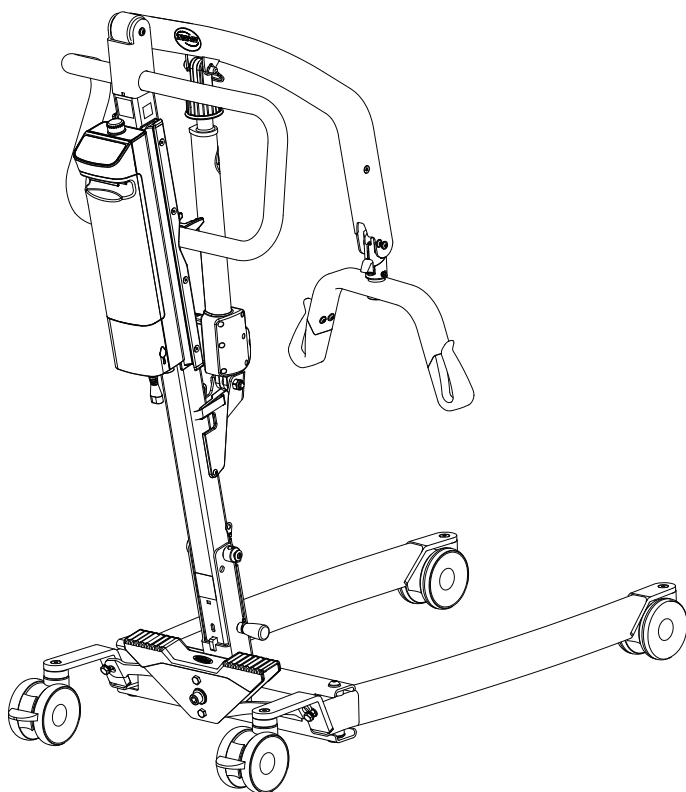


Invacare® Birdie® EVO

Birdie® EVO COMPACT

en Mobile Patient Lift User Manual



This manual **MUST** be given to the user of the product.
BEFORE using this product, this manual **MUST** be read and
saved for future reference.



Yes, you can.

Contents

1 General	3	6.2 Preparing to lift	17
1.1 Introduction	3	6.2.1 Attaching the sling to the lift	18
1.1.1 Symbols in this Document	3	6.3 Transferring a patient from a bed	18
1.2 Service Life	3	6.4 Transferring a patient to a bed	19
1.2.1 Additional information	3	6.5 Transferring a patient from a wheelchair	20
1.3 Limitation of Liability	3	6.6 Transferring a patient to a wheelchair	20
1.4 Warranty Information	3	6.7 Transferring a patient to and from a commode	20
1.5 Compliance	3	6.8 Lifting a patient from the floor	21
1.5.1 Product-specific standards	3	7 Transportation and Storage	23
2 Safety	4	7.1 General information	23
2.1 General safety information	4	7.2 Disassembling the mast from the base	23
2.1.1 Pinch points	5	7.3 Folding the mast	23
2.2 Safety Information on Accessories	5	8 Maintenance	24
2.3 Safety information on electromagnetic interference	5	8.1 General maintenance information	24
2.4 Labels and symbols on the product	6	8.2 Daily inspections	24
2.4.1 Label Location	6	8.2.1 Daily Inspection Checklist	24
2.4.2 Identification label	6	8.3 Cleaning and Disinfection	24
2.4.3 Other Labels and Symbols	6	8.3.1 General Safety Information	24
3 Product Overview	8	8.3.2 Cleaning Intervals	24
3.1 Intended use	8	8.3.3 Cleaning instructions	24
3.2 Main parts of the lift	8	8.3.4 Disinfection Instructions	25
3.3 Accessories and Options	8	8.4 Service Interval	25
4 Setup	9	8.4.1 LOLER Statement	25
4.1 General safety information	9	9 After Use	26
4.2 Scope of delivery	9	9.1 Disposal	26
4.3 Installing the mast	9	9.2 Reconditioning	26
4.3.1 Unfolding the mast	9	10 Troubleshooting	27
4.3.2 Assembling the mast to the base	10	10.1 Identifying faults and possible solutions	27
4.4 Unfolding the spreader bar	10	11 Technical Data	28
4.5 Installing the actuator to the boom	11	11.1 Maximum safe working load	28
4.6 Installing the lever for manual leg spreader	11	11.2 Dimensions and Weights	28
5 Usage	12	11.3 Electrical System	29
5.1 General safety information	12	11.4 Environmental conditions	30
5.2 Locking/Unlocking the Rear Castors	12	11.5 Materials	30
5.3 Raising/Lowering an Electric Lift	12	11.6 Operating forces of controls	30
5.4 Closing/Opening Legs	12	12 Electromagnetic Compatibility	31
5.4.1 Closing/Opening legs manually	12	12.1 General EMC information	31
5.5 Replacing the spreader bar	12	12.2 Electromagnetic emission	31
5.6 Emergency Functions	13	12.3 Electromagnetic Immunity	31
5.6.1 Performing an emergency stop	13	12.4 EMC test specifications	32
5.6.2 Activating an Emergency Lowering / Lifting on the Control Unit	13		
5.6.3 Activating a mechanical emergency lowering	13		
5.7 Charging the battery	14		
5.7.1 Battery Indicators	14		
5.7.2 Control Unit	14		
5.7.3 Optional Battery Charger	15		
5.7.4 Removing and Installing the Battery	15		
6 Patient Transfer	17		
6.1 General safety information	17		

1 General

1.1 Introduction

This user manual contains important information about the handling of the product. To ensure safety when using the product, read the user manual carefully and follow the safety instructions.

Only use this product if you have read and understood this manual. Seek additional advice from a healthcare professional who is familiar with your medical condition and clarify any questions regarding the correct use and necessary adjustment with the healthcare professional.

Note that there may be sections in this document, which are not relevant to your product, since this document applies to all available models (on the date of printing). If not otherwise stated, each section in this document refers to all models of the product.

The models and configurations available in your country can be found in the country-specific sales documents. Invacare reserves the right to alter product specifications without further notice.

Before reading this document, make sure you have the latest version. You find the latest version as a PDF on the Invacare website. If you find that the font size in the printed document is difficult to read, you can download the PDF version from the website. The PDF can then be scaled on screen to a font size that is more comfortable for you.

Previous product versions may not be described in this manual's current revision. If you require assistance, please contact Invacare.

For more information about the product, for example product safety notices and product recalls, contact your Invacare distributor. See addresses at the end of this document.

In case of a serious incident with the product, you should inform the manufacturer and the competent authority in your country.

1.1.1 Symbols in this Document

Symbols and signal words are used in this document and apply to hazards or unsafe practices which could result in personal injury or property damage. This document is printed in greyscale. For your information, the safety messages have the following colour coding according to ANSI Z535.6: Danger (Red), Warning (Orange), Caution (Yellow) and Notice (Blue). See the information below for definitions of the signal words.



WARNING!

Indicates a hazardous situation that could result in serious injury or death if it is not avoided.



CAUTION!

Indicates a hazardous situation that could result in minor or slight injury if it is not avoided.



NOTICE!

Indicates a hazardous situation that could result in damage to property if it is not avoided.



Tips and Recommendations

Gives useful tips, recommendations, and information for efficient, trouble-free use.

Other Symbols

(Not applicable for all manuals)



UK Responsible Person

Indicates if a product is not manufactured in the UK.



Triman

Indicates recycling and sorting rules (only relevant for France).

1.2 Service Life

The expected service life of this product is eight years when used daily and in accordance with the safety instructions, maintenance intervals and correct use, stated in this manual. The effective service life can vary according to frequency and intensity of use.

1.2.1 Additional information

The expected service life is based on an estimated average of 4 lifting cycles per day.

1.3 Limitation of Liability

Invacare accepts no liability for damage arising from:

- Non-compliance with the user manual
- Incorrect use
- Natural wear and tear
- Incorrect assembly or set-up by the purchaser or a third party
- Technical modifications
- Unauthorised modifications and/or use of unsuitable spare parts

1.4 Warranty Information

We provide a manufacturer's warranty for the product in accordance with our General Terms and Conditions of Business in the respective countries. Warranty claims can only be made through the provider from whom the product was obtained.

1.5 Compliance

Quality is fundamental to the company's operation, working within the disciplines of ISO 13485. This product features the CE mark, in compliance with the Medical Device Regulation 2017/745 Class I. This product features the UKCA mark, in compliance with Part II UK MDR 2002 (as amended) Class I.

We are continuously working towards ensuring that the company's impact on the environment, locally and globally, is reduced to a minimum. We only use REACH compliant materials and components. We comply with the current environmental legislations WEEE and RoHS.

1.5.1 Product-specific standards

The product has been tested and conforms to ISO 10535 (Hoists for the transfer of persons with disabilities) and all related standards.

For further information about local standards and regulations, contact your local Invacare representative. See addresses at the end of this document.

2 Safety

2.1 General safety information

This section of the manual contains general safety information about your product. For specific safety information, refer to the appropriate section of the manual and procedures within that section.



WARNING!

Risk of injury or damage

- Do not use this product or any available optional equipment without first completely reading and understanding these instructions and any additional instructional material such as user manuals or instruction sheets supplied with this product or optional equipment. If you are unable to understand the warnings, cautions or instructions, contact a healthcare professional, Invacare provider or qualified technician before attempting to use this product.
- Do not make any unauthorized alterations or modifications to the product.



WARNING!

The maximum safe working load must not be exceeded

- Do not exceed the maximum safe working load of this product or used accessories like slings, spreader bars etc. See documentation or the labelling for the stated maximum safe working load.
- The component with the lowest load limit determines the maximum safe working load of the entire system.



WARNING!

Risk of injury or damage

Improper use of this product may cause injury or damage.

- Do not attempt any transfer without approval of the patient's healthcare professional.
- Read the instructions in this user manual and observe trained personnel performing transfer procedures. Then practice transfers under supervision and with a capable person acting as a patient.
- Special care must be taken with people with disabilities who cannot cooperate while being transferred.
- Do not use the lift as a transport device. It is intended to transfer an individual from one resting surface to another.



WARNING!

Risk of injury or damage

Inappropriate handling of cables can cause electrical shock and product failure.

- Do not kink, shear or otherwise damage the cables of the product.
- Make sure that no cables are jammed or damaged when the product is used.
- Make sure the wiring is correct and connections are proper.
- Do not use unauthorized equipment.



WARNING!

Risk of injury or damage

Excessive moisture will damage the product and may cause electrical shock.

- The patient lift can be used in a bath or shower area but must NOT be used under the shower. The patient must be transferred to a shower chair or use other means for showering.
- If the patient lift is used in a moisture environment, ensure that the patient lift is wiped clean of any moisture after use.
- Do not plug or unplug the power cable in a moisture environment or with wet hands.
- Do not store the product in a damp area or damp condition.
- Periodically inspect all components of the product for signs of corrosion or damage. Replace parts that are corroded or damaged.
- See *11.4 Environmental conditions, page 30*



WARNING!

Risk of injury or damage

Ignition sources can cause burns or fire.

- Patient transfer must be performed with a safety space between the lift and possible ignition sources (heater, stove, fireplace, etc.)
- The patient and assistants must not smoke during transfer.
- The sling must not be placed over heat sources (heater, stove, fireplace, etc.)



WARNING!

Risk of injury or damage

To avoid injury or damage when operating the product:

- Close supervision is necessary when the product is used near children or pets.
- Do not let children play with the product.



CAUTION!

Risk of injury or damage

The product can get hot when exposed to sunlight or other heat sources.

- Do not expose the product to direct sunlight for prolonged periods.
- Keep the product away from heat sources.

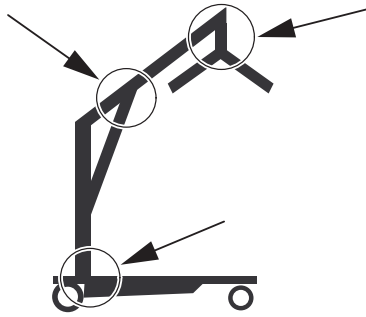


NOTICE!

Accumulation of lint, dust and other dirt can impair the product.

- Keep the product clean.

2.1.1 Pinch points


WARNING!
Risk of Injury

Pinch points are present in several locations on the lift and fingers could be pinched.

- Always keep hands and fingers clear of moving parts.

2.2 Safety Information on Accessories


WARNING!
Risk of Injury

Non-original or incorrect accessories may affect the function and safety of this product.

- Due to regional differences, refer to your local Invacare website or catalogue for available accessories or contact your Invacare provider.
- See the manual delivered with the accessory for further information and instructions.
- Use only original accessories for the product in use. Under certain circumstances, the use of slings from other manufacturers is possible. See additional information in this section.


CAUTION!
Compatibility of Slings with Attachment System

Invacare uses a common attachment system based on hooks and loops. Loops on the slings are attached to hooks on spreader bars (coat hanger style). Therefore, suitable slings of other manufacturers can be used on this lift as well.

- Use only slings with loop attachments that are suitable for spreader bars (coat hanger style) with hooks.
- Do not use slings designed for "Keyhole or Clip Attachment Systems" or "Tilting Frame Systems".

To select the appropriate sling, a risk assessment must be performed by a healthcare professional. The risk assessment must consider:

- The patient's weight, size, physical ability and medical condition.
- The type of transfer and the environment.
- The compatibility to the other lifting equipment used.

2.3 Safety information on electromagnetic interference


WARNING!
Risk of malfunction due to electromagnetic interference

Electromagnetic interference between this product and other electrical equipment can occur and disturb the electrical adjustment functions of this product. To prevent, reduce or eliminate such electromagnetic interference:

- Only use original cables, accessories and spare parts, to not increase electromagnetic emission or reduce electromagnetic immunity of this product.
- Do not use portable radio frequency (RF) communications equipment closer than 30 cm to any part of this product (including cables).
- Do not use this product near active high-frequency surgical equipment and the RF shielded room of a system for magnetic resonance imaging, where the intensity of electromagnetic disturbances is high.
- If disturbances occur, increase the distance between this product and the other equipment or switch it off.
- Refer to the detailed information and follow the guidance in chapter 12 *Electromagnetic Compatibility*, page 31

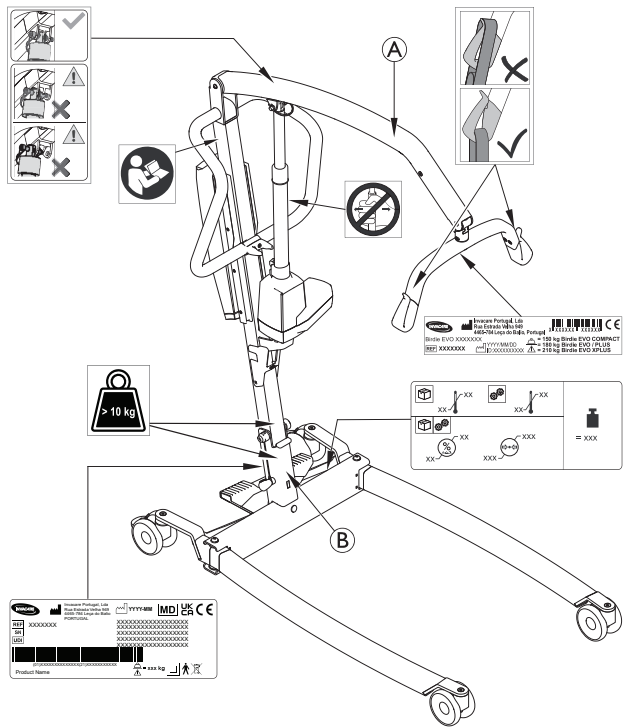

WARNING!
Risk of malfunction

Electromagnetic interference may cause improper operation.

- Do not use this product adjacent to or stacked with other electrical equipment. If such use is necessary this product and the other equipment must be closely observed to verify that they are operating normally.

2.4 Labels and symbols on the product

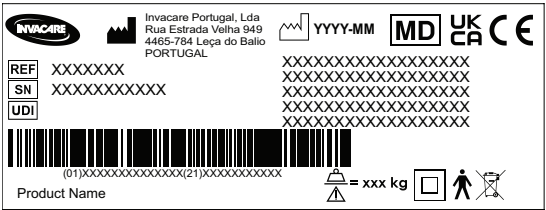
2.4.1 Label Location



A	Name and safe working load of lift – text depending on model
B	Safe working load of lift – text depending on model (fixed mast only)

For more information on the labels see the following information.

2.4.2 Identification label



The identification label contains the main product information, including technical data.

Symbols	
MD	Medical device
CE	European Conformity
UK CA	UK Conformity Assessed
Manufacturer logo	Manufacturer




















Symbols	
	Date of manufacture
	Max. safe working load
UDI	Universal Device Identifier
SN	Serial number
REF	Reference number
	Class II equipment
	Type B applied part
	WEEE conform

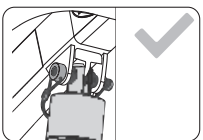
- Abbreviations for technical data:
- Iin = Incoming Current
 - Uin = Incoming Voltage
 - Int. = Intermittence
 - AC = Alternating Current
 - Max = maximum
 - min = minute


For more information about technical data, see 11 Technical Data, page 28

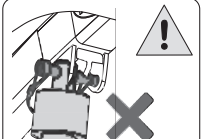
2.4.3 Other Labels and Symbols


	Read the user manual before using this product and follow all instructions for safety and use.
	The background colour of this symbol is blue on product labels.
	Do not apply any side forces to the actuator (e.g. by using it as a push bar) as this might result in damage and malfunction.
	The colour of the circle with diagonal bar is red on product labels.
	Individual part weighs more than 10 kg.


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	Total weight of the product with the maximum safe working load applied
	Temperature limit
	Humidity limitation
	Atmospheric pressure limitation
	Transport and storage conditions
	Operation conditions


















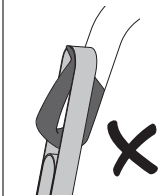





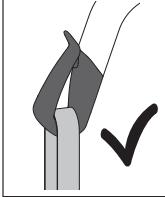
Ensure the mast's actuator is properly attached to the boom.


 The **Warning** symbol is orange on product labels.

 The **check mark** symbol is green on product labels.









 The **check mark** symbol is green on product labels.

3 Product Overview

3.1 Intended use

The mobile patient lift is a battery-powered transfer device and is intended to transfer and position an individual from one resting surface to another. For example:

- Between the bed and a wheelchair
- To and from the toilet
- Lowering and raising patients to/from the floor

The maximum safe working load is stated in *11 Technical Data, page 28*

The mobile patient lift is designed to be used indoors on a level surface, in hospitals, nursing facilities and domestic areas. The mobile patient lift can be turned (rotated) in place for transfers with limited floor space.

A healthcare professional or private person who has received proper training is the intended operator of this product.

Intended Users

The intended user is a completely or partially immobile person.

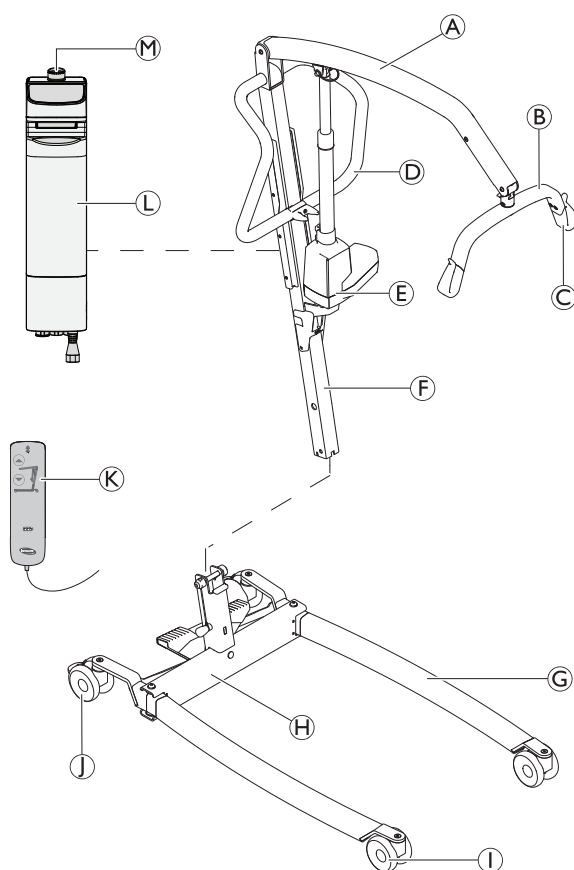
Indications

The mobile patient lift is indicated for persons who are completely or partially immobile, and unable to be transferred manually or with other types of lifts / transfer aids.

All position changes are possible without assistance of the patient.

There are no known contraindications for this product.

3.2 Main parts of the lift



(A)	Boom
(B)	Spreader bar – with or without SMARTLOCK™
(C)	Hook for sling
(D)	Push bar
(E)	Lifting actuator
(F)	Mast – foldable or fixed
(G)	Leg
(H)	Base with foot pedal for manual leg spreader
(I)	Front Castors
(J)	Rear castors with brake
(K)	Hand control
(L)	Control Unit with detachable battery
(M)	Emergency Stop

3.3 Accessories and Options



Due to regional differences, refer to your local Invacare website or catalog for details about available accessories and options or contact your Invacare provider.

- 4–point spreader bar (coat hanger style) 450 or 500 mm wide
- 2–point spreader bar (coat hanger style) 350, 450 or 550 mm wide
- Lever for manual leg spreader
- Wall charger for a detachable battery
- Extra battery
- Protective shrouds for legs
- Padding for spreader bar

Sling models with loop attachments, suitable for spreader bars (coat hanger style) with hooks:

- Full body support slings - with or without head support
- Slings for dress/ toileting - with or without head support
- Slings for amputee

Scales to be mounted with the spreader bar:

- Wunder® CR200
- Wunder® RS180
- Wunder® RS300

4 Setup

4.1 General safety information


WARNING!

- Check all parts for shipping damage before use, see *8.2 Daily inspections, page 24*.
- In case of damage, do not use the equipment. Contact your Invacare provider for further instructions.


WARNING!
Risk of Injury

Improper assembly may cause injury or damage.

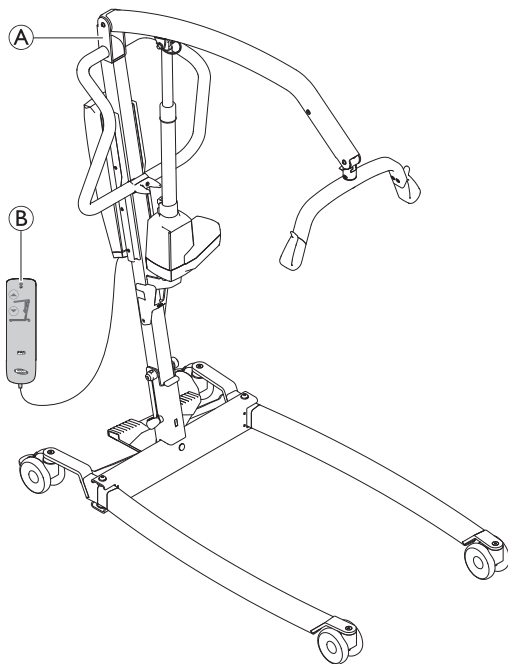
- Use only Invacare parts in the assembly of this patient lift.
- After each assembly, check that all fittings are properly tightened and all parts have the correct function
- Do not overtighten the mounting hardware. This may damage the mounting brackets.



There are no tools required to assemble the patient lift. If there are any issues or questions during assembly, contact your Invacare provider.

4.2 Scope of delivery

The items included in your package depend on the models and configurations available in your country. See *1.1 Introduction, page 3*



(A)	Lift – incl. base, mast, boom, spreader bar, control unit and actuators <ul style="list-style-type: none"> • with foldable mast (1 piece) • with fixed mast (2 pieces) – base as a separate part
(B)	Hand control (1 piece)

(not shown on image)	Mains cable (1 piece)
	User Manual (1 piece)
	Battery (1 piece)
	Lever for manual leg spreader (1 piece)*
	Sling (1 piece)*

* Depends on configuration



If the lift is delivered with a sling, refer to the user manual of the sling for use, application, maintenance and washing instructions.

4.3 Installing the mast

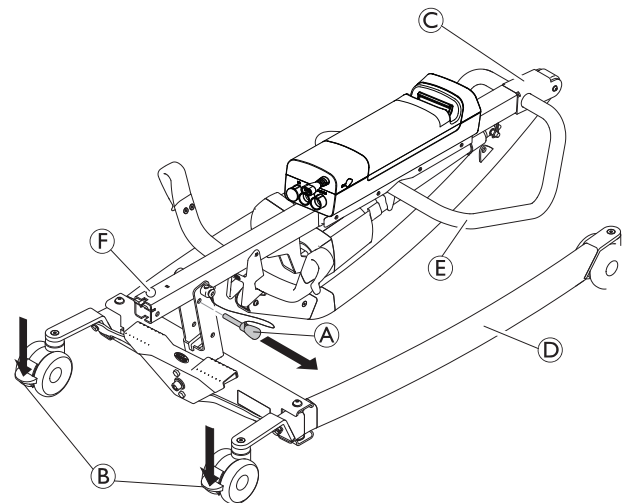
4.3.1 Unfolding the mast

(foldable mast only)


WARNING!

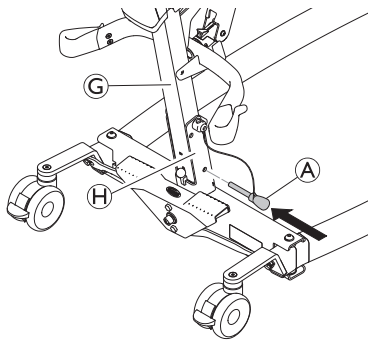
- The mast may be folded for storage or transporting. Each time the mast is folded, the mast **MUST** be properly secured to the base assembly.
- Check all parts for visible defects or damage before assembly. In case of any damage, do not use the product and contact your Invacare provider.
- Make sure the emergency stop is activated before assembly or disassembly.
- Take care when lifting components during assembly. Some parts are heavy. Always remember to adopt the correct lifting position.

Perform unpacking and assembly operation at floor level.



1. Lock both rear castors **(B)**. Remove the locking pin **(A)**.
2. Raise the mast assembly **(C)** to an upright position by stepping with one foot on the leg **(D)** and pulling the push bar **(E)** upwards until the safety catch **(F)** snaps in place.

3.



Reinstall the locking pin **A** through the mast **G** and base **H**. Ensure that the locking pin is correctly inserted.

4.3.2 Assembling the mast to the base

(fixed mast only)



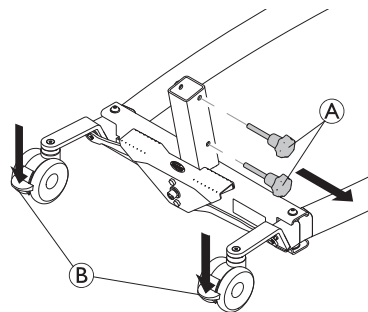
WARNING!

Risk of injury or Damage

The maximum safe working load stated on the boom and on the base must be the same.

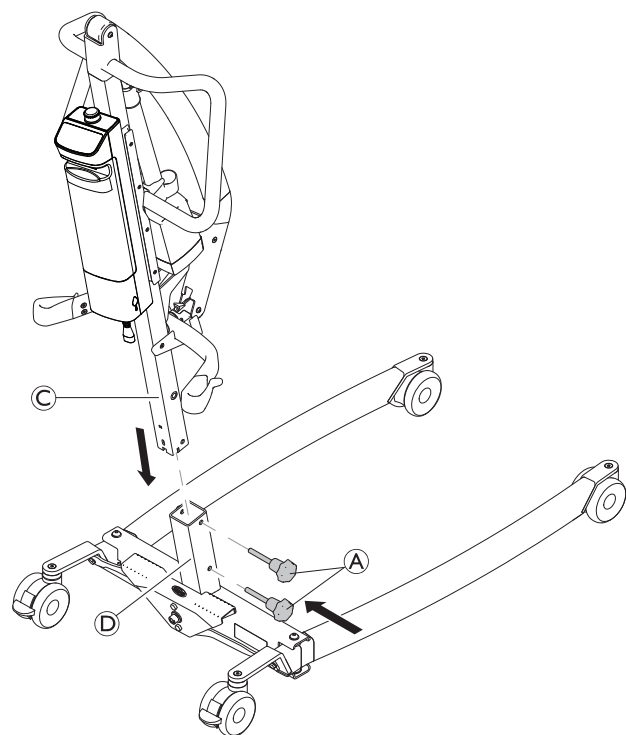
- Always compare the maximum safe working load values stated on the base and on the boom.

1.



Lock both rear castors **B** and rotate the hand screws anti-clockwise **A** to remove them from the base

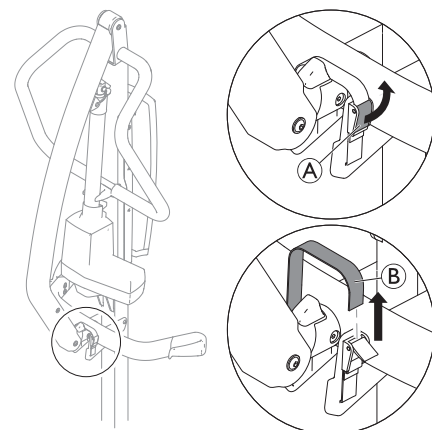
2.



With the boom pointing in forward direction, lower the mast **C** into the support of base **D** and reinstall the hand screws **A** to fix the mast **C** to the base.

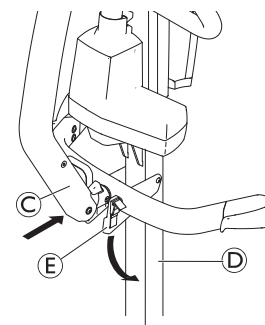
4.4 Unfolding the spreader bar

1.



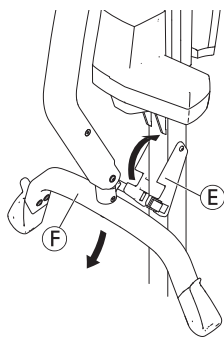
Open the fastener **A** and remove the band **B** from the clamping buckle.

2.



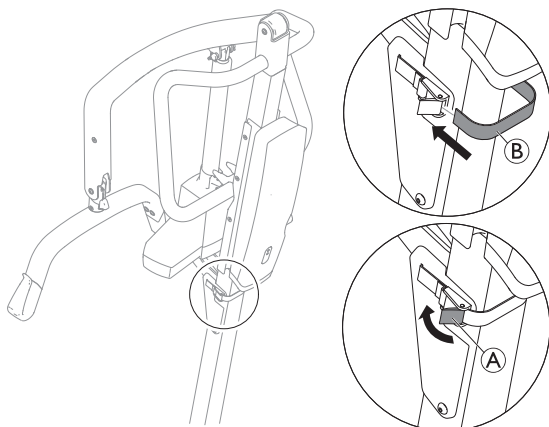
Push and hold the boom **C** towards the mast **D** and fold down the spreader bar holder **E**.

3.



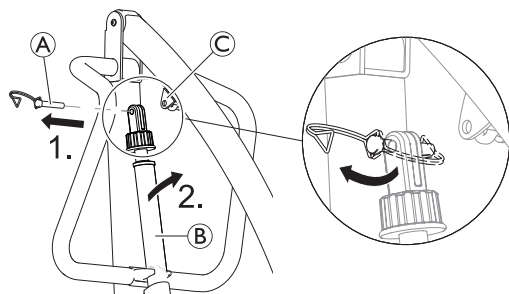
Fold down the spreader bar (F) and fold up the spreader bar holder (E).

4.



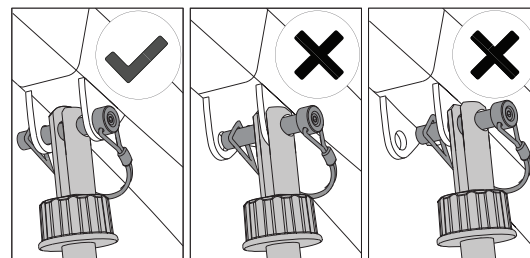
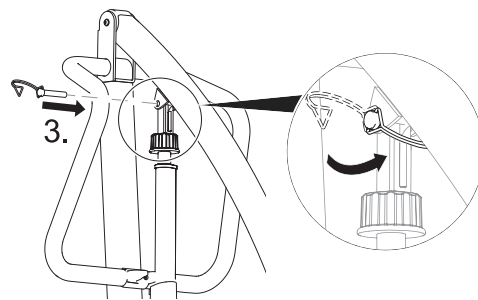
Wrap the band (B) around the back of the mast, insert it into the clamping buckle and close the fastener (A).

4.5 Installing the actuator to the boom



1. Release the D-clip and remove the pin (A) from actuator (B).
2. Remove the actuator (B) from the bracket on the mast and fit it to the boom mounting bracket (C).

3.

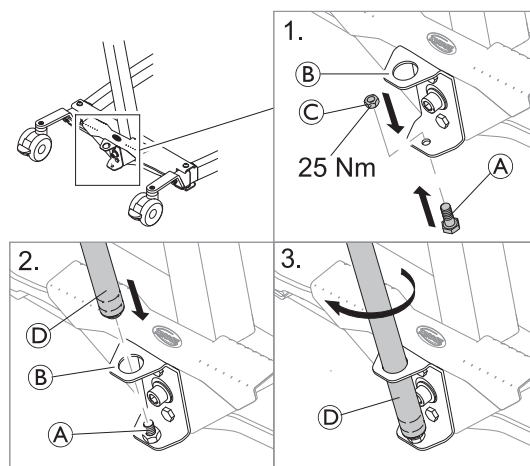


Align the holes and reinstall the pin (A). Make sure that the pin is completely inserted and secure it with the D-clip.

4.6 Installing the lever for manual leg spreader



2 x 13 mm wrench



1. Insert the bolt (A) from below into the lower hole of the bracket (B) and fix it with the nut (C).
2. Insert the threaded end of lever (D) into the upper hole of bracket (B) onto the fixed bolt (A).
3. Turn the lever (D) clockwise to screw it onto the bolt.

5 Usage

5.1 General safety information


WARNING!
Risk of injury or damage

Before using the lift with a patient, refer to the following safety information and instructions:

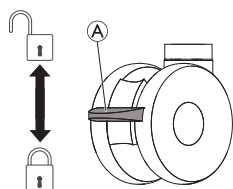
- 2 Safety, page 4
- 6 Patient Transfer, page 17

5.2 Locking/Unlocking the Rear Castors


WARNING!
Risk of Injury or Damage

The lift could tip and endanger the patient and assistants.

- Invacare recommends that the rear castors be left unlocked during lifting procedures to allow the patient lift to stabilize itself when the patient is initially lifted from a chair, bed or any stationary object.
- Invacare recommends locking the rear castors of the lift only when positioning or removing the sling from around the patient.



- To lock the castor, push down pedal (A) with the foot.
- To unlock the castor, push up pedal (A) with the foot.

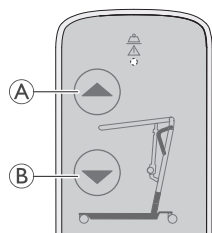
5.3 Raising/Lowering an Electric Lift

The hand control is used to raise or lower the lift.


WARNING!
Risk of Injury or Damage

Damage to parts of the lift (hand control, castors, etc.) caused by impact with walls or other stationary objects may cause damage to the product and lead to injury.

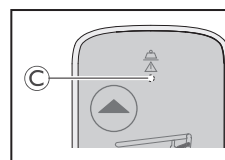
- DO NOT raise the boom manually.
- ALWAYS use the hand control to raise the boom.



1. To raise the lift — Press and hold the UP (A) button to raise the boom and the patient.
2. To lower the lift — Press and hold the DOWN (B) button to lower the boom and the patient.



Release the button to stop raising or lowering the lift.



Yellow indicator light visible if there is an overload.

Turned off during usage within working range.

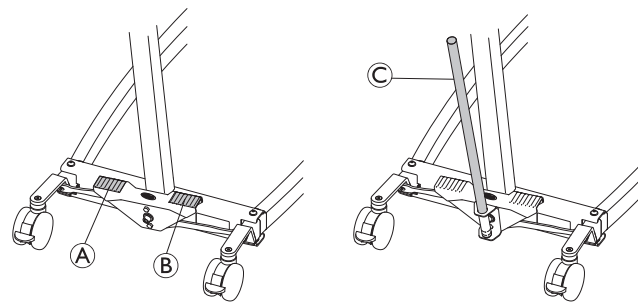
5.4 Closing/Opening Legs


WARNING!
Risk of Injury

The lift could tip and endanger the patient and assistants.

- The legs of the lift must be in the maximum open position for optimum stability and safety. If it is necessary to close the legs of the lift to manoeuvre the lift under a bed, close the legs of the lift only as long as it takes to position the lift over the patient and lift the patient off the surface of the bed. When the legs of the lift are no longer under the bed, return the legs of the lift to the maximum open position.

5.4.1 Closing/Opening legs manually



The manual leg spreader is operated by two pedals (A) and (B) or by the lever (C).

1. To open the legs, press the right pedal (B) with a foot.
2. To close the legs, press the left pedal (A) with a foot.

With the lever:

1. To open the legs, pull the lever (C) to the right.
2. To close the legs, push the lever (C) to the left.

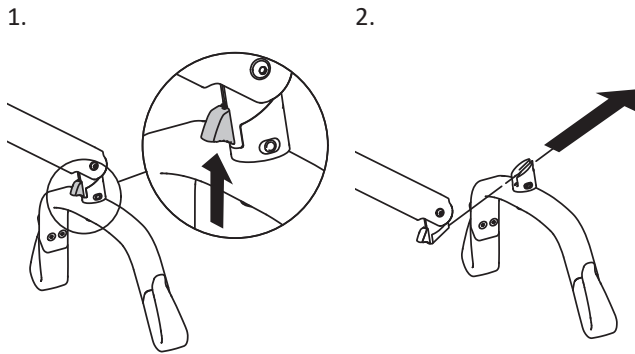
5.5 Replacing the spreader bar

(spreader bar with SMARTLOCK™ only)


WARNING!
Risk of injury

- Use only spreader bars made for this lift.
- Make sure the spreader bar is suitable for the patient and the actual lift or transfer required.
- Check that the spreader bar is firmly attached to the boom connector and cannot be removed without pressing the release button.

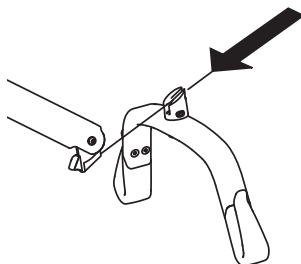
Removing the spreader bar



1. Push and hold the release button up.
2. Slide the spreader bar out in a forward and slightly upward direction.

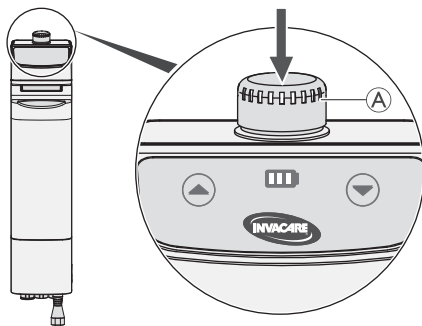
Attaching the spreader bar

1. Slide the spreader bar in until you hear an audible click.
2. Check that the spreader bar is firmly attached to the boom connector and cannot be removed without pressing the release button.



5.6 Emergency Functions

5.6.1 Performing an emergency stop

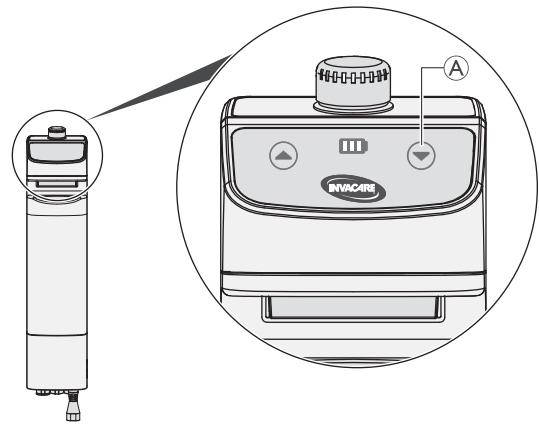


1. Press the RED emergency button (A) on the control unit to stop the boom and patient from raising or lowering.
2. To reset, rotate the emergency button clockwise.

5.6.2 Activating an Emergency Lowering / Lifting on the Control Unit

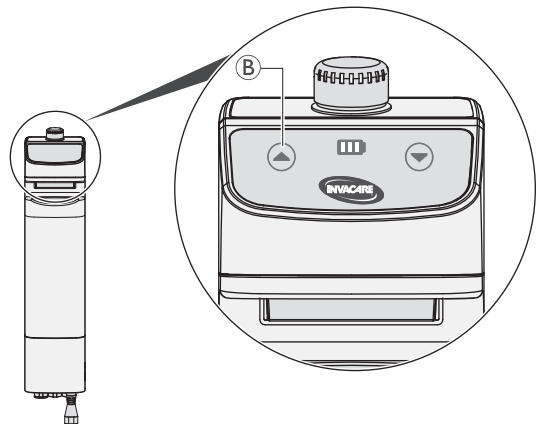
If the hand control fails, the boom can be lifted/lowered on the control unit.

Emergency Lowering



1. Lower the boom by pressing and holding button (A) at the front of the control unit.
2. Stop lowering the boom by releasing the button.

Emergency Lifting



1. Raise the boom by pressing and holding button (B) at the front of the control unit.
2. Stop raising the boom by releasing the button.

5.6.3 Activating a mechanical emergency lowering

If the emergency lowering on the control unit is not working, a mechanical emergency lowering is available as a back-up. This may happen in case of partial or total power failure, or if the battery is fully discharged during use.

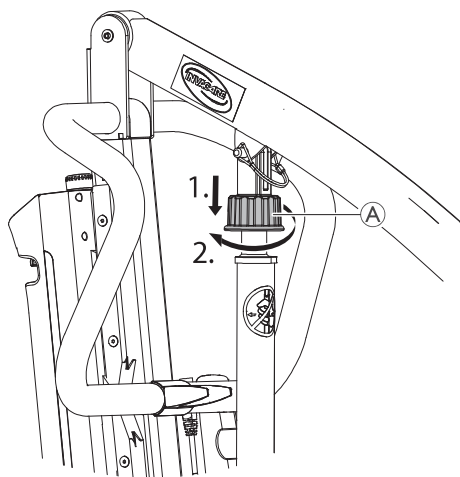


WARNING!

Risk of Injury or Damage

Repeated mechanical emergency lowering leads to a high increase of the lowering speed.

- Only use the mechanical emergency lowering as a back-up when the emergency lowering on the control unit is not working.
- Do not use the mechanical emergency lowering repeatedly in close succession.
- Always lower the patient onto a supporting surface like a bed or a chair.
- After a mechanical emergency lowering was required, the lift must be checked to resolve the malfunction of the control unit.



Locate the emergency release knob (A) at the top of the actuator piston.

1. Pull down the emergency release knob (A).
2. Rotate the emergency release knob (A) clockwise.

5.7 Charging the battery



NOTICE!

- Make sure the emergency stop is not activated while charging the battery.
- Make sure that charging takes place in a room with good air ventilation.
- Electrical functions are not working when the lift is connected to power supply.
- Do not attempt to use the lift if the battery housing is damaged.
- Replace a damaged battery housing before further use.
- Do not move the lift without unplugging from the power outlet.



NOTICE!

The lift has no mains switch.

- When charging the battery ensure the mains socket is easily accessible to unplug the lift.

It is recommended to charge the battery daily to ensure optimal use of the lift and prolong the life of the battery. Furthermore, it is recommended to charge the battery before first use.

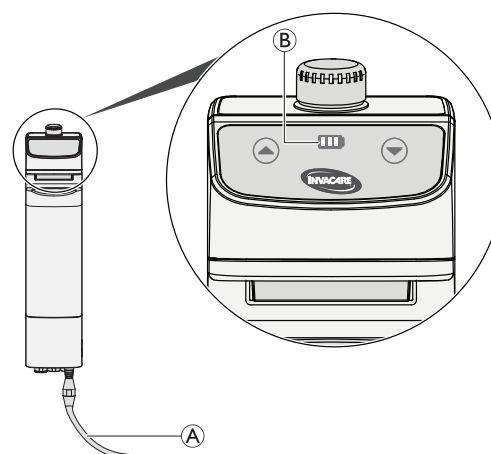
5.7.1 Battery Indicators

There are battery indicators on the control unit, on the hand control and on the optional battery charger:

Battery Indicator Type	Battery State	Description
	Full Charge	The battery is OK — no need for charging (100–50%). The top LED is GREEN.
	Partial Charge	The battery is OK — no need for charging (50–100%). Two left LEDs are GREEN.
	Low Charge	Left LED is GREEN. The battery needs to be charged. Finish current transfer and recharge the battery.
	Discharged	Left LED is ORANGE. The battery needs to be charged. Recharge battery immediately.

5.7.2 Control Unit

The control unit is equipped with a sound signal. A beep indicates that the battery has low capacity, but lowering the patient is still possible. It is recommended to charge the batteries as soon as the sound signal is heard.



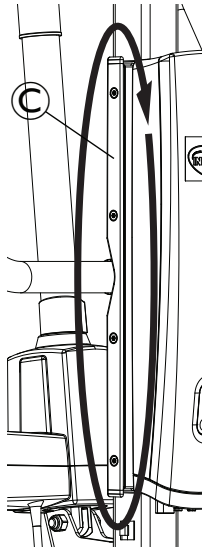
1. Plug the power cord (A) into a power outlet.



The battery will charge in up to 10 hours. The charger stops automatically when the batteries are fully charged.
The charging stops automatically when the battery is fully charged.
The charging status is visible on the battery indicator (B), see 5.7.1 *Battery Indicators*, page 14 for detailed information.

2. Disconnect the power cord from the power outlet after the battery has been fully charged.

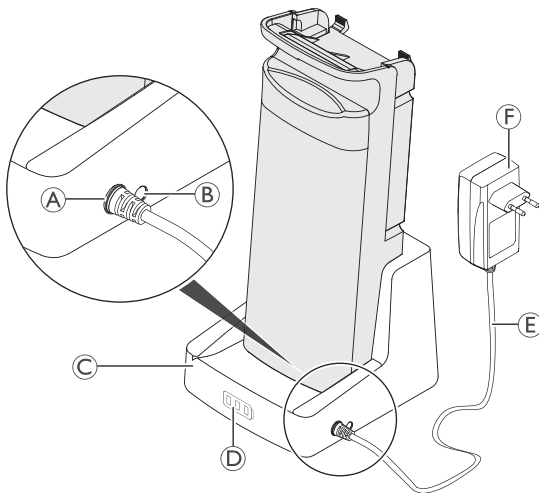
3. Store the power cord around the cable management support ③:



Make sure that the power cable connection to the control box is not bent.

5.7.3 Optional Battery Charger

A wall charger is available for the lift as an option.



1. Plug the charger's cable ⑤ to the base's socket ①.
2. Plug the charger ⑥ to a power outlet.



When the charger's base ④ is connected to a power outlet, the charge LED ③ turns Green. The charging status is visible on the battery indicator ④, see 5.7.1 *Battery Indicators*, page 14 for detailed information. A battery needing to be fully recharged will take up to 10 hours. The charging stops automatically when the battery is fully charged. Disconnect charger ⑥ from the power outlet after the battery has been fully charged.

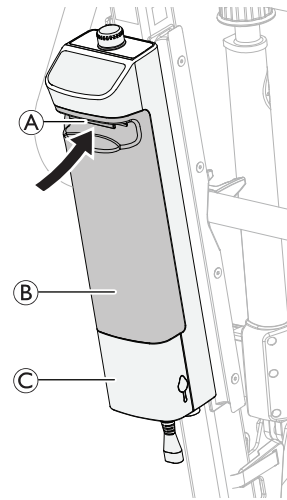
5.7.4 Removing and Installing the Battery



The procedure of removing or installing the battery is similar for the control unit and the wall charger.

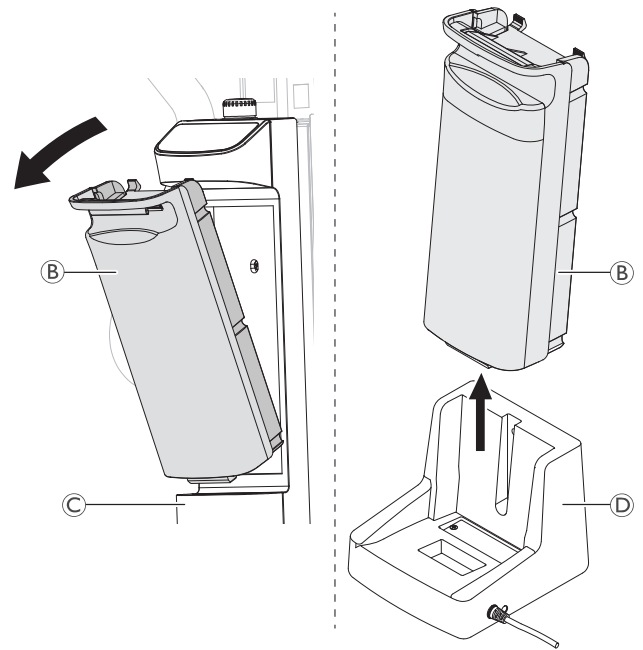
Removing the battery

Lift up on the handle ① on the front of the battery ②.



Only required when removing the battery from the control unit ③.

2. Lift the battery up and out away from the control unit ③ or charger base ④.



Installing the battery



CAUTION!

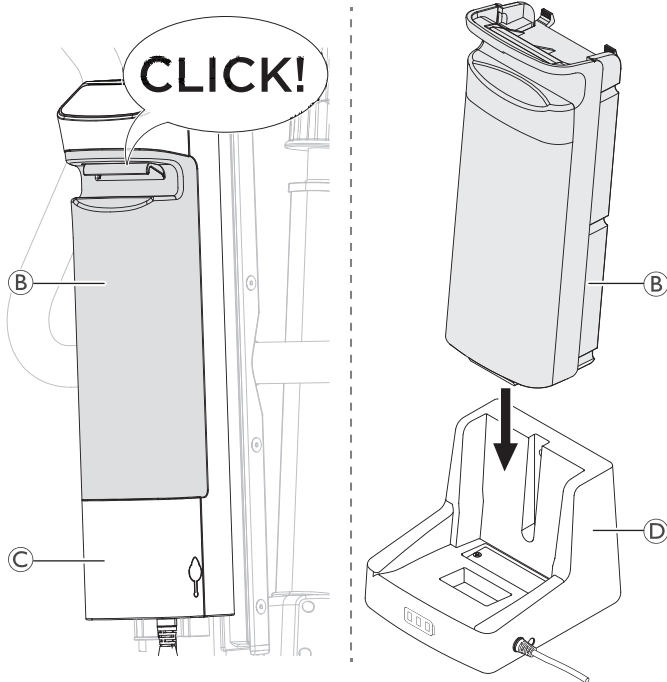
Installing the battery improperly may cause injury or damage.

- Make sure there is an audible click when installing the battery on the Control Unit to confirm proper installation.

1. Connect the battery **B** to the control unit **C** or the charger base **D** as shown.



When you connect the battery back to the control unit, make sure there is an audible click.



6 Patient Transfer

6.1 General safety information


WARNING!
Risk of Injury or Damage

Improper use of this product may cause injury or damage.

- Before transferring to a stationary object (wheelchair, bed, commode or other surface) check that the weight capacity can withstand the patient's weight.
- If applicable the wheel or castor locks of the stationary object (wheelchair, bed etc.) must be in a locked position before lowering the patient onto or lifting the patient off.


WARNING!
Risk of Injury or Damage

Improper use of this product may cause injury or damage.

- Use the push bars on the mast at all times to push or pull the lift.
- Avoid using the lift on an incline. Invacare recommends that the product only be used on a flat surface.
- During transfer, with the patient suspended in a sling attached to the lift, DO NOT roll lift over uneven surfaces that could cause the lift to tip over.


WARNING!
Risk of Injury or Damage

Damage to parts of the lift (hand control, castors, etc.) caused by impact with the floor, walls or other stationary objects may cause damage to the product and lead to injury.

- DO NOT allow parts of the lift to impact the floor, walls or other stationary objects.
- ALWAYS store the hand control properly when not in use.


WARNING!
Risk of Injury

The spreader bar can move suddenly and cause injury.

- When positioning lift, be aware of the position of the spreader bar and the patient.


WARNING!
Risk of Entrapment or Strangulation

The hand control cord can cause injury if improperly positioned and secured.

- ALWAYS be aware of the location of the hand control cord in relation to the patient and caregivers.
- DO NOT allow the hand control cord to become entangled around the patient and caregivers.
- The hand control must be secured properly. ALWAYS store the hand control properly when not in use.


WARNING!
Risk of Entrapment or Strangulation

Items in the patient's surroundings can cause entrapment strangulation during lifting. To avoid entrapment or strangulation:

- Before lifting, check that the patient is completely free of his/her surroundings.


WARNING!
Risk of Entrapment

There is a risk of entrapment between the spreader bar hooks and the sling.

- Use caution when lifting.
- NEVER put hands or fingers on or near the hooks when lifting.
- Ensure the patient's hands and fingers are away from the hooks before lifting.


NOTICE!

All transfer procedures described in the following can be performed by one (1) assistant. However, Invacare recommends that the procedures are performed by two (2) assistants whenever possible.

6.2 Preparing to lift


WARNING!
Risk of Injury

During transfers and lift operation, the boom can impact the patient or caregivers and cause injury.

- ALWAYS be aware of the position of the boom during transfers.
- Ensure the boom is positioned in a way that it cannot impact the patient or bystanders.
- ALWAYS be aware of your body position in relation to the boom during transfers.

1. Before proceeding, review the information and observe all warnings indicated in 2 *Safety*, page 4 and 6 *Patient Transfer*, page 17.
2. Position the patient onto the sling. Refer to your sling user manual.
3. Unlock the rear castors. See 5 *Usage*, page 12.
4. Open the legs of the lift. See 5 *Usage*, page 12.
5. Use the push bars to move the patient lift into position.


WARNING!

- When using the lift in conjunction with beds or wheelchairs, be aware of the position of the lift in relationship to those other devices so that the lift does not become entangled.
- Before positioning the legs of the patient lift under a bed, make sure that the area is clear of any obstructions.

6. Lower the patient lift for easy attachment of the sling.
7. Lock the rear castors. See 5 *Usage*, page 12.
8. Attach the sling. See 6.2.1 *Attaching the sling to the lift*, page 18

6.2.1 Attaching the sling to the lift



WARNING! Risk of Injury

Usage of wrong or damaged slings can cause the patient to fall or cause injury to assistants.

- Use an Invacare approved sling that is recommended by the individual's doctor, nurse or medical assistant for the comfort and safety of the individual being lifted.
- Invacare slings and patient lift accessories are specifically designed to be used in conjunction with Invacare patient lifts.
- After each laundering (in accordance with instructions on the sling), inspect sling(s) for wear, tear, and loose stitching.
- Bleached, torn, cut, frayed, or damaged slings are unsafe and could result in injury. Discard immediately.
- DO NOT alter slings.

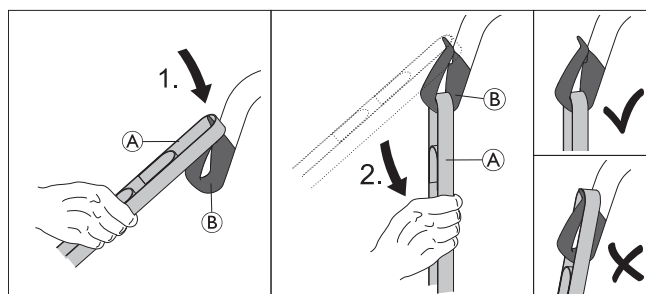


WARNING! Risk of Injury

Improperly attached or adjusted slings can cause the patient to fall or cause injury to assistants.

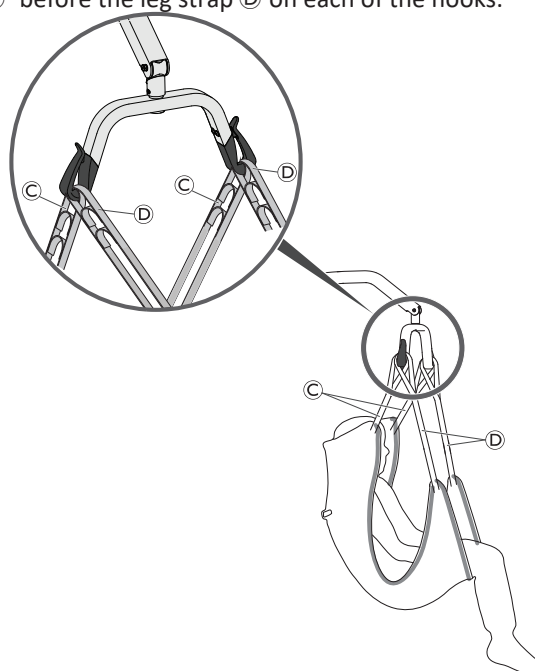
- Be sure to check the sling attachments each time the sling is removed and replaced, to ensure that it is properly attached before the patient is removed from a stationary object (bed, chair or commode).
- The spreader bar **MUST** be attached to the lift **BEFORE** attaching the sling.
- DO NOT use any kind of plastic back incontinence pad or seating cushion between patient and sling material that may cause the patient to slide out of the sling during transfer.
- Make sure that there is sufficient head support when lifting a patient.
- Position the patient in the sling as directed by the instructions provided with the sling.
- Adjustments for patient safety and comfort should be made before moving the patient.

The straps of the sling may be equipped with colour coded loops providing different lengths to place the patient into different positions. Shorter straps at the shoulders will produce a more vertical lift, which will assist with positioning into a chair or wheelchair. By lengthening the straps at the shoulders, a more reclined position can be achieved which is more suitable for a chair to bed transfer. Always match the loop colours of the corresponding straps on each side of the sling for an even lift of the patient.

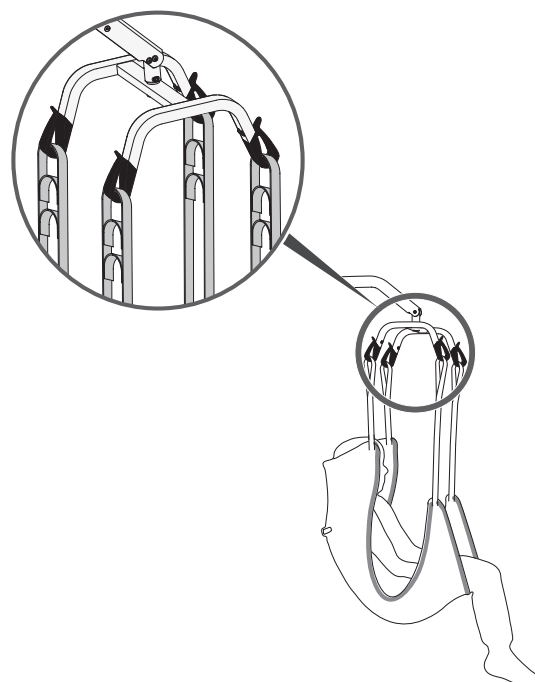


1. Place the desired loop of strap **A** over the nose of hook **B**.

2. Pull down the strap **A** until the loop is fully seated at the bottom of hook **B**.
3. Repeat the steps for each of the remaining straps of the sling.
 - a. On a 2-point spreader bar, attach the shoulder strap **C** before the leg strap **D** on each of the hooks.



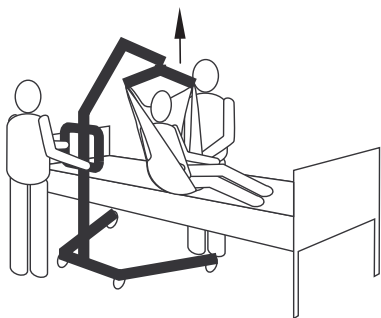
- b. On a 4-point spreader bar, attach each of the straps to an individual hook.




6.3 Transferring a patient from a bed

1. Prepare to lift. See 6.2 *Preparing to lift*, page 17.
2. Attach the sling to the lift. See 6.2.1 *Attaching the sling to the lift*, page 18.
3. Unlock the rear castors.

4.

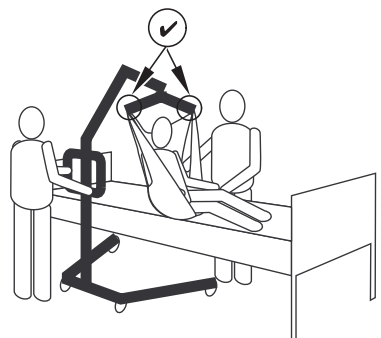


Lift the patient high enough to clear the stationary object with their weight fully supported by the lift.

-  The boom will stay in position until the DOWN button is pressed.

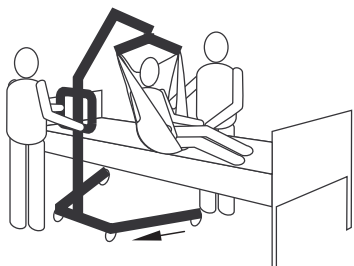
If needed, lower the bed.

5.



Before moving the patient, check again to make sure that the sling is properly attached to the hooks of the spreader bar. See 6.2.1 *Attaching the sling to the lift*, page 18. If any attachments are not properly in place, lower the patient back onto the stationary object and correct the problem.

6.



Using the push bars, move the lift away from the stationary object.

7.




Using the handles on the sling, turn the patient so that he/she faces the assistant operating the patient lift.

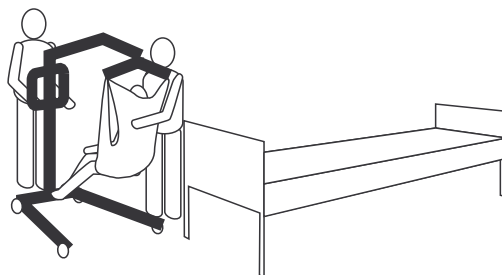
8.



Lower the patient so that his/her feet rest on the base of the lift, straddling the mast.

-  The lower centre of gravity provides stability making the patient feel more secure and the lift easier to move.

9.

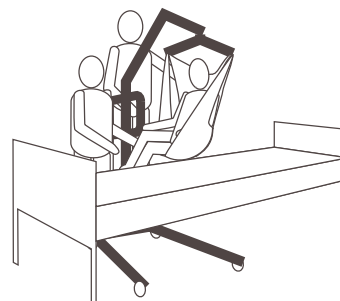


Move the patient lift with both hands firmly on the push bars.

10. Proceed with the transfer to another resting surface or stationary object.

6.4 Transferring a patient to a bed

1. Perform the following steps in addition to those required to lift the patient of another resting surface or stationary object
- 2.



Raise or lower the lift to position the patient over the stationary surface. Be sure to raise or lower the patient enough to clear the sides of the stationary object.

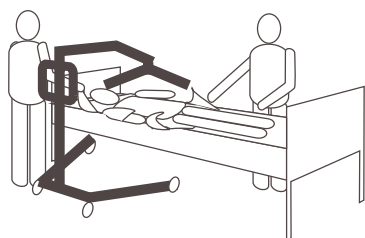
3.



Lower the patient onto the stationary surface.

4. Ensure the patient is fully supported by the surface to which you are transferring.
5. Lock the rear castors.
6. Raise the bed to a good working height (usually hip height of caregivers).

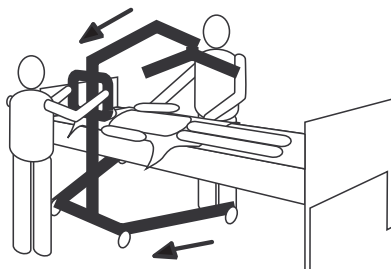
7.



Detach the sling from the spreader bar.

8. Unlock the rear castors.

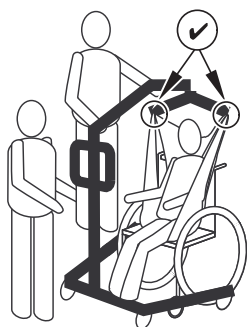
9.



Move the lift away from the area.

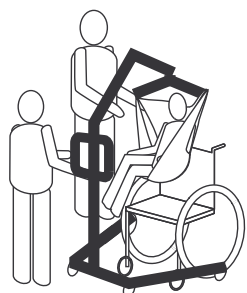
6.5 Transferring a patient from a wheelchair

1. Engage the parking brakes of the wheelchair to prevent movement of the wheelchair.
2. Prepare to lift. See 6.2 *Preparing to lift*, page 17.
3. Ensure the wheelchair is placed between the opened legs of the lift with the patient facing the mast.
4. Attach the sling to the lift. See 6.2.1 *Attaching the sling to the lift*, page 18.
5. Unlock the rear castors.
- 6.



Raise the boom until there is tension on the straps of the sling and make sure that the sling is properly attached to the hooks of the spreader bar. See 6.2.1 *Attaching the sling to the lift*, page 18. If any attachments are not properly in place, lower the patient back onto the wheelchair and correct the problem.

7.



Lift the patient high enough to clear the wheelchair surface with their weight fully supported by the lift.

8. Using the push bars, move the lift away from the wheelchair.

9. Proceed with the transfer to another resting surface or stationary object.

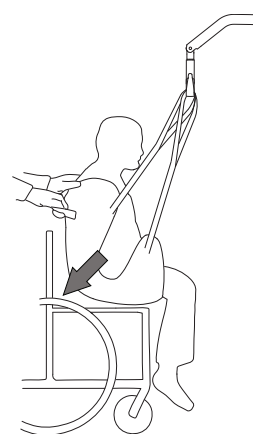
6.6 Transferring a patient to a wheelchair



WARNING! Risk of Injury

- Before transferring, check that the wheelchair weight capacity can withstand the patient's weight.
- The wheelchair wheel locks **MUST** be in a locked position before lowering the patient into the wheelchair for transport.

1. Perform the following steps in addition to those required to lift the patient of another resting surface or stationary object
2. Engage the parking brakes of the wheelchair to prevent movement of the wheelchair.
3. Position the patient over the seat with their back against the back of the chair.
- 4.



Begin to lower the patient and use the grab handle (on selected models) or sides of the sling to guide the patient's hips as far back as possible into the seat for proper positioning. This will maintain a good centre of balance and prevent the chair from tipping forward.

6.7 Transferring a patient to and from a commode



The Invacare patient lift is **NOT** intended as a transport device. If the bathroom facilities are **NOT** near the bed or if the patient lift cannot be easily manoeuvred towards the commode, then the patient **MUST** be transferred to a wheelchair and transported to the bathroom facilities before using the patient lift again to position the patient on a standard commode.



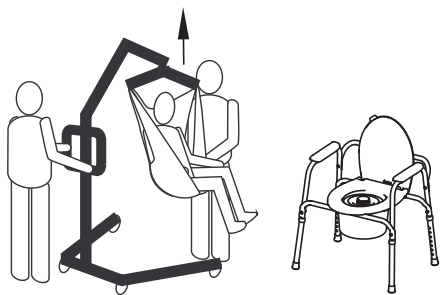
The slings with commode openings are designed to be used with either a commode chair or standard commode.



Before transferring the patient, the patient lift should be guided to the bathroom facilities to check that it can be easily manoeuvred towards the commode.

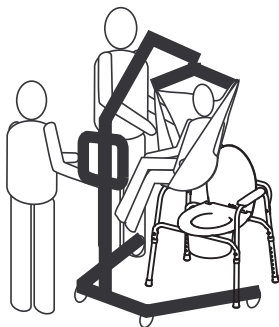
1. Perform the following steps in addition to those required to lift the patient of another resting surface or stationary object

2.



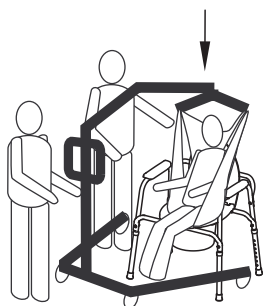
Elevate the patient high enough to clear the commode chair arms and have their weight supported by the patient lift. See 5 Usage, page 12

3.



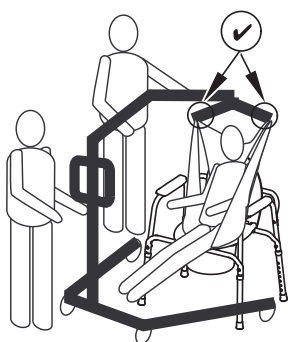
Position the lift so the legs are outside of the commode legs and the push bars of the lift are opposite of the commode and guide the patient over the commode.

4.



Lower the patient onto the commode, leaving the sling attached to the spreader bar hooks. Invacare recommends that the sling remains connected to the spreader bar hooks during the patient's use of either the commode chair or standard commode.

5.



When complete, recheck for correct sling attachment.

6. Raise the patient off of the commode.

7.



When the patient is clear of the commode surface, use the push bars to move the lift away from the commode.

8. Proceed with the transfer to another resting surface or stationary object.

6.8 Lifting a patient from the floor



WARNING!

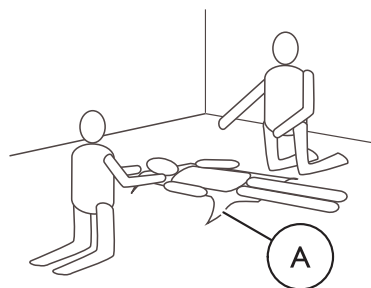
Risk of Injury

The lift can injure a patient who is on the floor or an assistant working on the floor.

- Always take care when moving parts of the lift close to a person on the floor.

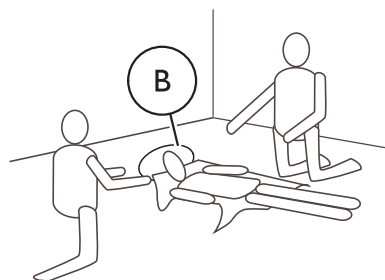
1. Determine if the patient has suffered any injuries from a fall. If no medical attention is needed, proceed with the transfer.

2.



Position the sling Ⓐ under the patient. Refer to the sling user manual for more information about positioning slings.

3.

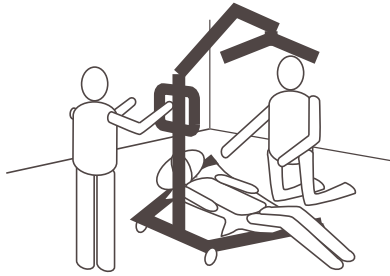


Have the patient bend his/her knees and raise his/her head off of the floor supporting the patient's head with a pillow Ⓑ.

4. Unlock the rear castors. See 5 Usage, page 12

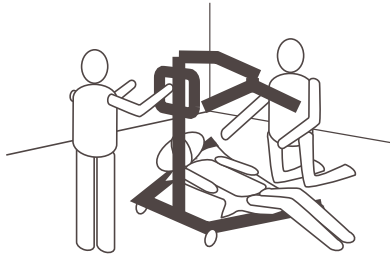
5. Open the legs of the lift. See 5 Usage, page 12.

6.



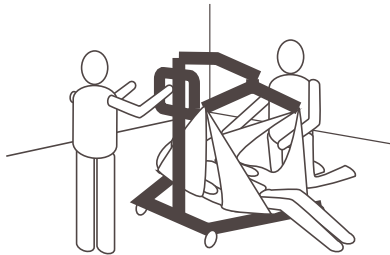
Position the lift with one leg under the patient's bent knees and the other leg under the patient's head. Keep the sling straps inside of the legs of the lift.

7.



Lower the boom so the spreader bar is directly over the patient's chest.

8.



Attach the sling. See 6.2.1 *Attaching the sling to the lift*, page 18.

9. Raise the boom to lift the patient off the floor.

10. Proceed with the transfer to another resting surface or stationary object.

7 Transportation and Storage

7.1 General information

During transportation, or when the patient lift is not to be used for some time, the emergency stop button should be pushed in.

A folded or disassembled lift can be placed in the packaging box, for transportation and storage.

Folded lifts can be pulled on the rear wheels and lifts with a manual leg spreader can be parked in an upright position with the mast/boom assembly pointing upwards.

The patient lift must be stored at normal room temperature. If it is stored in a damp, cold or wet environment then the motor and other mounting parts may be prone to corrosion. See *11.4 Environmental conditions, page 30*.


7.2 Disassembling the mast from the base

(fixed mast only)

1. Remove optional leg spreader lever if attached.
2. Lower the boom and narrow both legs completely.
3. Activate the emergency stop button and apply castor brakes.
4. Reverse the procedure described in *4.5 Installing the actuator to the boom, page 11*
5. Reverse the procedure described in *4.4 Unfolding the spreader bar, page 10*
6. Reverse the procedure described in *4.3.2 Assembling the mast to the base, page 10*

7.3 Folding the mast

(foldable mast only)

1. Remove optional leg spreader lever if attached.
2. Using the hand control, lower the boom (ensuring the actuator is fully retracted) and narrow both legs completely.
3. Activate the emergency stop button and apply castor brakes.
4. Reverse the procedure described in *4.5 Installing the actuator to the boom, page 11*
5. Reverse the procedure described in *4.4 Unfolding the spreader bar, page 10* (ensure the actuator is fully retracted).
6. Reverse the procedure described in *4.3.1 Unfolding the mast, page 9* and pull and hold the safety catch  upwards before folding down the mast.

8 Maintenance

8.1 General maintenance information


WARNING!
Risk of injury or damage

- Do not perform any maintenance or service procedures while the product is in use.

Follow the maintenance procedures described in this manual to keep your product in continuous service.

Further maintenance and inspection procedures, to be performed by a qualified technician, are described in the service manual of this product. Service manuals can be obtained from Invacare.

8.2 Daily inspections


WARNING!
Risk of injury or damage

Damaged or worn parts can affect the safety of the lift.

- The patient lift should be checked each time it is used.
- Do not use the lift if damage is found or you question the safety of any part of the lift. Contact your Invacare provider immediately and ensure the lift is not used until repairs are made.

8.2.1 Daily Inspection Checklist

- ☐ Visually inspect the patient lift. Check all parts for external damage or wear.
- ☐ Check all hardware, attachment points and stressed parts, such as slings, hooks and any pivot points for signs of wear, cracking, fraying, deformation or deterioration.
- ☐ Verify that the hand control is functional (lifting and leg movements).
- ☐ Charge the battery every day the lift is used.
- ☐ Check the emergency stop function.

8.3 Cleaning and Disinfection

8.3.1 General Safety Information


CAUTION!
Risk of Contamination

- Take precautions for yourself and use appropriate protective equipment.


CAUTION!
Risk of Electric Shock and Product Damage

- Switch off the device and disconnect from mains, if applicable.
- When cleaning electronic components consider their protection class regarding water ingress.
- Make sure that no water splashes to the plug or the wall outlet.
- Do not touch the power socket with wet hands.


NOTICE!

Wrong fluids or methods can harm or damage the product.

- All cleaning agents and disinfectants used must be effective, compatible with one another and must protect the materials they are used to clean.
- Never use corrosive fluids (alkalines, acid etc.) or abrasive cleaning agents. We recommend an ordinary household cleaning agent such as dishwashing liquid, if not specified otherwise in the cleaning instructions.
- Never use a solvent (cellulose thinner, acetone etc.) that changes the structure of the plastic or dissolves the attached labels.
- Always make sure that the product is completely dried before taking into use again.



For cleaning and disinfection in clinical or long-term care environments, follow your in-house procedures.

8.3.2 Cleaning Intervals


NOTICE!

Regular cleaning and disinfection enhance smooth operation, increases the service life and prevents contamination.

Clean and disinfect the product:

- regularly while in use;
- before and after any service procedure;
- when it has been in contact with any body fluids;
- before using it for a new user.

8.3.3 Cleaning instructions


NOTICE!

- The product does not tolerate cleaning in automatic washing systems, with high-pressure cleaning equipment or steam.

Cleaning the lift

Method: Wipe off with a damp cloth or soft brush.

Max. temperature: 40 °C

Solvent/chemicals: Ordinary household cleaning agent and water.

Drying: Wipe dry with a soft cloth.

Cleaning the sling

Refer to the washing instructions on the sling and to the sling manual for cleaning details.

8.3.4 Disinfection Instructions

In Domestic Care

- Disinfectant: We recommend using an alcohol-based surface disinfectant (with 70-90% alcohol).



Read the instructions on the label of your disinfectant. It provides information on the activity spectrum (bacteria, fungi and/or viruses), material compatibility and the correct exposure time.

1. Ensure the surfaces are cleaned before disinfection.
2. Moisten a soft cloth and wipe-disinfect all accessible surfaces and keep them moistened for the exposure time stated on the label of the disinfectant.
3. Allow the product to air-dry.

In Institutional Care

Follow your in-house disinfection procedures and only use the disinfectants and methods specified therein.

8.4 Service Interval



WARNING!

Risk of injury or damage

Service must be performed only by a qualified technician.

— Contact your Invacare provider for service.

Service must be performed at least every 12 months unless otherwise stated in local requirements.

8.4.1 LOLER Statement

The UK Health and Safety Executive's Lifting Operations and Lifting Equipment Regulations 1998, require any equipment that is used in the workplace to lift a load be subject to safety inspection on a six monthly basis. Please refer to the HSE web site for guidance: www.hse.gov.uk.

The person responsible for the equipment must ensure adherence to LOLER regulations.

9 After Use

9.1 Disposal

**WARNING!****Environmental Hazard**

Device contains batteries.

This product may contain substances that could be harmful to the environment if disposed of in places (landfills) that are not appropriate according to legislation.

- DO NOT dispose of batteries in normal household waste.
- DO NOT throw batteries into a fire.
- Batteries **MUST** be taken to a proper disposal site. The return is required by law and free of charge.
- Only dispose of discharged batteries.
- Cover terminals of lithium batteries prior to disposal.
- For information on the battery type see battery label or chapter *11 Technical Data, page 28*.

Be environmentally responsible and recycle this product through your recycling facility at its end of life.

Disassemble the product and its components, so the different materials can be separated and recycled individually.

The disposal and recycling of used products and packaging must comply with the laws and regulations for waste handling in each country. Contact your local waste management company for information.

9.2 Reconditioning

This product is suitable for reuse. To recondition the product for a new user, carry out the following actions:

- Cleaning and disinfection
- Inspection according to service plan

For detailed information about inspection, cleaning and disinfection, consult the user manual and service manual for this product.

Make sure that the user manual is handed over with the product.

If any damage or malfunction is detected, do not reuse the product.

10 Troubleshooting

10.1 Identifying faults and possible solutions


Symptoms	Faults	Solution
Patient lift feels loose.	Mast/ Base joint loose.	Refer to Installing the Mast in the Setup section.
	Tie - Rods are loose.	Contact your Invacare provider.
Castors/ Brakes noisy or stiff.	Fluff or debris in bearings.	Clean castors from fluff and debris.
Noisy or dry sound from pivots.	Pivots are worn or damaged	Contact your Invacare provider.
Electric actuator fails to lift or legs fail to open when button is pressed.	Hand control or actuator connector loose.	Connect hand control or actuator connector. Ensure connectors are seated properly and fully connected.
	Battery low.	Charge the battery. See 5.7 <i>Charging the battery</i> , page 14.
	Emergency stop button is pressed in.	Rotate the emergency stop button clockwise until it pops out.
	Battery not connected properly to control unit.	Reconnect the battery to the control unit. See 5.7.3 <i>Optional Battery Charger</i> , page 15.
	The connecting terminals are damaged.	Contact your Invacare provider.
	Power cord connected to power outlet.	Disconnect power cord from power outlet.
	Boom or leg actuator is damaged	Contact your Invacare provider.
	Max. load is exceeded	Reduce the load.
Unusual noise from actuator.	Actuator is damaged	Contact your Invacare provider.
Boom will not lower in uppermost position.	Boom requires a minimum weight load to lower from the uppermost position.	Pull down slightly on the boom.
The control unit emits a beeping sound during lifting, and the motor stops.	Max. load is exceeded	Reduce the load (and the lift will function normally).



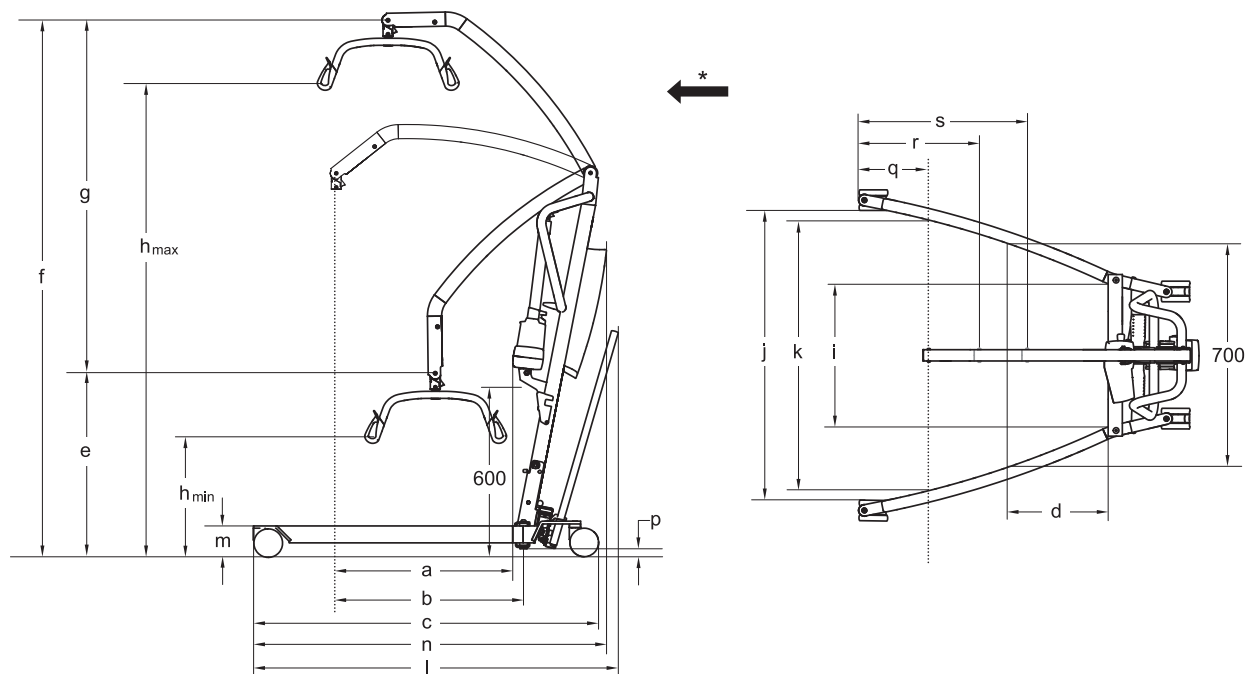
Contact your Invacare provider if the above does not solve your problems.

11 Technical Data

11.1 Maximum safe working load

	Birdie® EVO COMPACT
Max. Safe Working Load (patient + spreader bar + sling)	150 kg

11.2 Dimensions and Weights



* Forward direction

Dimensions [mm]	Birdie® EVO COMPACT	
Front / rear castor diameter	75 / 75	100 / 100
Max. reach at 600 mm (a)	530	530
Max. reach from base (b)	530	530
Base length (c)	1060	1080
Total length without lever (n)	1100	1100
Total length with lever (l)	1140	1140
Reach from base with legs spread to 700 mm (d)	420	420
CSP* min. height / lowest position (e)	730	745
CSP* max. height (f)	1805	1820
Lifting range (g)	1060	1060
Min. height at Sling Hook-up (h_{\min})	515	530
Max. height at Sling Hook-up (h_{\max})	1575	1590
Total width (legs open) centre to centre of castor	890	890
Total width (legs open) internal measure (j)	835	815
Total width (legs closed), external measure	520	520
Min. internal width (i)	380	380
Internal width at maximum reach (k)	765	765
Turning diameter without lever	1210	1210

Dimensions [mm]	Birdie® EVO COMPACT	
Turning diameter with lever	1245	1245
Height to upper edge of legs (m)	100	115
Min. free height (p)	20	35
Minimum distance from wall to CSP* at maximum reach (legs open) (q)	210	210
Minimum distance from wall to CSP* at maximum height (legs open) (r)	450	450
Minimum distance from wall to CSP* at minimum height (legs open) (s)	395	395
Height when folded (foldable version only)	455	470
Length when folded (foldable version only)	1190	1210

* CSP = Central Suspension Point



All measures are taken with a 450 mm 2-point spreader bar.

Weights Main Parts [kg]	Birdie® EVO COMPACT
Total weight excl. spreader bar	31
Weight, mast, incl. battery, excl. spreader bar	14
Weight manual base	17

Weights Spreader Bars [kg]	
Spreader bar, 2-point, 350 mm	1.3
Spreader bar, 2-point, 450 mm	1.4
Spreader bar, 2-point, 550 mm	1.6
Spreader bar, 4-point, 450 mm	2.8
Spreader bar, 4-point, 500 mm	2.9

11.3 Electrical System

Birdie® EVO COMPACT	
Voltage output	24 V DC, max. 240 VA
Voltage supply	100 – 240 V AC, 50/60 Hz
Maximum current input	1 A
Protection class (entire device)	IPX4*
Insulation class	Class II equipment

*IPX4 - The system is protected against water splashed from any direction.

Birdie® EVO COMPACT	
Type B Applied Part	Applied part complying with the specified requirements for protection against electrical shock according to IEC60601-1.
Sound level	≤ 54 dB(A)
Working ability	40 full lifts (with battery between 100% – 50% of full capacity)
Intermittent (periodic motor operation)	10%, max. 2 min/18 min
Battery specifications	2 x 12 V DC / 2.9 Ah
Battery type	Lead acid (service free, sealed)
Manual emergency lowering	Yes
Electric emergency lowering / lifting	Yes / Yes
Power Consumption	while charging: max. 19 W in standby: max. 2.5 W

*IPx4 - The system is protected against water splashed from any direction.

11.4 Environmental conditions

	Storage and transportation	Operation
Temperature	-10 °C to +50 °C	0 °C to +40 °C
Relative humidity	20% to 80%, not condensing	
Atmospheric pressure	860 hPa to 1060 hPa	



Allow the product to reach operation temperature before usage:

- Warming up from minimum storage temperature might take more than 30 minutes.
- Cooling down from maximum storage temperature might take more than 5 minutes.

11.5 Materials

Component	Material
Base, legs, mast and boom	Steel (powder-coated)
Spreader bar	Steel (powder-coated) and TPU
Actuator housing, hand control, mast protector, castors and other plastic parts	Material according to marking (PA, PP, PE)
Boom connector, bolts and nuts	Steel, zinc-plated

All components of the product are either corrosion resistant or corrosion protected.

11.6 Operating forces of controls

Control	Operating force
Buttons on control unit	5 N
Buttons on hand control	5 N
Foot pedal	max. 290 N
Leg spreader lever	max. 50 N

12 Electromagnetic Compatibility

12.1 General EMC information

Medical Electrical Equipment needs to be installed and used according to the EMC information in this manual.

This product has been tested and found to comply with EMC limits specified by IEC/EN 60601-1-2 for Class B equipment.

Portable and mobile RF communications equipment can affect the operation of this product.

Other devices may experience interference from even the low levels of electromagnetic emissions permitted by the above standard. To determine if the emission from this product is causing the interference, run and stop running this product. If the interference with the other device operation stops, then this product is causing the interference. In such rare cases, interference may be reduced or corrected by the following:

- Reposition, relocate, or increase the separation between the devices.

12.2 Electromagnetic emission

Guidance and manufacturer's declaration

This product is intended for use in the electromagnetic environment specified below. The customer or the user of this product should assure that it is used in such an environment.


Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group I	This product uses RF energy only for its internal function. 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 product 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.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations /flicker emissions IEC 61000-3-3	Complies	

12.3 Electromagnetic Immunity

Guidance and manufacturer's declaration

This product is intended for use in the electromagnetic environment specified below. The customer or the user of this product should assure that it is used in such an environment.

Immunity test	Test / Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrostatic transient / burst IEC 61000-4-4	± 2 kV for power supply lines; 100 kHz repetition frequency ± 1 kV for input / output lines; 100 kHz repetition frequency	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line to line ± 2 kV line to earth	Mains power quality should be that of a typical commercial or hospital environment.

Immunity test	Test / Compliance level	Electromagnetic environment – guidance
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	< 0% U_T for 0,5 cycle at 45° steps 0% U_T for 1 cycles 70% U_T for 25 / 30 cycles < 5% U_T for 250 / 300 cycles	Mains power quality should be that of a typical commercial or hospital environment. If the user of this product requires continued operation during power mains interruptions, it is recommended that the product is powered from an un-interruptible power supply or a battery. U_T is the a. c. mains voltage prior to application of the test level.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Conducted RF IEC 61000-4-6	3 V 150 kHz to 80 Mhz 6 V in ISM & amateur radio bands	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 this product is used exceeds the applicable RF compliance level above, this product should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating this product.
Radiated RF IEC 61000-4-3	10 V/m 80 Mhz to 2,7 GHz 385 MHz - 5785 MHz test specifications for immunity to RF wireless communication equipment refer to table 9 of IEC 60601-1-2	Interference may occur in the vicinity of equipment marked with the following symbol:  Portable and mobile RF communications equipment should be used no closer than 30 cm to any part of this product including cables.



These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

12.4 EMC test specifications

IEC 60601-1-2 — Table 9

Test Frequency (MHz)	Band a) (MHz)	Service a)	Modulation	Immunity test level (V/m)
385	380 - 390	TETRA 400	Pulse modulation ^{b)} 18 Hz	27
450	430 - 470	GMRS 460, FRS 460	FM ^{c)} ± 5 kHz deviation 1 kHz sine	28
710 745 788	704 - 787	LTE Band 13, 17	Pulse modulation ^{b)} 217 Hz	9
810 870 930	800 - 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation ^{b)} 18 Hz	28
1720 1845 1970	1700 - 1990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation ^{b)} 217 Hz	28
2450	2400 - 2570	Bluetooth, WLAN, 802.11, b/g/n, RFID, 2450, LTE, Band 7	Pulse modulation ^{b)} 217 Hz	28

Test Frequency (MHz)	Band a) (MHz)	Service ^{a)}	Modulation	Immunity test level (V/m)
5240 5500 5785	5100 - 5800	WLAN 802.11a/n	Pulse modulation ^{b)} 217 Hz	9



If necessary to achieve the immunity test level, the distance between the transmitting antenna and the Medical Electrical Equipment or System may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.

^{a)} For some services, only the uplink frequencies are included.

^{b)} The carrier shall be modulated using a 50 % duty cycle square wave signal.

^{c)} As an alternative to FM modulation, 50 % pulse modulation at 18 Hz may be used because while it does not represent actual modulation, it would be worst case.

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