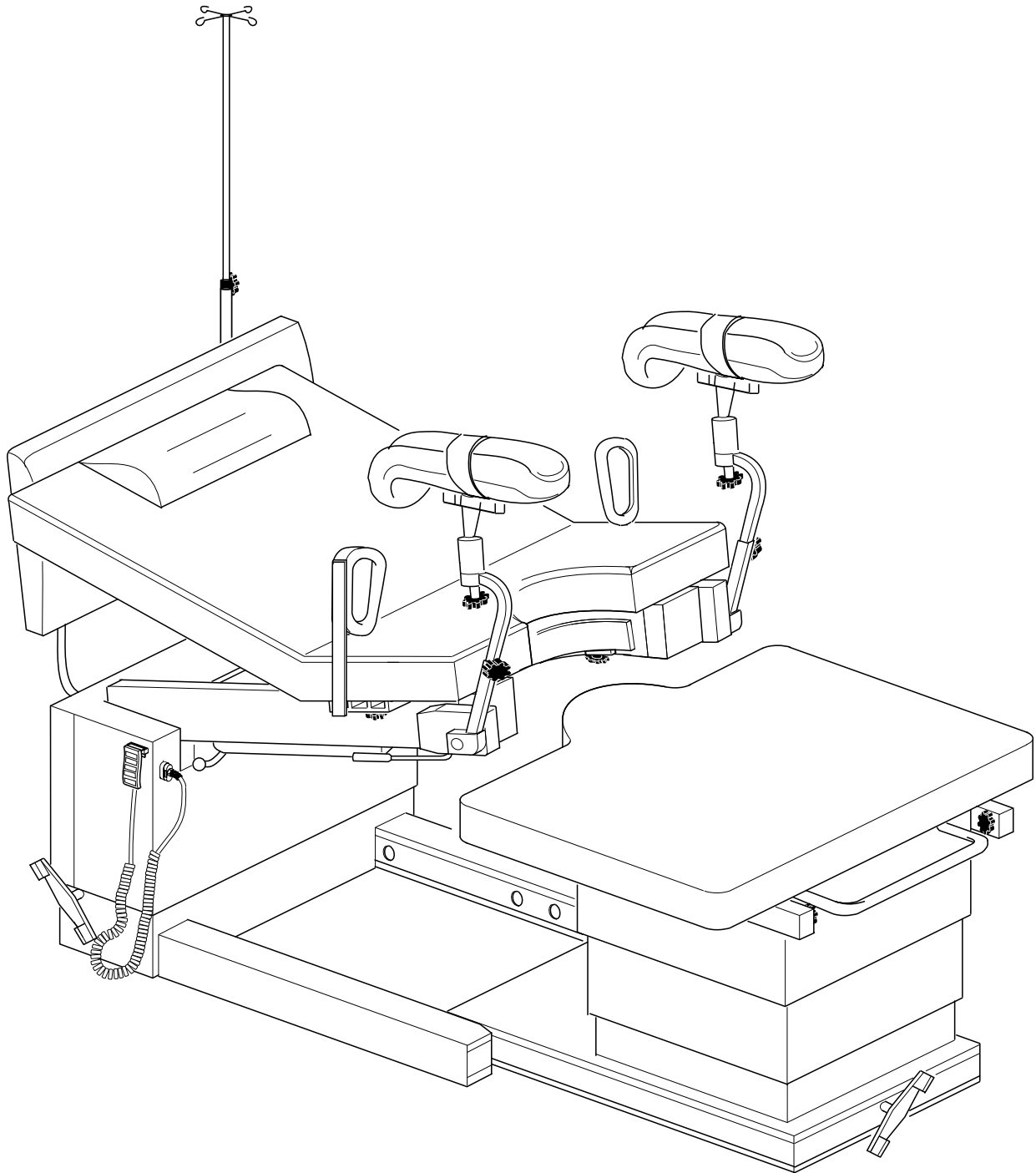


# Service manual

## Partura delivery bed®



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This service manual contains instructions how to carry out repairs on the Partura delivery bed.

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# Introduction

## About this service manual

In this paragraph you will find information about the layout of this service manual and explanations concerning the marks and symbols used in the text.

This service manual contains instructions how to carry out repairs on the Partura delivery bed

Our products are constantly being improved; that is why design-related modifications carried out after the printing of this service manual could not be taken into consideration. In case of any question, please contact our service team.

This service manual is to be read and observed by any person authorized to carry out work with and on the delivery bed, such as service, inspection or maintenance.

In addition to the operating manual and to the mandatory rules and regulations for accident prevention effective in the user's country and on the site of use, the generally acknowledged technical rules for safe and professional work are also to be observed.

# Symbols used in the text

In this service manual following designations or symbols are used to point out pieces of information of particular importance.



### **Danger!**

This symbol will appear wherever safety hints are designed to protect people from physical harm. The symbol stands for imminent danger of death or serious injury.



### **Caution!**

This symbol will appear where situations are described which might be dangerous, and which might inflict slight injuries.



### **Attention!**

This symbol will appear in front of warning hints which shall prevent the table or other equipment from being damaged.



This symbol will appear in front of additional helpful pieces of advice.

- A dot in front of the text means:  
This is what you have got to do.
- A dash in front of the text means:  
This is part of an enumeration.

## Safety instructions

The delivery bed has been constructed according to state-of-the-art standards and to the acknowledged rules for safety engineering. Nevertheless, its use may inflict danger to life or physical safety of the user or of third parties, or impairment to the delivery bed or to other material assets.

Do not use the delivery bed unless in technically perfect condition and only for its intended use, with regard to safety and possible dangers, and observing the operating manual!. It is most important to have any malfunction which may affect the safety of the appliance eliminated immediately!

Always keep the operating manual at hand at the site of use of the delivery bed!

In addition to the operating manual, observe the general rules implied by the law and all other mandatory regulations for accident prevention and environmental protection!

Do not carry out any modifications, extensions or reconstructions of the delivery bed which might affect its safety without the manufacturer's approval!

Spare parts must comply with the technical requirements specified by the manufacturer. This is always guaranteed when using original spare parts.

Observe the intervals prescribed or stated in the operating manual for periodical check-ups!

For the execution of maintenance work, tools and workshop equipment adapted to the task on hand are absolutely indispensable.

Work on the electrical system and equipment of the delivery bed may only be carried out by a skilled electrician, or by specially instructed persons under the supervision and guidance of a skilled electrician, and in accordance with the applicable rules and regulations for electrical engineering.

Any safety devices removed for maintenance or repair purposes must be refitted and checked immediately upon completion of the maintenance and repair work.

The electrical safety must especially be checked after carrying out the following tasks:

- replacement of motors and
- replacement of control units.

Ensure that all running and process materials as well as parts exchanged are disposed of safely and with minimum environmental impact!

## Intended use

The delivery bed is designed exclusively for positioning parturient women before and during the process of childbirth. Any use apart or beyond this, e. g. as a patient transport stretcher or as an operating table, is not intended. The manufacturer cannot be held liable for any dam-

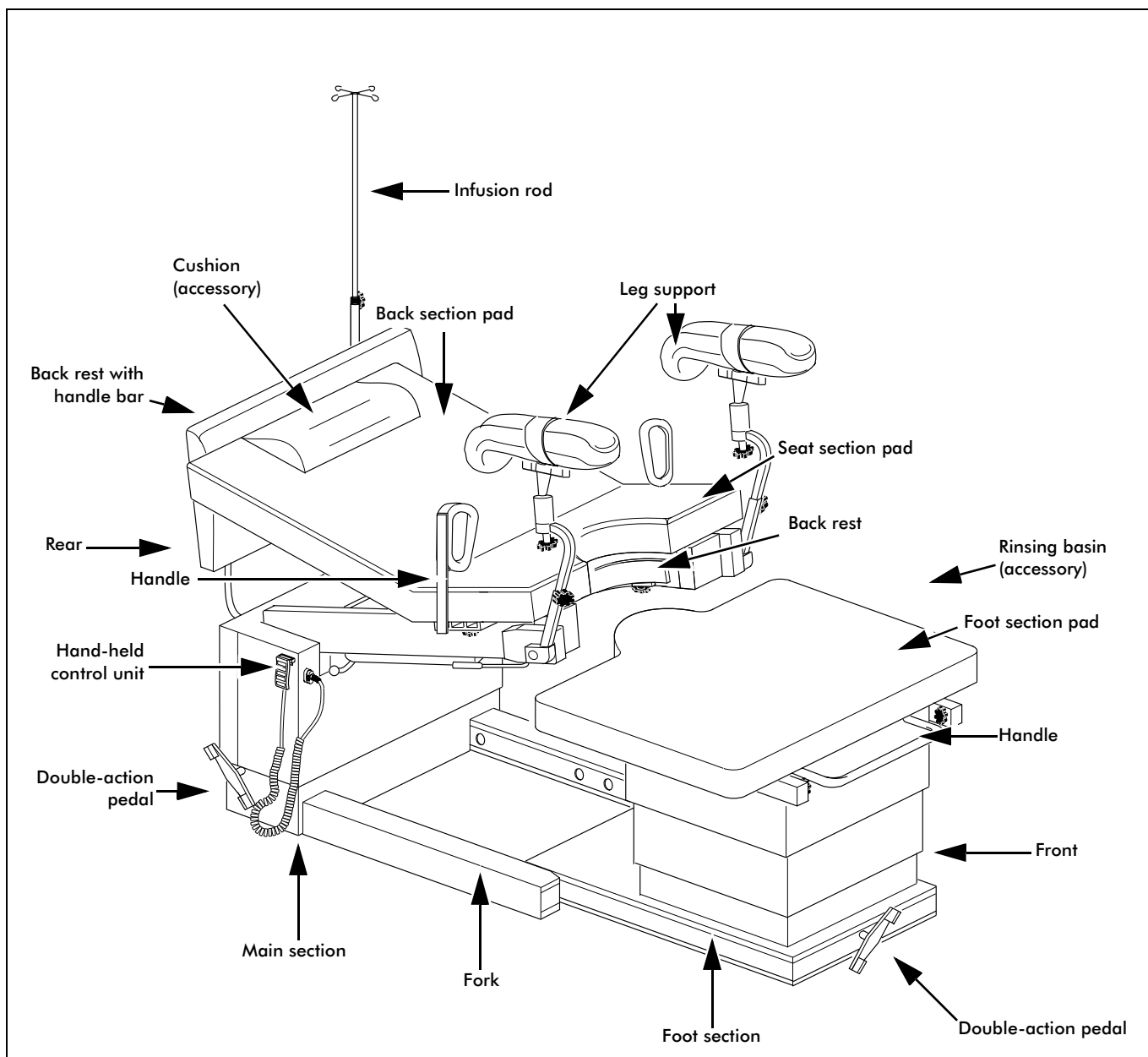
age resulting from such non-intended use, which would be entirely at the user's risk.

Intended use also means following the operating manual and complying with the conditions for inspection and maintenance.





# Description of the delivery bed



In the following manual the terms left-hand, right-hand, front and rear are used as seen by a person sitting on the bed and facing the foot section.

## **Description of the delivery bed**

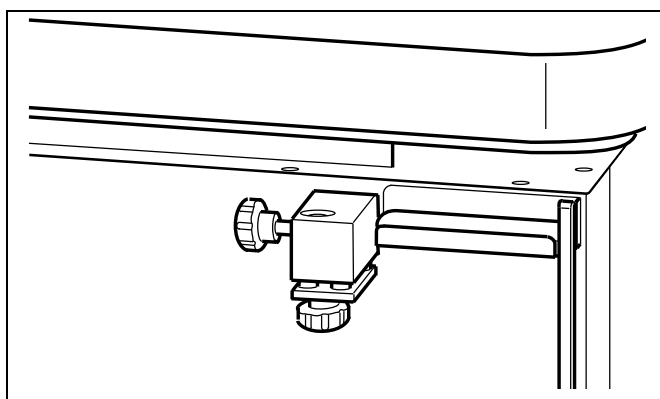
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# Repairs on the main section

## How to remove and re-attach the claddings

Many repair works on the delivery bed can only be carried out after the claddings have been removed. In the following it is described how to remove and re-attach the claddings.

### How to remove the upper rear cladding



- Unscrew the screws at the lower plate of the fixing clamps for the back rest and remove it.

### How to remove the upper front cladding

As soon as the upper rear cladding has been removed, the front cladding can be detached. Normally it is sufficient to detach the cladding only, without the need to loosen the cables.

- Unscrew the fastening screws on top of the cladding and lift the cladding off.
- Let the cables follow and put the cladding sheet carefully down on the fork.

- Loosen the screws on top and at both sides of the cladding and pull the cladding off to the rear.

After finishing the repairs, the cladding has to be re-attached.

### How to re-attach the upper rear cladding

Proceed in reverse order to re-attach the cladding.

- Put the cladding back in position and refasten the screws on top and at both sides of the cladding.
- Refix the lower plate of the fixing clamp for the back rest with the screws.

If the cladding sheet has to be removed completely, in order to be replaced, or in order to replace the motors for adjustment of the seat or back sections, proceed as follows:

- Compress the strain relieves from the inside and push them out of the elongated holes of the cladding sheet.
- Unplug all cables which are led through the cladding sheet from their connections and pull the cables and their connectors through the elongated holes to the outside.
- Disconnect the two hand-held control units with cable connection from the left and right hand sockets.

## Repairs on the main section

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- Loosen the fixing screws of the sockets for the hand-held control units and lift the sockets off.

### How to re-attach the upper front cladding

In order to re-attach the cladding, proceed in reverse order.

If the cables have been removed completely, they have to be passed through the cladding sheet as described in the following, otherwise, the next two steps can be omitted.

- Fasten the sockets for the hand-held control units with screws on the cladding sheet and plug the cables of the two hand-held control units into the left and right hand sockets.
- Pass the connectors and cables from the outside through the elongated holes of the cladding sheet, put the strain relieves onto the cables and push the strain relieves into the elongated holes.
- Put the cladding sheet back into place, pull the cables to the inside and screw in the fastening screws on the top surface.

### How to remove the lower rear cladding

The lower rear cladding can be detached as soon as the upper rear cladding has been removed.



#### **Danger!**

Electric shocks are dangerous to life. Disconnect the delivery bed from the mains before detaching the lower rear cladding.

- Loosen 3 screws on each side of the cladding sheet and the two bottom rear screws at the cladding sheet.

- Deposit the cladding sheet behind the delivery bed.

Normally, the connector shoes at the current supply cable do not need to be pulled off.

### How to re-attach the lower rear cladding

In order to re-attach the cladding, proceed in reverse order.

- Put the cladding sheet back into place, fasten the two bottom rear screws and 3 screws on each side of the cladding sheet.

### How to remove the lower front cladding

- Raise the delivery bed into maximum height, if possible. If this is not possible, the upper front cladding has to be removed.



#### **Attention!**

Attach the lower front cladding, or remove it completely in order to avoid scratching the cladding sheet, when removing the lower front cladding.

- Loosen the two front screws with stoppers and the screws at the bottom of the left and right hand sides of the cladding sheet.

- Lift the cladding sheet out, bottom side first.

### How to re-attach the lower front cladding

In order to re-attach the cladding, proceed in reverse order.

- Put the cladding sheet back into place, fasten the two bottom front screws with stoppers and the screws at the bottom of the left and right hand sides of the cladding sheet.

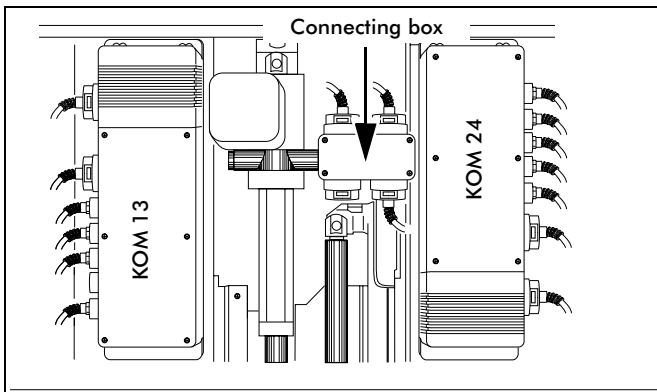
# How to replace the control units

The Partura delivery bed is equipped with two control units. The left hand control unit marked KOM 13 and the right hand control unit marked KOM 24 are each fixed to one of the guide pillars. In order to replace one of the control units, the upper rear cladding has to be removed first.


### Preparation

- Detach the upper rear cladding. Details can be found under "How to remove the upper rear cladding" on page 11.

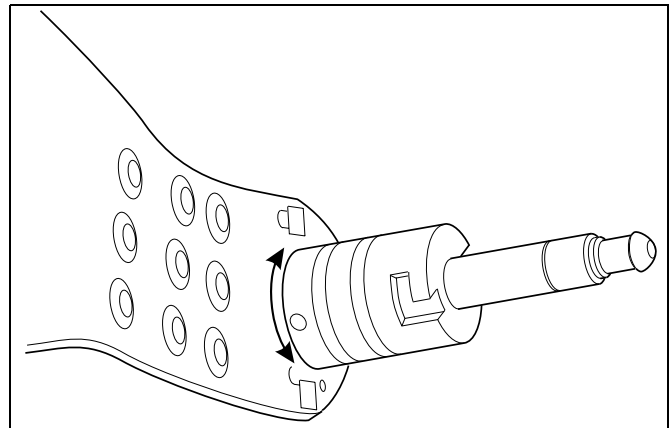
### How to remove the control unit




- Cut the laces.

 Mark the cables with a felt-tip pen when unplugging them from the control unit.

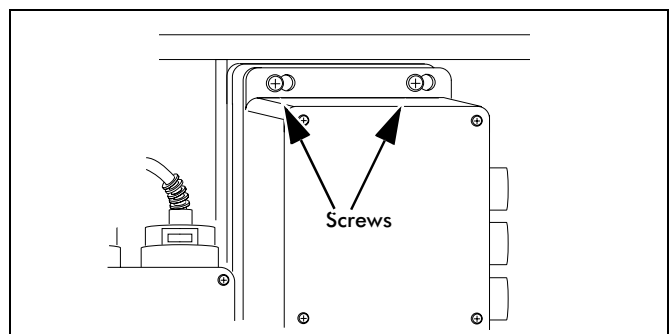
- Pull all connectors out of the control unit with the aid of the special tool.



 The markings on the connectors and on the control unit must coincide.

- Turn the connectors anticlockwise using the special tool and pull all the plugs out.

As soon as all connectors have been pulled out of one of the control units, the control unit can be removed. The control units are fixed with screws to the left and right hand guide pillars.



- Loosen the two screws at the head-end side of the control unit, shift it to the left and lift the control unit out to the front.

### How to install the control unit

Installation of a new control unit is effected in reverse order.

- Insert a new control unit passing the holes at its head-end side over the fastening screws and shifting it to the right. Fasten the screws.



#### Attention!

The connectors for the control unit are equipped with gaskets. If connectors are mounted without the gaskets having been greased, they cannot be dismantled without difficulty. Therefore it is necessary to grease the gaskets before the assembly or to remove the gaskets completely, so that the plugs can be released later.

- Plug the connectors marked beforehand into the sockets of the control unit and make the bayonet catch engage with the aid of the special tool.



#### Attention!

The cables which lead to the motor must not be installed together with the control cables. The control cables are to be installed above the control units.

- If possible, install the cables as before and fix the loose cables with a lace.

### Final tasks

- Check the mechanical functions and the electrical safety. Details can be found under "Checking the electrical safety" on page 29.
- Reassemble the upper cladding.

The delivery bed is operative again.

# How to replace the connecting box

The hand-held control units are connected to a connecting box via the D-Sub-connectors in the upper front cladding sheet.

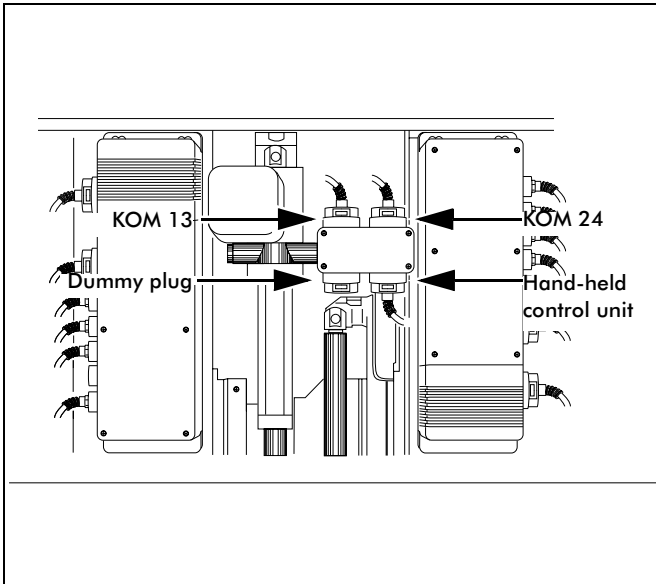
The pulses emitted by the hand-held control units are directed to the connecting box and from there, to both control units. The connecting box is fixed to the fastening sheet on the right hand guide pillar.

In order to replace the connecting box, the upper rear cladding has to be removed first.

### Preparation

- Remove the upper rear cladding. Details can be found under "How to remove the upper rear cladding" on page 11.

### How to remove the connecting box



- Unplug all connectors from the sockets of the connecting box with the aid of the special key.

- Unscrew the fastening screws at the right hand side of the connecting box and detach the connecting box from the fastening sheet.

### How to install the connecting box

The new connecting box is adjusted and fixed in reverse order.

- Adjust the connecting box so that the two sockets point upwards and the dummy plug, downwards.
- Position the fastening holes of the connecting box over the holes for the screws in the fastening sheet and screw the fastening screws in.
- Insert the connectors for the hand-held control units and for the control units into the connecting box. Details can be found in the above drawing.
- Check the functions of the delivery bed.

### Final tasks

- Check the mechanical functions and the electrical safety. Details can be found under "Checking the electrical safety" on page 29.
- Reassemble the upper cladding.

The delivery bed is operative again.



## How to replace the motors for shock position adjustment

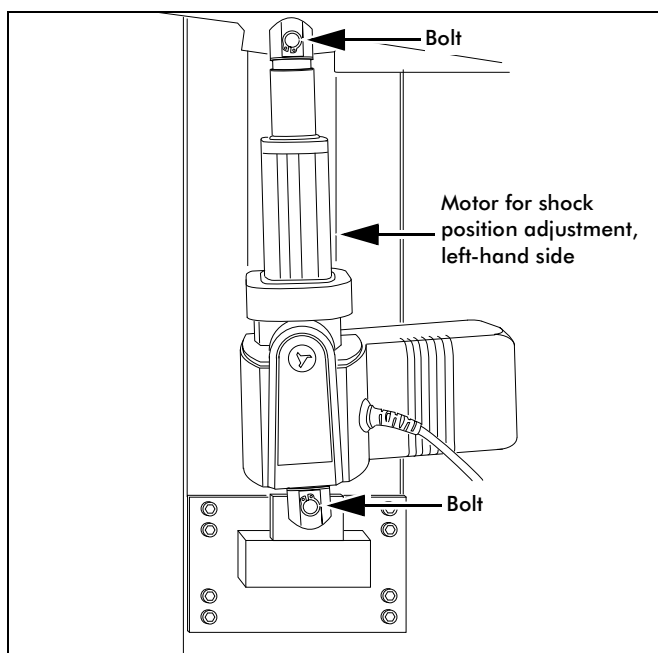
The Partura delivery bed is equipped with 2 motors with parallel operation for the adjustment of the platform of the main section. The motors are fixed to the left and right hand sides of each guide pillar. Both motors can be replaced the same way.

### Preparation

- Remove the upper rear cladding. Details can be found under "How to remove the upper rear cladding" on page 11.
- Cut the laces at the control unit.

### How to remove the motor

- Unplug the motor connector from the control unit with the aid of the special tool.



- Remove the circlips from the upper bolt and start the bolt.

- Remove the circlips from the lower bolt, start the bolt and lift the motor out of the appliance.

### How to install the motor

Installation of a new motor is effected in reverse order.

- Position the fork heads of the new motor over the eyes of the bearing, drive the bolt in and mount the circlips.
- Connect the motor connector to the control unit.

### Final tasks

- In order to reset the control unit, adjust the motors into minimum position.
- Fix the loose cables with a lace.
- Check the mechanical functions and the electrical safety. Details can be found under "Checking the electrical safety" on page 29.
- Re-attach the upper rear cladding.

The delivery bed is operative again.

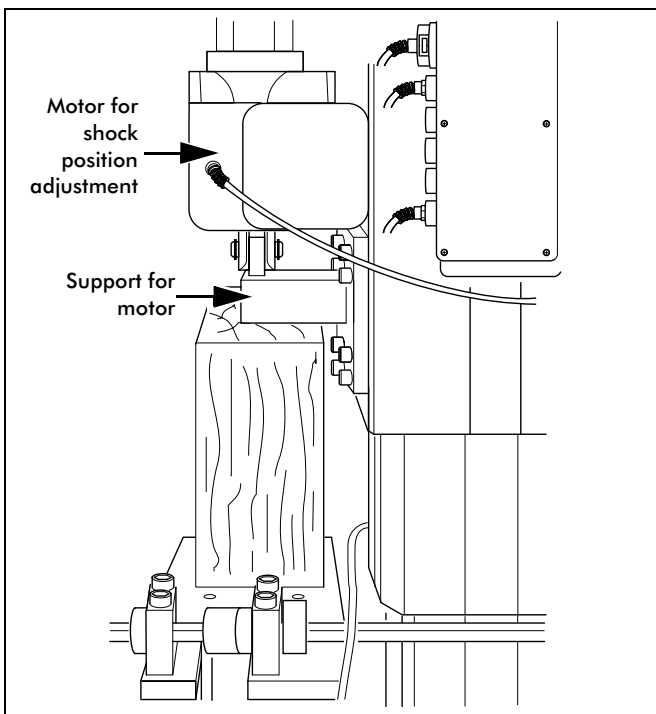
# How to replace the motors for height adjustment

The Partura delivery bed is equipped with 2 motors with reverse operation for height adjustment. The motors are installed between the left and right hand guide pillars. The lower bearing of the right hand motor is fixed to the base plate, and its spindle sets a coupling in motion, which is guided between the two guide pillars. The left hand motor is installed with its spindle pointing downwards. The spindle is fixed to the coupling, and the motor, to the brace connecting the pillars.

### Preparation

- Remove the upper rear cladding, the lower rear cladding and the lower front cladding. Details can be found under "How to remove and re-attach the claddings" on page 11.
- Cut the laces at the control unit.

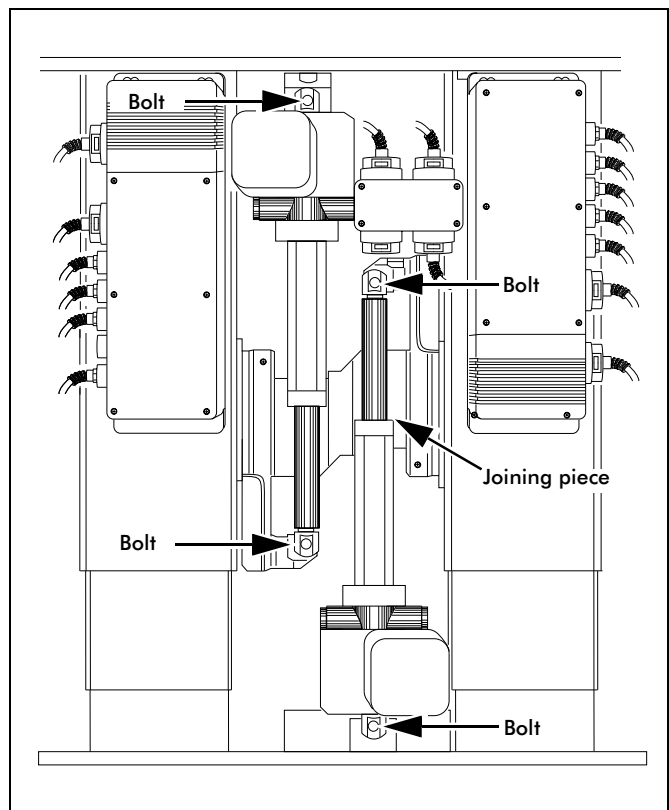
### How to remove the motor



- Unplug the connector of the defective motor from the control unit with the aid of the special tool.

- Prop up the guide pillar by means of a wooden beam of approx. 20 cm height under the left or right hand support of one of the motors for shock position adjustment.
- Lower the bed into minimum height by means of the operative motor, until the motor support touches the wooden beam.

The bolts of the defective motor are now relieved from compression stress.



- Remove the circlips from the bolts, start the bolts and lift the defective motor for height adjustment out of the appliance.

## How to install the motor

Installation of a new motor is effected in reverse order.



The head of the new motor points to the rear.

- Install the new motor for height adjustment.
- In order to adjust the clearance between the two bearing eyes to the clearance between the fork heads of the new motor, elevate or lower the coupling with the aid of the operative motor, until the fork heads are positioned above the bearing eyes.



The lower bearing eye of the right hand motor has got a bore hole in the front allowing the bolt to be driven in from the front.

- Drive the bolts in from the front and mount the circlips.

- Connect the motor connector to the control unit.
- Adjust the motors into maximum position and remove the wooden beam.
- Fix the loose cables with a lace.

## Final tasks

- Re-attach the upper rear cladding, the lower rear cladding and the lower front cladding. Details can be found under "How to remove and re-attach the claddings" on page 11.
- Fix the loose cables with a lace.
- Check the mechanical functions and the electrical safety. Details can be found under "Checking the electrical safety" on page 29.

The delivery bed is operative again.

# How to replace the motor for adjustment of the seat section

The motors for adjustment of the back and seat sections are installed underneath the back section.

The motors can be replaced.

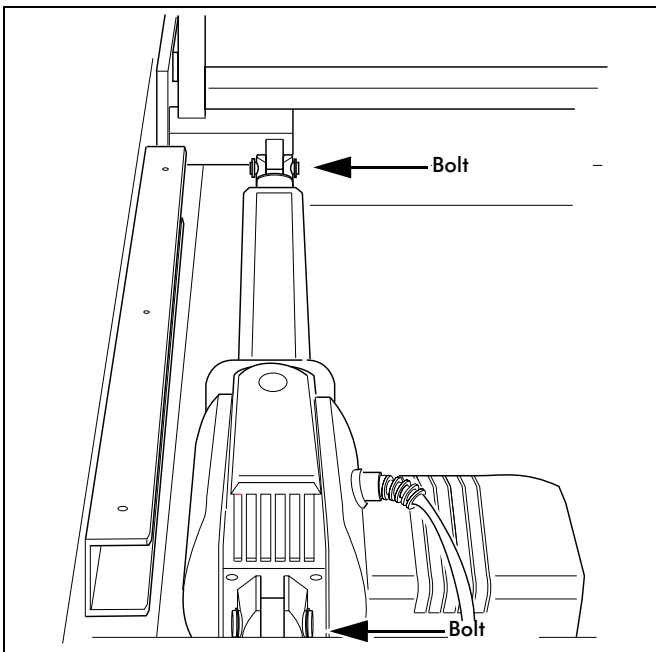
### Preparation

- Remove the upper front cladding and let the cables follow. Details can be found under "How to remove the upper front cladding" on page 11.
- Move the back section into upright position.

A plastic cladding, which is fixed with 6 screws becomes visible underneath the back section.

- Unscrew the 6 screws from the plastic cladding underneath the back section and lift the plastic cladding out.

### How to remove the motor for adjustment of the seat section



- Remove the circlips from the bolts, start the bolts and lift the motor out.

### How to install the motor for adjustment of the back section

The bearing holes of the motors for the adjustment of back and seat section are equipped with mating flanges instead of plastic bushings.



Normally, the bearing holes allow the bolts to pass through. If necessary, however, they can be made penetrable by means of a 12.4mm reamer.



Grease the bolts before driving them in.

- Put the new motor to the provided place.
- Adjust the motor so that the fork heads are lying above the bearing eyes, drive the bolt through the bearings and mount the circlips.
- Lead the connecting cables through the upper front cladding to the control unit. Details can be found under "How to re-attach the upper front cladding" on page 12.

### Final tasks

- Check the mechanical functions and the electrical safety. Details can be found under "Checking the electrical safety" on page 29.
- Fasten the upper front cladding.
- Remount the plastic cladding and screw the fastening screws in.

The delivery bed is operative again.

## How to replace the motor for adjustment of the back section

The motors for the adjustment of the back and seat sections are installed underneath the back section.

The motors can be replaced.

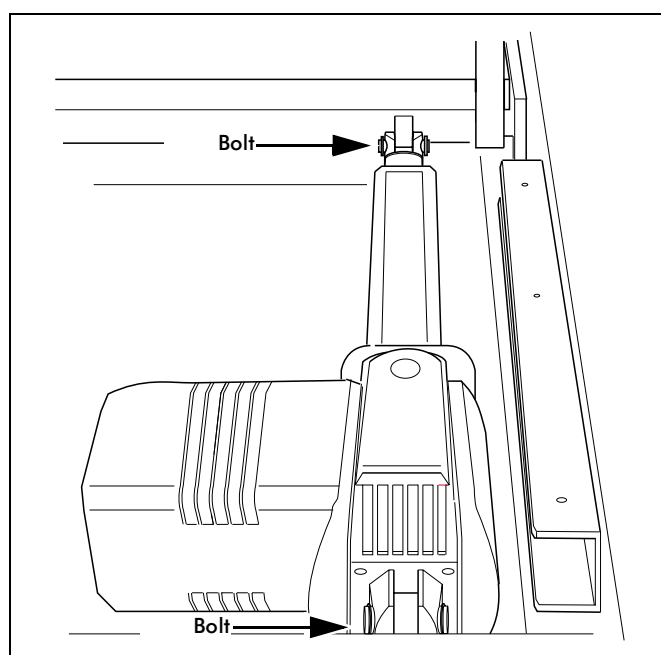
### Preparation

- Remove the upper front cladding and let the cables follow. Details can be found under "How to remove the upper front cladding" on page 11.
- Move the back section into upright position.

A plastic cladding, which is fixed with 6 screws, becomes visible underneath the back section.

- Unscrew the 6 screws from the plastic cladding underneath the back section and lift the plastic cladding out.

### How to remove the motor for adjustment of the back section



- Remove the circlips from the bolts, start the bolts and lift the motor out.

### How to install the motor for adjustment of the back section

The bearing holes of the motors for the adjustment of back and seat section are equipped with mating flanges instead of plastic bushings.



Normally, the bearing holes allow the bolts to pass through. If necessary, however, they can be made penetrable by means of a 12.4mm reamer.



Grease the bolts before driving them in.

- Put the new motor to the provided place.
- Adjust the motor so that the fork heads are lying above the bearing eyes, drive the bolts in and mount the circlips.
- Lead the connecting cables through the upper front cladding to the control unit. Details can be found under "How to re-attach the upper front cladding" on page 12.

### Final tasks

- Check the mechanical functions and the electrical safety. Details can be found under "Checking the electrical safety" on page 29.
- Fasten the upper front cladding.
- Remount the plastic cladding and screw the fastening screws in.

The delivery bed is operative again.



## Repairs on the foot section

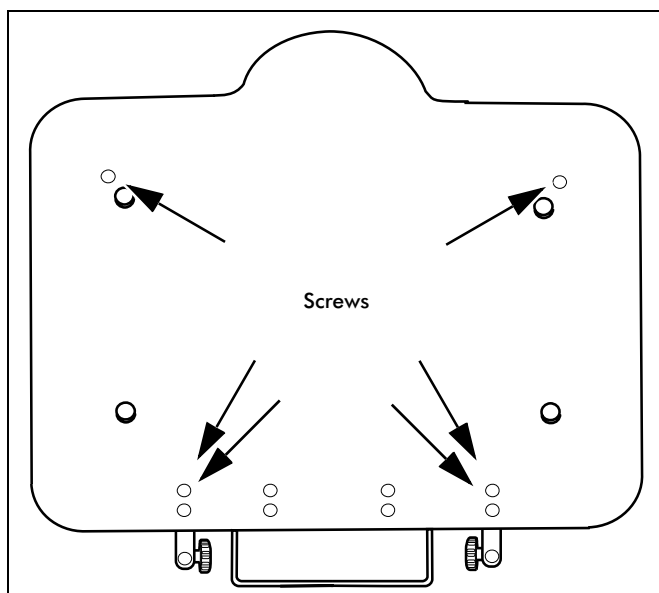
### How to remove and re-attach the covering plate of the foot section


For repairs inside the foot section the covering plate has to be removed.

#### How to remove the covering plate of the foot section

- Lift the foot section pad up.

The covering plate of the foot section, which is underneath, is held by 6 screws.



 The four screws marked by the arrowheads in the illustration hold at the same time the fixing clamps for the back rest. Hold onto the clamps, when you loosen the screws.

- To detach the covering plate, lift the 6 protection caps off and unscrews the screws which are underneath.

- Lift the covering plate up.

Now repairs inside the foot section can be carried out. The covering plate has to be fixed again afterwards.

#### How to mount the covering plate



The hand wheels at the holders for the back rest are normally facing inwards.

- Mount the covering plate and fasten the screws loosely for the time being. The screws marked by the arrowheads in the illustration also hold the fixing clamps for the back rest.
- Insert the back rest into the clamps and tighten all screws.
- As a final step, the protection caps have to be put onto the screws.

# How to replace the motor for adjustment of the foot section

For the replacement of the motor for the adjustment of the foot section, the following tools are needed:

- circlips pliers
- Clamping device



If required, the clamping device can be obtained at our service department (part no. 02011809).

### Preparation

- Remove the pad and remove the covering plate of the foot section. Details can be found under "How to remove the covering plate of the foot section" on page 23.

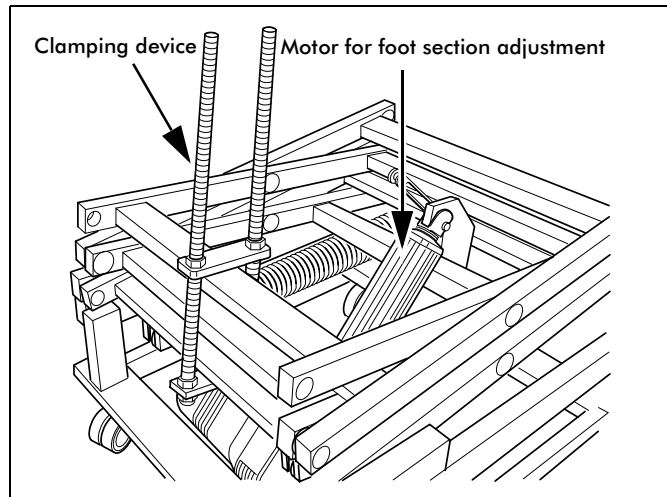
The motor for foot section adjustment can be replaced as long as the foot section is in maximum height, or if the tension of the tension springs is compensated. In order to do so, a special tool is required.



### Caution!

The foot section is equipped with tension springs assisting the motor in raising the foot section. If the bearing bolt of the motor for foot section adjustment is removed without using a clamping device, the foot section will bounce up owing to the spring force. This may result in injuries. Always use the clamping device before replacing the motor for foot section adjustment.

- Raise the foot section to maximum height, if still possible. In this position the tension springs are no longer under strain.

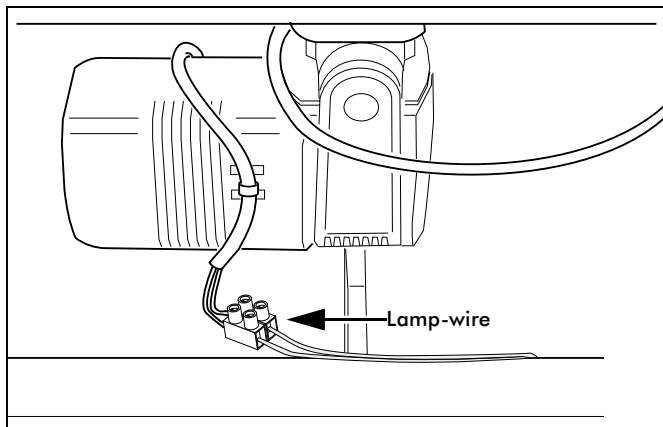


- Otherwise, apply the clamping device as shown in the illustration. Attach the shackle, and tighten the screws of the clamping device.



### How to remove the motor

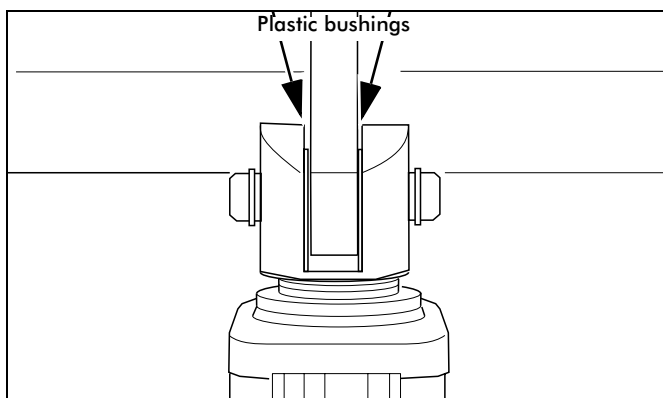
- Tip the foot section to the left or right hand side, so that the motor for the adjustment of the foot section becomes accessible from the bottom.



- Loosen the cables of the motor from the contacts of the lamp-wire connector.
- Remove the circlips from the bolt of the lower and upper bearing and start the bolts.
- Lift the motor out towards the bottom.

### How to install the motor

To install a new motor, proceed in reverse order.



- Put the plastic bushings into the holes of the upper and lower fork heads and insert the motor with the fork heads above the bearing eyes. The motor head points to the rear, towards the release lever.



Grease the bolts before driving them in.

- Adjust the motor so that the fork heads are lying above the bearing eyes, drive the bolts in and mount the circlips.
- Connect the cables leading from the motor to the electric supply cables of the same colour at the lamp-wire connector.

### Final tasks

- Check the mechanical functions and the electrical safety. Details can be found under "Checking the electrical safety" on page 29.
- Remount the covering plate of the foot section. Details can be found under "How to mount the covering plate" on page 23.
- Put the pad back on top of the foot section.

The foot section is operative again.

## Repairs on the foot section

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# General maintenance works

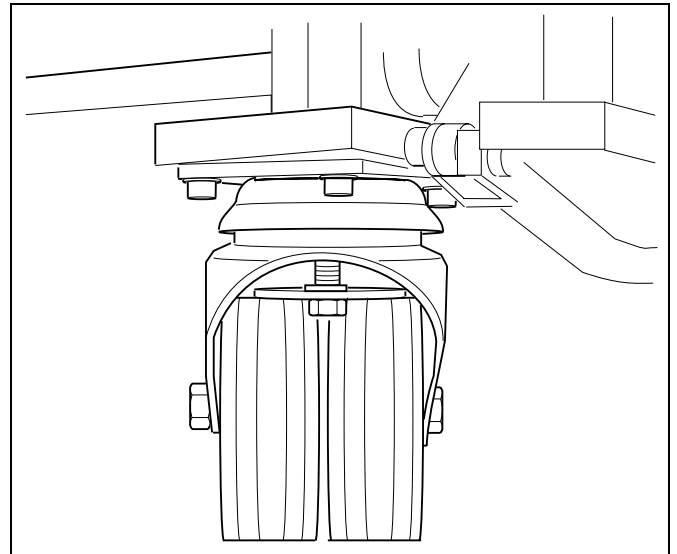
## How to replace the castors

The castors are situated under the foot section as well as under the main section and under the fork.

All castors are completely replaceable.

- To replace one of the castors of the main section, release the dual function pedal, lift the bottom of the delivery bed up and support it.
- To replace one of the castors of the foot section, pull the foot section off the fork of the main section and deposit the foot section on the locking bow.

The castors are now accessible.



- Loosen the 4 fastening screws and lift the castor off.
- Put the new castor in place and screw the fastening screws in.

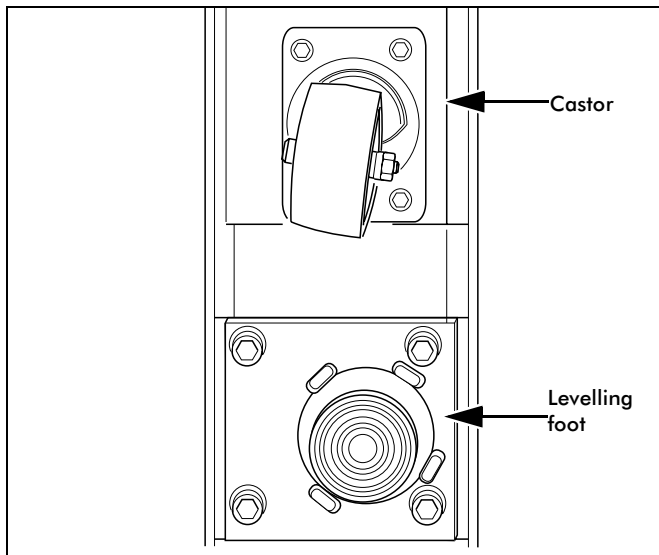
### How to replace the levelling feet

The levelling feet are situated underneath the fork.

The levelling feet are completely replaceable.

- Release the dual function pedal, lift the fork up and support it.

The levelling foot at the supported side is now accessible and can be replaced as follows:



- Screw the new levelling foot in.
- To adjust the height of the levelling foot, put the delivery bed on the castors.
- Screw the levelling foot in until the castors are relieved of pressure load; however, the castors must not be lifted off the ground.
- Secure the position of the levelling foot by fastening the locknuts.

- Release the locknut and unscrew the levelling foot.

# Checking the electrical safety

After the repairs, the design-related and functional features essential for the safety of the appliance must be checked, insofar as they may be affected by the repairs.

After modifications which may alter the safety characteristics of the appliance, the corresponding check-ups of the resistance of the protective conductor and of the equivalent of the leakage current have to be carried out.

The individual checks allow in general the evaluation of the status of the electrical safety.

After repairs or modifications which may influence the normal operation as to the input/output values of the appliance, or currents inside the equipment, these values

must be measured additionally and, if need be, readjusted.

Repairs, modifications or tests may involve electrical or mechanical risks for patients or operators. Therefore, patients or users should not stay in the dangerous area of the appliance while the above-mentioned operations are being carried out.

For the protection of the inspector, following tests should be carried out in the stated order.

The test values stated below are in accordance with the VDE 0751/part 1.

## Carrying out the measurements

The appliances have to be connected to the measuring units according to the measurements to be carried out and according to the circuit diagrams.

Lines which establish the contact to the equipment under test have to be guided in a distance of at least 200 mm from the enclosure of the equipment under test. Switches in the mains part have to be closed as during normal operation while the measuring procedures are being carried out, in order to register the resistance of all insulations of the mains part during the measurement.

### Initially measured value

In case of new appliances, or of appliances which have not yet been tested, the so-called initially measured value

has to be determined, if possible before any repair is carried out. This value has to be recorded in writing as a comparison value for future measurements of the equivalent of the leakage current. The appliances may only be operated further, if the measured value is lower than the indicated limit value.

### Repeated measurements

The values determined in the repeated measurements must not exceed the indicated limit values. Additionally, the initially measured value must not be exceeded by more than 10  $\mu\text{A}$  or 50% respectively, depending on which value is higher. Higher values give a reason to suspect inadmissible modifications. Such appliances are to be returned to the manufacturer.

### Documentation and evaluation of the tests

The results of the tests must be recorded in writing. For their documentation, the table at the end of these instructions has to be filled in. For perpetual completion of the table, please enclose it in the operating manual, so that it stays with the delivery bed.

If safety is not assured, e.g. because

- repairs are impossible
- the testings failed or
- the user does not want to have the necessary repairs done,

the user must be informed in written form about the danger which the appliance is constituting.

### Visual inspection

Before the following tests concerning the protective measures against an excessive shock hazard voltage can be carried out, repaired or modified appliances must be visually checked for externally or internally recognizable defects, as far as these become visible during the intervention; this applies especially to the protective conductor and its connection points. After that, the appliances are closed, if they need not remain open for the tests. After the assembly, all mechanical parts which have been removed during the repairs must be visually checked for being duly fastened, all moving parts, for their mobility,

and all supporting parts, for possible damage. In the evaluation of the safety status of appliances, it should particularly be taken care, that

- the fuse links are corresponding to the values indicated by the manufacturer,
- the safety-relevant marks on the appliance are legible,
- the mechanical condition allows further safe operation, and that
- there are no soilings affecting the safety.

### Measuring the resistance of the protective conductor

A current of a minimum of 5 A and of a maximum of 25 A flows from a power supply with an off-load voltage of a maximum of 6 V to the protective conductor section which is to be measured. The resistance depends on the current and the voltage drop at this section of the protective conductor. The measuring instruments must at least meet the requirement of the class 2,5.



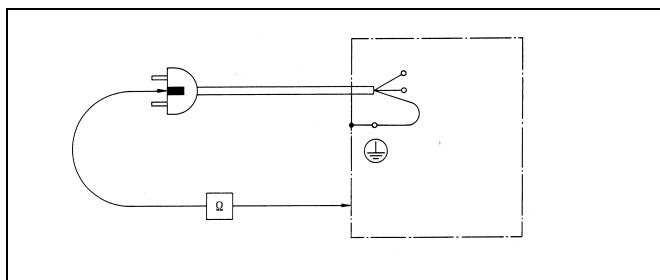
Ohmmeters according to DIN VDE 0413, part 4, may be used, if the measuring is carried out with alternating voltage.

Move the mains cables for at least 5 s during the measurement. The resistance must not fluctuate during that time.

If resistance fluctuations occur, it must be supposed, that the protective conductor is damaged or that the connection points are no longer perfect.

### Appliances with mains cable

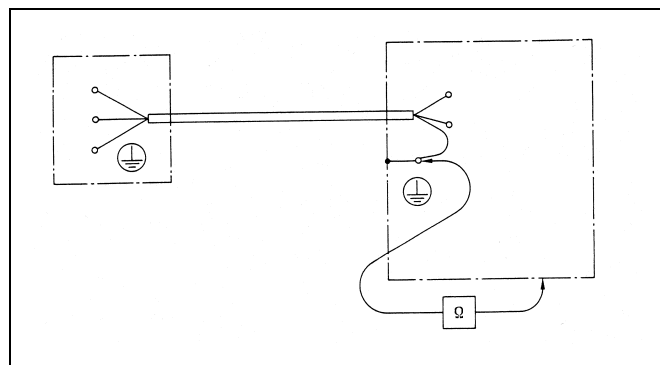
The resistance between the accessible conductive parts of the appliances, which can assume a dangerous electric voltage in the case of a malfunction, and the connections of the protective conductor is measured. For appliances with mains cable, the resistance between the contact pins of the mains plug and the accessible parts of the appliance must not exceed  $0.3 \Omega$



Measuring the resistance of the protective conductor of appliances with mains lead

### Hard-wired appliances

For hard-wired appliances, the resistance between the terminal of the protective conductor of the appliance on the one hand and its accessible conductive parts on the other hand, which can assume a dangerous shock hazard voltage in case of a malfunction, must not be higher than  $0.2 \Omega$ . The existing protective conductor is not disconnected during the test.



Measuring the resistance of the protective conductor of hard-wired appliances



Disconnecting and reconnecting a protective conductor repeatedly will involve a deterioration of its mechanical and electrical values. In addition, the danger of forgetting to reconnect the protective conductor will increase. A possible influence on the measuring values by incidental connections to earth is acceptable.

### Measuring the equivalent of the leakage current to ground

Measuring the leakage current on site is either impossible or requires special effort. Normally, the measurement of the equivalent of the leakage current is sufficient after repairs to and modifications of appliances connected to the mains by means of mains cable and plug.

Measurement of the equivalent of the leakage current produces measured values which are not directly comparable with the leakage current values according to the definitions for type tests.

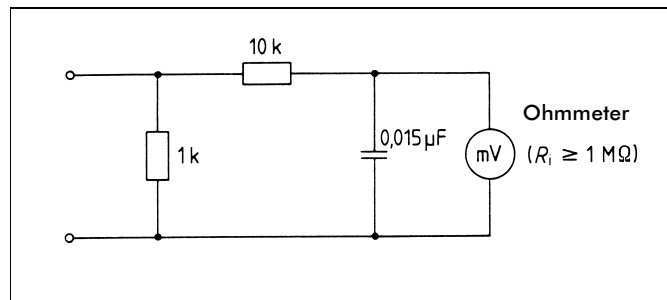
The purpose of repeated measurements of the equivalent of the leakage current is to recognize as soon as possible any deviations from the so-called initially measured value and thereby, modifications of the safety structure of the appliance.

These measurements may only be carried out by skilled personnel, as during the measuring procedure of the leakage current, protective measures, e. g. the protective conductor, may be ineffective.

#### Measuring circuit

The measuring circuit consists of the actual measuring device and an external circuitry. Observing the following requirements, the circuit for measurement must be appropriate to measure alternating currents between  $10 \mu\text{A}$  and  $10 \text{mA}$ .

The actual measuring device must display r.m.s. voltage of sinusoidal alternating current; an input resistance of  $\geq 1 \text{M}\Omega$ , and the error of measurement, basing on the accumulated range value, must not exceed 5% in the frequency range of 20 Hz to 1000 Hz.



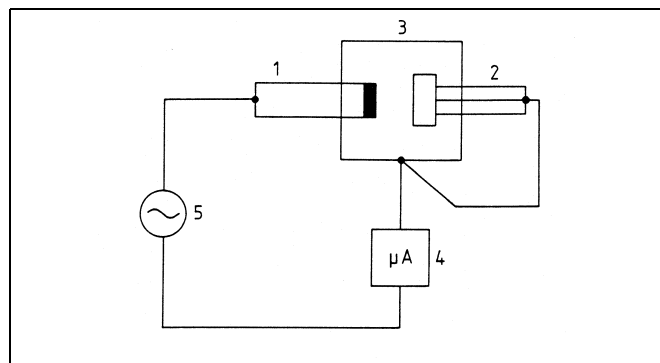
Measuring circuit



## Appliances with mains cable

The pins of the mains plug, which are temporarily connected to be conductive (except earthing pin plugs), as well as accessible metal parts of the enclosure are connected with the measuring device according to the following diagram.

The maximum values for the equivalent of the leakage current amount to 1 mA for appliances with mains cable.



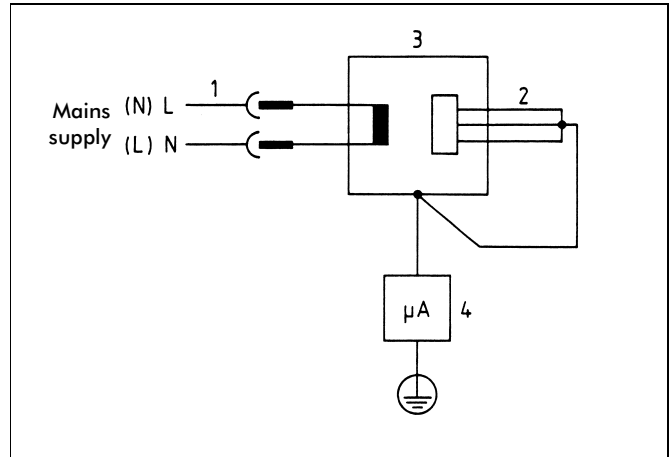
Measuring the equivalent of the leakage current

1. Unit connecting
2. Applied part  
(e.g. accessible surfaces of accessories)
3. Accessible conductive parts  
(enclosure of the appliance)
4. Measuring circuit
5. Mains frequent measuring voltage source

### Hard-wired appliances

The measurement has to be carried out for both polarities separately. Reversal of the polarity and disconnection of the resistance of the protective conductor can be effected behind the lower rear cladding.

The upper limiting values for the equivalent of the leakage current amount to 10 mA for hard-wired appliances.



**Measuring the equivalent of the leakage current of hard-wired appliances**

1. Test socket without protective earth contact  
(here: socket for cable link underneath the cladding of the base)
2. Applied part (e.g. accessible surfaces of accessories)
3. Accessible conductive parts  
(enclosure of the appliance)
4. Measuring circuit





# Spare parts lists

**Product: 140100**

Item Number	Designation
02001576	Double castor, lockable
02001577	Castor for main section
00092367	Bolt lock for 8 mm diameter bolt
01096009	Dual-function pedal, right-hand side, for main and foot sections
02000695	Dual-function pedal, left-hand side, for main section
02002974	Ball bearing FAG 625
01096004	Levelling foot
00095398	Main switch with thermo-protection
00095336	Mains cable (230 V)
00095469	Potential equalization socket
02002312	Motor for height adjustment
02002313	Motor for shock position adjustment
02002325	Bearing bush 1610 DU (Bearing for shock position frame)
02003996	Rubber buffer, black, 22 x 11 mm diameter
00094139	Handwheel, oval M8 x 15
02000809	Connecting cable for control and distributor box
02004051	Cable, 3 x D-Sub / 2 sockets for hand-held control units, 1 connecting box
02002632	Control unit KOM13-01AA-021
02002633	Control unit KOM 24-01AA-022
02003144	Connecting box 3 x D-Sub, 9 poles
02003145	Hand-held control unit with cable connection
02003147	Socket for hand-held control unit
02002346	Friction-type bearing for shock position frame, seat section
02003429	Friction-type bearing back section / seat section
02003427	Friction-type bearing seat section / back section
02002924	Bearing bush for seat section / back section
02003833	Cover for main section
02000680	Rubber buffer, black, 30 x 25 mm diameter
02003391	End position switch for cover

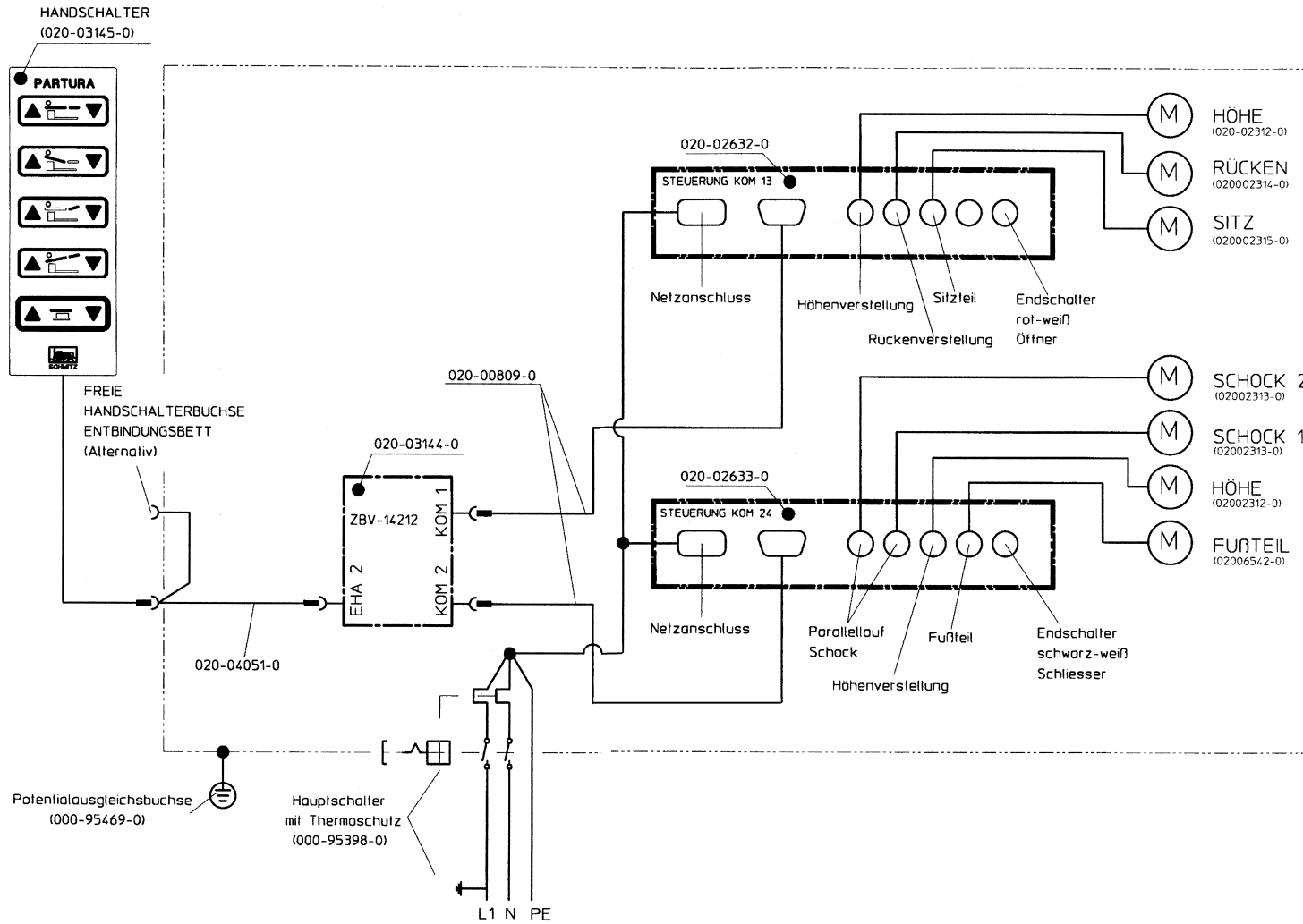
## Spare parts lists

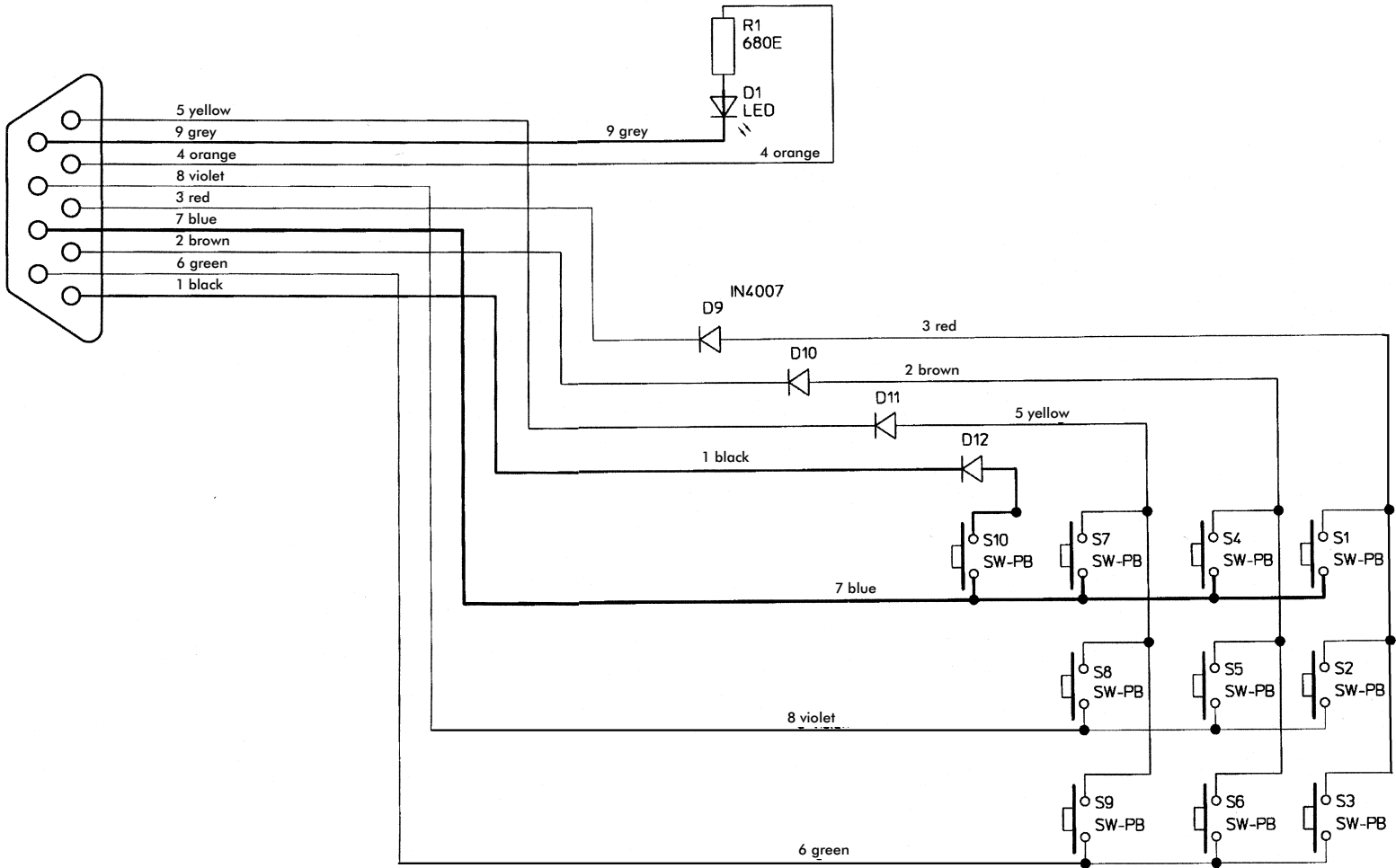
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### Product: 140100

Item Number	Designation
00094554	Mushroom stopper rubber, light-coloured
00015172	Padding for leg support, PU foam
00094040	Handwheel, oval M10 x 20
02003100	Caps for hexagon socket head screws, black
02006542	Foot section motor
02003834	Foot section cover
02002619	Slide strips for lateral sides of foot section
02002621	Slide strips for front of foot section
02008666	Slide strips for rear of foot section
00086122	Single handle, foam material
00094146	Cap cover 8,5 mm diameter, black
02002314	Motor for back section adjustment
02002315	Motor for seat section adjustment
02004731	Padding for main section
02008667	Padding for foot section
02006562	Castor for foot section, electrically conductive
02009356	Castor for foot section
02010085	End position switch for foot section

# Circuit diagrams

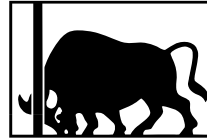




Tastenzahl von 1-10  
wählbar  
durch Bestückung







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