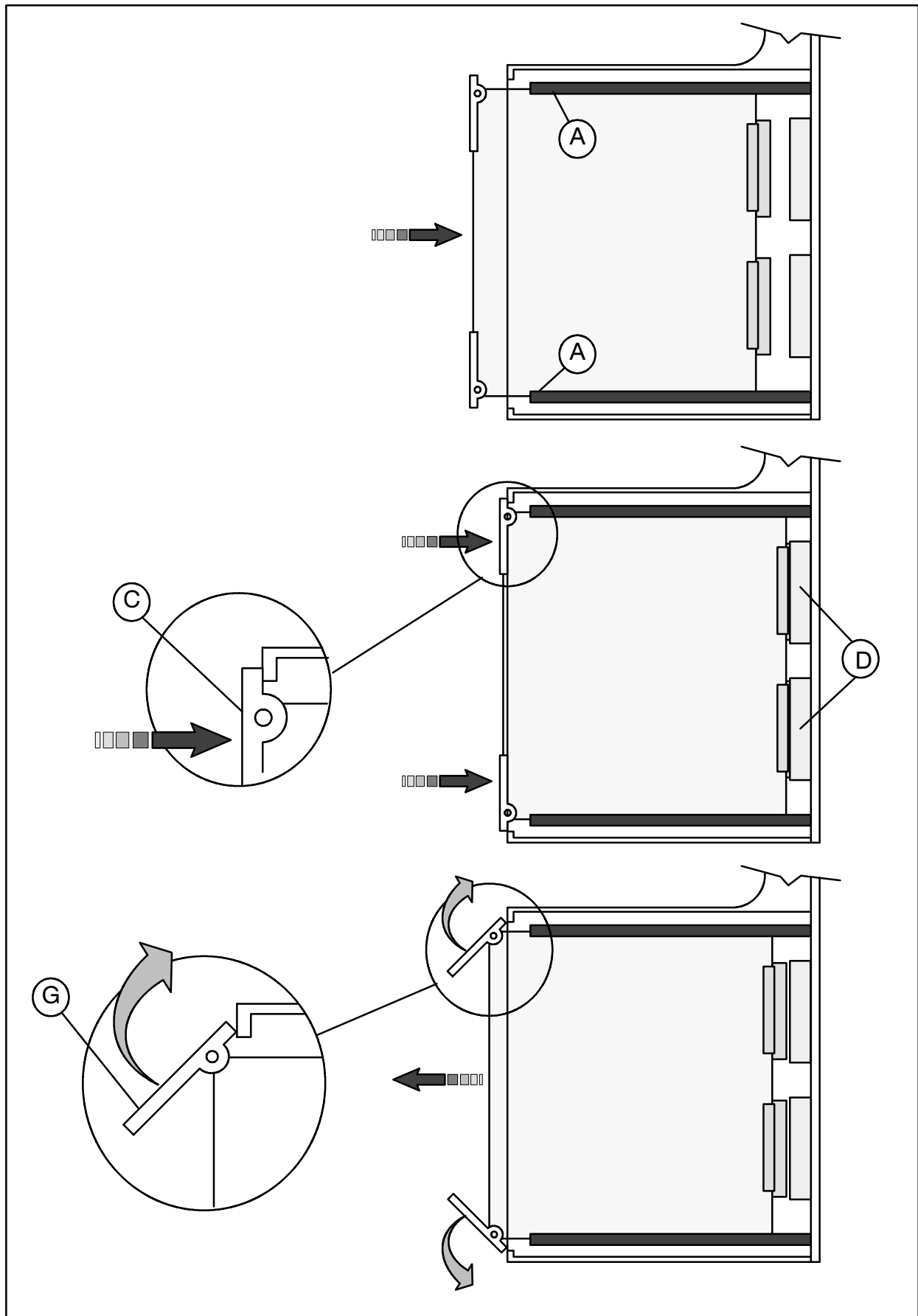
Fig. CK–12   *Inserting the plug–in circuit units*

Connection Unit Insertion

1. once you have established the position, insert each unit fully and make sure that the unit connector is correctly inserted in the subrack connector;

2. fix the unit in position by tightening the two knurled bolts on the front panel;

**3.** Where equipment is not fully equipped, you have to insert the corresponding cover assy.
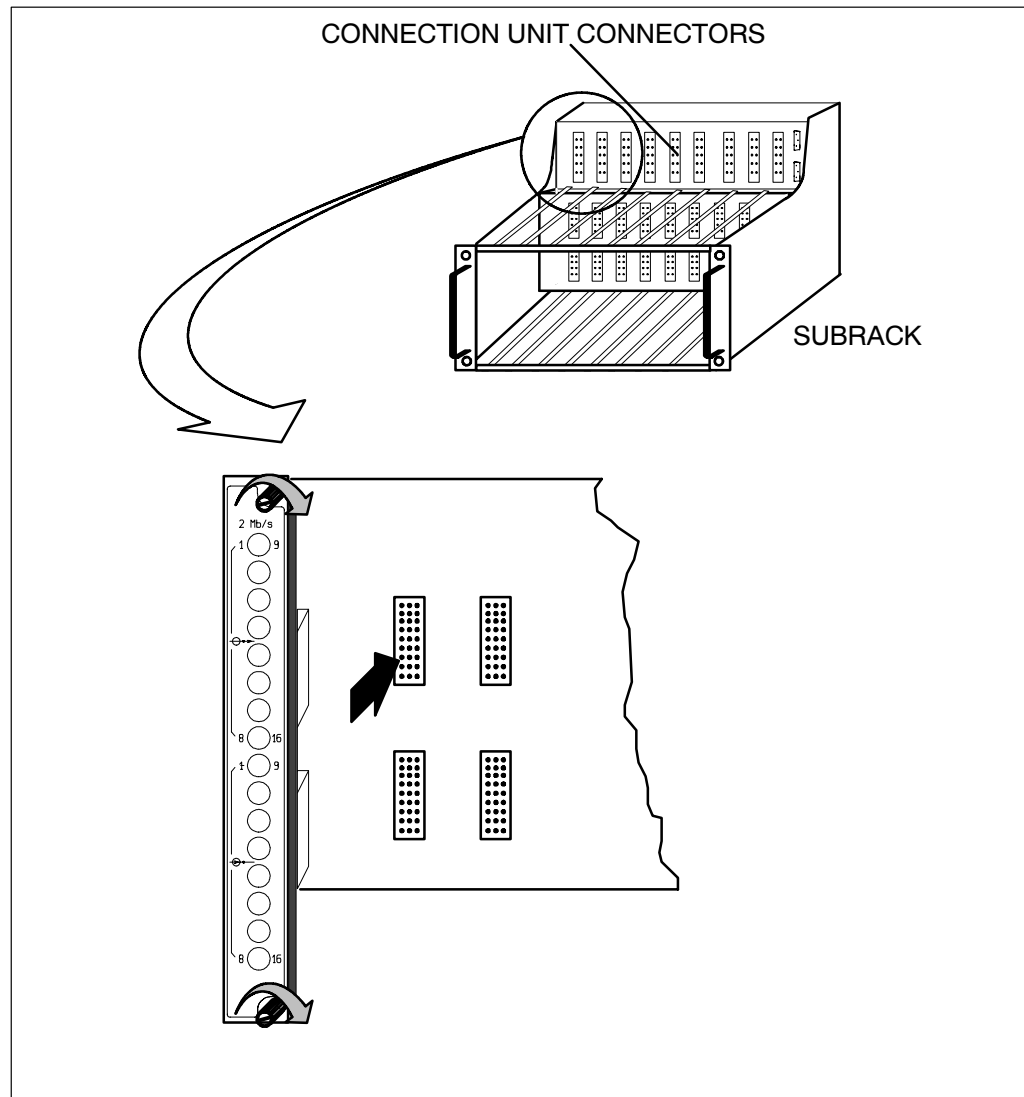

Fig. CK–13   *Installing connection unit*

Protective Cover For Optical Fiber Assembling

After having fitted the optical unit and fixed the optical connectors on the front panel an optional protective cover can be assembled.

This cover can be fixed by screws to the front panel or to the optical fiber raceway. Different kind of protective covers are shown in the figure below.
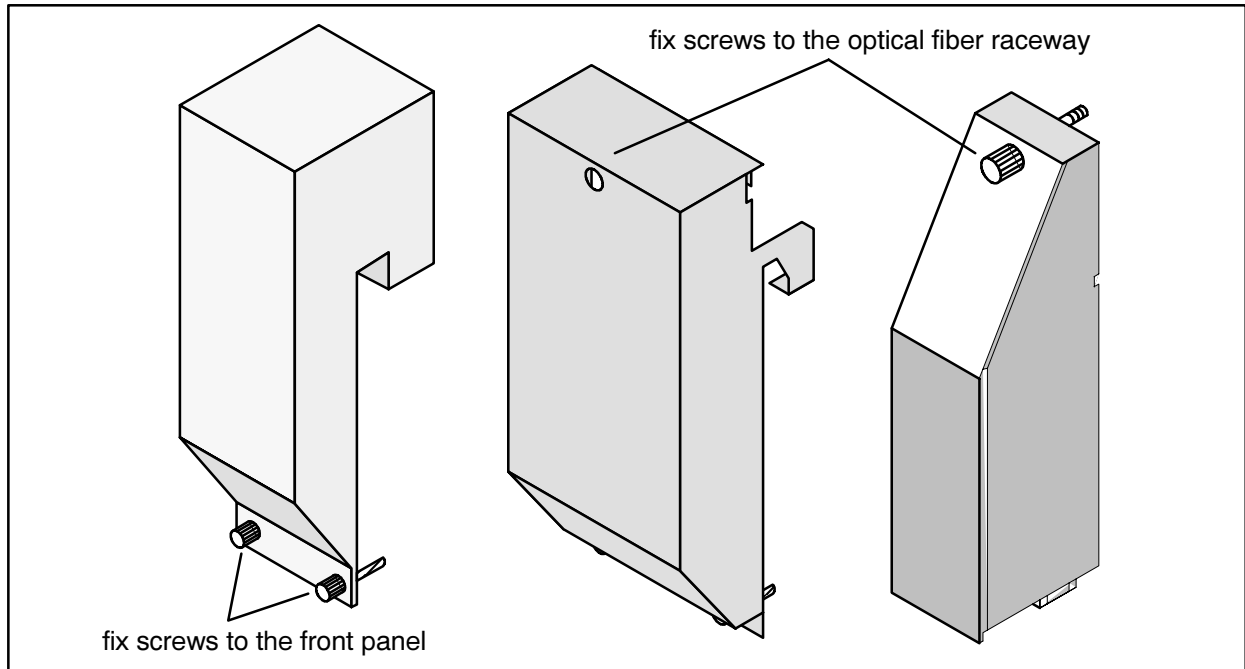
Fig. CK–14   *Protective covers for optical fiber*
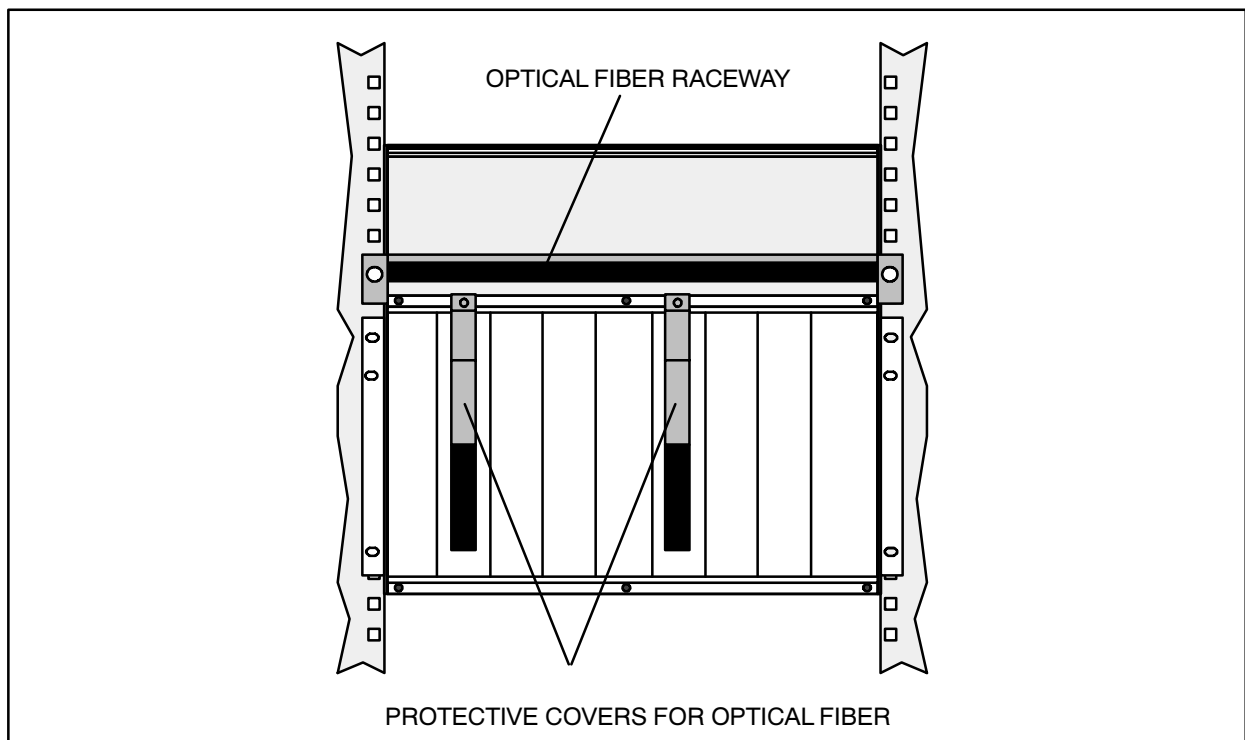
Fig. CK–15   *Example of protective cover installation*

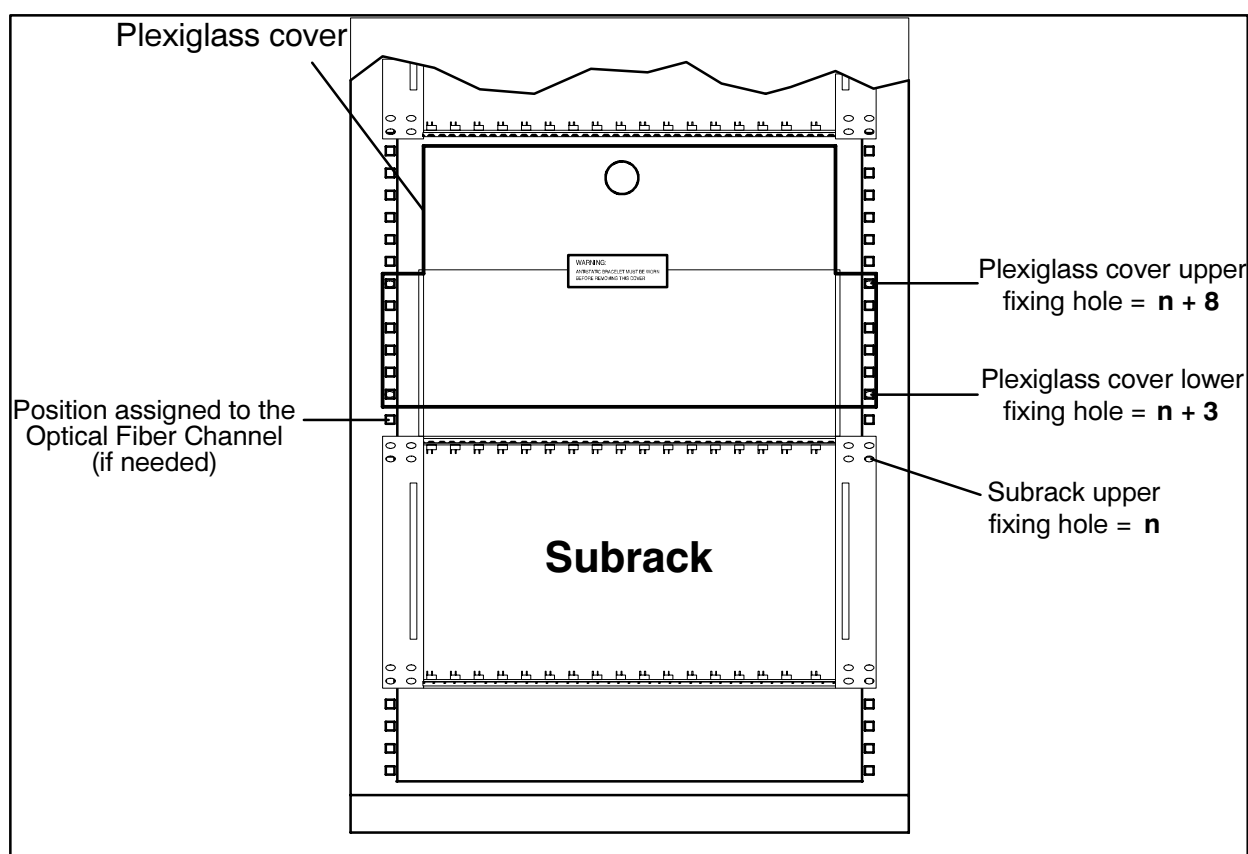# Plexiglass Cover Installation

——————— *The plexiglass cover is an optional item.*

When all cables will have been fitted and all connectors properly connected, one plexiglass cover may be assembled on each Subrack forming part of the equipment.

The plexiglass cover is used for protection of connectors terminated on the various Subracks against electrostatic discharges, it may be supplied on request with the Plexiglass Cover Set which also contains the installation hardware.

Proceed as follows to install the covers:

1. Locate the position in which the plexiglass cover has to be installed, by consulting Fig. CK–15 below.

2. Insert the four floating nuts supplied with the set in the appropriate square holes on the rack front uprights.

3. Fasten the covering to the rack using the four washers and screws.

4. Repeat the steps above for all Subracks, using one Plexiglass Cover Set each subrack.

Fig. CK–16   *Installing plexiglass covers*

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