ARJOHUNTLEIGH
GETINGE GROUP

Maxi Lite

Maintenance and Repair Manual

CE

001-20804-EN rev. 0 • June 2014

...with people in mind

NOTICE

The following manual is an internal document intended for ARJOHUNTLEIGH trained technicians only.

SAFETY INSTRUCTIONS

A. ARJOHUNTLEIGH strongly advises that only ARJOHUNTLEIGH designated parts, which are designed for the purpose, should be used on equipment and other ARJOHUNTLEIGH supplied appliance to avoid injuries attributable to the use of inadequate parts. ARJOHUNTLEIGH's conditions of sale make specific provisions confirming no liability in such circumstances. Our policy is one of continuous development, and we, therefore reserve the right to change specifications without notice.

B. Unauthorized modifications on any ARJOHUNTLEIGH equipment may affect its safety and are in breach of any warranty on it. ARJOHUNTLEIGH will not be held responsible for any accidents, incidents or lack of performance that occur as a result of unauthorized modifications to its products.

C. If the terms listed below are used in the text, their meaning is as follows:

DANGER
ELECTRICAL HAZARD WARNING: FAILURE TO UNDERSTAND AND FOLLOW THESE INSTRUCTIONS MAY RESULT IN AN ELECTRICAL SHOCK.

WARNING
FAILURE TO UNDERSTAND AND FOLLOW THESE INSTRUCTIONS MAY RESULT IN INJURY TO YOU OR TO OTHERS.

CAUTION
FAILURE TO FOLLOW THESE INSTRUCTIONS MAY CAUSE DAMAGE TO ALL OR PARTS OF THE SYSTEMS OR EQUIPMENT.

NOTE
THIS IS IMPORTANT FOR THE CORRECT USE OF THIS SYSTEM OR EQUIPMENT.

D. Dangerous substances: If using hazardous substances be sure how to handle them and refer to applicable information. When in doubt, refer to the local authorities for health and safety requirements.

E. It is strongly recommended that every technician follows the procedures as indicated in this manual. Every procedure has been studied from the perspective of minimizing the risks either for the technician or the floor lift. Even if some of the procedures are not the shortest ones, they are the most effective on a long term basis.

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MANUAL VERSION 2

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UPDATING INSTRUCTIONS 3

VERIFY THAT THE LATEST UPDATES HAVE BEEN IMPLEMENTED

Verify on Careprosis if there were any field correction bulletin, safety notice or technical bulletin that have been published since the last service. http://www.careprosis.com

This verification must be done to keep the product up to date according to safety and product improvements. Bulletins and notices can be generated as a result of an engineering change note, a safety incident report or a change to form/fit etc.

Example of a Technical Bulletin

ARJO TECHNICAL

TECHNICAL BULLETIN

CARENDO – bad noise, corrosion on bearings

Background
We have recieved a small but significant number of complaints from the Netherlands on CARENDO giving an annoying noise when being operated. It was observed that the bearings had a white layer (corrosion product?). Products were returned to factory for analysing and additional testing on factory samples were also made.
Case no 205 was opened to investigate the complaint.

Result of investigation
Tests show that the white layer was " white rust". The bearings are made of aluminium, which is stable against corrosion in the pH -range 4-9, but high acid or alkali content in the environment may cause the aluminium to corrode. It is from the samples obvious that the Carendo sometimes can be exposed to such environment. The corrosion is not safety critical in any aspect but will cause the reported annoying noise and will of course make a bad impression and therefor product improvements as described below has been made.

Product improvements/ corrective actions
The bearings had originally a surface treatment with Electro-coating including Ferro-phosphatising to prevent corrosion, this process has been enhanced. From November 2004 all bearings are pre-treated using the new technology with Zink- phosphatising, which gives an active protection against corrosion. Further more to prevent corrosion all bearings are grease in production using Shell Cassida RLS2. This greasing is implemented in production with the new chassis in November 2004, SE0046634.

Greasing of the bearings is also included in the Preventive Maintenance Schedule (PMS) in the last edition (November 2004) of the Operating and Product Care Instructions and the next issue of the Maintenance and Repair Manual (MRM) will be updated accordingly. The greasing is specified to be performed every year by ARJO authorised service. (See attached for a copy of the greasing procedure).

Fig. 1

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GENERAL INFORMATION 4

PRODUCT AND TECHNICAL DESCRIPTION

Introduction

The Maxi Lite is a mobile patient lifter and is used for transferring patients from the bed, chair or the toilet. The Maxi Lite floor lift has a maximum safe working load (SWL) of 160 kg (350 lb).
Each Maxi Lite is supplied with two 24 VDC rechargeable batteries and a charging unit.

NOTE
THE SWL WILL DEPEND ON THE LIFT'S CONFIGURATION AND ATTACHMENTS. ALWAYS REFER TO THE MAXIMUM SWL OF THE LOWEST RATED ATTACHMENT.

Features

The features of the Maxi Lite floor lift include:

- Immediate stop/reset switch
- Overload circuit
- Overload current limit protection in the PCB
- Lower and upper limit switch
- Anti-crush
- Control panel on the unit
- Emergency lowering device

The raising and lowering mechanism comprises an electromechanical linear actuator powered by a 24 VDC motor.

WARNING
SERVICE MUST BE CARRIED OUT BY A QUALIFIED PERSONNEL, USING CORRECT TOOLS AND KNOWLEDGE OF PROCEDURES. FAILURE TO MEET THESE REQUIREMENTS COULD RESULT IN PERSONAL INJURIES AND/OR UNSAFE EQUIPMENT.

Risk Assessment Checklist for Service Technician

WARNING
IF IN DOUBT, CONTACT YOUR LOCAL ARJOHUNTLEIGH REPRESENTATIVE. DO NOT TAKE UNNECESSARY RISKS.

The following assessment MUST be made before carrying out servicing, repair work or installations:

- Make sure the work area is adequately sized, suitably lit and at a reasonable temperature.
- The floor surfaces must be free from clutter, unevenness and non-slip.
- Use good engineering and manual handling practices to keep risk of injury at its lowest level.
- Tools and equipment must be kept in good condition.
- Wear protective clothing and eye protection where necessary.
- You should be adequately trained to perform the task.
- Do not manually lift items that could cause personal injury, that is too heavy, hot or sharp.
- You must comply with all local site safety rules, report any incident or accident to the site safety supervisor or equivalent. Use the ArjoHuntleigh reporting procedure.

If necessary use hard surface wipes (alcohol impregnated) to decontaminate a machine before carrying out any work.

NOTE

THE ABOVE WIPES SHOULD BE OF THE TYPE THAT HAS PROVEN BACTERICIDAL ACTION FOR DISINFECTING HARD SURFACES AGAINST MRSA & E.COLI.

- Load tests must only be applied as instructed in the relevant procedure.
- If it is necessary to work from a platform (i.e. scaffold, ladders etc.) to perform a service or installation task make sure the platform is secure and suitable for the task.
- Do not perform maintenance tasks on equipment with 'live' electrical connections unless absolutely necessary.
- Isolate the power supply before removing plugs, sockets or disconnecting cables.
- Be alert at all times to the dangers of working on electrical equipment that operates on mains supply voltage. Where possible, visually inspect electrical cables and plugs etc. for damage or deterioration before working on equipment.

WARNING

ELECTRICAL SHOCK CAN KILL.

- Dispose of all waste in appropriate containers.

Suggested Tools

- Standard tool kit
- Socket Allen key: (4 mm ST82) (5 mm ST274) (6 mm ST55) (8 mm ST87)
- AMP 20-16 pin extraction tool
- Sling clip gauge ST331
- Load test equipment

Recommended Spares

- Casters
- Fuse
- Hand Control

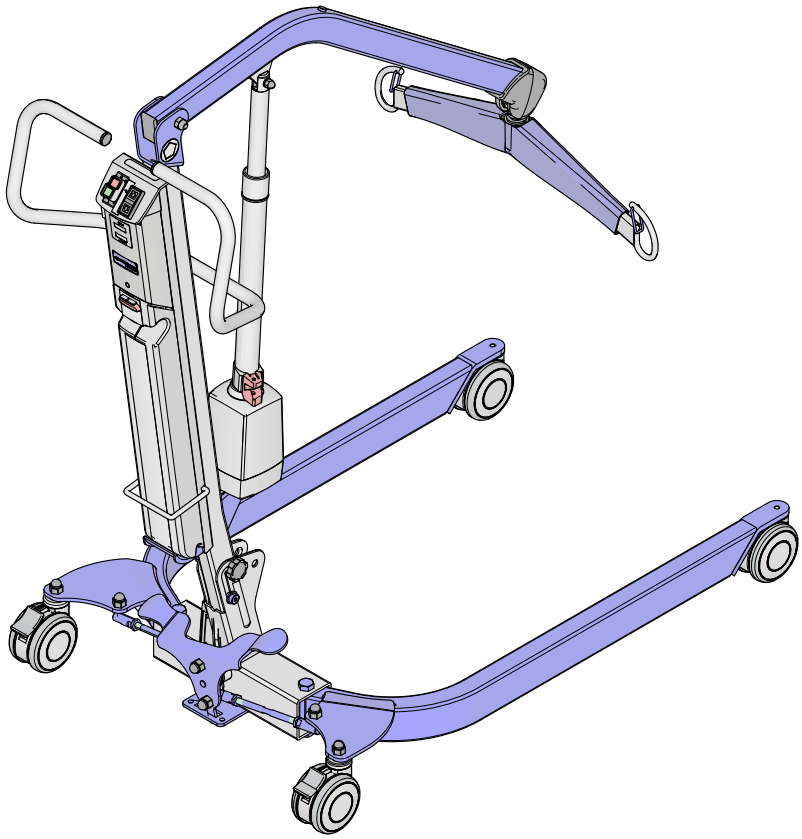

Fig. 2

Threadlocker Application

Refer to the manufacturer's instructions found on the container before use, in addition to the following information:

The procedure for correctly applying Loctite 242 and Loctite 243 (Blue color) threadlocking is as follows:

- Clean both of the joint faces with Loctite 7063 cleaner or a lint-free cloth moistened with acetone or another suitable solvent.

NOTE

BECAUSE LOCTITE 243 IS OIL-TOLERANT, IT IS NOT NECESSARY TO MEET THE SAME STANDARD OF OIL FREE CLEANLINESS AS FOR LOCTITE 242.

- Apply Loctite 243 sparingly but sufficiently enough to fill all engaged threads. (This product performs best in thin bond gaps [0.05 mm]).
- Install the threaded components and, where known, torque to the applicable torque value. If the torque value is not known, tighten to a firm fixing.
- Clean off any unwanted adhesive.
- Allow the Loctite 243 to cure before subjecting to load.

NOTE

THE CURE TIME WILL DEPEND ON THE MATERIALS USED, THE AMBIENT TEMPERATURE AND THE BOND LINE GAP.

- Where the cure time is unacceptably long, or large gaps are present, applying Loctite Activator 'N' or 'T' to the surface will reduce the cure time.

For general Loctite specifications and application details, refer to Loctite manufacture's instructions.

Torque, Lubrication and Threadlocker Data

Thread retaining: Apply Loctite 243 when no threadlocking patch has been pre-applied. When replacing a part with pre-applied threadlocking, the part should be replaced by a new part using pre-applied threadlocking.

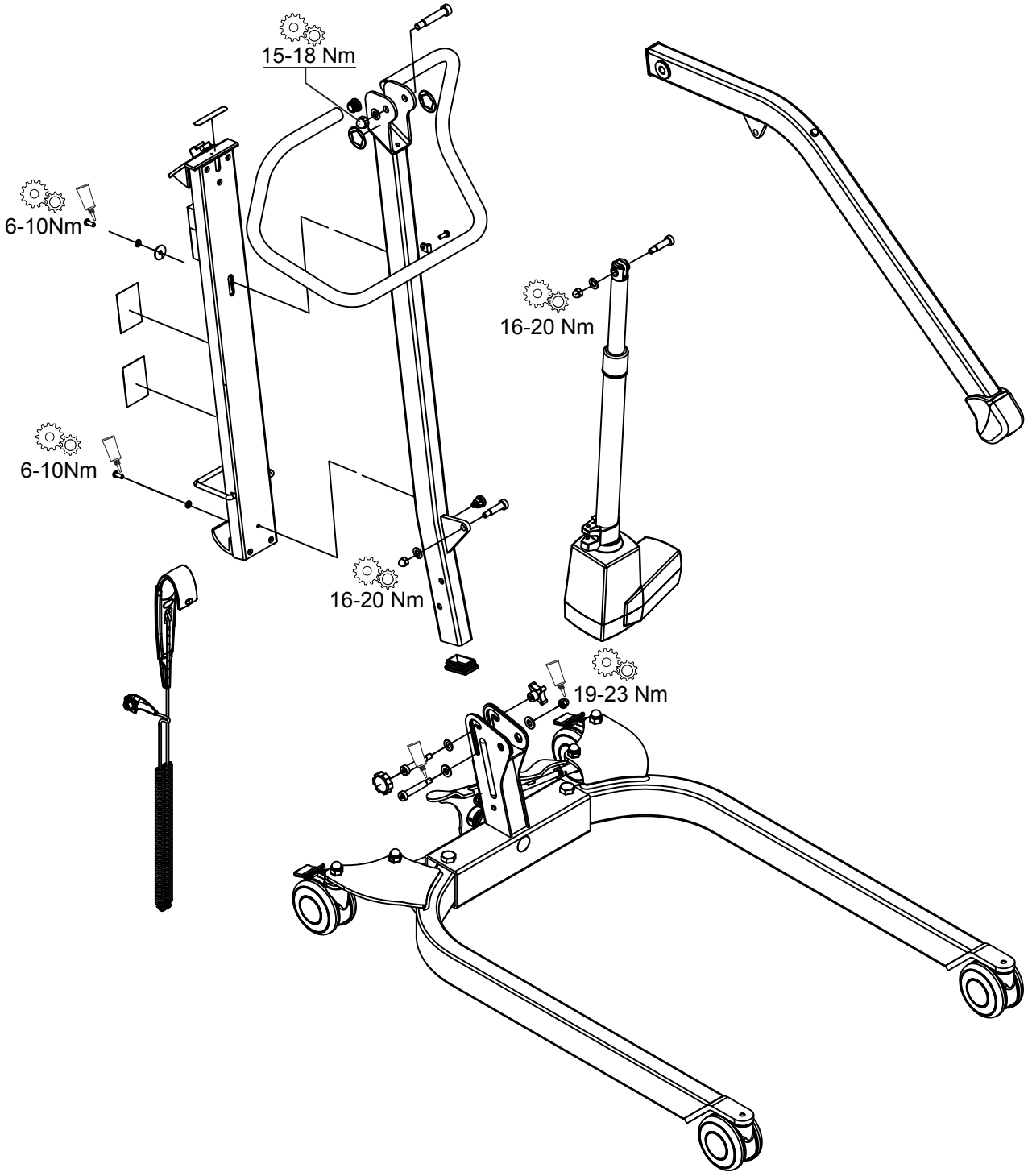

Fig. 3

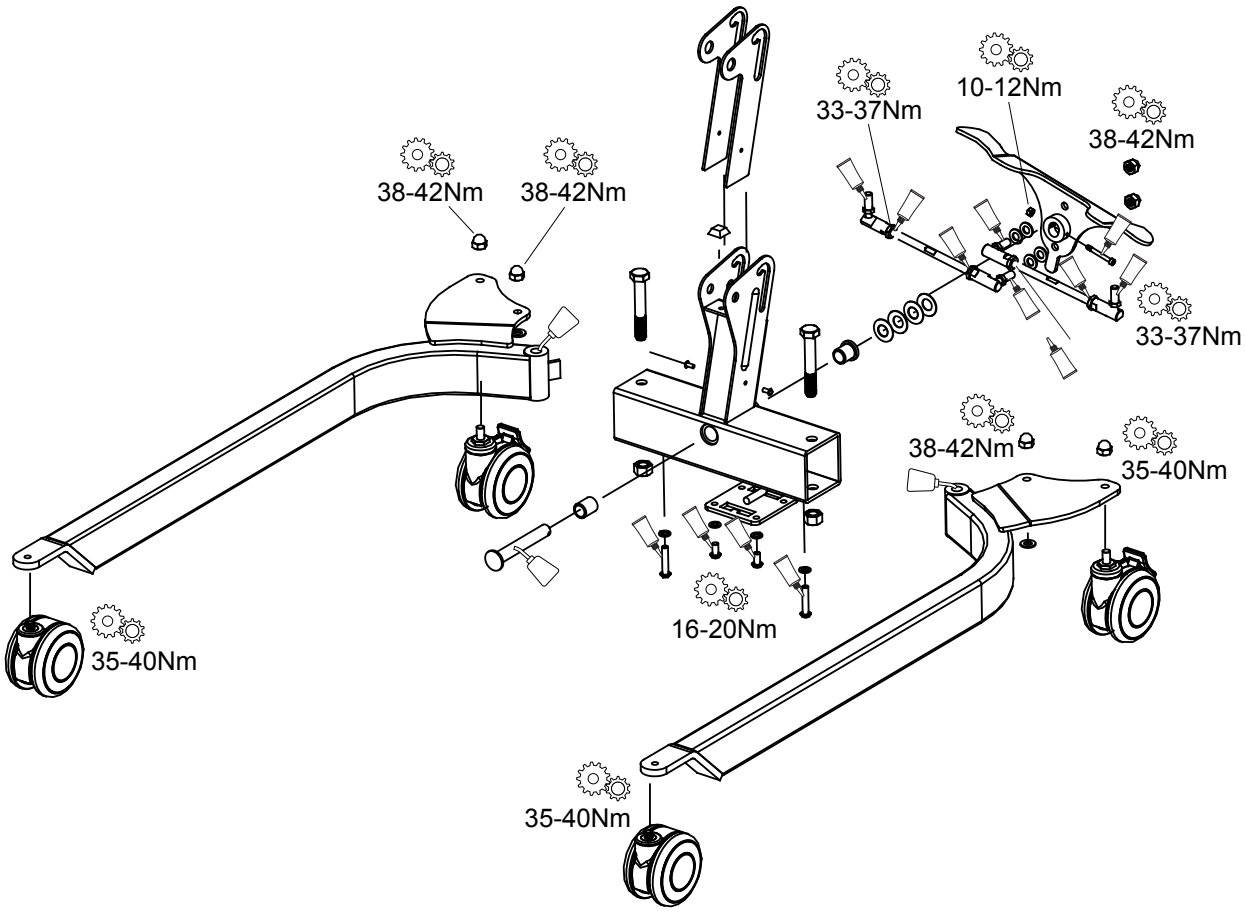

Fig. 4

= Loctite 262

= Grease

= Torque

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PREVENTIVE MAINTENANCE SCHEDULE

WARNING

SERVICE MUST BE CARRIED OUT BY QUALIFIED PERSONNEL, USING CORRECT TOOLS AND WITH A KNOWLEDGE OF PROCEDURES. FAILURE TO MEET THESE REQUIREMENTS COULD RESULT IN PERSONAL INJURIES AND OR UNSAFE EQUIPMENT.

To be inspected by a qualified technician	Frequency: Monthly	Frequency: Annually	Call out reference (p. 15)
Inspect all weld sites for cracking or separation, both on lift and spreader bar/DPS.		•	-
Make sure that the spreader bar/DPS is securely fastened.		•	1
Actuator's attachments With shoulder bolts: Ensure that the shoulder bolts at both ends of the actuator are well secured by the locknut stovers with added Loctite and that the actuator bushings are in place and in good condition. With clevis pins: Ensure that the clevis pins at both end of the actuator are well secured by the split rings and that the actuator bushings are in place and in good condition.		•	2-3
Make sure that all nuts and locknuts of the base open/close mechanism are securely fastened and the ball joints are in good condition.		•	4-9
Check the mast's permanent screw to ensure that it is tight.		•	10
Make sure that the pivot bolts on the legs are tight.		•	11-12
Check that the casters are securely tightened.		•	13-14
If applicable, verify that the safety latches on the spreader bar are present and move freely.		•	15
Lubricate pivot points if necessary.		•	-
Check the function of the emergency lowering device by applying weight to the lift and activating the lowering device.		•	16
Make sure that the legs are at 90° angle from the base (see SP10).		•	17-18
Ensure that there is no irregular deflection in the spreader bar/DPS.		•	-
Verify that the hole for the clevis pin has not widened.		•	19
Verify that the boom is not abnormally loose in relation with the mast.		•	-
Run actuator to ensure that the limit stops are functioning.		•	-
Press the emergency stop button and make sure that all electrical power is cut off and that the green power light is off.		•	20
Check all functions of the hand control. Ensure that the hand control touch pad membrane is intact.		•	21
Check for the proper function of each auxiliary switch located on the control box.		•	22
Verify that the batteries are in good condition and that they are not leaking.		•	23
Verify all cables.		•	24-25
Verify the actuator's anti-crush system (see SP5).		•	-
Ensure that the bolt is properly securing the clevis pin. Push back the boom cap to have access to the screw and nut.	•		26
Check that the spreader bar/DPS flange bushings, pivot bolt and welds are in good condition.	•		27
Check the condition of the friction discs and bushings of the DPS within the pivot points. If found worn and/or damaged, replacing them is recommended.	•		28
When the friction discs and bushings of the DPS have been checked/replaced, reset friction assembly to support a 5.4 kg (12 lb) load at the handle.	•		-

Technician inspections

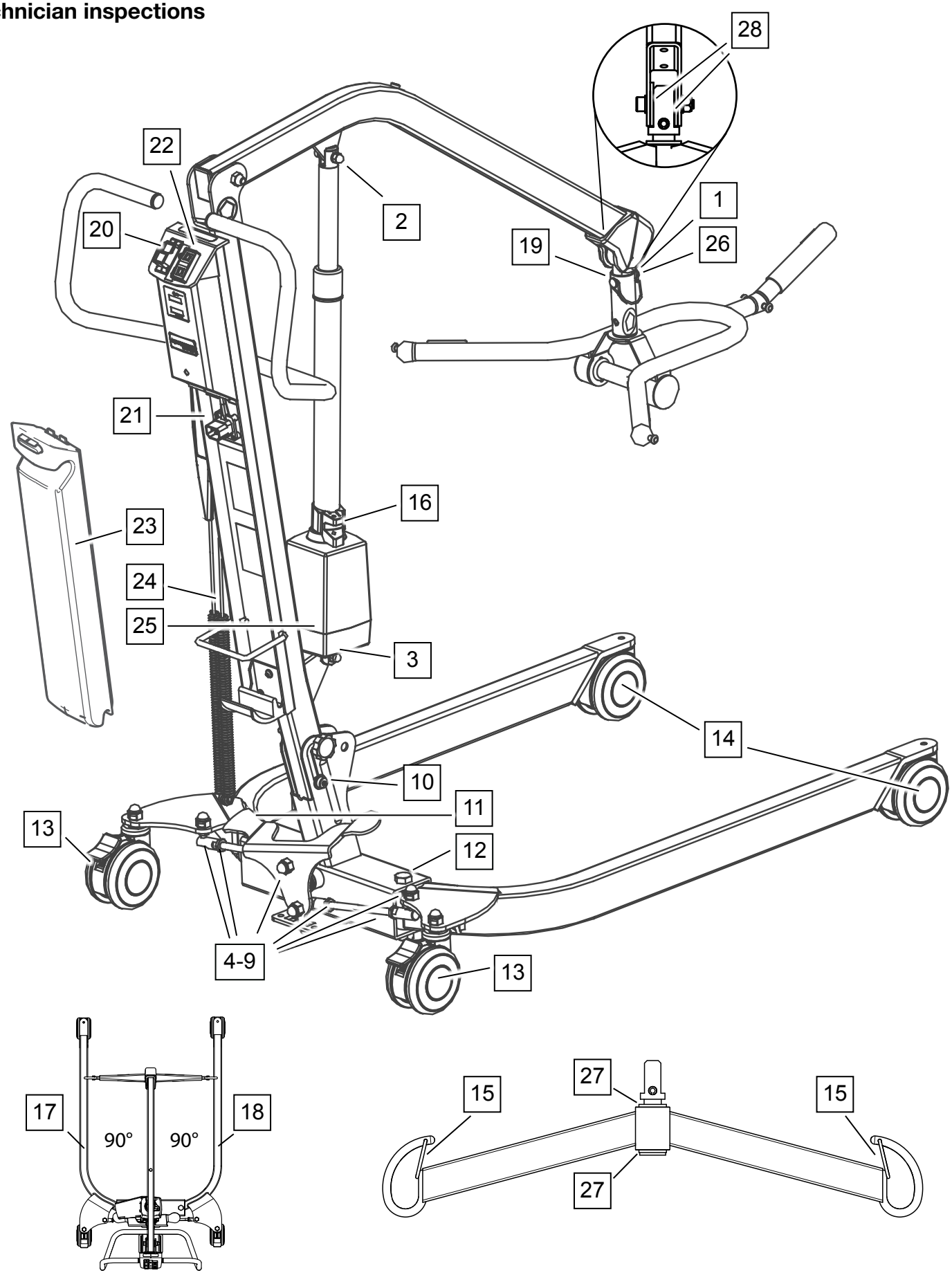

Fig. 5

TROUBLESHOOTING

Lift trouble	Resolution
Hand control does not respond.	• Check the red emergency stop button on the control box. • Check the connector on hand control wire. • Check if the battery are installed correctly and fully charged. Test with a new, fully-charged battery pack.
UP and DOWN buttons on control box do not respond.	• Check the red emergency stop button on the control box. • Check if the battery are installed correctly and fully charged. Test with a new, fully-charged battery pack.
Actuator does not respond.	• Check the red emergency stop button on control box. • Check if the battery are installed correctly and fully charged. Test with a new, fully-charged battery pack. • Check if the hand control is connected. • Check if the actuator is connected to the control box.
Audible “beep” is heard from the control box.	• Batteries are low. Replace with a fully charged battery pack.
Actuator “stalls” during lift.	• Batteries are low. Replace with a fully charged battery. Make sure you are not exceeding the lifting capacity.
Charger trouble	**Resolution**
“Power on” light on charger is not lit.	• Check if the charger is plugged into a wall outlet.
Charger is plugged in, but “Power on” light is not lit.	• Check there is power to the wall outlet[1].
Battery trouble	**Resolution**
Batteries are properly seated but no lights are visible.	• Call for service (charger may be faulty).
Yellow indicator light does not go off after several hours of charging time.	• Internal batteries need replacing. Call ArjoHuntleigh for replacement.
Battery pack indicates it is fully charged when in the charger, but when placed in the lift, will only do a few lifts.	• Replace batteries[2].

[1] Some wall outlets are controlled by wall/light switches. Ensure power to wall outlet continues after wall/light switch is turned off.
[2] Generally with low amperage, the actuator will make a humming noise, indicating insufficient battery power.

SERVICE PROCEDURES 5

SP1 - Checking for Updates
SP2 - Checking the Battery and Charger
SP3 - Checking for Corrosion and Damage
SP4 - Full Feature Test
SP5 - Checking the Anti-Crush system

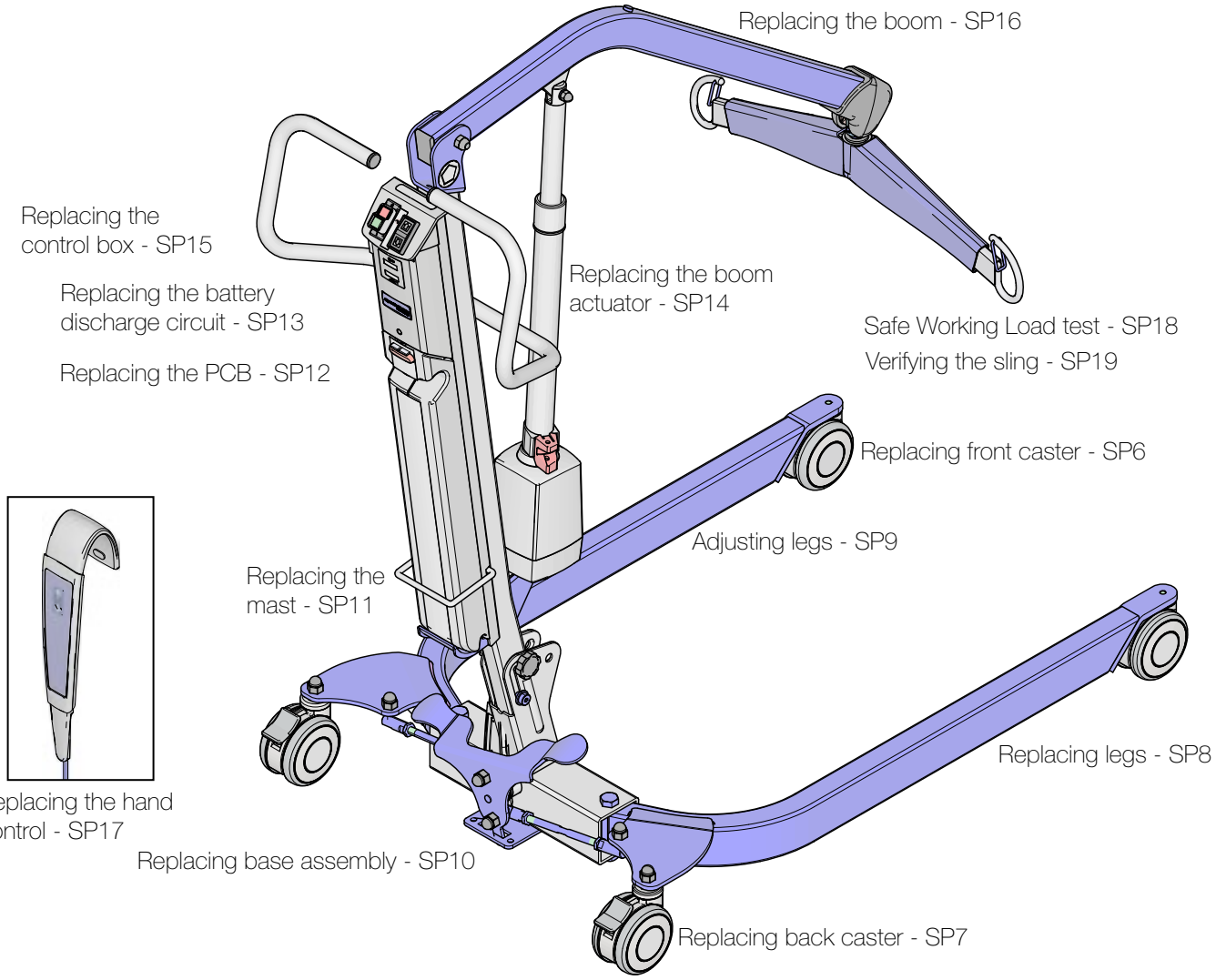

Fig. 6

Service Procedure 1 - Check for Updates

- Check if there are any field correction bulletins, safety notices or technical bulletins that have been published since the last service was performed.
- This verification must be done to keep the product up to date according to safety and product improvements.
  Bulletins and notices can be generated as a result of an engineering change note, a safety incident report, a change to form/fit, etc.


ARJOHUNTLEIGH

TECHNICAL BULLETIN

CARENDO – bad noise, corrosion on bearings

Fig. 7

Service Procedure 2 - Checking the battery and charger

ArjoHuntleigh has added a fuse in battery NDA0100-20. There is no visual difference between the former and the new battery version other than the labeling (see following pictures for more details).

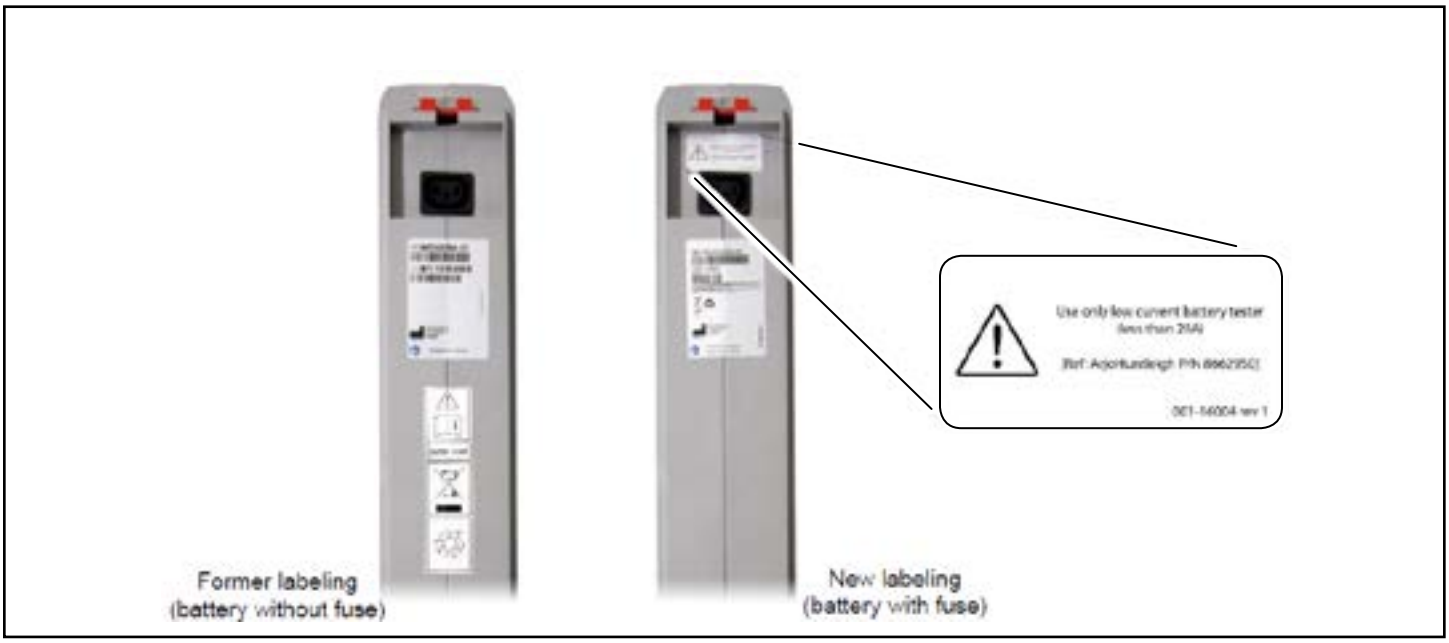

Fig. 8

Only battery testers with a current less than 20A, such as battery tester with part number 8662950, can be used for the battery including the fuse to prevent this component from blowing and making the battery unusable (refer to TAN SEE201204).
Battery tester #8662950 can also be used on the battery without fuse. The battery tester will load the battery with a high current for a short time. This will show the battery condition on a meter.

Testing a battery without fuse - former labeling

With former battery tester:

1. The battery to be tested must be charged for at least 12 hours before the test.
2. Connect the tester to the battery. When the tester is fully connected, turn the test switch right or left for 1-2 seconds and take a quick reading on the meter.
3. The meter will show the battery's condition.

WARNING
THE BATTERY POWER TESTER WILL BECOME HOT AND THERE IS A POTENTIAL RISK OF FIRE. • MAKE SURE THE BATTERY POWER TESTER IS KEPT AWAY FROM FLAMMABLE MATERIAL DURING AND FOR SEVERAL MINUTES FOLLOWING THE TEST. • BEWARE OF TOUCHING THE METAL CASING FOR SEVERAL MINUTES FOLLOWING THE TEST.

Testing a battery with fuse - new labeling

With battery tester (refer to SEE201204):

1. The battery to be tested must be charged for at least 12 hours before the test.
2. Connect the tester to the battery. When the tester is fully connected, press and hold the button for 1-2 seconds and take a quick reading on the meter.
3. The meter will show the battery's condition.

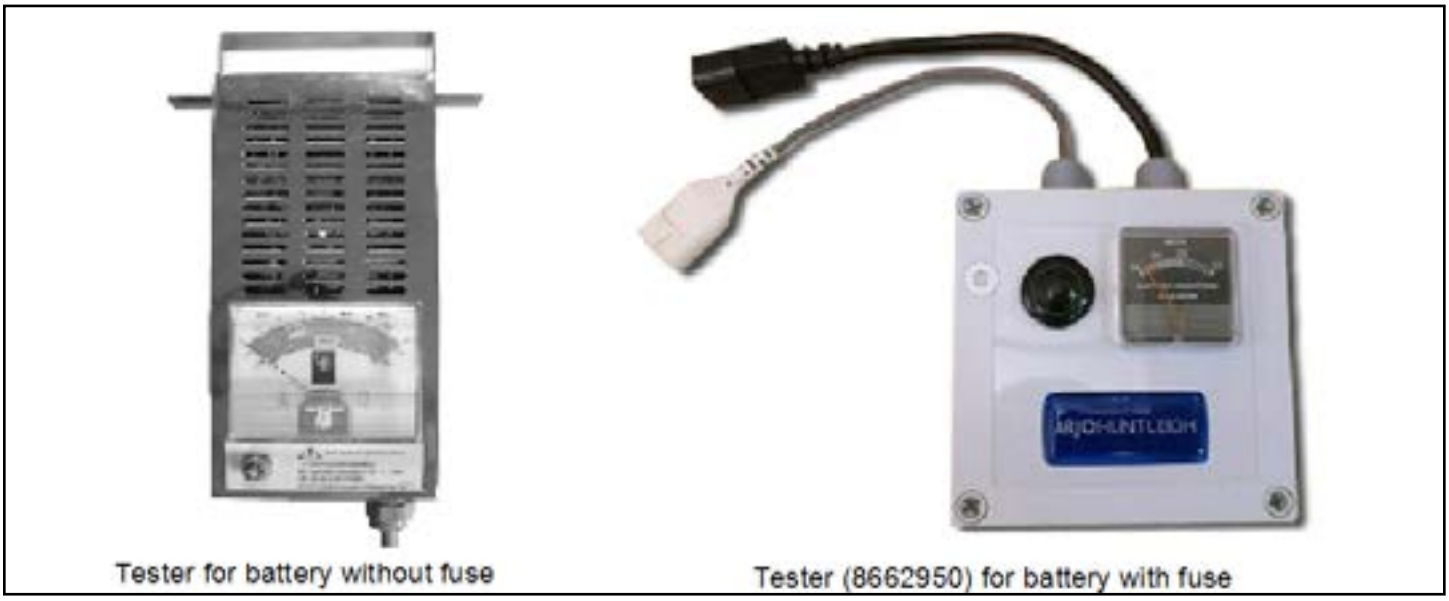

Fig. 9

Check the battery charger (NDA8200)

1. Inspect charger and cable for damage.
2. Test charger as follows:
   - Measure charger output voltage (directly on output socket prongs).
     ☑ Charger status indicator LED should be GREEN.
     ☑ Voltage reading should be between 27.04 V and 28.16 V.
   - Add an 80 Ohms resistance (10 W min.) between both charger output prongs and measure voltage at resistor.
     ☑ Status indicator LED on charger should be YELLOW.
     ☑ Voltage reading should be between 28.71 V and 29.29 V.
   - Measure charger maximum output current by connecting ammeter directly on output socket prongs.
     ☑ Light indicator on charger should be OFF.
     ☑ Current reading should be between 1.3 A and 1.7 A.

The charger must be replaced if any test result is not within the specifications stated above.

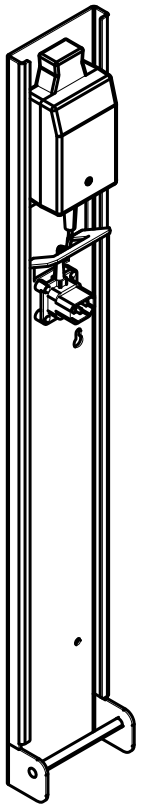

Fig. 10

Service procedure 3 - Checking for corrosion and damage

This verification will help preserve the safety and performance of the product.

TO VERIFY:

1. Front caster
2. Legs
3. Braked caster
4. Base
5. Mast
6. Battery
7. Handle
8. Control box
9. Boom
10. Hand control

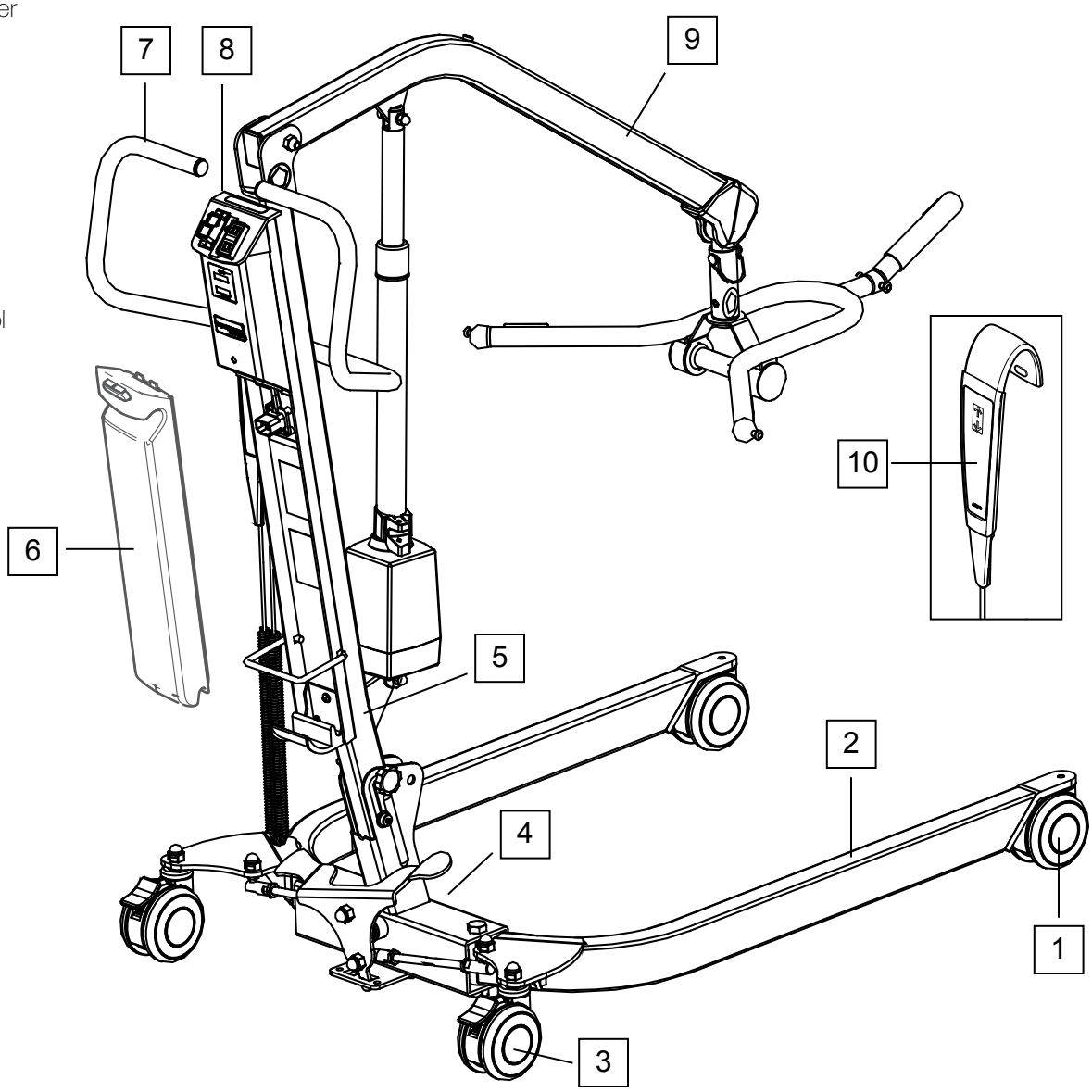

Fig. 11

Floor lift paint

If the paint is damaged (e.g. scratches, marks, etc.), add paint in matching color to prevent further corrosion.

NOTE
BEFORE APPLYING THE PAINT, THE SURFACE MUST BE CLEAN AND DRY.

Service procedure 4 - Full feature test

Function	Activation/ Validation	Actions	Criteria for approval
Lift Up/Down	Buttons	Full stroke Up and Down	No abnormal noises; unit reaches Up/Down points as per specifications (see the Instructions for use)
Legs Open/Close	Pedal (manual)	Full opening and closing	Legs open fully on each side (see the Instructions for use)
Rotation and swiveling of casters	Manual	Move on short distance, rotating the lifter	No pulling, no abnormal noises or vibrations
Braked caster	Manual	Engage the brake on each rear caster	Easy engagement/disengagement; lift immobile when brakes are engaged
Hand control	Buttons	Press each button, check display	All lift functions working normally
Control panel	Buttons	Press each button	All functions working normally
Emergency lowering devices	Manual	Use emergency lowering device (see the Instructions for use)	Boom must lower as per user manual[1]

[1] In order to have the emergency lowering device to work properly, a load that pushes down on the boom must be applied.

Service procedure 5 - Verifying the anti-crush system

1. Place an object beneath the boom (e.g. place Maxi Lite boom over a table).
2. Press the “down” button on the unit’s control panel.
3. The actuator should stop operating and the downward motion should cease immediately when the boom makes contact with an object.
4. If the motion does not stop, remove the lift from service until necessary repairs are performed (see “Service Procedure 14 - Replacing the Boom Actuator).
5. Repeat the procedure using the “down” button on the hand control.
6. When repairs are done, perform the anti-crush system test again to make sure it is in proper working condition.

WARNING

IF THE ANTI-CRUSH DEVICE DOES NOT WORK PROPERLY THIS CAN CAUSE PINCHING OR CRUSHING WHICH CAN LEAD TO DEATH OR SERIOUS INJURY. IF LIFT COMPONENTS ARE DISASSEMBLED IN ORDER TO MAINTAIN ANTI-CRUSH SYSTEM PROPER OPERATION, IT IS ESSENTIAL THAT ALL PARTS ARE REINSTALLED CORRECTLY. IF NOT, THE CONSEQUENCE MAY BE LATER DISENGAGEMENT, WHICH CAN LEAD TO DEATH OR SERIOUS INJURY.

Service procedure 6 - Replacing the front caster

1. Position the base of the Maxi Lite so as to get easy access to the front wheels.
2. Unscrew the old caster and replace it by the new one. Tighten it to between 35-40 N·m (26-30 lb·ft).
3. Check that the caster spins freely over the stem.

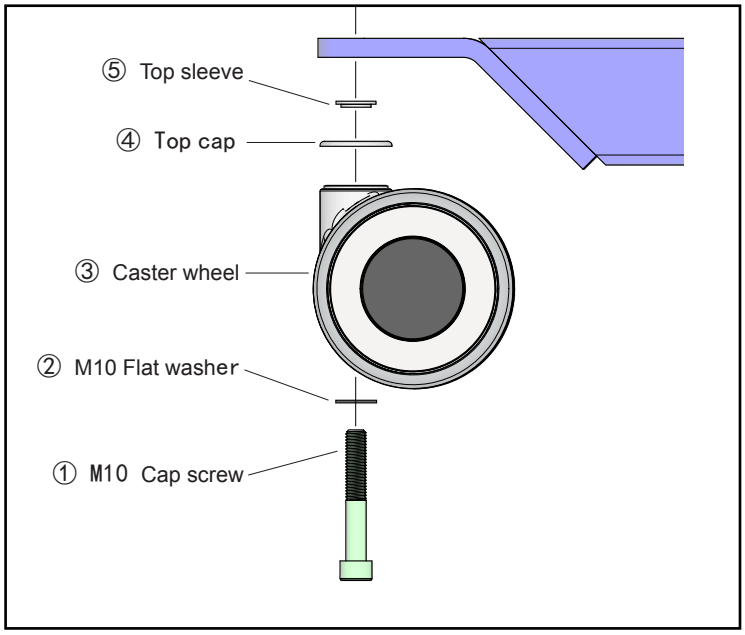

Fig. 12

WARNING

IF THE FRONT CASTER IS DISASSEMBLED, IT IS ESSENTIAL THAT ALL COMPONENTS ARE REINSTALLED CORRECTLY. IF NOT, THE CONSEQUENCES MAY LATER INCLUDE DISENGAGEMENT, WHICH CAN LEAD TO DEATH OR SERIOUS INJURY.

Service procedure 7 - Replacing the back casters

1. Position the Maxi Lite base in order to get access to the back casters.
2. Remove the caster by unscrewing the acorn nut (Fig. 13).
3. Install the new caster with thread locker. Tighten the acorn nut to 38-42 N·m. You can prevent the stud from pivoting by activating the caster's brake.

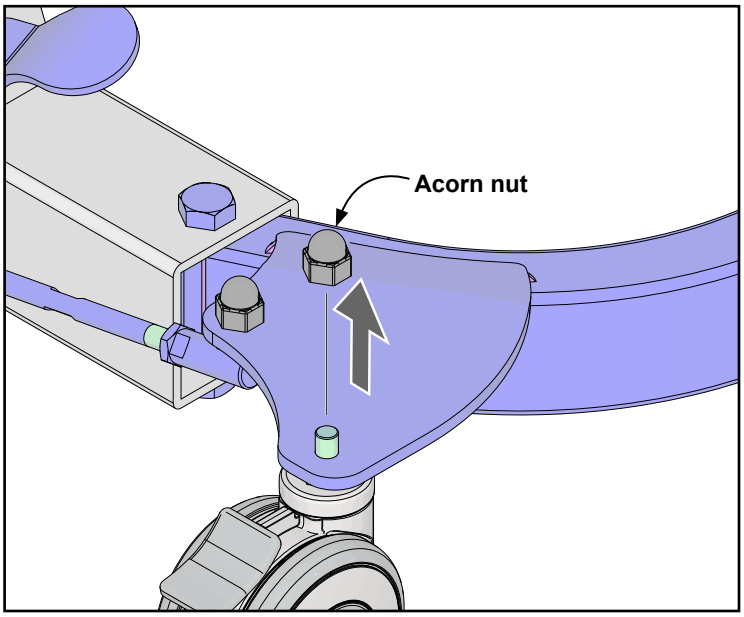

Fig. 13

WARNING

ENSURE THAT THE CASTER IS PROPERLY TIGHTENED BY TORQUING THE ACORN NUT WITH THE APPROPRIATE WRENCH.

4. Check that the caster spins freely over the stem.
5. Verify that the brake is working properly (i.e. easy engagement/disengagement and that the lift is immobile when brakes are engaged).

WARNING

FAILURE TO TORQUE THE CASTERS MAY RESULT IN THEM LOOSENING. THE CONSEQUENCE MAY BE LATER DISENGAGEMENT, WHICH CAN LEAD TO DEATH OR SERIOUS INJURY.

Service procedure 8 - Replacing the legs

1. Lock the rear casters to make sure the lift stays stable during maintenance.
2. Unscrew the tie rod end from the leg to be replaced and remove from bracket.
3. Unscrew the leg pivot bolt that holds the leg to the base assembly and remove leg. Dispose of the stover nut.

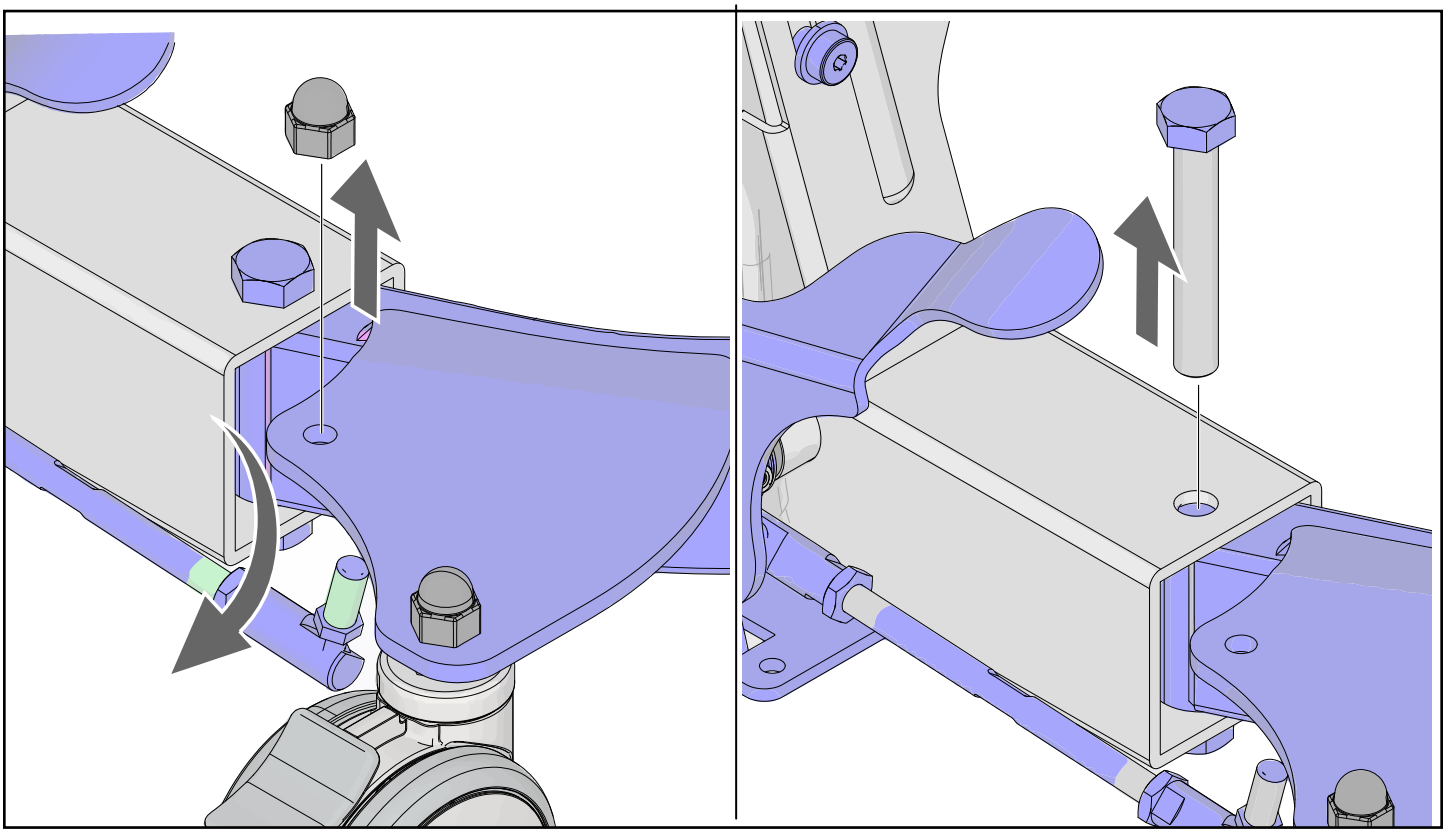

Fig. 14

4. Put the new leg in place and fasten the leg pivot bolt and new stover nut.
5. Reinstall the tie rod end using an acorn nut and Loctite (torque to 38 N·m).
6. Leg opening must be verified /adjusted after installation (see service procedure 9).
7. Fully open and close the legs.
8. Perform a safe working load test as per service procedure 18.

WARNING

IF ONE OR BOTH LEGS ARE DISASSEMBLED, IT IS ESSENTIAL THAT ALL COMPONENTS ARE REINSTALLED CORRECTLY. IF NOT, THE CONSEQUENCE MAY BE LATER DISENGAGEMENT, WHICH CAN LEAD TO DEATH OR SERIOUS INJURY.

Service procedure 9 - Adjusting the legs

Check if the legs are square with the base. If not, perform the following procedure:

1. Using a heat gun, heat the area between the tie rods and the nuts so as to liquefy any Loctite that had been applied there previously.
2. Release the tie rod by loosening the jamnut at each end. One jamnut on each tie-rod is left-handed.
3. Completely remove the tie rod and clean it thoroughly. This will ensure that the next application of Loctite will adhere properly and will facilitate any further leg adjustments later on.
4. Reinstall the tie rod, ensuring that the tie rod ends are both completely threaded onto it.
5. Adjust the legs so that they are 90° relative to the base. Minimize any looseness in the legs by pushing them inwards during their adjustment.

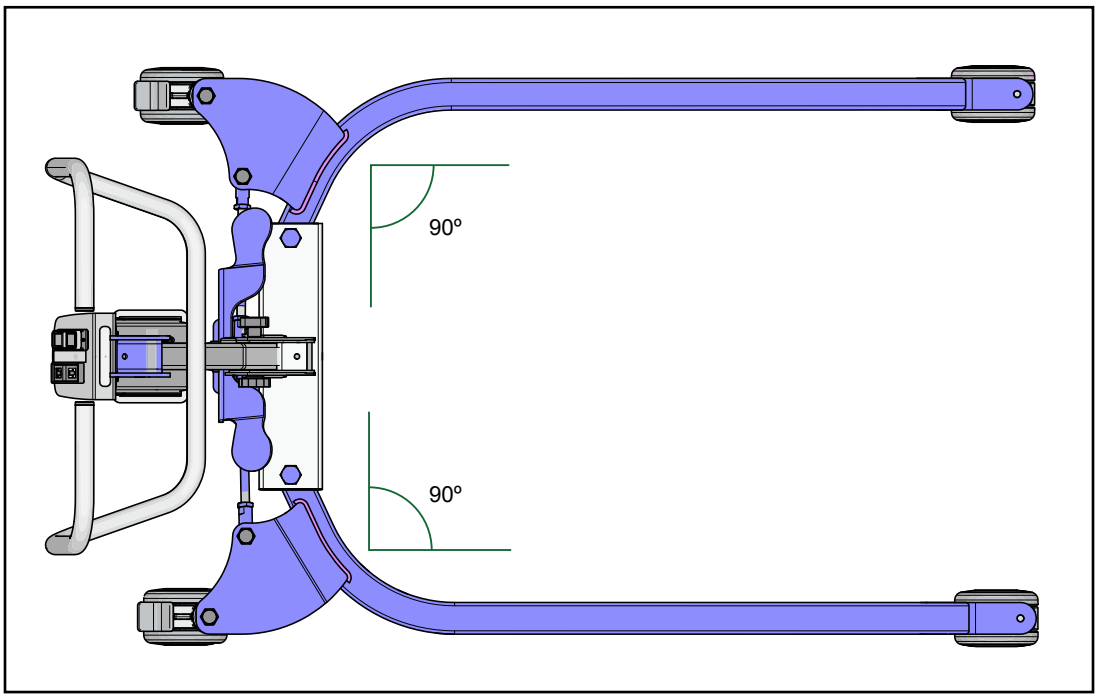

Fig. 15

6. Apply threadlocker to the threaded section, between the tie rod end and the jamnut. Lock the rod by torquing the jamnut at each end.

Service procedure 10 - Replacing the base assembly

1. Tilt the mast according to the *Folding the Lift* section of the IFU (*Instructions for Use - 001.23104.xx*). Do not reinstall the locking screw and knob.
2. Ensure that the upper end of the mast is supported and remove the permanent screw.

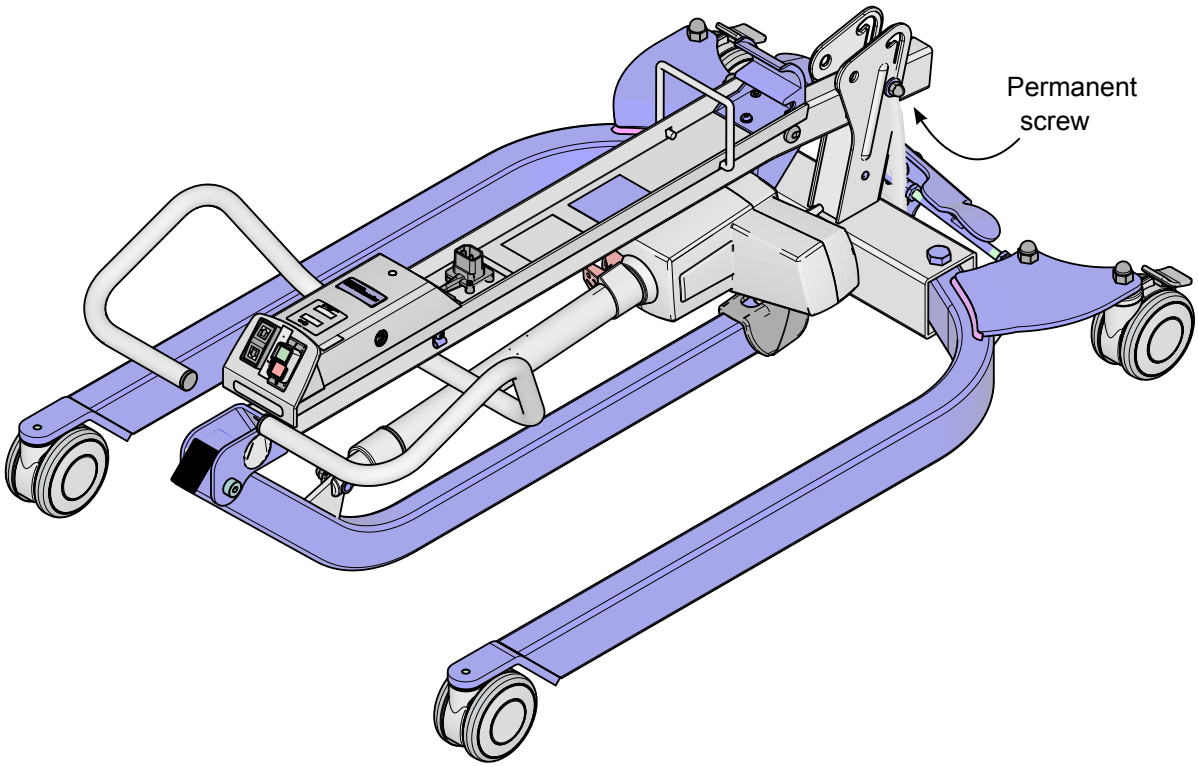

Fig. 16

3. Disengage the old base assembly from the mast.
4. Lock the rear casters of the new base assembly.
5. Insert the mast, while in the tilted position, into the opening in the new base.
6. Clean the threadlocker off from the threads of the permanent screw.
7. Apply new threadlocker to the permanent screw and reinstall.
8. Slide the mast into the opening in the base. If it is very difficult to slide the mast in, try loosening the permanent screw gradually until the it slides in easily but without any lateral looseness.
9. Unfold the lift as per the instruction in the IFU .
10. Perform a full feature test as per service procedure 4.
11. Perform a safe working load test as per service procedure 18.

WARNING
IF THE BASE IS DISASSEMBLED, IT IS ESSENTIAL THAT ALL COMPONENTS ARE REINSTALLED CORRECTLY. IF NOT, THE CONSEQUENCE MAY BE LATER DISENGAGEMENT, WHICH CAN LEAD TO DEATH OR SERIOUS INJURY.

Service Procedure 11 - Replacing the Mast

1. Lock the rear casters to make sure the lift stays stable during maintenance.
2. Remove the battery.
3. Remove the actuator according service procedure 14 without installing a wire fish tool.
4. Remove the boom according service procedure 16 without removing the Flat DPS or the 2 hooks spreader bar.
5. Remove the control box according to service procedure 15.
6. Remove the mast and install the new one. Refer to service procedure 11 for details.
7. Install the mast in the unfold state.
8. Reinstall the control box (service procedure 15).
9. Reinstall the boom assembly (service procedure 16).
10. Reinstall the actuator (service procedure 14).
11. Perform a full feature test as per service procedure 4.
12. Perform a safe working load test as per service procedure 18.

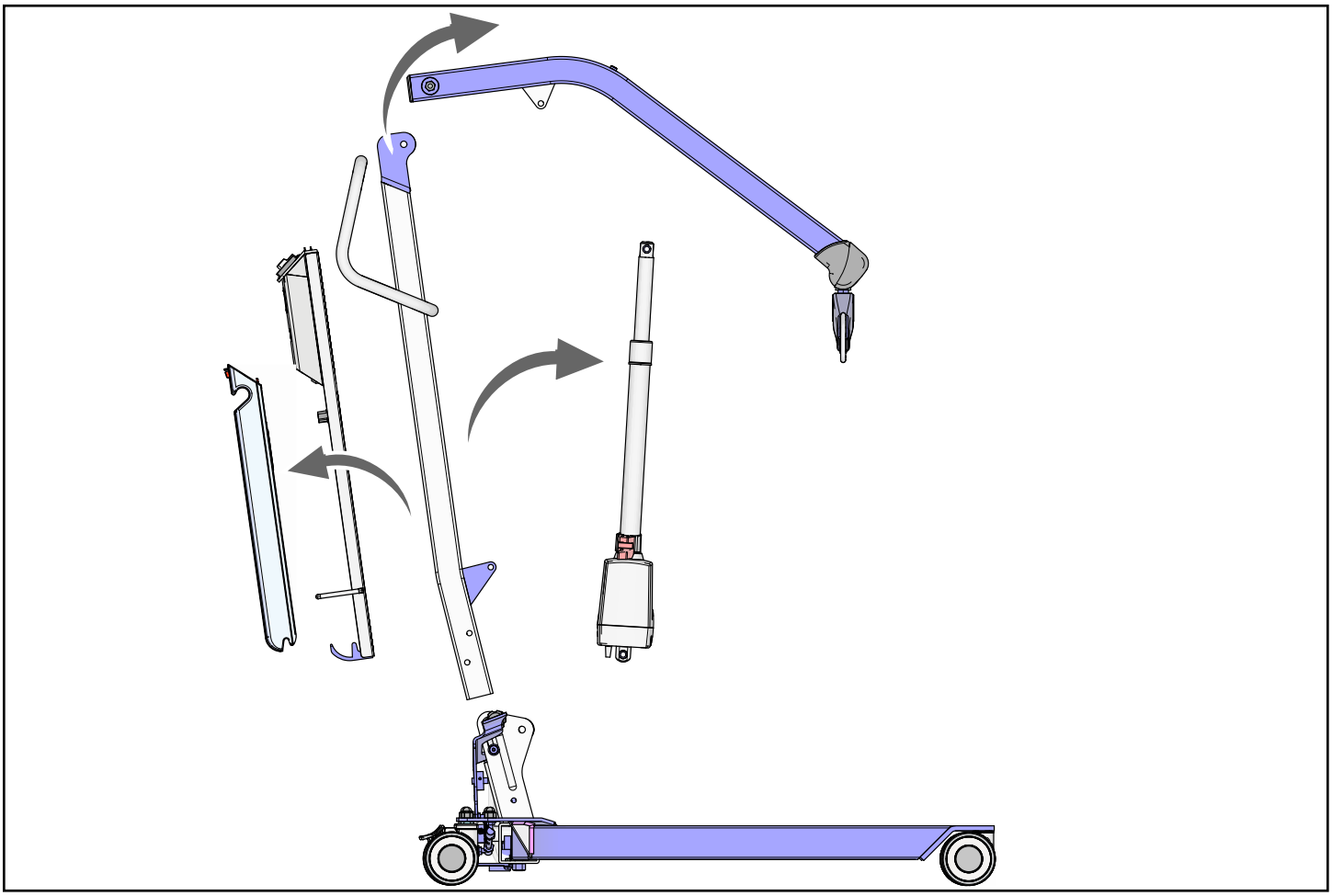

Fig. 17

WARNING

IF THE MAST IS DISASSEMBLED, IT IS ESSENTIAL THAT ALL COMPONENTS ARE REINSTALLED CORRECTLY. IF NOT, THE CONSEQUENCE MAY BE LATER DISENGAGEMENT, WHICH CAN LEAD TO DEATH OR SERIOUS INJURY.

Service Procedure 12 - Replacing the PCB

HOW TO OPEN THE CONTROL BOX

1. Lock the rear casters to make sure the lift stays stable during maintenance.
2. Remove the battery pack.
3. Remove both screws (Phillips #2) at the lower end of control box cover.
4. Push down and away to disengage the control box cover for maintenance.

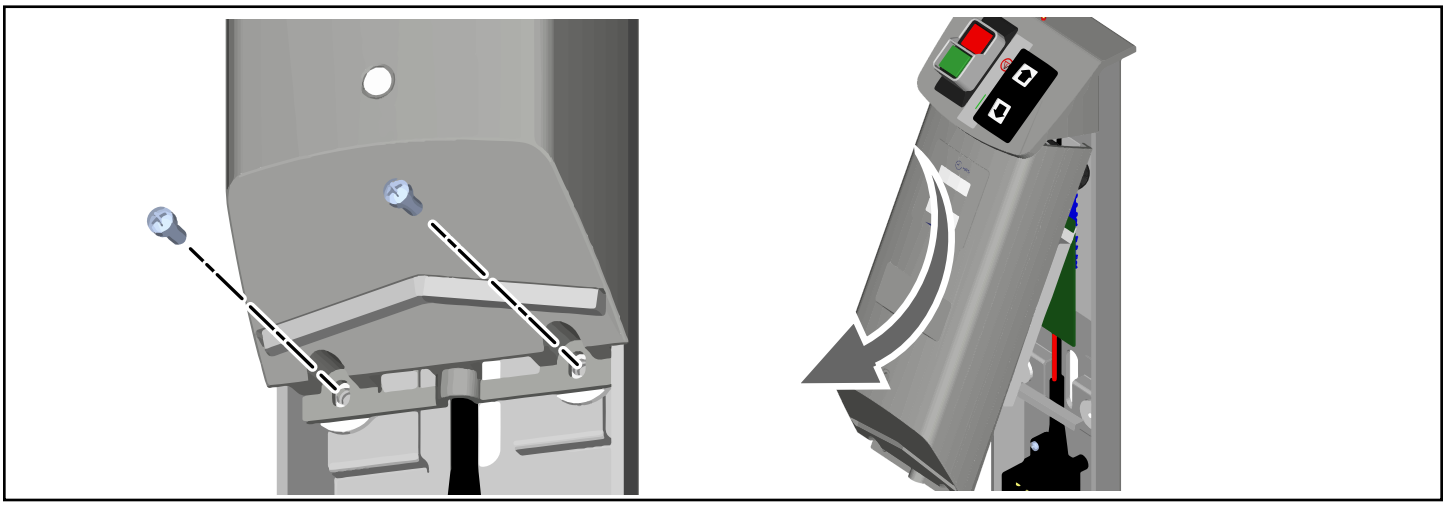

Fig. 18

WARNING

IF ANY COMPONENT OF THE ELECTRICAL SYSTEM IS DISASSEMBLED, IT IS ESSENTIAL THAT ALL COMPONENTS ARE REINSTALLED CORRECTLY. IF NOT, THIS COULD RESULT IN THE BATTERY HEATING WHICH IN TURN COULD LEAD TO HAZARDOUS PRODUCT LEAKAGE, FIRE AND EXPLOSION. EXPOSURE TO THESE RISKS COULD LEAD TO DEATH OR SERIOUS INJURY.

REPLACING OLD-STYLE BOARDS

CAUTION

USE APPROPRIATE ESD PROTECTION WHEN MANIPULATING THE PCB.

1. Remove control box cover (refer to Fig. 18).
2. Unplug J1 and J3 connectors as shown on electric diagram from main PCB (see Fig. 19).
3. Unscrew main PCB holding device. The assembly consists of two screws (Phillips #1) and two holding bars on each side. Remove the circuit.
4. Replace the new main PCB circuit in place, securely fastening the two screws and bars on each side.
5. Plug J1 and J3 connectors as shown on electric diagram on main PCB.
6. Install the control box cover.
7. Reinstall the battery pack and test all features controlled by this device to confirm that it works properly, as per service procedure 4.

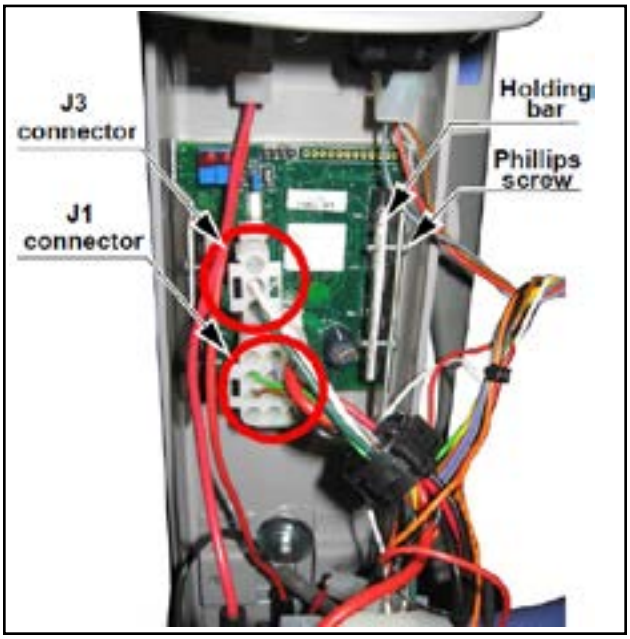

Fig. 19

REPLACING NEW-STYLE BOARDS

1. Remove control box cover (refer to Fig. 18).
2. Unplug J1 and J2 connectors (see Fig. 20).
3. Using long nose pliers, remove the circuit board from the plastic standoffs holding it in place.
4. Install the new main PCB circuit in place, pushing it onto the plastic standoffs.
5. Plug J1 and J2 connectors.
6. Adjust the board as per procedure below.
7. Install the control box cover.
8. Reinstall the battery pack and test all features controlled by this device to confirm that it works properly, as per service procedure 4.

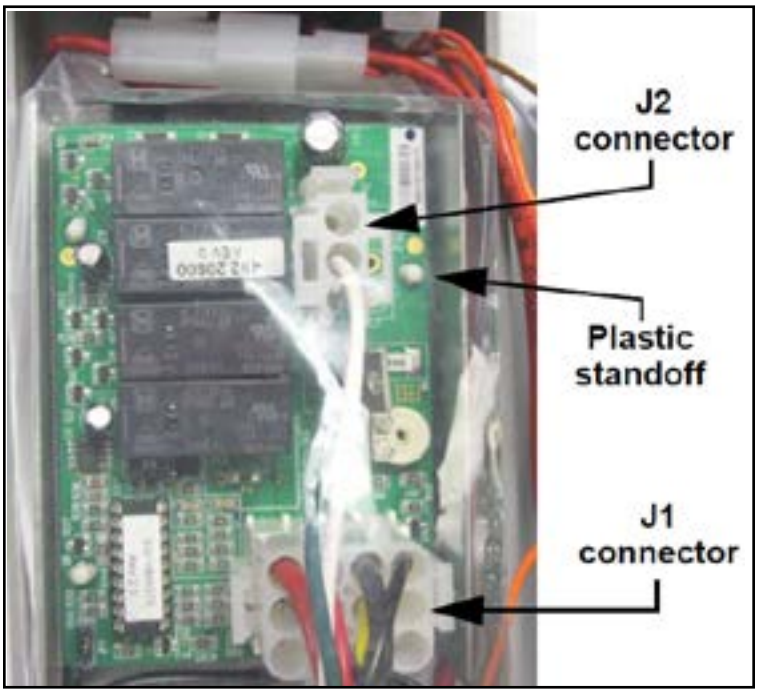

Fig. 20

HOW TO ADJUST THE PCB: OLD-STYLE BOARDS

a) Safe working load: By actuating the hand control, make sure that the lift raises the safe working load on its entire stroke. If not, adjust the current limiter with the potentiometer VR1 (see Fig. 21). Keep the safe working load raised for the next step.
b) Safe working load X 1.5: Using the buttons of the control panel make sure that the hoist does not lift 1.5 x its safe working load. If it does, adjust the current limiter with the potentiometer VR1.

HOW TO ADJUST THE PCB: NEW-STYLE BOARDS

a) Safe working load: By actuating the handset, make sure that the lift raises the safe working load on its entire stroke. If not, adjust the current limiter with the potentiometer RV1 (see Fig. 21). Keep the safe working load raised for the next step. Turn the potentiometer clockwise to increase the current.

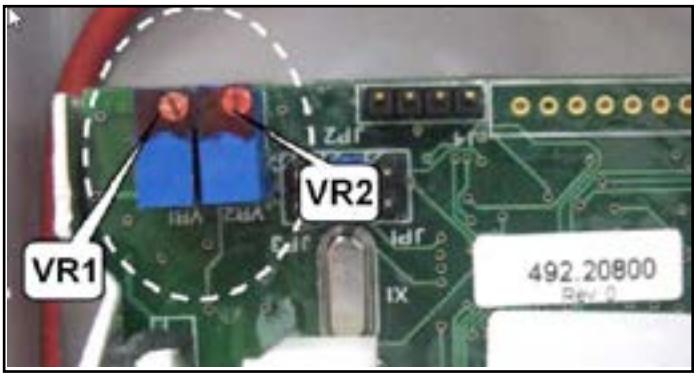

Fig. 21

CAUTION

RESPECT THE 10% DUTY CYCLE OF THE ACTUATOR TO PREVENT DAMAGING THE LIFT.

b) Safe working load X 1.5: Using the buttons of the control panel make sure that the hoist does not lift 1.5 x its safe working load (175 kg / 385 lb). If it does, adjust the current limiter with the potentiometer RV1 (see Fig. 21). Turn the potentiometer counter-clockwise to decrease the current.

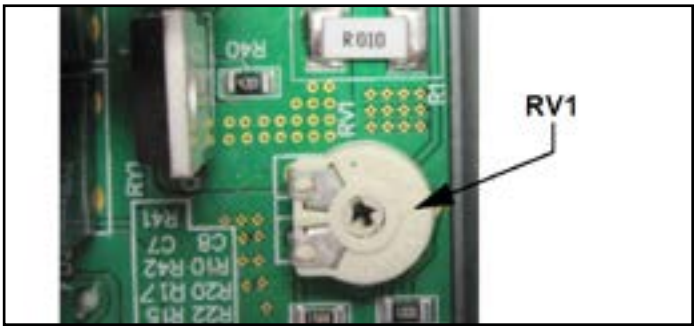

Fig. 22

NOTE

NOTE: IF THE POTENTIOMETER VALUE WAS LOWERED, A SAFE WORKING LOAD TEST MUST BE PERFORMED, AS PER SERVICE PROCEDURE 18.

c) Emergency stop: When completing a full stroke, press the emergency stop button (red). The actuator must stop immediately. Press the "on" button (green) to reactivate the hoist and finish its course.
e) Hour meter: Check that hour meter and battery charge indicator are working properly.

HOW TO CLOSE THE CONTROL BOX

1. Insert the top end of the cover under the switch panel (refer to Fig. 18).
2. Carefully position the wires. Be sure not to pinch a wire behind a screw or the edge of the control box.
3. Fasten both screws (Phillips #2) near the bottom end. Insert the nylon washers between the control box cover and the control box body before fastening (see Fig. 23).
4. Put back the battery pack and test all features controlled by this device to confirm that they work properly.

Fig. 23

Service procedure 13 - Replacing the battery discharge indicator PCB

1. Remove control box cover.
2. Unplug J5 and J7 connectors as shown on electric diagram from battery discharge indicator PCB (see Fig. 24).
3. Unscrew both nuts holding the battery discharge indicator PCB using a 5 mm socket, and remove circuit.
4. Put a new battery discharge indicator PCB in place, fastening the two nuts and flat washers securely. Do not overtighten the nuts holding the circuit as too much torque could damage the board.
5. Plug J5 and J7 connectors as shown on electric diagram on battery discharge indicator PCB.
6. Install control box cover.
7. Reinstall the battery and test battery discharge indicator to confirm that it works properly.

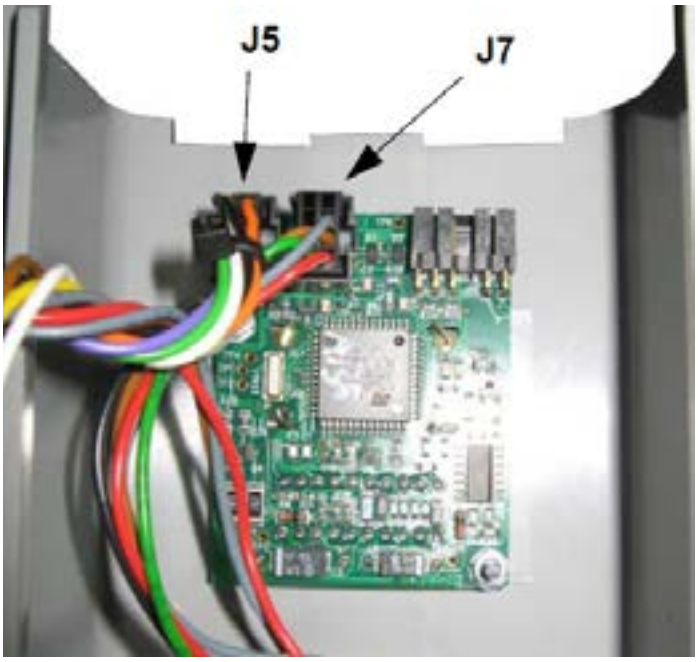

Fig. 24

Service procedure 14 - Replacing the boom actuator

1. Lock the rear casters to make sure the lift stays stable during maintenance.
2. Open the control box. Refer to service procedure 12 for details.
3. Remove the ferrite.
4. Unplug the 12-pin connector from the PCB. Remove the actuator wires from the connector using an appropriate AMP 20-16 pin extraction tool.
5. Reconnect the 12-pin connector to the PCB.
6. Install a fish tape on the actuator cable.
7. Remove the actuator cable strain relief located at the bottom of the mast.
8. Pull out the actuator cable until the fish tape is accessible and detach the actuator cable from the fish tape.

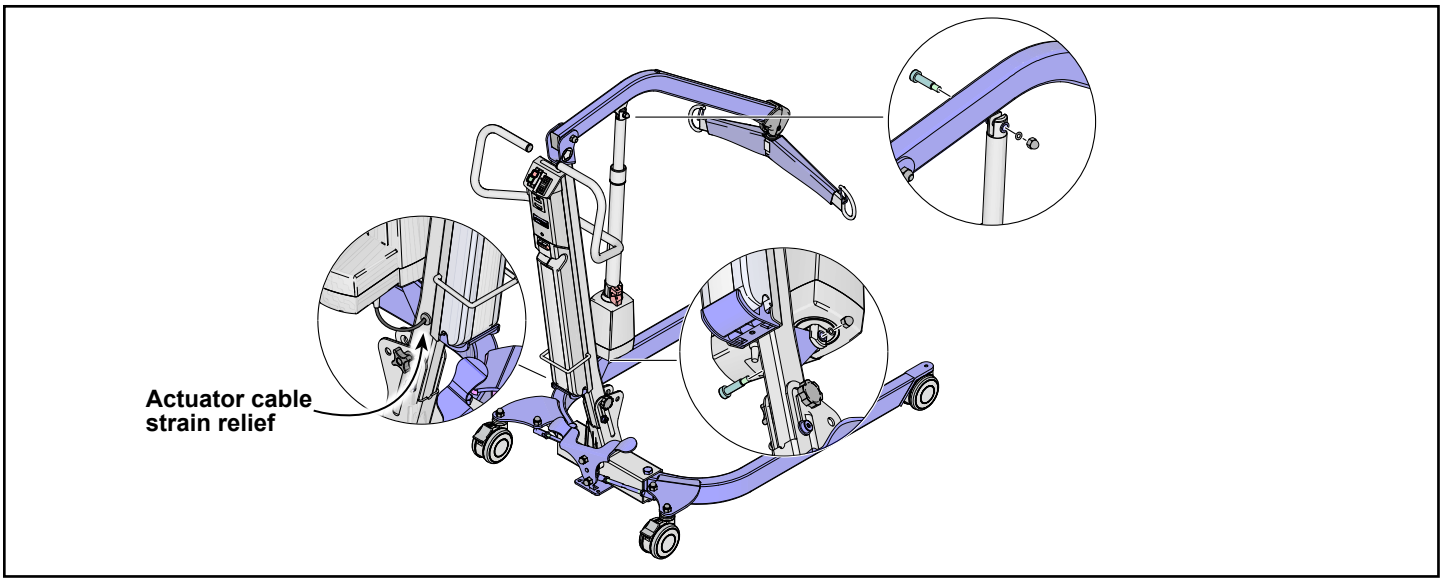

Fig. 25

9. Unbolt the screw and nut at each end and remove the actuator from the lift.
10. Install the new actuator with new screws and acorn nut.
11. Attach the actuator cable to the fish tape and bring it to the control box, passing it up through the mast tubing.
12. Detach the cable from the fish tape and connect the wires in the appropriate locations in the 12-pin connector.
13. Reinstall the ferrite. All wires from the main PCB as well as the common (black wire) from the BDI must pass within the ferrite.
14. Close the control box. Refer to service procedure 12 for details.
15. Reinstall the strain relief, leaving enough wire length to allow displacement of the actuator on its complete stroke.
16. Test the emergency lowering device as per the instructions in the IFU (*Instructions for Use 001.23104.xx*).
17. Perform a full feature test as per service procedure 4.
18. Perform a safe working load test as per service procedure 18.

WARNING

IF THE BOOM ACTUATOR IS DISASSEMBLED, IT IS ESSENTIAL THAT ALL COMPONENTS ARE REINSTALLED CORRECTLY. IF NOT, THE CONSEQUENCE MAY BE LATER DISENGAGEMENT, WHICH CAN LEAD TO DEATH OR SERIOUS INJURY.

Service Procedure 15 - Replacing the Control Box

1. Lock the rear casters to make sure the lift stays stable during maintenance.
2. Remove the battery.
3. Disconnect the handset (see service procedure 17).
4. Open the control box (refer to service procedure 12) and unplug the actuator cable from the PCB (refer to service procedure 14).
5. Undo the 2 screws which hold the control box to the mast.

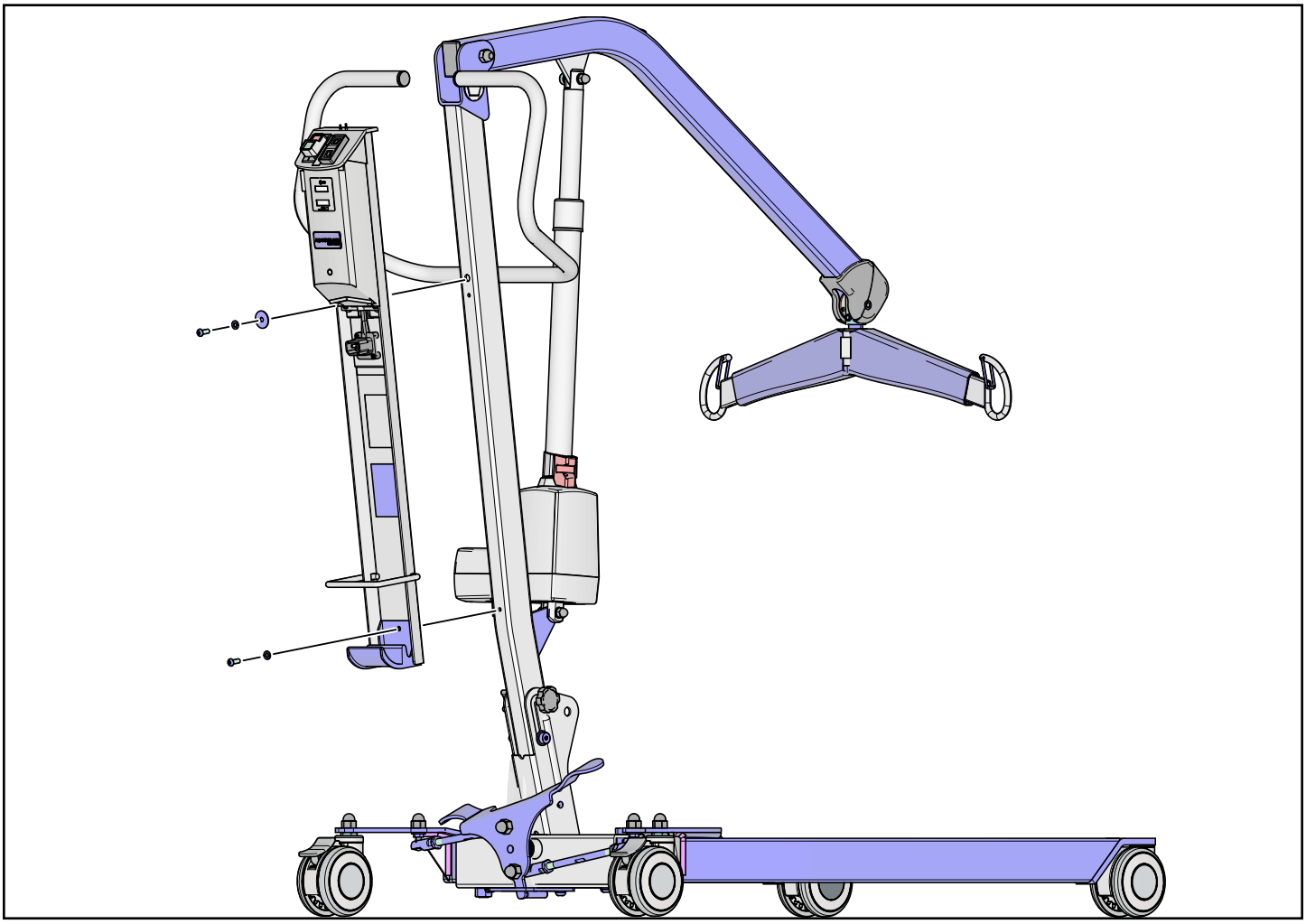

Fig. 26

6. Fasten the new control box to the mast.
7. Reconnect the actuator pins and reinstall the ferrite. All wires from the main PCB as well as the common (black wire) from the BDI must pass within the ferrite
8. Close the control box.
9. Reconnect the handset.
10. Perform a full feature test as per service procedure 4.
11. Perform a safe working load test as per service procedure 18.

Service Procedure 16 - Replacing the Boom

1. Lock the rear casters to make sure the lift stays stable during maintenance.
2. Remove the 2-hook spreader bar or the flat DPS.

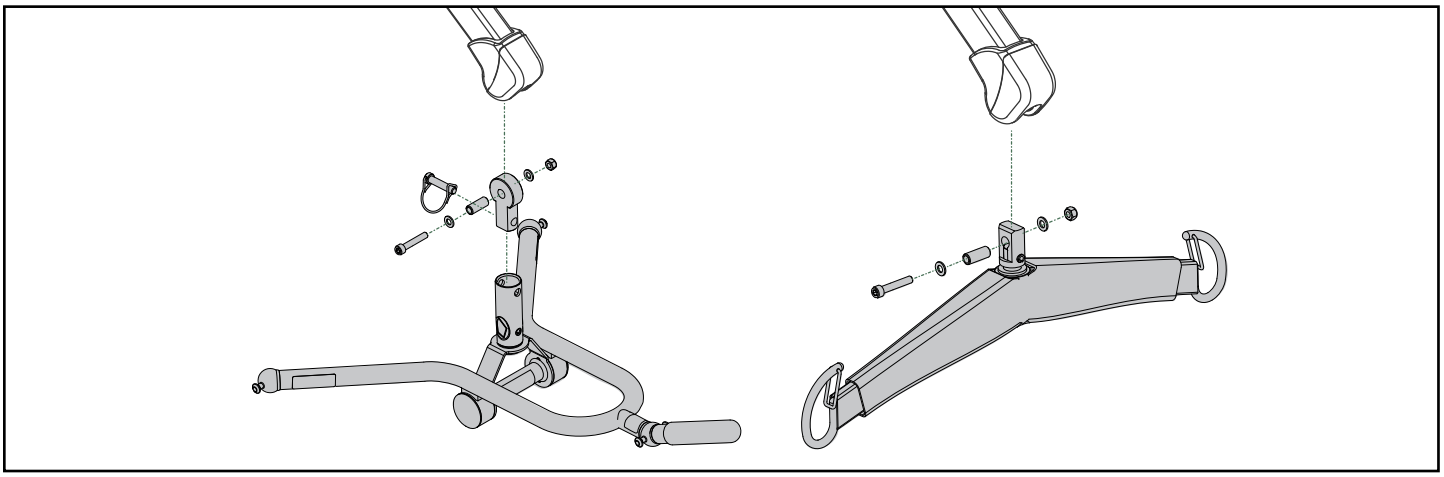

Fig. 27

3. Detach the actuator from the boom.
4. Remove the boom from the mast.
5. Attach the new boom using a new shoulder screw or clean the original screw and apply threadlocker.
6. Attach the actuator to the boom using a new screw or clean the original screw and apply threadlocker.
7. Reinstall the 2-hook spreader bar or the flat DPS. Make sure that the friction discs are in place (see “Fig. 28”).
8. Adjust the friction discs. The proper ammount of friction should prevent any unwanted movement of the spreader bar yet still allow for the maneuvering of the spreader bar/DPS without affecting the rest of the lift (i.e. raising the legs of the lift off the floor).

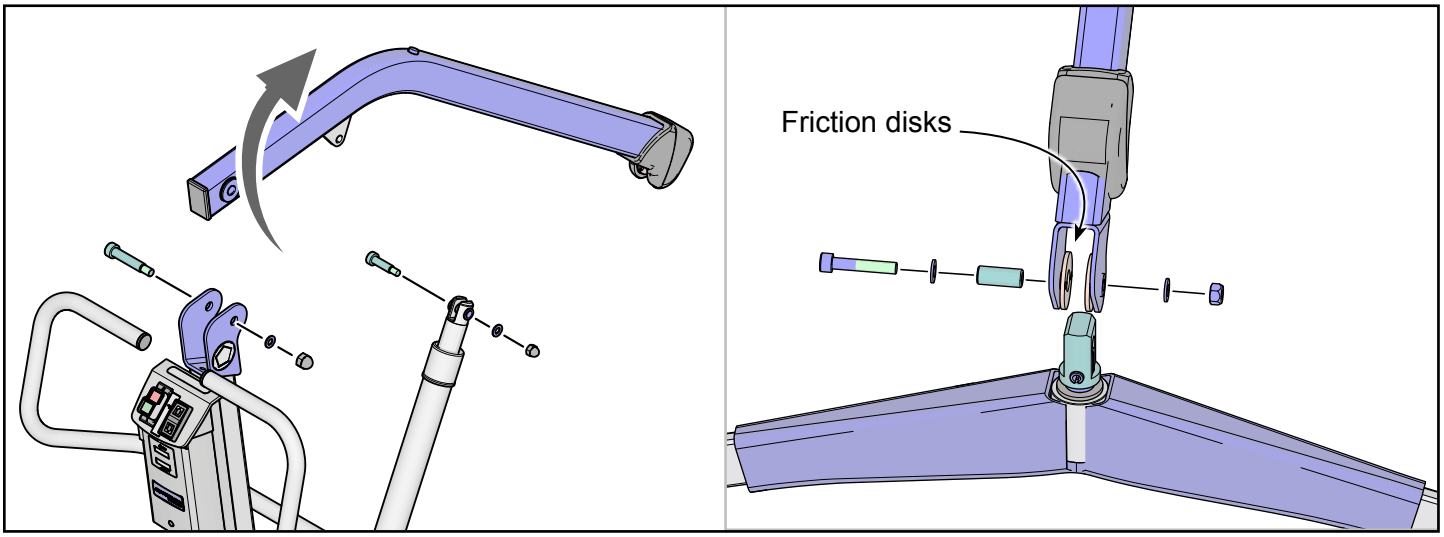

Fig. 28

9. Perform a full feature test as per service procedure 4.
10. Perform a safe working load test as per service procedure 18.

WARNING

IF THE BOOM IS REASSEMBLED USING A SHOULDER BOLT, MAKE SURE TO SECURE IT WITH THE ACORN NUT. TIGHTEN SECURELY TO 15 N·M (10 LBF·FT).

Service Procedure 17 - Replacing the Hand Control

1. Remove the battery pack.
2. Unplug the hand control from the socket located on the left side of the control box.
3. Remove the cable from the bracket located on the side of the mast (see Fig. 29).

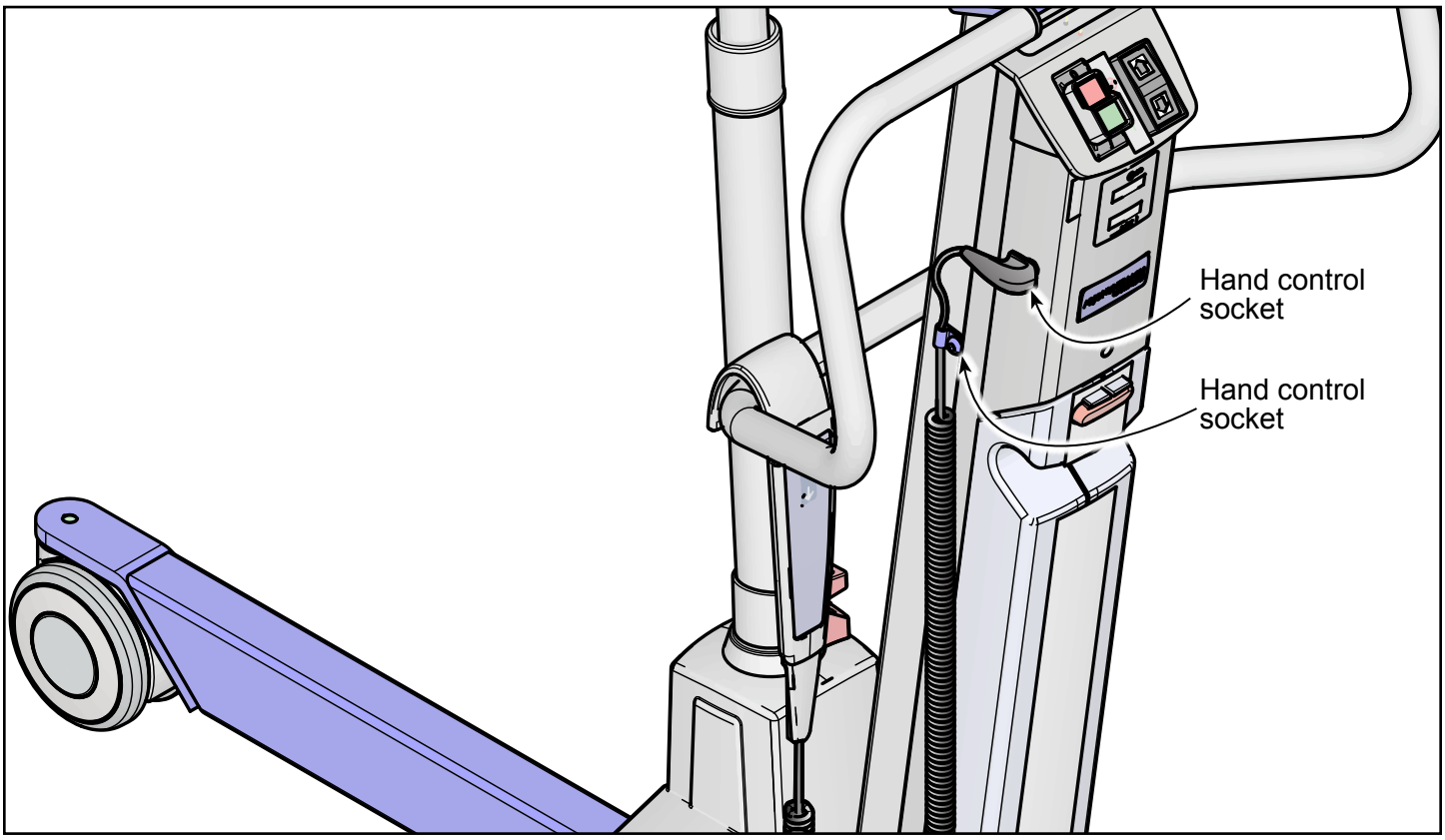

Fig. 29

4. Install the new hand control and attach the cable to the clip.
5. Replace the battery pack.
6. Test if the hand control is working properly as per service procedure 4.

Service Procedure 18 - Safe Working Load Test

WARNING
OBEY ALL RELEVANT SAFETY PRECAUTIONS.

1. Two-point spreader bar:
   - Set up the ArjoHuntleigh Load Test Kit as shown and test to the Safe Working Load (SWL).
   - Release the load and remove the load test equipment. Check the hoist for any permanent deformation or damage.

2. Flat DPS:
   - Set up the ArjoHuntleigh Load Test Kit as shown and test to Safe Working Load (SWL).
   - Release the load and remove the load test equipment. Check the hoist for any permanent deformation or damage.

Two-Point Spreader Bar

Fig. 30

Tool #	Description	Qty
ST164	Hand control and load cell	1
ST165	Load test strap-short	2
ST171	Load test strap	2
ST239	Hinge beam	1
ST240	Hook bolt	1
ST243	Plunger bracket	1

Flat DPS

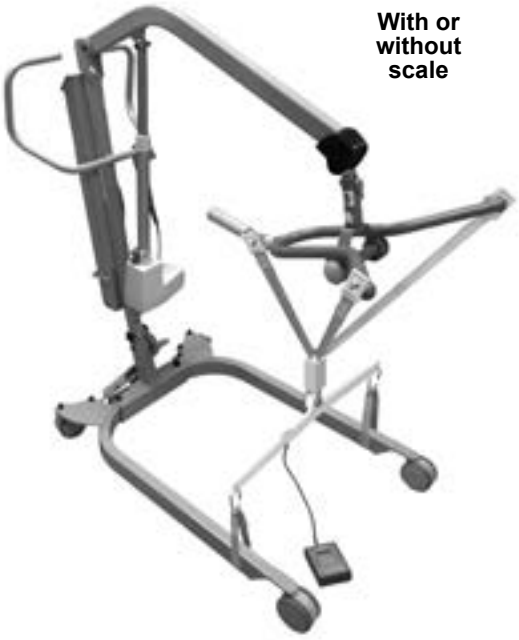

Fig. 31

Tool #	Description	Qty
ST164	Hand control and load cell	1
ST165	Load test strap-short	2
ST166	Load test strap-long	2
ST239	Hinge beam	1
ST240	Hook bolt	1
ST241	Load cell housing	1

Service Procedure 19 - Verifying the Slings

- Visually check the stitching, seams and the fabric must be in good condition.
- Visually check the condition of all plastic support clips, look for cracks on the cold shut line and any deformation that would be attributed to incorrect laundry processes.
- The procedure detailed in the text that follows only applies to the plastic clips on ArjoHuntleigh manufactured slings.

ST331 Sling clip gauge

SIDC2000 Band

- Refer to the above illustration and insert the machined diameter of the ST331 Sling Clip Gauge into the large diameter of the keyhole slot in the plastic clip.
- Allow the weight of the gauge to rest against the sling clip and attempt to pass the gauge pin through the slot into the smaller diameter. Do not force the gauge through the slot.
- The gauge must not pass through the narrow (mouth) section of the plastic sling clip. If the gauge does pass through the slot the sling clip is defective:
- Attach one of the “DEFECTIVE - DO NOT USE” bands, Part No. SIDC2000, securely to the sling. Sign and date the band with a indelible marker pen.

NOTE

THIS IS A UK BAND. IT CAN BE ORDERED OUTSIDE UK AS AN EXAMPLE AND SHOULD BE CHANGED TO A COUNTRY SPECIFIC LAYOUT).

- Record the identity serial number from the DO NOT USE band on your service report sheet and make a note of the failure.
- Use the indelible marker pen to discreetly write the identity serial number from the DO NOT USE band in a corner of the sling.
- Inform the customer of your findings and the actions taken and advise that the sling be withdrawn from service and replaced with a new or serviceable sling.

NOTE

THE USE OF THIS GAUGE IS THE ONLY APPROVED METHOD OF CHECKING THE SERVICEABILITY OF THE ARJOHUNTLEIGH PLASTIC SLING CLIP AND NO OTHER METHOD SHOULD BE USED.

- Check that the Safe Working Load (SWL) label is legible. If necessary, mark the SWL with an indelible marker pen.
- If in doubt about the condition of the sling recommend that the sling should be removed from service.
- If satisfied with the condition of the sling identify in accordance with one of the following:
  - Slings that have a serial number label should be signed and dated with an indelible marker pen and the information recorded on the Service Report paperwork.

OR

  - Slings without a serial number label mark the date and Engineers number discreetly in a corner of the sling with an indelible marker pen.

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