

INSTRUCTIONS FOR USE

Minstrel



WARNING

To avoid injury, always read this Instructions for Use and accompanied documents before using the product.



Mandatory to read the Instructions for Use

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Foreword

Thank you for purchasing your Arjo equipment.

Your *Minstrel* mobile passive hoist is part of a series of quality products that have been specially designed for use in hospitals, care establishments and other health care environments.

We do our utmost to satisfy your requirements and to provide the best possible aids. We also provide excellent training facilities, so that your staff can make optimal use of the facilities offered by each Arjo aid.

Should you have any questions about operating or maintaining your Arjo aid, please contact Arjo.

Read this user manual carefully!

Carefully read this entire user manual before using the *Minstrel* mobile hoist.

The information is essential not only for correct use and maintenance, but also for the optimal protection and performance of the aid. Part of the information in this user manual is important for your own safety and that of the patient. Therefore, read the text carefully in order to avoid possible injury. In order to prevent injury as a result of using unsuitable parts, Arjo recommends using only original Arjo parts designed specifically for the purpose on aids, equipment and accessories supplied by Arjo.

Unauthorized modifications to Arjo aids and accessories can be detrimental to their safety. Arjo is not liable for accidents, incidents or the insufficient performance of aids as a result of unauthorized modifications to its aids, products and accessories.

Serious incident

If a serious incident occurs in relation to this medical device, affecting the user, or the patient then the user or patient should report the serious incident to the medical device manufacturer or the distributor. In the European Union, the user should also report the serious incident to the Competent Authority in the member state where they are located.

Service and support




A qualified Arjo service technician must carry out maintenance on your *Minstrel* every year in order to guarantee its safety and day-to-day working (see the chapter “Care and maintenance”).

Contact Arjo for more information. We offer extensive support and service programmes. These guarantee your aid's safety, reliability and value in the long term.

Contact Arjo for spares. The service department has all the parts you need in stock.

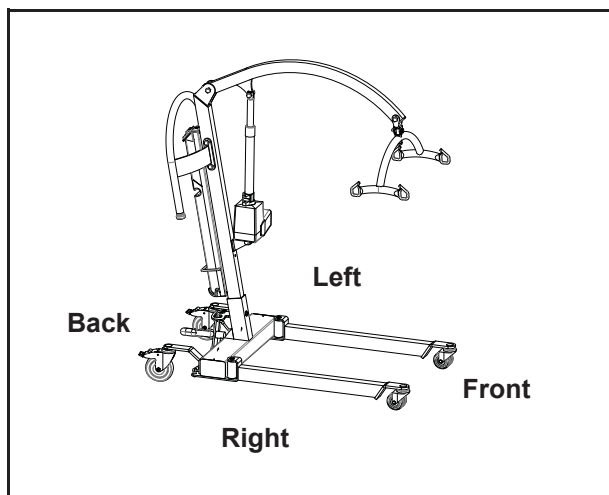
The number to call for more information can be found on the last page of this user manual.

Definitions and symbols used in this manual:

	WARNING Means: failure to follow these instructions may result in injury to yourself or to others.
	CAUTION Means: failure to follow these instructions may cause to damage to the product(s).
	Means: The manufacturer's name and address are shown next to this symbol.

All references to 'the patient' in this manual refer to the person who is being lifted with the *Minstrel*. References to 'the caregiver' refer to the person who is operating the *Minstrel*.

All references to the left-hand and right-hand sides of the hoist in this user manual are as seen from the caregiver's position behind the *Minstrel* (see illustration).



Safety instructions



READ BEFORE USE

Use the *Minstrel* in accordance with these safety instructions. Every person who uses this aid must have read and understood the instructions in this user manual. Contact Arjo in the event of anything not being clear.

Intended use

The *Minstrel* is a mobile passive hoist. It is intended for use on horizontal floors in hospitals, nursing and care homes and at home.

Arjo has designed a mobility guide to show which patients may be lifted using an Arjo *Minstrel*.

According to the mobility guide, the following patients may be lifted with the *Minstrel*:

You may lift Doris (D), who:

- Is confined to a wheelchair;
- Cannot support herself at all;
- Cannot stand without assistance and cannot support her own weight even partially;
- Depends on the caregiver in most situations.

You may lift Emma (E), who:

- Is a passive patient;
- Is almost totally bedridden;
- Is often stiff or has stiff joints;
- Is totally dependent on the caregiver.

WARNING



A clinical assessment by a qualified caregiver or therapist will show whether the patient can be lifted using the *Minstrel*. Patients with curvature of the spine, patients with muscle spasms and some other patients may not be lifted using the *Minstrel*. This is to prevent the patients being injured.

If patients fall into these categories, we recommend using a different hoist or a different system.

The *Minstrel* may only be used by a qualified caregiver in accordance with the guidelines in this user manual and maintenance instructions.

Transfers with the *Minstrel* are made indoors in the patient's room, in communal areas or in a bathroom. The aid is not intended for use in a shower or outdoors.

The scales (if fitted) have been designed only for weighing patients.

WARNING



Avoid loading the *Minstrel* above its safe working load (190 kg) or that of the sling. The lowest safe working load shown on the product (the *Minstrel* or the sling) applies.

CAUTION



Although manufactured to a high standard, the *Minstrel* should not be left for extended periods in humid or wet areas.

Never spray the *Minstrel* or its accessories (except for slings) with water.

The *Minstrel* is intended for use with 4-point spreader bar and with Arjo slings with attachment loops (see page 10 for a description of the parts of a sling).

Use the *Minstrel* only for the purposes specified in this user manual. Any other use is prohibited.

We recommend that care establishments set up standard assessment procedures.

Operational life

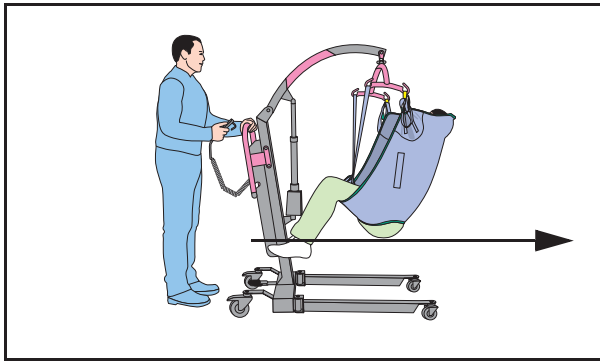
Unless stated otherwise, the expected operational life of the *Minstrel* is ten (10) years, as long as the required preventive maintenance is carried out in accordance with the care and maintenance instructions in this user manual. The *Minstrel* will not be suitable for use if it is damaged.

Modifications or the use of non-original parts will have a detrimental effect on the safety of the aid, the patient or the caregiver.

Safety instructions

Always obey the following instructions in order to prevent injury:

- The aid must only be used by properly-trained caregivers.
- The patient must never be left alone.
- The patient must not be lifted for too long with the *Minstrel* because this can have a detrimental effect on the circulation of the blood in his / her legs.
- Bring the *Minstrel* to a safe height, a little higher than chair seat, before moving the patient.
- Make sure before moving the patient that his / her legs are clear of the floor and are at a safe distance from the parts of the hoist.
- Move the *Minstrel* carefully, especially in narrow passageways and across rough surfaces.
- Move the *Minstrel* only when its chassis legs are in a parallel (closed) position.
- Moving is always in the direction shown in the illustration below.



- Check that the castors and the brakes work smoothly.
- Check that the brakes on the bed's wheels are pushed in when transferring a patient between the bed and the *Minstrel*.
- The hoist must not be used on a sloping surface.

Slings

The *Minstrel* is intended for use with Arjo slings with attachment loops. Use only the slings supplied by Arjo that are specified in this user manual.

For detailed information about the slings and their use in combination with the hoist, see the instructions supplied with the slings and the chapter "Using your *Minstrel*" in this user manual.

CAUTION



Before using a sling, always read the "Instructions for using your sling" which is supplied with the sling.

Safety instructions for the battery charger

- The battery charger has been developed for use in dry rooms with a normal relative humidity.
- Never expose the battery charger to water or humidity.
- The battery charger must not be covered.

CAUTION



Use only Arjo battery charger TGT.232 or NDA8200 for charging *Minstrel* batteries. Using other types can lead to short-circuiting of the battery.

Safety instructions for the battery

- The TGT.232 charger is supplied with the *Minstrel*.
- Never charge the battery in a vacuum container.
- Take care not to drop the battery.
- Never place batteries near a heat source or a naked flame.
- Avoid short circuiting.
- Never store batteries at temperatures above 30°C.
- Never crush, drill into, open or dismantle batteries or expose them to other mechanical influences.
- Should the battery burst and its contents come into contact with the skin or clothing, immediately rinse the affected item with water. If the contents come into contact with the eyes, rinse immediately with plenty of water and seek medical attention.
- Inhaling the contents of the battery can cause breathing problems.
- Contact your local authority for the best way of recycling the battery.
- Check the labels on the battery.

CAUTION



Use only Arjo battery *NDA0100-20* with the *Minstrel*. Using other types of batteries can cause damage to the battery, the *Minstrel* or the battery charger.

WARNING



Do not connect or disconnect batteries in the vicinity of flammable gases. This could cause a spark, which could ignite the gases.

Preparation

Actions before using it for the first time

1. Inspect the packaging for damage. Inform Arjo if the product appears to be damaged.
2. Remove the packaging in the following way:
 - Remove the stapled box and / or plastic bag;
 - Remove the two plastic straps and the protective foam around the legs of the hoist;
 - Next, remove the two straps and the protective foam around the chassis;
 - Carefully take the hoist off the pallet.
3. The packaging must be recycled in accordance with local regulations.
4. Check that all the parts of the product have been supplied. Check them against the description in this user manual.

WARNING



Do not use the product if a part is missing or damaged!

5. Unpack the battery charger. Take an adaptor that is suitable for your electrical socket and connect it in the correct way. Read “Battery and battery charger” on page 15 of this user manual.
6. Charge each battery until the charger indicates full charge
7. Clean the product in accordance with the instructions on page 17 of this user manual.
8. Find a well-ventilated dry room in which you can store the hoist.
9. Indicate a place where the user manual can be kept, so that it is always available to users.
10. Should you have any questions, contact Arjo for support and service. The telephone numbers can be found on the last page of this user manual.

Actions before every use

Check that all parts of the hoist are present and are in the correct places.

Compare your results with the “Parts” on page 7 of this user manual.

Make sure the preventive maintenance in the “Preventive maintenance schedule” on page 18 has been carried out before each use.

Make sure you have fully read and understood this user manual before you start using the *Minstrel*.

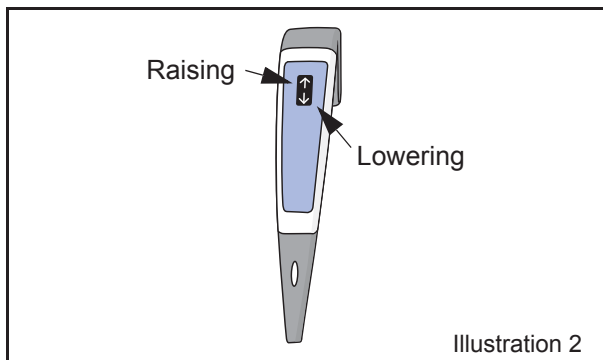
Product description / function

Remote control: The remote control is used for raising and lowering the jib. Arrows on the buttons indicate the associated directions (see Illustration 2). If pressure is released from any button during use, the powered movement will stop immediately. The remote control is attached to the hoist by an extended cable and has a hook (see Illustration 2) to facilitate hanging it onto the hoist.

CAUTION

Do not drop the remote control into water. This will cause a short circuit.

Do not use the remote control to pull the hoist. This will damage the remote control.



Additional control panel: As an alternative to the remote control, the jib can be raised and lowered by pressing the buttons on the back of the mast. The functions are shown on the buttons (see Illustration 1, Item 10).

Pressing the appropriate button starts the movement. The movement stops immediately when the button is released. These buttons even work if the remote control cable has been unplugged.

Emergency Stop button (red): If, in an emergency, you have to immediately stop any powered movement (other than by releasing pressure on the button on the handset) press the emergency stop button situated on the right hand side of the electronics / battery compartment (Illustration 1, Item 20).

Once the Emergency Stop button has been operated, it must be reset by turning the red cap until it pops out. Now the *Minstrel* can be operated again.

Power On / Reset button (green): Press this button to turn on power to the *Minstrel*.

Power Off button (red): Press this button to turn off power to the *Minstrel*.

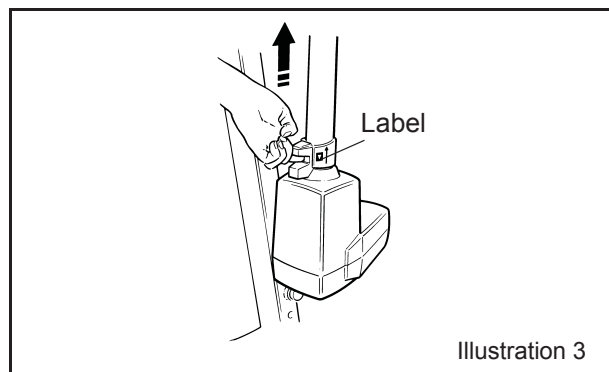
Overload protection: This operates automatically, overload will be shown on the LCD and the buzzer will beep continuously. Also, the *Minstrel* movement will stop if you overload, for example by lifting a patient who is heavier than the *Minstrel*'s safe working load.

If the overload protection has occurred, unlock it by releasing the button on the remote control (or the button on the control panel at the back of the mast). The patient can then be lowered by pressing the Lower button on the remote control or the control panel. Remove the patient from the hoist.

Emergency Lowering button in the event of system failure: Use this in the event of power failure. If the hoist cannot be lowered using the remote control or the control panel and the patient is still in the sling, use this emergency button on the actuator (see Item 11 in Illustration 1, and Illustration 3) to lower the jib.

The label on the side of the emergency button shows the operation (see Illustration 3). Operation is as follows: pull the slide control upwards until the patient's own weight makes the mast lower slowly. Release the slide control to stop lowering.

Only use this function in the event of system failure and not under normal circumstances.



WARNING

Always place a chair or other suitable support under the patient before lowering him / her when using the lowering button.

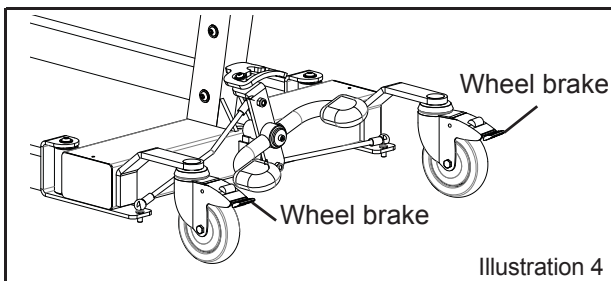
Product description / function

Battery Discharge Indicator: There is a small battery symbol on the bottom of the LCD. The battery symbol shows the level of battery charge.

Hour /Cycle Meter: On the top of the LCD it shows the total duration of the lift and lowering operation (in hours). The LCD can also show the number of cycles by simultaneously pressing the up and down button.

OverHeat Protection: The buzzer will beep twice every 15s and “OverHeat” will display on the LCD. This happens when the caregiver exceeds the duty cycle for the lift actuator (2 min /18 min). When it starts beeping, lifting and lowering is still possible. This function protects the actuator against damage.

Braked castors: The chassis rear castors have brakes that can be foot operated (see Illustration 4) to keep the *Minstrel* in position.

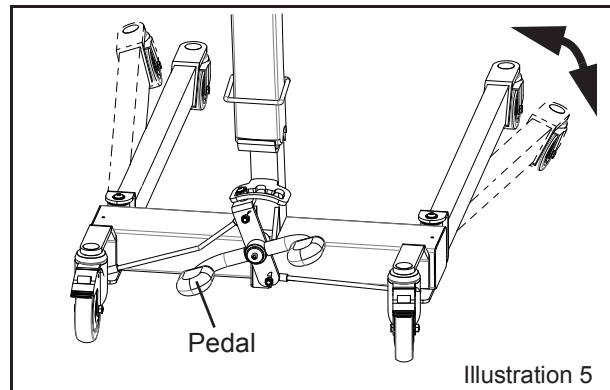


Adjustable chassis legs: The hoist's chassis legs can be opened or closed as required to avoid obstructions such as chair legs and so forth. The chassis legs can be operated electrically (see Illustration 6) or by pedals (see Illustration 5).

a. Adjusting chassis legs with a pedal

When pedals are fitted to a *Minstrel*, they open and close the chassis legs (see Illustration 5). Pressing the right pedal opens the legs, and pressing the left pedal closes them. The chassis legs can be set in three positions: parallel, half open, and fully open.

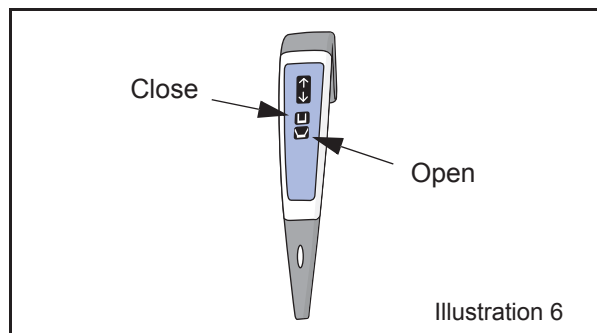
Always move the hoist with the chassis legs in the closed position. Manoeuvring, especially through doorways, is easier with the legs closed.



b. Electrically-adjustable chassis legs

On a *Minstrel* with electrically-adjustable chassis legs, the legs can be moved horizontally to any position between parallel and fully open.

Press the Open button on the remote control (see Illustration 6). Keep the button depressed until the desired width has been achieved. Press the Close button to close the legs. The movement stops as soon as the button is released.



WARNING



Make sure nobody is in the way when the chassis legs are opening or closing.

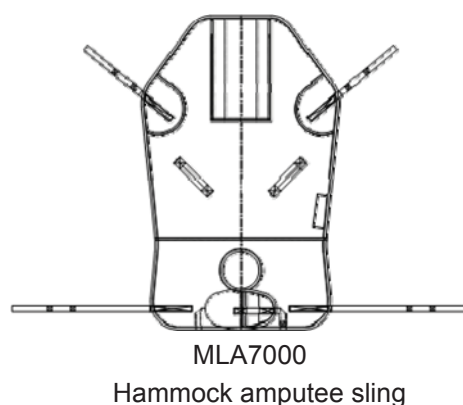
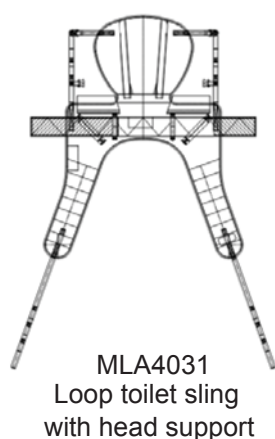
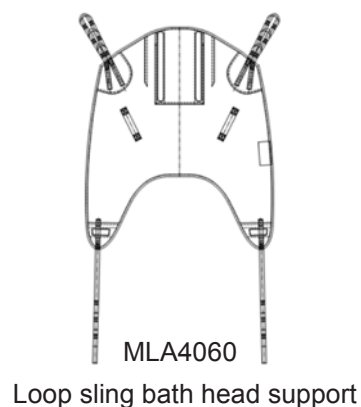
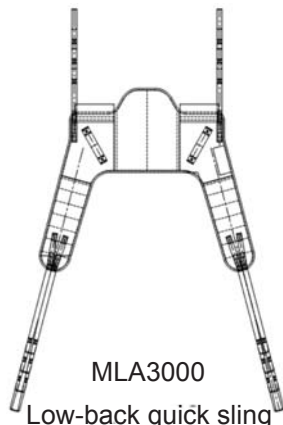
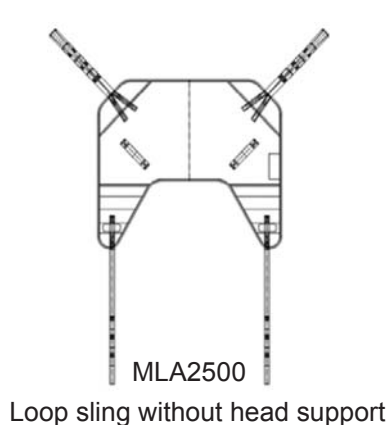
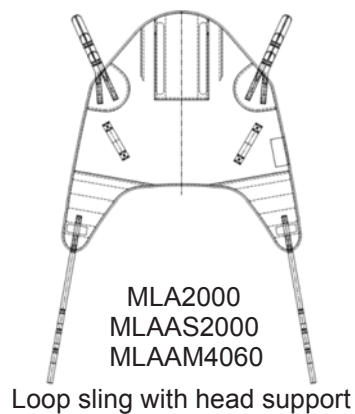
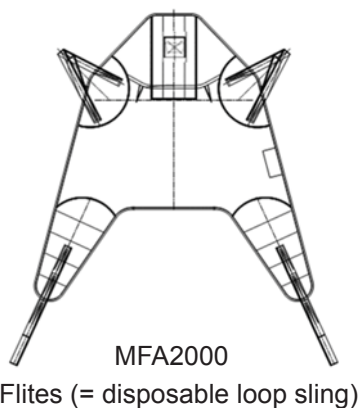
Scale (Optional): To use the scale, if available, refer to the *Scale IFU*.

Product description / function

Slings

These are Arjo slings that can be used with the Minstrel.

SIZE	XXS	TEAL GREEN	XS	BROWN	S	RED	M	YELLOW	L	GREEN	XL	BLUE
	0 - 25kg		25 - 35kg		35 - 60kg		55 - 75kg		70 - 130kg		120 - 190kg	
	0 - 55lbs		55 - 77lbs		77 - 132lbs		121 - 165lbs		154 - 286lbs		264 - 418lbs	



Our materials



Using your *Minstrel* & slings

Preparation

CAUTION

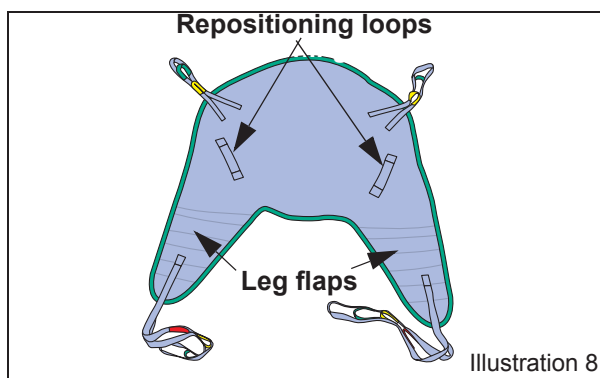
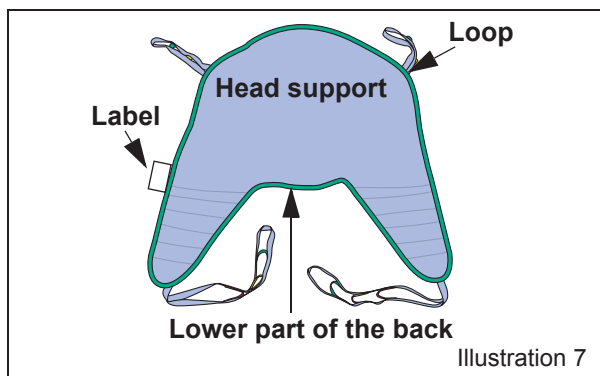
Take the battery out of the packaging and charge it until the charger indicates full charge.

Disconnect the power cable when the battery is fully charged. Remove the battery from the charger and insert it into the battery holder at the back of the mast (see Illustration 1). The electrical connections will be made automatically.

Make sure the green button (on the control panel above the battery, see Item 10 in Illustration 1) is pushed in.

Make sure a sling is ready for use.

There is a summary of sling sizes on the round label on the *Minstrel*'s spreader bar (see Item 9 in Illustration 28 on page 20).



General warnings to be read before approaching the patient

Tell the patient exactly what is going to happen. Choose the correct size of sling in advance. Always approach the patient from the front if possible.

Always keep an eye on the patient when moving him / her. Never leave the patient unattended.

Be careful as you approach the patient with the hoist. Keep a safe distance between the patient and the parts of the hoist.

Always check whether the loops used to attach the sling are in position and under tension both before and during lifting. This is to prevent the loops from coming loose when the patient is being lifted.

Make sure the patient's arms and legs are always inside the sling while he / she is being moved (except when transferring with a toilet sling).

It is important for the patient's safety that he / she does not hold onto the spreader bar.

Never allow the spreader bar to be lowered onto the patient or an obstruction.

Move the *Minstrel* away from the patient when you have detached the sling from it. Next, remove the sling from under the patient.

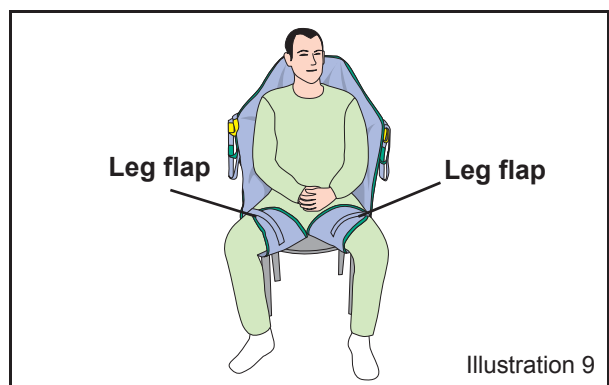
Open the chassis legs, if necessary, to manoeuvre around a chair or wheelchair, or to avoid hitting bed legs or other obstructions.

The chosen combination of leg and shoulder loops affects the patient's position.

Icon	Shoulders	Legs
	Yellow	Cache blue
	Yellow	Yellow

Lifting from a chair

- Place the sling under the patient so that the coccyx is covered and the head support is behind the head. Pull the leg flaps under the thighs so that they emerge on the insides of the thighs (see Illustration 9).



- Make sure the sling is not folded or twisted under the patient.

Using your *Minstrel* & slings

3. Move the *Minstrel* up to the patient. Make sure the spreader bar is at or just below shoulder level and that the open part of the spreader bar points towards the patient (see Illustrations 10 & 11).
4. Position the *Minstrel* sufficiently close to the patient. Open the chassis legs, if necessary, to make this easier (see Illustration 10). The patient's feet may have to be placed on or over the chassis.

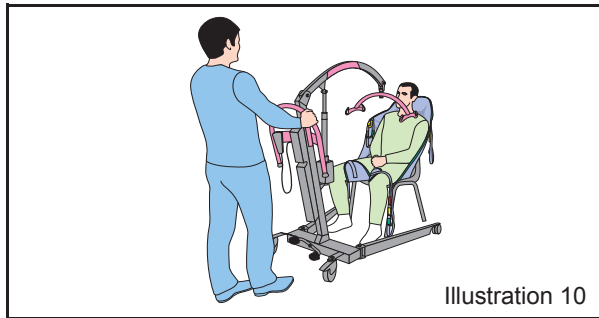


Illustration 10

5. Once the *Minstrel* is in the correct position, attach the shoulder strap loops to the attachment points on the spreader bar. Use the loops that best match the patient's build. Make sure the left and right shoulder loops are of the same colour. The spreader bar can be tilted backwards and forwards to enable easier sling attachment (see Illustration 11).

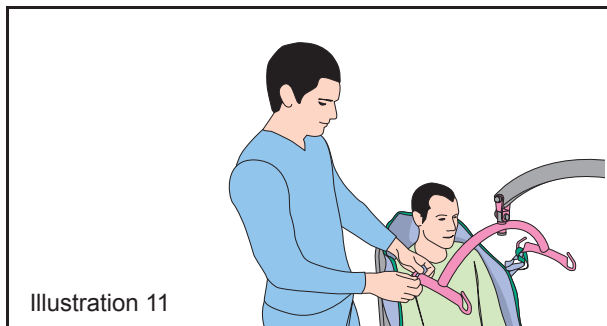


Illustration 11

6. Next, attach the leg loops crosswise to the attachment points on the spreader bar. This means that the loops are attached to the opposite hooks. When attaching crosswise, pass one loop through the other (see Illustration 12a). Use the loops that best match the patient's build (see Illustration 12b). The left and right leg loops used must be of the same colour.

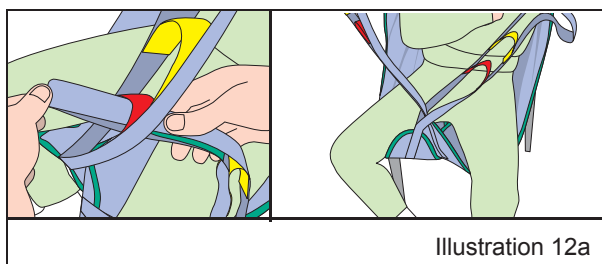


Illustration 12a

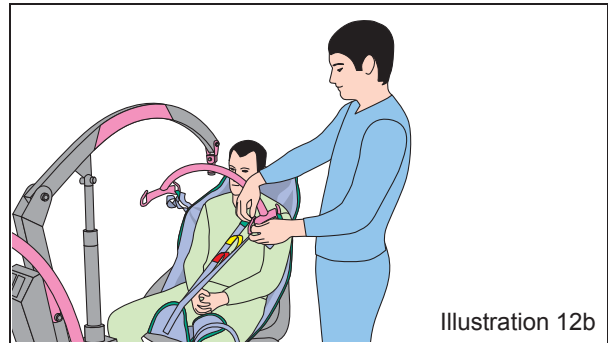


Illustration 12b

To ensure a good personal hygiene and care of the patient's personal areas, the sling can be fitted in a non-crosswise manner (see Illustration 13) by sliding the left leg flap underneath the left leg and attaching its loop to the left hook. Vice versa for the right side.

We advise to use loop combination yellow/yellow, this way helping the patient into a recumbent position and giving the caregiver proper access to the patient's personal areas.

Note that this position is less comfortable for the patient. Therefore, it is advised to limit this action to a minimum.



Illustration 13

7. Use the remote control to lift the patient. Move the hoist away from the chair.
8. Continue to lift the patient until his / her feet are approximately 10 centimetres above the chassis legs. Put the patient in a comfortable position. Before moving the hoist, the patient must be turned to face the caregiver (see Illustration 14).

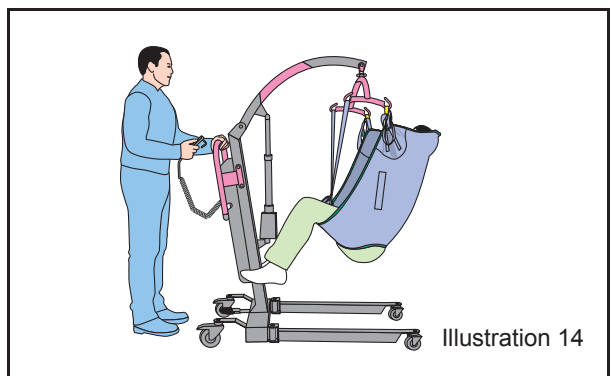


Illustration 14

Using your *Minstrel* & slings

Putting back onto a chair

1. Make sure the patient is sitting as upright as possible in the sling when lowering him / her onto a chair. You can use the repositioning loops on the outside of the sling for this, if fitted (see Illustration 15).
2. When returning to a chair, make sure the lift legs are positioned around the legs/wheels of the chair. To position the resident over the chair, use the lift handles, do NOT pull the sling. The resident suspended in sling should always remain in the centre of gravity. Use the hand control to lower the resident. (see bottom Illustration 15)

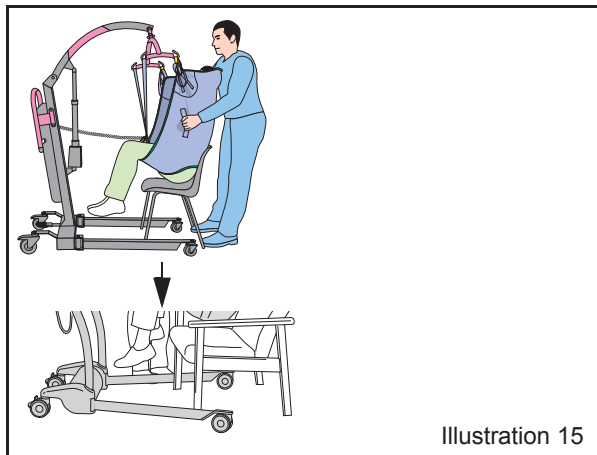


Illustration 15

3. Make sure the patient is fully supported by the chair after lowering.

Lifting from a bed

WARNING



Before lifting a patient from a bed, make sure there is sufficient room under the bed for the *Minstrel's* chassis legs.

1. Raise the bed's first guard rail. Roll the patient away from you and place the sling, folded double, behind his / her back. Place the sling so that when the patient is rolled back, the middle of his / her back is on the fold. Check that the seat portion of the sling is at the height of the patient's coccyx and that the sling's head support is under the patient's head (see Illustration 16).

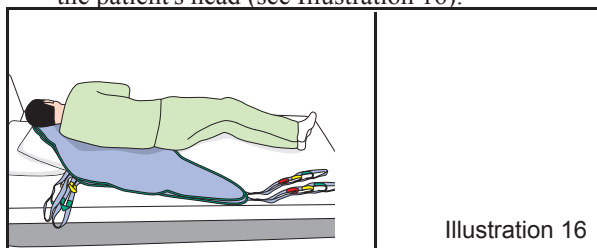


Illustration 16

2. Now turn the patient onto his / her other side, until the folded part of the sling can be pulled under

him / her. This should result in the patient lying in the middle of the sling (see Illustration 17).

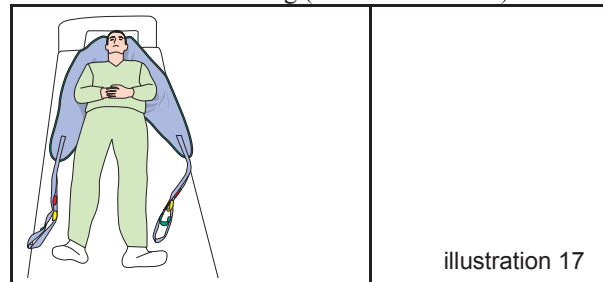


Illustration 17

You can also sit the patient up and then put him / her in the sling. See "Lifting from a chair".

3. Approach the bed with the *Minstrel* so that the spreader bar is at the height of the patient's chest. Turn the spreader bar so that its open part is towards the patient's head (see Illustration 18).



Illustration 18

4. Make sure the lift is positioned perpendicular to the bed. (see Illustration 19)

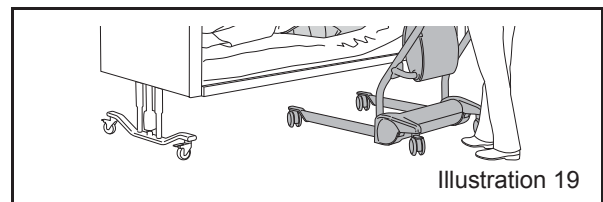


Illustration 19

5. Use the remote control to lower the spreader bar until the shoulder attachment loops can be attached to the hooks nearest the patient's head (see Illustration 20). Use the loops that best match the patient's build. Make sure the left and right shoulder loops are of the same colour.

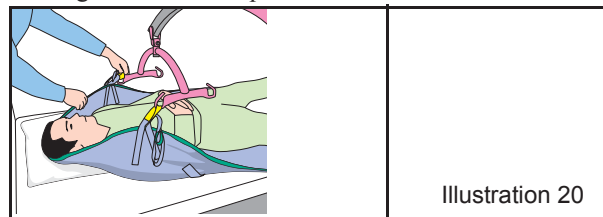


Illustration 20

6. Slide the sling's leg flaps under the patient's upper legs and attach the loops on both of them crosswise to the spreader bar. This means that the loops are attached to the opposite hooks. When attaching crosswise, pass one loop through the other. Use the loops that best match the patient's build (see Illustrations 21 & 22). Make sure the left and right leg loops are of the same colour.

Using your *Minstrel* & slings



Illustration 21

Illustration 22

- Use the remote control to lift the patient. The resident suspended in sling should always remain in the centre of gravity. Move the hoist away from the bed (see Illustration 22).
- Lift the patient until his / her feet are approximately 10 centimetres above the chassis legs. Put the patient in a comfortable position. Before moving, the patient must be turned to face the caregiver (see Illustration 23).

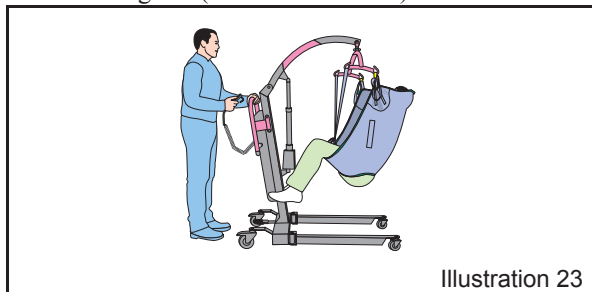


Illustration 23

Putting back onto a bed

When returning to a bed, make sure the lift is positioned perpendicular to the bed.

To position the resident over the bed, use the lift handles, do NOT pull the sling. The resident suspended in sling should always remain in the centre of gravity. Use the hand control to lower the resident. (see Illustration 23)

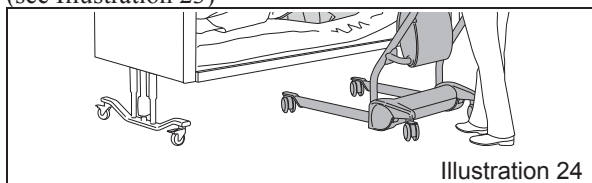


Illustration 24

WARNING



Only detach the sling's leg loops once the patient's body is fully supported by the bed. The shoulder loops are then detached.

Lifting a patient from the floor

This procedure requires two caregivers.

- Put a pillow under the patient's head to make him / her sufficiently comfortable (see Illustration 25).

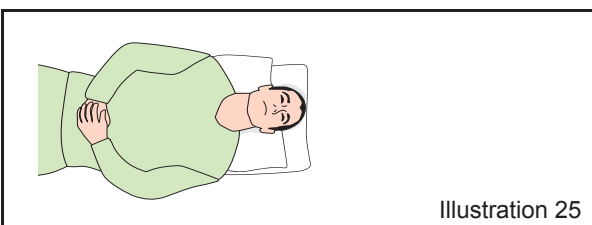


Illustration 25

- Put the sling around the patient. See the chapters "Lifting from a chair" and "Lifting from a bed" (see Illustration 26).

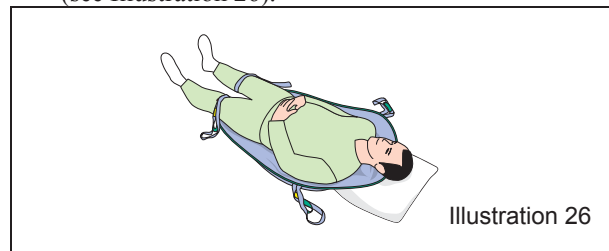


Illustration 26

- Approach the patient with the open side of the chassis. Open the chassis legs if necessary. Apply the hoist's brakes.
- Attach the shoulder loops. The easiest way is to use the longest loops (see Illustration 27). Use the loops that best match the patient's build. Make sure the left and right shoulder loops are of the same colour.

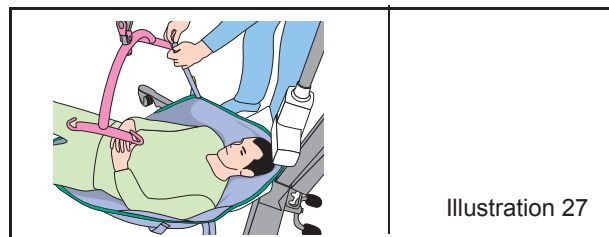


Illustration 27

- Slide the sling's leg flaps under the patient's upper legs and attach the loops on both of them crosswise to the spreader bar. This means that the loops are attached to the opposite hooks. When attaching crosswise, pass one loop through the other. Use the loops that best match the patient's build. Make sure the left and right leg loops are of the same colour (see Illustration 28).

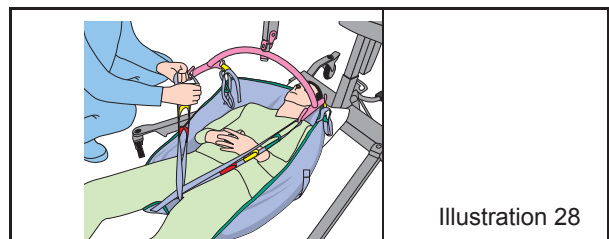


Illustration 28

- Next, lift the patient carefully. It is reassuring for the patient if you support his / her head. Check when lifting that the patient's legs do not become caught underneath the chassis.
- Lift the patient until his / her feet are 10 centimetres above the chassis legs. Put the patient in a comfortable position. Before moving, the patient must be turned to face the caregiver (see Illustration 23).
- Release the hoist's brakes.

Battery and battery charger

Battery charger Installation

- The battery charger has been designed for use in dry environments and must not be installed in bathrooms or other wet rooms.
- Attach the battery holder in a suitable place on the wall, within reach of the ordinary electrical socket to which it will be connected.
- Use suitable fixing screws (not supplied) of sufficient load-bearing capacity for the wall.
- The battery charger must not be used in patients' living areas.
- Use Arjo battery charger TGT.232 or NDA8200 for charging the *Minstrel* batteries.
- The charger is ready for use as soon as it is plugged into the electrical socket.

A recommended place for charging batteries is the hoist storage area that satisfies the aforementioned requirements.

Charging the battery

General

- Switch off the mains power to the battery charger before connecting the battery to it.
- Use only Arjo battery NDA0100-20 on the *Minstrel*.
- The *Minstrel* has a Battery Discharged indicator (bottom of the LCD) at the back of the battery holder (see Item 12 in Illustration 1).
- It is recommended that the battery be removed from the hoist and charged as soon as the battery charge indicator displays 3 filled segments of battery charge and the buzzer beeps once every 10s.
- Recharging the battery before it reaches a low state of charge or is totally discharged will prolong its life.
- Make sure there is always a charged battery available, so that the *Minstrel* is always ready for use. Do this by having a second charged battery ready while the other is in use.
- Additional batteries can be ordered from Arjo.
- We recommend having a charged battery available at the beginning of every shift.
- We recommend putting a battery that is not being used in the battery charger. There will be no danger of the battery being overcharged.
- A discharged battery must be left to charge until the charger indicates full charge.
- The battery life is variable (2-5 years) and mainly depends on proper charging practices. To extend the battery life, the batteries must be charged at regular interval until the charger indicates full charge.
- It is recommended to charge batteries until the charger indicates full charge when they are delivered or after a long storage period, as they spontaneously discharge over time. This will extend the battery life.

Charging procedure

- When the Battery Discharged Indicator on the *Minstrel* displays 3 filled segments on the battery symbol and the buzzer beeps once every 10s, complete the lifting cycle and move the hoist to a place where you can remove the battery.
- Grasp the battery by the handle and press the release button to remove it (see Item 17 in Illustration 1).
- Place the battery in the battery charger.
- Connect the charger to the electrical socket. Switch on the mains supply.
- The orange lamp on the charger will light up if the battery is partially or fully discharged. The light turns green when the battery is fully charged.
- Discharged batteries take approximately eight hours to fully recharge.

WARNING



Hold the battery firmly when taking it out or placing it back in the hoist or the charger so that it does not fall and become damaged or cause personal injury.

- Always switch the mains supply off before taking the battery out of the charger. Switch the mains supply off when the battery is fully charged.
- Remove the battery from the charger and place it back in the *Minstrel*.
- When disconnecting the battery, pull the plug, not the cable. The cable can become worn or damaged.

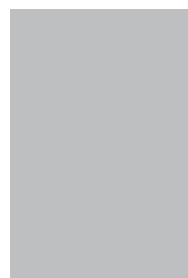


Illustration 29

- Ensure that the green Power On/Reset button is pressed in.
- The *Minstrel* is now ready for use.

CAUTION



Never open the battery charger casing in the event of a failure.

Have repairs carried out by Arjo qualified service

Battery and battery charger

CAUTION

After use, turn off the *Minstrel* by pressing the red Power Off button. This will reduce power consumption.



WARNING

Handle batteries carefully and do not crush, open, dismantle or damage them.

Should the battery casing become cracked and electrolyte come into contact with the skin or clothing, rinse immediately with plenty of water.

Should the electrolyte come into contact with the eyes, rinse immediately with plenty of water and seek medical attention.

To avoid overheating, the battery charger must not be covered while in use.

Smoking or naked flames in the vicinity of the battery are prohibited.

Protect the battery charger against dust.

"Pb" on the battery label indicates lead. As the battery contains lead, it cannot be disposed of in the usual way. It must be handed in for reuse.

Contact the appropriate local authority for advice when disposing of batteries.

Storing batteries

- Batteries are supplied already charged. It is nevertheless recommended to charge batteries when they are delivered as they spontaneously discharge over time. This will extend the life of the batteries.
- Batteries discharge slowly when they are not used.
- Store the batteries you are not using in a cool place, not below 0°C and not above +25°C.
- A battery that is charged for the first time, or after a long storage period, must be charged until the charger indicates full charge.

CAUTION



Do not charge batteries in a sealed container or cabinet.

Do not place batteries near a fire or throw them into it.

Never short circuit a battery.

Do not store batteries where the temperature could exceed 60°C.

Maintaining your *Minstrel* and slings

General maintenance and cleaning instructions for your *Minstrel*

For optimal results, use only Arjo disinfectants.

Should you have any questions about cleaning / disinfecting the aids or if you want to order disinfectants, contact Arjo.

Unless specified otherwise, you must follow the procedures for cleaning, maintenance and inspection in this chapter each time before using the aid.

We recommend that Arjo patient hoists, accessories and slings be cleaned and / or disinfected regularly. If the slings, hoists or equipment are dirty or could be contaminated, follow these procedures for cleaning and / or disinfecting before using the equipment again.

WARNING



Always wear protective gloves and safety eye wear when using concentrated cleaning products or disinfectants. Avoid contact with the eyes or skin. Rinse the eyes or skin with plenty of water if they do come into contact with the products. Seek medical advice if irritation occurs.

Do not use phenol, lemon or paraffin-based solvents, trichloroethylene, chlorine, hydrogen peroxide or similar cleaning products as they could damage plastics. Sterilising using steam or ethylene oxide is not permitted either.

Use cleaning and disinfection products in accordance with the manufacturer's instructions.

Note: Product cannot be maintained and serviced while in use with the patient.

Remove the slings from the hoist before cleaning it.

Use a spray bottle with disinfectant. Spray the *Minstrel* with disinfectant at the correct dilution. Use a correctly-labelled spray bottle for the disinfectant that has been diluted according to the instructions on the packaging.

Use a sponge, a cloth or a disposable cloth, and clean all the parts of the hoist.

Make sure that the contact time during cleaning or disinfecting is in accordance with the instructions or local regulations.

Dry all parts of the hoist with a cloth.

Maintenance recommendations

Arjo recommends that you maintain the *Minstrel* regularly. See the Arjo "Preventive maintenance schedule" on page 18.

Maintenance recommendations for slings

CAUTION



Slings must be checked before and after use with a patient and, if necessary, washed according to the instructions on the sling.

For cleaning purposes, slings should not be classified as linen but as accessories to a patient hoist, i.e. as medical equipment. Clean and disinfect slings only in accordance with the manufacturer's instructions.

The maximum washing and drying temperatures are shown on the label on the sling. Use normal detergents. Do not iron slings.

WARNING



Avoid mechanical pressure such as rolling or pressing during the washing and drying procedure. Parts that are vitally necessary for safety and the comfortable working of the sling could otherwise be damaged.

Before using a sling or Flites (Arjo disposable slings), always read the user manual for the sling or Flites. Also read this user manual thoroughly.


Sling storage

Store slings away from direct sunlight where they are not subjected to unnecessary strain or pressure, or excessive heat or humidity. Keep slings away from contact with sharp objects, corrosive products or other possible causes of damage.

Maintaining your *Minstrel* and slings

Preventive maintenance schedule

The *Minstrel* is subject to wear and tear, and the following maintenance actions must be performed to ensure that it remains within its original manufacturing specifications.

WARNING
 <p>The points on this checklist are the minimum the manufacturer recommends. It may be necessary to carry out inspections more frequently if it is used more intensively or is exposed to a demanding environment. If you continue to use it without carrying out periodical inspections or after a defect has been found, you will seriously endanger your safety and that of the patient. Local regulations and standards may require more inspections than the manufacturer's. Preventive maintenance, as detailed in this user manual, will prevent accidents.</p>

Tasks / checks for the caregiver	Before each use	Daily	Weekly	Annually	Every 3 years
Examine the sling, safety straps and attachment loops for damage or fraying. Read the documentation for the slings.	X				
Disinfect the sling if necessary after every use by a patient.	X				
Examine the battery charger for loose connectors, damaged wiring and damage to the casing.	X				
Make sure the battery is charged before use.	X				
Disinfect the <i>Minstrel</i> if necessary after every use.	X				
Check the mobility of the hoist. Check that castors are securely attached to the chassis and that they can turn freely. Also check the contact surfaces of the castors. Replace where necessary.		X			
Examine all exposed parts, especially where they could come into contact with a patient's body. Make sure no cracks or sharp edges have developed that could cause injury or that have become unhygienic. Replace where necessary.		X			
Check the operation of the brakes. Replace where necessary.		X			
Check that all external fittings are secure and that all screws and nuts are tight.		X			
Check that all labels are firmly attached and are legible.		X			
To extend the battery life, the batteries must be charged until the charger indicates full charge.			X		
Check the condition of the remote control and its cable. If damaged, withdraw from use immediately and replace.			X		
Check whether the remote control and the additional operating switch on the front of the battery holder are working properly.			X		
Test the Emergency Stop function. All powered movement must stop immediately when the Emergency Stop button (red) is pressed. Unlock the Emergency Stop button by pressing the Restart button (green).			X		
Testing the System Failure Lower Override: Pull the System Failure Lower Override knob. The jib must lower under its own weight and stop when the knob is released.			X		
Open and close the chassis legs. Check they are fully working.			X		

Maintaining your *Minstrel* and slings

Preventive maintenance schedule

The work that is the caregiver's responsibility must be carried out by qualified staff in accordance with the instructions in this user manual.

Weekly

- Inspect the attachment of the spreader bar to the jib. Inspect the sling attachment points for damage. Check the spreader bar pivot point for any possible damage, such as protruding plastic, for example.
- Check the full range of hoist movement by raising and lowering it. Test the opening and closing of the chassis legs. All functions must operate as they should and without defects.

Annually

- Maintenance on the *Minstrel* must be carried out in accordance with the preventive maintenance schedule.

Have the following actions be carried out by qualified staff, who use the correct tools and know the applicable maintenance procedure. Failure to comply with these requirements may result in physical injury and / or an unsafe aid.

All work that is the caregiver's responsibility must be checked by a qualified Arjo technician when servicing is carried out.

Tasks / checks to be performed by qualified service technicians	Before each use	Daily	Weekly	Annually	Every 3 years
Check that the castor mounting pins are firmly attached to the chassis and the chassis legs.				X	
Check that all external fittings are secure and that all screws and nuts are tight.				X	
The M12 nut and bolt that attach the spreader bar to the scales do not have to be tightened. The nut and bolt fastening is held in place by a hair pin cotter.				X	
Inspect all major parts for corrosion and damage.				X	
Check all mechanical attachment points.				X	
Perform a maximum load test (local requirement).				X	
Check the operation of all motors.				X	
Check the moveable parts of the spreader bar.				X	
Check the operation of the Emergency Stop button.				X	
Check the wheels, replace if necessary.				X	
Perform a complete function test.				X	
Check the plastic sliding ring between the spreader bar and the bolt and replace it if necessary.					X

WARNING



If you have any doubts about the correct functioning of the *Minstrel*, withdraw it from use immediately and contact Arjo.

Labels

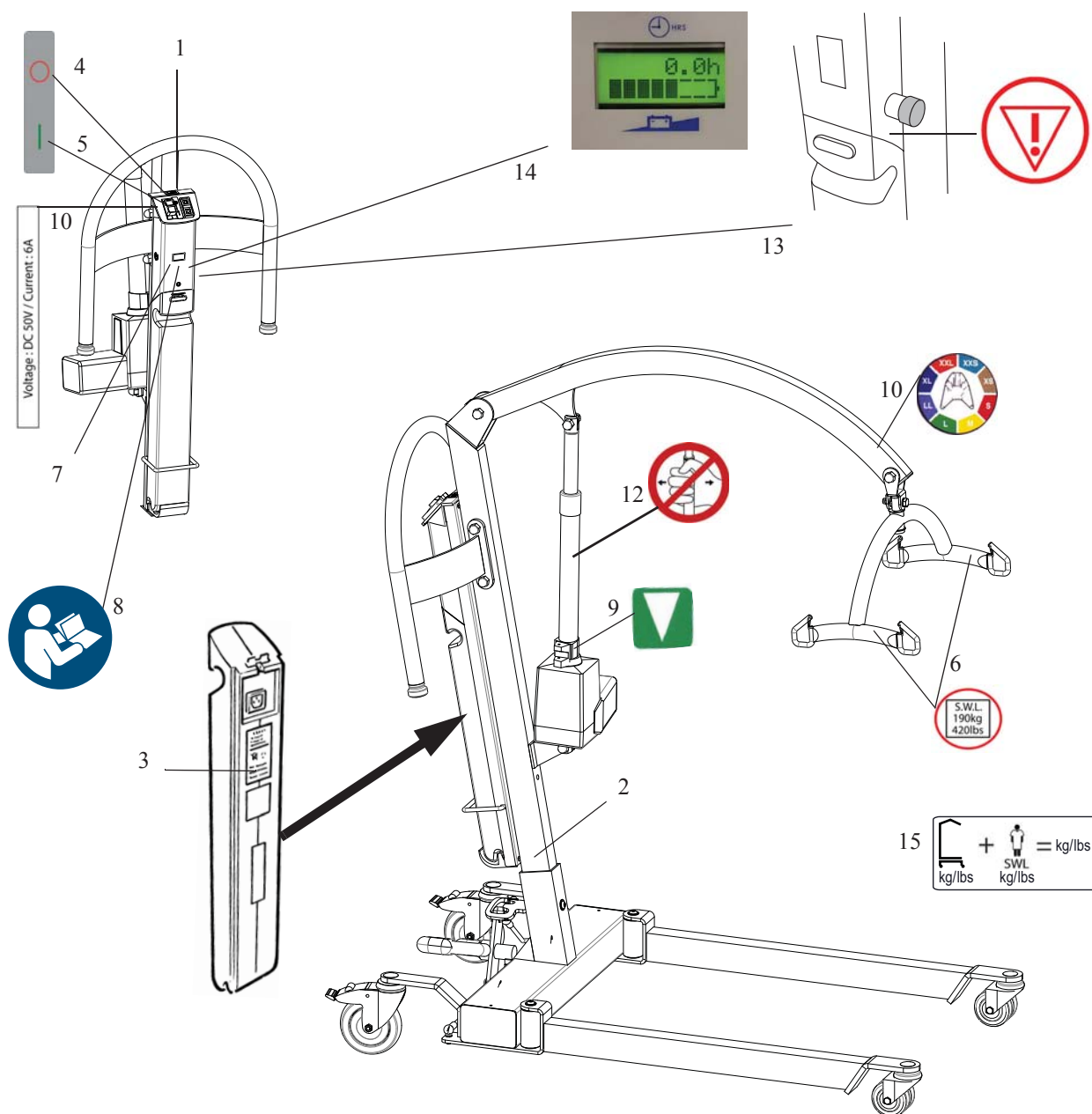





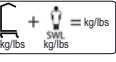



Illustration 30

1. Product name	8. Note: Read the user manual
2. Product Label Safe Working Load - 190 kg (420 lbs) and serial number	9. Button for Emergency Lowering function
3. Battery information	10. Sling sizes
4. Power Off button (red)	11. Type and rating
5. Power On/Reset button (green)	12. Sticker: Do not touch the actuator
6. Safe working load stickers	13. Emergency stop button label
7. Arjo logo	14. LCD - Battery Discharged Indicator and Hour/Cycle meter
	15. Maximum total weight of lift (lift + patient)

Labels

Symbol Explanation	
	Mandatory to read the Instructions for Use
	Separate electrical and electronic components for recycling in accordance with the European Directive 2012/19/EU (WEEE)
	Type B Applied part: protection against electrical shock in accordance with EN/IEC 60601-1.
	CE marking indicating conformity with European Community harmonised legislation Figures indicate Notified Body supervision.
	Indicates the product is a Medical Device according to EU Medical Device Regulation 2017/745
	Total mass of equipment including its safe working load.
	Name and address of the manufacturer

Technical specifications

Component weights

	kg (lbs)
<i>Minstrel</i> complete (with battery)	56.6 (124.8)
<i>Minstrel</i> complete with scale (with battery)	57.8 (127.4)

In normal use, the complete *Minstrel* can be divided into two parts:

Battery	3.80 (8.4)
<i>Minstrel</i> (without battery)	52.8 (116.4)
<i>Minstrel</i> with scale (without battery)	54 (119)

Maximum total weight of lift (lift + patient)	248 (548)
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Safe Working Load

<i>Minstrel</i>	190 (420)
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All slings - check the safe working load on the sling label

Electrical

Battery type	Rechargeable sealed lead battery
Battery part number	NDA0100
Battery capacity	24 V 4 Ah
Hoist - protection class - intrusion of moisture	IPX4
Hoist - protection class - protection against electric shock	Internal electrical device
Nominal hoist voltage	24 V
Fuse	6A (Thermal over-current circuit breaker)
Fuse - PCBA	20A
Fuse - battery	30A
Battery charger type	FW7318M/24
Battery charger manufacturer	Friwo Mobile Power GmbH
Battery charger power	100-240 V AC
Battery charger current type	AC
Battery charger power supply frequency	50-60 Hz
Battery charger current	1 A
Battery charger output voltage	24 V DC
Battery charger - protection class - intrusion of moisture	IP40
Battery charger - protection class - protection against electric shock	Class II double insulated
Battery Charger part number (country code in parentheses)	TGT.232 - (EU) TGT.232 - (GB) TGT.232 - (CH) TGT.232 - (US) TGT.232 - (AU)

Operating force of controls	< 5 N
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Medical equipment: Type B  protection against electrical shock in accordance with IEC 60601-1.

Arjo products / aids for moving patients meet the requirements of Electromagnetic Compatibility (EMC) as stated in Clause 12.5 of the Medical Devices Directive 93/42/EEC.

Conforms to IEC 60601-1:2012(ed.3.1), ANSI/AAMI ES60601-1:2005 / A2:2010, CAN/CSA-C22.2 No. 60601-1:08 and ISO 10535:2006.

	Duty cycle	Max. voltage	Max current
Mast motor	10% - (2 min/18 min)	24V	10.5A
V-chassis motor	10% - (2 min/18 min)	24V	2.2A

Technical specifications

Environment

Relative humidity / storage	80% at 20°C
Usage temperature range (ambient)	+5°C to +35°C
Optimum usage temperature range (ambient temperature)	+20°C to +25°C
Ambient temperature for transport and storage	-10°C to +45°C

Maximum sound level

In accordance with ISO 3746	53dB (dB re 1pW ± 3dB)
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Classified as a medical device, risk class 1, within the meaning of the Medical Device Directive 93/42/EEC.

Designed and manufactured in accordance with the requirements in Annex 1 to the Medical Device Directive 93/42/EEC.

Conforms to IEC 60601-1:2012(ed.3.1), ANSI/AAMI ES60601-1:2005 / A2:2010, CAN/CSA-C22.2 No. 60601-1:08 and ISO 10535:2006.

End of Life Disposal

- All batteries in the product must be recycled separately. Batteries are to be disposed in accordance with national or local regulations.
- Slings including stiffeners/stabilizers, padding material, any other textiles or polymers or plastic materials etc. should be sorted as combustible waste.
- Lift systems having electrical and electronic components or an electrical cord should be disassembled and recycled per Waste of Electrical and Electronic Equipment (WEEE) or in accordance with local or national regulation.
- Components that are primarily be made up of different kinds of metal (containing more than 90% metal by weight) for example sling bars, rails, upright supports, etc., should be recycled as metals.

Technical specifications

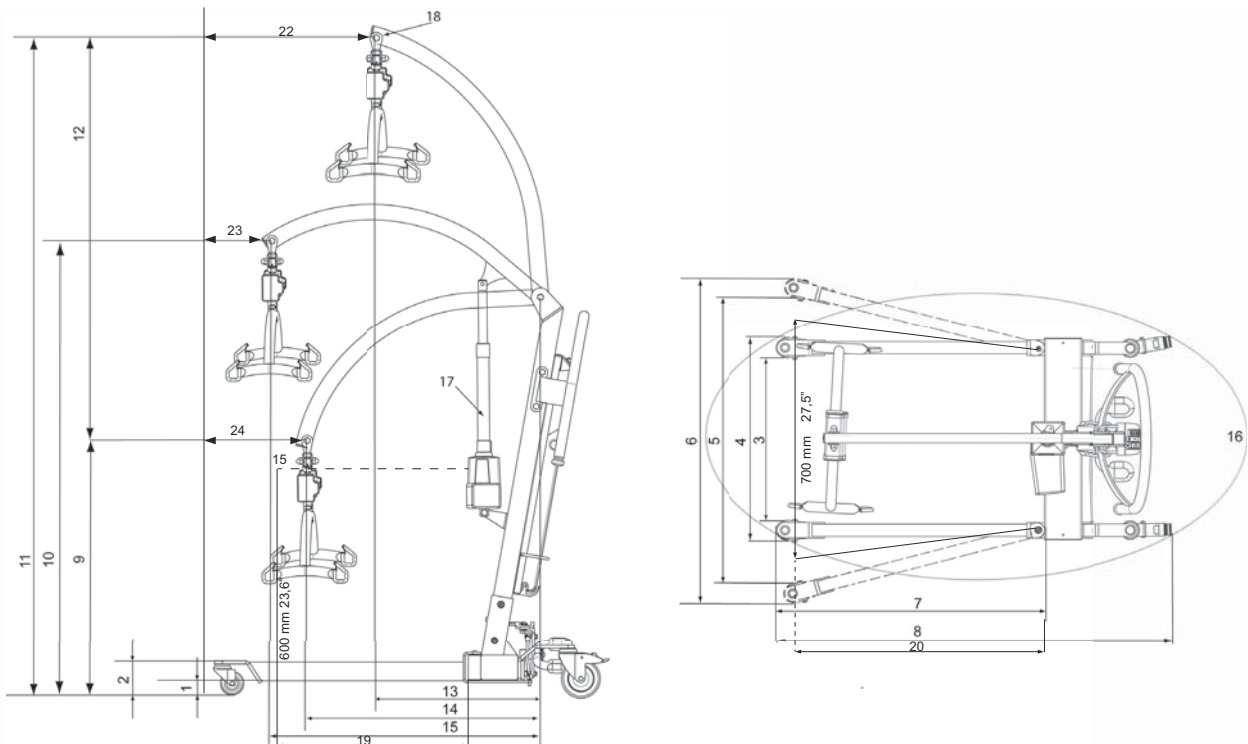
Hoist dimensions

- | | | |
|--|---|--|
| 1. Minimum clearance
45 mm / 1.77" | 10. Height of CSP at maximum
hoisting reach 1480 mm / 58.27" | 19. Maximum reach at 600 (reference
high) - 855 mm |
| 2. Maximum height
110 mm / 4.3" | 11. Maximum height of CSP
2050 mm / 80.7" | 20. Reach from base with legs spread
to 700 - 920 mm |
| 3. Minimum internal width
545 mm / 21.46" | 12. Hoisting range
1382 mm / 54.41" | 21. Internal width at maximum reach -
1100 mm |
| 4. Minimum external width
645 mm / 25.4" | 13. Hoisting reach at maximum height
of CSP 470 mm / 18.5" | 22. Minimum distance from wall to
CSP at maximum height (legs
spread) - 440 mm |
| 5. Maximum internal width
1080 mm / 42.5" | 14. Hoisting reach at minimum height
of CSP 640 mm / 25.2" | 23. Minimum distance from wall to
CSP at maximum reach) legs
spread) - 15 mm |
| 6. Maximum external width
1181 mm / 46.5" | 15. Maximum hoisting reach
895 mm / 35.24" | 24. Minimum distance from wall to
CSP at minimum height (legs
spread) - 290 mm |
| 7. Maximum internal length
910 mm / 35.8" | 16. Turning circle
1420 mm / 55.91" | |
| 8. Maximum external length
1320 mm / 52" | 17. Hoisting mechanism
370 mm - 680 mm / 14.57" -
26.77" | |
| 9. Minimum height of CSP
650 mm / 25.6" | 18. CSP | |

CSP = Central Suspension Point: a reference point on the hoist used for measurements.

We have used the attachment point for the spreader bar as the CSP on the *Minstrel*.

Technical specifications may be changed without notice.



Troubleshooting / Problem Solving

Problem description	Possible cause	Resolution
The <i>Minstrel</i> is (brand new and) not functioning at all	Power Off button (red) is still engaged	Press green Power On /reset button.
The <i>Minstrel</i> is raising and lowering more slowly than normal.	Low battery power level.	Check the LCD light, digital display and hour/cycle meter on the mast of the <i>Minstrel</i> , just above the battery. This will indicate the power level of the battery. If in doubt, replace the battery on the <i>Minstrel</i> with a fully charged one and compare performance. In case of low battery power level, charge the battery and use a fully charged one to continue using the <i>Minstrel</i> .
The <i>Minstrel</i> is not raising or lowering and / or the chassis legs cannot be opened or closed.	Hand control is damaged	Try operating the <i>Minstrel</i> with the Dual Up/Down Control situated on the mast of the <i>Minstrel</i> . Should the equipment function properly when these controls are used but does not function properly when using the hand control, replace the hand control.
The <i>Minstrel</i> does not function correctly when using the hand control or the Dual Up/Down switches.	Electronics PCB fault Actuator on the jib or chassis malfunctioning	Contact your Arjo dealer or an approved Arjo service engineer.
While pressing the “Raise” button, the <i>Minstrel</i> makes a noise but the jib do not move upwards.	An obstruction is blocking the jib	Remove the obstruction and check thoroughly for damage before continuing the lifting cycle. If in doubt, use the System Failure Lowering Override to return the resident to a safe seated position before removing the hoist and withdrawing it from use. Only use the <i>Minstrel</i> again after it has been inspected and approved for safe use by a qualified technician.
While pressing the “Chassis Legs Open” button, the <i>Minstrel</i> makes a noise but the chassis legs do not open.	An obstruction is blocking the chassis legs	Remove the obstruction and check thoroughly for damage before continuing the lifting cycle. If in doubt, use the System Failure Lowering Override to return the resident to a safe seated position before removing the hoist and withdrawing it from use. Only use the <i>Minstrel</i> again after it has been inspected and approved for safe use by a qualified technician.
Unexpected movement of the hoist	Two control buttons pressed simultaneously Faulty hand control, push buttons or electronics.	Release both control buttons If releasing the buttons does not work: Push the red Emergency Stop button and remove the battery from the hoist. Use the System Failure Lowering Override to put the patient back into a safe seated position before removing the hoist and withdrawing it from use. Only use the <i>Minstrel</i> again after it has been inspected and approved for safe use by a qualified technician.

Electromagnetic Compatibility (EMC)

Product has been tested for compliance with current regulatory standards regarding its capacity to block EMI (electromagnetic interference) from external sources.

Some procedures can help reduce electromagnetic interferences:

- Use only Arjo cables and spare parts to avoid increased emissions or decreased immunity which can compromise the correct functioning of the equipment.
- Ensure that other devices in patient-monitoring and/or life-support areas comply to accepted emissions standards.

WARNING

Wireless communications equipment such as wireless computer network devices, mobile phones, cordless telephones and their base stations, walkie-talkies, etc. can affect this equipment and should be kept at least 1.5 m away from the equipment.


Intended Environment: Professional Healthcare Facility Environment

Exceptions: HF Surgical Equipment and the RF Shielded room of an ME SYSTEM for magnetic resonance imaging

WARNING

Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.

Guidance and manufacturer's declaration – electromagnetic emission		
Emission test	Compliance	Guidance
RF emissions CISPR 11	Group 1	This equipment uses RF energy only for its internal functions. Therefore its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	This equipment is suitable for use in all establishments, including domestic establishments and those directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes.

Guidance and manufacturer's declaration – electromagnetic immunity			
Immunity test	IEC 60601-1-2 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) EN 61000-4-2	±2kV, ±4kV, ±8kV, ±15kV air ±8kV contact	±2kV, ±4kV, ±8kV, ±15kV air ±8kV contact	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Conducted disturbances induced by RF fields EN 61000-4-6	3V in 0,15 MHz to 80 MHz 6V in ISM and amateur radio bands between 0,15 MHz and 80 MHz 80% AM at 1 kHz	3V in 0,15 MHz to 80 MHz 6V in ISM and amateur radio bands between 0,15 MHz and 80 MHz 80% AM at 1 kHz	Portable and mobile RF communications equipment should be used no closer to any part of the product, including cables, than 1.0 m, if the transmitter's output power rating exceeds 1W ^a . Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range ^b . Interference may occur in the vicinity of equipment marked with this symbol: 
Radiated RF electromagnetic field EN 61000-4-3	Professional Healthcare environment 3 V/m 80 MHz to 2,7 GHz 80% AM at 1 kHz	Professional Healthcare environment 3 V/m 80 MHz to 2,7 GHz 80% AM at 1 kHz	
Proximity fields from RF wireless communications equipment EN 61000-4-3	385 MHz - 27 V/m 450 MHz - 28 V/m 710, 745, 780 MHz - 9V/m 810, 870, 930 MHz - 28V/m 1720, 1845, 1970, 2450 MHz - 28 V/m 5240,5500, 5785 MHz - 9V/m	385 MHz - 27 V/m 450 MHz - 28 V/m 710, 745, 780 MHz - 9V/m 810, 870, 930 MHz - 28V/m 1720, 1845, 1970, 2450 MHz - 28 V/m 5240,5500, 5785 MHz - 9V/m	
Electrical fast transient/burst EN 61000-4-4	±1kV SIP/SOP ports 100 kHz repetition frequency	±1kV SIP/SOP ports 100 kHz repetition frequency	
Power frequency Magnetic field EN 61000-4-8	30 A/m 50 Hz or 60 Hz	30 A/m 50 Hz	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
<p>^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the product is used exceeds the applicable RF compliance level above, the product should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary.</p> <p>^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 1 V/m.</p>			

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Address page - REV 24: 04/2019

At Arjo, we are committed to improving the everyday lives of people affected by reduced mobility and age-related health challenges. With products and solutions that ensure ergonomic patient handling, personal hygiene, disinfection, diagnostics, and the effective prevention of pressure ulcers and venous thromboembolism, we help professionals across care environments to continually raise the standard of safe and dignified care. Everything we do, we do with people in mind.



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