



EN

PLANMECA
intra

installation manual

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1 INTRODUCTION

This manual contains all the information required to install and set up the Planmeca Intra X-ray unit. Please read this manual carefully before installing the X-ray unit.



WARNING

Failure to install the Planmeca Intra X-ray unit in an approved location may be dangerous to both patient and operator.



CAUTION

It is very important that the room in which the Planmeca Intra X-ray unit is installed and the position from which the equipment is operated are correctly shielded against radiation.

Since radiation safety requirements vary from country to country and state to state, it is the responsibility of the installer to ensure that all local and national safety regulations are met.

NOTE ***In case the Planmeca Dixi digital intra X-ray system is going to be installed to the Planmeca Intra X-ray unit, use the Dixi digital intra X-ray system installation manual in conjunction with this manual.***

The manufacturer, assembler and importer are responsible for the safety, reliability and performance of the X-ray only if:

- installation, calibration, modification and repairs are carried out by qualified and authorized personnel
- electrical installations are carried out according to the appropriate requirements such as IEC364
- equipment is used according to the operating instructions

Planmeca pursues a policy of continual product development. Although every effort is made to produce up-to-date product documentation this publication should not be regarded as an infallible guide to current specifications. We reserve the right to make changes without prior notice.

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2 PRE-INSTALLATION REQUIREMENTS

2.1 Environmental requirements

Wall construction

The wall construction must be able to resist a shear load of 75 kg (170 pounds) and withdrawal force of 200 kg (445 pounds) at each of the four attachment locations. Otherwise, some additional mounting supports must be used to fulfill this requirement.

Temperature & humidity

The operating temperature range is from +15°C to +35°C, non condensing. The acceptable humidity range is from 25% to 75%. The storage temperature range is from -5°C to +60°C.

NOTE *If the X-ray unit has been stored at temperatures below +10°C for more than a few hours, time must be allowed for the X-ray unit to reach the room temperature before connecting it to the mains voltage.*

2.2 Electrical requirements

Mains voltage

The Planmeca Intra X-ray unit has been preset at the factory to one of the 3 different mains voltage settings. Please check that the rating indicated on the type shield and the mains voltage selector on the generator PCB (connector P4) corresponds to the local mains voltage. The possible voltage settings are:

- 100V~ (90V~...110V~)
- 110-115V~ (99V~...126V~)
- 220-240V~ (198V~...264V~)

NOTE *Please note that the ratings of the internal (as well as external) mains fuses are depending on the mains voltage setting.*



CAUTION

Never connect the X-ray unit to the mains without first checking the voltage setting. Incorrect voltage setting can cause damage to the X-ray electronics.

Mains frequency

The mains frequency is 50 or 60 Hz, and is independent on the mains voltage setting.

Internal mains fuse ratings

The Planmeca Intra X-ray unit is equipped with dual mains fuses (live and neutral). However, in some areas it is not allowed to have a fuse in the neutral wire. The neutral fuse is optionally bypassed at the factory, in which case the X-ray unit is equipped with one mains fuse.

The ratings for the internal mains fuses are:

- units with 100V~ or 110-115V~ voltage setting: 15AT, 250V, slow blow
(6.3x32mm)
(special fuse, manufacturer Bussmann, type MDA)
- units with 220-240V~ voltage setting: 8AT, 250V, slow blow
(6.3x32mm)
(special fuse, manufacturer Bussmann, type MDA)

External mains fuse recommendation

The recommendation for the external mains fuses are:

- units with 100V~ or 115V~ voltage setting: 16A, time lag
- units with 220-240V~ voltage setting: 10A, time lag

No other equipment should be connected to the same fused mains line as the X-ray unit. In some countries an additional external fault current guard is also required.

Grounding

The Planmeca Intra X-ray unit must always be connected to a grounded outlet to fulfill the safety directives stated.

Power consumption

The idle power consumption is less than 30VA. Maximum power consumption is 1000VA and occurs during the exposure (maximum exposure time is 3.2 seconds).

3 INSTALLATION POSSIBILITIES

3.1 Mounting alternatives

NOTE The Planmeca Intra X-ray unit can be installed in several ways. Read these installation instructions carefully, because some installation accessories are optional, and are not included in the standard delivery. Make sure that required accessories are available before starting the installation.

NOTE The following cables are used in some installations described in this section:

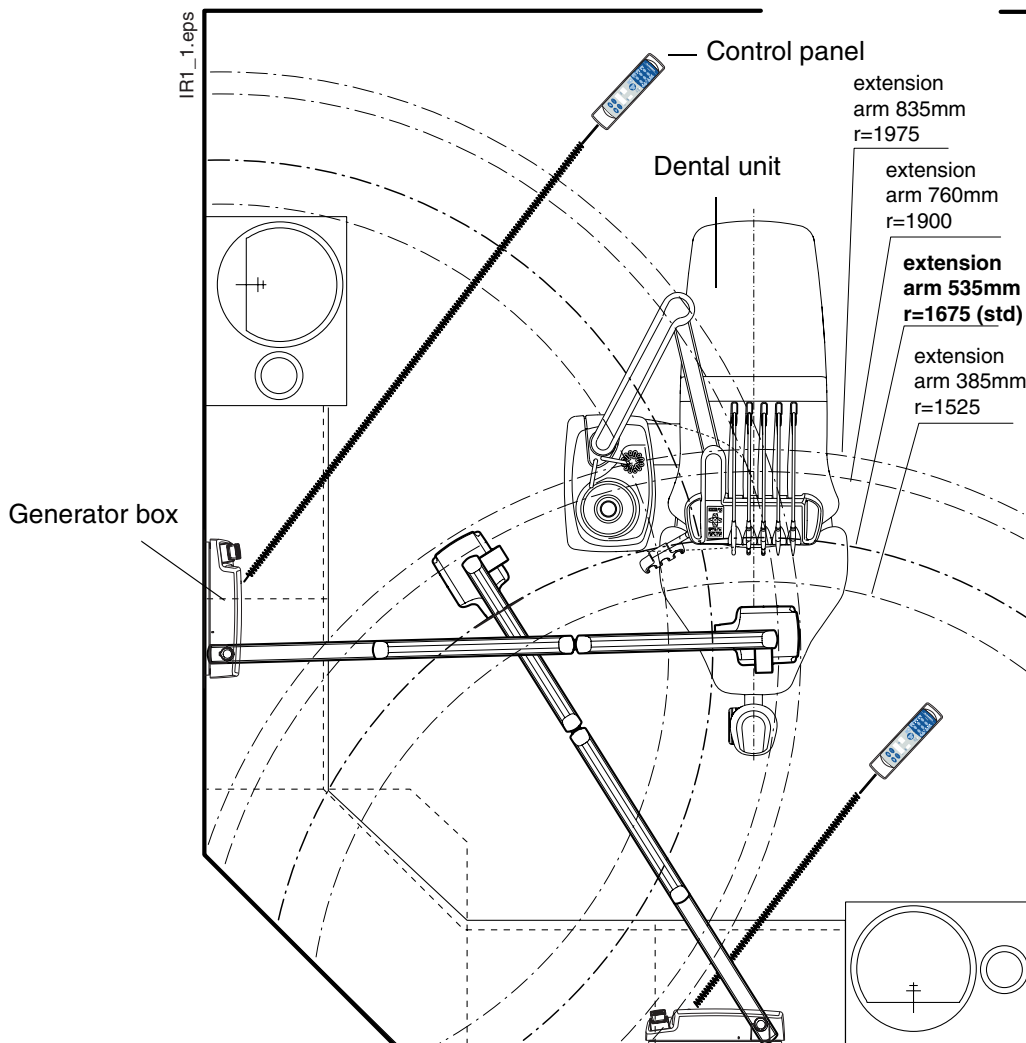
EXTENSION CABLE:

- 1 pcs. protective earth min. 1.0 mm² AWG 18
- 4 pcs. signal wires min. 1.0mm² AWG 18
- 4 pcs. signal wires min. 0.5 mm² AWG 20 rated 300 V, flexible

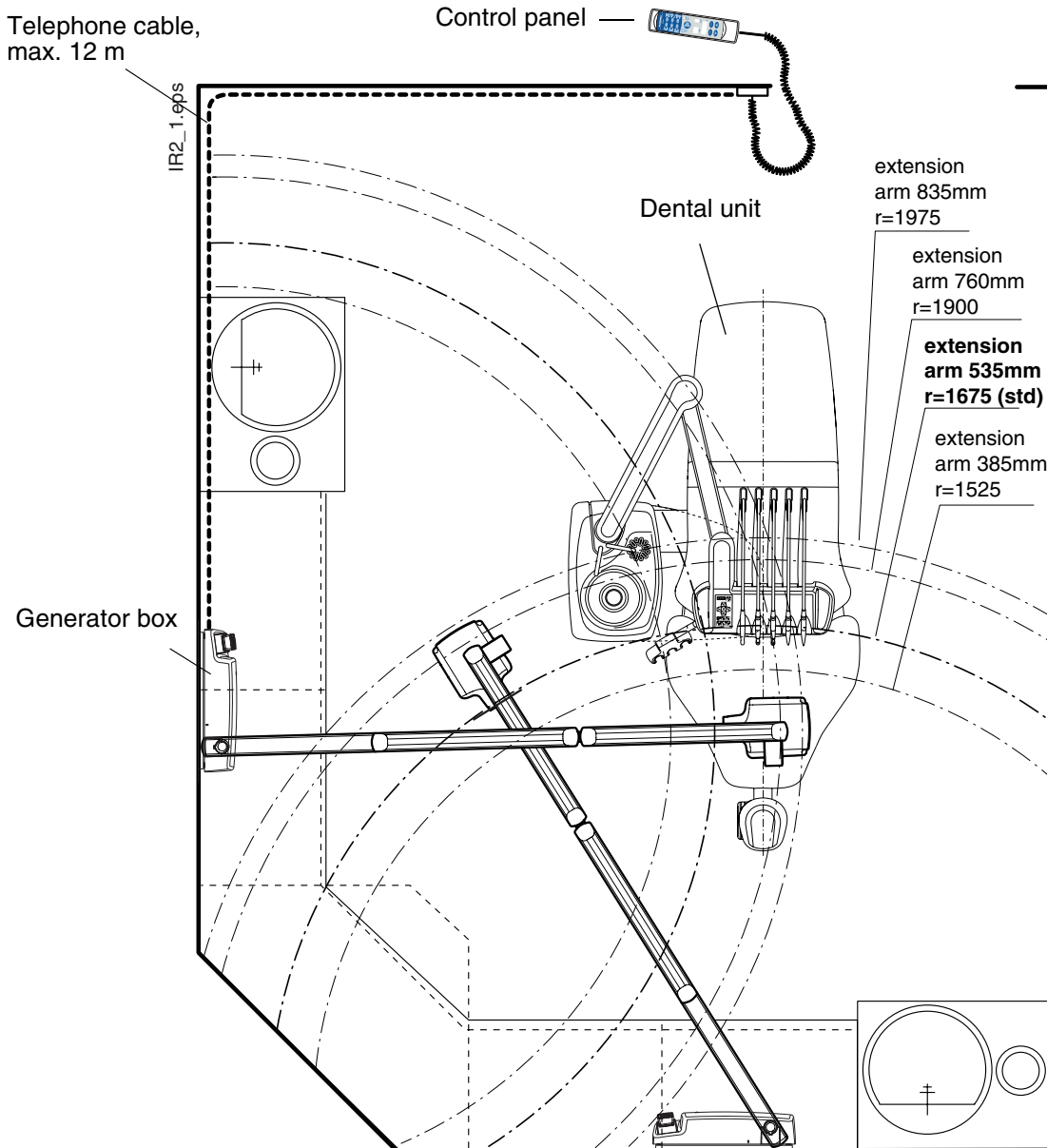
TELEPHONE CABLE:

ordinary 6-pole telephone cable AWG 24.

Standard wall mounting in treatment room (see section 4 “STANDARD INSTALLATION TO A WALL” on page 11)



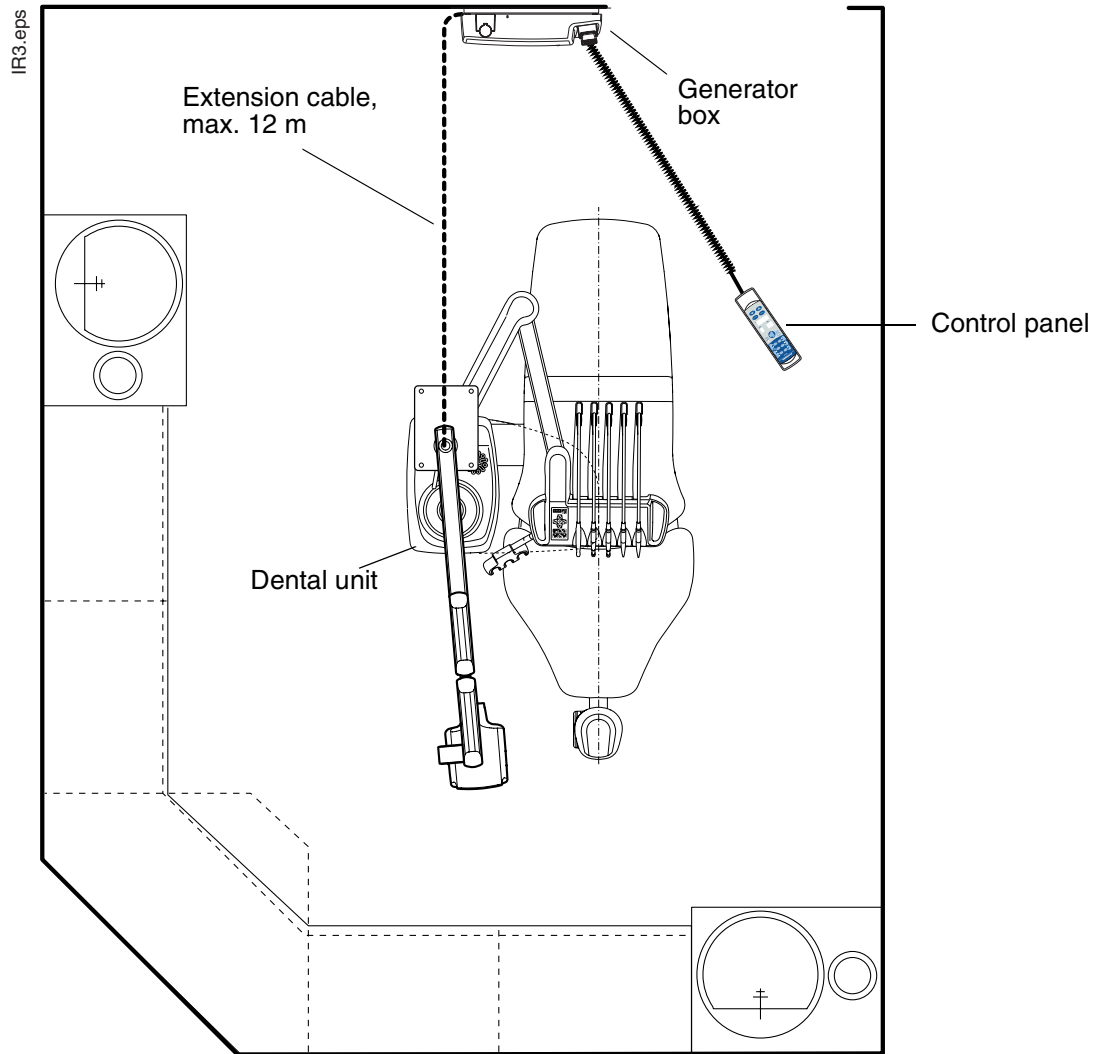
Wall mounting with remote control in treatment room (see section 7 "REMOTE CONTROL PANEL INSTALLATION" on page 48)



Ceiling mounting in treatment room (see section 5.1 “Ceiling installation” on page 25)

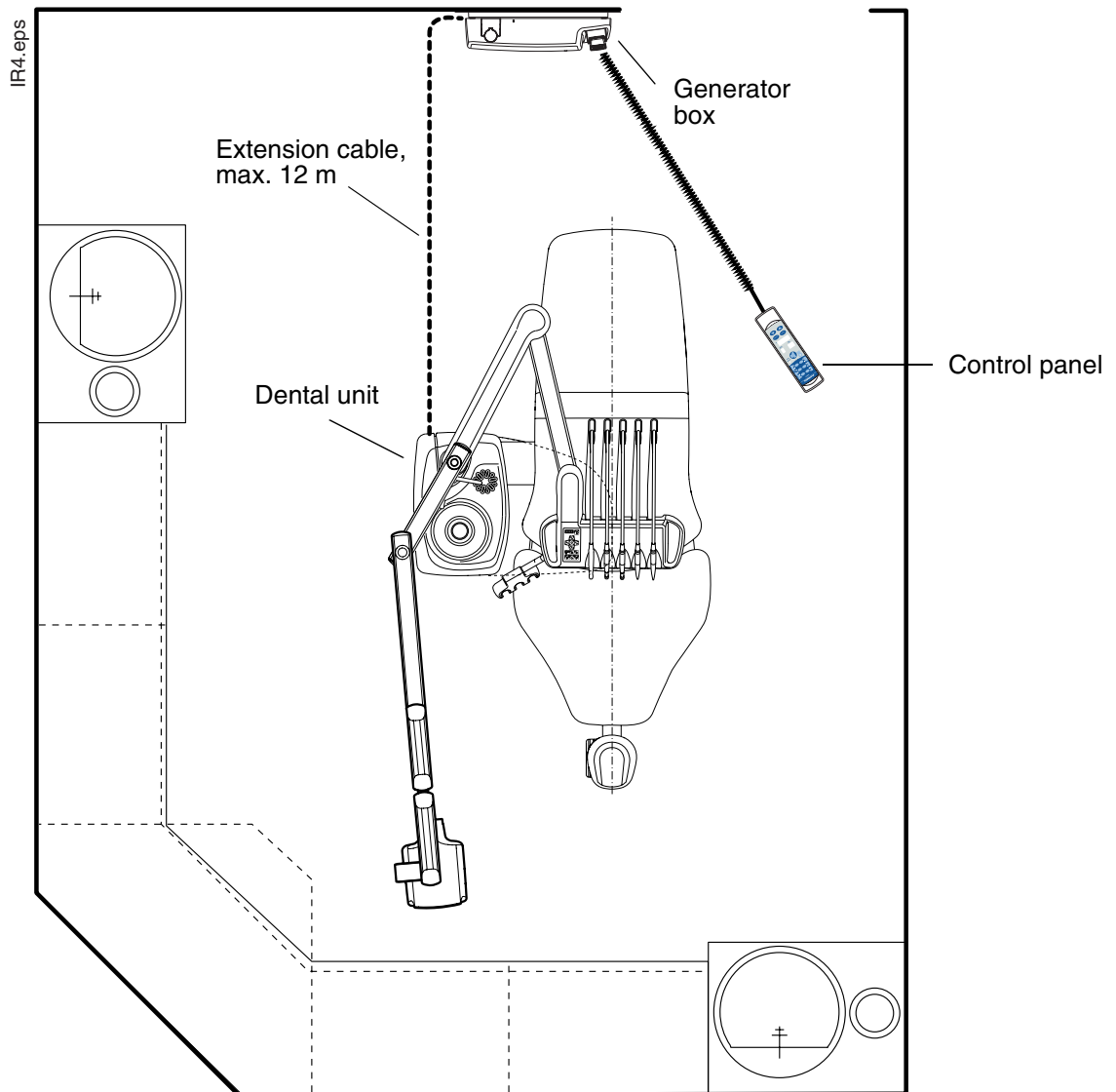
NOTE The extension arm 535mm (21.1 in.) is recommended for the ceiling installation. Also the short extension arm can be used, but the long extension arm is not recommended.

NOTE Both the Delight S and Delight operating light for unit mounting can be installed to the ceiling arm using an additional arm.

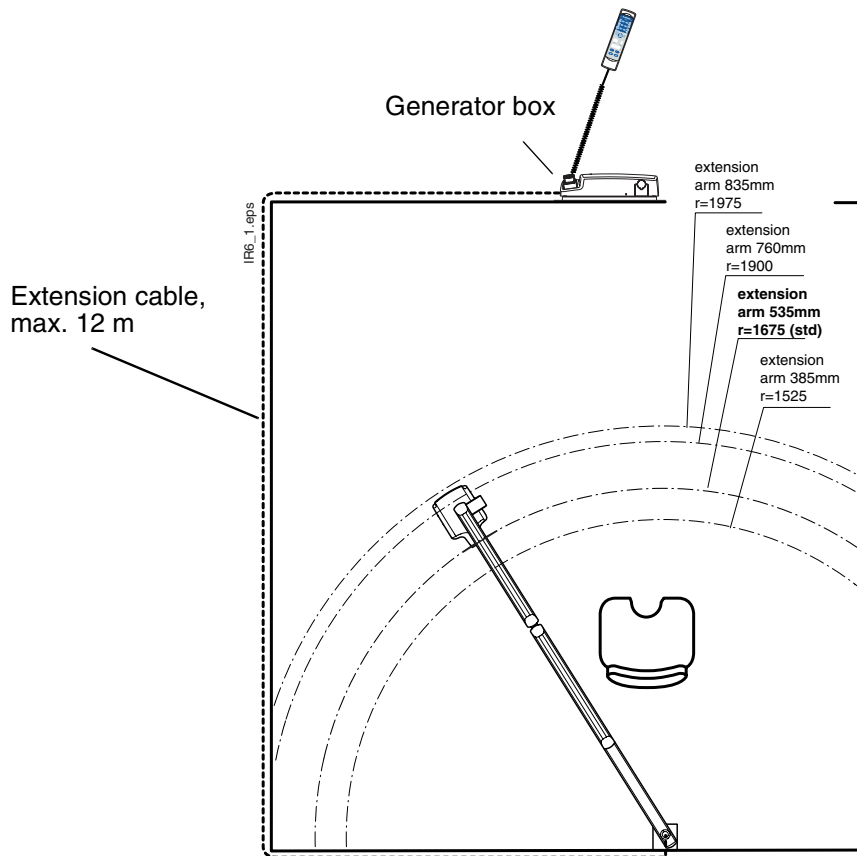
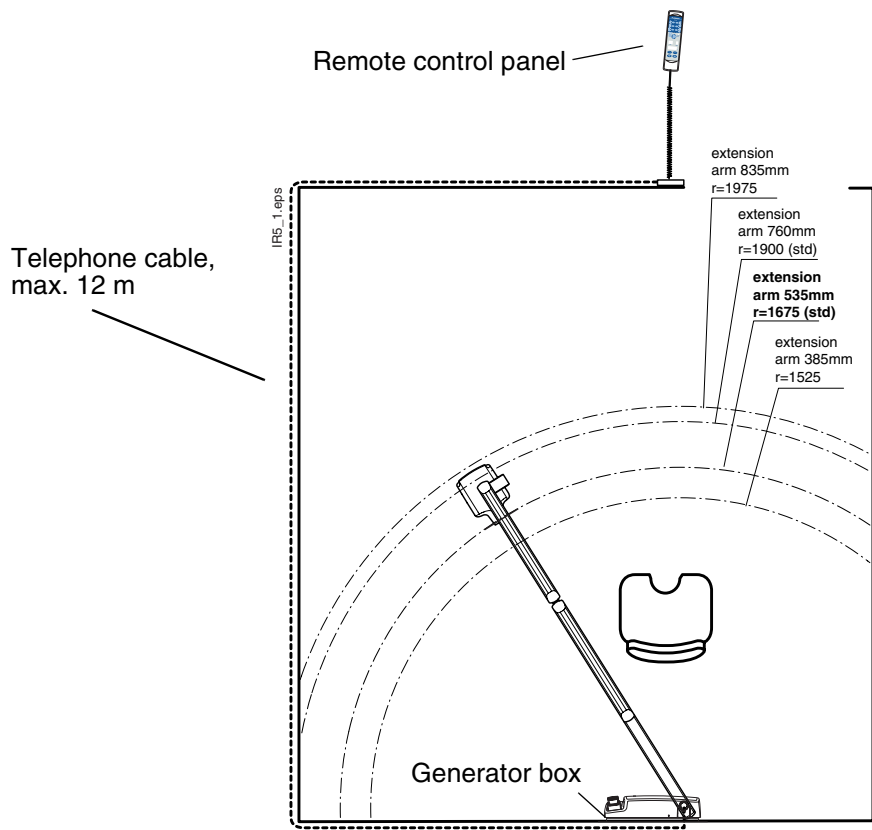


**Dental unit mounting in treatment room (only Planmeca Compact dental unit)
(see Planmeca Compact installation manual)**

NOTE Only short extension arm can be used in dental unit mounting.

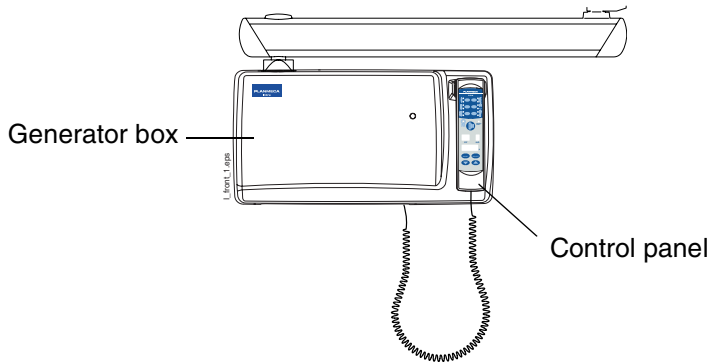


X-ray room with generator box/control panel outside the room (see sections 7 “REMOTE CONTROL PANEL INSTALLATION” on page 48 and 5.3 “Single stud installation” on page 38)

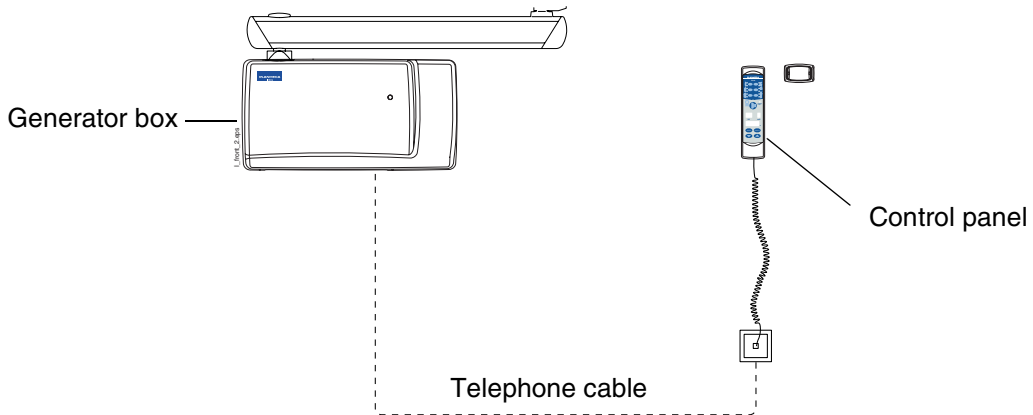


3.2 Control panel assembling alternatives

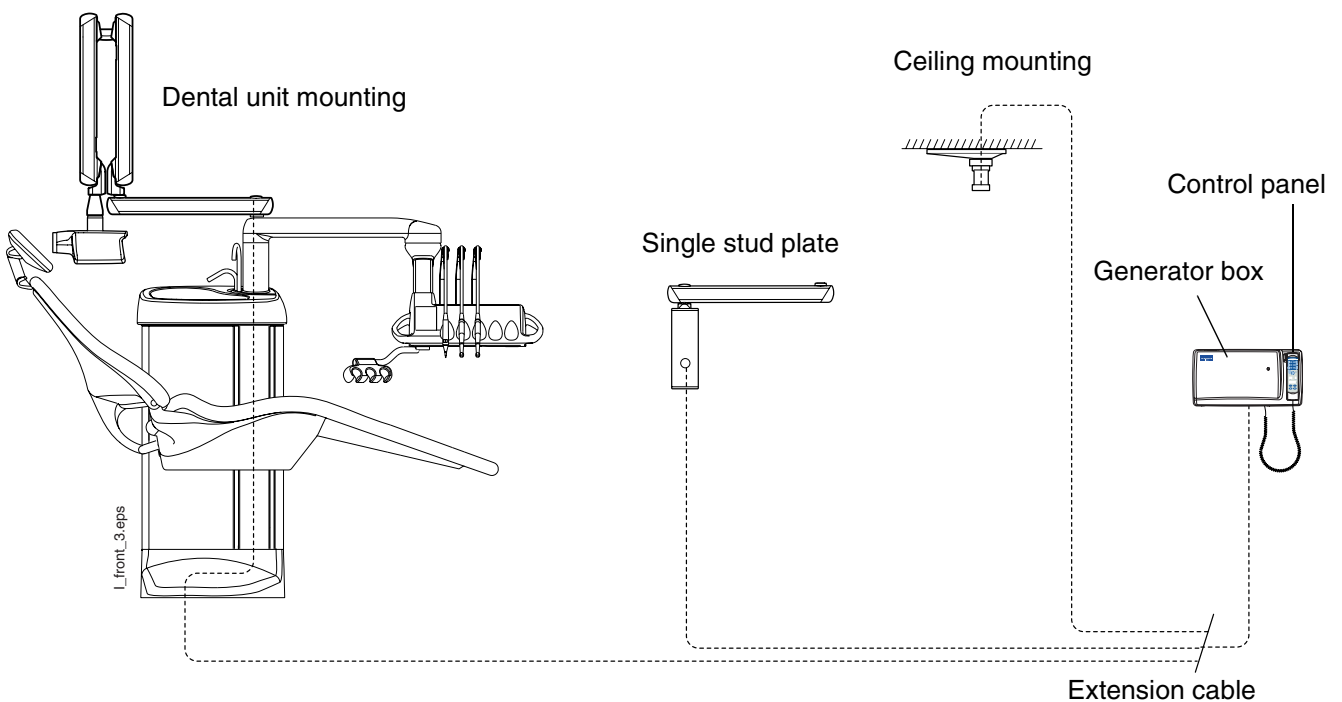
Standard assembly (see section 4 “STANDARD INSTALLATION TO A WALL” on page 11)



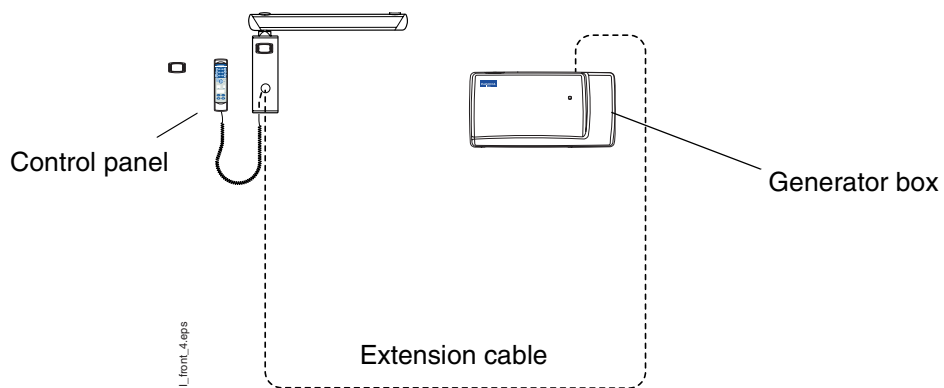
Remote assembly (see section 7 “REMOTE CONTROL PANEL INSTALLATION” on page 48)



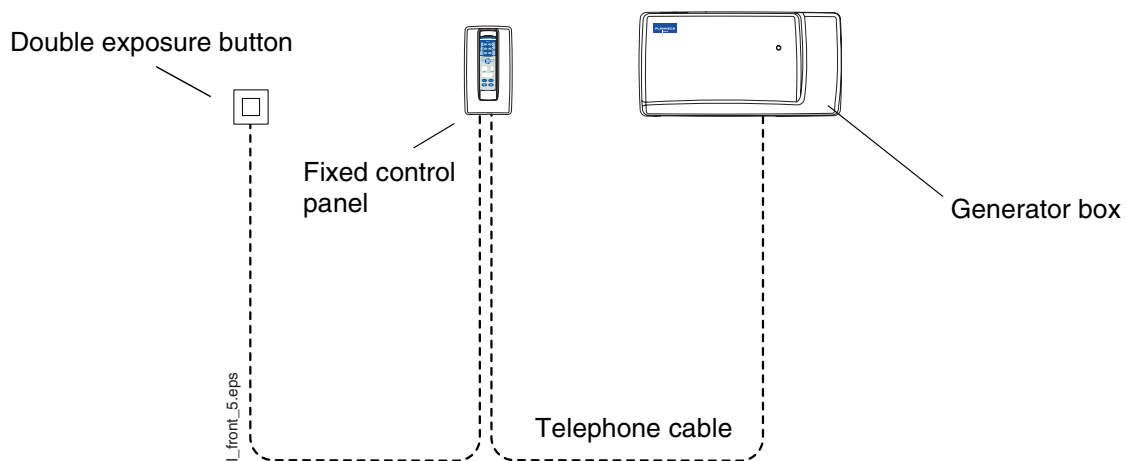
Remote assembly with generator box (see section 6 “ATTACHING THE GENERATOR BOX WITHOUT THE ADAPTER PLATE” on page 44)



Single stud assembly plate with control panel (see section 5.3 “Single stud installation” on page 38)



Fixed control panel (contains a possibility to make “double exposure button” assembly) (see section 8 “FIXED CONTROL PANEL INSTALLATION” on page 51)



4 STANDARD INSTALLATION TO A WALL



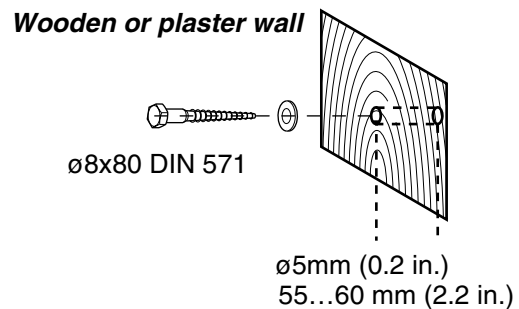
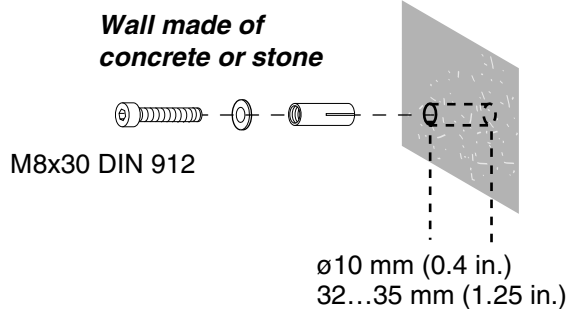
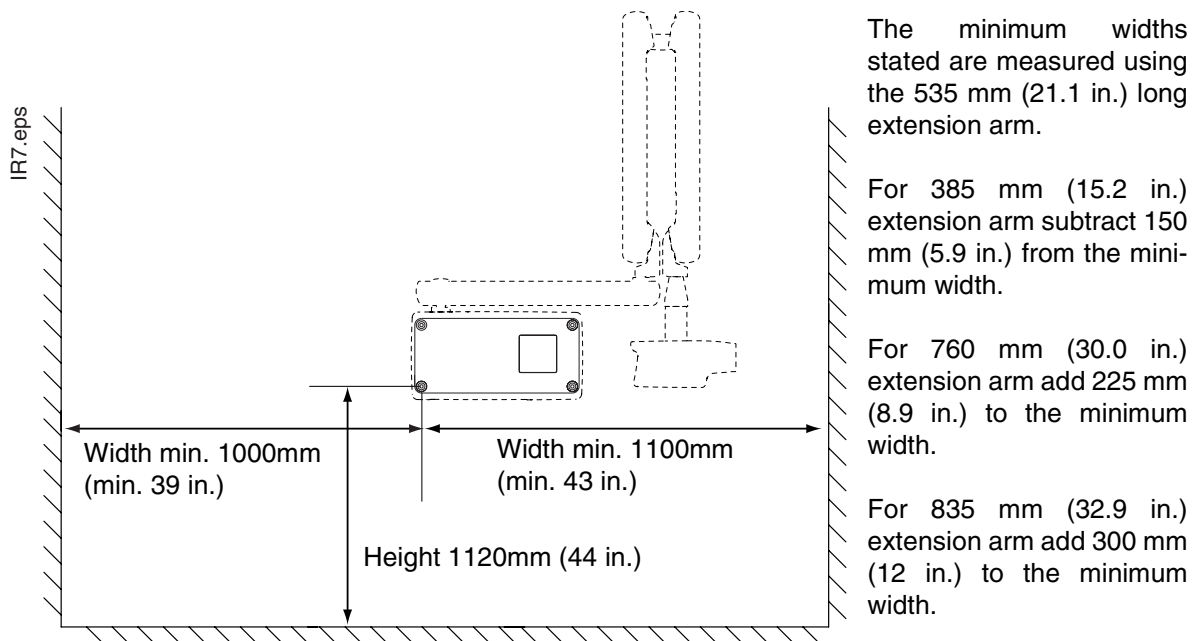
WARNING

Ensure that the power supply is switched off before installing the Planmeca Intra X-ray unit.

4.1 Attaching the standard adapter plate to wall

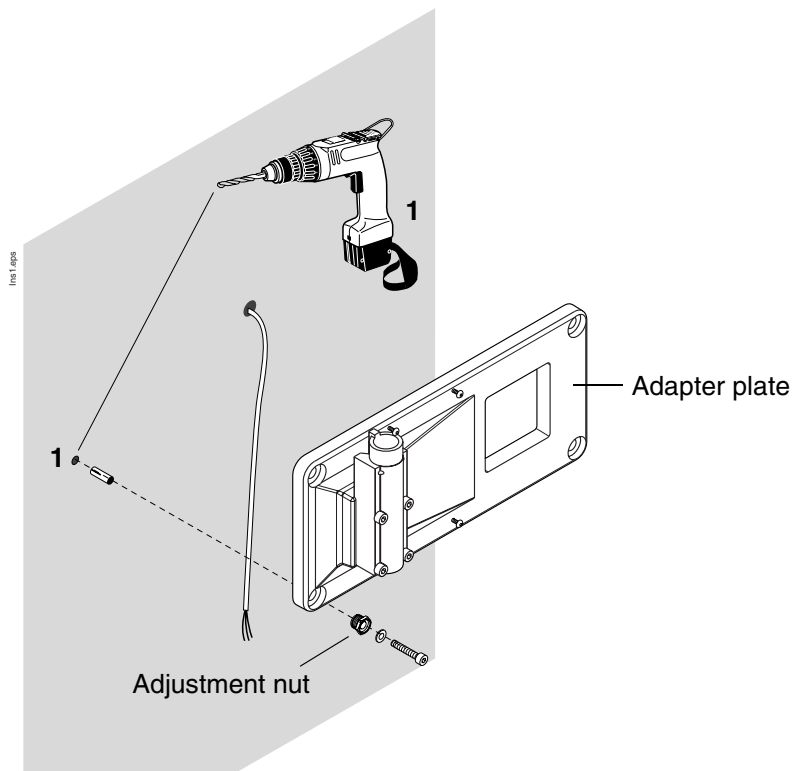
The Planmeca Intra X-ray unit must be positioned in accordance with the information given in the installation pattern supplied with the unit. The X-ray unit should be positioned within the reach of the power supply cable (3m) (118 in.). In the case that concealed wiring is used, the cable outlet should be positioned next to (on the right-hand side) the adapter plate.

The wall plate is attached to the wall according to the instructions given in next pages. If the wall is made of concrete or brick, use the M8x30 DIN 912 screws and the expansion anchors. If the wall is made of wood or plaster, use the \varnothing 8x80 DIN 571 lag screws. Do not use the expansion anchors with wooden or plaster wall. See figure below.

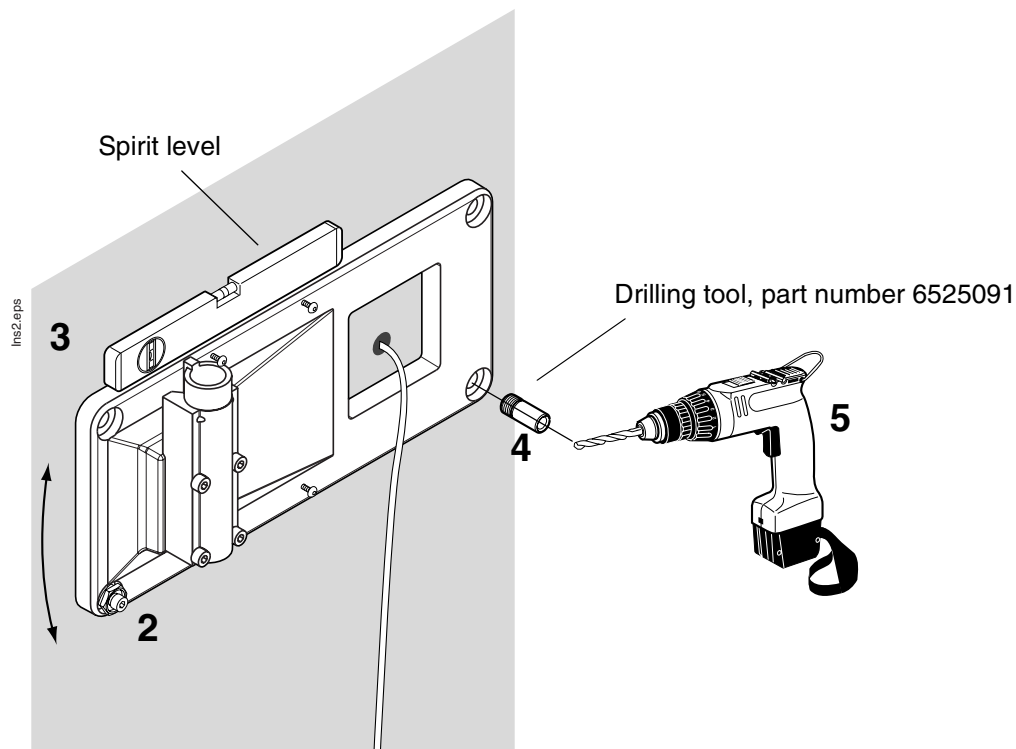


Attaching alternative 1 (recommended for concrete or brick wall)

Mark the position of the left lower mounting hole to the wall on the height of 1120 mm (44 in.). Drill one $\varnothing 10\text{mm}$ (0.4 in.), 32...35 mm (1.25 in.) in depth, hole and place the expansion anchor into it. Make sure that the end of the anchor is under the wall surface, but not more than 5 mm. Hit the wedge of the anchor firmly to the bottom of the hole. Remove the adjustment nuts from the three other mounting holes. Attach the adapter plate to the wall with one of the fastening screws and adjust the plate exactly to horizontal position.



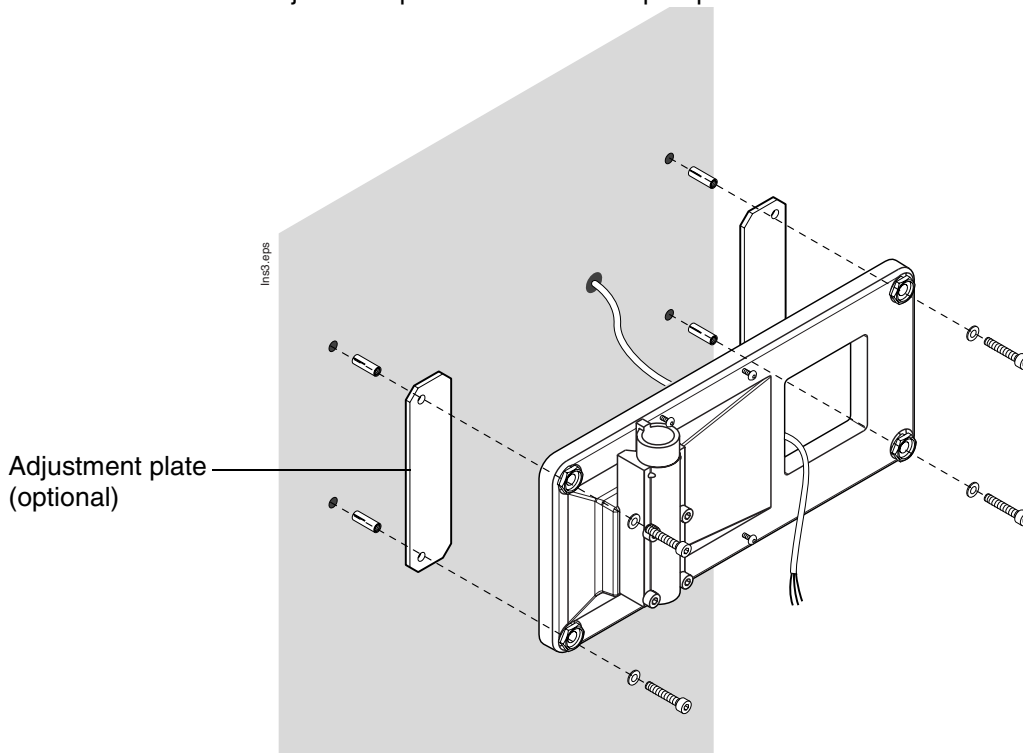
Insert the drilling tool to one of the holes and drill the second hole using the drilling tool as a guide. Unscrew the drilling tool and insert the second expansion anchor as described above, replace the adjustment nut and attach the screw.



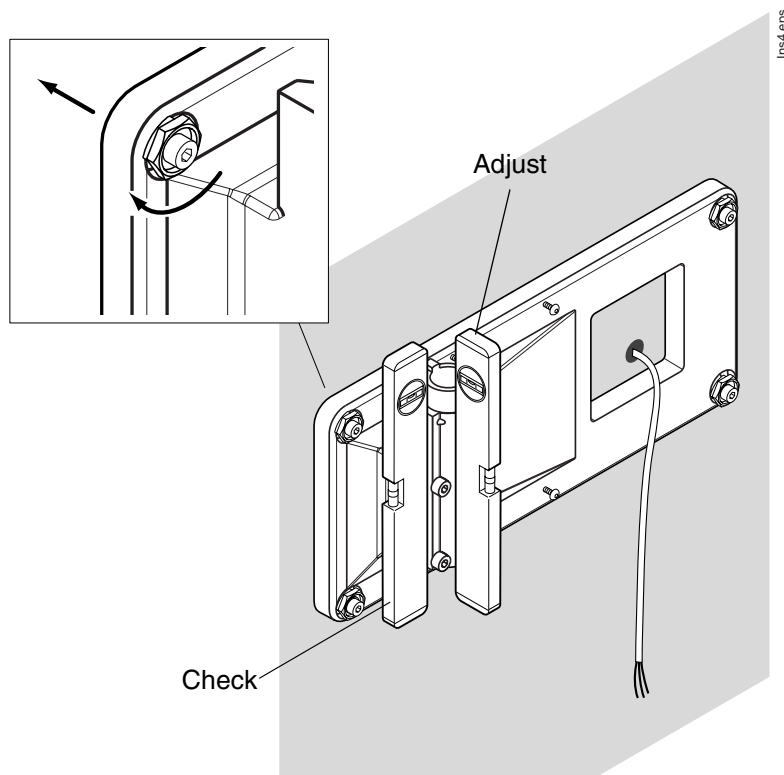
Drill the two other holes.

Remove the adapter plate and place the expansion anchors into the last two holes.

Attach the plate to the wall with four M8x30 DIN 912 screws and $\varnothing 8.4/17$ DIN 125 washers. You can use two adjustment plates under the adapter plate.



Use the adjustment nuts and the adjustment plates with the screws at each corner of the adapter plate. Adjust the wall adapter bearing to vertical position by opening slightly the mounting screws and turning the adjustment nuts to required position. The wall adapter moves towards the wall when turning the nut counterclockwise.



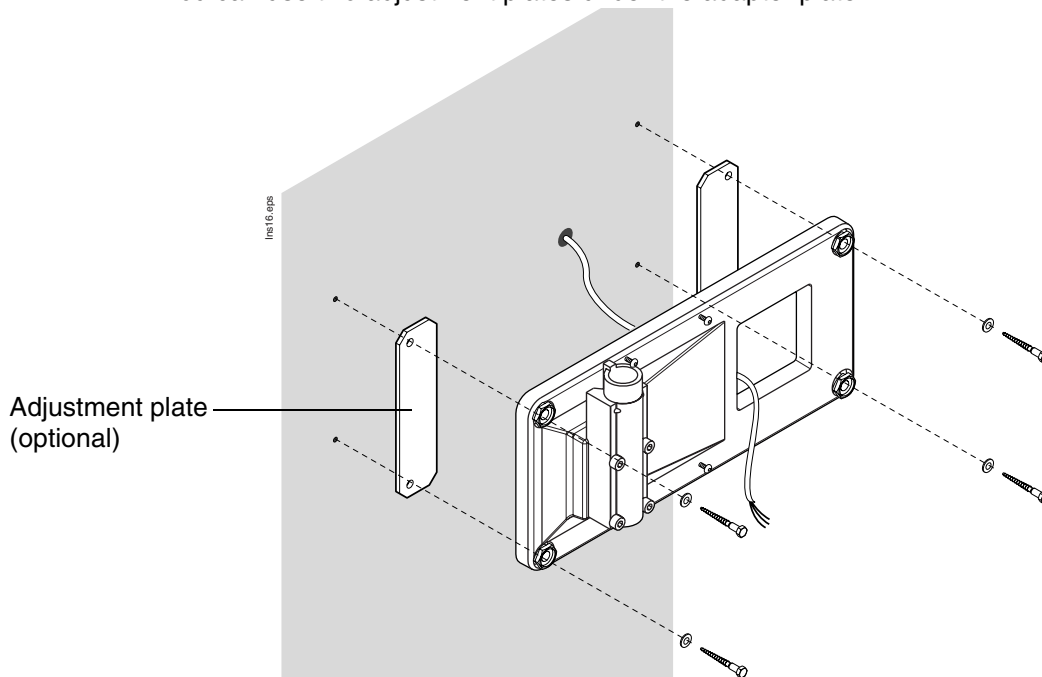
Finally, tighten all the mounting screws.

Attaching alternative 2 (for wooden wall, not recommended for concrete wall)

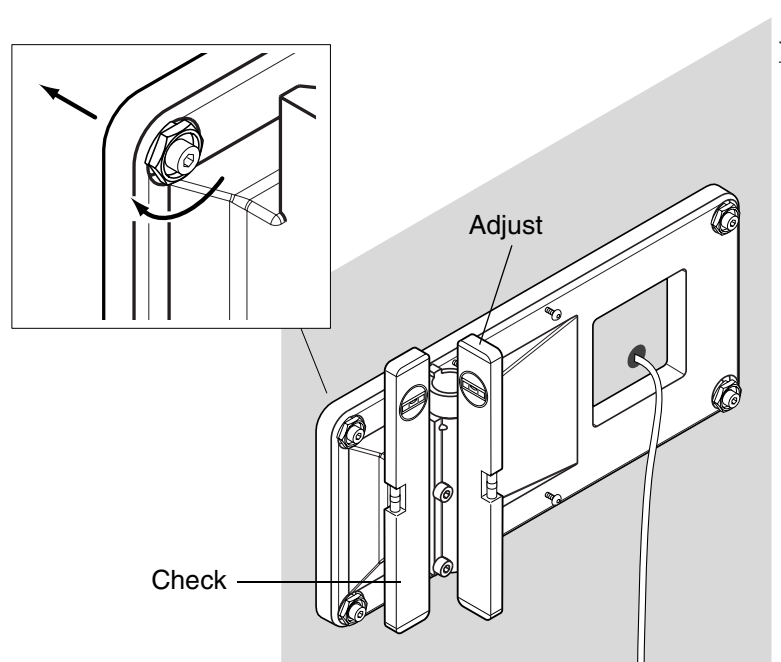
Use the installation pattern as a template and mark the positions where the holes for the four attaching screws will be drilled. Use a spirit level to ensure that the adapter plate will be level.

If the wall is made of concrete or brick, drill $\varnothing 10\text{mm}$ (0.4 in.), 32...35 mm (1.25 in.) in depth, holes and place the expansion anchors into them. Attach the adapter plate to the wall with the four M8x30 DIN 912 screws and the $\varnothing 8.4$ DIN 125 washers.

If the wall is made of wood or plaster, drill $\varnothing 5\text{ mm}$ (0.2 in.), 55...60 mm (2.2 in.) in depth, holes for the attachment screws. Do not use the expansion anchors with wooden or plaster wall. Attach the adapter plate to the wall with the four $\varnothing 8 \times 80$ DIN 571 lag screws and the $\varnothing 8.4$ DIN 125 washers. You can use two adjustment plates under the adapter plate.



Use the adjustment nuts with the screws at each corner of the adapter plate. Adjust the wall adapter bearing to vertical position by opening slightly the mounting screws and turning the adjustment nuts to required position. The wall adapter moves towards the wall when turning the nut counterclockwise.



Finally, tighten all the mounting screws.

4.2 Assembling the arm

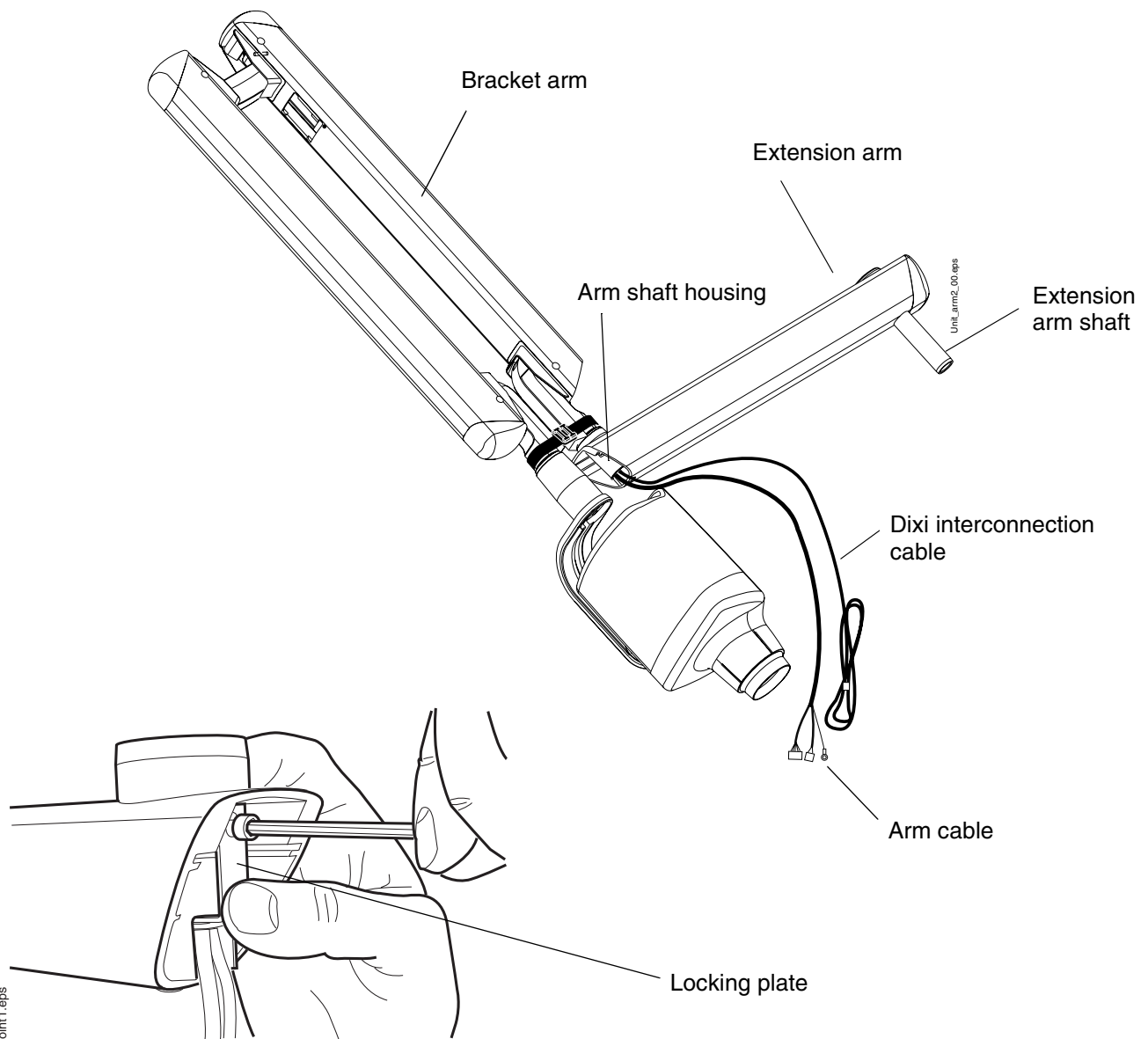


CAUTION

Care must be taken when assembling the arm for not to damage the arm cable.

NOTE *Normally the bracket arm does not turn above the extension arm. In case you need to change the movement area of the bracket arm, refer to section 4.3 “Changing the bracket arm movement area” on page 16.*

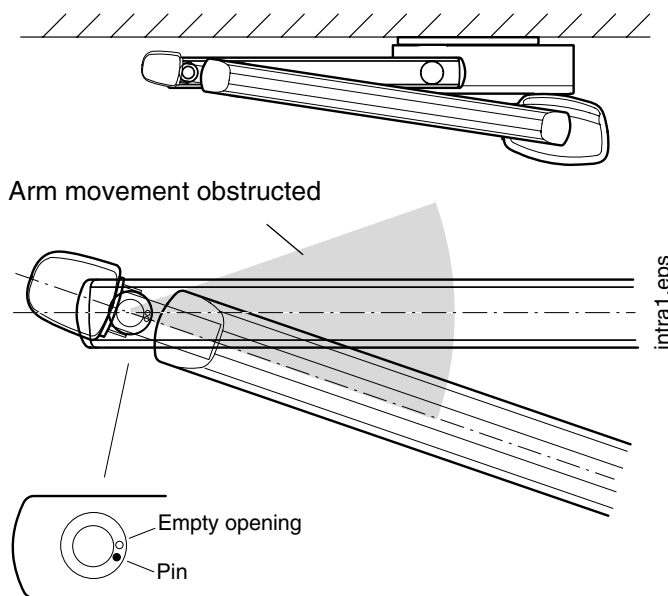
Route the arm cable and the Dixi interconnection cable through the extension arm shaft housing. Assemble the bracket arm to the extension arm by pushing the bracket arm shaft into the housing. Secure the bracket arm with the locking plate. Route the cables through the extension arm and arm shaft. Place the cover plug back to the end of the extension arm.



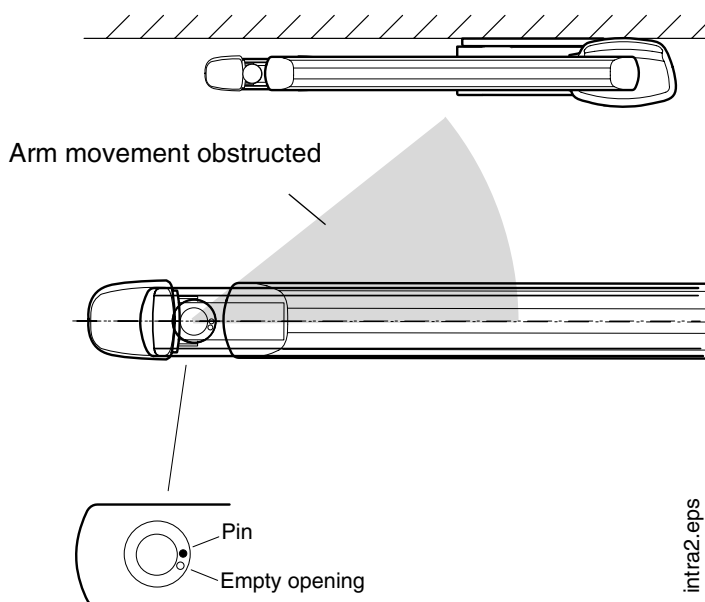
4.3 Changing the bracket arm movement area

NOTE Normally the bracket arm does not turn above the extension arm, but the arm movement area can be changed by moving the limiting pin on the extension arm shaft housing. The factory preset and modified movement areas are shown on the figures below. **THE LIMITING PIN POSITION CAN BE CHANGED BUT THE PIN MUST NOT BE REMOVED.**

Factory preset movement area

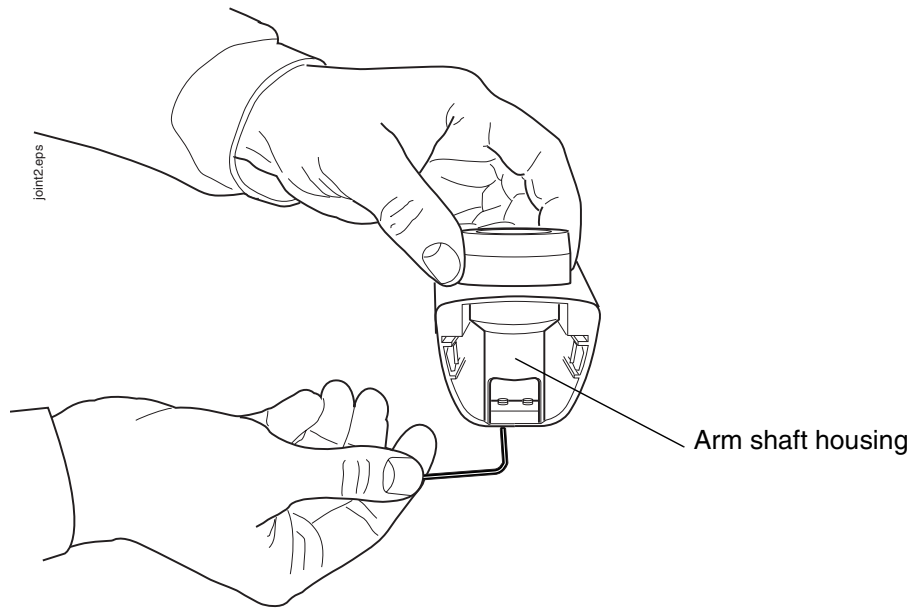


Modified movement area



NOTE When the modified area is used the tube head can hit the extension arm. Be careful not to knock the tube head against the arm.

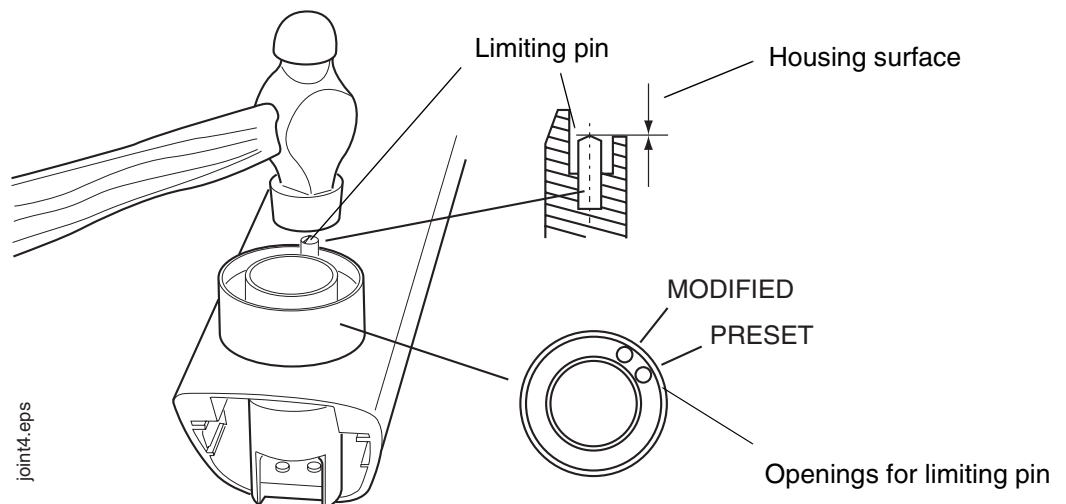
Unscrew the two screws that hold the housing on the extension arm and remove the shaft.



Remove the limiting pin from the housing by using a thin screwdriver and hammer.



Attach the pin to the other opening on the housing so that the pin is level with the inner surface of the housing (see figure below).

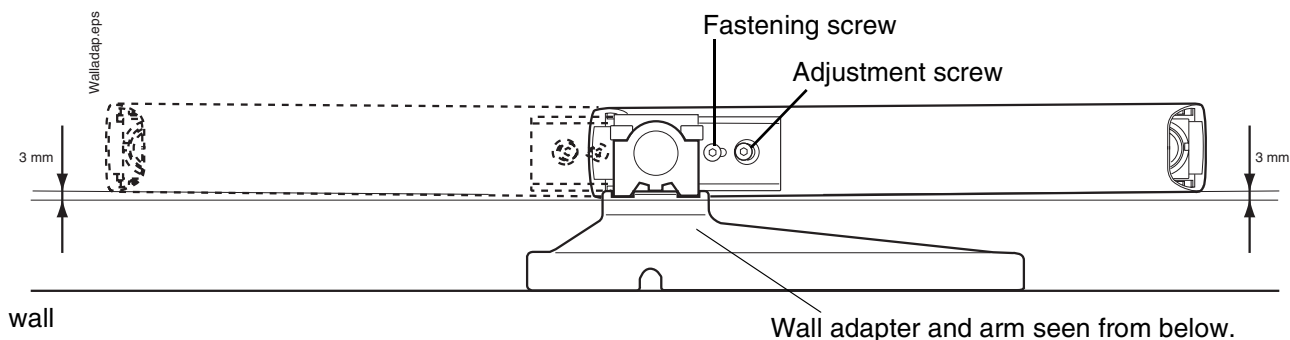


4.4 Mounting the arm

Route the arm and Dixi interconnection cables through the wall adapter bearing. Mount the arm into position by pushing the arm shaft into the wall adapter bearing.

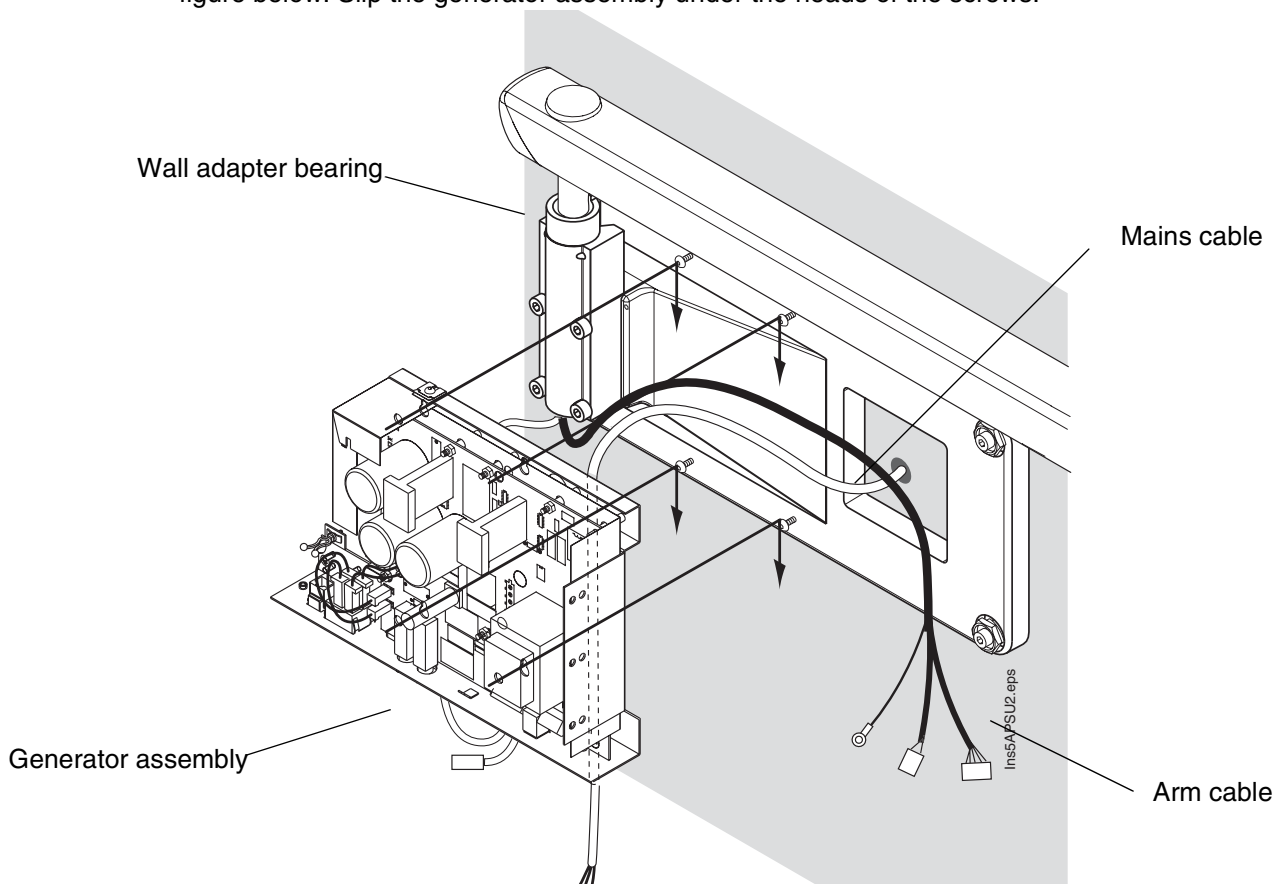
The arm position is adjusted at the factory. In case the position needs to be adjusted, loosen the adjustment piece fastening and adjustment screws. **Do not open the screws totally.** Turn the arm away from the wall. Tighten the adjustment screw, the adjustment piece moves towards the arm shaft.

Turn the arm carefully to the desired position. If the arm remains too far from the wall, push the arm slightly towards the wall and simultaneously loosen the adjustment screw. The adjustment piece now moves away from the arm shaft and the arm towards the wall. After the desired position has been reached, tighten the adjustment piece fastening screw with care. Tighten also the adjustment screw.

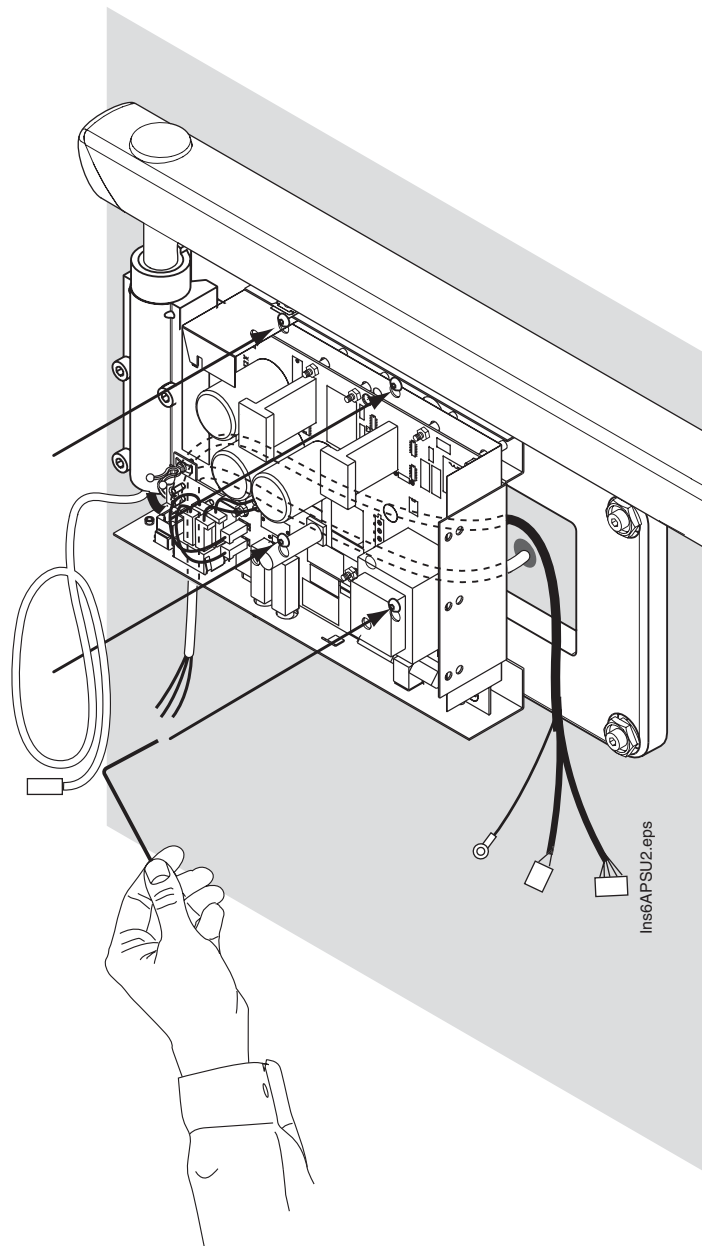


4.5 Installing the generator assembly

There are four M4x8 ULS screws attached to the adapter plate at the factory. Loosen these screws a couple of turns with a 2mm allen key. Position the arm cable (and mains cable) as shown on the figure below. Slip the generator assembly under the heads of the screws.



Secure the generator assembly into position by tightening the four screws through the openings on the generator PCB.



4.6 Connecting the cables



WARNING

Ensure that the power supply is switched off before connecting the cables.

Arm cable

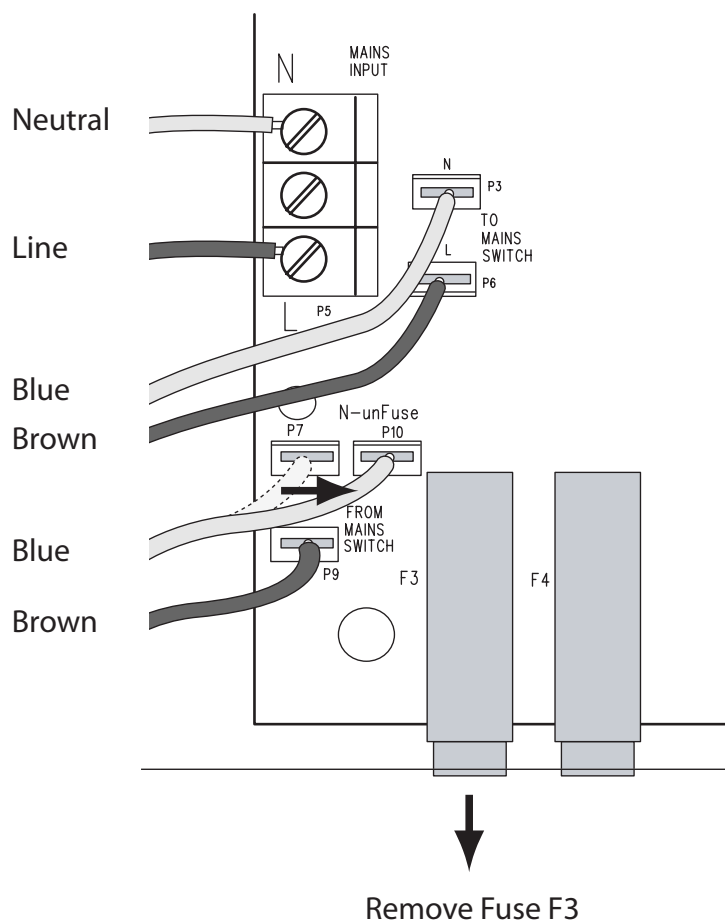
Connect the grounding lead of the arm cable to the grounding point located on the right side of the generator assembly. Connect the control leads of the arm cable (6-pole connector) to the terminal P8 on the generator PCB. Connect the power leads (3-pole connector) of the arm cable to the terminal P1 on the generator PCB. Snap the ferrite to the arm cable as shown on the figure on next page.

Mains cable (concealed wiring)

In the case that mains voltage is supplied via concealed wiring route the mains cable between the adapter plate and the generator assembly.

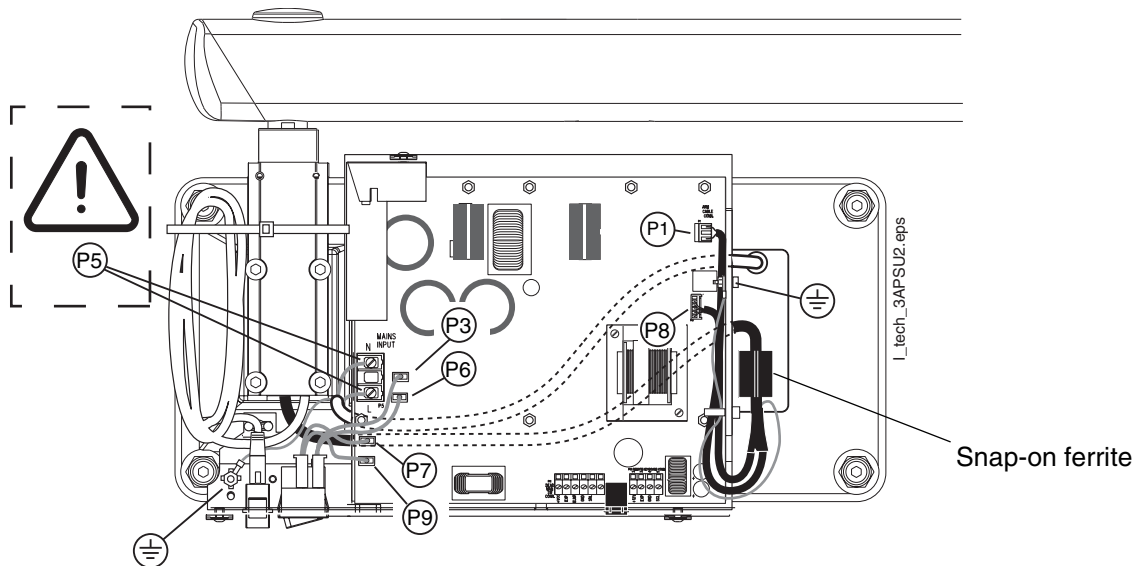
Connect the grounding lead to the grounding point next to the mains switch. Connect the neutral wire to the mains input terminal (P5) marked **N**. Connect the live wire to the mains input terminal (P5) marked **L**.

Generator PCB version -C or later (from X-ray unit's serial number IXRF58018): When the concealed wiring is used the cable coming from the ON/OFF switch to the connector **P7** must be moved to the connecto **P10**. Also the fuse **F3** must be removed.



NOTE In case the X-ray units own power supply cable and the strain reliefer are removed from the generator assembly (mains voltage is supplied via concealed wiring), cover the opening with a plug supplied with the X-ray unit.

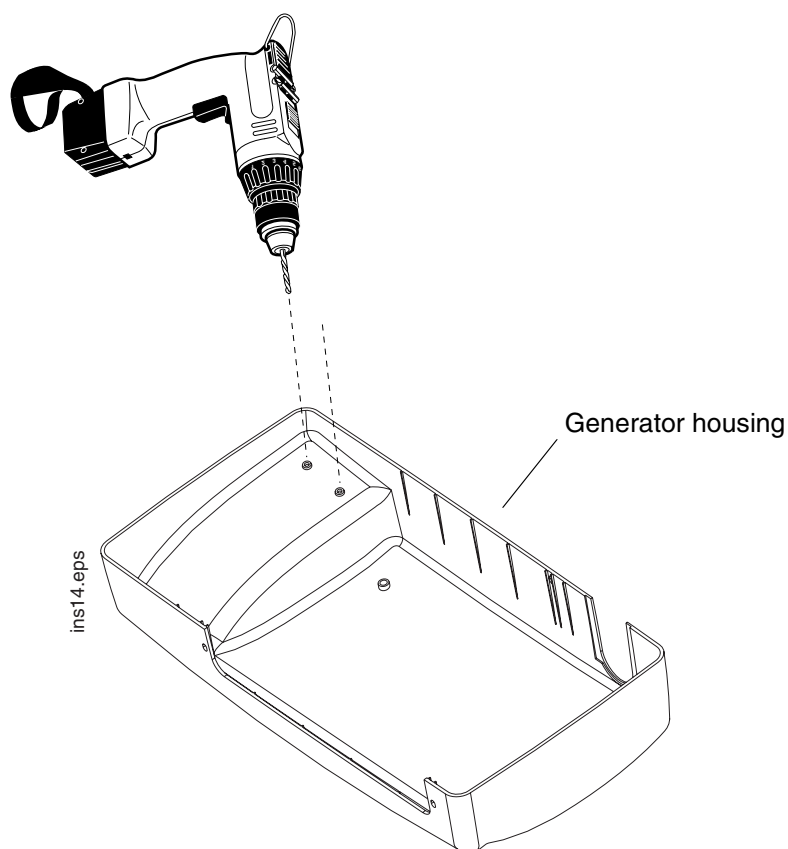
Connect the Dixi interconnection cable to the Panel mounted RJ45 adapter located beside the on/off switch and secure the cable with the cable clamp. If needed, attach the cable to the wall adapter bearing with a cable tie.



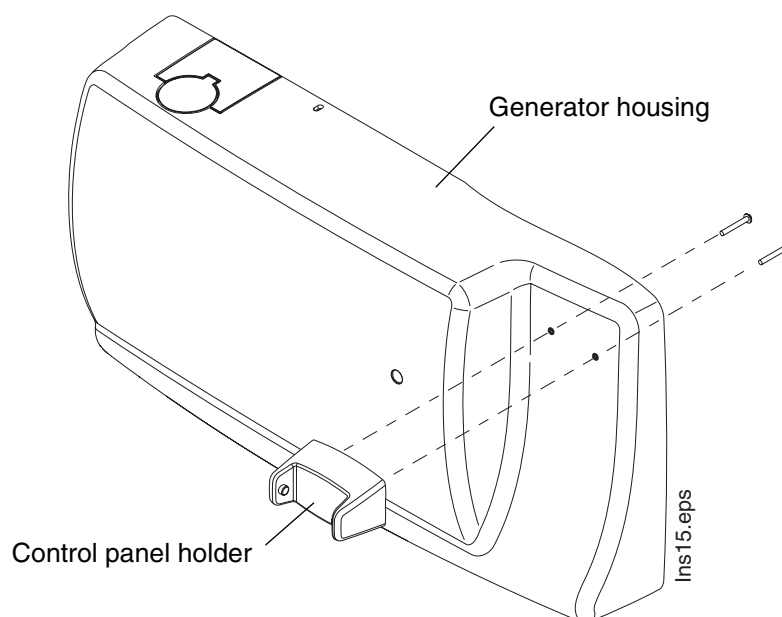
NOTE The Dixi digital intra X-ray system is installed according to the instructions given in the Dixi digital X-ray systems installation manual.

4.7 Attaching the control panel holder to the generator housing

Drill two $\varnothing 3.5$ -4mm (0.14-0.16 in.) holes for the control panel holder to the generator housing. The hole positions are marked to the inner side of the cover with collars.

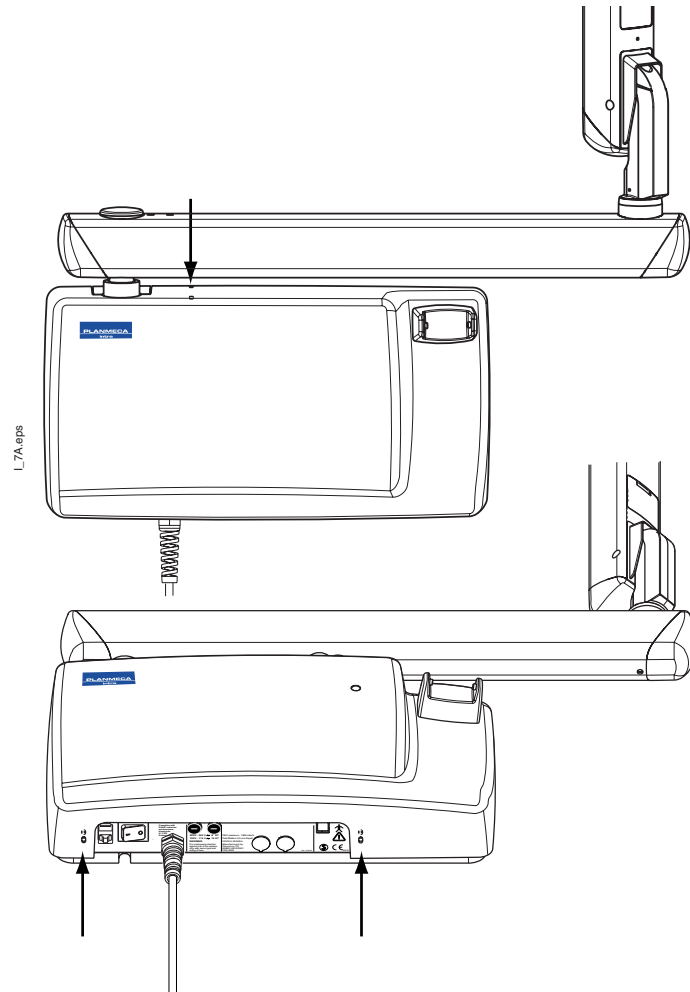


Attach the control panel holder to the generator housing with the two PT 3x22 rst WN1451 screws.



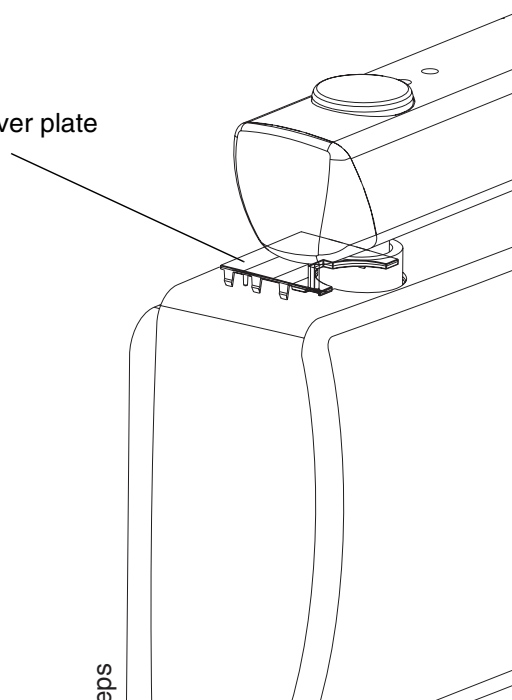
4.8 Mounting the generator housing

Place the generator housing over the generator assembly. Secure the cover into position with the three M4x6 ULS screws.



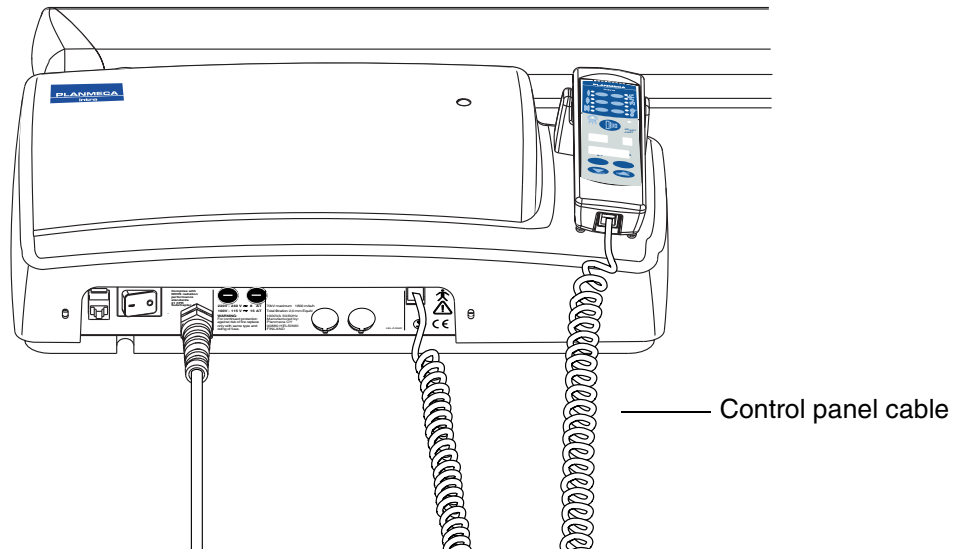
Attach the generator housing cover plate to its position.

Generator housing cover plate



4.9 Connecting the control panel cable

Connect the control panel cable to its terminal at the underside of the generator box.



5 OTHER INSTALLATION ALTERNATIVES



WARNING

Ensure that the power supply is switched off before installing the Planmeca Intra X-ray unit.

NOTE *With the installation methods described in this section the generator box is installed directly to a wall without using a wall adapter plate. Refer to the section 6 “ATTACHING THE GENERATOR BOX WITHOUT THE ADAPTER PLATE” on page 44.*

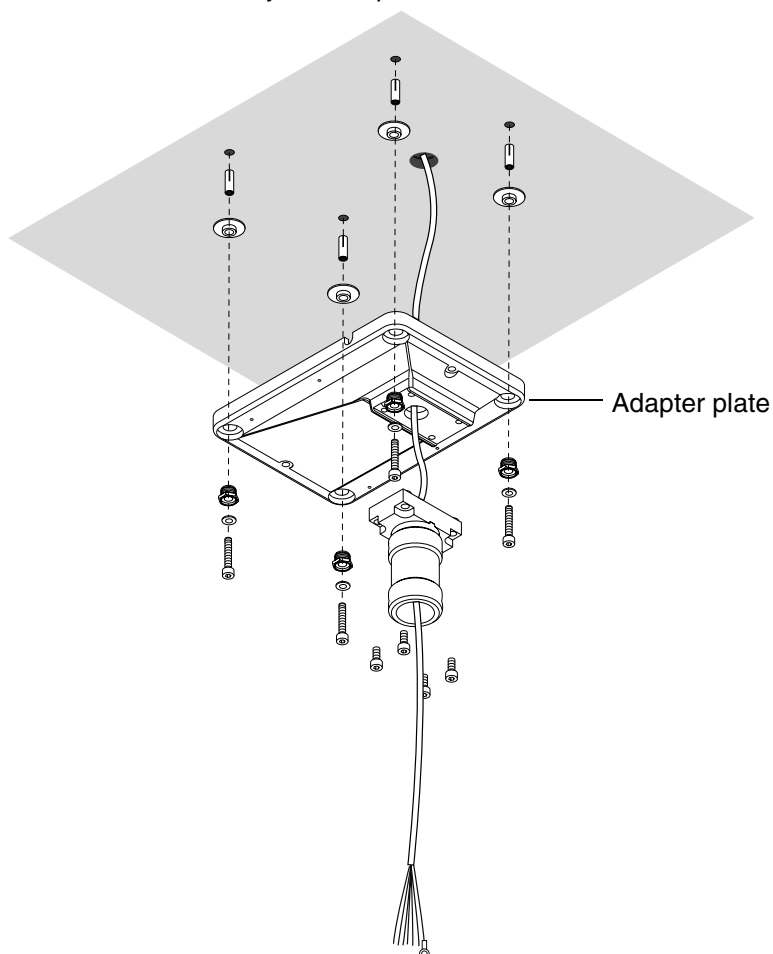
5.1 Ceiling installation

Concrete ceiling

Mark the place of the adapter plate to the ceiling. Drill one $\varnothing 10$ mm (0.4 in.), 32...35 mm (1.25 in.) in depth, hole and place the expansion anchor into it. Attach the adapter plate to the ceiling with one of the fastening screws.

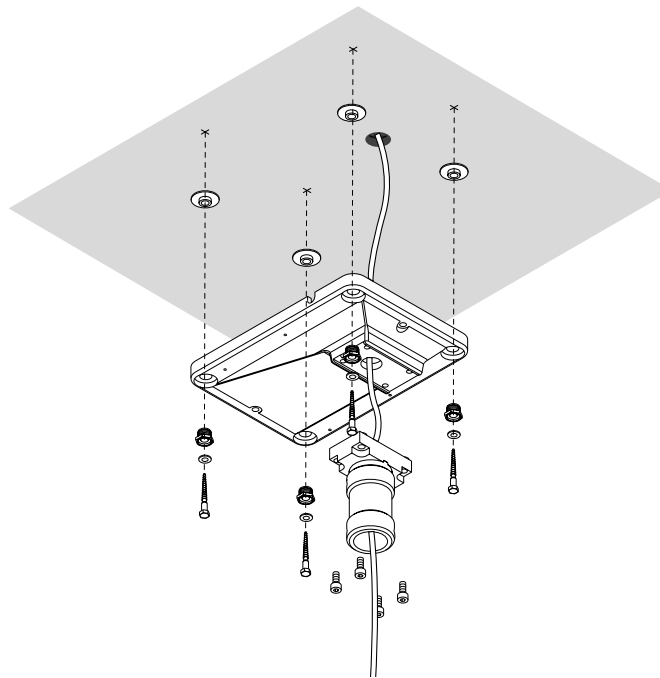
Remove the adjustment nuts from the three mounting holes. **Attach the drilling tool to one of the holes** and drill the second hole using the drilling tool as a guide. Drill the two other holes in the same way. Remove the adapter plate and insert the expansion anchors into the holes.

Attach the plate to the ceiling with four M8x35 DIN 912 screws and $\varnothing 8.4/17$ DIN 125 washers. Use the adjustment nuts and the adjustment plates with the screws at each corner of the adapter plate.

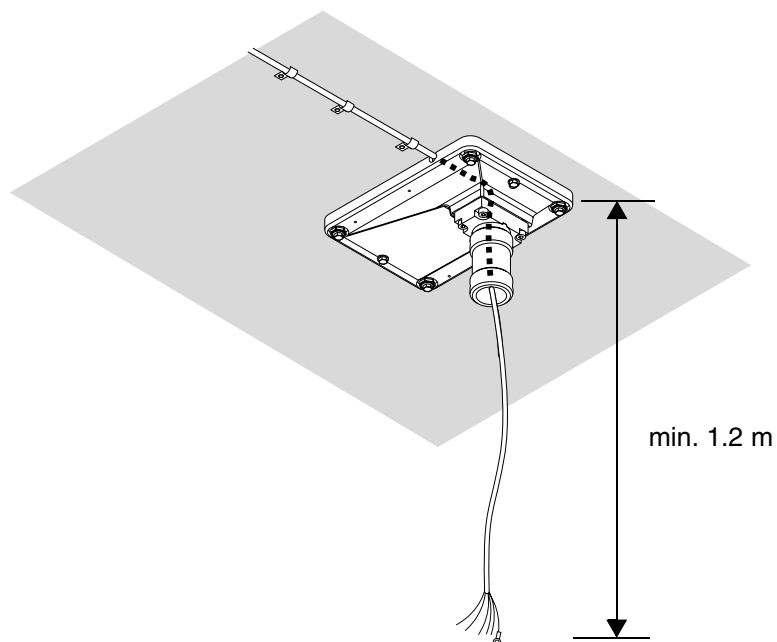


Wooden ceiling

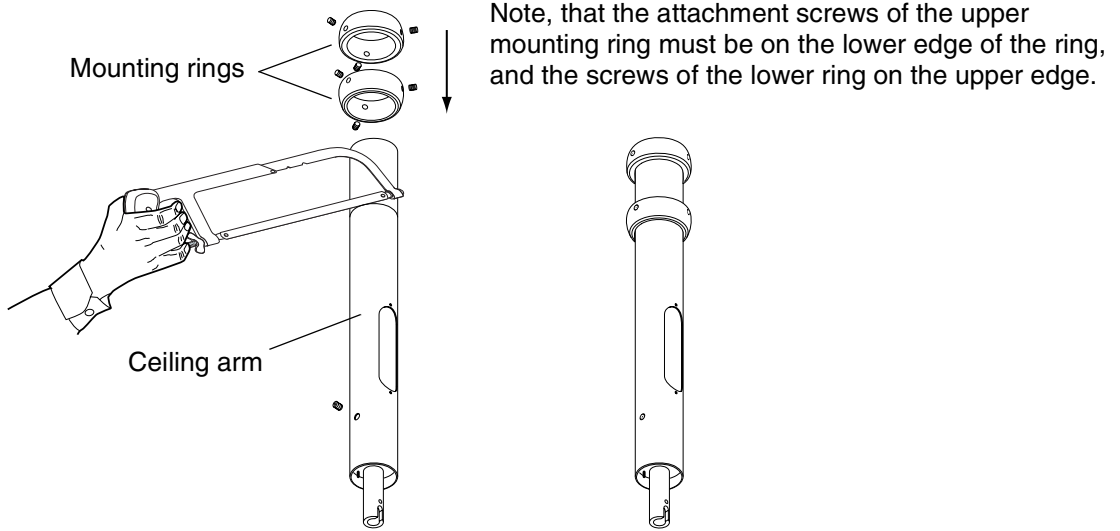
Attach the adapter plate to the ceiling with four $\varnothing 8 \times 80$ DIN 571 lag screws. Do not use the expansion anchors with wooden ceiling. Use the adjustment nuts and the adjustment plates with the screws at each corner of the adapter plate.



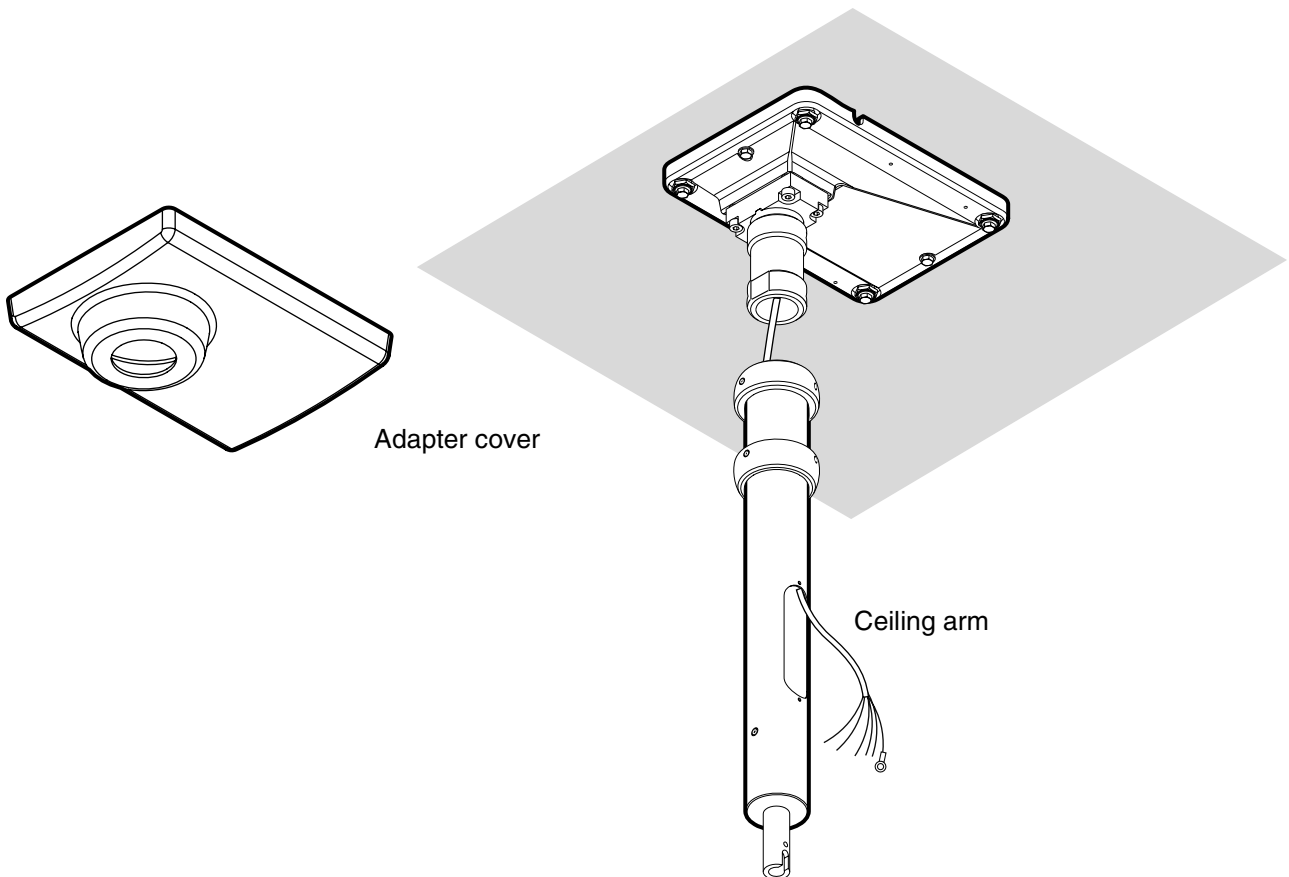
NOTE *If the concealed wiring is not used, the extension cable must be lead so that there is at least 1.2 m cable after adapter plate.*



Shorten the ceiling arm if needed and attach the mounting rings to the arm. Do not tighten the screws yet.



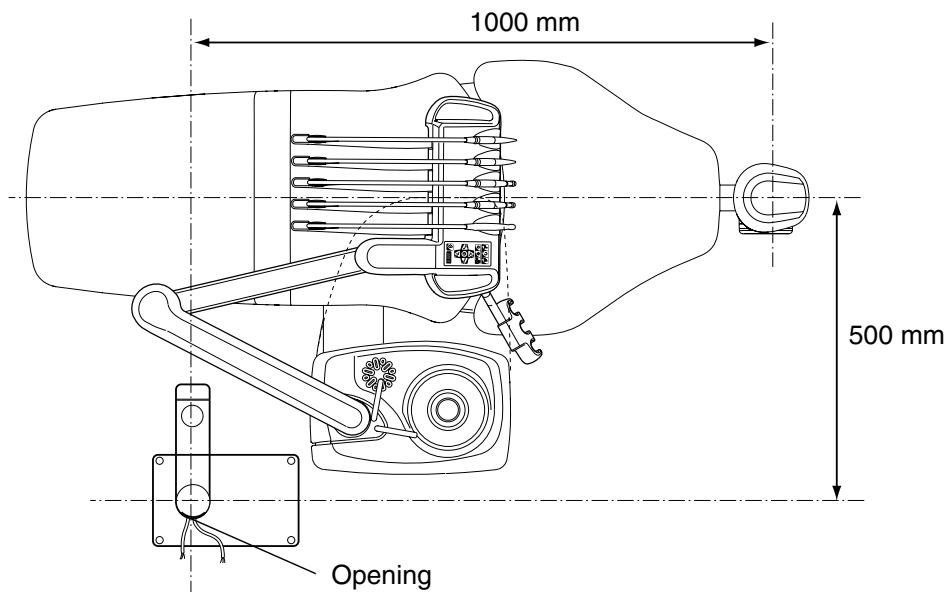
NOTE If the optional adapter cover is used, attach it to its position before attaching the ceiling arm.



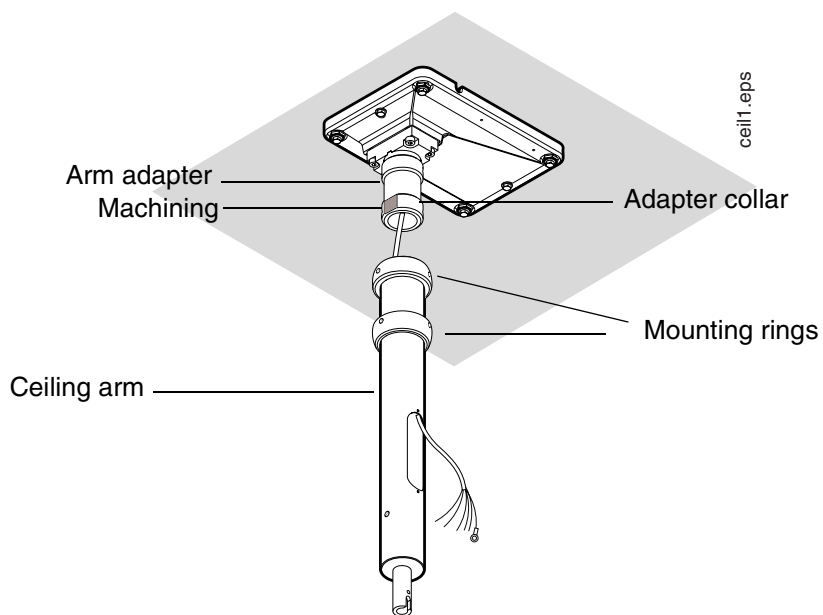
OTHER INSTALLATION ALTERNATIVES

Install the ceiling arm to the adapter as follows.

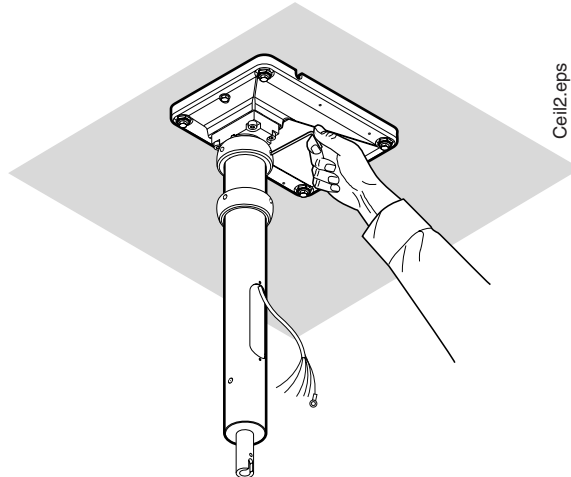
If the operating light is installed to the ceiling arm, position the arm according to the figure below (opening away from the chair).



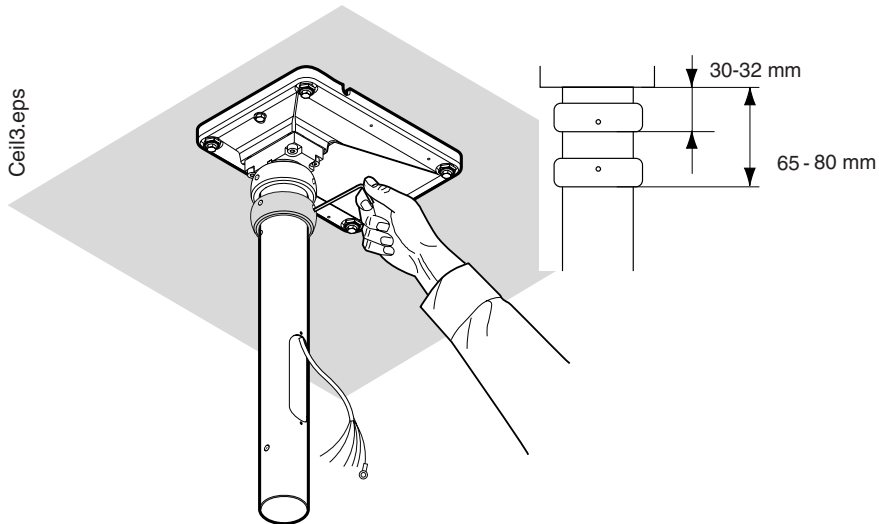
NOTE The ceiling arm is locked to the arm adapter by making a dent with a mounting ring screw to the arm above the adapter collar. The dent must not be in line with the machining on the adapter collar.



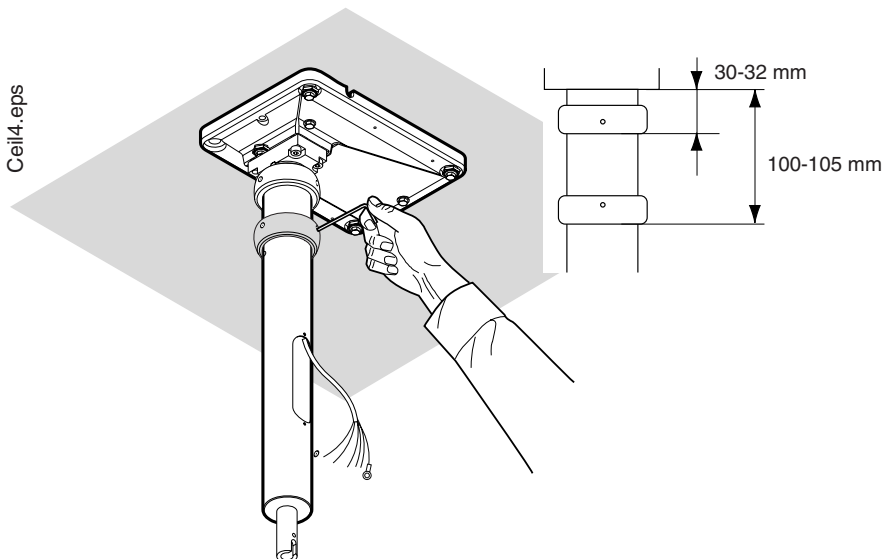
Attach the ceiling arm to the adapter with the upper mounting ring.



Move the lower mounting ring to the position shown on the figure below. With the locking screw located on the lower mounting ring make a dent to the arm (the head of the locking screw differs from the head of the normal attachment screws). This will lock the arm to the adapter. Replace the locking screw with an attachment screw.

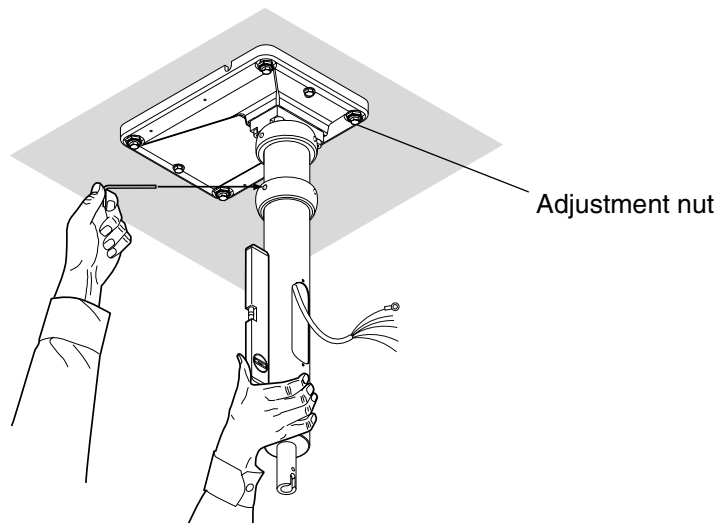


Move the lower mounting ring to the position shown on the figure below. Tighten all the mounting rings' screws firmly.

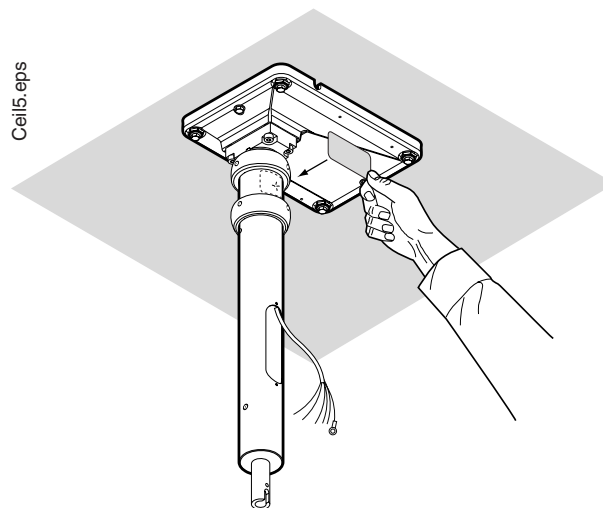


OTHER INSTALLATION ALTERNATIVES

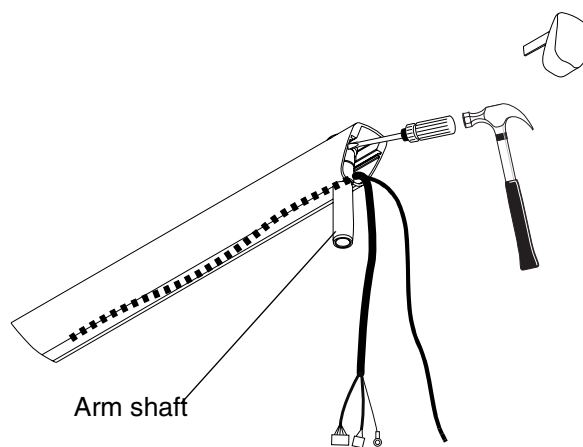
With a spirit level make sure that the ceiling arm is vertical. Adjust its position with the adjustment nuts, if needed.



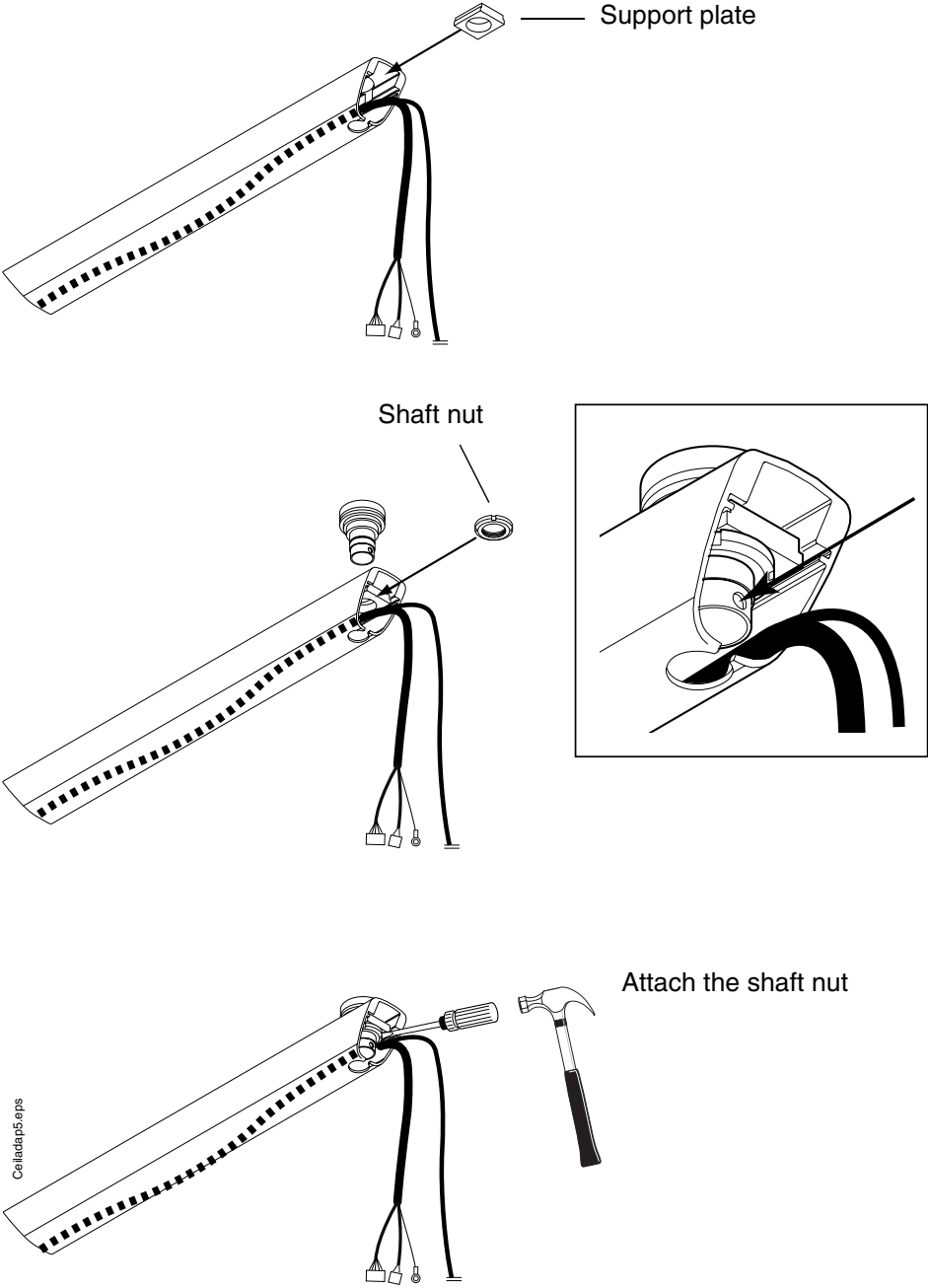
Attach the cover label over the dent.



Remove the extension arm shaft. Remove the shaft nut by hitting it as shown on the figure below. Remove the support plate and the shaft. The shaft is not needed in this installation.

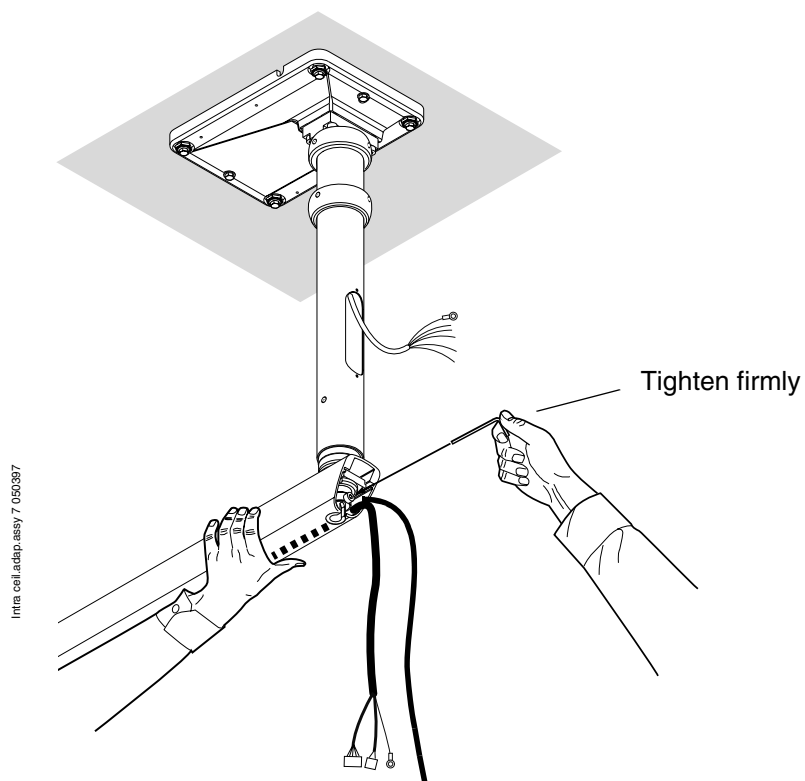
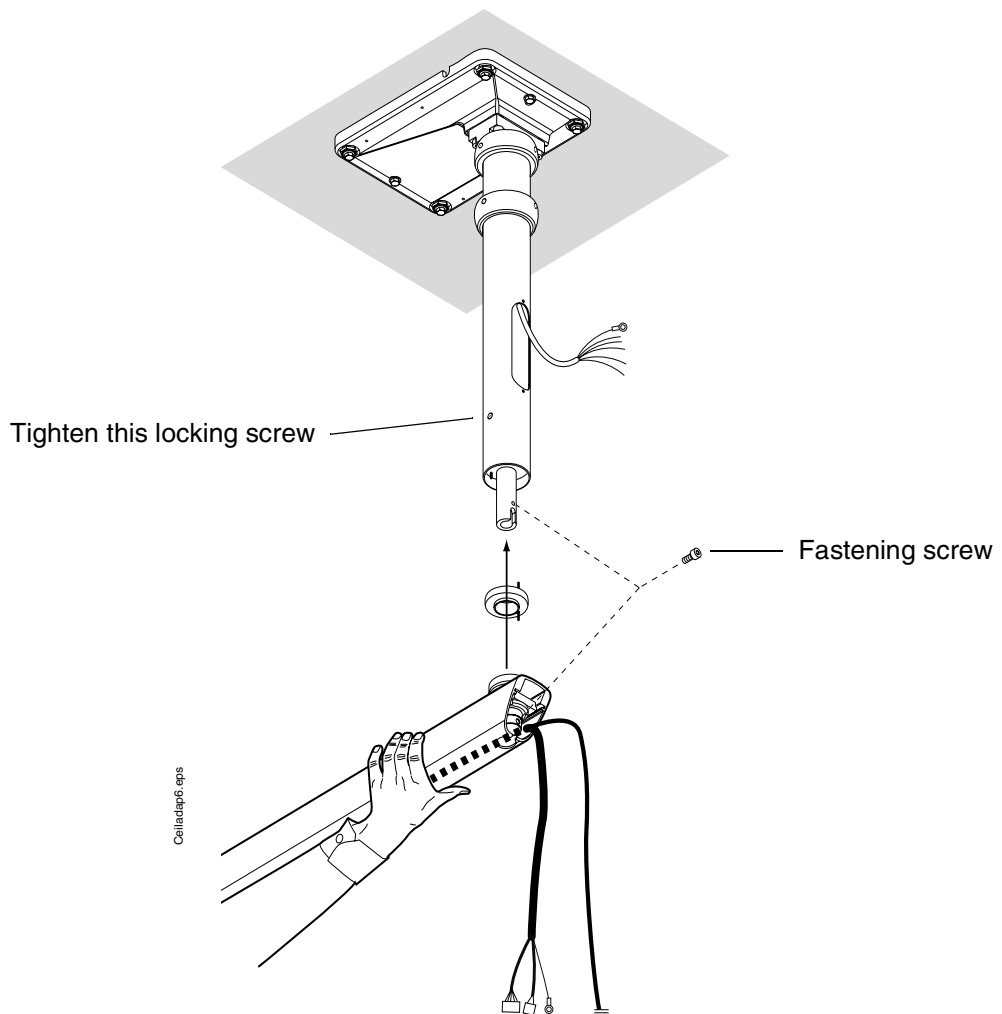


Assemble the bracket arm to the extension arm, refer to the section 4.2 “Assembling the arm” on page 15. Assemble the bearing housing to the extension arm as described in figure below.

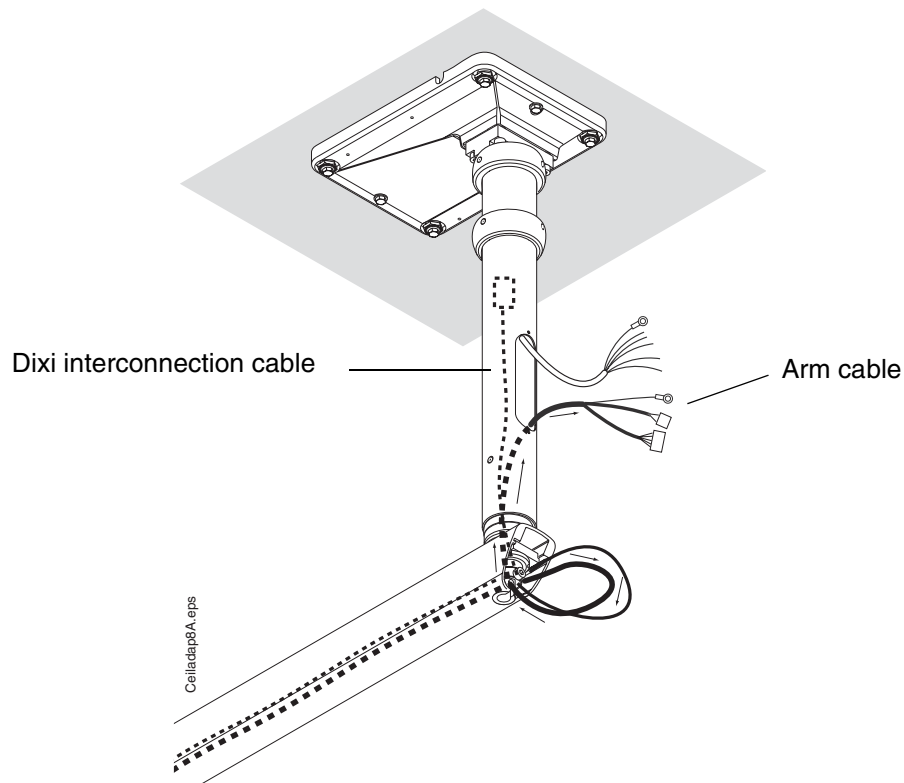


Install the X-ray unit to the ceiling arm and lock it immediately to its position with the fastening screw.

NOTE The ceiling arm shaft can be locked temporarily to ease the installation of the unit.

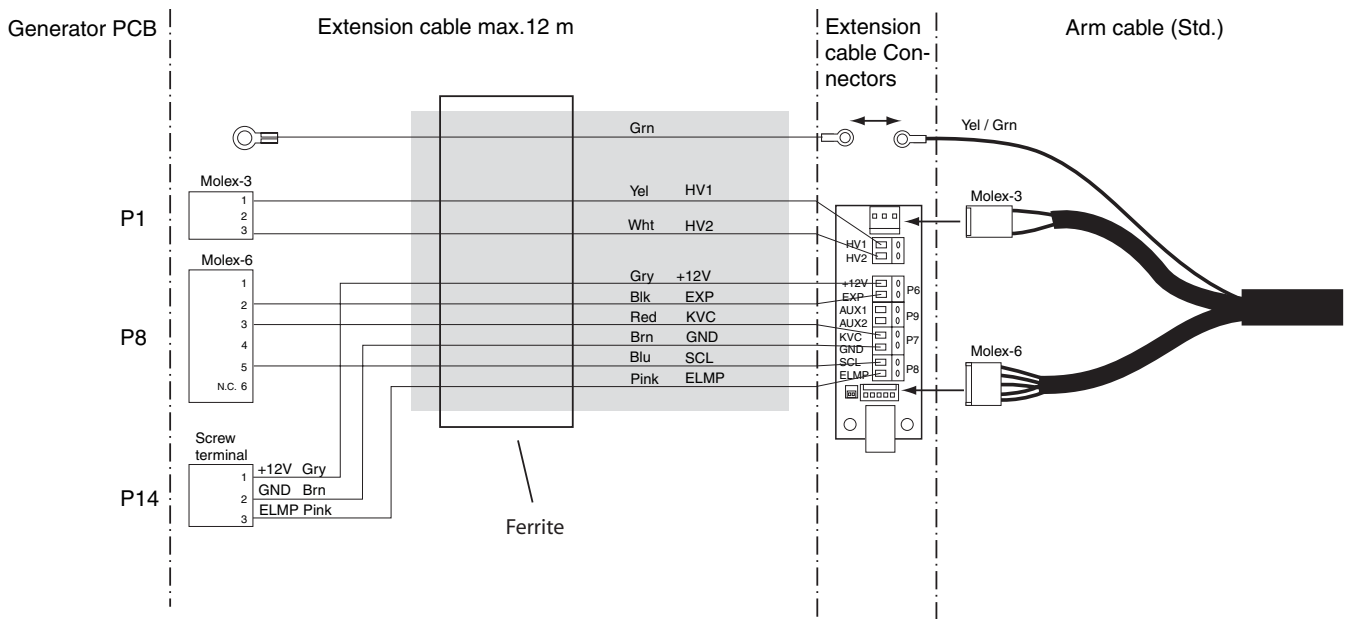


Route the arm and Dixi interconnection cables from the extension arm to the ceiling arm. In case the Dixi digital intra X-ray system is not installed leave the Dixi interconnection cable into the ceiling arm as shown on the figure below.

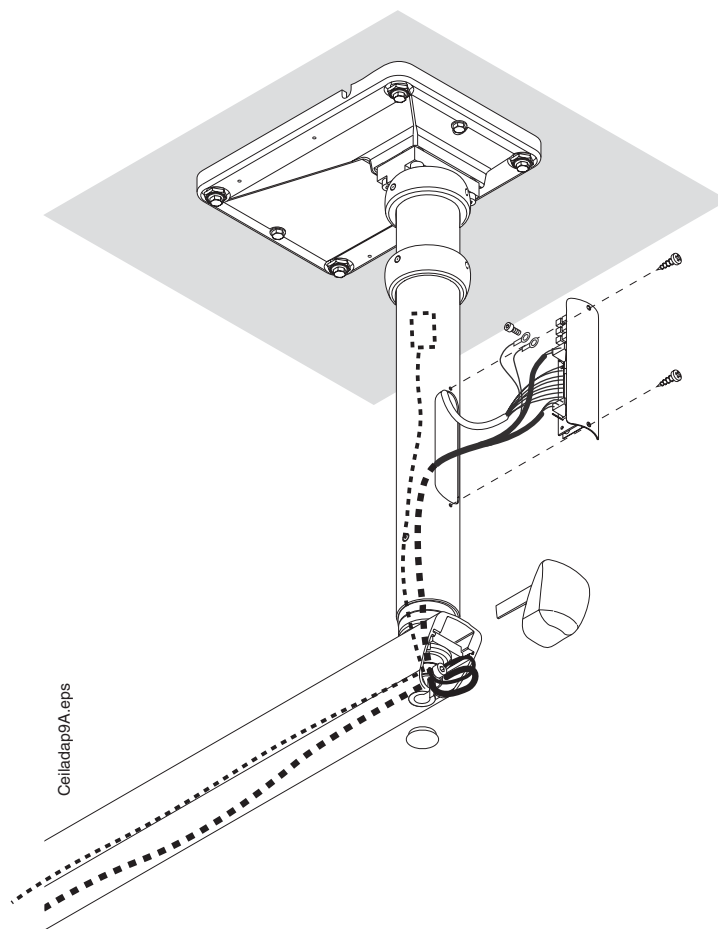


NOTE The Dixi digital intra X-ray system is installed according to the instructions given in the Dixi digital X-ray systems installation manual.

Connect the cables according to the figure below. Note, that it does not matter which way the yellow leads (HV1 and HV2) are connected to the connectors HV1 and HV2.



Fasten the cover to the opening of the ceiling arm.



Loosen the locking screw and either leave it loose, so that the arm can be rotated (700°), or tighten it to the position desired by the customer. Attach the cover plugs.

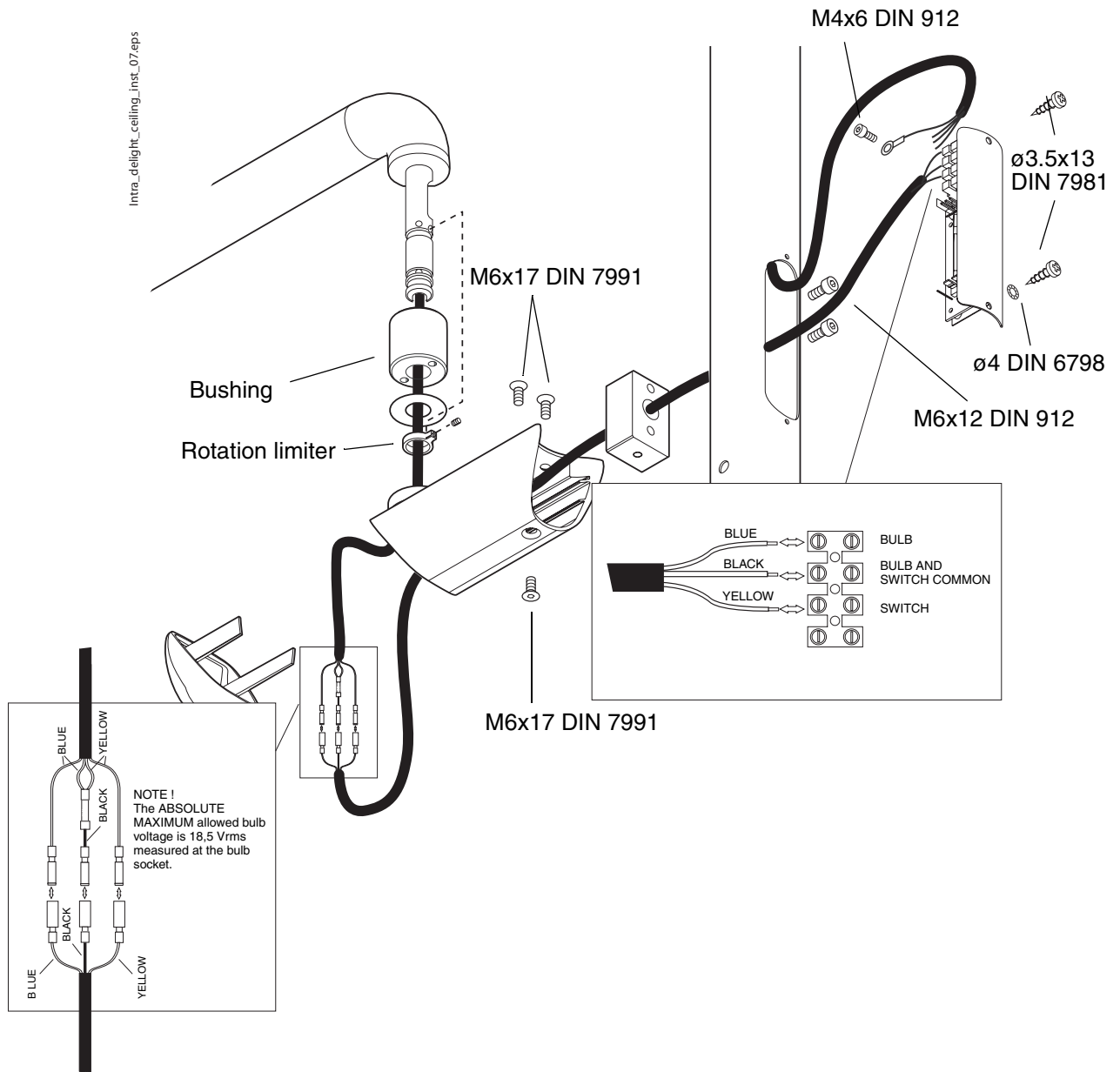
Delight operating light installation

The operating light can be installed to the ceiling arm of the Planmeca Intra X-ray unit.

Delight operating light without power control

Make sure that the operating light cable is installed.

Attach the arm and the Delight operating light according to the figure below. Make sure that the light cable is in the groove of the light arm pivot when attaching the light to the horizontal arm.



Delight operating light with power control

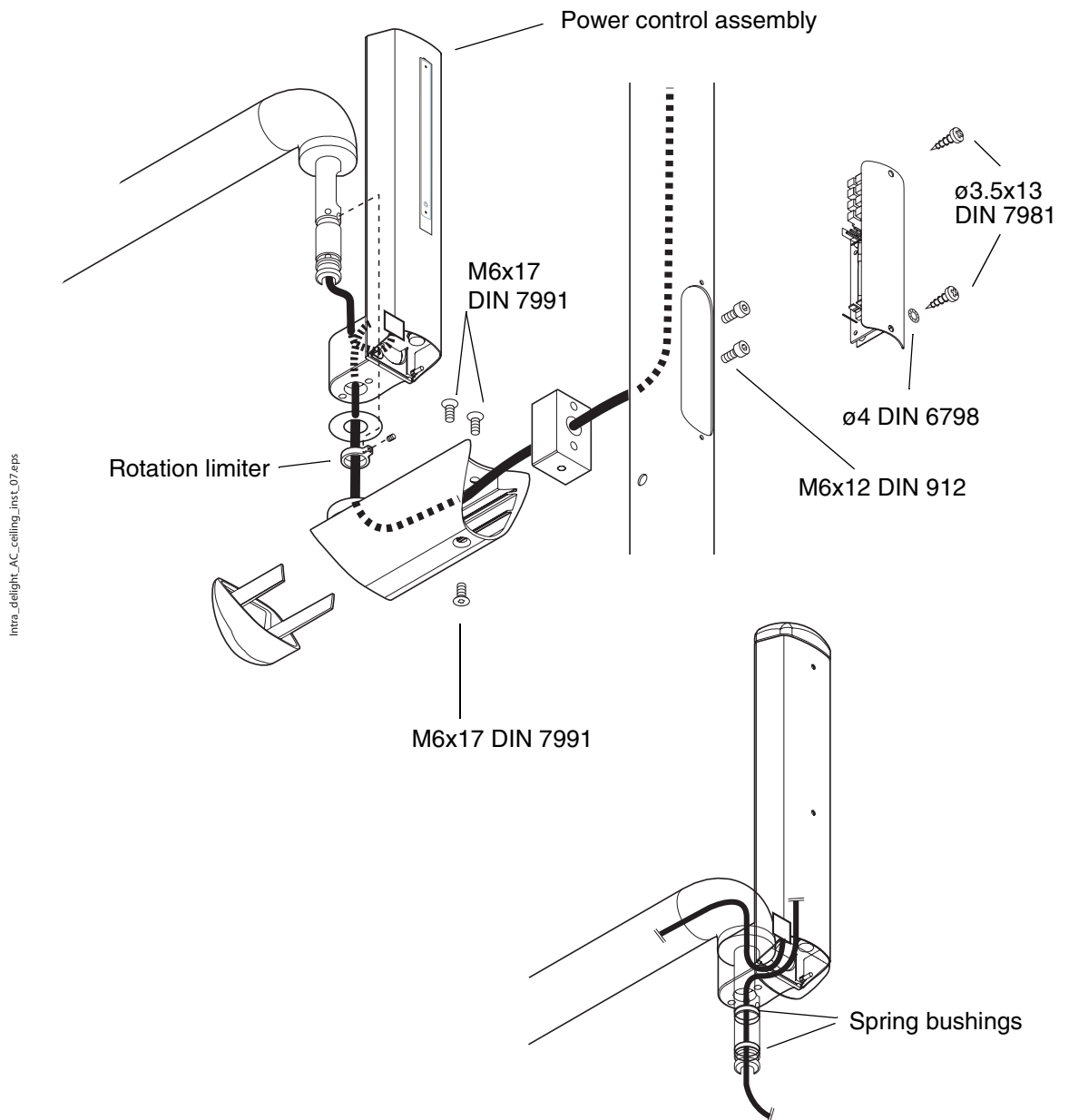
Attach the arm and the Delight operating light according to the figure below.

Make sure that the light cable is in the groove of the light arm pivot when attaching the power control assembly to the light.

Add some vaseline to the light arm pivot. Route the light cable through the openings on the power control assembly and push the light arm pivot into the power control assembly opening.

Carefully push the light power supply cable into the groove of the light arm pivot. Push the pivot through the power control assembly openings so that the assembly hits the pin located on the light arm. Push the power supply cable into the power control assembly and rotate the power control assembly so that the pin in the light arm goes into the hole on the power control assembly.

Attach two spring bushings to the light arm pivot.



NOTE Do not tighten the lighth cable but leave it a bit loose.

Connect the Delight wires according to the instructions given in Delight Installation manual, publication number 588200.

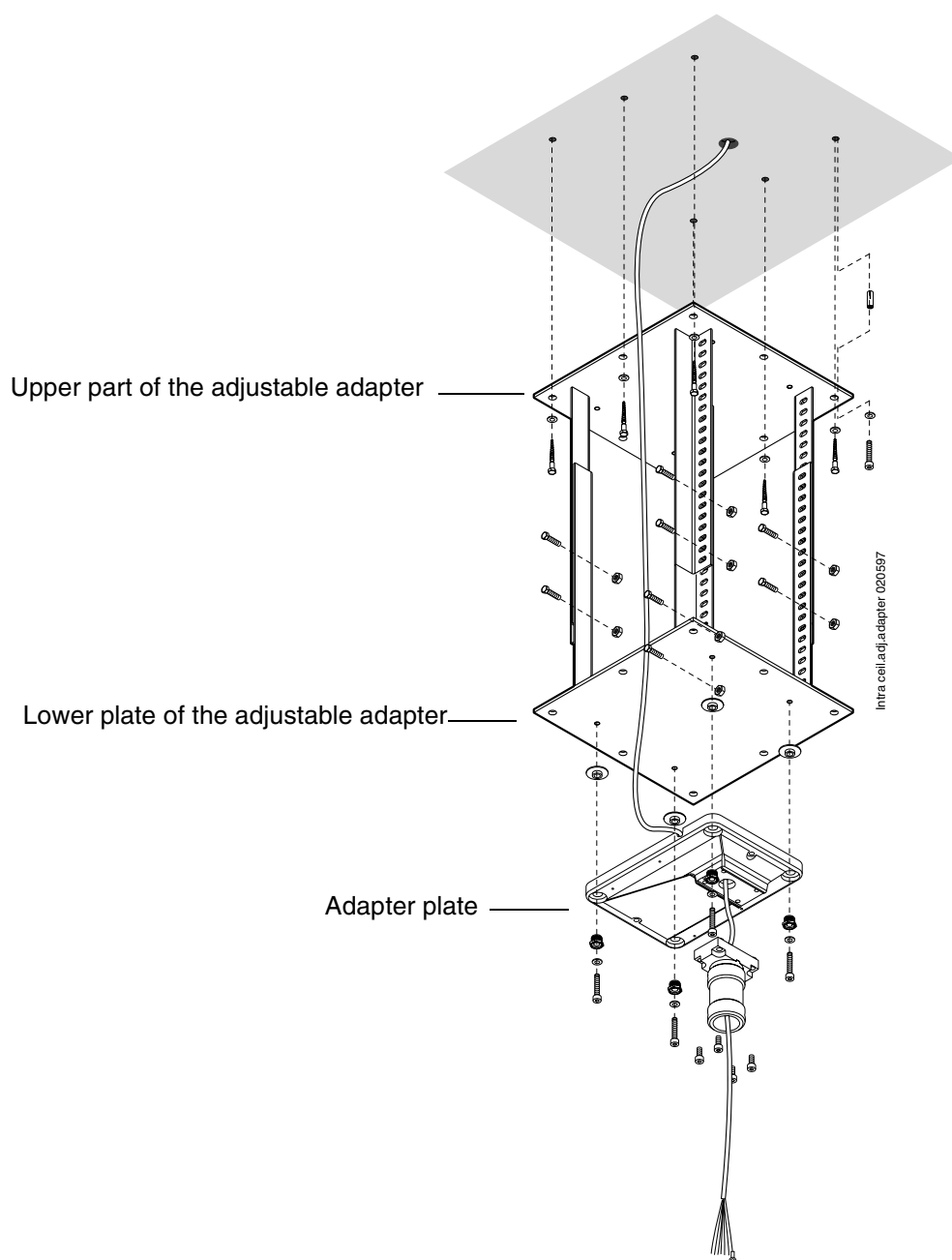
5.2 Adjustable ceiling adapter

Concrete ceiling: Mark the place of the adapter plate to the ceiling. Drill six $\varnothing 10$ mm (0.4 in.), 32...35 mm (1.25 in.) in depth, holes and place the expansion anchors into them. Insert the expansion anchors into the holes. Attach the upper part of the adapter to the concrete ceiling with six M8x30 DIN 912 screws and $\varnothing 8.4/17$ DIN 125 washers.

Wooden ceiling: Attach the upper part of the adapter to the wooden ceiling with six $\varnothing 8 \times 80$ DIN 571 lag screws. Do not use the expansion anchors with wooden ceiling.

Adjust the height of the ceiling adapter so that the lower plate of the adapter is on a level with the ceiling. Lock the lower part to the upper part with the eight M8x16 DIN 912 screws and M8 DIN 934 nuts.

Attach the standard adapter plate to the adjustable ceiling adapter with four M8x30 DIN 912 screws and $\varnothing 8.4/17$ DIN 125 washers. Use the adjustment nuts and the adjustment plates with the screws at each corner of the adapter plate. Continue the installation according to the instructions given in section 5.1 "Ceiling installation" on page 25.



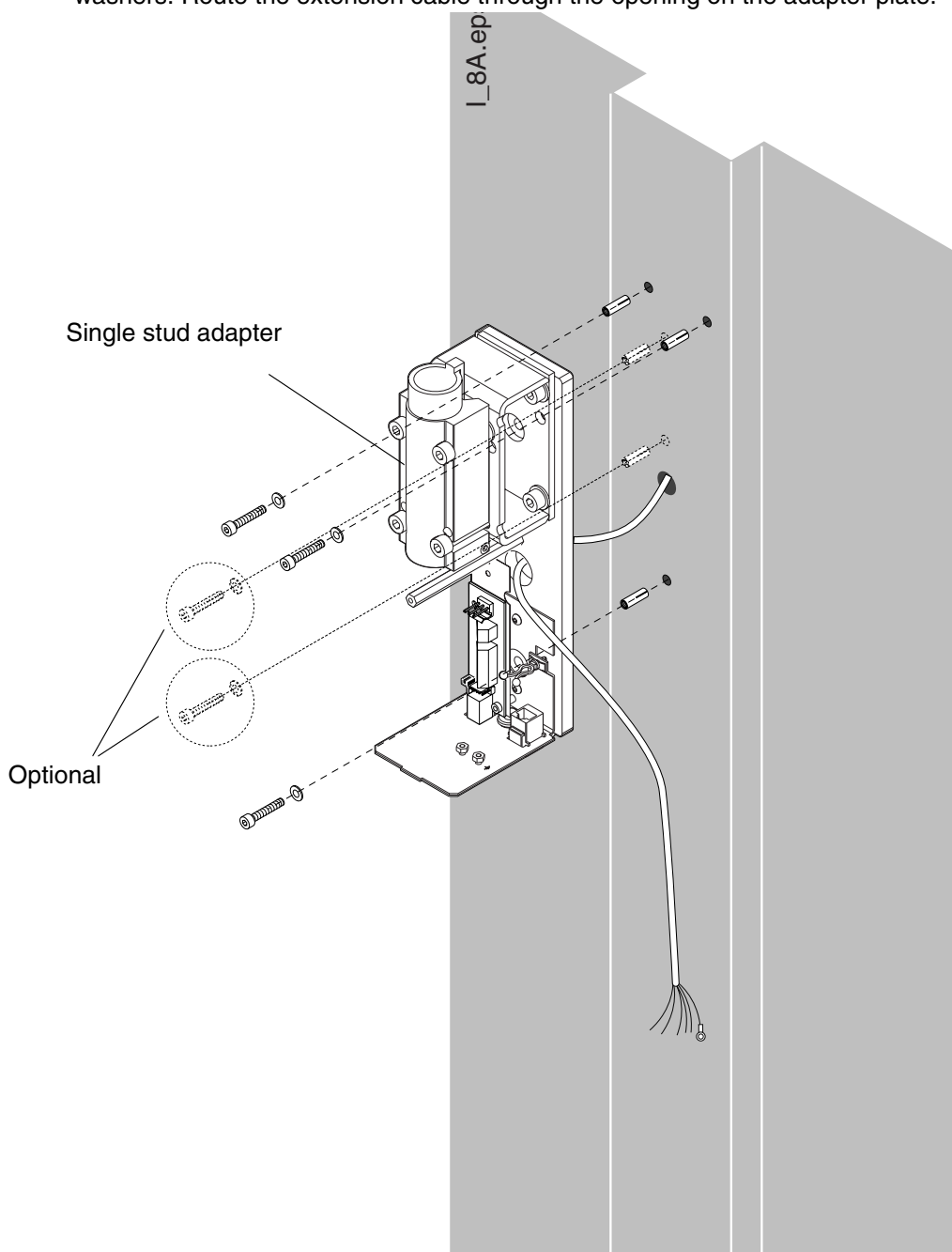
5.3 Single stud installation

NOTE Use the single stud assembling plate when you are installing the Planmeca Intra to a cabinet, to an end of a wall, or to a single stud (plaster) wall.

Use the installation pattern or the single stud adapter plate as a template and mark the positions where the holes for the attaching screws will be drilled.

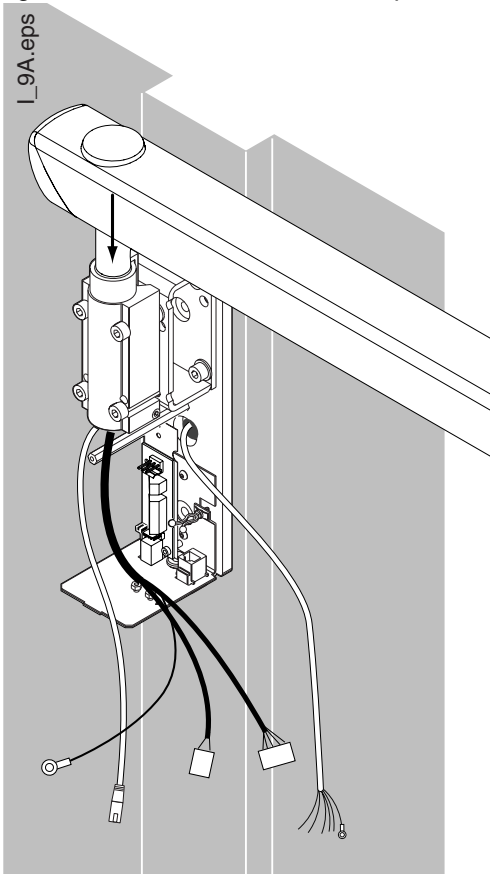
If the wall is made of concrete or brick, drill $\varnothing 10\text{mm}$ (0.4 in.), 32...35 mm (1.25 in.) in depth, holes and place the expansion anchors into them. If the wall is made of wood, drill $\varnothing 5\text{ mm}$ (0.2 in.), 55...60 mm (2.2 in.) in depth, holes for the attachment screws. Do not use the expansion anchors with wooden wall.

Attach the adapter plate to the wall with at least three M8x80 DIN 571 screws and the $\varnothing 8.4\text{ DIN 125}$ washers. Route the extension cable through the opening on the adapter plate.

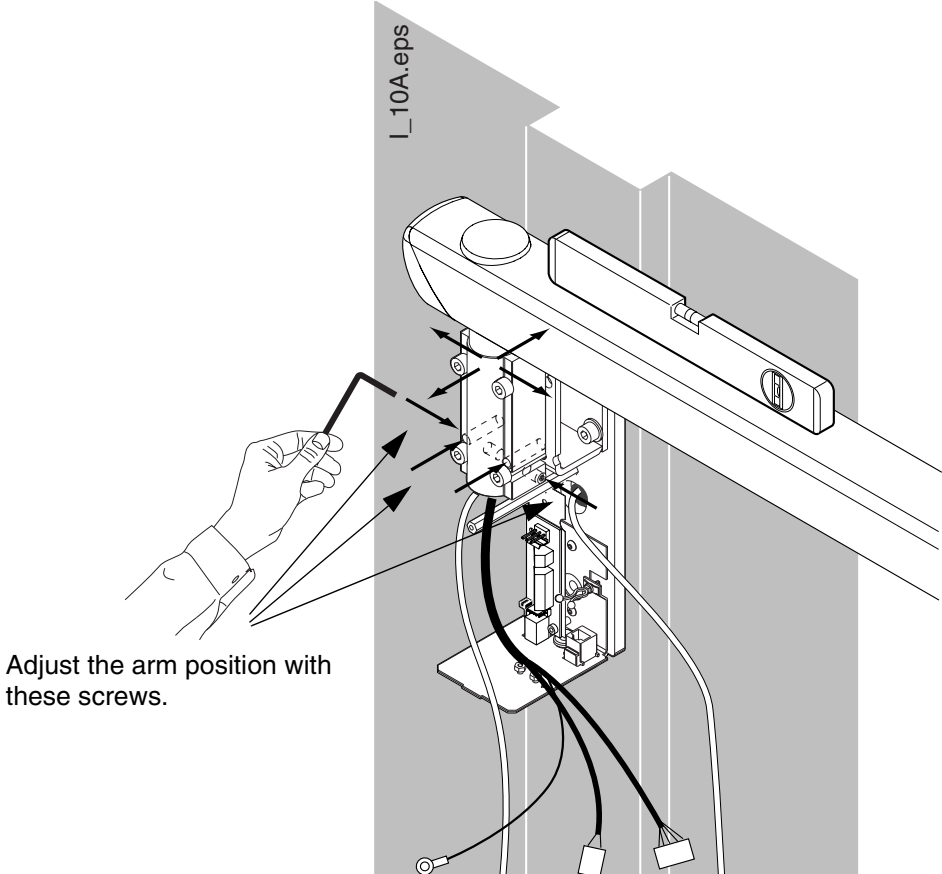


Assemble the bracket arm to the extension arm, refer to the section 4.2 “Assembling the arm” on page 15.

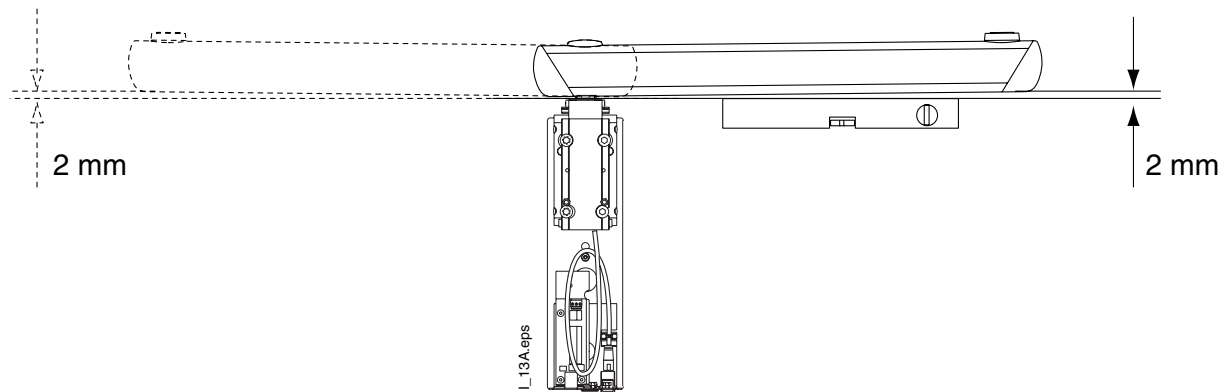
Route the arm and Dixi interconnection cables through the wall adapter bearing. Mount the arm into position by pushing the arm shaft into the wall adapter bearing.



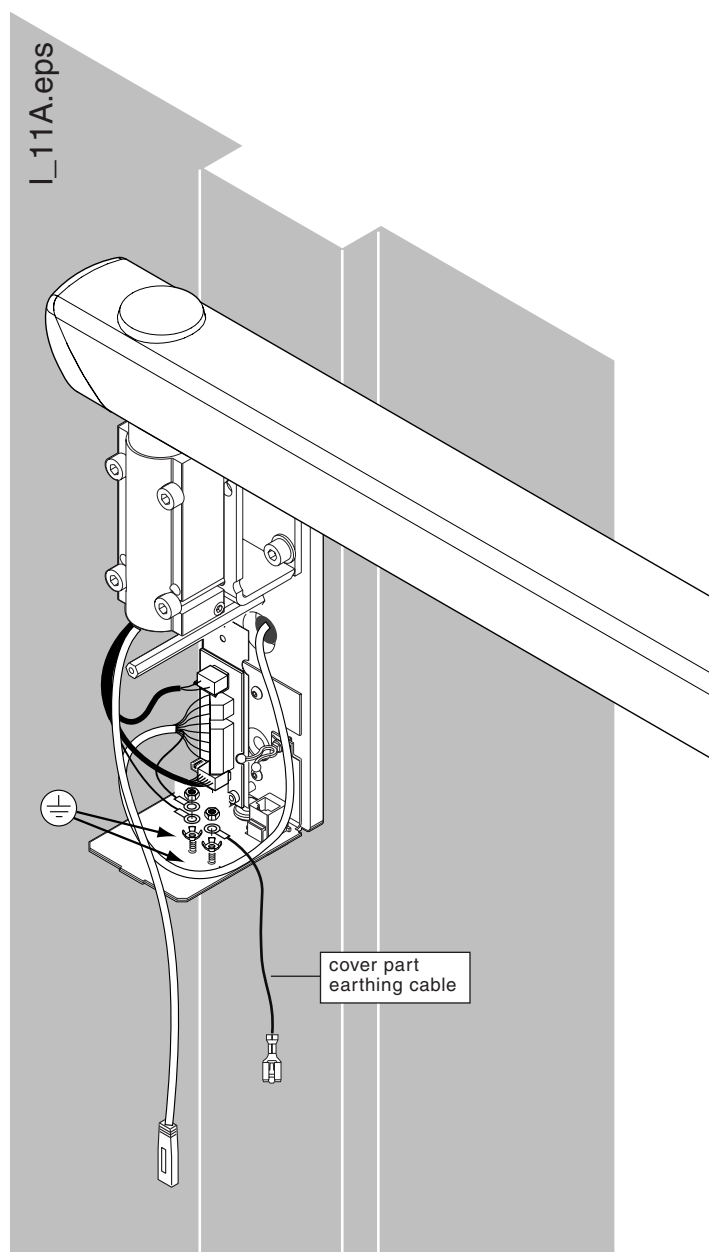
Using a spirit level adjust the arm position with the four screws of the wall adapter bearing.



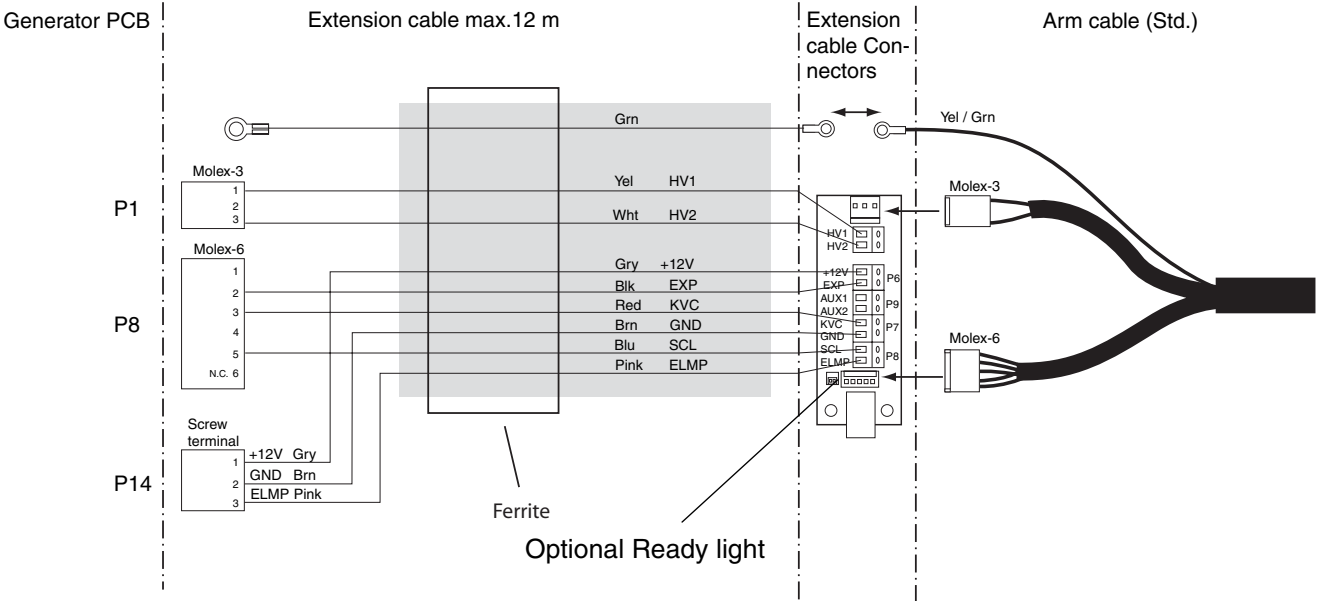
NOTE The extension arm is not horizontal, but its end is 2 mm over the horizontal level. When the assembly is completed, the weight of the unit bends the arm to horizontal position.



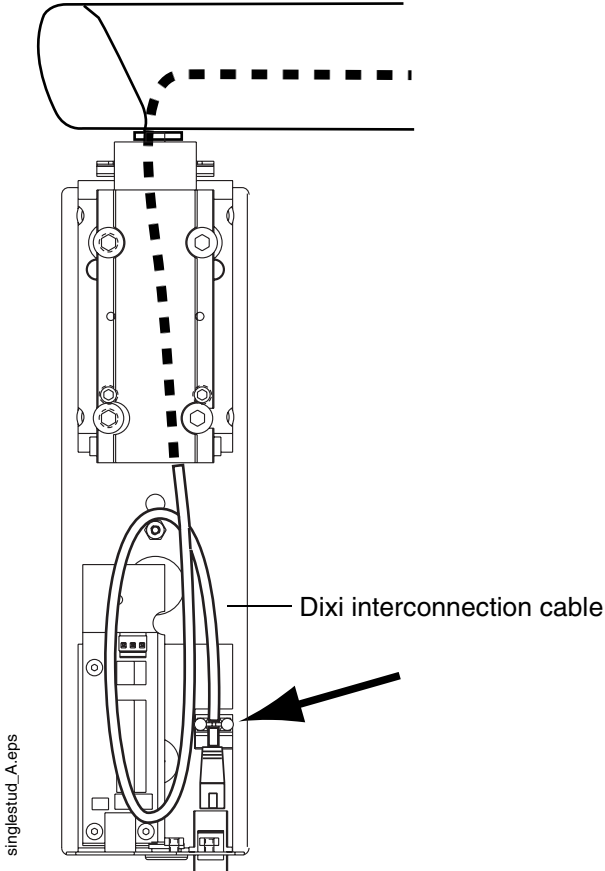
Connect the grounding leads to the grounding point in the bottom of the adapter plate.



Connect the arm cable and extension cable according to the figure below. Note, that it does not matter which way the yellow leads (HV1 and HV2) are connected to the connectors HV1 and HV2.



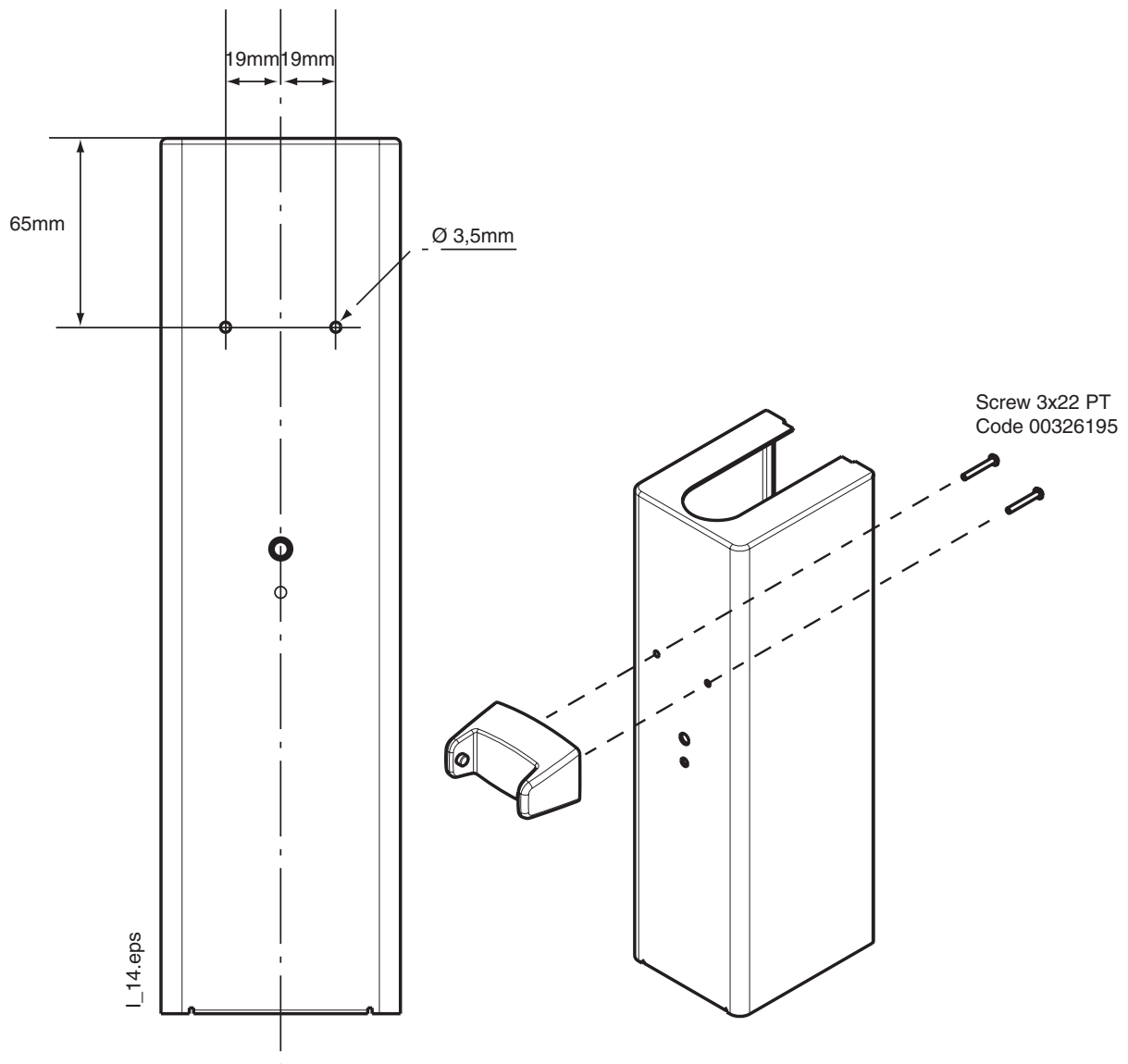
Connect the Dixi interconnection cable to the Panel mounted RJ45 modular adapter located on the base plate of the single stud assembly and secure the cable to the single stud wall plate with the cable clamp as shown on the figure below.



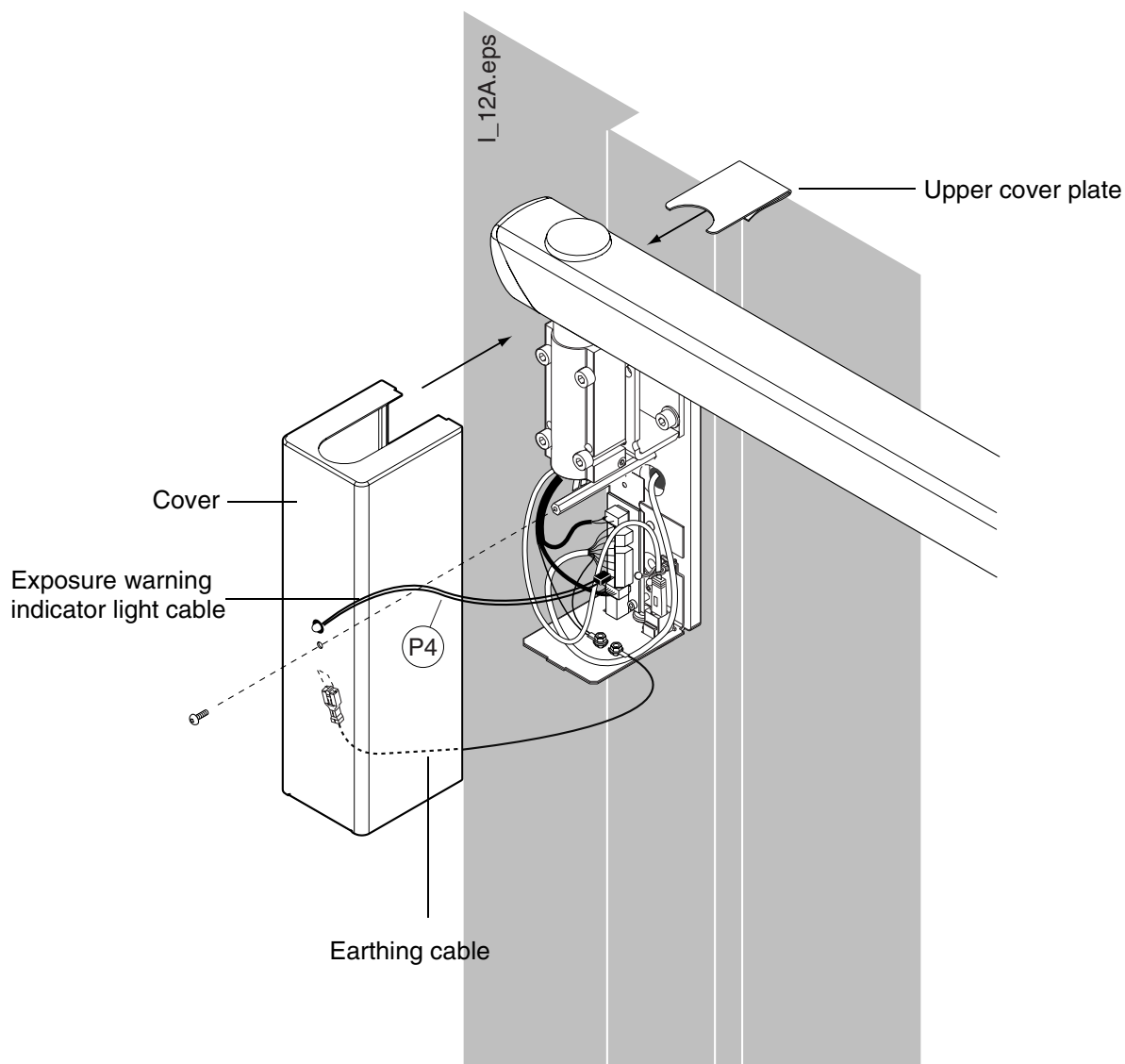
NOTE The Dixi digital intra X-ray system is installed according to the instructions given in the Dixi digital X-ray systems installation manual.

OTHER INSTALLATION ALTERNATIVES

If the control panel is attached to the single stud cover, attach the control panel holder before attaching the cover to its position. Drill two attachment holes to the cover as shown on the figure below and attach the holder to the cover with the two PT 3x22 rst WN1451 screws.



Connect the exposure warning indicator light cable to the connector P4 on the Extension cable PCB and attach the cover part earthing cable to the connector on the cover. Attach the cover to position with one attachment screw and slide and the upper cover plate to its position.



5.4 Installation to the Planmecca Compact dental unit

Install the Planmecca Intra X-ray unit to the Planmecca Compact dental unit according to the instructions given in dental unit installation manual, publication number 10006961.

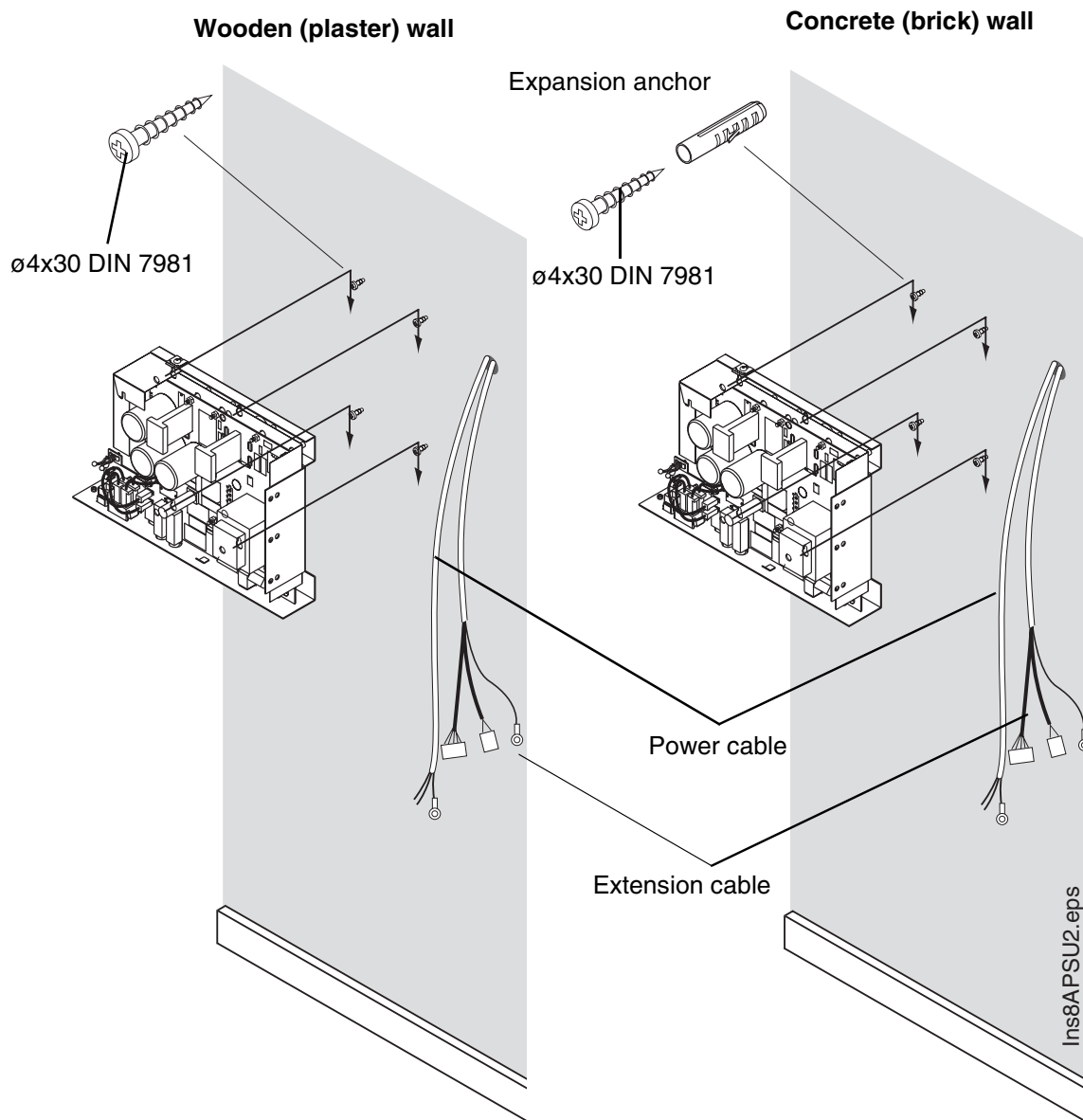
6 ATTACHING THE GENERATOR BOX WITHOUT THE ADAPTER PLATE

NOTE The generator box is attached to the wall without adapter plate in ceiling, single stud and dental unit installations.

NOTE Use the extension cable supplied with the unit between the X-ray unit and generator box. Note, that the connectors of the cable must be connected to the generator box and the cable wires to the Extension cable PCB.

In the case that concealed wiring is used, the mains cable and extension cable outlet should be positioned next to (on the right-hand side) the adapter plate.

Use the generator assembly as a template and mark the positions of the holes for the four attaching screws to the wall. If the wall is made of concrete or brick, drill $\varnothing 6$ mm (0.23 in.), 32...35 mm (1.25 in.) in depth, holes and place the expansion anchors into them. If the wall is made of wood or plaster, attach the screws to the wall without drilled holes. Do not use the expansion anchors with wooden or plaster wall.



Insert the screws to the holes and slip the generator assembly under the heads of the screws.



WARNING

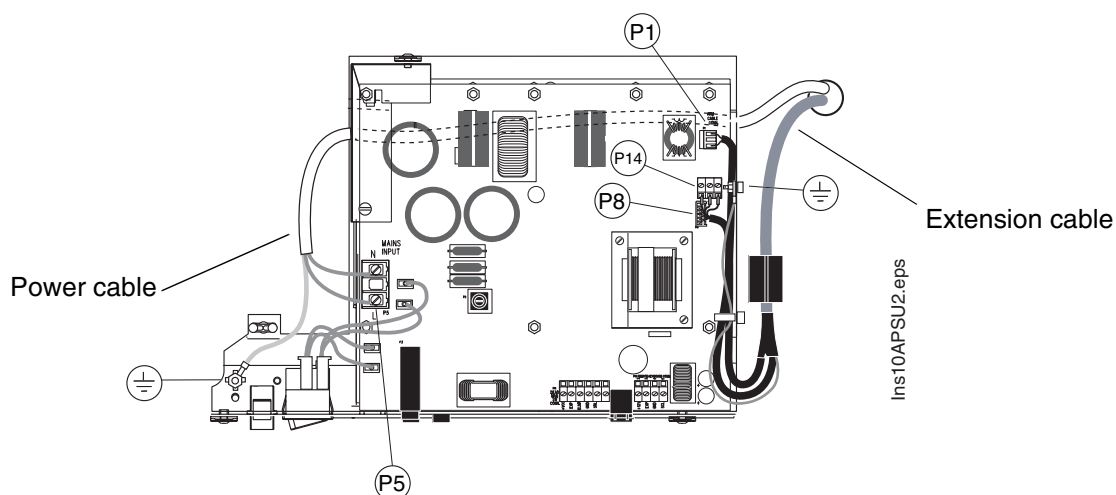
Ensure that the power supply is switched off before connecting the cables.

In the case that mains voltage is supplied via concealed wiring route the mains cable as shown on the figure below.

NOTE ***In case the X-ray units own power supply cable and the strain reliefer are removed from the generator assembly (mains voltage is supplied via concealed wiring), cover the opening with a plug supplied with the X-ray unit.***

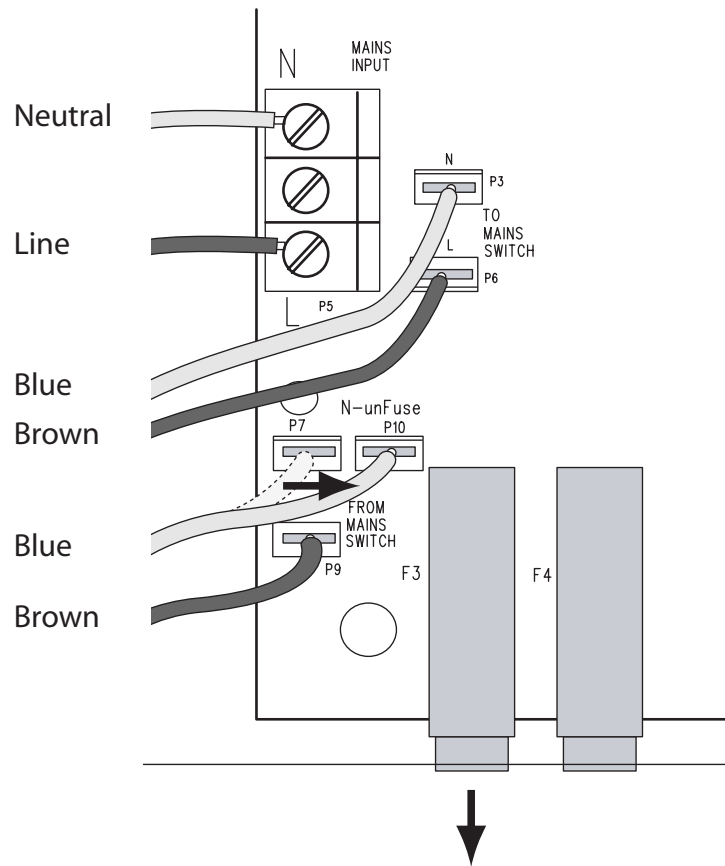
Connect the grounding lead of the power cable to the grounding point next to the mains switch. Connect the neutral wire to the mains input terminal (P5) marked **N**. Connect the live wire to the mains input terminal (P5) marked **L**.

Connect the grounding lead of the extension cable to the grounding point located on the right side of the generator assembly. Connect the control leads of the cable (6-pole connector) to the terminal P8 on the generator PCB. Connect the power leads (3-pole connector) of the cable to the terminal P1 on the generator PCB. Snap the ferrite to the extension cable as shown on the figure below.



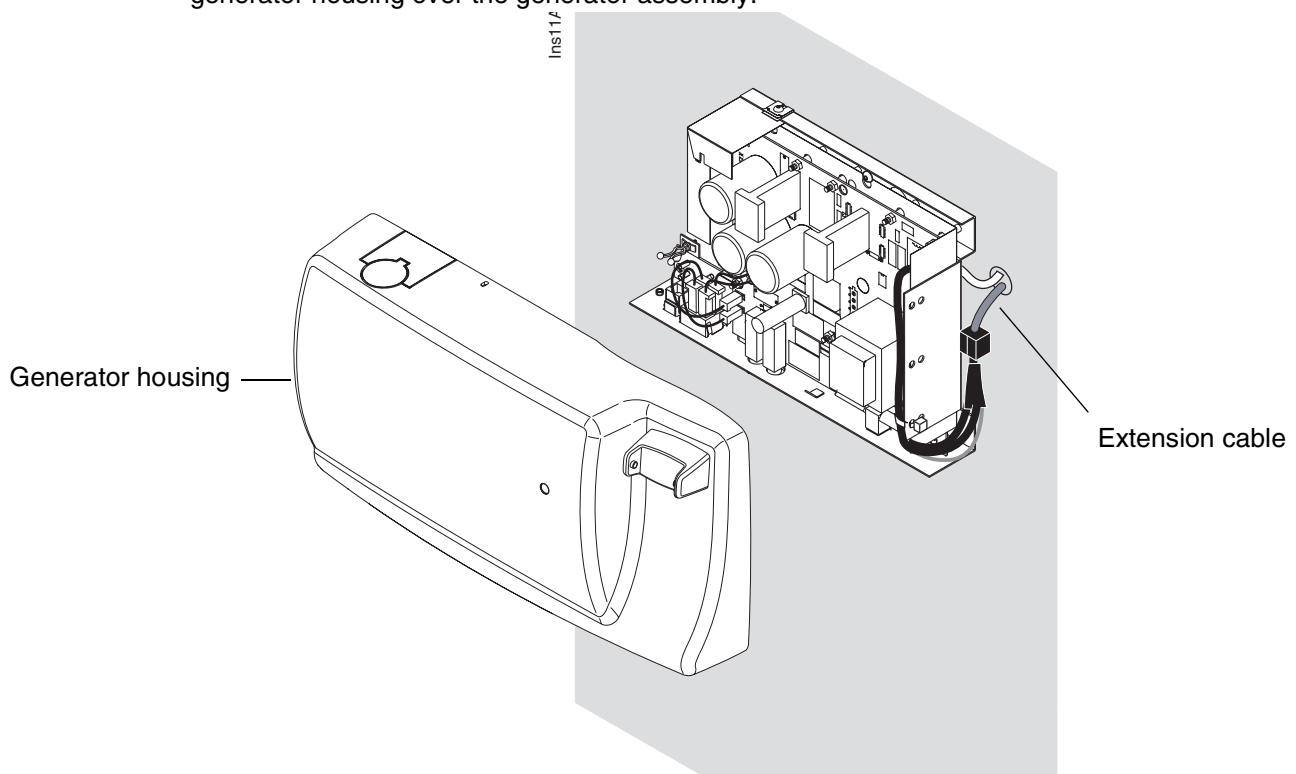
ATTACHING THE GENERATOR BOX WITHOUT THE ADAPTER PLATE

When the concealed wiring is used the cable coming from the ON/OFF switch to the connector **P7** must be moved to the connector **P10**. Also the fuse **F3** must be removed.

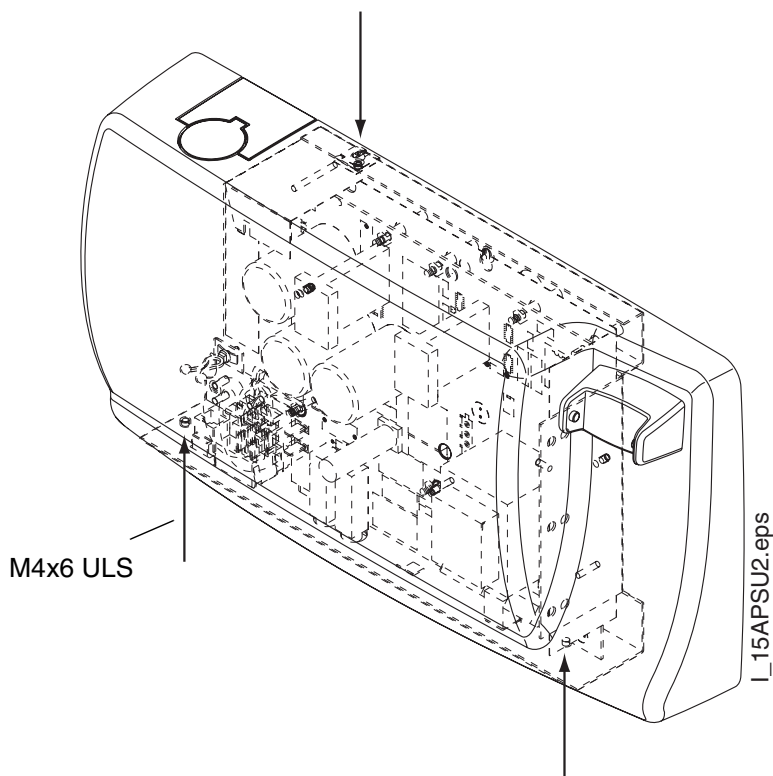


Remove Fuse F3

Attach the extension cable to the generator box assembly as shown on the figure below. Place the generator housing over the generator assembly.



Secure the cover into position with the three M4x6 ULS screws.



Connect the control panel cable to its terminal at the underside of the generator box.

7 REMOTE CONTROL PANEL INSTALLATION

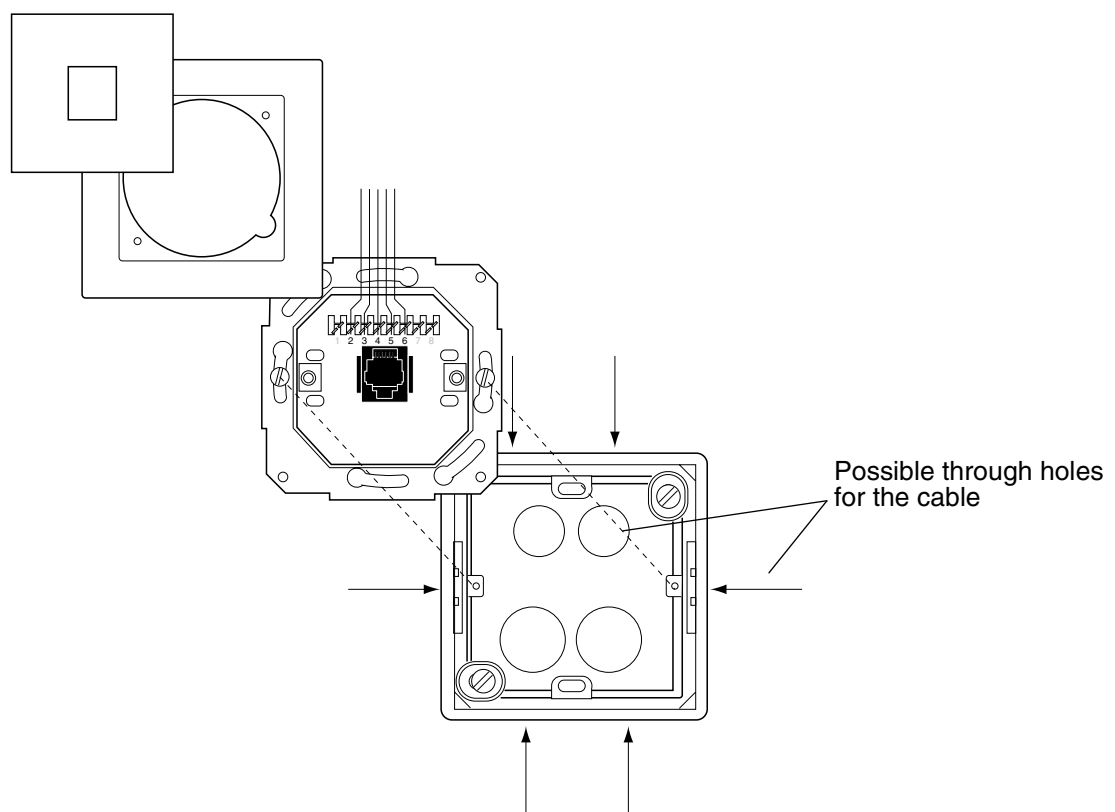


WARNING

Ensure that the power supply is switched off before connecting the cables.

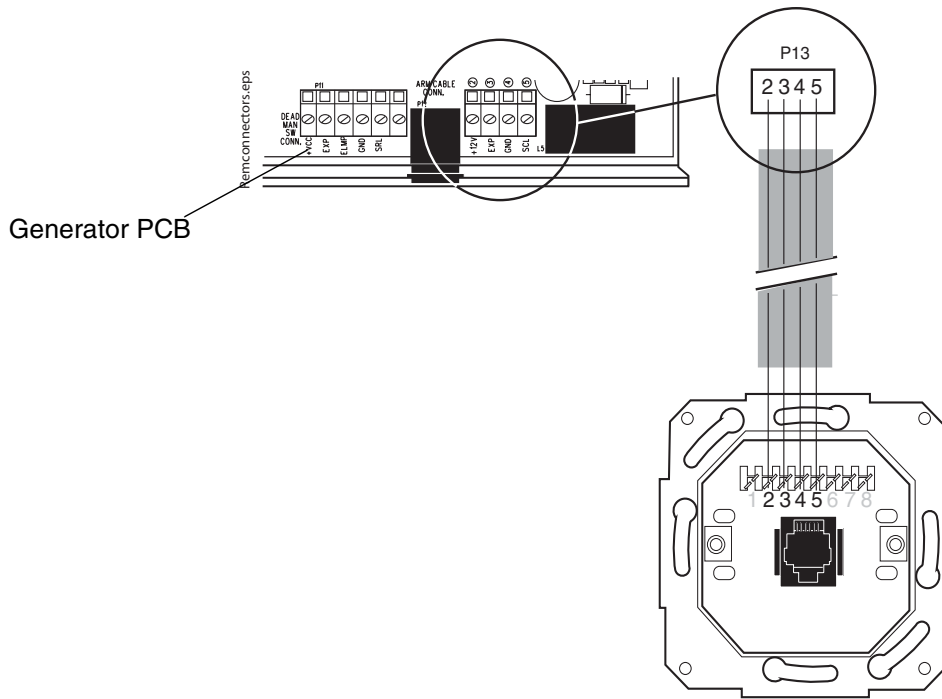
NOTE *Use the telephone cable (max. 12 m) between the generator box and the data wall socket.*

Attach the frame of the data wall socket to the wall with two $\varnothing 4 \times 30$ DIN 7981 screws. If the wall is made of concrete or brick, drill $\varnothing 6$ mm (0.23 in.), 32...35 mm (1.25 in.) in depth, holes and place the expansion anchors into them. If the wall is made of wood or plaster, attach the frame to the wall with two $\varnothing 4 \times 30$ DIN 7981 screws to the wall without drilled holes. Do not use the expansion anchors with wooden or plaster wall.

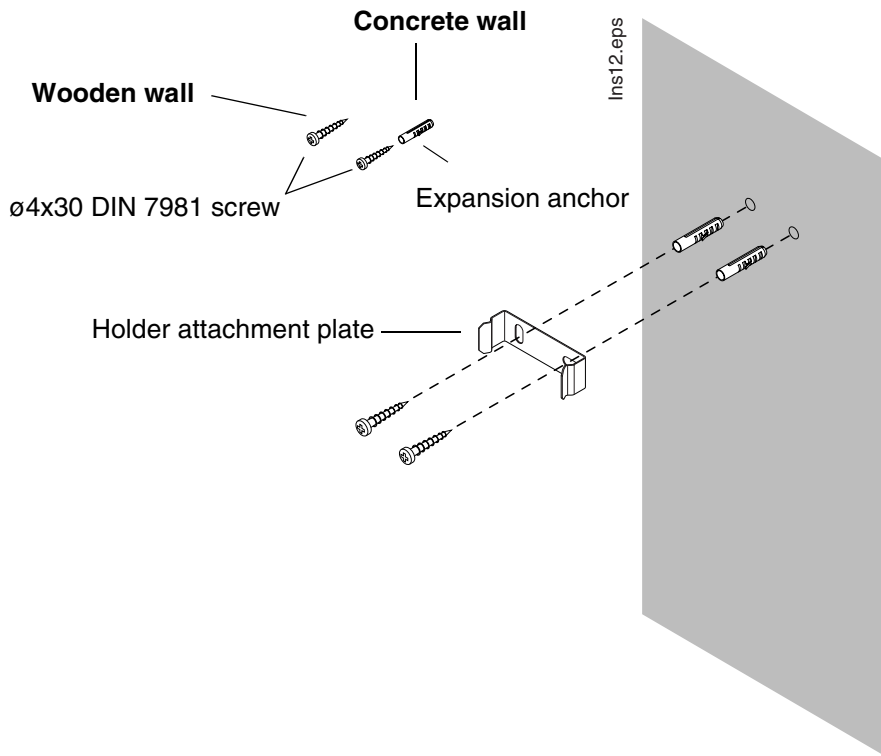


Route the telephone cable through the hole on the side or bottom of the frame. Assemble the data wall socket according to the figure above.

Connect the telephone cable according to the figure below.

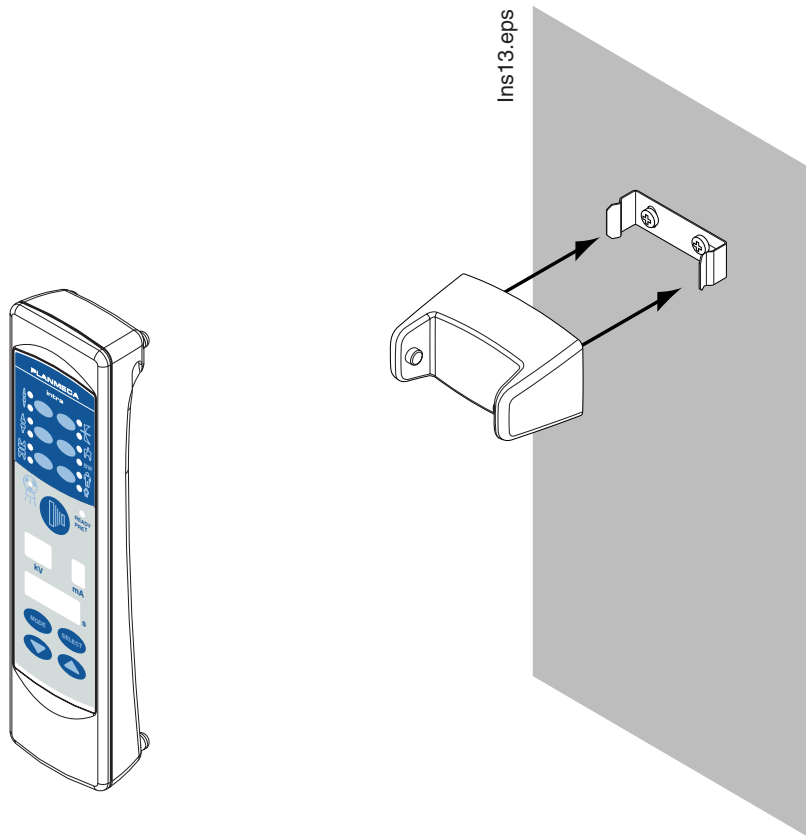


Install the holder attachment plate to the wall with two $\varnothing 4 \times 30$ DIN 7981 screws. If the wall is made of concrete or brick, drill $\varnothing 6$ mm (0.23 in.), 32...35 mm (1.25 in.) in depth, holes and place the expansion anchors into them. If the wall is made of wood, attach the screws to the wall without drilled holes.



REMOTE CONTROL PANEL INSTALLATION

Press the control panel holder to the attachment plate. Attach the control panel to the holder and connect the control panel cable to the control panel and to the wall socket.



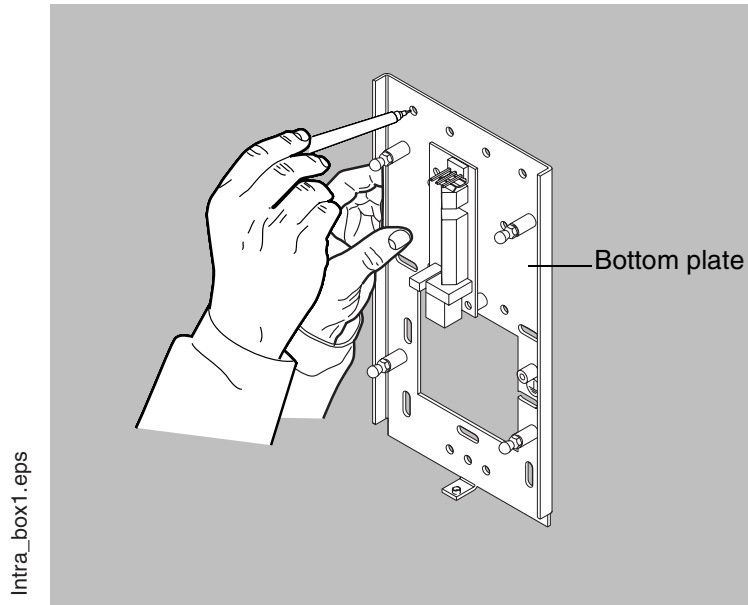
NOTE *The control panel holder can be attached with a sticker to a surface which can not be drilled (e.g. glass).*

8 FIXED CONTROL PANEL INSTALLATION

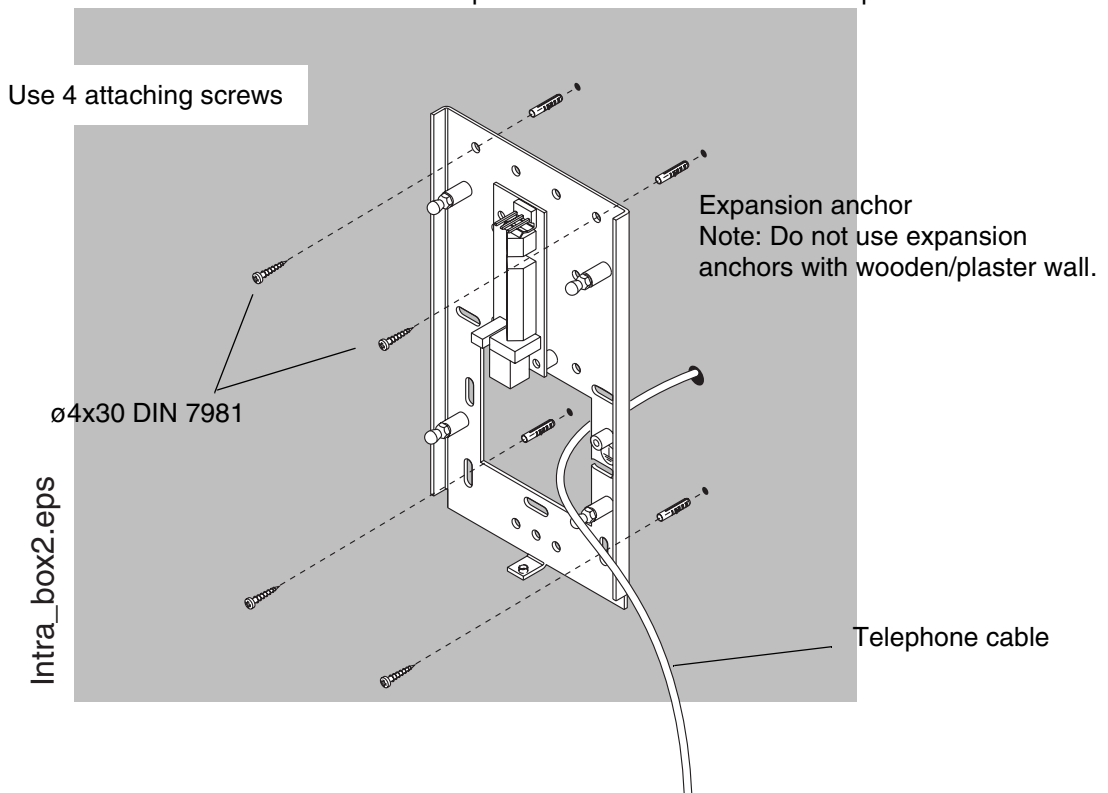
8.1 Attaching the bottom plate

NOTE *In case you are using a wall socket, attach the bottom plate according to instructions given in section 8.2 “Attaching the bottom plate to the wall socket” on page 52.*

Use the bottom plate as a template and mark the positions of the holes for the four attaching screws to the wall.

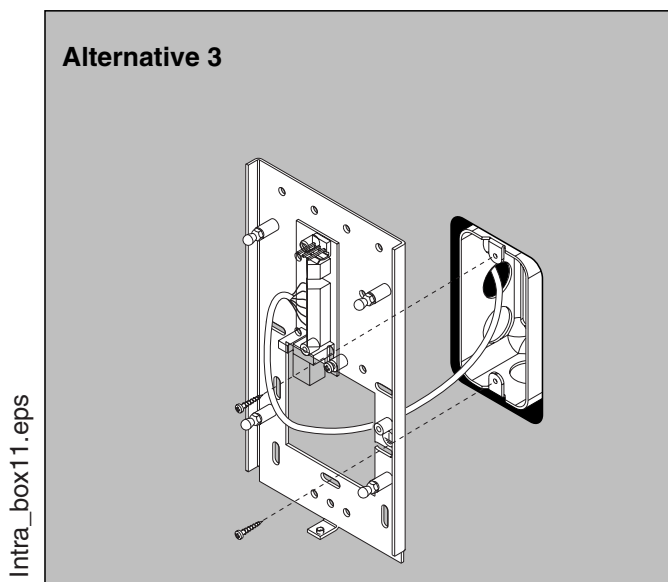
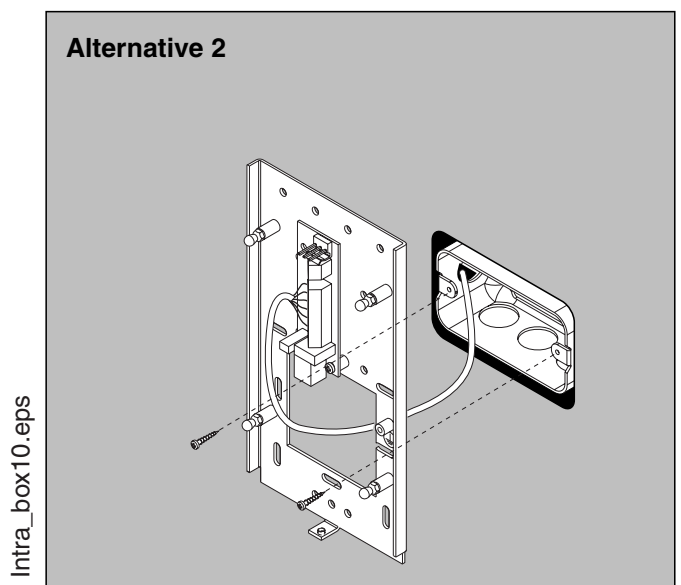
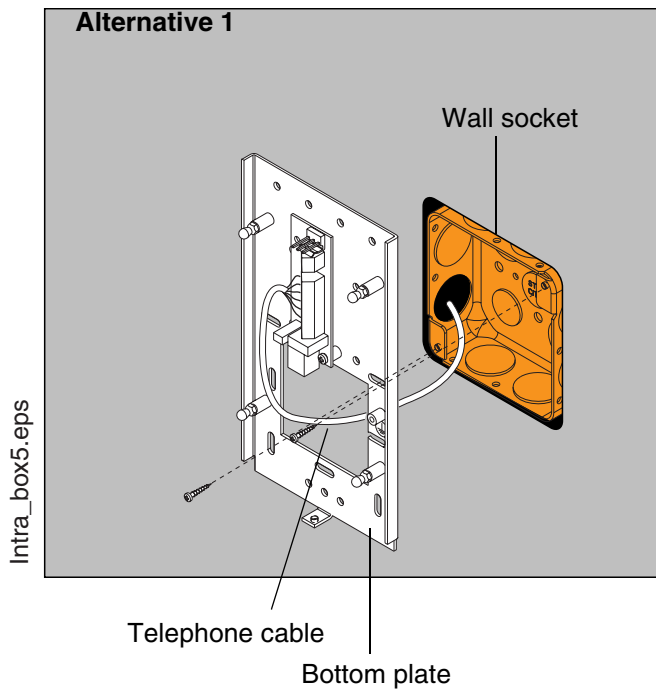


If the wall is made of concrete or brick, drill $\varnothing 6$ mm (0.23 in.), 32...35 mm (1.25 in.) in depth, holes and place the expansion anchors into them. If the wall is made of wood, attach the screws to the wall without drilled holes. Do not use the expansion anchors with wooden or plaster wall.



8.2 Attaching the bottom plate to the wall socket

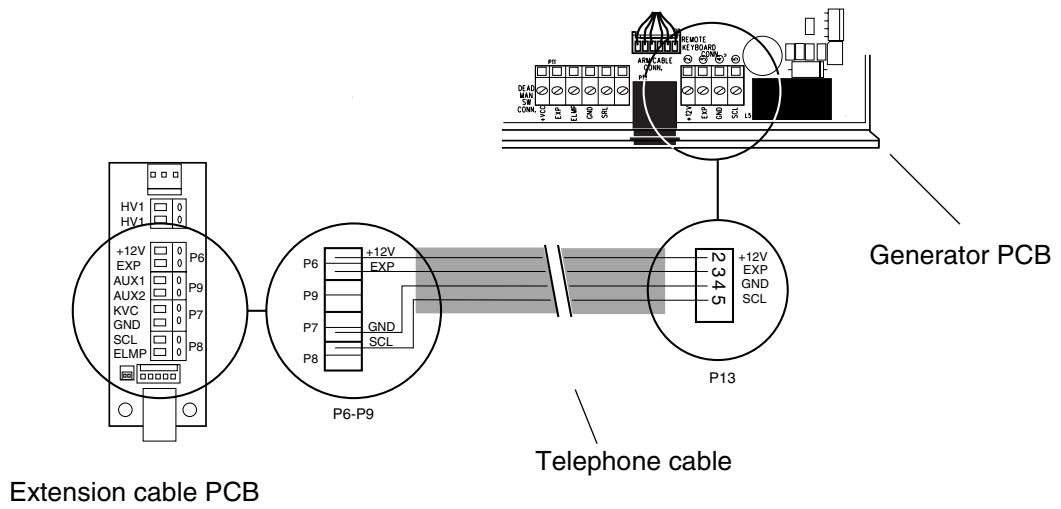
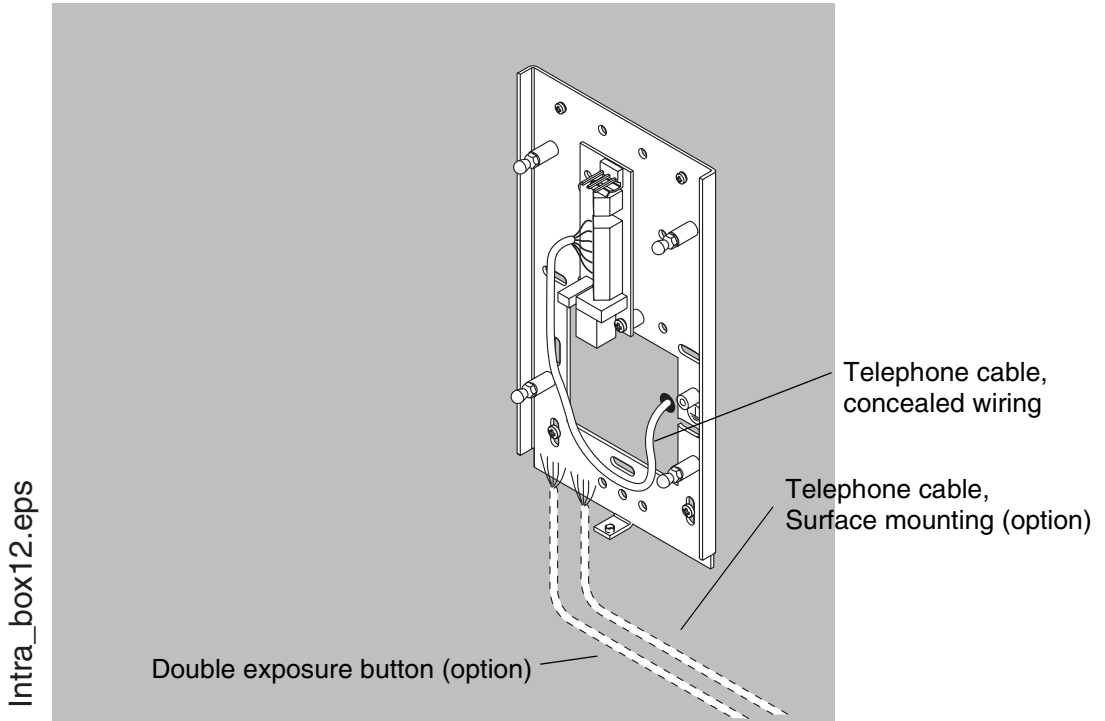
You can also attach the bottom plate to the wall socket as shown on the figure below.



NOTE You can connect the telephone cable to the Extension cable PCB before attaching the bottom plate to the wall socket. Refer to section 8.3 “Connecting the cables” on page 53.

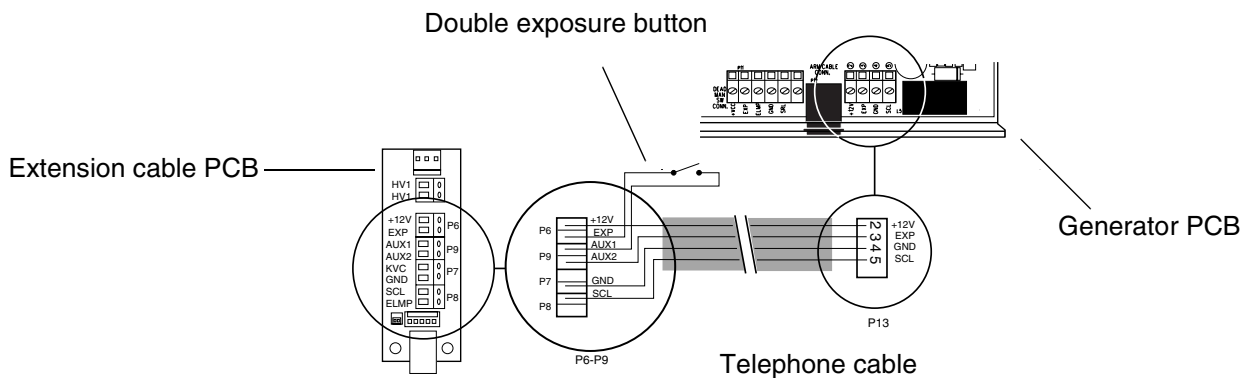
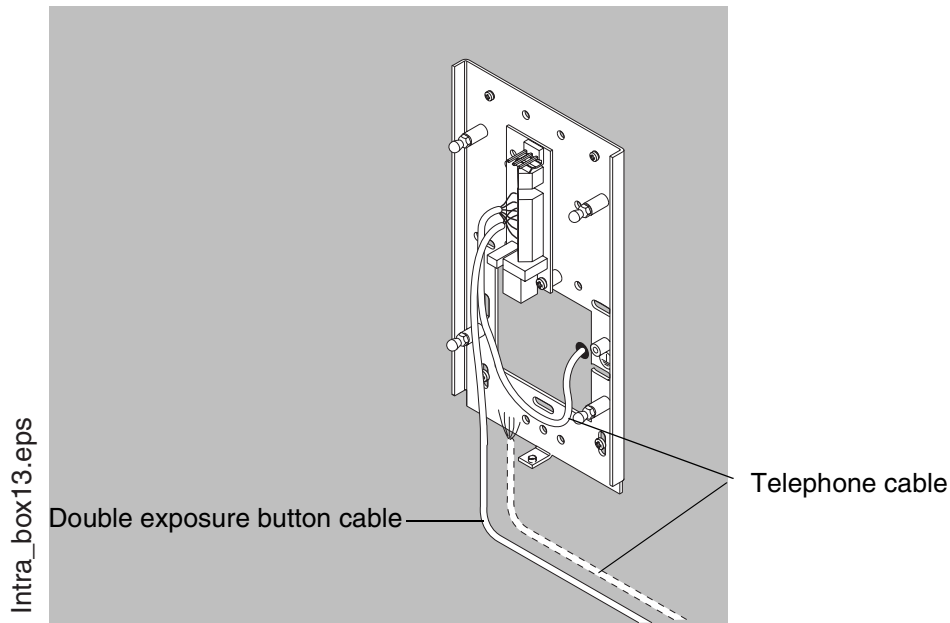
8.3 Connecting the cables

Connect the telephone cable between the Generator PCB and Extension cable PCB according to the figure below.

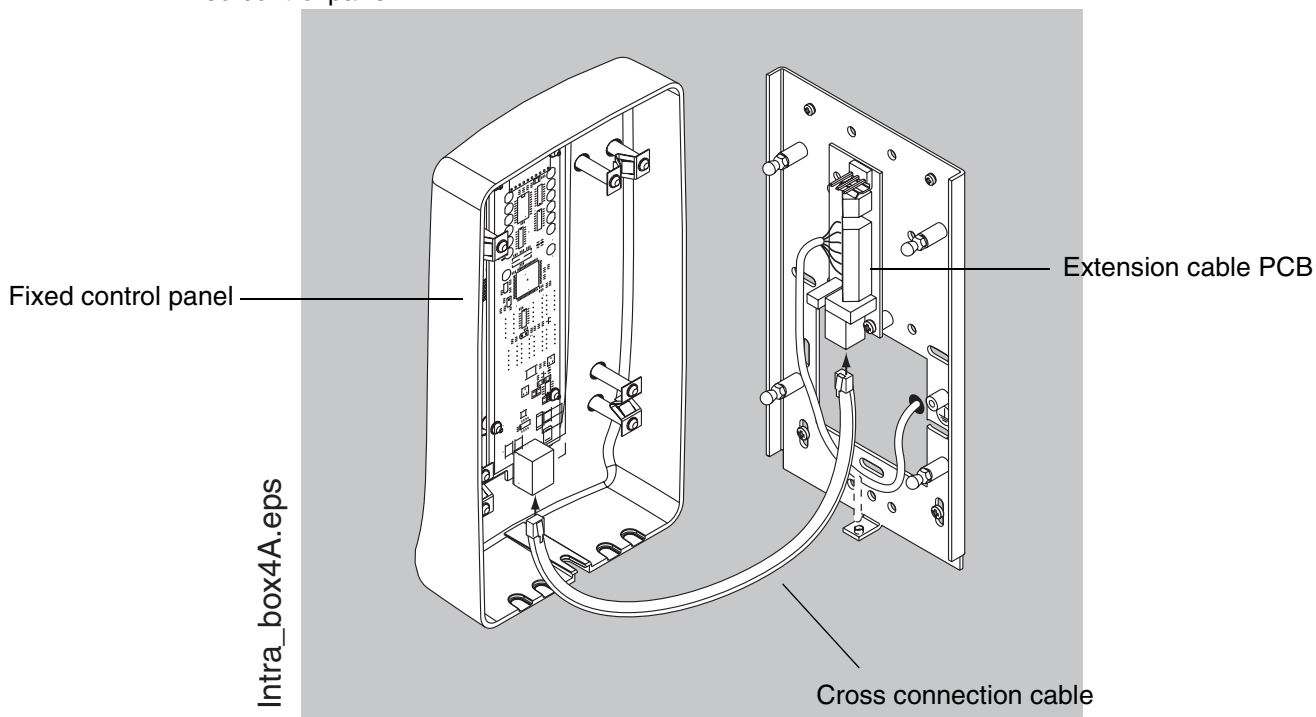


FIXED CONTROL PANEL INSTALLATION

In case the double exposure button is installed, connect the cables according to the figure below.

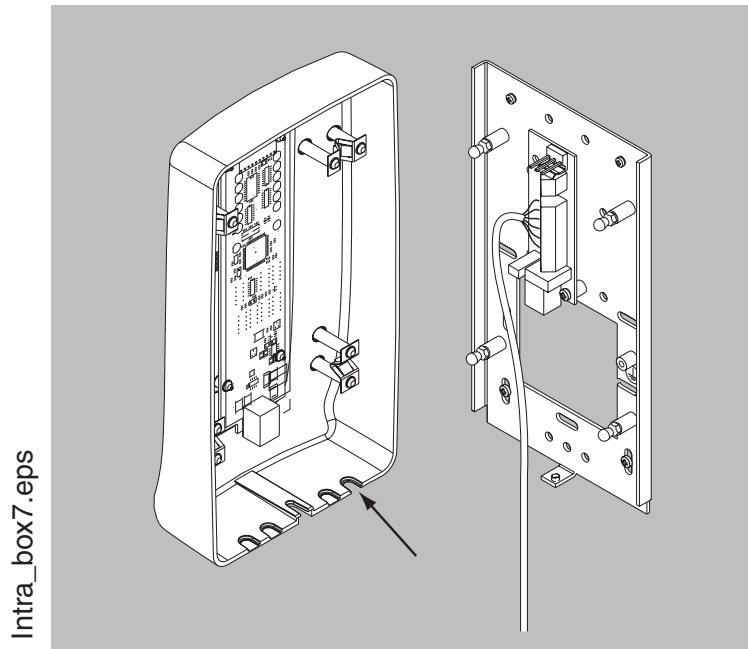


Connect the cross connection (part number 10007597) cable between the Extension cable PCB and fixed control panel.

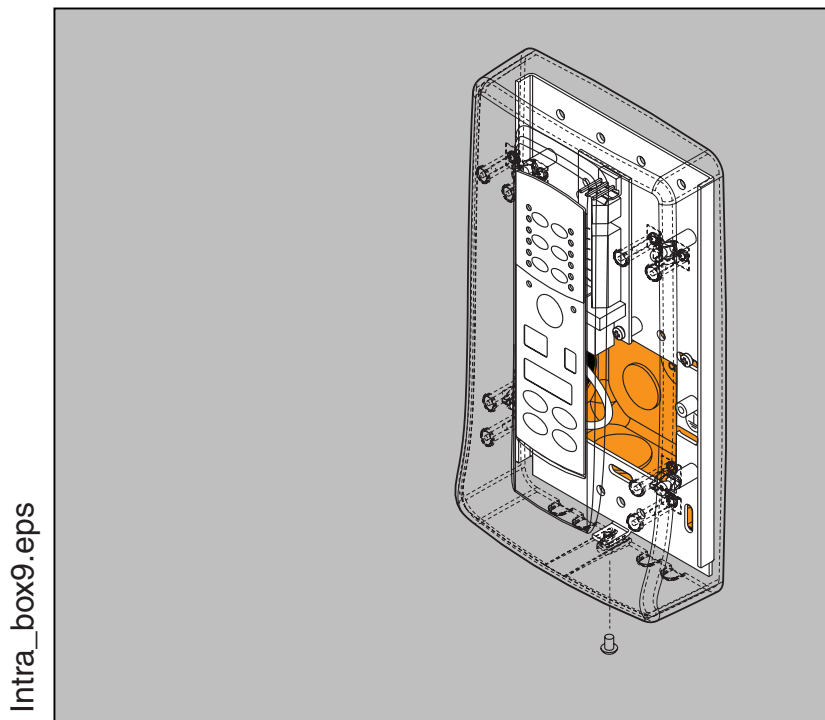


8.4 Attaching the fixed control panel to the bottom plate

In case the telephone cable is routed to the Extension cable PCB via the wall surface, remove the cover from the right-hand side knock-out opening.

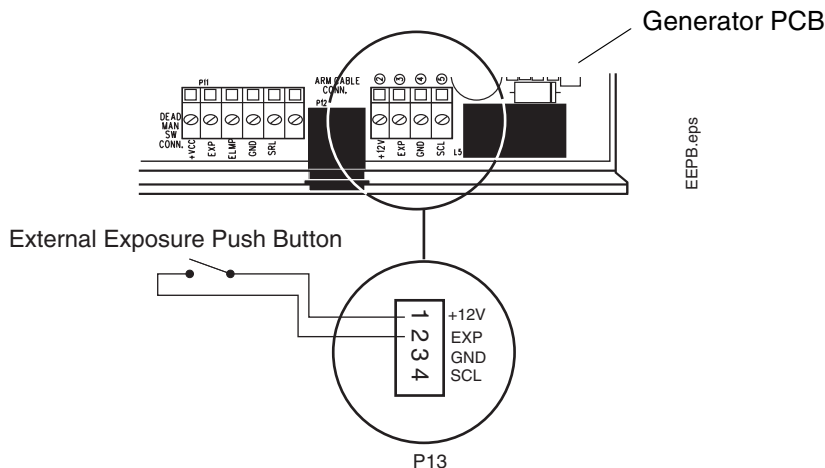


Press the fixed control panel to its position so that the mounting pins located on the bottom plate hit the mounting springs on the control panel. Secure the control panel to its position with one attachment screw.



9 EXTERNAL EXPOSURE BUTTON

An external exposure push button cable can be connected to the Generator PCB according to the figure below.



Disabling the exposure key on the control panel

The exposure key on the control panel can be disabled as follows.

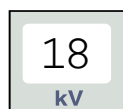
SELECT

Enter the service mode: Press and hold down the select key for 4 seconds.

MODE

Press and hold down the Mode key for more than 2 seconds, until the four uppermost pre-programmed setting indicator lights come on.

Press the parameter adjustment up key until the parameter number 18 appears on the kV display.



Parameter adjustment up -key

0

The number indicating the mode of exposure key operation is shown on the time display. 0 = exposure key normal operation, 1 = exposure key operation disabled. The factory default is 0.

SELECT

Press the Select key until the number starts to blink, and the value can now be changed with the parameter adjustment keys. Select the number 1.

SELECT

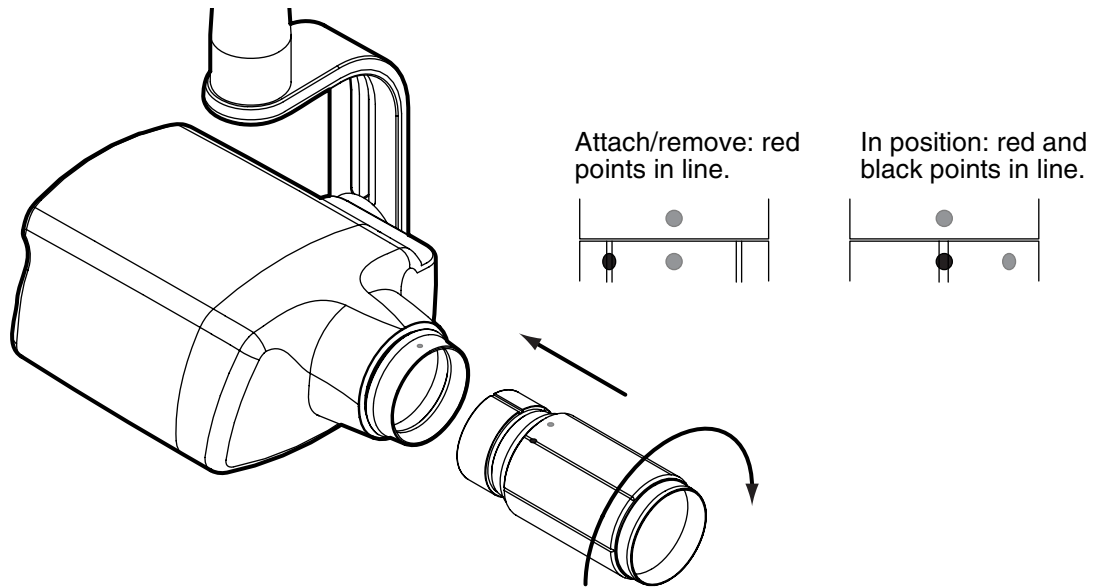
Accept the number 1 setting by pressing the Select key.

MODE

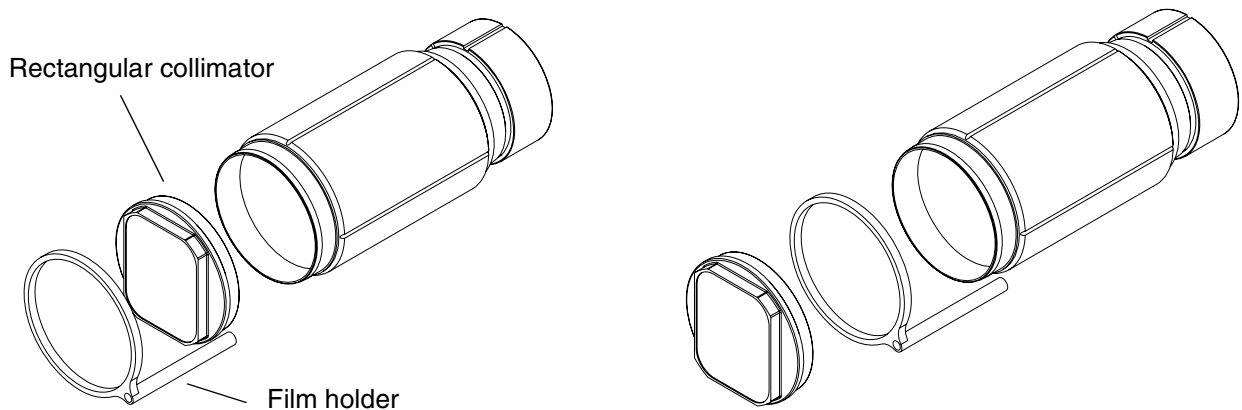
Press the Mode key briefly to exit the service mode.

10 ATTACHING THE LONG CONE AND RECTANGULAR COLLIMATOR (OPTIONAL)

The long cone is attached into its position by pushing it into the short cone and rotate it so that the red point on the short cone and the black point on the long cone are in line.



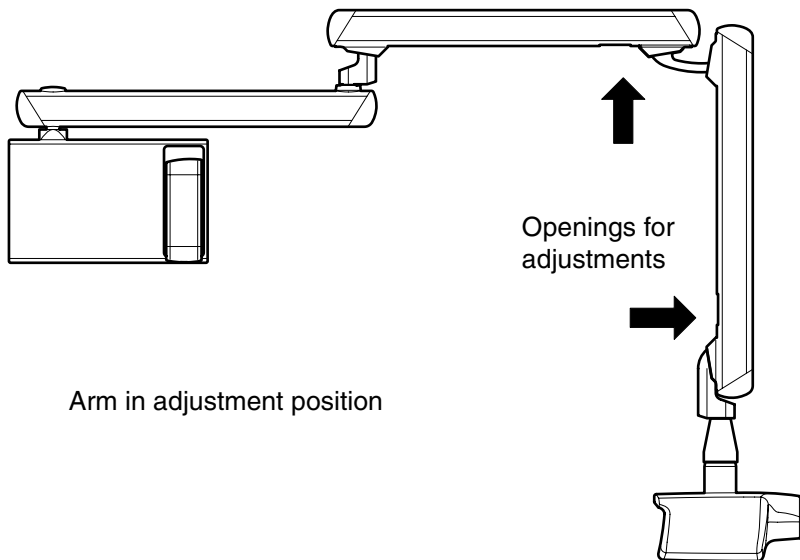
The rectangular collimator can be attached to the long cone either before the film holder or after it. Refer to the Planmeca Intra X-ray unit's user's manual for detailed instructions on how to use the rectangular collimator and the film holder.



11 FINAL ADJUSTMENTS

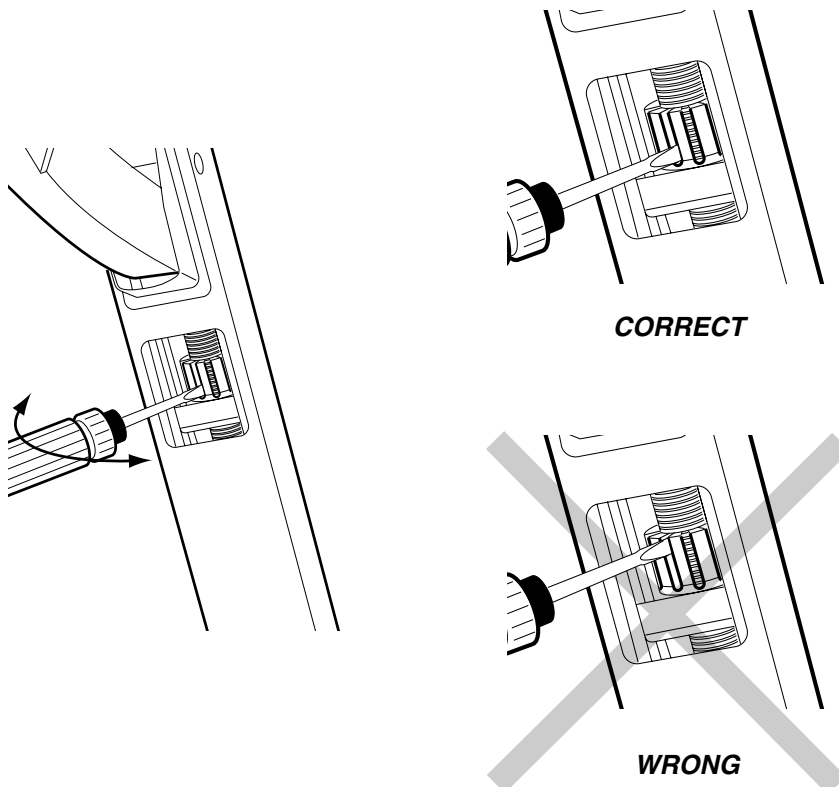
11.1 Adjusting the balance of the arm

Adjust the balance of the arm by turning the adjustment nuts with a screwdriver. The adjustment nuts are located inside the bracket arm and can be reached through the openings at the under-side of the bracket arm.



Arm in adjustment position

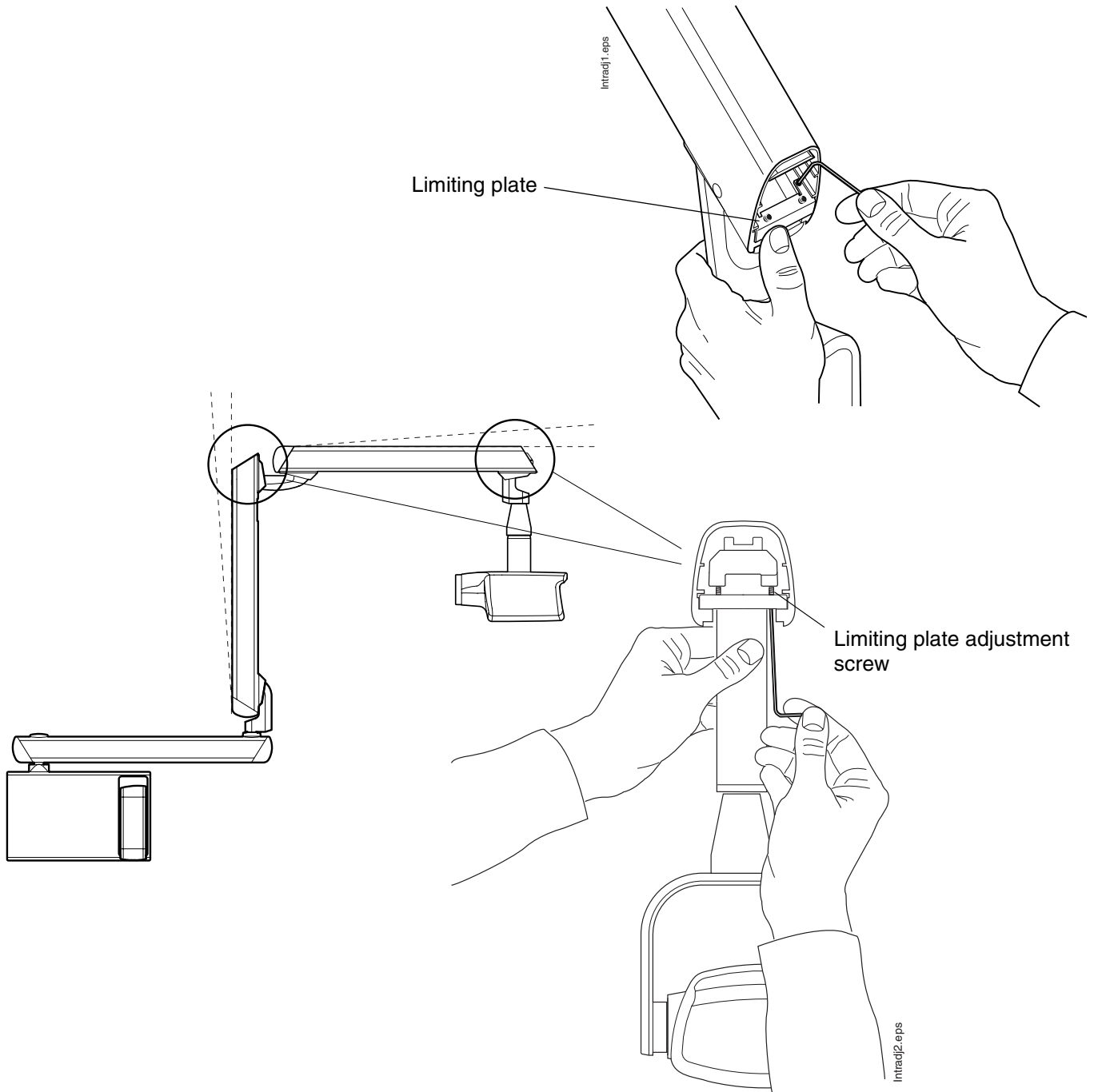
NOTE Adjust the arm from the lower part of the adjustment nut.



11.2 Adjusting the bracket arm angles

In case the bracket arm angles need to be adjusted it can be done with the limiting plates.

Remove the cover plug from the end of the bracket arm. Attach the limiting plate to the arm with the two M3 Allen screws. Adjust the angle with the limiting plate adjustment screws.

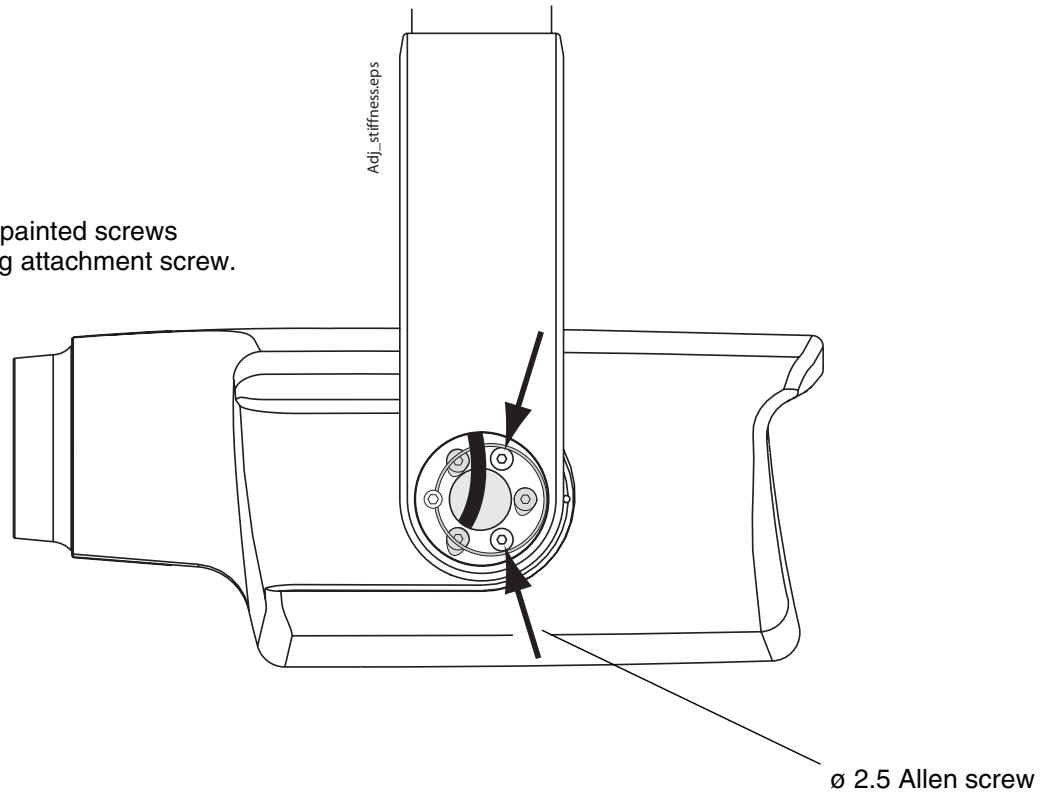


11.3 Adjusting the stiffness of the tube head's horizontal axle

Remove the plug from the tube head's axle and adjust the tightness of the two adjusting screws evenly (arrows on the figure below).

WARNING!

Do not touch the painted screws
or the earth spring attachment screw.



12 RUNNING IN THE X-RAY UNIT

After installation, before using the unit for the patient work, the following exposures must be taken to run in the unit.

Switch the unit on. The on/off switch is located under the generator box.

- Take three exposures with exposure values 60 kV and 0.05 seconds.
- Take three exposures with exposure values 70 kV and 0.1 seconds.
- Take three exposures with exposure values 70 kV and 1.0 seconds.

