ARJOHUNTLEIGH
GETINGE GROUP

Voyager® Duo, V5 Duo

Technical Manual

CE

001-19521-EN rev. 3 • August 2013

...with people in mind

Table of Contents

001-19521-EN rev. 3

General Information

ArjoHuntleigh designs and manufactures quality engineered patient lifting equipment for the care of the elderly and disabled in a home care setting, nursing homes and other health care facilities.

Please take the time to read the entire manual, including the "Safety Instructions" section. It contains important information that will allow you to take advantage of the many characteristics of your ArjoHuntleigh patient lift.

ArjoHuntleigh Credentials:

- **CE mark (European Union Listing)**
- **Global operations for in-warranty and out-of-warranty service support for the Voyager Duo / V5 Duo.**
- **Each finished unit is individually tested in our laboratory.**
- **Maximum lifting capacity is 200 kg (440 lb). Engineering safety factor exceeds European Standards.**
- **Complete range of patient lift slings and supports designed and manufactured by ArjoHuntleigh using medical quality materials and fabrics.**
- **FDA Quality System Regulations**

COMPLIANT WITH:

CAN/CSA-C22.2
CSA-Z323.5.98
IEC 60601-1
UL 60601-1
ISO 10535

Introduction

How to use this Manual

WARNING: Do not attempt to use this equipment without understanding this manual.

To ensure a safe operation of the unit, read the entire manual carefully, especially the "Safety Instructions" section, before installing, operating, or servicing this equipment.

Refer to this manual as required. If anything is not completely understood, please contact ArjoHuntleigh for more details. Failure to comply with warnings in this manual may result in injury.

NOTE: ArjoHuntleigh is constantly improving its products. For this reason, it may be possible to encounter product modifications without revision of this manual or that the contents of this manual changes without prior notice to users.

You can obtain additional copies of this manual by contacting your supplier. Include the User Manual product number (see front page) and equipment identification number.

Equipment Identification

The unit's identification number (specification, model, serial number) appears on a silver nameplate attached to front end of the plastic housing on the lift.

Instructions and Warnings

Please read the following important information.

General

WARNING: Read the following instructions to avoid serious injury. Read the Operating and Product Care manual before installing, operating and servicing this equipment.

- ArjoHuntleigh ceiling lifts and track system must be installed by an authorized contractor or installer.
- Only a certified technician or installer can remove and reinstall the lift into the track.
- The installation is capable of accepting at least 120 kg (264 lb) or 272 kg (600 lb).
- ArjoHuntleigh ceiling lifts are specifically designed for use with Kwiktrak ceiling rail systems, and ArjoHuntleigh slings and accessories.
- Use all controls and safety features only according to the manner specified in the User Manual. Never attempt to force a control or button on the lift.
- DO NOT install the charger in a shower, bath or other areas with high humidity.

CAUTION: Keep all components of the lift clean and dry, and have electrical and mechanical safety checkpoints performed as instructed in the "Maintenance" section of the *Instruction for Use*.

- Replace any precautionary or instruction labels that cannot be easily read.
- Avoid violent impact during transportation.

Shock Prevention

- DO NOT touch or use a lift with bare conductors or a damaged power cord. Electrically live equipment can electrocute a patient. If the lift or charger has any exposed or damaged wires, contact your local dealer immediately.
- Do not splash or expose electric parts of the device to water or moisture.
- Check nameplate for voltage and frequency requirements. These requirements differ by country. Do not attempt to use the lift in an area that has a different voltage and cycle requirement.

Fire and Explosion Prevention

WARNING: Dispose of the batteries safely. Batteries may explode, leak and cause personal injuries if disposed improperly. If battery acid comes into contact with skin or eyes, flush immediately with water.

- Do not dispose of batteries in fire.
- Do not short the battery terminals.
- For recycling and disposal of the batteries, the rules according to the WEEE directive (Waste of Electronic and Electrical Components) as well as local laws and regulations must be followed. When returning batteries, insulate their terminals with adhesive tape. Otherwise, the residual electricity in used batteries may cause fire or explosion. The figure below shows the symbols for disposal and recycling.

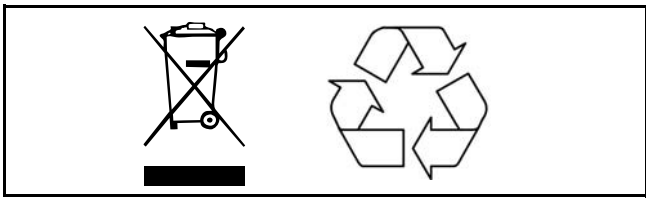

Fig. 1

Safe Working Load

The Voyager Duo / V5 Duo has been designed with two settings with regards to the safe working load:

- 100 kg (220 lb): Safe working load
- 200 kg (440 lb): Maximum allowable load for the lift (adjusted in factory)

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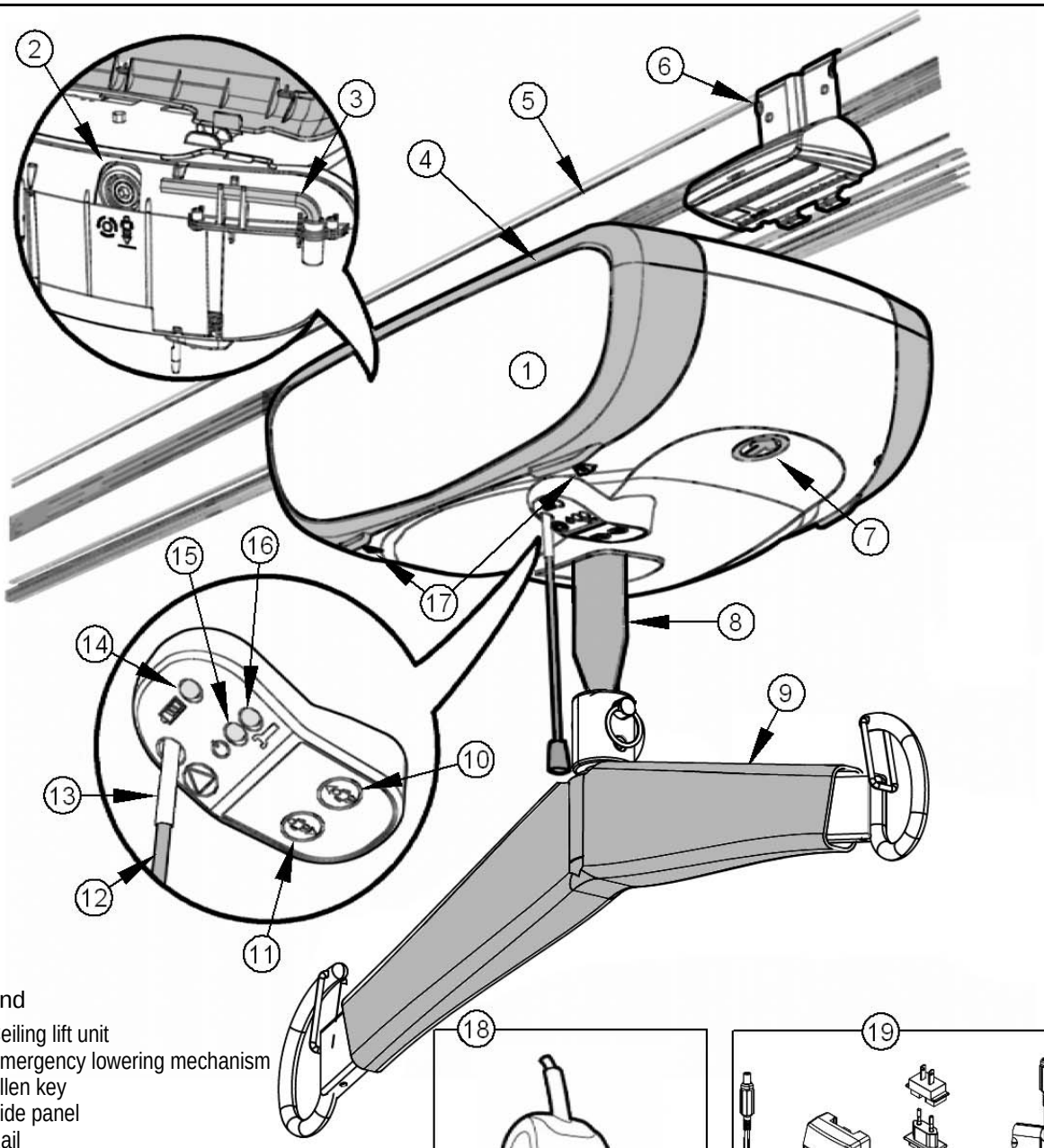
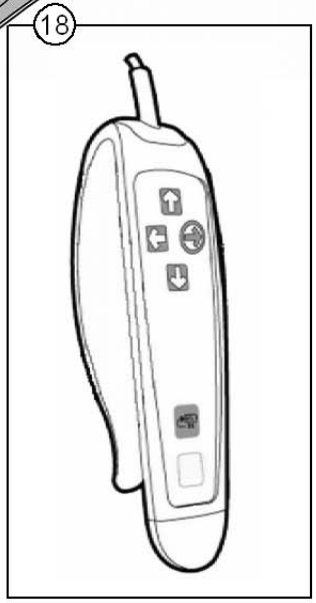
Part Designation

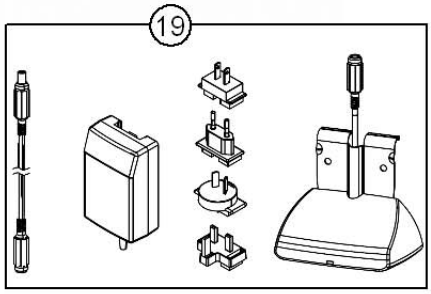
Lift Cassette and Charger Station



Legend

1) Ceiling lift unit
2) Emergency lowering mechanism
3) Allen key
4) Side panel
5) Rail
6) Charging station
7) Travel direction arrows
8) Strap
9) Spreader bar
10) Up button
11) Down button
12) Red emergency pull cord
13) Reset switch plastic insert
14) Yellow charging light
15) Green power light
16) Red maintenance/overload light
17) Indicator for emergency lowering side access
18) Hand control (inset)
19) Wall adapted charger
20) Cord connected charger





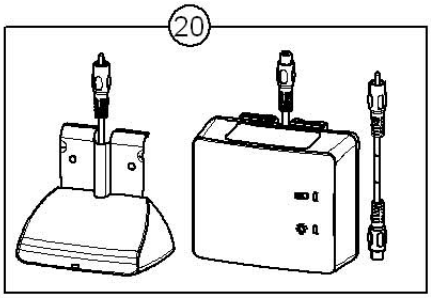


Fig. 2

The following refers to the figure “Lift Cassette and Charger Station” on the previous page:

- The yellow charging light flashes while charging and goes solid when charge is finished.
- The green power light illuminates once the lift is on and ready for use; the green light flashes when the batteries are low.
- The red light illuminates to confirm that the lift is in the programming mode.
- The red light also illuminates in the normal mode when the lift goes into overheat protection caused by overuse.
- The red light flashes when a service inspection is required.

Hand control

The Voyager Duo / V5 Duo hand control comes only in the wired model.

Universal Chargers

The Voyager Duo / V5 Duo comes equipped with a universal charging system that can be customized to fit the AC voltage outlets where they are sold (see Fig. 2).

Maintenance and Service

Required Maintenance

The Voyager Duo / V5 Duo is equipped with an electronic monitor that will cause a red light to flash when a maintenance inspection is necessary. Once this red light begins to flash, please contact ArjoHuntleigh if you need any assistance with performing the necessary maintenance inspection requirements.

Other maintenance includes changing parts or components that are subject to wear with regular use.

Battery Replacement

Accessing the batteries:

① Turn unit off.

② Open and unhook both side panels.

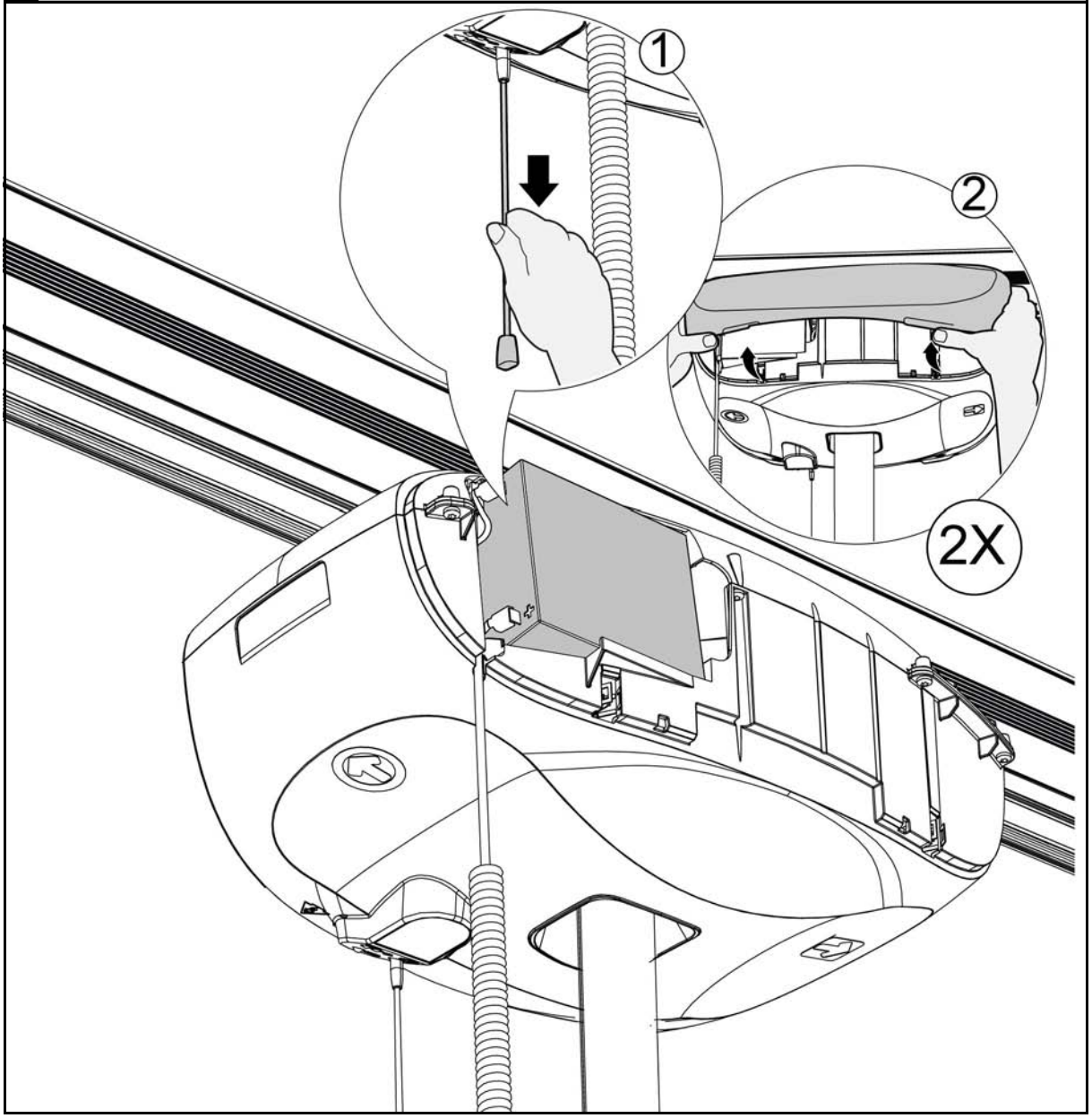


Fig. 3

Removing the batteries:

① Push up on the battery.
② Slide the battery slightly to the left.
③ Slide the battery outwards, and carefully disconnect the wires.

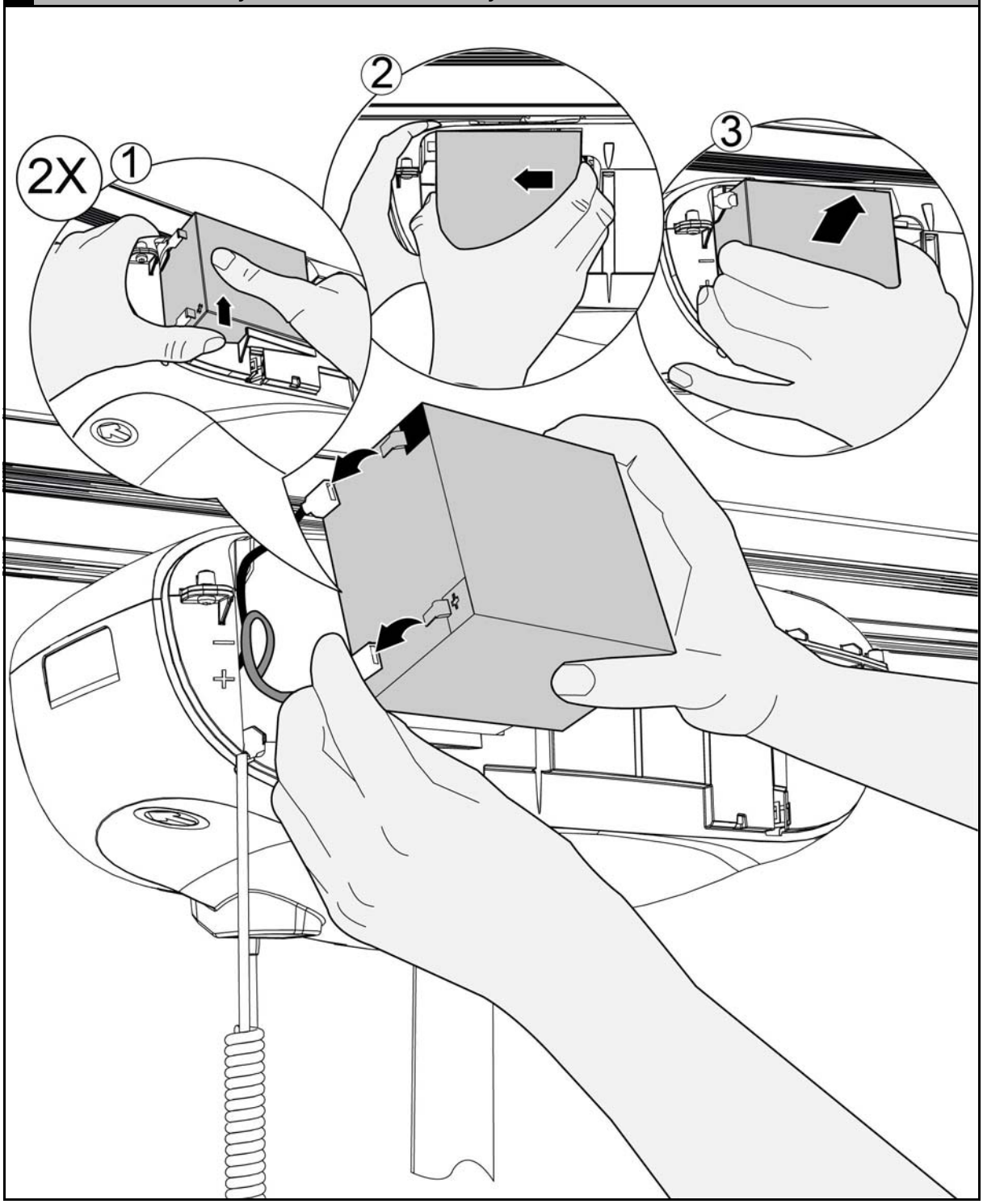


Fig. 4

Replacing the batteries:

① Pass the battery wires behind the plastic column located within the battery compartment.

② Reconnect the battery wires black to black, red to red.

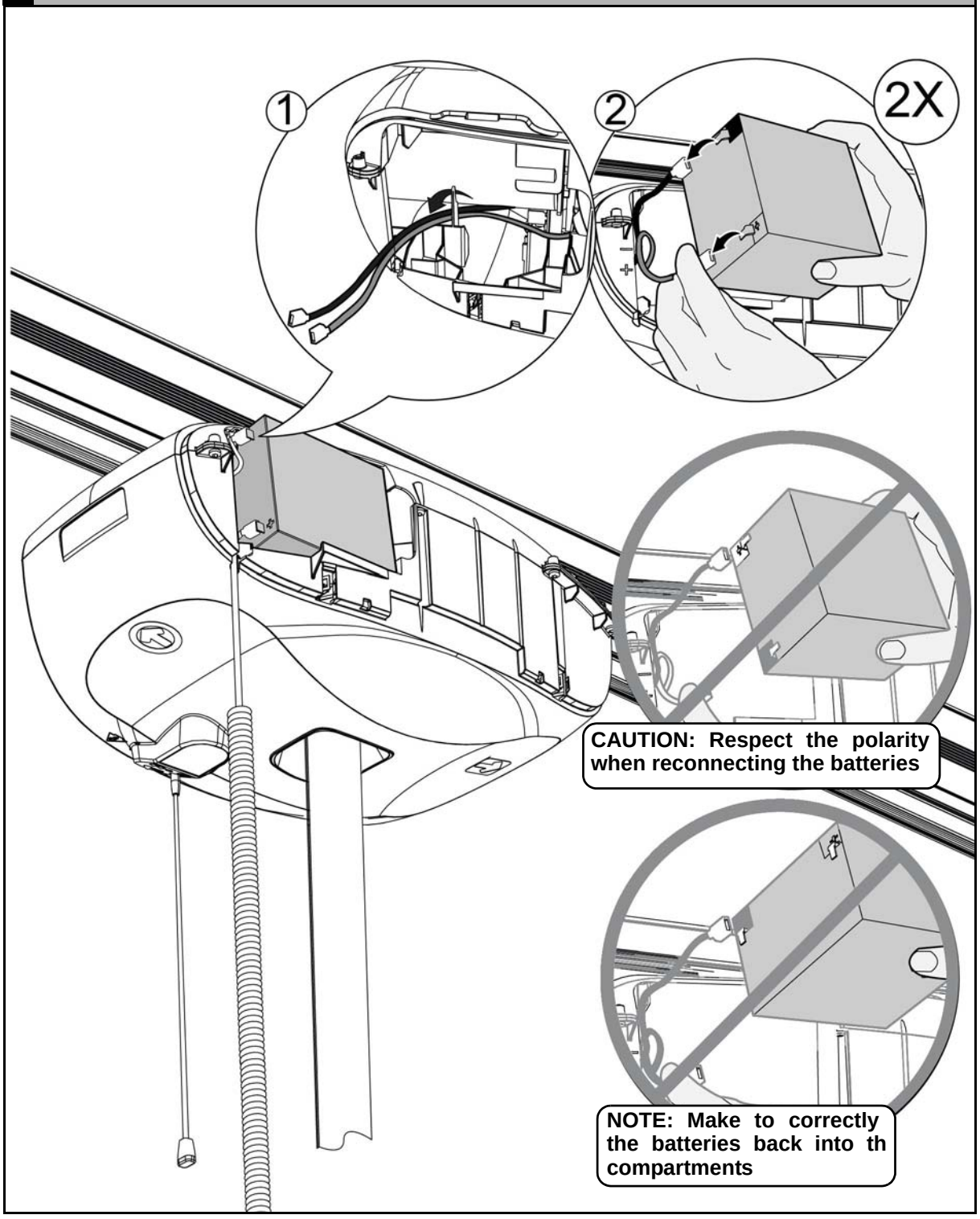


Fig. 5

Final steps:

① Hook the side panels back onto the main shell of the unit's housing.
② Close the side panels completely.
③ Push up on the plastic insert switch to turn the unit back on.

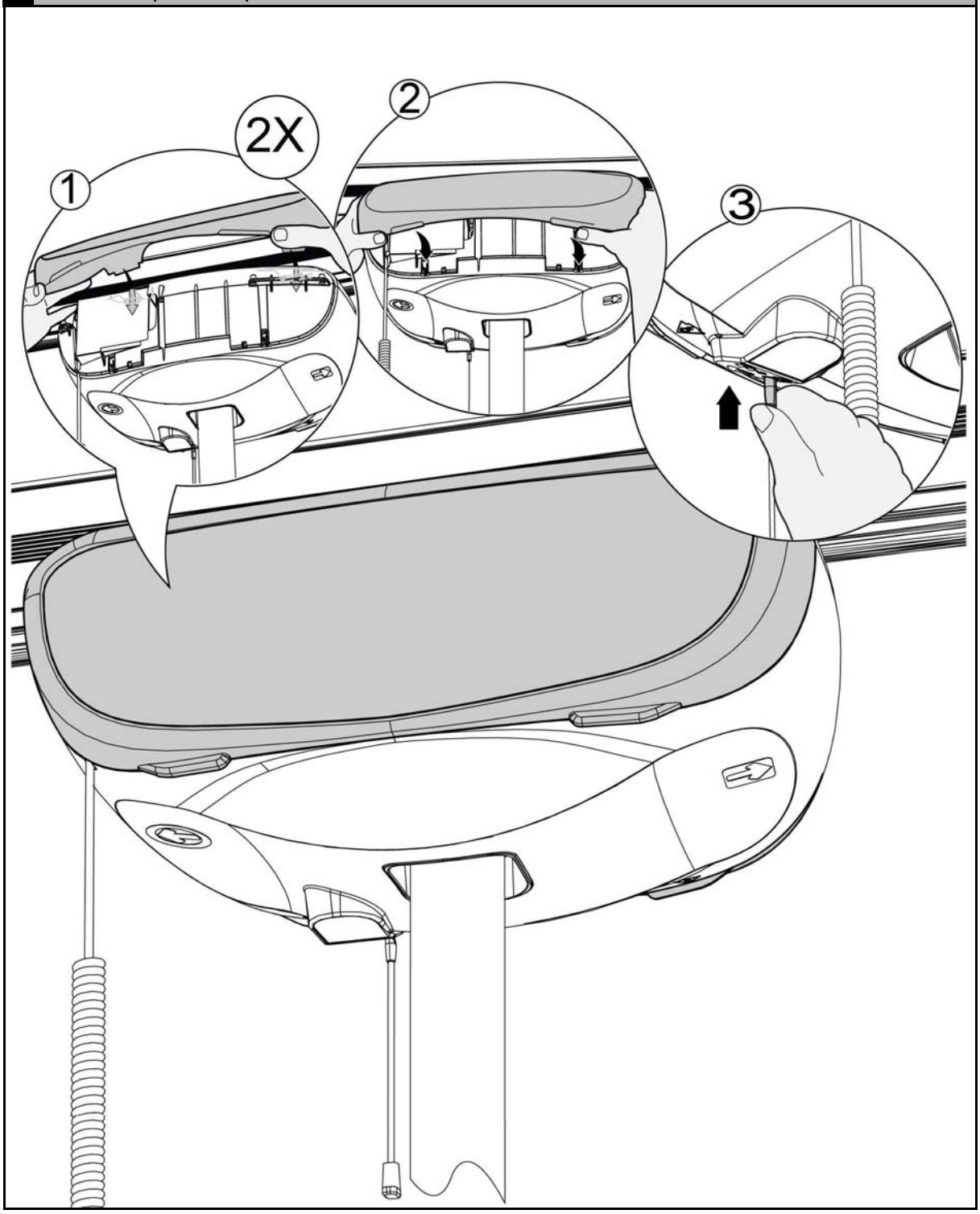
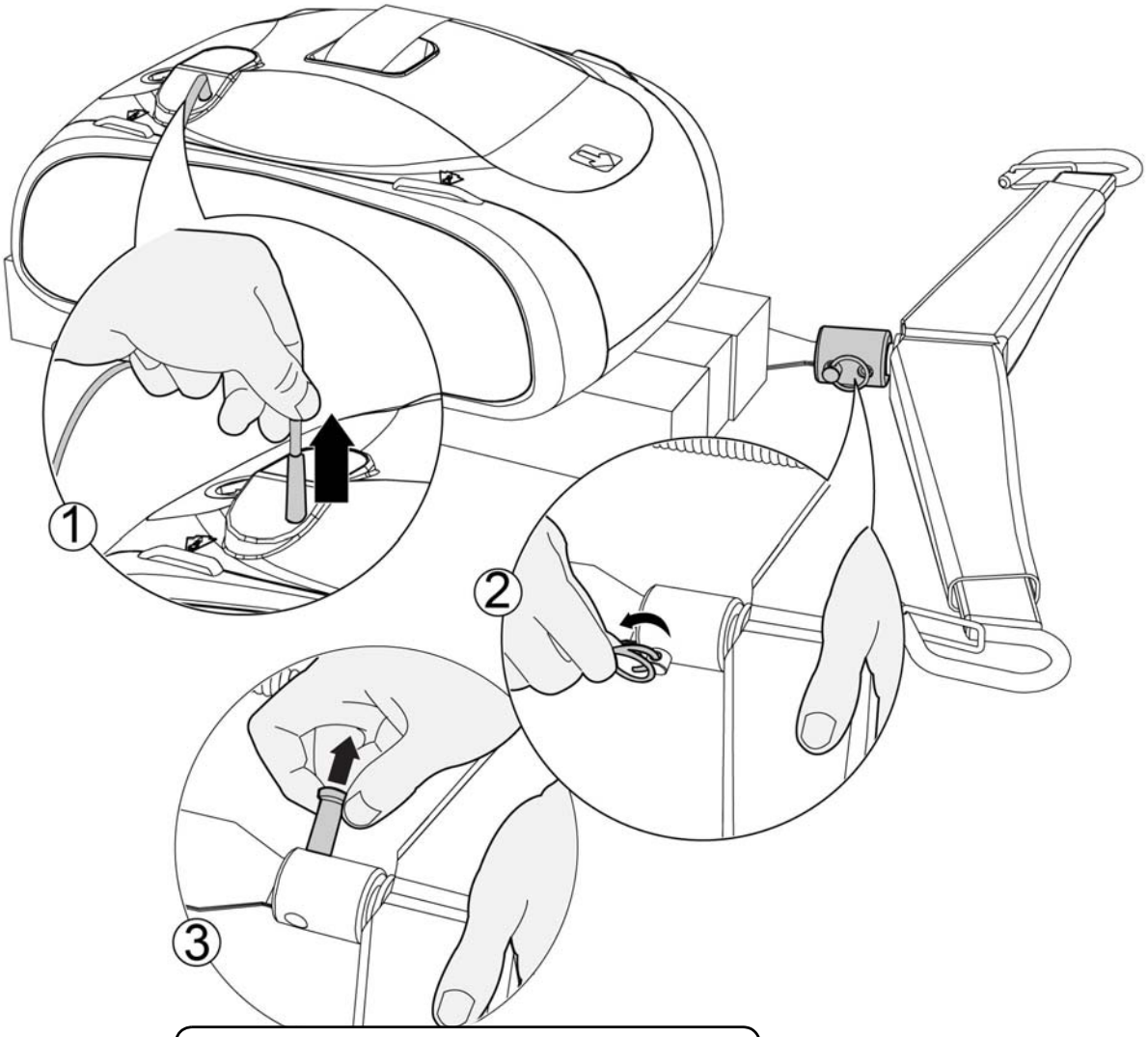


Fig. 6

Strap Replacement

Disconnecting the spreader bar from the strap:

① Gently pull the red cord to turn off the unit.
② Remove the split ring from the spreader bar clevis pin.
③ Slide the clevis out from the spreader bar connector.



Note: Reinstall the clevis pin and split ring back into the now detached spreader bar connector. This will keep the small parts from being lost.

Fig. 7

Removing the batteries and handset plug:

① Open and unhook the side panels.
② Push down slightly on the battery.
③ Slide the battery outwards.
④ Carefully disconnect the wires.
⑤ Unplug the handset jack from its socket located on the plastic housing, unravel the cable from the strain relief and unclip the handset cable from the plastic housing.

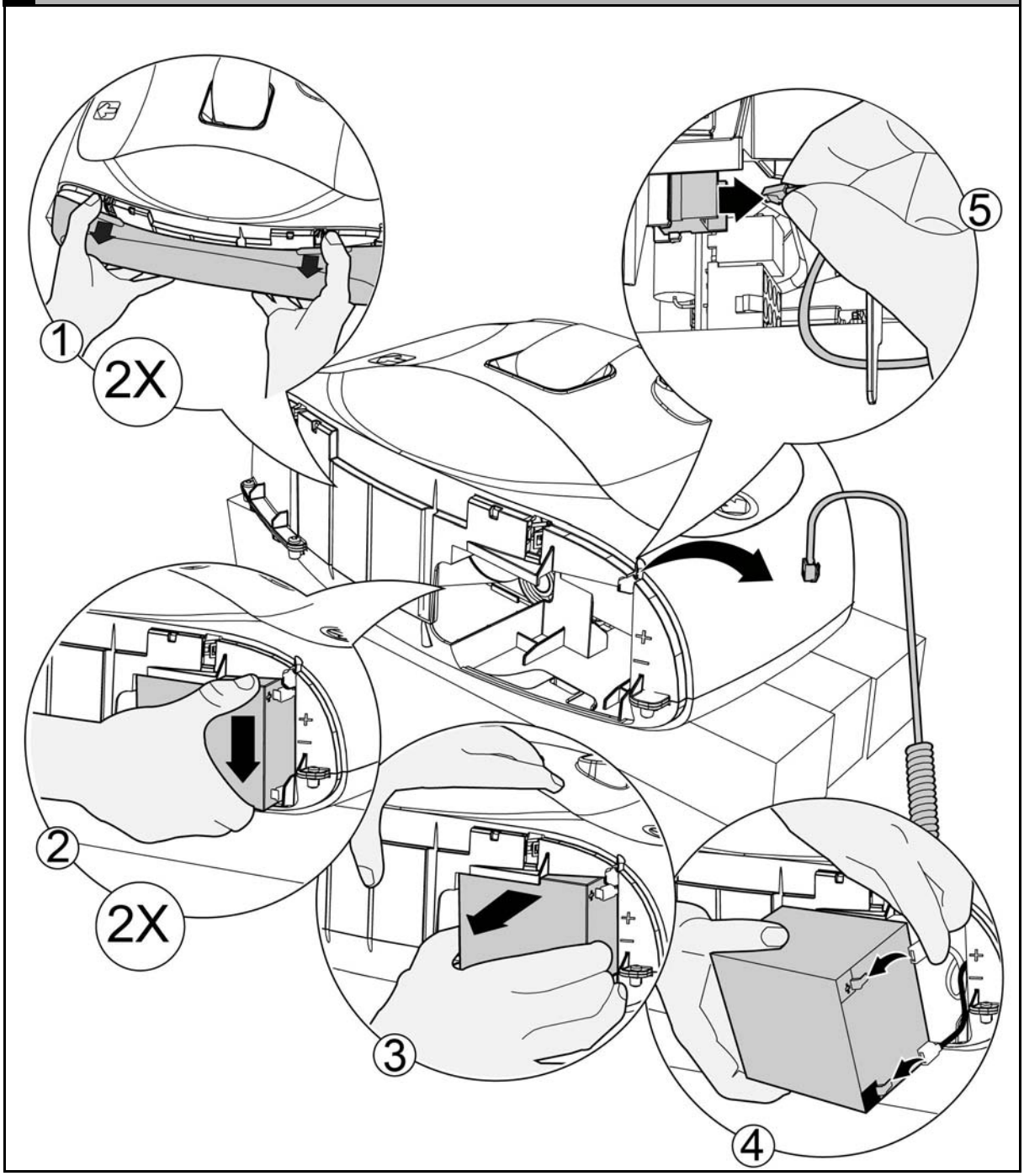


Fig. 8

Removing the top plastic housing:

① Remove the screws that secure the top plastic housing.

② Unplug the membrane for the alternative up/down switches located on the unit, as well as the SWL key membrane, if applicable (see Fig. 34 step 3 for location).

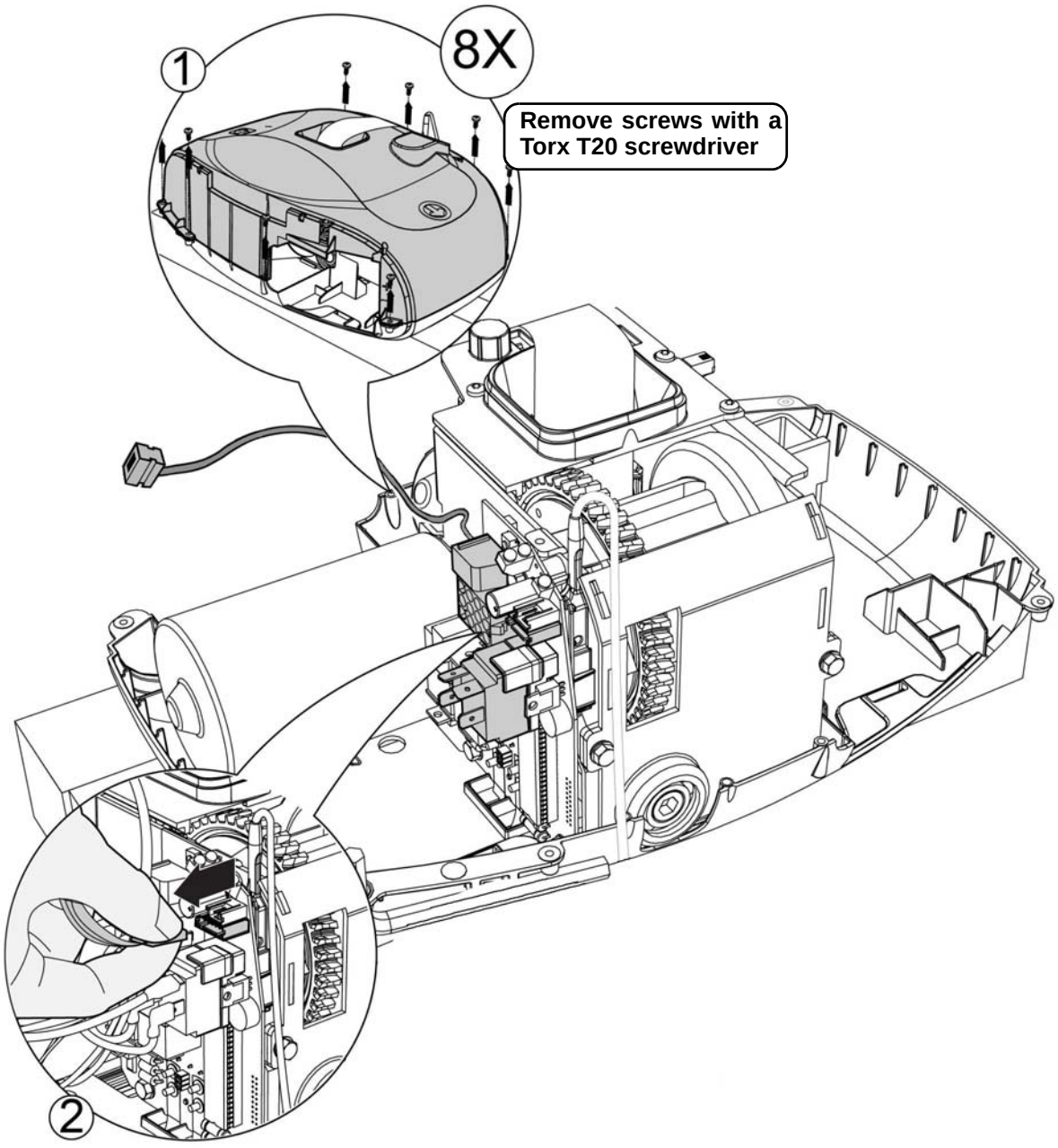


Fig. 9

Removing the strap:

① Remove the strap inlet.

② Unlock the transmission from the drum by restraining the drum with one hand and turning the shaft counter-clockwise.

③ Completely unwind the strap and remove it from the drum.

④ Lubricate the drum's teeth with food-grade grease.

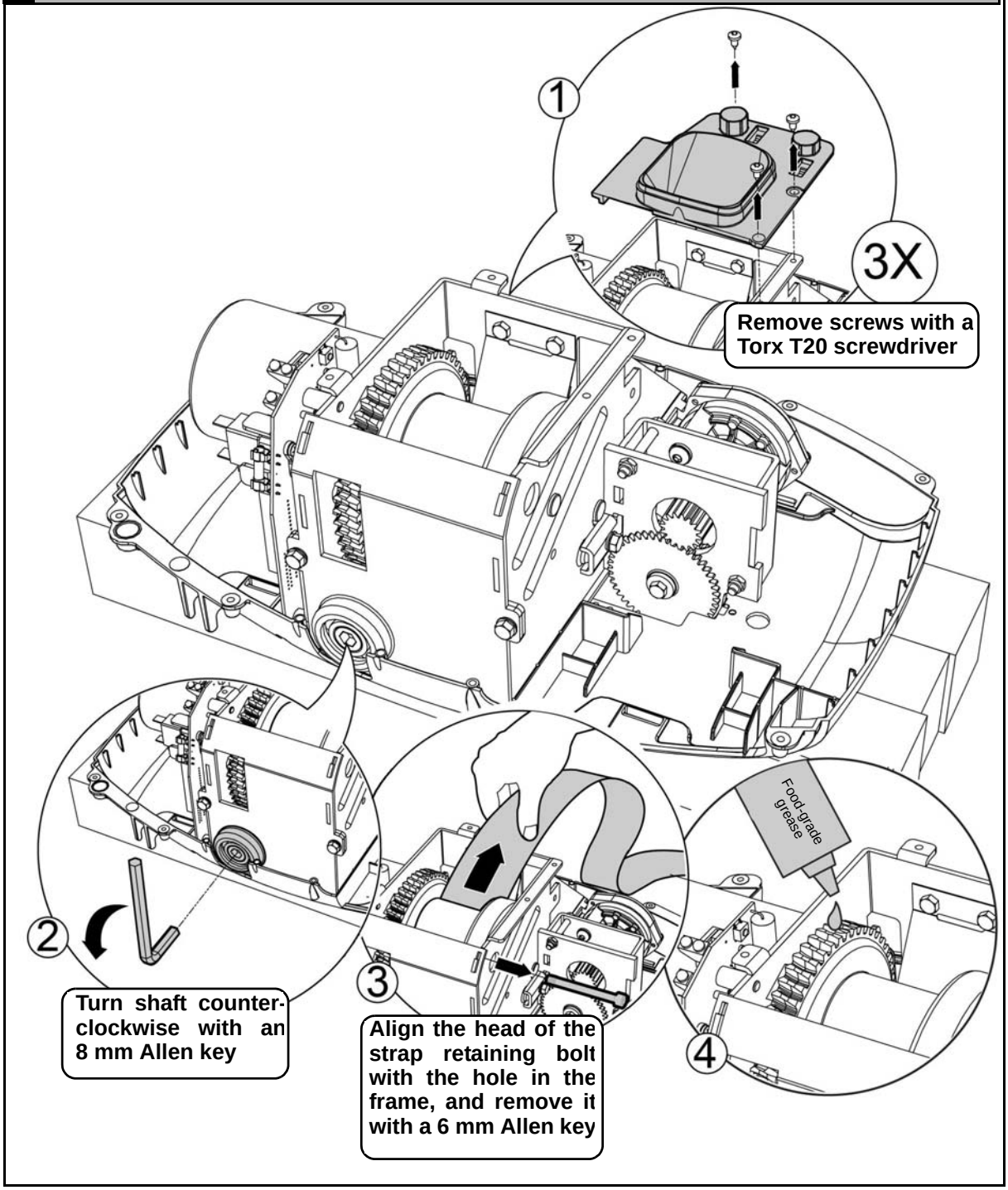


Fig. 10

Maintenance and Service

Strap Replacement

Installing the new strap:

① Thread the strap onto the drum, stitching side up, securing it with the strap retaining bolt. Wind up the strap manually until it is nearly completely wound on the drum.
② Reengage the transmission by restraining the drum with one hand and turning the shaft clockwise.
③ Reinstall the strap inlet.
④ Be sure to snap the battery wires into the clips located underneath the strap inlet.

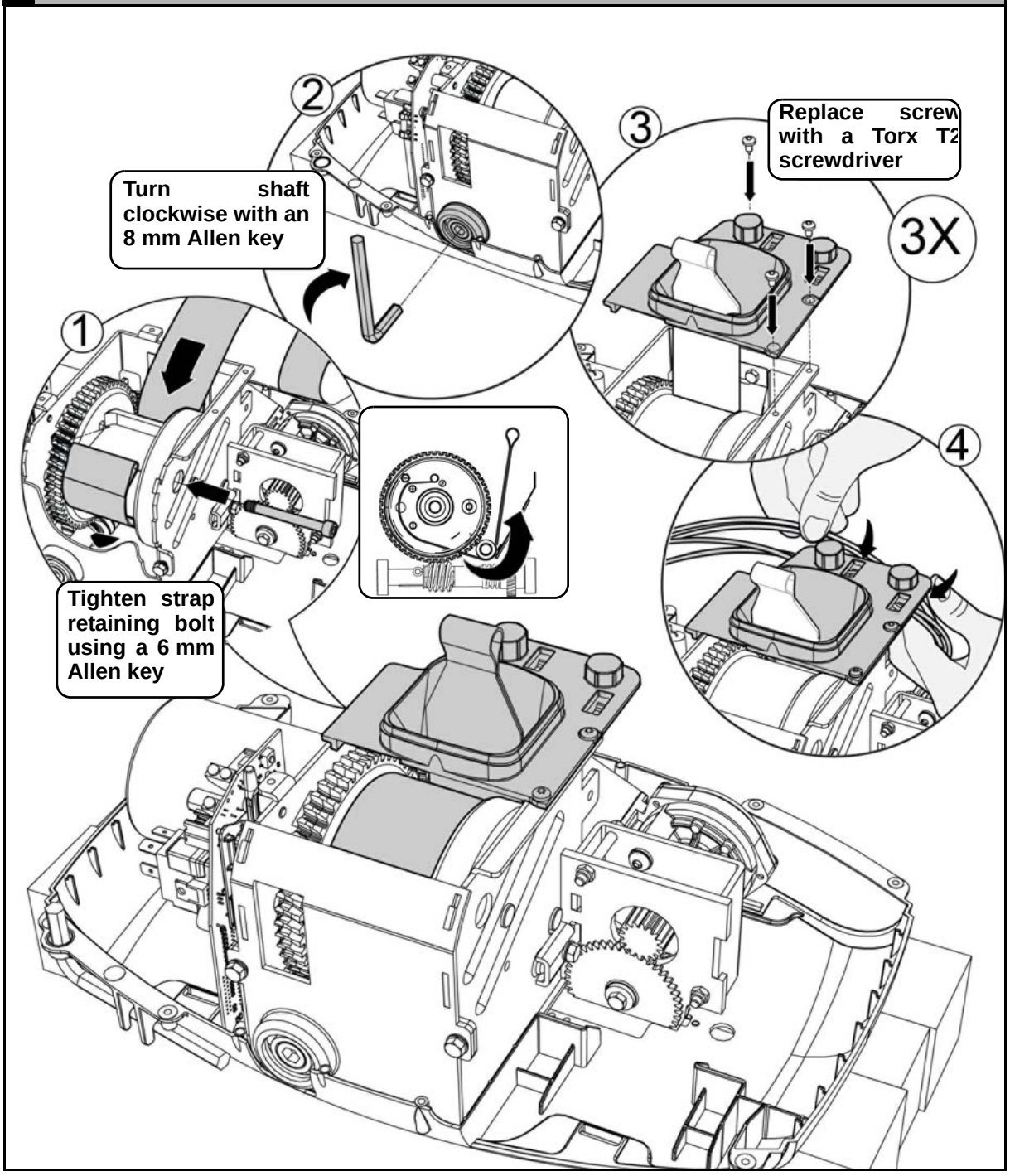


Fig. 11

Reinstalling the top plastic housing:

① Plug in the membrane for the alternative up/down switches located on the unit, as well as for the SWL key membrane, if applicable (see Fig. 34 step 3 for location).

② Replace the top plastic cover and secure it with the plastic screws.

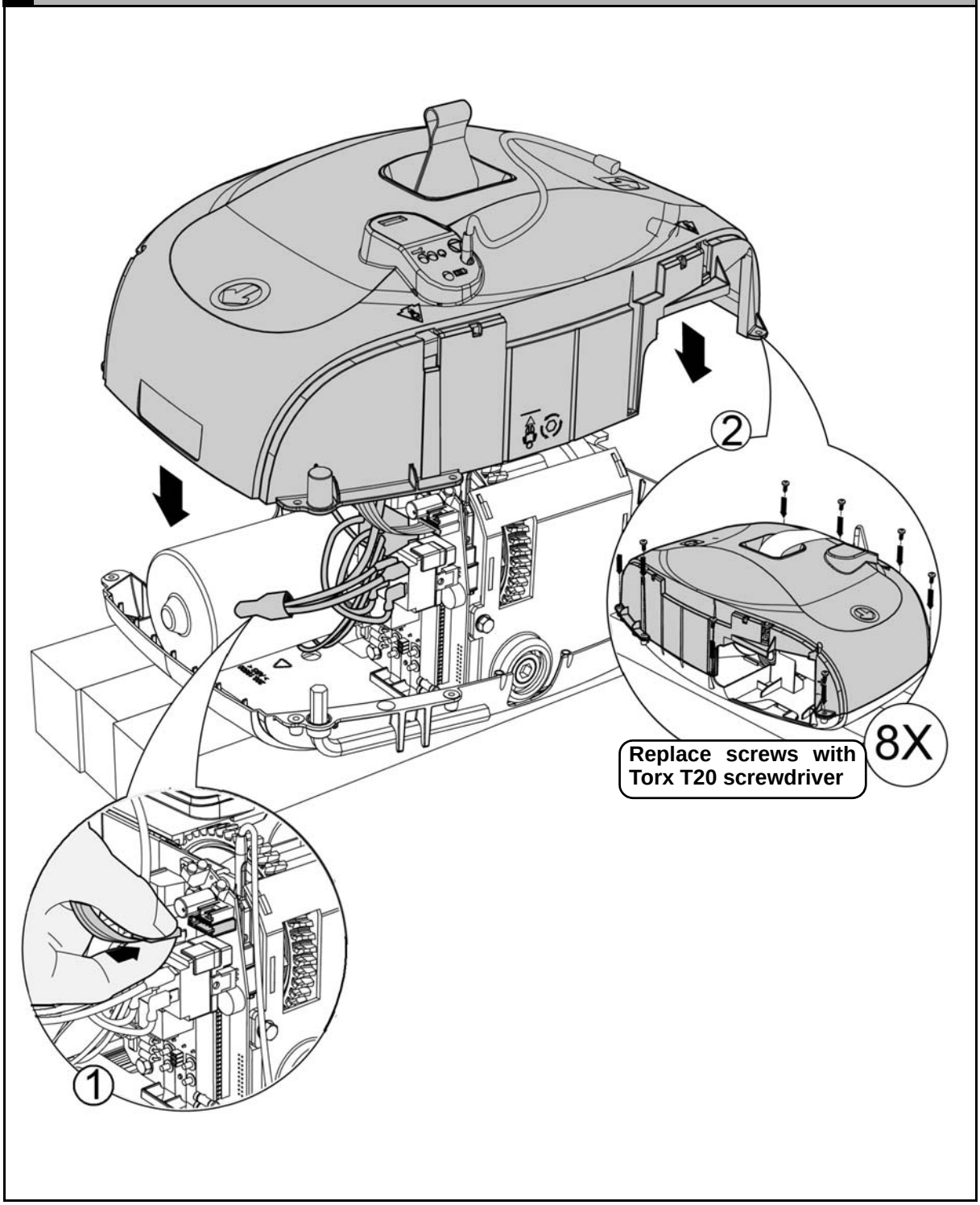


Fig. 12

Reinstalling the handset:

① Reconnect the handset jack back in its socket on the unit's frame.
② Thread the cable through the various points in the strain-relief.
③ Secure the handset cable by clipping it to the unit's plastic housing.

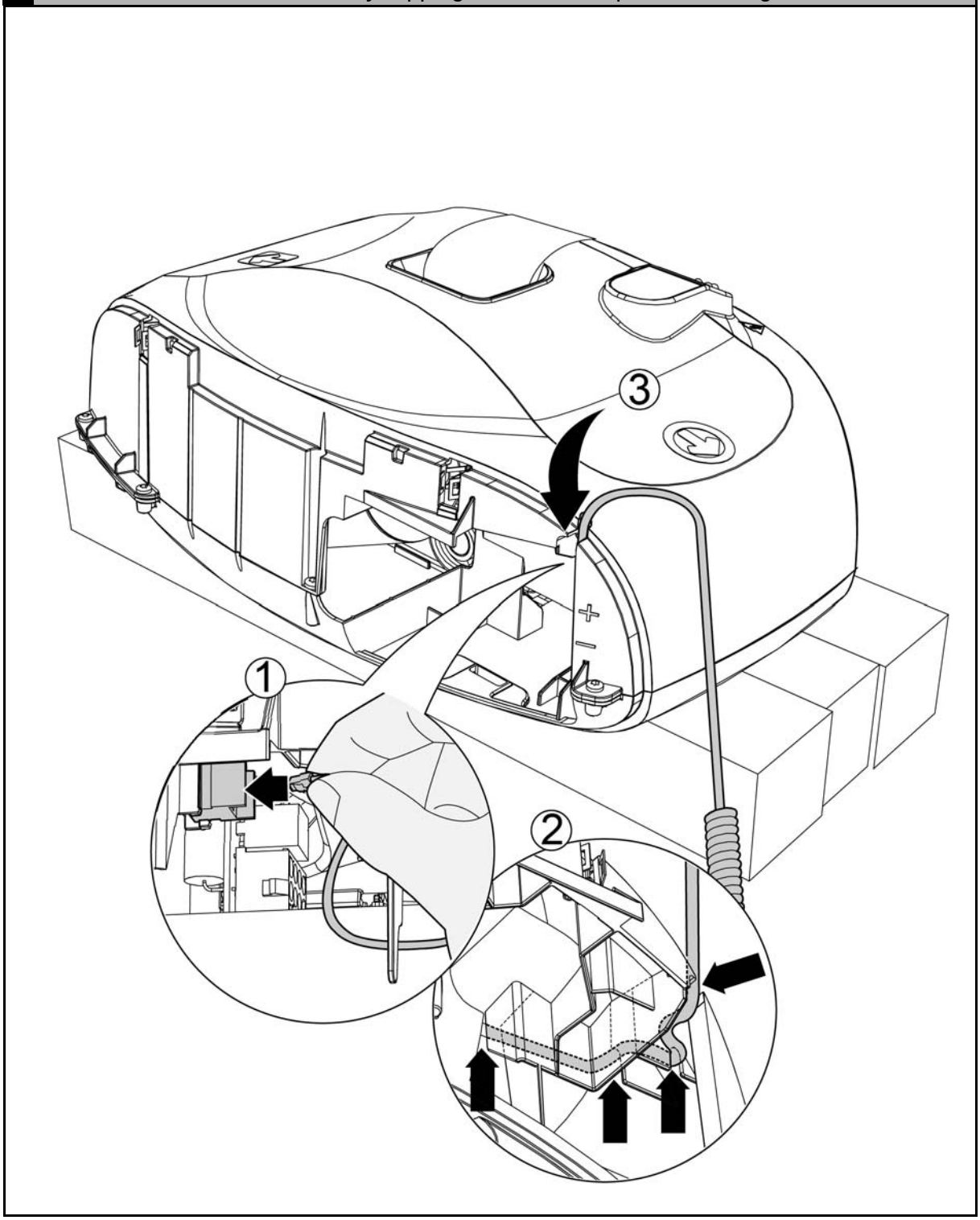


Fig. 13

Reinstalling the batteries:

① Reconnect the batteries wires for the batteries that was previously removed.
② Reinsert the batteries back into the lift.

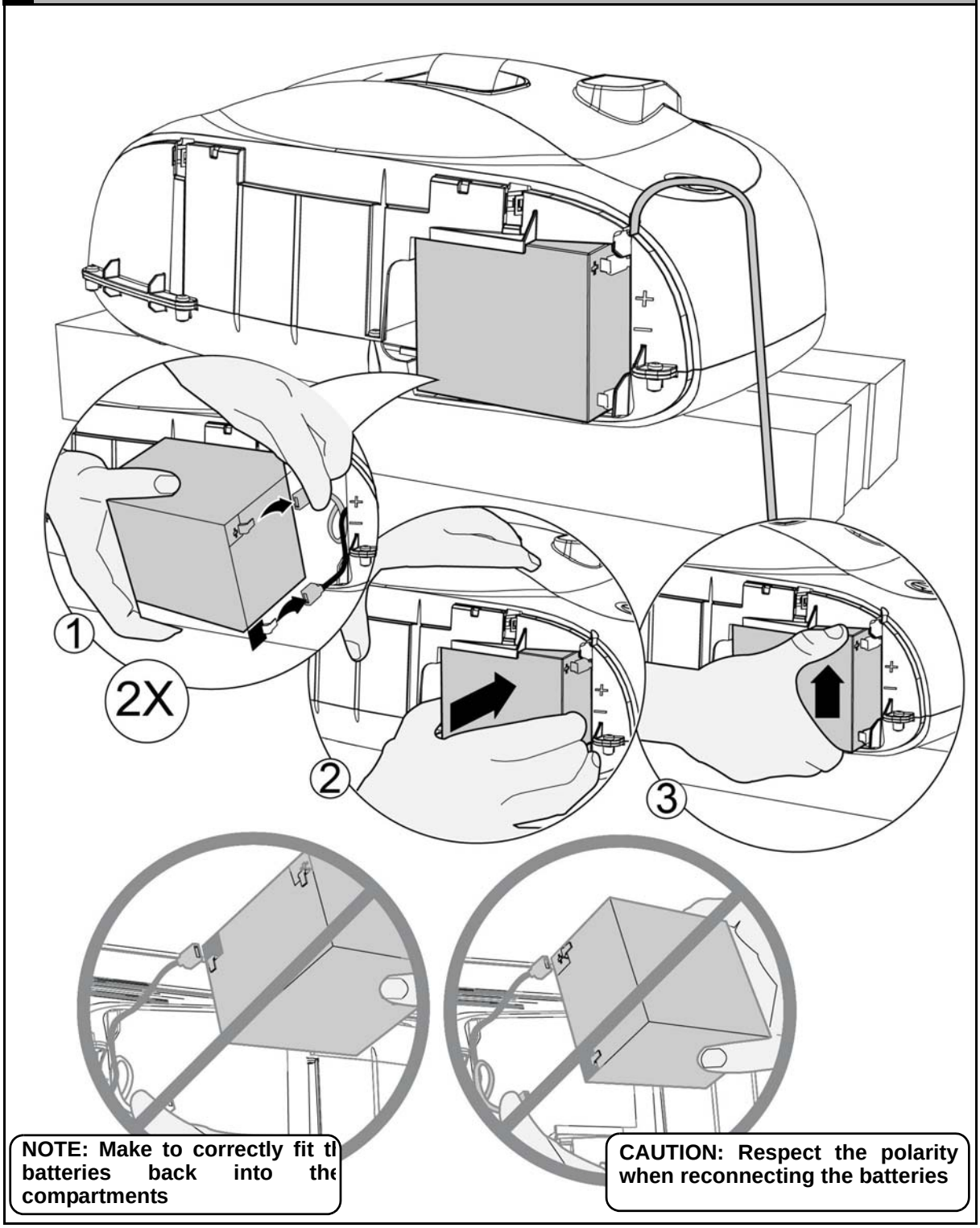


Fig. 14

Final steps:

① Hook the panel onto the ceiling lift main shell.
② Close the side panel completely.
③ Reinstall the spreader bar by sliding the clevis pin back into the connector.
④ Install the split ring on the clevis pin.
⑤ Turn the unit back on by pushing in the plastic insert.

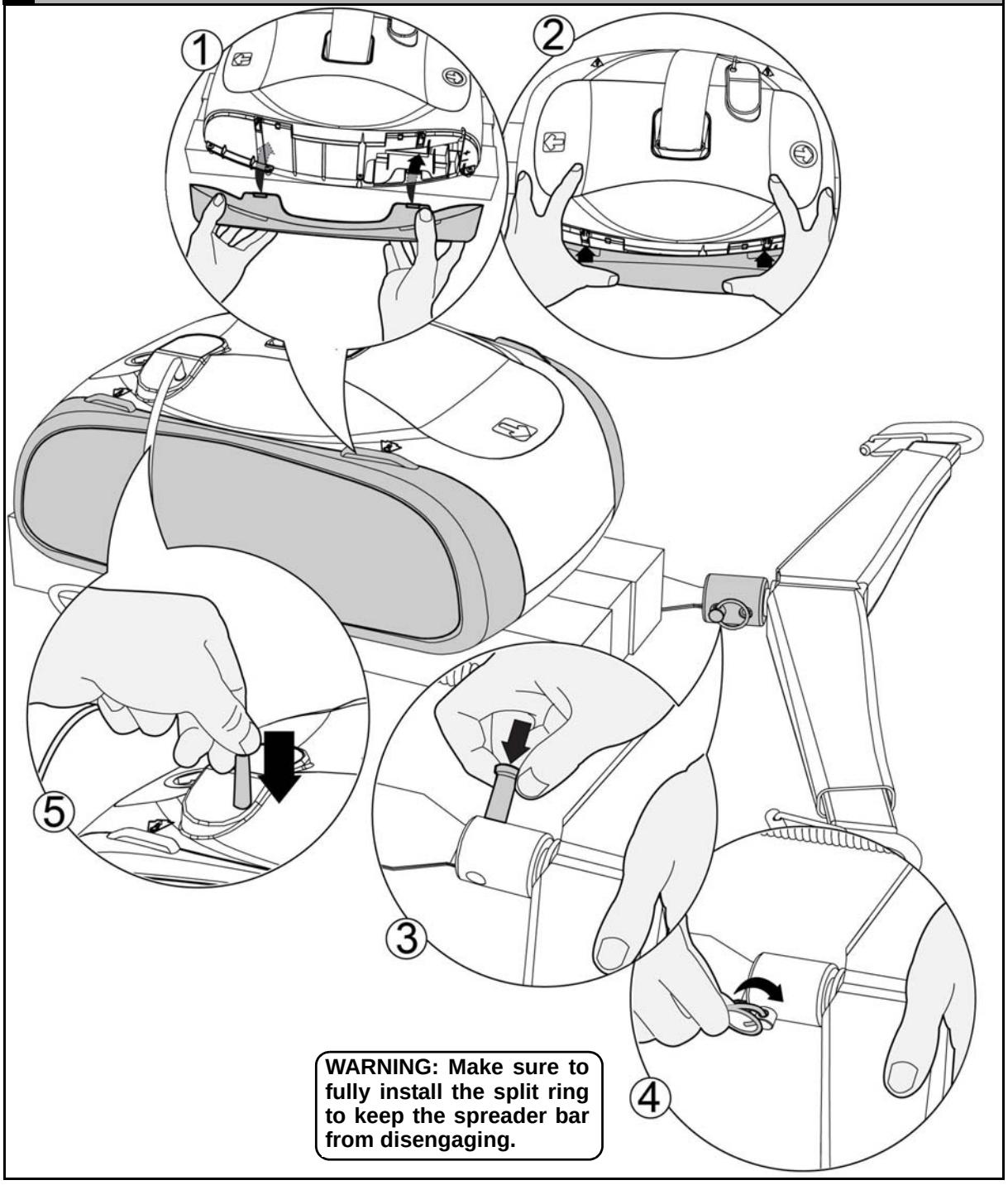


Fig. 15

Handset Replacement

Accessing the battery:

① Turn unit off.
② Open and unhook the side panel opposite to the emergency system access labels
③ Push up on the battery.
④ Slide the battery slightly to the left.
⑤ Slide the battery outwards, and carefully disconnect the wires.

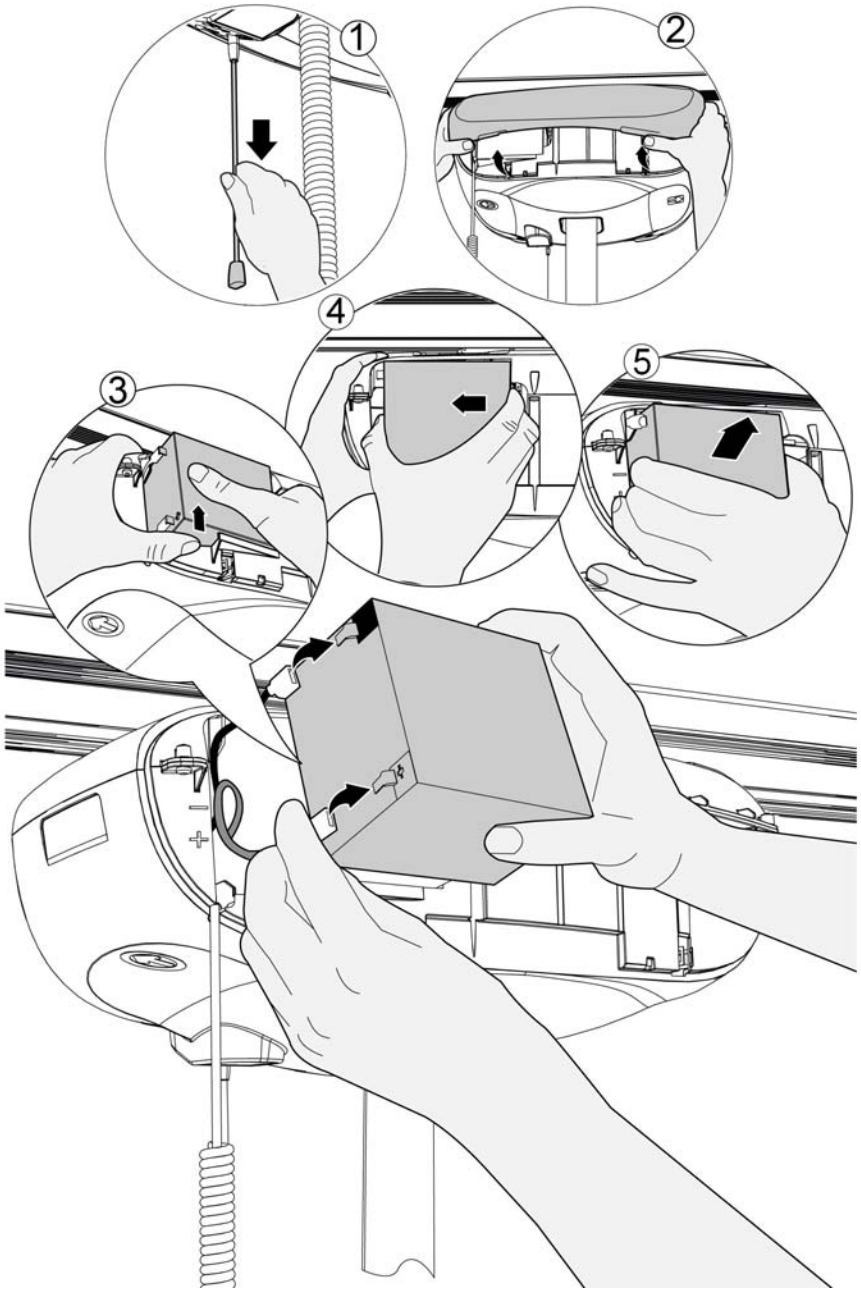


Fig. 16

Accessing the handset jack:

① Unplug the handset jack from its socket located on the plastic housing, unravel the cable from the strain relief.

② Unclip the handset cable from the plastic housing.

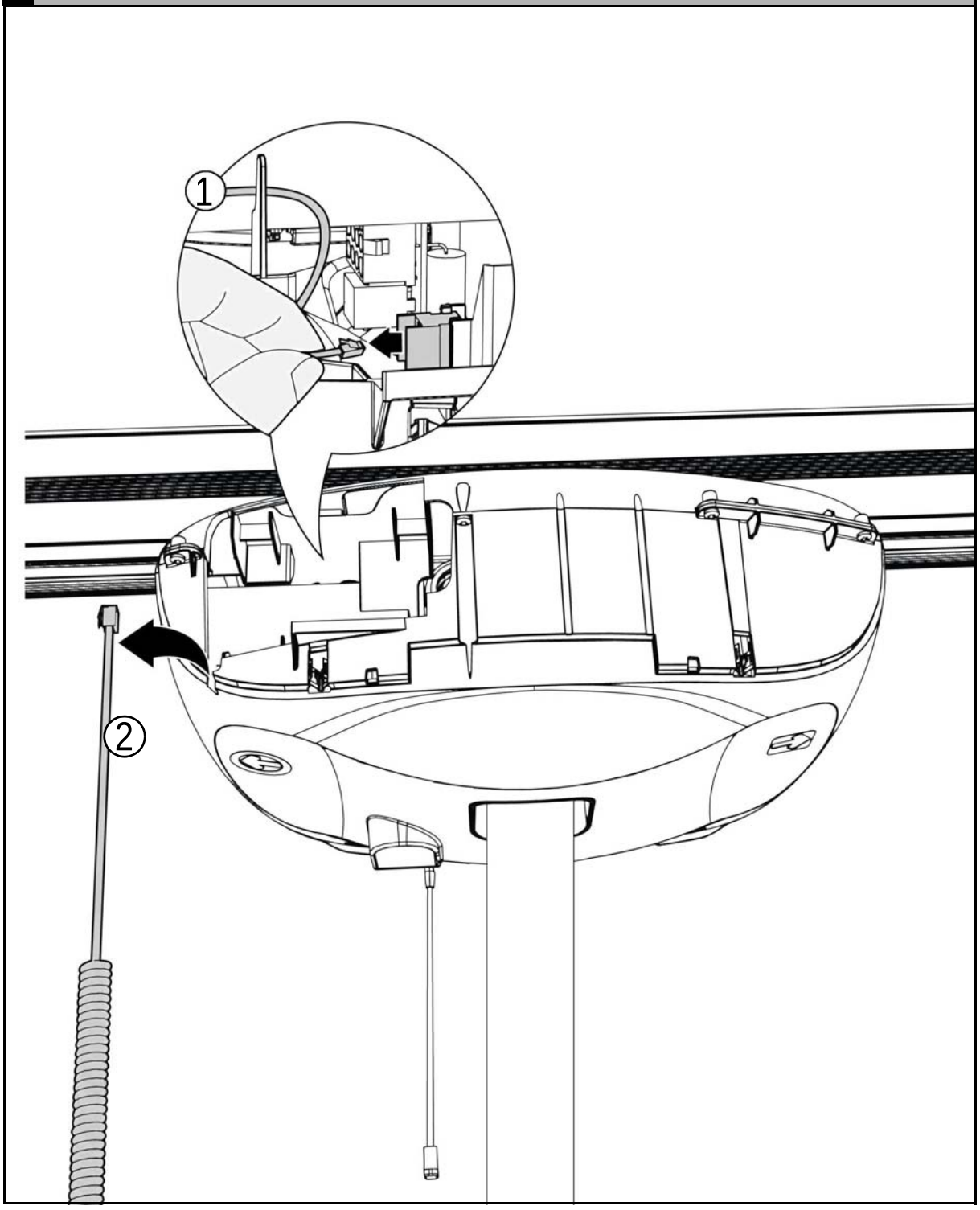


Fig. 17

Installing the new handset:

① Reconnect the handset jack to the socket located on the plastic housing.
② Thread the cable through the various points in the strain-relief.
③ Secure the handset cable by clipping it to the unit's plastic housing.
④ Reinstall the battery (see Fig. 5) and side panel (see Fig. 6). The unit can now be turned back on by pushing upwards on the plastic insert switch.

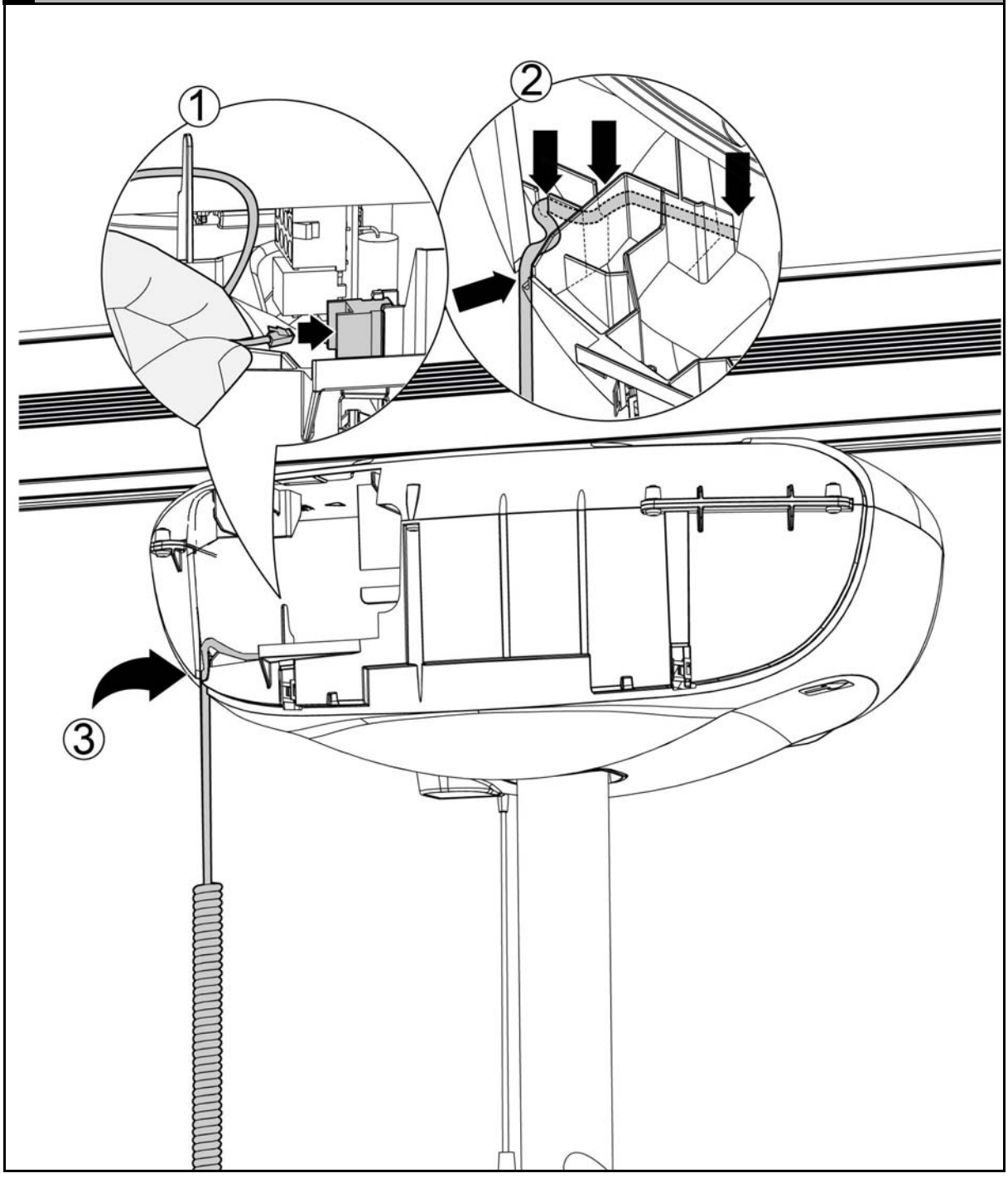


Fig. 18

Main Circuit Board Replacement

Initial preparations:

① Follow the initial steps as explained in Fig. 3, Fig. 4. and Fig. 7

② Unplug the handset jack from its socket located on the plastic housing, unravel the cable from the strain relief and unclip the handset cable from the plastic housing.

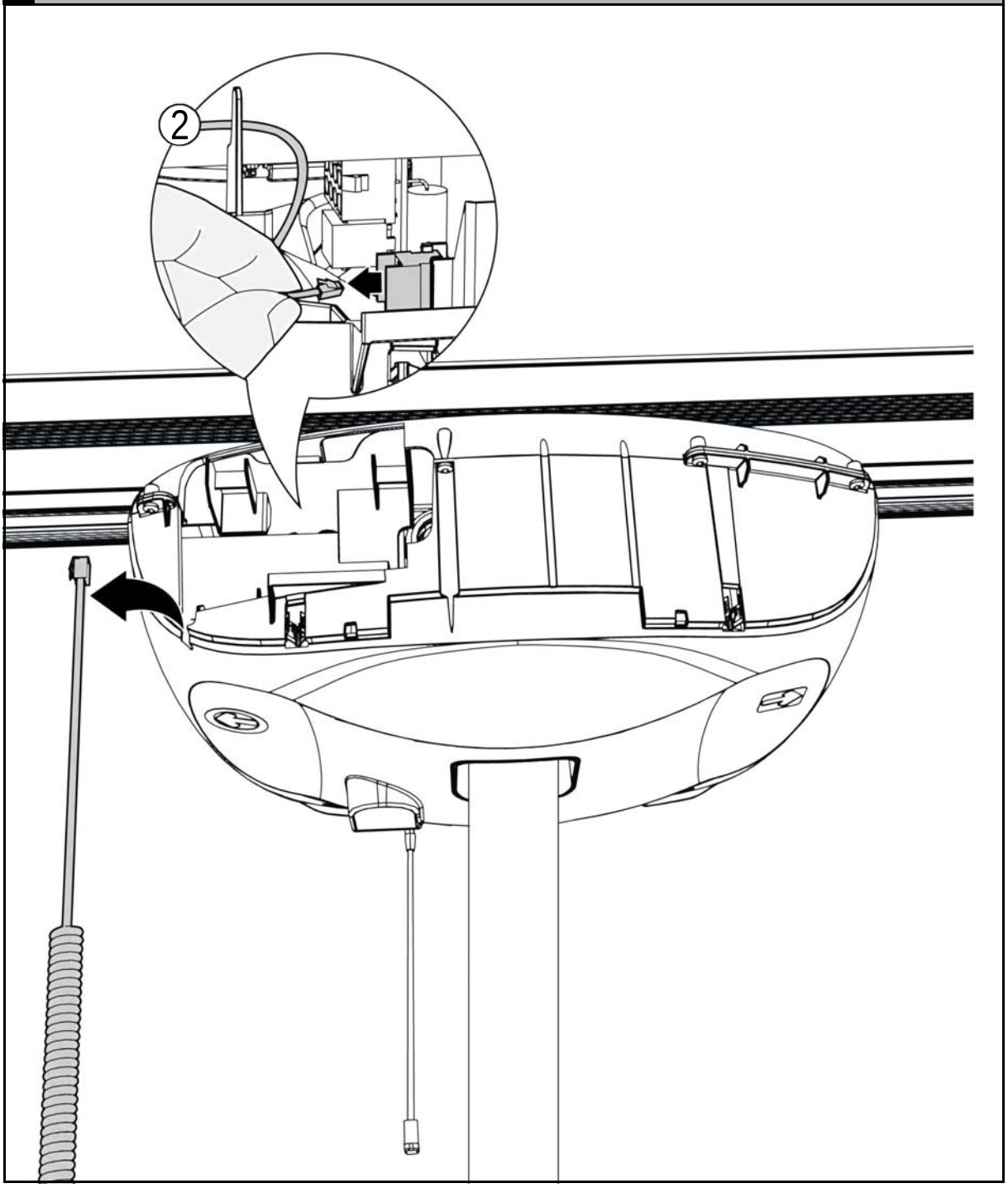


Fig. 19

Removing the plastic housing:

① Remove the screws that secure the housing parts together.

② Unplug the membrane for the alternative up/down switches located on the unit, as well as the SWL key membrane, if applicable (see Fig. 34).

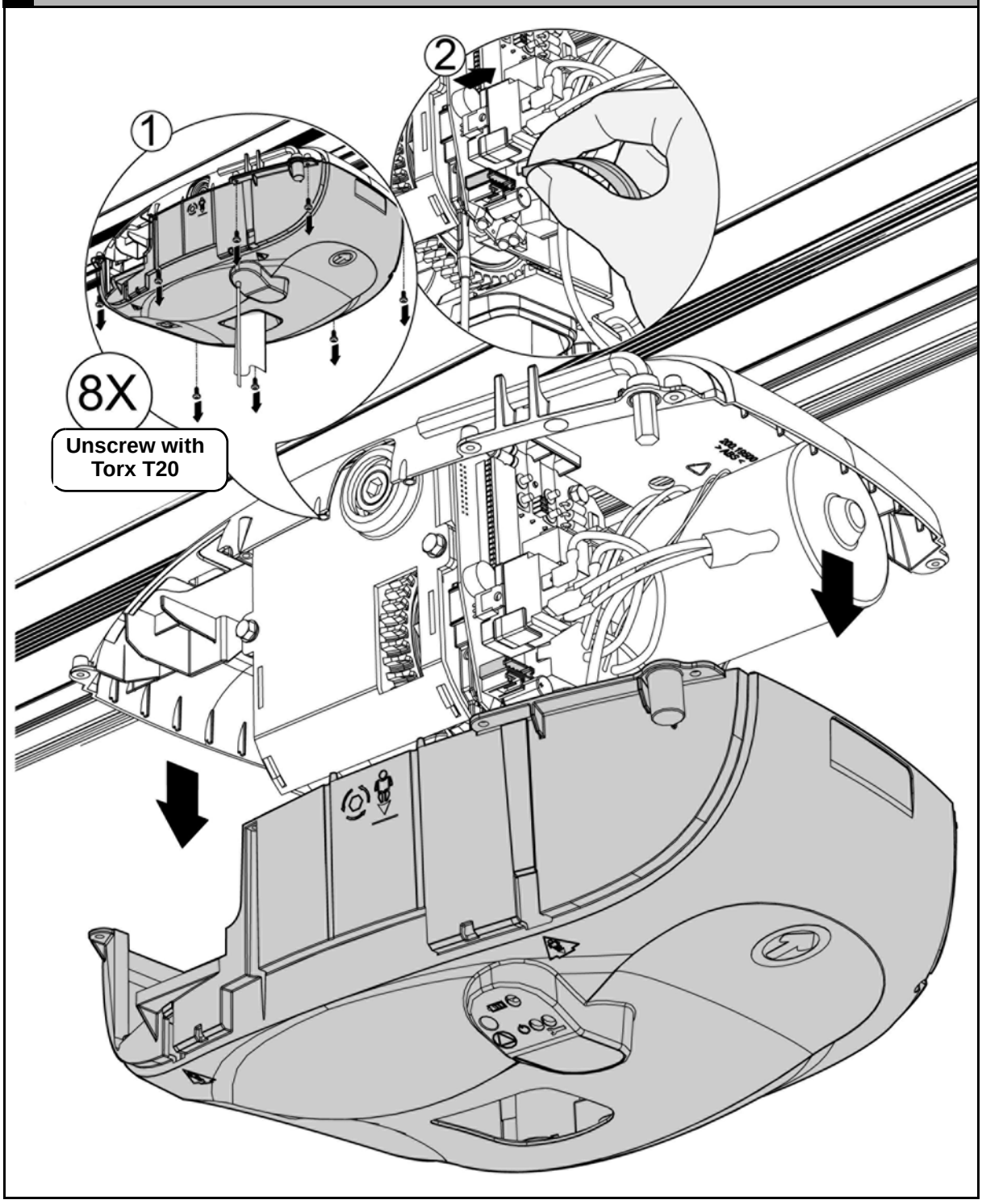


Fig. 20

Removing the circuit board:

① Unplug the main circuit board connector and two wires (orange/red-white) going to the emergency switch.

② Unplug the battery wire harness (orange/red-white), as well as the handset connector extension.

③ Remove all three bolts and take away the circuit board.

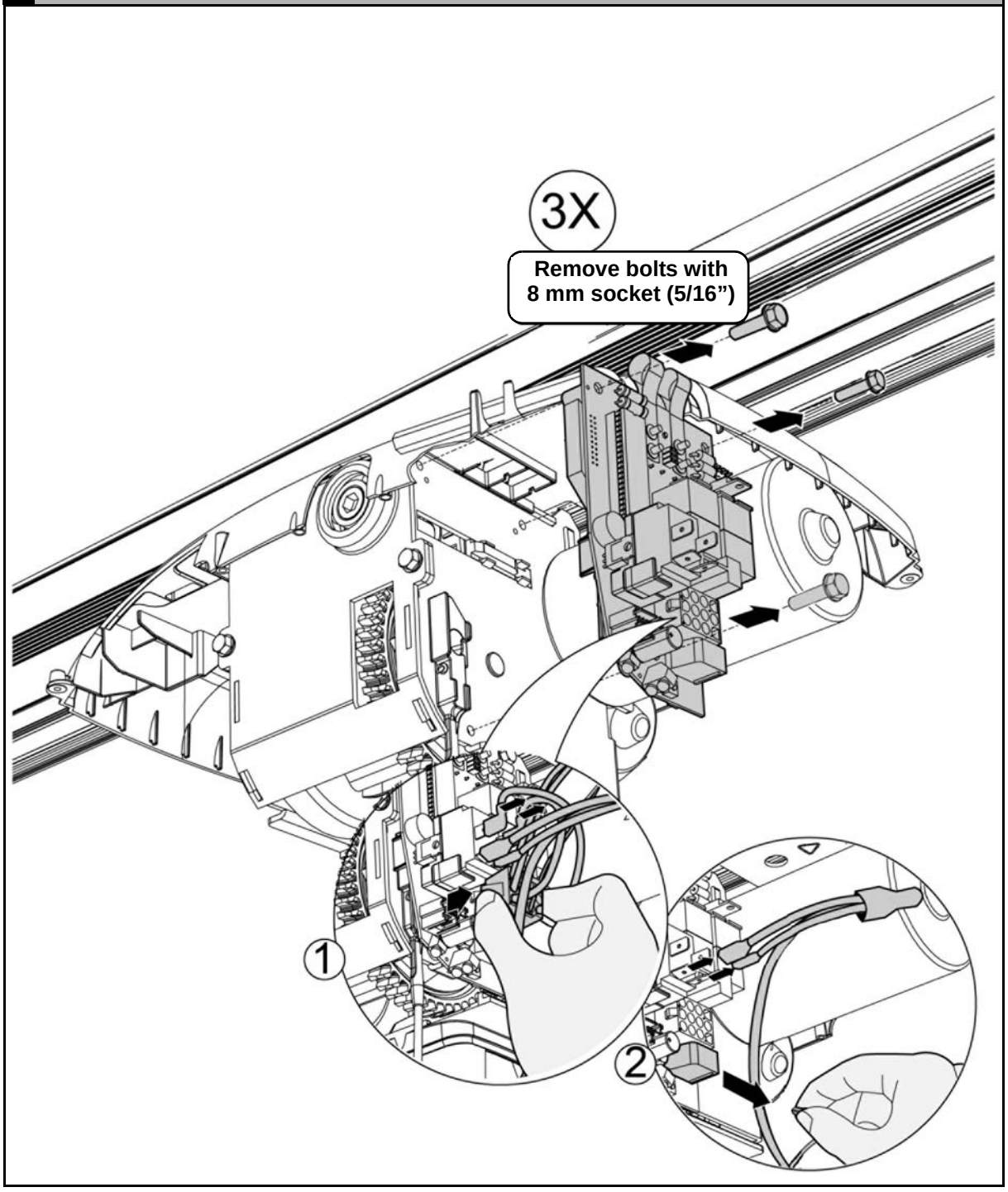


Fig. 21

Installing the new circuit board:

① Make sure that the plastic insert switch as well as the circuit support are placed between the new circuit and the frame. Replace the bolts.

② Reconnect the battery wire harness (orange/red-white) to the emergency switch, as well as the handset connector extension to the new circuit board.

③ Plug the main circuit board connector and the two wires (orange/red-white) going to the emergency switch.

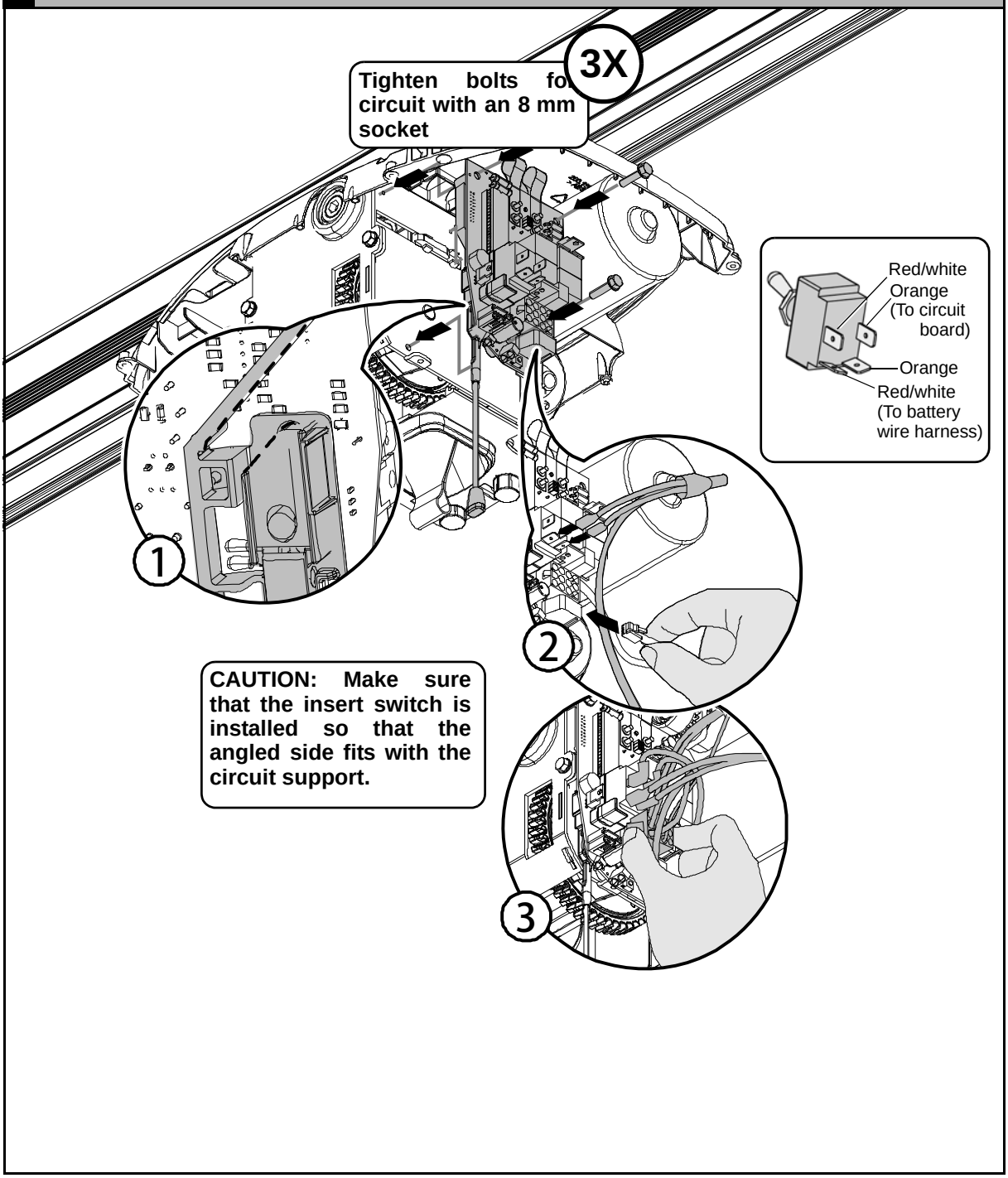


Fig. 22

Reinstalling the top plastic housing:

① Plug the membrane for the alternative up/down switches located on the unit, as well as the SWL key membrane, if applicable (see Fig. 34).
② Reposition the handset extension cable socket in its slot on the plastic housing.
③ Reinstall the screws that secure the plastic housing parts together.

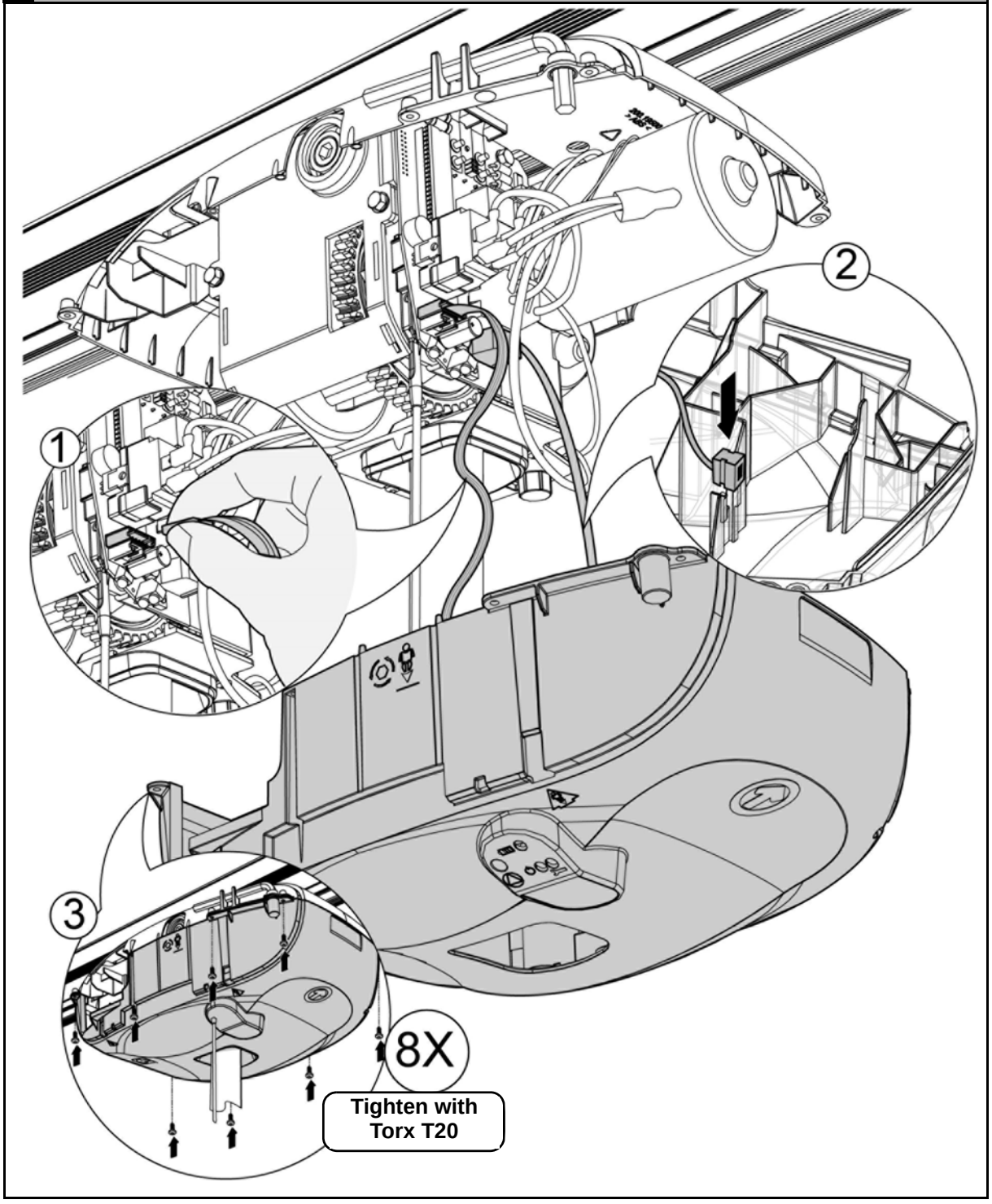


Fig. 23

Final steps:

① Slide the clevis pin into the spreader bar connector and the looped end of the strap.
② Install the split ring on the clevis pin.
③ Reinstall the handset (see Fig. 18).
④ Replace the batteries (see Fig. 5) and side panels (see Fig. 6). The unit can now be turned back on by pushing upwards on the plastic insert switch.

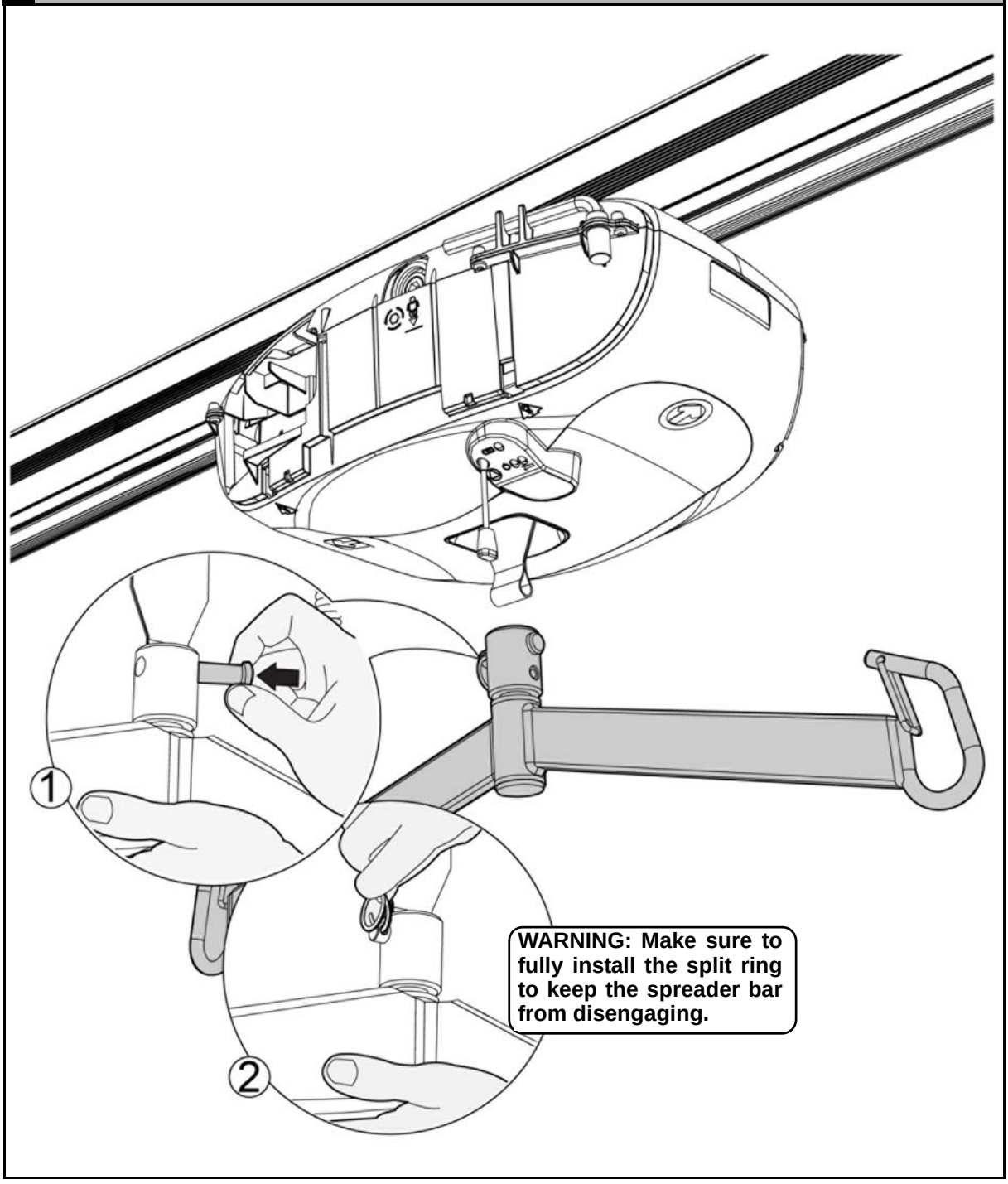


Fig. 24

High Limit Switch Replacement

Accessing the limit switch:

① Turn unit off and follow the initial steps found in Fig. 7 to disconnect the spreader bar, and Fig. 8 to remove the batteries and the handset.
② Remove the screws that secure the top plastic housing.
③ Unplug the membrane for the alternative up/down switches located on the unit, as well as the SWL key membrane, if applicable (see Fig. 34).
④ Unplug the main cicuit connector.

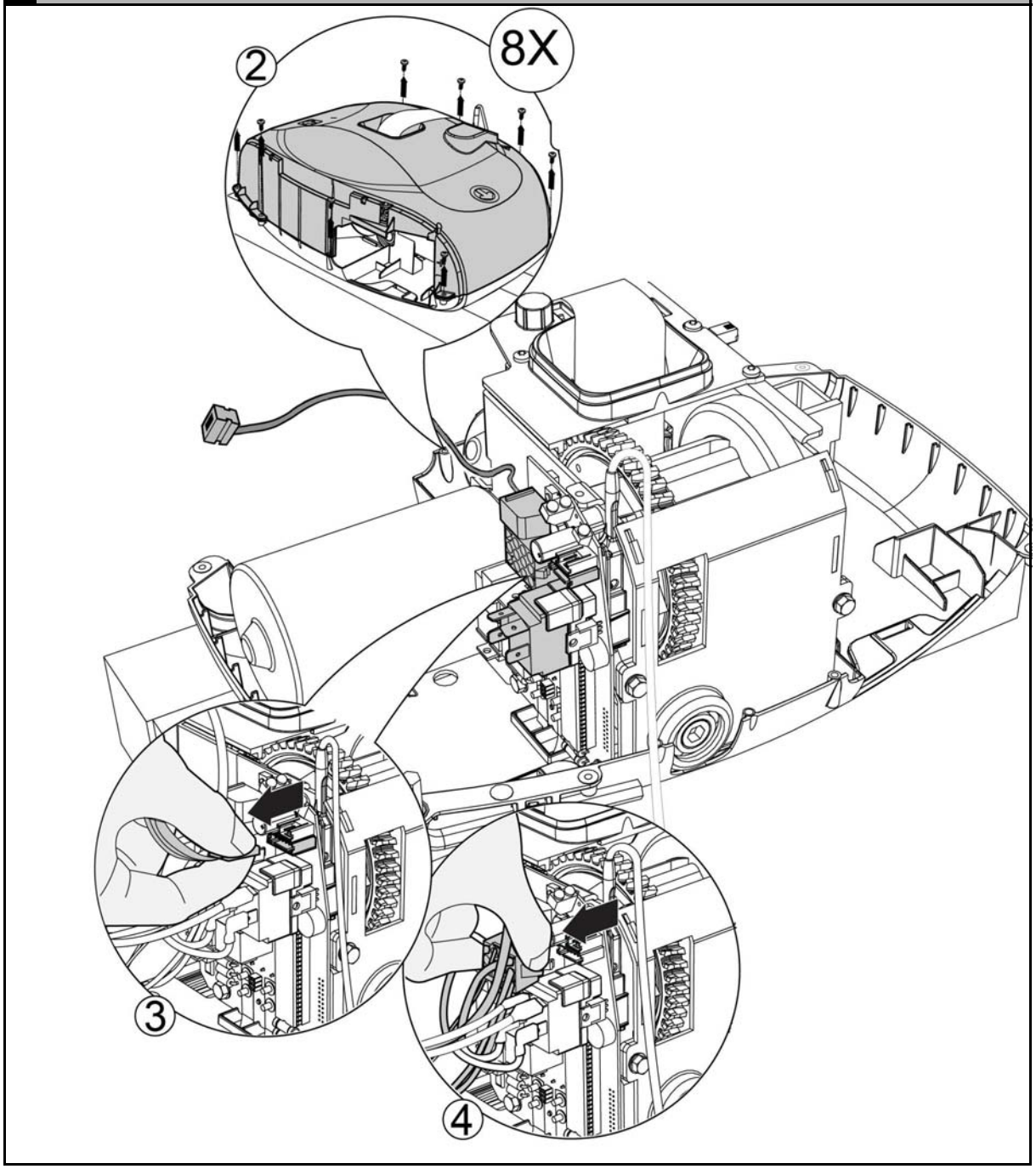


Fig. 25

Removing the limit switch:

① Select the two high limit wires from the main circuit harness (both are blue) and with a extractor tool, disconnect them from main circuit connector.
② Remove the strap inlet.
③ Remove the limit switch plate, and then the limit switch.

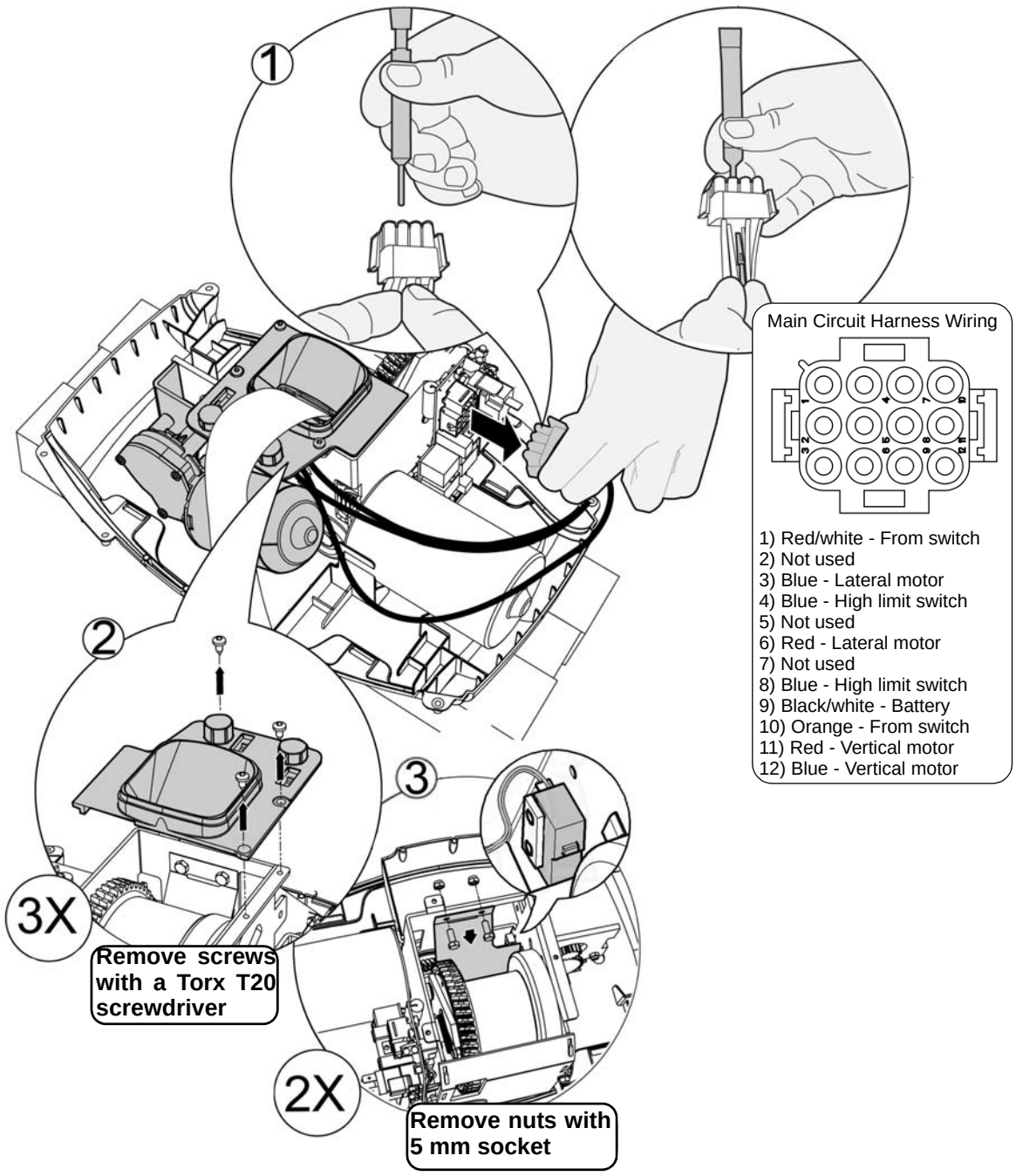


Fig. 26

Reinstalling the high limit switch:

① Reinsert the high limit switch wires into the main circuit harness, passing them first through the opening in the frame.

② Fasten the high limit switch to the frame and reinstall the limit switch plate.

③ To verify that the switch is operating correctly, push down on the strap between the roller and the switch plate. When the double thickness of strap meets up with the switch plate, you should hear a clicking sound.

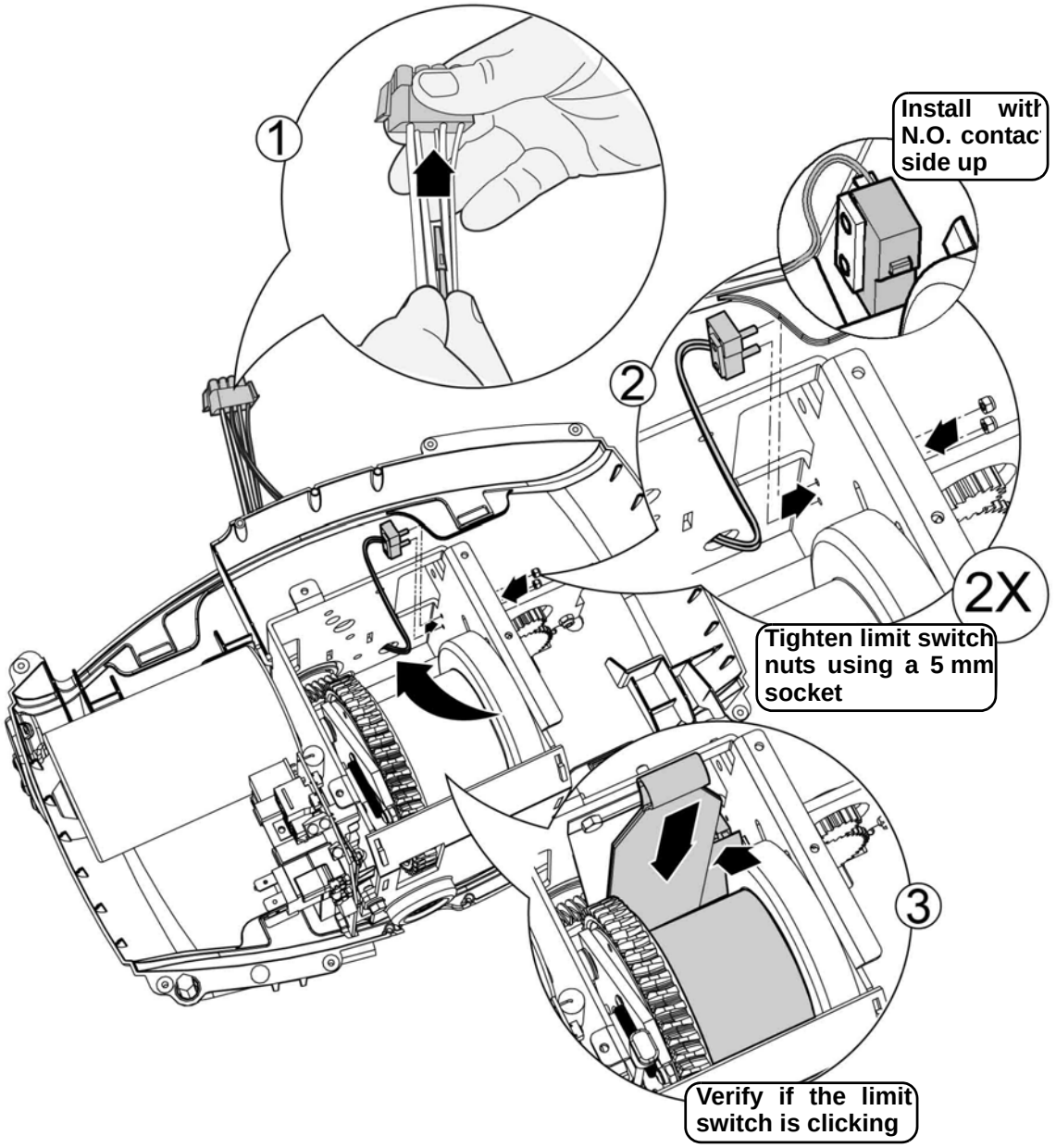


Fig. 27

Installing the strap inlet:

① Replace the screws that attach the strap inlet to the frame.
② Be sure to snap the battery wires into the clips located underneath the strap inlet.

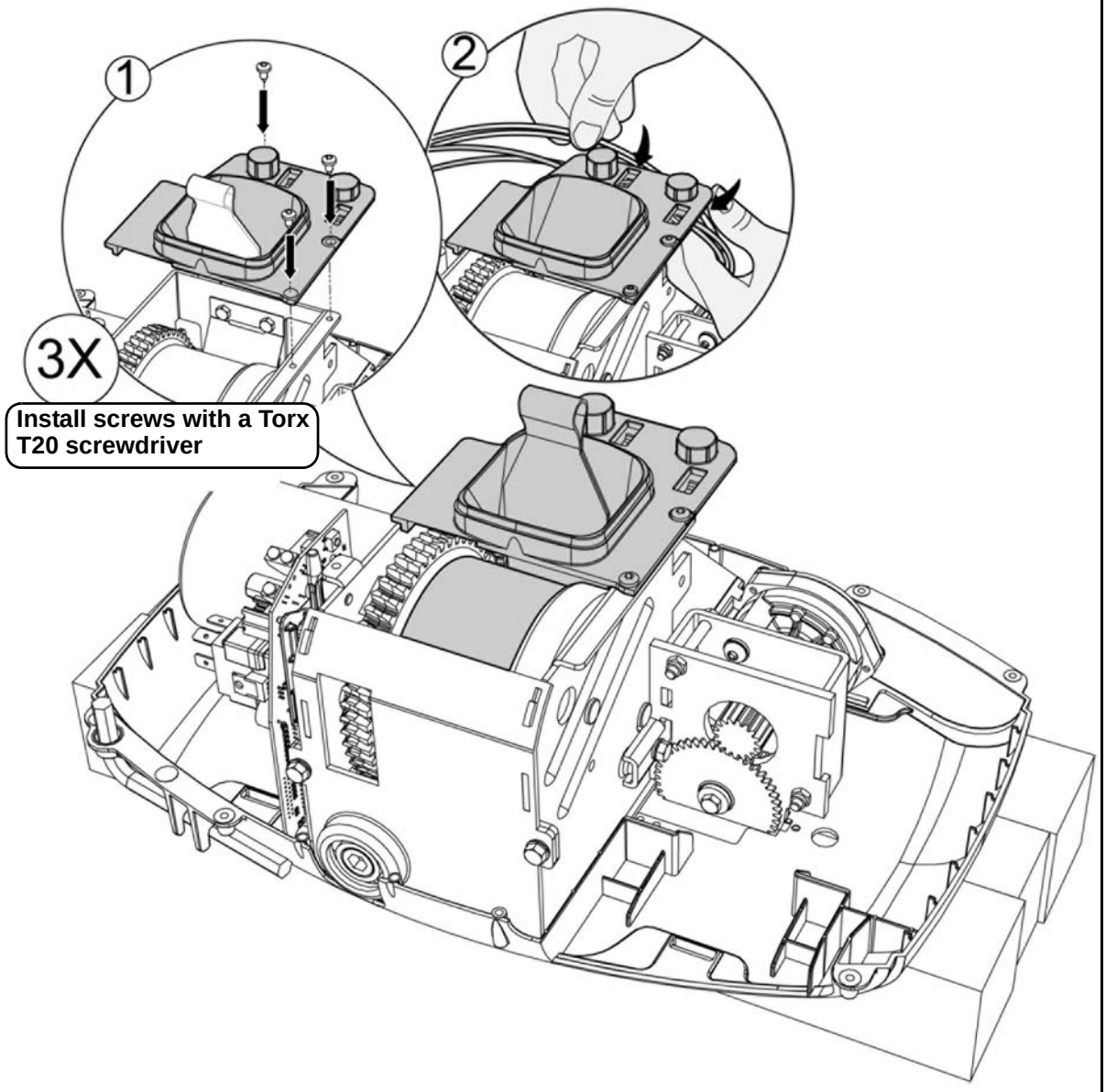


Fig. 28

Reinstalling the top plastic housing:

① Plug in the main circuit connector
② Plug the membrane for the alternative up/down switches located on the unit, as well as the SWL key membrane, if applicable (see Fig. 34).
③ Replace the top plastic cover and secure it with the plastic screws.
④ Reconnect the handset (see Fig. 13) and the batteries (see Fig. 14).
⑤ Reinstall the spreader bar to the strap (see Fig. 15).

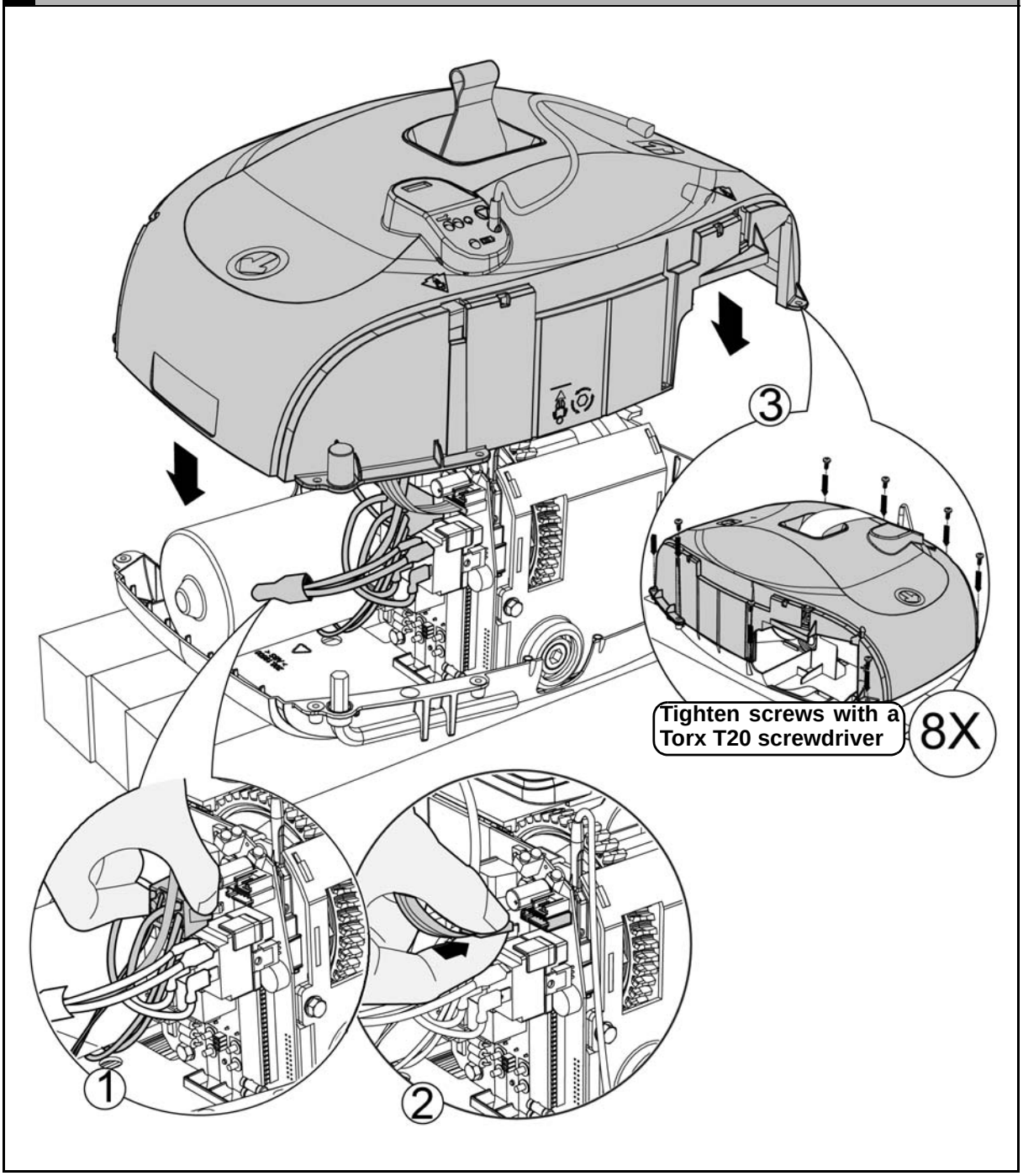


Fig. 29

Horizontal Motor Replacement

Accessing the motor:

① Turn unit off and follow the steps explained in Fig. 7, and Fig. 8.
② Remove the screws that secure the top plastic housing.
③ Unplug the membrane for the alternative up/down switches located on the unit, as well as the SWL key membrane, if applicable (see Fig. 34).
④ Unplug the main circuit connector.
⑤ With an extractor tool, disconnect the two horizontal motor wires from the main circuit harness and replace them with the ones from the new motor.

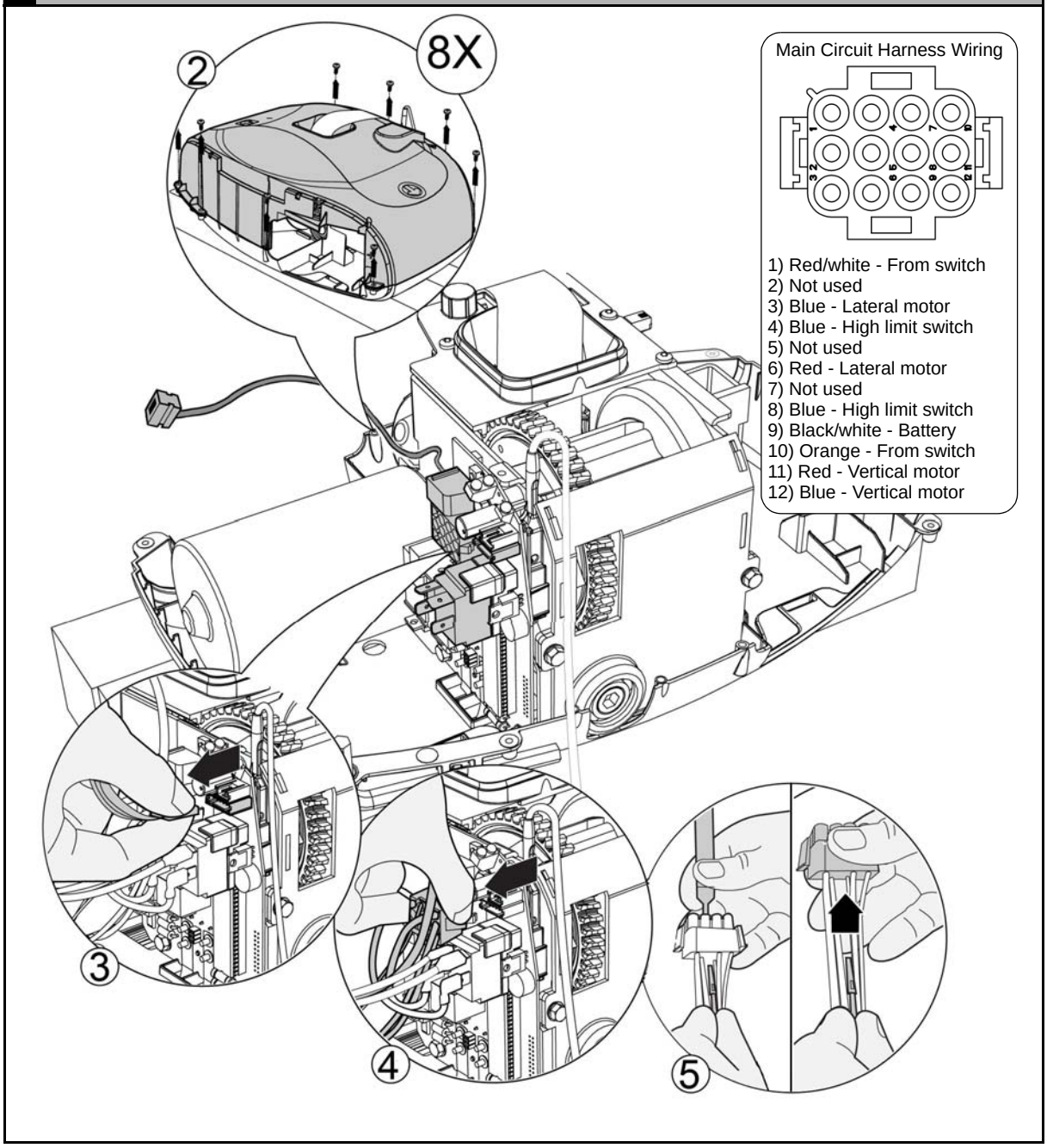


Fig. 30

Removing the motor:

① Remove the two screws located in the corners of the motor support.
② Use a 8 mm wrench as a lever to push out the gear from the motor shaft.
③ Remove the three screws from the motor support plate. Change out the motor.

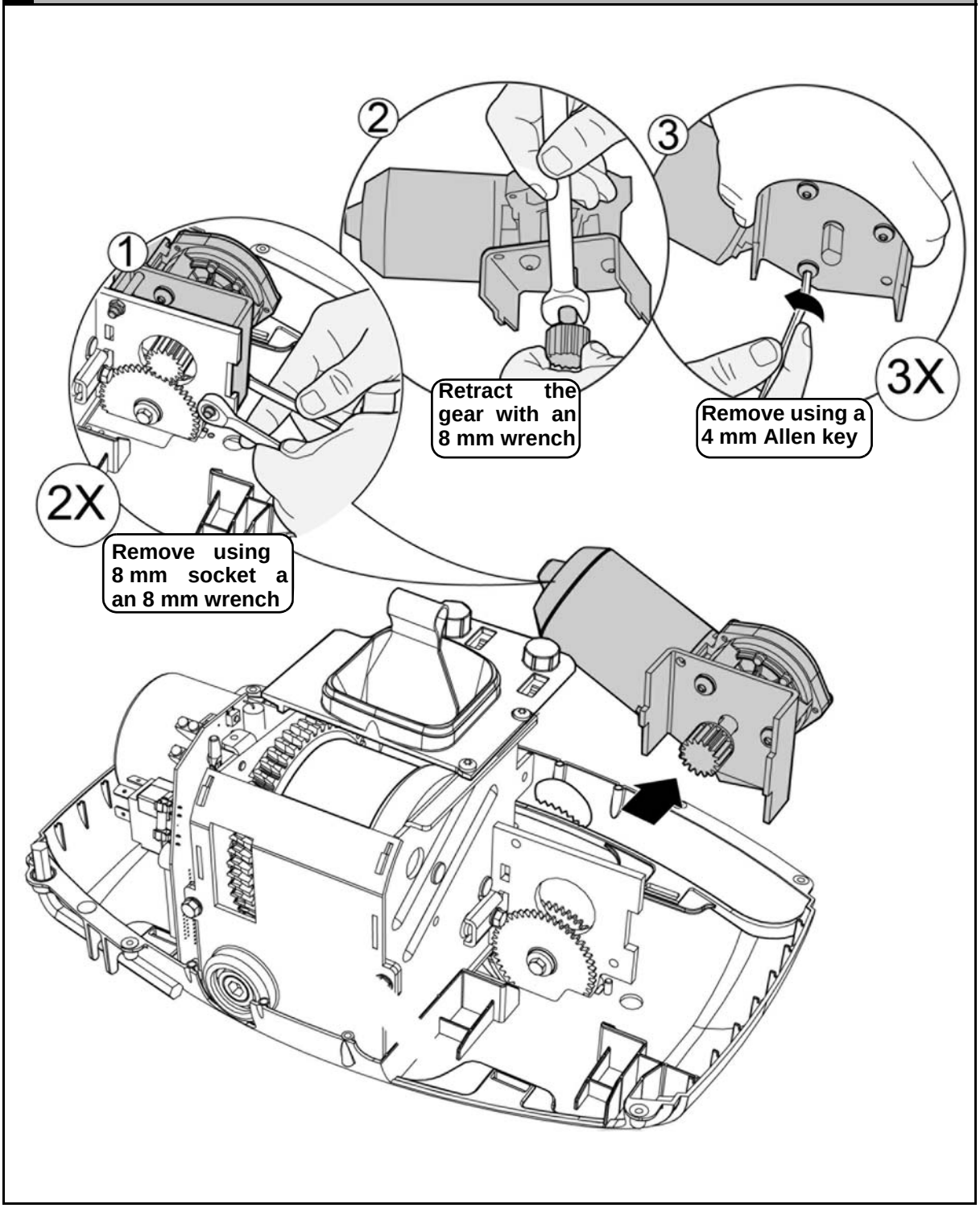


Fig. 31

Reinstalling the new motor:

① Replace the three screws that secure the motor to the motor support plate.
② Replace the gear fully on the motor shaft.
③ Install and tighten the two screws located in the corners of the motor support.
④ Reinstall the top plastic cover (see Fig. 29), the handset (see Fig. 13) and the batteries (see Fig. 14).
⑤ Reinstall the side panels and spreader bar (Fig. 15).

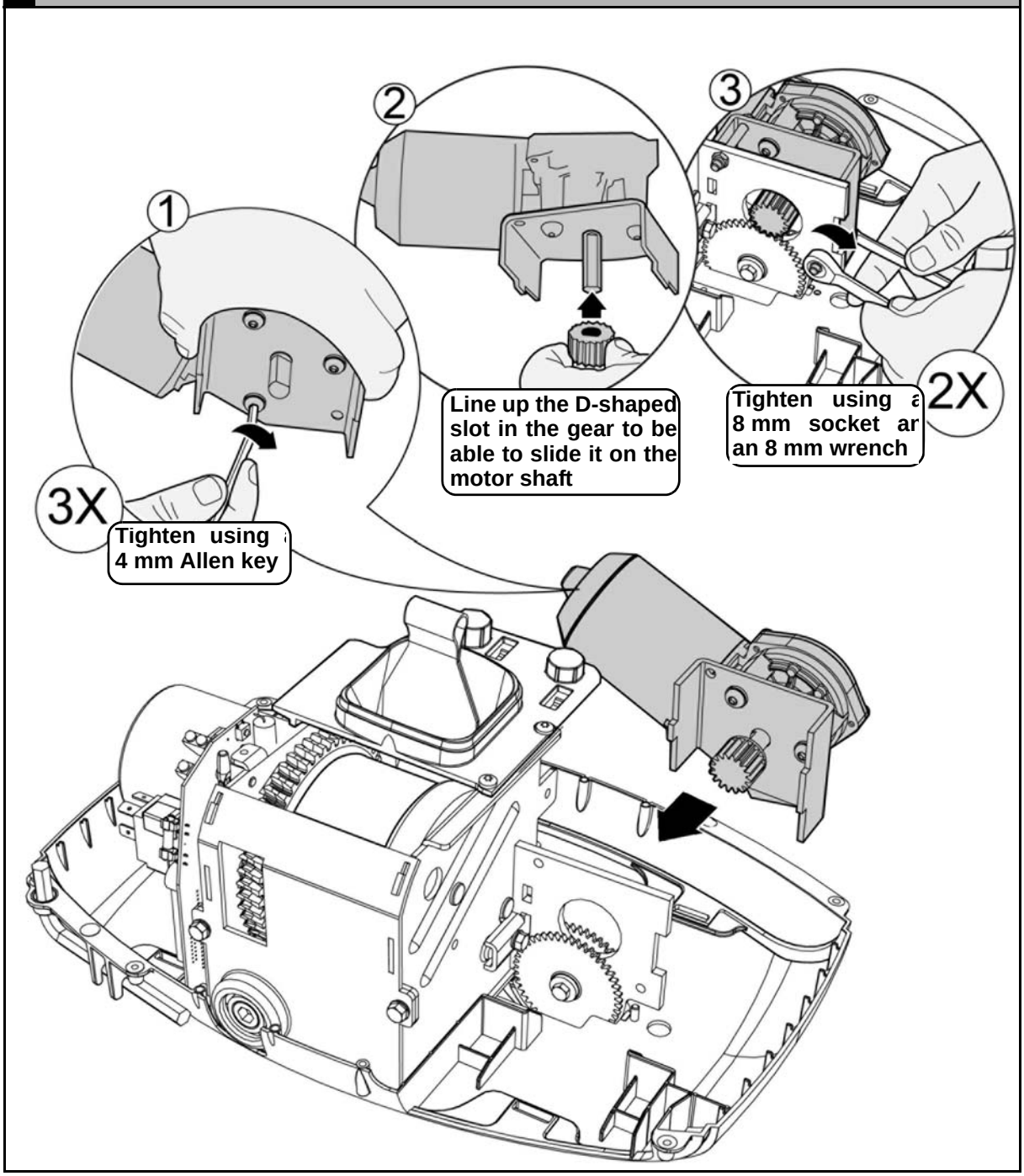
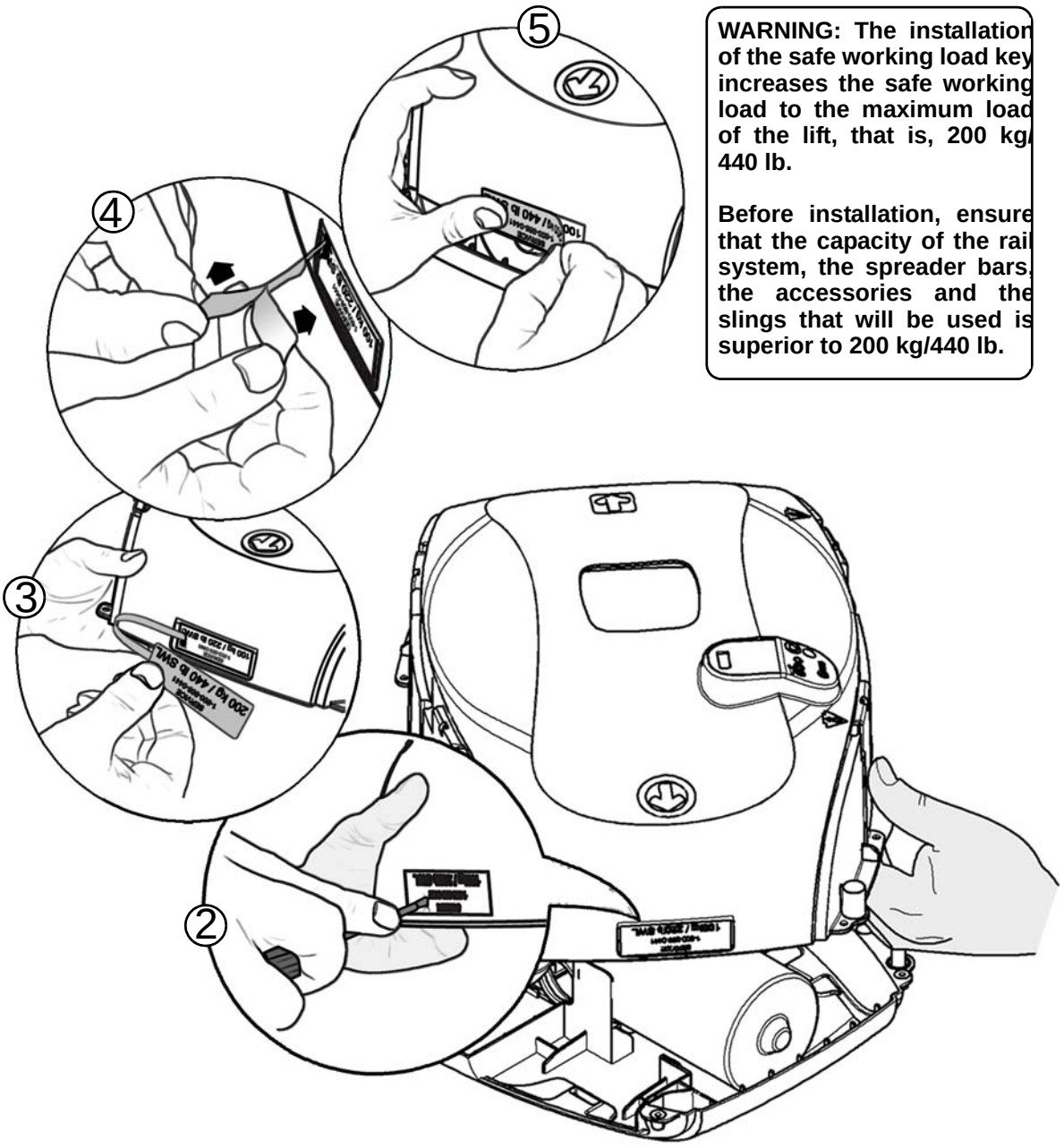


Fig. 32

200 kg Safe Working Load (SWL) Key Installation

Applying the label:

① Turn unit off and follow the steps found in Fig. 7, Fig. 8 and Fig. 9.
② With a screwdriver, pierce the SWL label already applied on the ceiling lift main shell.
③ Thread the connector through the hole.
④ Remove the back of the label to expose the adhesive side.
⑤ Apply the label portion of the SWL key over the old label.



WARNING: The installation of the safe working load key increases the safe working load to the maximum load of the lift, that is, 200 kg/ 440 lb.

Before installation, ensure that the capacity of the rail system, the spreader bars, the accessories and the slings that will be used is superior to 200 kg/440 lb.

Fig. 33

Connecting the 200 kg Safe Working Load key:

① Plug in the membrane for the alternative up/down switches located on the unit.
② Plug in the connector for the SWL key.

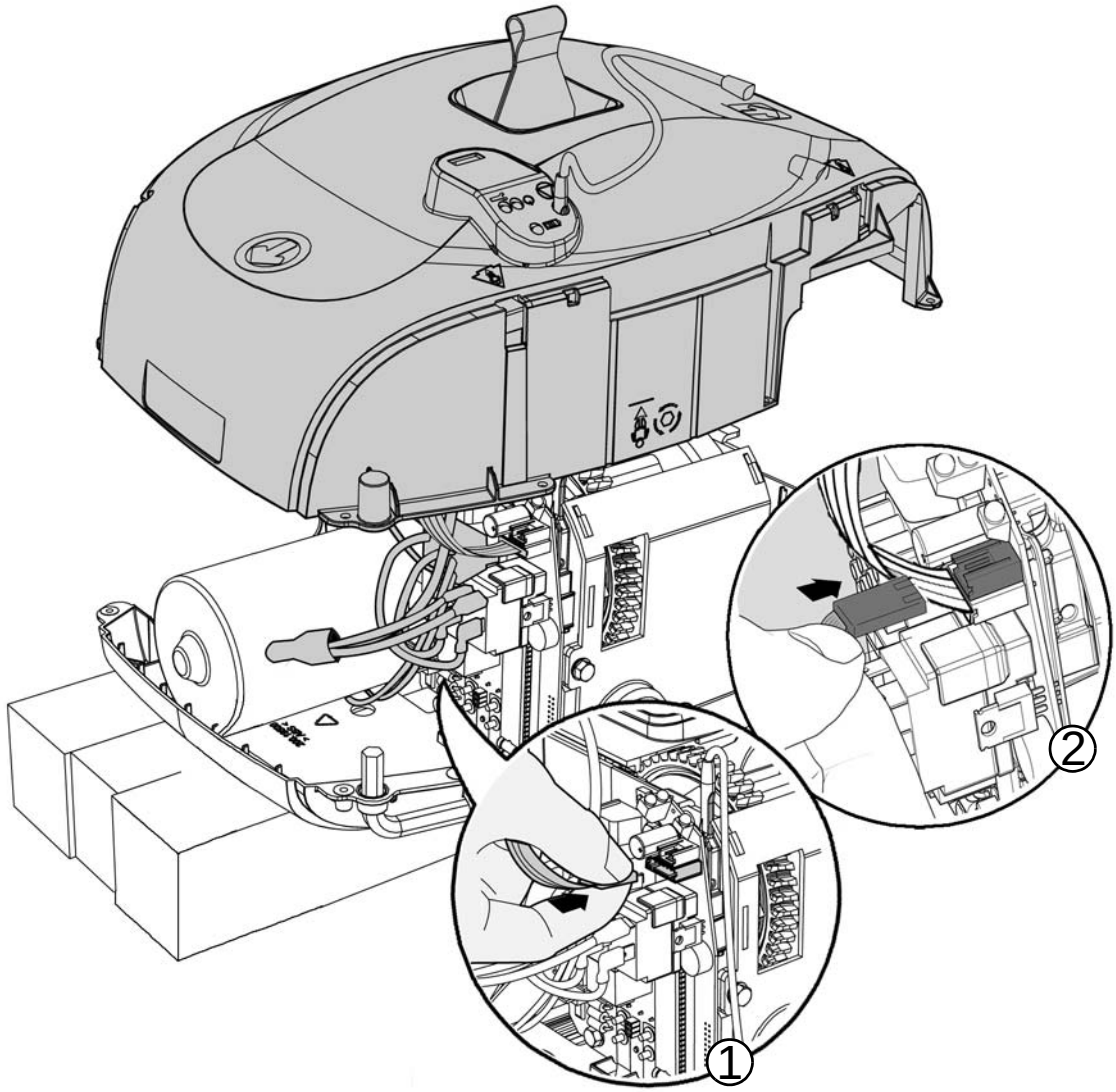


Fig. 34

Maintenance and Service

Final steps:

① Reposition the handset extension cable socket within its slot on the plastic housing.
② Reconnect the handset jack back into its socket on the unit's plastic housing (see Fig. 13).
③ Replace the top plastic cover and secure it with the plastic screws.
④ Reconnect the batteries (see Fig. 14), reinstall the side panels and the spreader bar to the lift (see Fig. 15).

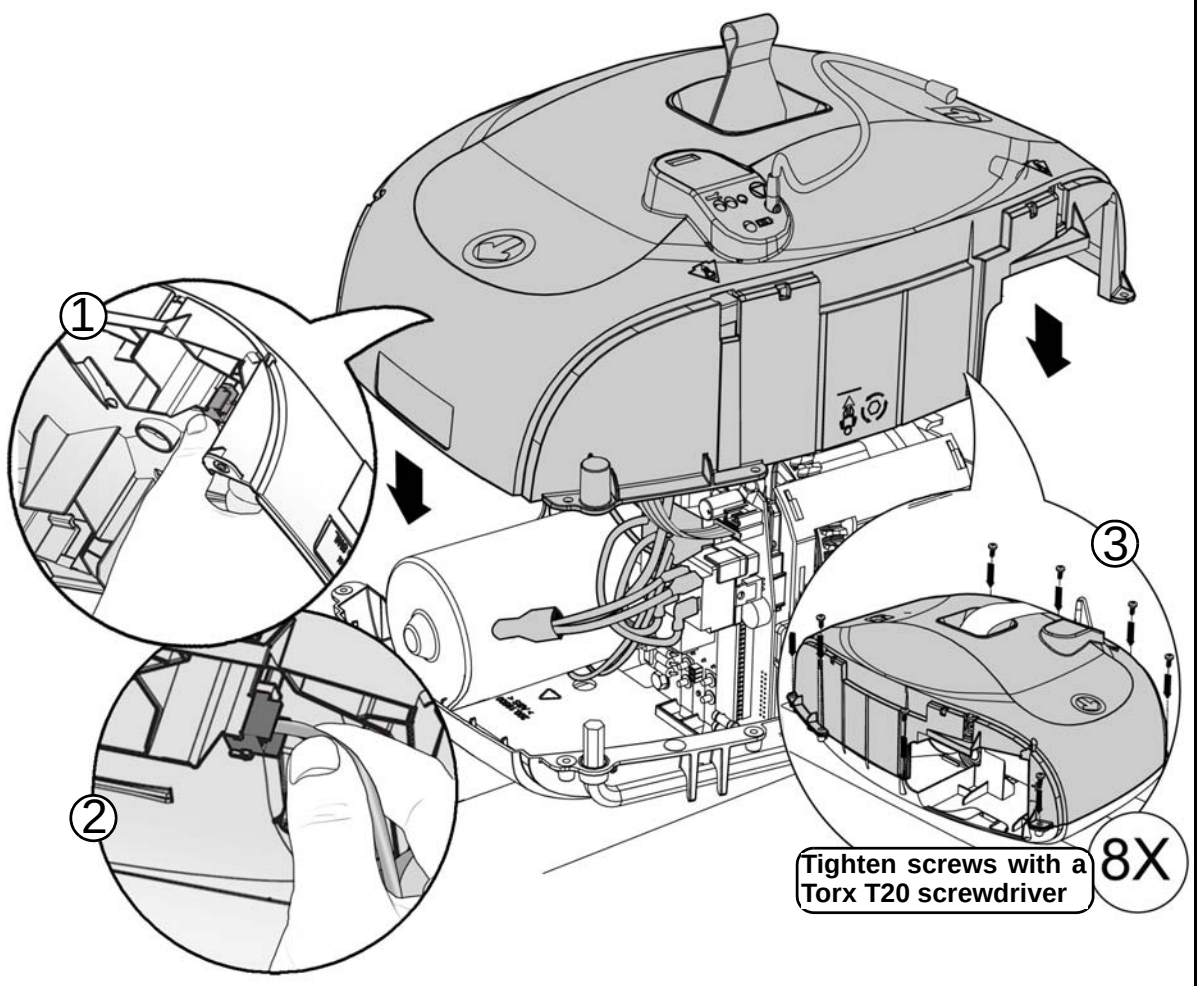


Fig. 35

200 kg Safe Working Load (SWL) Key Removal

Applying the label:

① Turn the unit off and follow steps from Fig. 7, Fig. 8 and Fig. 9.
② Disconnect the **200** kg SWL key (see Fig. 36).
③ Remove the key label off the plastic housing. Cut the key to ensure that it will not be re-used.
④ Apply the **100 kg** SWL label (001.19510) on the top plastic housing.
⑤ Re-assemble the unit, refer to steps in Fig. 35, Fig. 13, Fig. 14 and Fig. 15.

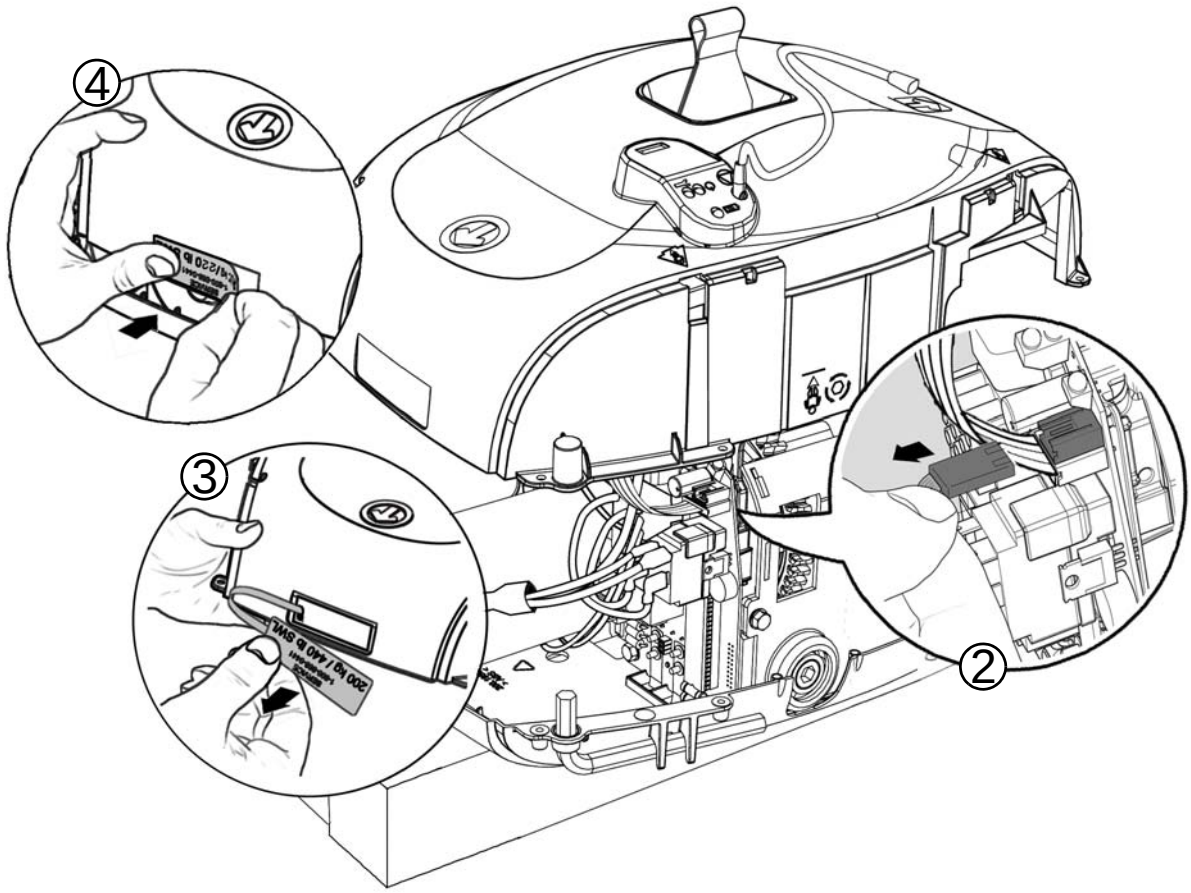


Fig. 36

Care and Maintenance

Preventive Maintenance Schedule

The equipment is subjected to wear and tear, and the following maintenance instructions must be acted upon when specified to ensure that the equipment remains within its original manufacturing specifications. Care and maintenance must be carried out in accordance with the preventive maintenance schedule below.

Customer obligations must be carried out by qualified personnel in accordance with the instructions in this manual.

WARNING: The maintenance described in the following checklist is the minimum that the manufacturer recommends. In some cases more frequent inspections should be carried out. Continuing to use this equipment without conducting regular inspections or when a fault is found will seriously compromise the safety of the user and of the resident. Local regulations and standards may be higher than those of the manufacturer. A load test for the ceiling lift is recommended. Preventive maintenance specified in this manual can prevent accidents and reduce repair costs.

WARNING: Safety related maintenance and authorized service must be carried out by qualified personnel, fully trained in servicing procedures by ArjoHuntleigh, and equipped with proper tools. Failure to meet these requirements could result in personal injuries and/or unsafe equipment.

User Inspections

	FREQUENCY					
Inspections for lift cassette and track system	**Initially**	**Before every use**	**Every two months or 500 cycles**	**Every four months or 1000 cycles**	**Every year or 2500 cycles**	**Every two years or 5000 cycles**
Inspect for evidence of external damage, missing parts or broken panels.	X	X				
Make sure that end stoppers and rail caps are in place and tightened.	X	X				
Inspect strap for wear, discoloration or loose threads.		X				
Recharge batteries.	X	X				
Inspect wheels in rail for damage, rust or cracks. Replace if damaged.					X	
Clean the rail and the clip-on charging station contacts.				X		
Overall inspection by authorized personnel.					X	
Verify emergency stop cord.				X		
Verify emergency lowering device.				X		

Inspections by an Authorized Service Technician

	FREQUENCY					
Inspections for spreader bar and slings	**Initially**	**Before every use**	**Every two months or 500 cycles**	**Every four months or 1000 cycles**	**Every year or 2500 cycles**	**Every two years or 5000 cycles**
Inspect all sling parts (attachments, fabric, stitch areas and strap) for signs of wear, discoloration, deterioration or loose threads.		X				
Clean sling as indicated on the tag.	When necessary					
Inspect the spreader bar on the strap of the lift for damage or cracks. Make sure all attachments are properly secured (e.g. split ring).		X				

	FREQUENCY					
Inspection for lift cassette	**Initially**	**Before every use**	**Every two months or 500 cycles**	**Every four months or 1000 cycles**	**Every year or 2500 cycles**	**Every two years or 5000 cycles**
Replace strap.						X
Inspect frame parts interlock and hardware for malfunction and make sure there are no parts missing.					X	
Inspect gears for wear.					X	
Inspect connecting joints for proper attachment (trolley and spreader bar).					X	
Verify the emergency brake.					X	
Verify emergency lowering mechanism.					X	
Verify alternative up and down buttons on cassette.					X	
Load test (safe working load -SWL) for ceiling lift recommended.					X	

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Care and Maintenance

	FREQUENCY					
Inspections for rails	**Initially**	**Before every use**	**Every two months or 500 cycles**	**Every four months or 1000 cycles**	**Every year or 2500 cycles**	**Every two years or 5000 cycles**
Torque end stoppers to 20 N•m. (15 lbf.ft).	X				X	
Make sure that the bracket locking device is not visible.	X				X	
Make sure rail joints are closed and that the spring pins are centered.	X				X	
Make sure the rail is straight when it is not loaded.	X				X	
Make sure the adjusted load setting of the lift is equal or lower than the safe working load of the installation.	X				X	
Check that the accessories (turntable and exchanger) are complete and correctly maintained.	X				X	
Make sure that the attachments (ceiling brackets, wall post, wall brackets) have not been displaced.	X				X	
Inspect track end stoppers.	X				X	
Required SWL (safe working load) test for tracks	X				X	

Note: If the productdoes not work as intended, immediately contact your local ArjoHuntleigh representative for support.

WARNING: Always reinstall the rail end stoppers (if removed) after servicing.

Cleaning

To clean the the lift enclosure, wipe it down with a damp cloth using warm water and a disinfectant cleaner. Disinfectant wipes, supplied already impregnated with a 70% v/v solution of isopropyl alcohol, can also be used.

Rub the lift vigorously when using the wipes, to promote an effective disinfection of its entire surface. Do not use phenol, chlorine or any other type of solvent that may damage the finish.

To ensure a better rolling surface for the trolley wheels, clean the inside of the track every 4 months. To do so, insert a damp cloth in the opening and slide it from one end of the track to the other.

Strap Inspection

If the strap is damaged or shows signs of wear or discoloration, the acceptable load on the strap before rupture can drop rapidly and present a danger for the resident or caregiver. ArjoHuntleigh recommends a thorough inspection of the straps every 2 months as follows:

1) Completely unwind the strap.

2) Look for any signs of wear or discoloration (see Fig. 37).

WARNING: If there is any sign of wear as indicated previously or any other visual defects, the strap must changed. The manufacturer recommends changing the strap at least every two years. By continuing to use the lift without changing a damaged strap, the safety of the caregiver or resident is greatly compromised.

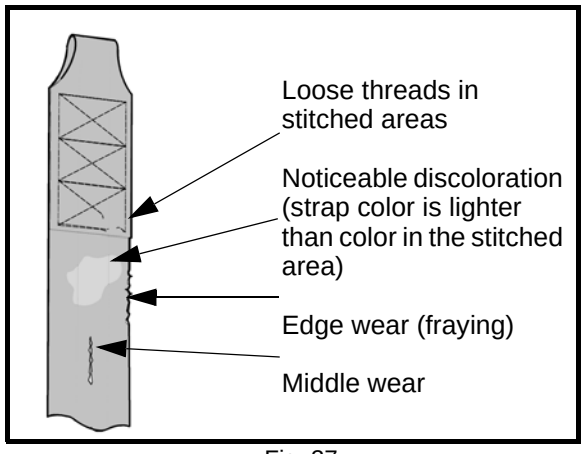


Fig. 37

Emergency Brake Inspection

Units preceding serial number 01407

1) Rotate the drum until one of the lock can be accessed from under the unit.

2) With a small screwdriver, check if the lock is moving freely and that the spring brings it back to its original position immediately when it is released.

3) Repeat procedure for both locks

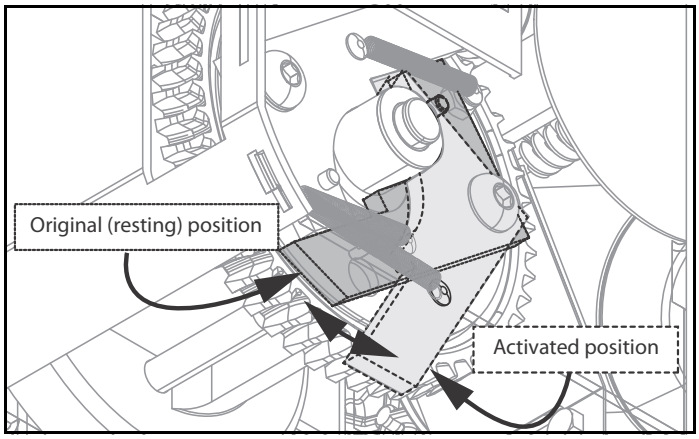


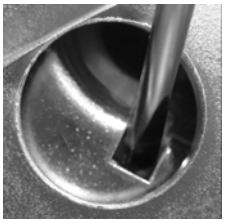
Fig. 38

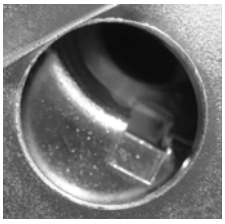
Units from serial number 01407 and above

1) Rotate the drum until one of the lock is align with the large opening on the chassis.

2) With a small screwdriver, check if the lock is moving freely and that the spring brings it back to its original position immediately when it is released.

3) Repeat procedure for each three locks.





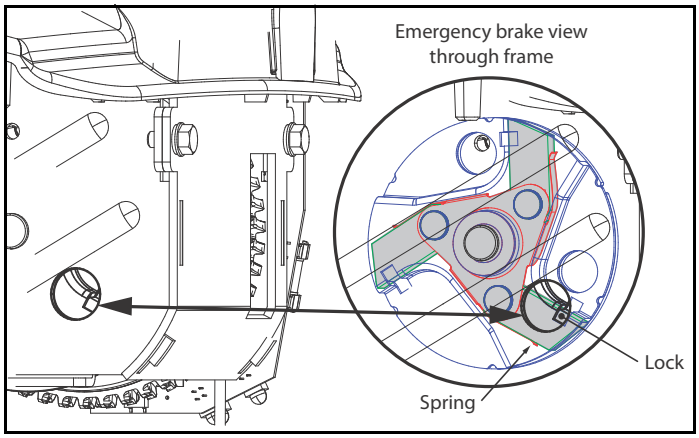


Fig. 39

Care and Maintenance

Handling and Storage

Avoid violent impacts while transporting the lift.

The lift should not remain stored for long periods of time without recharging the batteries.

If you store or ship the lift, ensure that the power (green light) is turned off beforehand.

NOTE: Even if the lift is not used, ArjoHuntleigh recommends charging the batteries at least every two weeks. This will prevent premature aging of batteries.

Battery Replacement

ArjoHuntleigh uses sealed lead-acid batteries in the ceiling lifts. ArjoHuntleigh batteries do not have any memory effect. Therefore, batteries should not be completely discharged before recharging.

Replace the batteries when there is a noticeable reduction in the number of transfers that can be performed between charges. If you hear the lift beeping and notice a red light flashing, see the instructions in the “Troubleshooting” section of this manual to determine if it is a problem with the batteries.

CAUTION: Do not attempt to use a battery that was not supplied by ArjoHuntleigh. ArjoHuntleigh batteries are specially designed for ArjoHuntleigh charging systems. Attempting to use an unauthorized battery may seriously damage the lift and/or the charger.

Verification of the Charger’s Power Source

If the light does not illuminate when there are batteries correctly installed in the lift, try the following:

1) Make sure that the power cord is correctly plugged into the charger and in the wall AC outlet, and that the green light on the clip-on charging station is on.
2) Make sure that there is contact between the contact blades of the lift and the contact plates of the charging station.
3) Check the power of the AC outlet on the wall.
4) If the charger’s green light does not light up, contact your local ArjoHuntleigh representative for assistance.

Sling Inspection and Care

For maximum resident safety and hygiene, read the instructions found in the *Loop Sling Instructions for Use* that comes with the sling.

Annual Inspection

The unit and its accessories must be inspected annually by a qualified technician.

WARNING: The Voyager Duo / V5 Duo and accessories must be serviced every 12 months as a minimum requirement. Do not attempt to do the inspection unless you are certified to do so.

Maintenance Requirements

The unit is equipped with an electronic monitor that causes a red light to flash when a maintenance inspection is necessary. Arranging for scheduled inspections ensures the durability of the unit and the security of the resident and user.

WARNING: Only a qualified technician is authorized to open the Voyager Duo / V5 Duo ceiling lift cassette. Alterations made to the Voyager Duo / V5 Duo ceiling lift cassette by someone other than a certified technician may cause serious injury.

Troubleshooting

PROBLEM	TO CHECK
The red “service” light is on and flashing.	• A maintenance inspection must be performed. See the *Programming KWIKtrak Track Lifts* (001-14154-EN) to reset the unit after the inspection has been performed.
The red light is solid.	• The ceiling lift cassette is under its overheat protection. Wait between 10 to 30 minutes until the red light turns off and press on the “UP” button to use the ceiling lift cassette again.
The unit starts and stops repetitively.	• If the load is over a safe working load, the unit will not work due to the overload protection on the motor.
The ceiling lift cassette emits a beep during utilization. The unit may stop lifting but the lowering function can still be used.	• Batteries are low. Return the ceiling lift cassette to the charging station.
The charger indicator (yellow) on the ceiling lift cassette does not light up when the lift is on the charger.	• Check that the charger is plugged into a standard outlet, and that the outlet has power. The green light on the clip-on charging station indicates that it is functioning.
When returning to charge, the ceiling lift cassette passes the clip on the charging station, or goes in the wrong direction.	• Clean the contact blades of the charging station with mild detergent. Pass the ceiling lift cassette through the charging station manually once, then retry the return to charger function.
Batteries are always dead after only a few transfers (3 to 5).	• Verify the function of the ceiling lift charger and the contact plates on the clip-on charging station. • Replace batteries with new ones. The life of the current batteries may be almost finished. It is important to always change both batteries at the same time.
The yellow light on the unit is solid while on the charging station, yet when being used, the ceiling lift cassette will only perform one or two transfers.	• Replace batteries with new ones. The life of the current batteries may be almost finished. It is important to always change both batteries at the same time.
The yellow light on the unit is solid while on the charging station, yet the ceiling lift will only work when there is no one on the lift. When you try to transfer the patient, the ceiling lift stops.	• Replace batteries with new ones. The life of the current batteries may be almost finished. It is important to always change both batteries at the same time.
The ceiling lift does not work when you press the buttons on the hand control.	• If the charger light is on, move the ceiling lift away from the charging station in order to operate the lift. • If the emergency stop is activated, gently push up on the reset switch plastic insert to turn the unit back on. • Check if the buttons on the ceiling lift cassette are working.If so, the problem may be coming from the hand control. If not, check the charge on the ceiling lift. • Check if the hand control is plugged in properly into the ceiling lift cassette; the hand control may be slightly pulled out from its socket and yet appear as though it is plugged in. Pull out the plastic cover to check the connection. • Slide the ceiling lift over the clip-on charging station. Verify if the yellow light turns on.

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PROBLEM	TO CHECK
The charging light on the ceiling lift cassette continues flashing yellow and the light does not turn solid even after recharging the unit overnight.	• Using a voltmeter, test two contact points on the charging station (see Fig. 40). The voltmeter should read between 26 and 30 volts VDC. • If available, try another integrated clip-on charging station from another ceiling lift, or a spare one. Clip it to the rail and charge the unit for 3 hours. • Replace batteries with new ones. The life of the current batteries may be almost finished. It is important to always change both batteries at the same time. • If, after testing all of the above, the ceiling lift will not operate, contact ArjoHuntleigh's customer services department.
When you press the button to return the ceiling lift to its charger (four-way motor only), the ceiling lift goes past the charger.	• Verify that the contact blades of the cassette are intact and making a good contact with the clip on charging station. • The charger either has no power or is not working properly (the contacts are defective). See "Troubleshooting" question above.

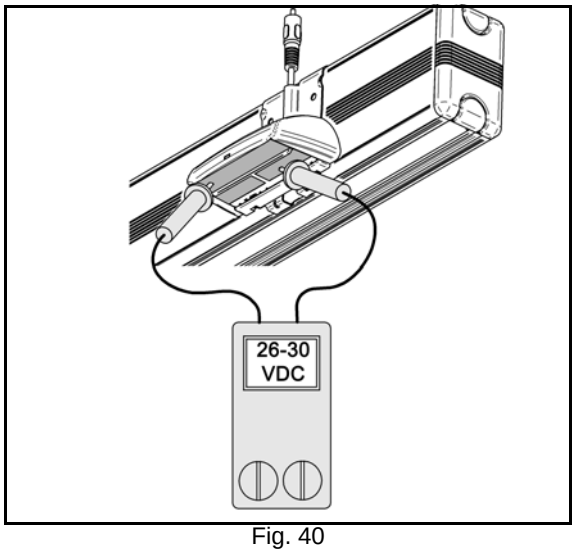
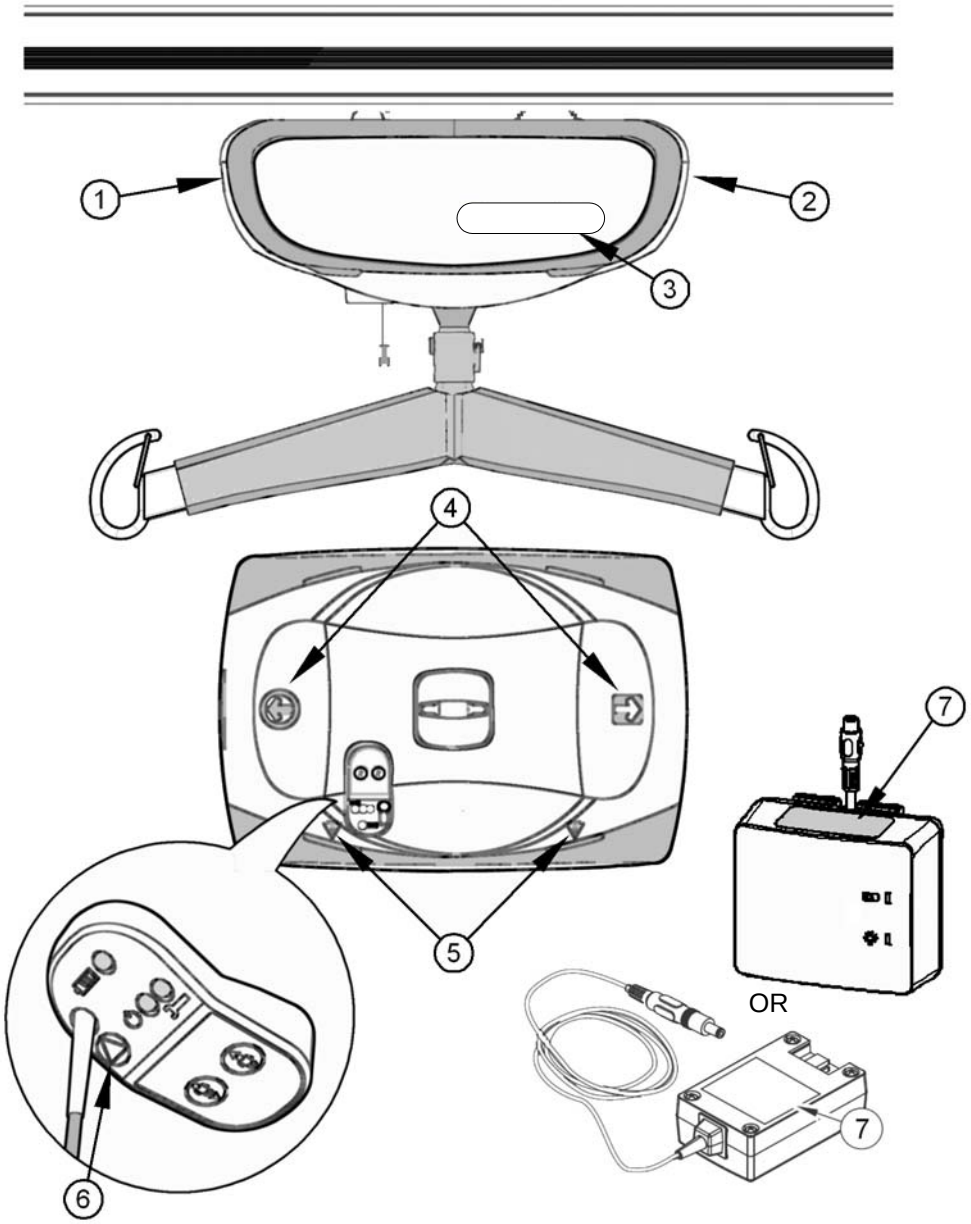


Fig. 40



1) Maximum capacity/Service telephone number
2) Date of manufacture, serial number, product code and manufacturer identification
3) Product name
4) Travel direction indicators
5) Emergency lowering system access identification
6) Emergency stop identification
7) Charger information

Fig. 41

Technical Specifications

PRODUCT INFORMATION	Voyager Duo / V5 Duo
Weight, complete (four-function model)	12.7 kg (28 lb)
Weight, complete (two-function model)	11.4 kg (25 lb)
Weight of spreader bar	2.5 kg
Lifting capacity	100 kg (220 lb) or 200 kg (440 lb)
Strap length	2300 mm (90.6 in)
Lifting speed	6.0 cm/s (2.4 in/s) without load) 3.5 cm/s (1.4 in/s) at 200 kg (440 lb)
Maximum stroke (from ceiling)	2300 mm (90.6 in)
Horizontal displacement speeds	10, 15, 20 and 25 cm/s. Speed is 20 cm/s (7.9 in/s) by default
Horizontal axis motor	24 VDC, 62 watts
Vertical axis motor	24 VDC, 110 watts
Operating force of control	< 5 N
ELECTRICAL	
Duty cycle	Max 10%, 1 minute continuously
Rating	24 VDC, 15 A max.
Noise level for either raising or lowering, with or without load	61 dBA max.
Medical equipment	Type BF protection against electrical shock in accordance with IEC 60601-1
The Voyager Duo ceiling lift is compliant with CAN/CSA C22.2 No. 601.1 (SUP1+AM2), UL 60601 1, CAN/CSA-C22.2 No. 60601-1-08, ANSI/AAMI ES60601-1:2005, and designed according to ISO 10535.	
WARNING: Wireless communications equipment such as wireless home network devices, mobile phones, cordless telephones and their base stations, walkie-talkies, etc. can affect the Voyager Duo unit and should be kept at least 2.3 m away from it. Cables from potentially strong sources of electromagnetic fields should not be placed near the unit.	
Battery type	Sealed rechargeable valve regulated lead acid batteries Rating: 12 V, 5 Ah
Battery capacity	Provides up to 120 transfers with a load of 100 kg (220 lb), up to 70 transfers with a load of 200 kg (440 lb)
Degree of protection - Hand Control	IPX4 - 700-13800, 700-13820 IPX7 - 700-13805, 700-13825
Degree of protection - Lift Casette	IP21
Lift - protection class - shock prevention	Internally powered equipment
Battery Charger input	100-240 VAC, 50-60 Hz, 57-70 VA
Battery Charger output	700-15500 : 27-29Vdc, 1A max 700-24201 : 28.1Vdc, 1A max 700-15567 : 24Vdc, 24VA, 1A max
Battery Charger safety protection	Class 2, double insulated
OPERATION AND STORAGE CONDITIONS	
Ambient temperature range	**Operation**: 10 to 40 °C **Storage:** -40 to + 70°C
Relative humidity range	**Operation:** 30% to 75% **Storage:** 10 to 100%, non-condensing
Atmospheric pressure range	**Operation**: 700 hPa to 1060 hPa (2000 m Max) **Storage**: 500 hPa to 1060 hPa (2000 m Max)
WARNING: This equipment is not suitable in the presence of flammable anesthetic mixtures with air or oxygen, or with nitrous oxide.	
RECYCLING	
Battery	Sealed lead-acid, rechargeable, recyclable
Package	Cardboard recyclable
The lift	Separated and recycled, according to the European Directive 2002/96/EG (WEEE).

ArjoHuntleigh resident Handling products meet the requirements of Electromagnetic Compatibility (EMC) as stated in clause 12.5 of Annex 1 of the Medical Devices Directive 93/42/EEC.

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Lift Dimensions

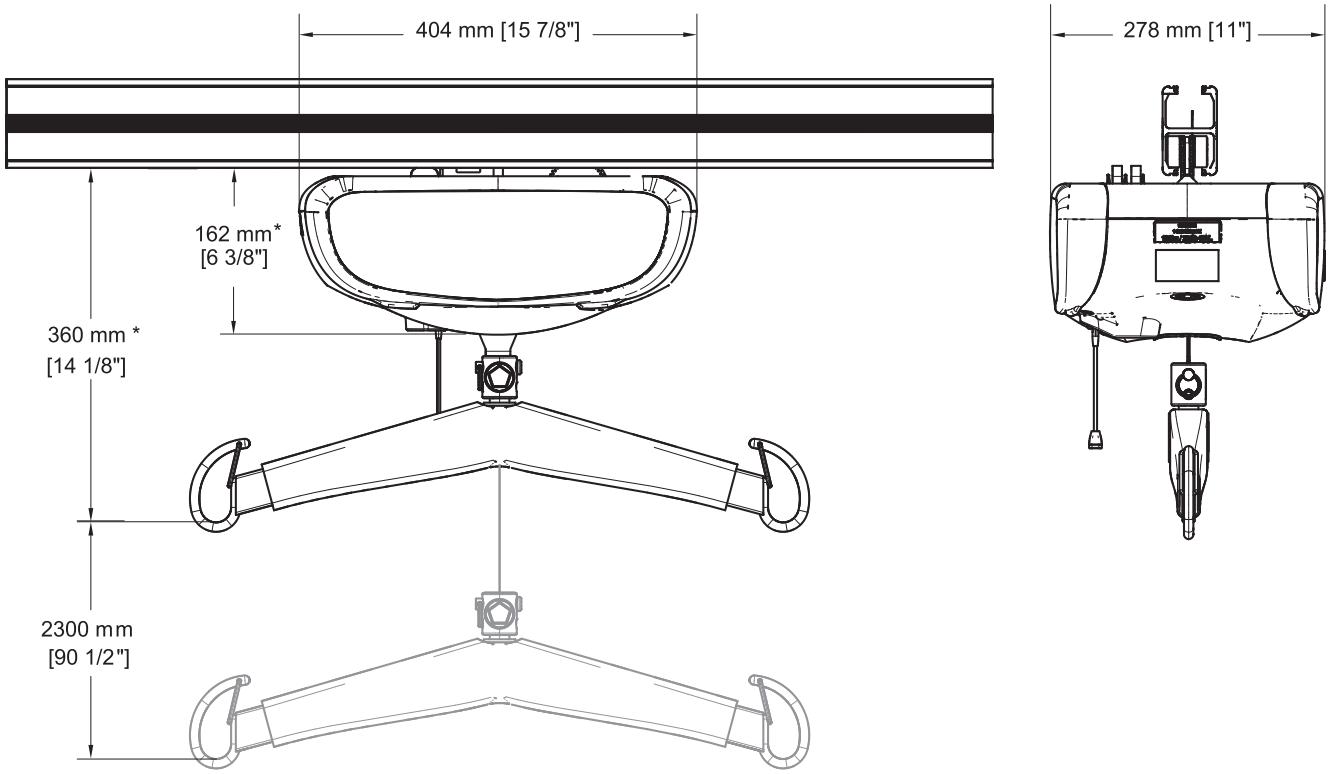

Fig. 42

Electromagnetic Compatibility

Electromagnetic Compliance

The Voyager Duo / V5 Duo has been tested for compliance with current regulatory standards regarding its capacity to block EMI (electromagnetic interference) from external sources.

Nonetheless, some procedures can help reduce electromagnetic interferences:

- Use only ArjoHuntleigh 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.
- Maximize the distance between electro-medical devices. High-powered devices may produce EMI that can affect the ceiling lift. Refer to separation distance table further on in this document.

For more information on how to manage the unit's RF electromagnetic environment, please consult the *AMI TIR 18-1997 - Guidance on Electromagnetic Compatibility of Medical Devices for Clinical/Biomedical Engineers*.

Electromagnetic Emissions

Guidance and Manufacturer's Declaration - Electromagnetic Emissions - For all Equipment and Systems		
The Voyager Duo / V5 Duo is intended for use in the electromagnetic environment indicated below. The customer or the user of the Voyager Duo / V5 Duo should assure that it is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment - guidance**
RF emissions CISPR 11	Group 1	The Voyager Duo / V5 Duo 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	The Voyager Duo / V5 Duo 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	Complies [1]	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Complies [2]	

Notes: [1] The EUT utilizes less than 75 W. No limits are specified for equipment with less than 75 W input rating.

[2] The EUT is unlikely to produce significant voltage fluctuations or flicker. No testing required.

Electromagnetic Immunity

Guidance and Manufacturer's Declaration - Electromagnetic Immunity - For all Equipment and Systems			
The Voyager Duo / V5 Duo is intended for use in electromagnetic environment specified below. The customer or the user of the Voyager Duo / V5 Duo should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±8 kV contact[1] ±15 kV air[1]	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% *U*T (>95% dip in *U*T) for 0.5 cycle 40% *U*T (60% dip in *U*T) for 5 cycles 70% *U*T (30% dip in *U*T) for 25 cycles <5% *U*T (>95% dip in *U*T) for 5 sec.	<5% *U*T (>95% dip in *U*T) for 0.5 cycle 40% *U*T (60% dip in *U*T) for 5 cycles 70% *U*T (30% dip in *U*T) for 25 cycles <5% *U*T (>95% dip in *U*T) for 5 sec.	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Voyager Duo / V5 Duo requires continued operation during power mainsinterruptions, it is recommended that the Voyager Duo / V5 Duo be powered from an uninterruptible power supply or a battery. NOTE: UT is the a.c. mains voltage prior to application of the test level.
Power frequency (50/60 Hz) magnetic field (IEC 61000-4-8)	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercials or hospital environment.
NOTE: *U*T is the AC mains voltage prior to application of the test level.			

Notes: [1] The EUT was tested at 8 kV contact discharge and 15 kV air discharge as per client request.

Electromagnetic Compatibility

(continued)

<table>
<tr><th colspan="4">Guidance and Manufacturer's Declaration -
Electromagnetic Immunity - For Equipment and Systems that are Not Life-Supporting</th></tr>
<tr><th>Immunity test</th><th>IEC 60601 test level</th><th>Compliance level</th><th>Electromagnetic environment - guidance</th></tr>
<tr><td>Conducted RF
IEC 61000-4-6

Radiated RF
IEC 61000-4-3</td><td>3 Vrms
150 kHz to 80 Mhz
outside ISM bands[a]

3 V/m
80 MHz to 2.5 GHz</td><td>3 V

10 V/m[1]
80 MHz to 2.5 GHz</td><td>Portable and mobile RF communications equipment should be used no closer to any part of the Voyager Duo / V5 Duo, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

Recommended separation distance:

$d = \left[\frac{3.5}{V_1}\right]\sqrt{P}$

$d = \left[\frac{12}{E_1}\right]\sqrt{P}$ 80 MHz to 800 MHz

$d = \left[\frac{23}{E_1}\right]\sqrt{P}$ 800 MHz to 2.5 GHz

where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters.

Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [a] should be less than the compliance level in each frequency range. [b]

Interference may occur in the vicinity of equipment marked with the following symbol:

  </td></tr>
<tr><td colspan="4">NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.
NOTE 2: Theses guidelines may not apply in all situations. Electromagnetic propagation if affected by absorption and reflection from structures, objects and people.</td></tr>
<tr><td colspan="4">(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 Voyager Duo / V5 Duo is used exceeds the applicable RF compliance level above, the Voyager Duo / V5 Duo should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the Voyager Duo / V5 Duo.</td></tr>
<tr><td colspan="4">(b) Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.</td></tr>
<tr><td colspan="4">[1] The EUT was tested at 10 V/m.</td></tr>
</table>

(continued)

**Recommended Separation Distance Between -
Portable and Mobile RF Communications Equipment and the Voyager Duo / V5 Duo
for Equipment and Systems that are not Life-Supporting**

Recommended separation distances between portable and mobile RF communications equipment and the Voyager Duo / V5 Duo.

The Voyager Duo / V5 Duo is intended for use in electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Voyager Duo / V5 Duo can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communication equipment (transmitters) and the Voyager Duo / V5 Duo as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	**Separation distances according to frequency of transmitter (m)**		
	150 kHz to 80 MHz outside ISM bands $d = \left[\frac{3.5}{V_1}\right]\sqrt{P}$	80 MHz to 800 MHz $d = \left[\frac{3.5}{E_1}\right]\sqrt{P}$	800 MHz to 2.5 GHz $d = \left[\frac{7}{E_1}\right]\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.38	0.73
1	1.17	1.2	2.3
10	3.69	3.8	7.3
100	11.67	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

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