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CPP Ceiling Track Hoist

Service Manual

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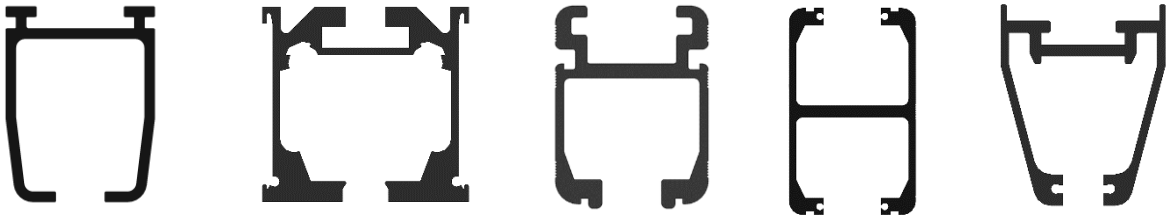
Content

1.0 Introduction

This Manual will explain how to carry out interim servicing and parts replacement on the Mackworth CPP Hoist safely and effectively. This document is divided into sections to help a Service Engineer find the correct information. Each section will show in a step by step fashion the correct way to disassemble and assemble the Hoist. The aim of the Manual is to help and assist you, so that you can provide a successful service for the end user.

The CPP is available in different configerations dependent on track profile. The track profiles are shown below:



Type 1 Type 2 Type 3 Type 4 Type 5

When Servicing the CPP Hoist, one of the above track profiles should match.

The list below includes all types of CPP that are covered by this Service Manual and which track type they are suitable for.

Hoist Type	Carry Bar Type	Track Type
CP130P - 108750	Black Carry Bar	Type 1
CP130P 108767	White Carry bar	Type 1
CP130P - 108751	Black Carry Bar	Type 2
CP130P - 108768	White Carry Bar	Type 2
CP130P - 108752	Black Carry Bar	Type 3
CP130P - 108769	White Carry Bar	Type 3
CP130P - 108753	Black Carry Bar	Type 4
CP130P - 108770	White Carry Bar	Type 4
CP130P - 108754	Black Carry Bar	Type 5
CP130P - 108771	White Carry Bar	Type 5
CP200P - 108755	Black Carry Bar	Type 1
CP200P - 108772	White Carry Bar	Type 1
CP200P - 108756	Black Carry Bar	Type 2
CP200P - 108773	White Carry Bar	Type 2

CP200P - 108757	Black Carry Bar	Type 3
CP200P - 108774	White Carry Bar	Type 3
CP200P - 108758	Black Carry Bar	Type 4
CP200P - 108775	White Carry Bar	Type 4
CP200P - 108759	Black Carry Bar	Type 5
CP200P - 108776	White Carry Bar	Type 5
CP200P FSG - 108760	Black Carry Bar	FSG
CP200P FSG - 108777	White Carry Bar	FSG

Table 1

2.0 Safety Precautions

Read and understand this manual in its entirety before servicing the CPP Hoist.

- Mackworth authorised personnel must complete the Full and Interim services of the CPP Hoist.
- The Hoist must not be in use by the user during any form of servicing.
- The Hoist must only be removed from the track by a trained professional.
- The Hoist must be turned OFF during any servicing that requires the external covers of the Hoist to be removed, or any dismantling of standard parts.
- Always ensure suitable clearance to remove the Hoist from the ceiling track.
- Ensure that all servicing procedures are followed correctly as instructed in this manual.
- All listed tools and equipment stated in this manual must be used to safely service this Hoist.
- Ensure you have assessed all risks for your environment and any persons within that environment before commencing work.
- Ensure you have all PPE available to carry out the work before commencing.

3.0 Servicing

To be completed by Approved Service Engineer

Maintenance should be completed by an approved service engineer every 6 months to ensure the products required standard is maintained. The service history of the product should be documented each service.

When Servicing the Hoist, ensure to fill out the Service Log which is located in the back of the User Manual. When doing so, ensure the Serial Number of the Product and the User Manual match up. Each Hoist has its designated User Manual which is supplied to the User during commissioning.

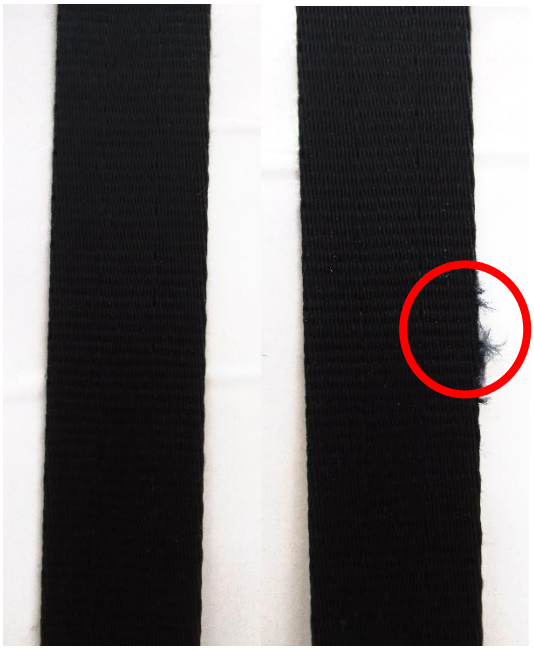
Component	Service/Inspection required
Generic:	Visual inspection of the externals of the Hoist. Significant damage that may affect the function of the Hoist along with a clear safety hazard is unacceptable.
	Check the Labelling on the Hoist to ensure they are all still legible, this includes the Serial Number and other important markings.
	Clean the Hoist at the end of each service. See User Manual for cleaning details.
	Check all main nuts and bolts, screws and fixing to see if they are loose, if so tighten accordingly.
Lift Motors:	Inspect the components for damage that may affect the function and safety of the product.
	Listen for any unusual sounds when operating the Motors, this should be done loaded and unloaded.
	Fully Lift and Lower the Hoist to ensure that the Motors are performing as intended. The lifting and lowering speed should be fairly consistent throughout the motion of travel.
Hub and Gearing:	Ensure that the Hub gearing is in good condition, excess wear should be cleaning and an inspection on the condition must be conducted to ensure the gearings are in a safe condition until the next service.
	The Hub should be re-greased during service.
	Ensure that the meshing of the Hub and Motor gearings is smooth.
	Test the function of the Over-Speed Cam. Using a small Allen Key, place it through the slot in the Chassis and test the functionality of the Cam by pushing it outward. The Cam should automatically spring back to position once the force has been removed.
Lift Tape:	Inspect the full length of the Lift Tape for any damage such as fraying. See section 3.1 below as a reference for unacceptable wear.
	There must be no signs of failure to the stitching of the Lift Tape, this is most noticeable at the lowered where the Carry Bar is attached.
Membrane:	Ensure that the emergency lower button is functioning when activated.
	Ensure that the Lift and Lowering functions are functioning when activated.

Limit Switch:	Fully lower the Lift Tape to reach maximum length, at this point the lower limit switch should be activated and stop the Hoist. The LED's will indicate by displaying a solid blue light on the fourth LED, with two beeps (one second apart).
	Fully raise the Lift Tape to reach minimum length, at this point the upper limit switch should be activated and stop the Hoist. The LED's will indicate by displaying a solid blue light on the fourth LED, with two beeps (half a second apart).
	Lower the Lift Tape without any load (do not remove the carry bar), the Lift Tape should reach the bottom limit without any issues. If the Hoist performs a stop/start motion, the limit switch may be damaged.
	Remove the Carry Bar, the Limit Switch should trigger the down limit scenario.
Carry Bar:	Inspect the Carry Bar for damage, this includes deformation, cracking or large dents that may affect its function or safety.
	Ensure that the Carry Bar Spring Clips remain functional.
	No sharp edges shall be found on the Carry Bar as this has the potential to damage the Slings.
	Ensure that the Carry Bar is fitted to the QRS Hook correctly. Refer to the User Manual for correct attachment.
Handset:	Inspect the components for damage that may affect the function and safety of the product.
	Verify that all the Handset controls are functioning.
	Ensure that the Handset is connected to the Hoist correctly and that the connections are secure.
PCB and electrics:	Inspect the PCB for any electrical burns.
	Ensure that all the wires are connected to the PCB correctly, as well any other wire connections.
	Inspect all wires for any damage.
LED Indicator:	Ensure that the LED is functioning correctly. See the LED Display Table in the User Manual to confirm.
	Ensure that the LED's is not cracked or damaged.
Charging:	Check that the Handset Charging is in working order.
	Ensure the Charging is active. The Hoist first LED will flash orange.
Batteries:	If the Hoist is having power issues or difficulties charging, the Battery voltage should be measured using a Voltmeter to determine the status of the Batteries.
	Test the batteries on the Hoist using the battery tester to see if they still hold charge properly, test the two batteries while running the Hoist to see if they equally draw charge.
	Check for any damage or leaks on the Batteries.
Trolley:	Examine the Trolley Wheels for signs of damage or wear, ensure they run freely and are not cracked.
	Ensure that the Trolley is able to swivel smoothly and allow full rotation of the Hoist with minimal effort.
	Ensure that the QRS attachment to the Trolley is safe and as intended. See User Manual for correct attachment procedure.
	Ensure the product is able to traverse freely with ease.
Ceiling Track:	Perform a quick inspection on the Ceiling Track to ensure that the Hoist is safe for use on the Ceiling Track.

	Assess all track fixings to ensure they are safe for use until the next service.
	Ensure the joints between the two track sections (if any) have no gap between them and that they are smooth and level. If there is a rough transition, use a small file to blend the two surfaces for smooth transition.
	Ensure that the Installation of brackets are correct and fitted properly, as well as the correct amount of brackets have been installed. If necessary, tighten the bracket screws with a 3mm Allen Key.
	Ensure that the Bolt Ends Stops have been installed in the track for safety. Tighten the bolts if necessary. If non-existent, see Installation manual on how to install. The end stop is a safety component that ensure the Hoist is confined to the track.
	If the track is up against the wall, ensure that a track bolt has been fitted correctly. If non-existent, see Installation manual on how to install.
	Clean the internal of the Ceiling Track if there is any debris that could affect the function of the Hoist.
Slings:	Inspect the applied sling thoroughly with regards to the following points: - Any damage such as cuts, frays, tears, burns on the sling or sling straps - Any sign of stitching failure, where the fabric is found to be stretching, tearing and coming undone - Are the straps fully intact - The labels and serial numbers should all be legible. If there is a problem discovered with the sling, it should be noted on the service sheet and be brought to the attention of the person(s) who requested the service to be carried out. In addition, notify the customer on-site or the Manager if it is a care facility. The serial number, type of sling, and condition should be noted on the service sheet. Mark the date of inspection on the sling service label.

3.1 Lift Tape Condition

In this section the images below will show two types of lift tape condition, one in which the wear is minimal and therefore in an acceptable condition, whereas the other Lift Tape has a level of wear which is unacceptable and requires a change during the current service.

Acceptable Condition	**Unacceptable Condition**
It can be seen there is a very small amount of wear to the tape but nothing substantial that requires an immediate Lift Tape replacement. It is advised the Service Engineer informs the Customer of the dangers of Lift Tape fraying and that they keep an eye on the tapes condition.	In the first image you can see a clear increase in wear with additional fraying. This is the start of the Lift Tape starting the fraying process which will only increase each lift. If the Lift Tape is discovered in this condition or worse, at any point along the tape, the Lift Tape should be replaced immediately. The second image is an example of extreme wear which is a condition the Lift Tape should never be allowed to reach. This condition is endangering the safety of the patient.
	

4.0 Test Procedure

Below is the full testing procedure required to complete an Annual Hoist Service.

The SWL 440 pounds **(CP440P – 440 pounds)** is an essential load for the testing of the Hoist. A mode of transportation to transport the weights to the Hoist is required.

The weights must be attached to the Hoist carry bar securely and follow the below procedure in order:

1. Raise the Weight to the Hoist Upper Limit. Be aware of any unusual noises while raising the Safe Working Load.
2. Lower the weight to a safe height, but still fully suspended from the Hoist.
3. Traverse the Hoist around the full track system and observe. Watch for any abnormalities such as noise or traversing trouble. Also inspect the track system for any abnormalities such as creaking, cracking, traversing the whole track system should test every bracket and accessory to the tracking system, observe for any fragilities in the brackets and supports.
4. Traverse the Hoist to its chosen location of Charging, and insert the Handset into the Charging Dock. Ensure that the Hoist is charging correctly.
5. Remove the Handset from charging and traverse the Hoist away from the charging location.
6. Begin to lower the Hoist using the down function on the Handset.
7. Begin to lower the Hoist using the E-Lower function on the Handset.
8. Continue to lower the Hoist using the E-Lower function on the Membrane.
9. Lower the Hoist using the down function on the membrane until the weight can be detached.
10. Continue to lower until the lift tape has been fully extended to test the lower limit switch.
11. Pull the Off Cord to ensure power is cut from the hoist
12. Reset the cord to resume power to the hoist
13. Raise the Hoist back to its original height.
14. Test Complete.

5.0 Tools, Equipment and Lubricants Required for Servicing

When carrying out work on the CPP Hoist, you will require the following:

Tools Required

1.5mm Allen Key
2mm Allen Key
2.5mm Allen Key
3mm Allen Key
4mm Ball Ended Allen Key
5mm Allen Key
No. 2 Pozi Drive Screwdriver
Small Slotted Screwdriver
5.5mm slotted Screwdriver
External Circlip Pliers 3-10mm
Long Nose Pliers
Side Snips
Digital Vernier Calliper
Tape Measure
Second Cut Hand File
Power Drill
8.5mm Drill Piece

Equipment Required

Step Ladder
Multi-Meter
Battery Tester
Marker Pen
Cloth
Lint Free Cloth
Service Documentation
Product User Manual
Product Spare Parts Manual
Product Commissioning Manual
Test Weights – 286 pounds /440 pounds
Weight Trolley
Lifting Straps x2 (Attach weight to Carry Bar)
CPP Service Stand
Grease Gun
Cable Ties – 100x2.5mm (Part No. 000106) **x 4**

Lubricants and Sundries Required

Morris Grease – k42EP Multi- Purpose Grease
Loctite 222
Loctite 243

6.0 Decommissioning

The following section will instruct on how to correctly decommission the CPP Hoist at the end of use. This section is relevant for all variants of the CPP.

The product may be contaminated and has to be disinfected before decommissioning. See section 'Cleaning' in the User Manual for details of how to do this.

6.1 Hoist Removal

To successfully remove the Hoist from the Ceiling Track, refer to the Commissioning Manual for full details. A summary of the correct order on how to remove the CPP and its components has been listed below. It is highly recommended that the Commissioning Manual is used to ensure a safe removal.

1. Turn OFF the Hoist by pulling the OFF cord on the underside of the hoist.
2. Detach the Carry Bar from the Hoist.
3. Detach the Handset from the Hoist
4. At the end of the Track, remove the End Cap, Safety Bolt and End Stop.
5. Carefully slide the Hoist out of the Track.
6. Turn OFF the Charger at the Wall Socket and remove the plug.
7. Remove the charging unit from the wall using a pozi head screwdriver.
8. Ensure the End Stop, Safety Bolt and End Cap are refitted to the Track once all the above steps are complete.
9. Hoist Removal is complete.

6.2 Hoist Dismantling

All serviceable components of the Hoist should be dismantled prior to the disposal of the Hoist. For guidance on how to dismantle all of the Hoist components, refer to section 9.0 – Servicing within this manual for removal and replacement details. Each sub-section will give in depth details on how to dismantle each component of the Hoist.

6.3 Hoist Disposal

When the Hoist has completed its life cycle and can no longer perform to its intended use safely the Hoist must be decommissioned by an approved Service Engineer. The following specifies the importance of correct disposal procedure including local laws and being environmentally friendly.

Please observe the local laws on recycling and respect the current laws for disposal within the community the device is being used within. If there is any uncertainty of the below guidelines, contact your local authorities to determine the proper method of disposal of potentially biohazardous parts and accessories.

The relevant components utilised in the manufacture of the device that can be recycled at the end of the device life are:

Fully recyclables:	Consideration when Recycling:
Chassis	Batteries
Plastic Covers	Wiring Looms – electronics
Metallic Internals – Hub etc.	PCB
Initial packaging of the device (cardboard)	Hand Control
Metallic fixing – Screws etc.	Motors
Plastic Mouldings	Lift Tape
Carry Bar	Charger
Trolley	

Ensure that this list is used as guidance and that the local laws in the given community overrule the suggested component disposal in the table above.

7.0 Spare Parts List

For the full list of Spare Parts available for this product. Please refer to the latest revision of the Spare Parts Manual.

Document Number: 992086.

The Spare Parts Manual can be located on the Mackworth Website: **https://mackworthusa.com**

8.0 Troubleshooting

Should a problem arise with the use of the Hoist, this section offers guidance to all known faults revolving the product. The list of faults below offers the correct actions in sequence to resolve the issue.

For each step per scenario, if the step does not determine the issue, continue to the following step in sequence until the fault is found. Once the fault is found, refer to the action guide with the corresponding number to resolve the issue. After following the correct action, check that the Hoist is now functioning correctly, and perform a simple test. See Section 4.0 for correct test procedure.

For guidance on how to dismantle the Hoist to perform troubleshooting actions, see section 9.0 – Servicing.

If the fault is not found and/or the solutions do not correct the problem, contact your local Prism authorized dealer immediately – contact details are provided on the last page of this manual.

While determining faults on the Hoist, ensure to see the LED Fault Finding Table to determine what a certain combination of displayed LED's means.

8.1 Hoist doesn't turn on

Operate the handset to determine if the Hoist powers up. If it does not – Follow the Troubleshooting guide below.

Troubleshooting Guide

1. Check the Handset is correctly connected to the Handset Plug.
2. Check the Handset wire is not damaged, e.g. cuts and brakes.
3. Check the ON/OFF cord has not been pulled, this will turn power of to the Hoist.
4. Begin to charge the Hoist, it is possible the Hoist is out of battery.
5. Check the Battery Lead connection points are connected properly, from battery to PCB.
6. Check for any damage to the battery leads, e.g. cuts and breaks.
7. Check the Limit Switch Wires for any damage, cuts and breaks. See section 9.7 for guidance.
8. Perform a visual check on the PCB for any damage, e.g. blown components.
9. Using a Battery Tester, check that both Batteries are providing around 12V to the PCB.
10. Replace current PCB.
11. Replace current Limit Switches.

Action Guide

1. Re-attach the Handset to the Handset Plug – See User Manual on Handset attachment.
2. Remove the Handset from the Hoist and Replace – See User Manual on Handset attachment.
3. Press the ON/OFF cord into the ON position to provide power to the Hoist.
4. If Hoist LED's flash orange, use Handset to attempt to turn on Hoist. **If unsuccessful, continue Troubleshooting Guide and refer to the section on "Hoist doesn't Charge" as this is likely the guide to resolve the issue.** If Hoist turns on, allow the Hoist to charge before testing. If Hoist does show signs of charging but does not turn on, continue this Troubleshooting Guide.
5. Re-attach the Battery Leads as shown in section 9.3.

6. Remove the Battery Leads and Replace as shown in section 9.3
7. Replace the Limit Switches – See section 9.7
8. Replace the PCB – See section 9.2
9. If voltage is below 12V. Replace the Batteries – See Section 9.3
10. See section 9.2 on PCB replacement.
11. See section 9.7 on Limit Switches replacement.

8.2 Hoist doesn't charge

Attach the Charger to the Handset correctly (ensure the lead is fully inserted into the Handset Port) to determine if the Hoist will charge, if the LED does not begin to flash orange, follow the Troubleshooting Guide below.

Troubleshooting Guide

1. Check the Charger is turned on at the power supply.
2. Check the Handset is connected to the Hoist correctly.
3. Check Charger wiring for damage, e.g. cuts and breaks.
4. Check the Handset Port is not damaged, e.g. Clear brakes or burns.
5. Check PCB for damage, e.g. blown components.
6. Check the Batteries output using a Battery Tester.
7. Replace Handset.
8. Replace Charger.
9. Replace PCB.

Action Guide

1. Turn the Plug Switch at the wall on.
2. See User Manual on correct Handset attachment.
3. Replace Charger Assembly. See Installation Manual for Charger installation.
4. Replace the Handset. (See User Manual on Handset attachment)
5. Replace the PCB – See section 9.2
6. If Batteries or non-responsive, replace the batteries.
7. See User Manual on Handset attachment.
8. See Charger Installation within the Installation Manual.
9. See section 9.2 on PCB replacement.

8.3 Hoist doesn't Lift – No Error Indication

Attempt to raise/lower Hoist with handset, but Hoist is not responding. Hoist does not give any indication of what the fault could be. Follow the Troubleshooting Guide below.

Troubleshooting Guide

1. Check the Lift Motor Wires are connected properly between the PCB and Motor.
2. Check for damage along the Motor Wires, e.g. Cuts and breaks.
3. Check Lift Motor(s) gearing inside the Hoist for damage. The teeth could be worn down and no contact is being made with the Hub. (This issue is likely to be determined by the Hoist as a current variant between both motors, and will display a singular red light, along with three flashing green lights on the LED Panel).

4. Check Hub teeth for damage. The teeth could be worn down and no contact is being made with the Lift Motor.
5. Check PCB for damage, e.g. blown components.
6. Replace Lift Motor.
7. Replace PCB

Action Guide

1. Connect the Motor Wires with the PCB correctly. See 9.4 for guidance.
2. Replace the Lift Motor(s). See section 9.4 for guidance.
3. Replace the Lift Motor(s). See section 9.4 for guidance.
4. Replace the Hub. See section 9.8 for guidance.
5. Replace the PCB. See section 9.2 for guidance.
6. See section 9.4 on guidance to replace the Lift Motor.
7. See section 9.2 on guidance to replace the PCB.

8.4 Hoist doesn't Lift – High Current

Attempt to raise/lower Hoist with handset, the LED displays that there is an Overload of current when lifting. The alarm will signal a single beep twice (1 second apart). Follow the Troubleshooting Guide below.

Troubleshooting Guide

1. Inspect the internal gearing between the Hub and Lift Motors for wear, swarf and damage.
2. Check for lift tape fraying/wear that may be jamming the gears within the Hoist.
3. Check Battery Voltage using Battery Tester as high current could be due to low battery.
4. Check PCB for any damage, e.g. Blown components.
5. Replace the Lift Motor.
6. Replace the PCB.

Action Guide

1. Remove swarf from gearing if any. Replace Hub (section 9.8) and/or Lift Motors (section 9.4) if necessary due to damage and wear.
2. Replace the Lift Tape (section 9.9) and remove any frayed material jamming the gears.
3. Charge Hoist if Battery Voltage is 24.5V or lower. Test the Hoist once sufficiently charged.
4. Replace the PCB, see section 9.2 for guidance.
5. See section 9.4 to replace Lift Motor.
6. See section 9.2 to replace the PCB.

8.5 Hoist is functioning but LED is inactive

Attempt to raise/lower Hoist with handset, the Hoist does perform commands but the LED Panel does not respond. Follow the Troubleshooting Guide below.

Troubleshooting Guide

1. Check LED externally for any impact damage, e.g. cracks or breaks.
2. Check the LED wiring for damage such as cuts or breaks. Ensure they are plugged in.
3. Inspect the PCB for any damage such as blown components.

4. Replace the External Cover Assembly.
5. Replace the PCB.

Action Guide

1. Replace the External Covers of the Hoist. See section 9.1 for guidance.
2. Plug the wires in correctly or replace the External Covers if the wires are damaged. See section 9.1 for guidance.
3. Replace the PCB. See section 9.2 for guidance.
4. See section 9.1 for guidance on External Covers replacement.
5. See section 9.2 for guidance on PCB replacement.

8.6 Troubleshooting – Hoist Safety Mechanisms

Hoist doesn't not lower while Hoist is in use

When this occurs the E-Lower Button (on the Handset or Membrane) is to be operated to safely lower the patient from the Hoist. For details on how to use the E-Lower Button, refer to the User Manual. Once the patient has been removed from the Hoist, follow the relevant troubleshooting guide procedure to service adequately.

Hoist Over-Speed Cam has been activated while in use

When this occurs the E-Lower Button cannot be used to safely lower the patient. The Hoist gearing mechanism has failed and therefore cannot be used to lower the patient. The Over-Speed Cam has been activated to prevent the Patient from free fall.

To safely lower the patient from the Hoist the emergency services should be contacted immediately. Do not attempt to lower the patient until emergency services have arrived.

Once the patient has been safely removed, the Hoist should not be serviced and must be decommissioned. The Hoist is beyond the point of repair and should not be reused.

Decommission the Hoist following the correct decommissioning procedure. See section 6.0.

8.7 LED Fault Finding Table

Should a problem arise with the use of the Hoist, review the table below gives an indication as to the status of the device through reference to the LED's shown on the Hoist unit.

Find the fault and complete the recommended solution.

If the fault is not found and/or the solution does not correct the problem, contact your local authorized dealer immediately – contact details are provided on the last page of this manual.

LED 1 LED 2 LED 3 LED 4	Buzzer	Function	Action
	No	75% - 100% Battery Capacity	None
	No	50% - 75% Battery Capacity	None
	No	25% - 50% Battery Capacity	None
	No	10% - 25% Battery Capacity	None
	2 Beeps (1 sec apart) x 3 cycles	0% - 10% Battery Capacity	Charge Hoist
	No	Hoist Charging	None
	No	Hoist charged (connected to charger)	None
	2 Beeps (0.5 sec apart)	Upper limit reached	Release Up button
	2 Beeps (1 sec apart)	Lower limit reached	Release Down button
	Solid Beep	Emergency lower Activated	General Information
	No	Hoist Standby/Switched Off	General Information
	1 Beep (1 sec apart) x 2 cycles	Maximum patient load exceeded	Review loading
	No	Motor -Max temperature exceeded	Allow Hoist to cool
	No	Battery - Max temperature exceeded	Allow Hoist to cool
	3 Beeps (0.5 sec apart) x 2 cycles	Motor current delta limit exceeded	Call Engineer Promptly
	4 Beeps (0.5 sec apart) x 2 cycles	Battery voltage delta exceeded	Call Engineer Promptly
	5 Beeps (0.5 sec apart) x 2 cycles	Battery temperature sensor fault	Call Engineer Immediately
	6 Beeps (0.5 sec apart) x 2 cycles	Charging system fault	Call Engineer Immediately
	7 Beeps (0.5 sec apart) x 2 cycles	Motor temperature sensor fault	Call Engineer Immediately
	8 Beeps (0.5 sec apart) x 2 cycles	Limit switch fault	Call Engineer Immediately

LED'S are solid

LED's are flashing.

9.0 Servicing – Removal and Replacement

This section will cover the details of how to remove, refit and replace all serviceable parts to the Hoist. The step by step process is to be followed in sequence to perform a successful service on the Hoist. Unless stated otherwise, all images refer to a Mackworth CP440P with a Standard Wheel Assembly (Track Type 1). Where necessary, additional images for Alternative Track Types have been included.

NOTE: Before carrying out any work on a CPP Hoist, remember to switch off the power first. This action can be carried out by pulling the OFF Cord on the underside of the Hoist.

When Servicing the CPP Hoist, a work bench or table should be used, along with a protective cover such as a cloth to avoid damaging the Hoist. The CPP Service Stand is highly recommended to assist during servicing. See image below of the Service Stand.

9.1 External Covers

This section will instruct the correct procedure on how to remove and replace the External Covers.

Removal

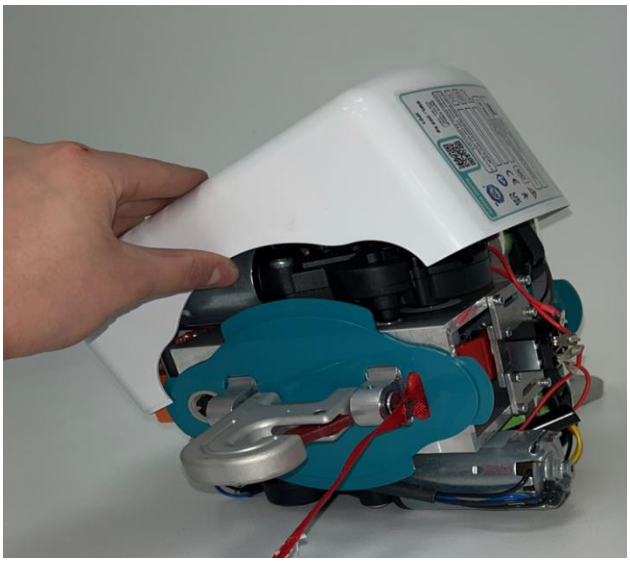
Step 1 – Use a slotted screwdriver to remove the two brass screws. (Arrowed)

Step 2 – Gently remove the cover away from the Hoist and detach the Wire Ribbon.

Step 3 – Rotate the Hoist 180 degrees and gently position the Hoist in the below orientation. **Be careful positioning the Hoist on the Lift Motor.**

Step 4 - Using a slotted screwdriver remove the two brass screws from the second cover. (Arrowed)

Step 5 – Gently remove the cover away from the Hoist.



Refitting / Replacement

Step 6 – Refitting is a reversal of the removal process noting the following points:

A) Make sure the profile edge marries up with the bottom and top cover.

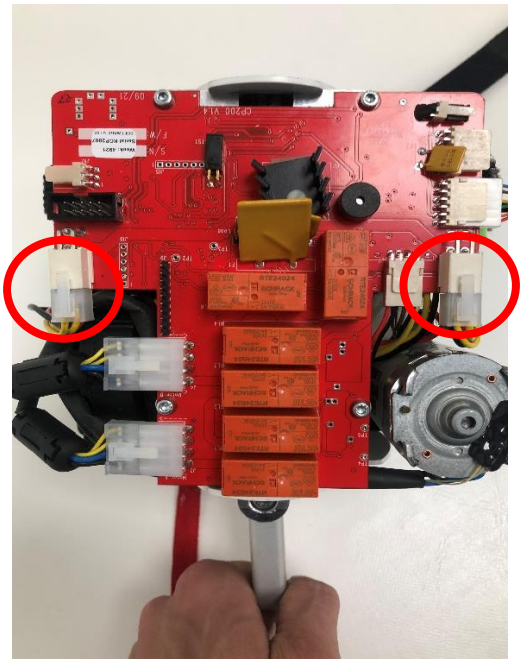
9.2 PCB

This section will instruct the correct procedure on how to remove and replace the PCB.

Removal

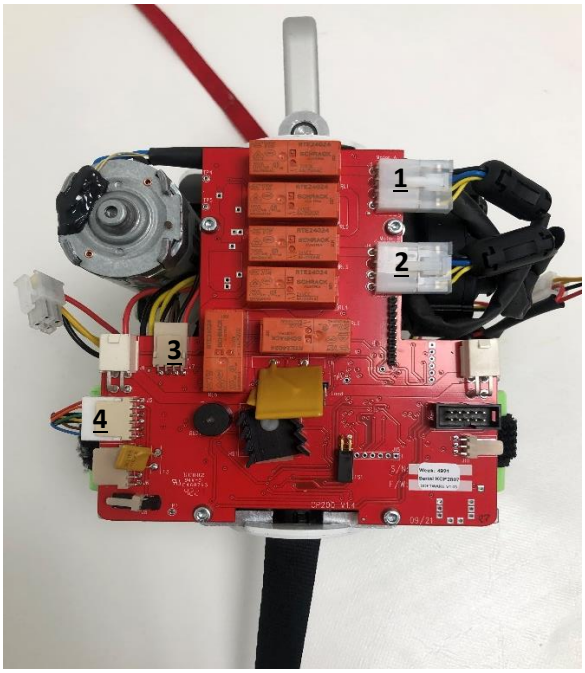
Step 1 – Remove external covers of the Hoist (refer to section 9.1)

Step 2 - Remove the Power supply cables, by pressing down on the latch and then pull away from the PCB. (Circled Below)

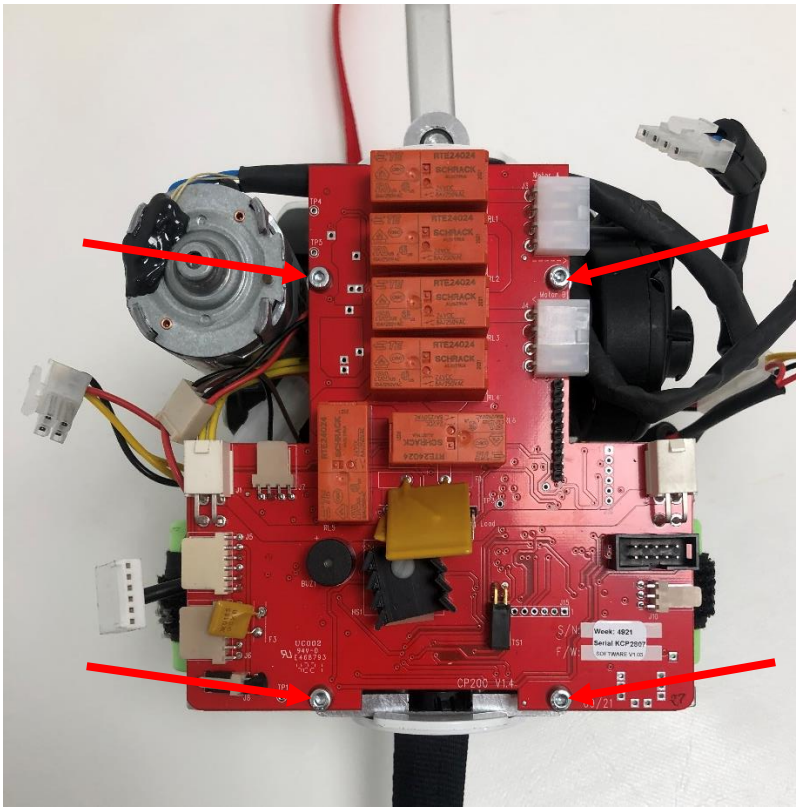


Step 3 – Remove the remaining connectors in the numerical order labelled below.

1. Motor A
2. Motor B
3. Limit Switch
4. Handset Input



Step 4 – Using a 2.5mm Allen key remove the four M3 screws (arrowed).



Step 5 – Remove the PCB from the Hoist.

Refitting / Replacement

Step 6 - Refitting is a reversal of the removal process noting the following points:

A) Make sure the power cable is connected last.

B) Ensure that the Motors are connected to the correct port.

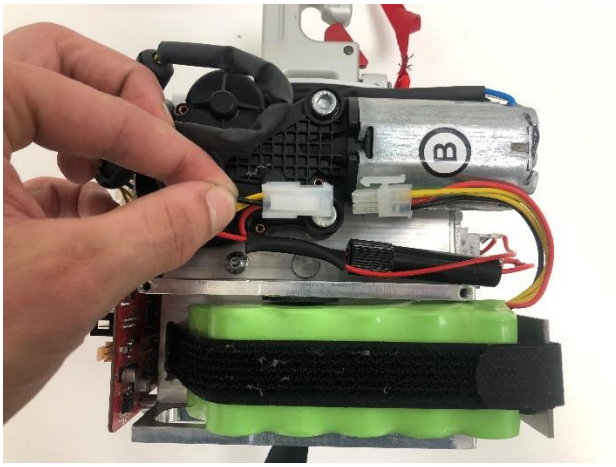
9.3 Batteries

This section will instruct the correct procedure on how to remove and replace the Batteries.

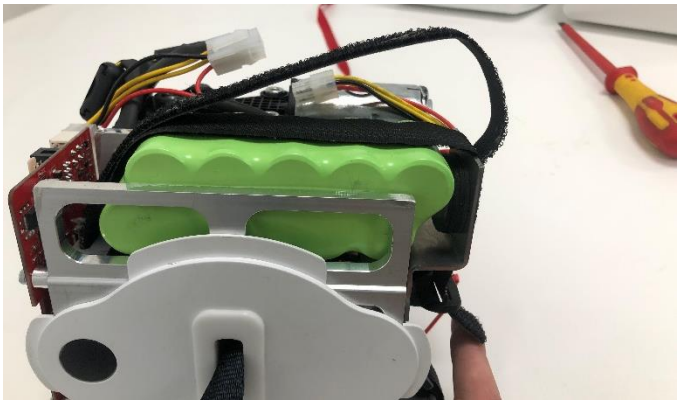
Removal

Step 1 – Remove external covers of the Hoist. (Refer to section 9.1)

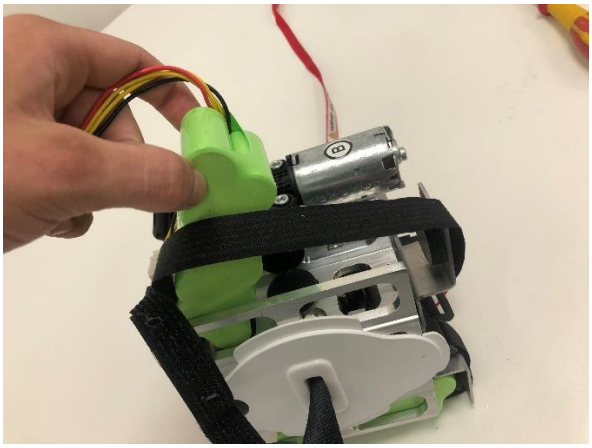
Step 2 - Disconnect the battery power leads as shown.



Step 3 – Release the Velcro straps to give access to the Batteries.



Step 4 – Remove the battery from its placement.

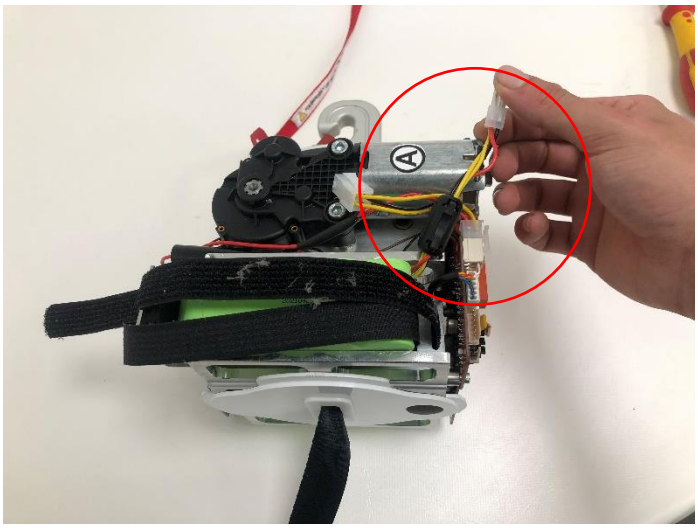


Step 5 – Repeat steps 2 to 6 to remove the opposite Battery.

Refitting / Replacement

Step 6 - Refitting is a reversal of the removal process noting the following points:

A) Ensure that the Battery Power Lead is facing the opposite face to the PCB when fitting.



B) Ensure that the Battery on the same face as Motor B Does NOT have a Suppressor attached, and the Battery on the same face as Motor A DOES have a Suppressor.

9.4 Lift Motor

This section will instruct the correct procedure on how to remove and replace the Lift Motor.

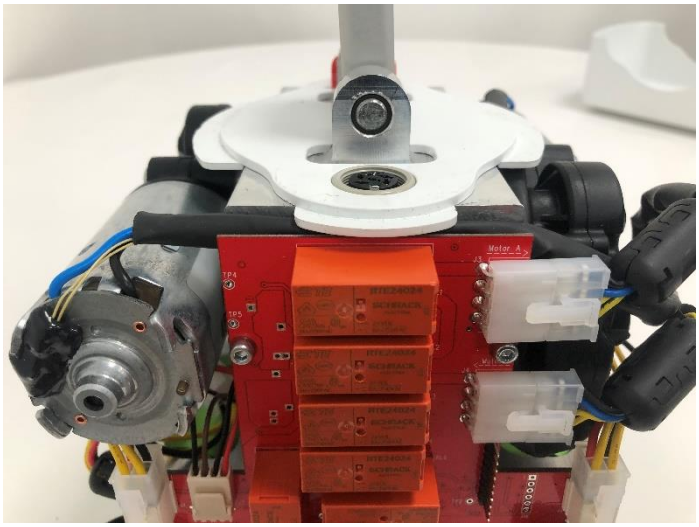
Removal

Step 1 – Remove external covers of the Hoist. (Refer to section 9.1)

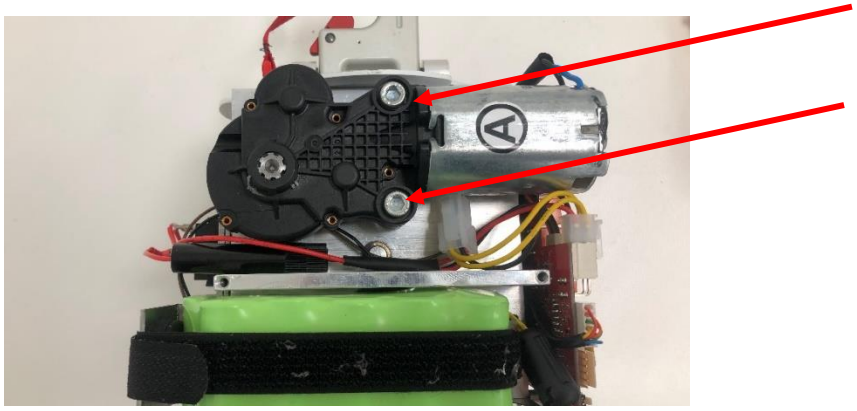
Step 2 - Disconnect the power lead from the batteries. (For further information refer to section 9.3)

Step 3 – Disconnect the Motor Leads from the PCB. (For further information refer to section 9.2)

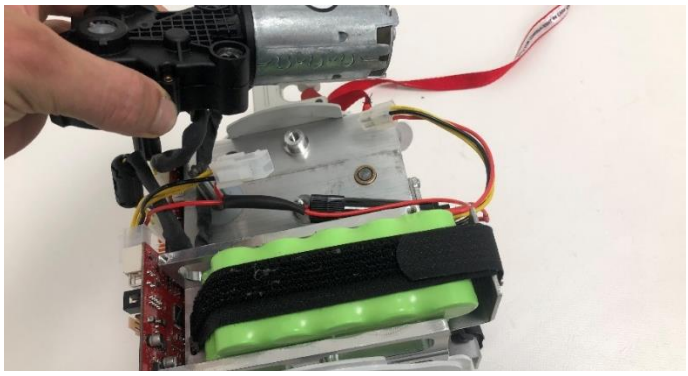
Step 4 – Remove the routing of Lift Motor B Wires from under the PCB. (PCB removal is recommended)



Step 5 – Use a 5mm Allen Key to remove the two bolts.



Step 6- Remove the Motor by pulling away from the chassis.



Step 7 – Repeat steps 5 and 6 to remove the opposite Motor.
CAUTION! Motor might be hot.

Refitting / Replacement

Step 8 - Refitting is a reversal of the removal process noting the following point:

A) Ensure the motor aligns with the motor mount tapped holes.
B) Ensure Motor A and B are attached on the correct face. Use the PCB for reference.
C) Re-Route the Motor B Wires under the PCB.
D) Ensure that the Motors are connected into the correct designated port on the PCB.

9.5 QRS Hooks

This section will instruct the correct procedure on how to remove and replace the QRS Hooks.

9.5.1 Bottom QRS Hook

Removal

Step 1 – Using a 2mm Allen key unscrew the grub screw (arrow) until it releases its hold on the Pin.

Step 2 – Slide the pin out of the hook to release the Lift Tape.

Refitting / Replacement

Step 3 - Refitting is a reversal of the removal process noting the following point:

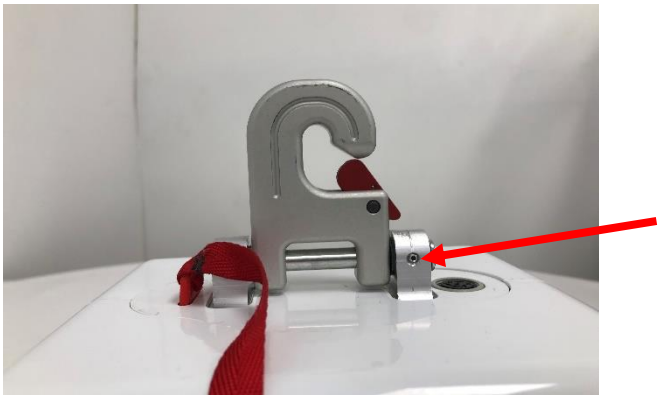
A) Make sure the hole in the QRS pin lines up with the grub screw.

B) Ensure the hook is attached to the lift tape in the below orientation.

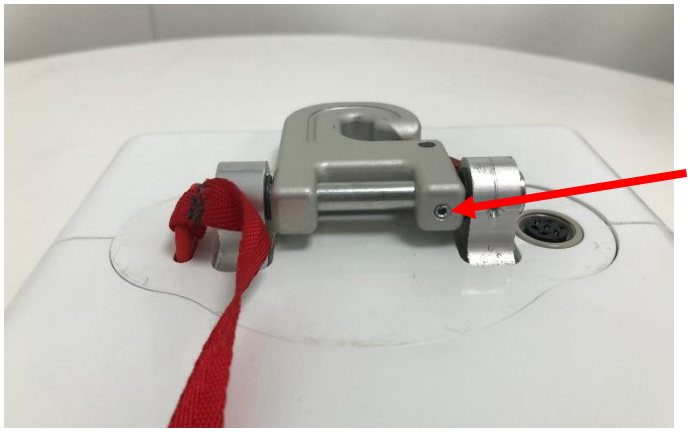
9.5.2 Top QRS Hook

Removal

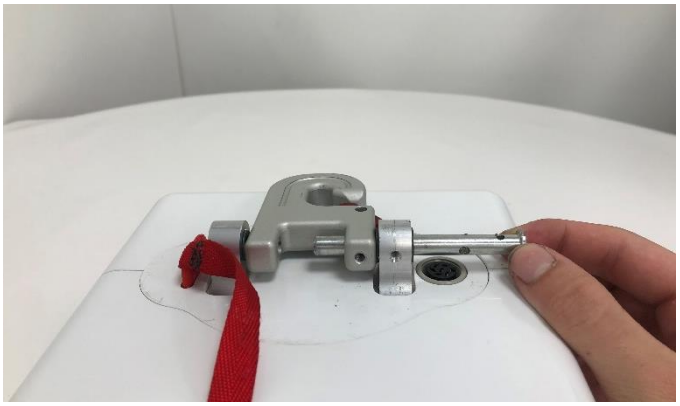
Step 1 – Use 1.5mm Allen Key, remove the two grub screws on either side of the Hoist.



Step 2 – Using a 2mm Allen key unscrew the grub screw (arrow) until it releases its hold on the Pin.



Step 2 – Slide the pin out to release the Hook.



Refitting / Replacement

Step 3 - Refitting is a reversal of the removal process noting the following point:

A) Make sure the hole in the QRS pin lines up with the grub screw.
B) Ensure the hook is attached to the lift tape in the orientation above.

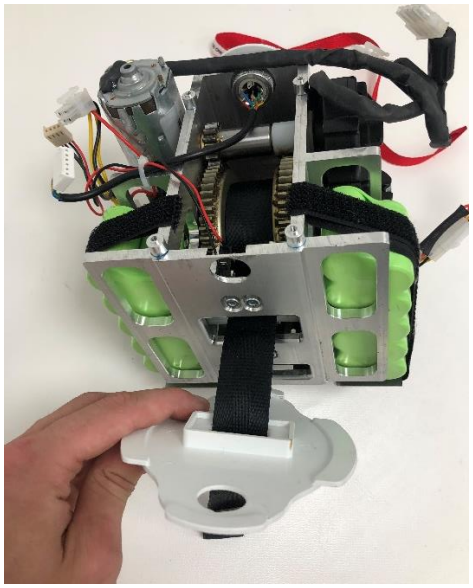
9.6 Top and Bottom Cover

Within this section it will explain the correct procedure on removing and reinstalling the Top and Bottom Cover for servicing procedures or replacement.

9.6.1 Bottom Cover

Removal

Step 1 - Remove external covers of the Hoist. (Refer to section 9.1)
Step 2 – Remove the PCB from the Hoist. (Refer to section 9.2)
Step 3 – Remove the Bottom QRS Hooks (refer to section 9.5)
Step 4 – Remove the Handset Cable Port from the Hoist. (Refer to section 9.12)
Step 5 – Gently pull the bottom cover away from the chassis and feed the Lift Tape through to detach it from the unit.



Refitting / Replacement

Step 6 - Refitting is a reversal of the removal process noting the following point:

A) Make sure the lift tape is fed through the slot in the correct direction
B) Ensure to align the Bottom Cover with the hole for the Handset Wiring Cable.

9.6.2 Top Cover

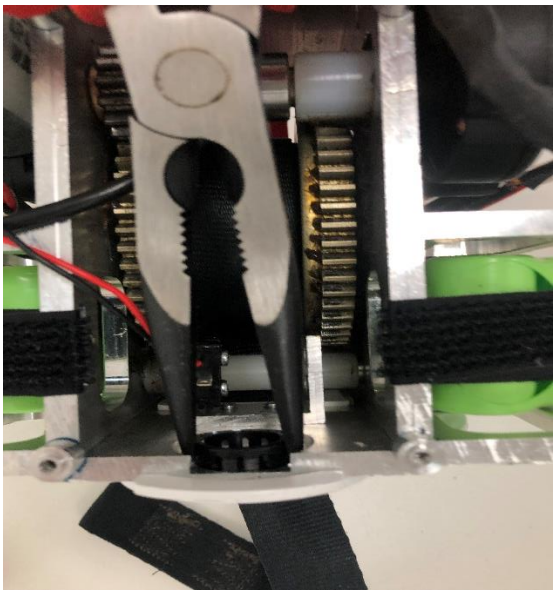
Removal

Step 1 - Remove external covers of the Hoist. (Refer to section 9.1)

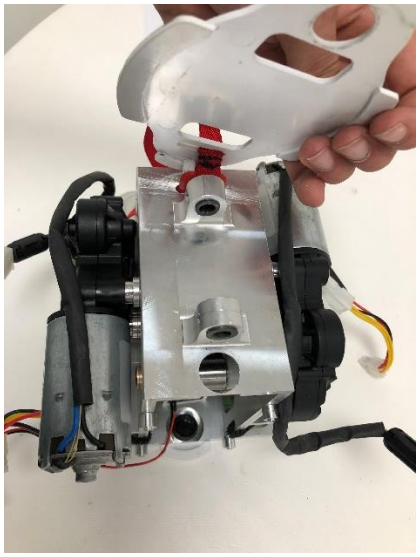
Step 2 – Remove the PCB from the Hoist. (Refer to section 9.2)

Step 3 – Remove the Top QRS Hook (refer to section 9.5)

Step 4 – Using Long Nose Pliers, remove the Bung that secures the Cover to the Chassis by pressing the retaining clips inwards.



Step 5 – Gently pull the Top Cover away from the Chassis.



Refitting / Replacement

Step 6 - Refitting is a reversal of the removal process noting the following point:

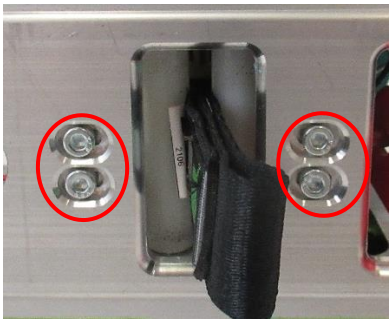
A) Ensure to align the Bottom Cover with the hole for the Bung
B) Attach the Bung by simply pressing the Bung into the slot.

9.7 Limit Switch

Within this section it will explain the correct procedure on removing and reinstalling the Limit switch unit for servicing procedures or replacement.

Removal

Step 1 - Remove external covers off the Hoist (refer to section 9.1)
Step 2 – Remove the PCB from the Hoist (refer to section 9.2)
Step 3 – Remove the Batteries from the Hoist. (Refer to section 9.3)
Step 3 – Remove the Handset Wiring Cable from the Hoist (Refer to section 9.12)
Step 4 - Remove Bottom Cover (refer to section 9.6)
Step 5 – Remove the E-Stop Assembly. (Refer to section 9.14)
Step 6 – Using a 3mm Allen Key, remove the four screws shown to release the limit switch assembly.

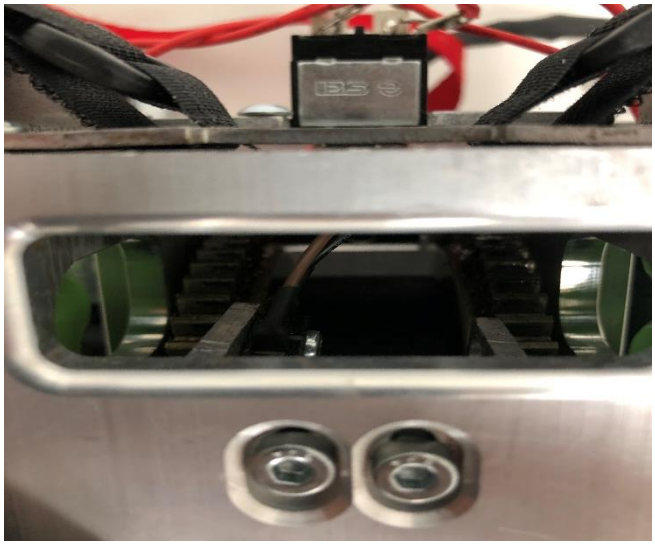


Step 7 – Remove the Limit Switch Assembly from the Hoist.

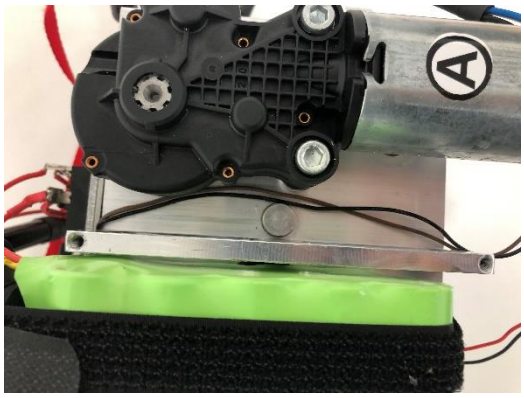
Refitting / Replacement

Step 8 - Refitting is a reversal of the removal process noting the following point:

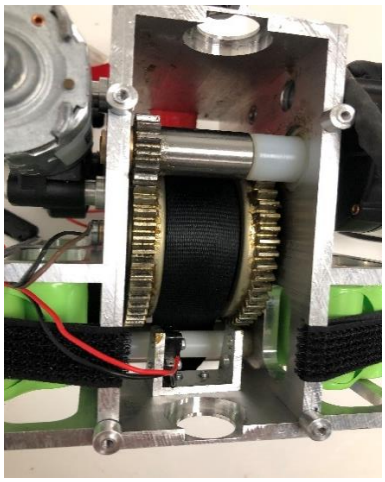
A) When fixing the individual limit switches, fix the black and brown wire block to the back face of the Hoist. (Opposite face to the PCB.)



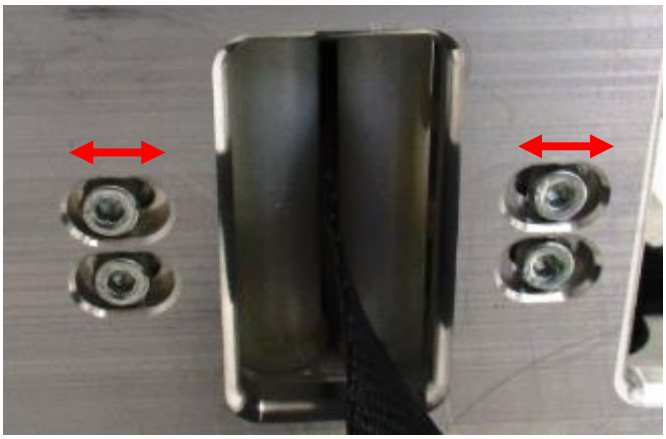
B) Route the black and brown wire along the Chassis side face underneath the Lifting Motor.



C) Fix the black and red wire limit switch to the front face of the Hoist. (This is the PCB side)



D) Each Limit Switches must be set when refitted into position, as can be seen in the image the fixing point allows adjusting placement. To set each Limit Switch correctly, thread the screws to the Limit Switches but do not tighten. (See next step)



E) Slide the Limit Switch towards the roller until it is activated. This will be apparent as the Switch makes a clear “click” noise when activated. Once this point has been determined, slide the Limit Switch back a couple of millimetres and tighten the screws to fix in place.

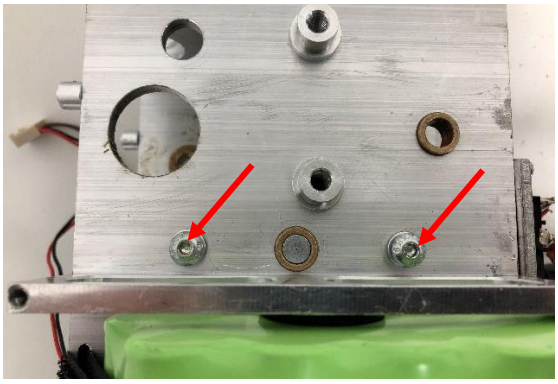
F) To test the function of the switch, manually press the roller inwards, the Limit Switch should activate, ENSURE that the Limit Switch deactivates when the roller is released.
G) Repeat these steps for both Limit Switches.

9.8 Hub

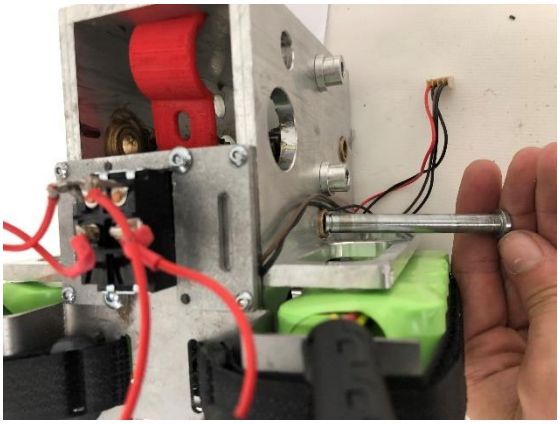
Within this section it will explain the correct procedure on removing and reinstalling the Hub for servicing procedures or replacement.
When performing a hub change, ensure to fully extend the lift tape prior to turning off the hoist power, this will allow quicker removal.

Removal

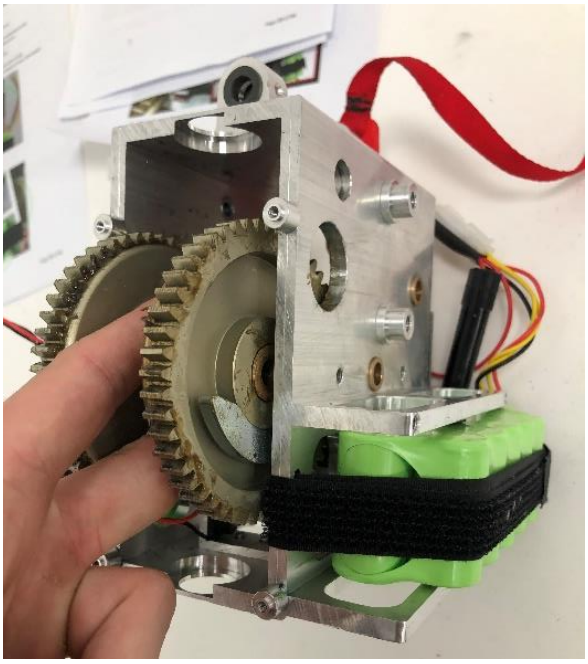
Step 1 - Remove external covers from the Hoist. (Refer to section 9.1)
Step 2 – Remove the PCB from the Hoist. (Refer to section 9.2)
Step 3 – Remove the Handset Wiring Cable from the Hoist. (Refer to section 9.12)
Step 4 – Remove Bottom QRS Hook from the Hoist. (Refer to section 9.5)
Step 5 – Remove Bottom Cover from Hoist. (Refer to section 9.6)
Step 6 – Remove the Lift Tape from the Hoist. (Refer to section 9.9)
Step 7 – Remove **Motor A & Motor B** from the Hoist. (Refer to section 9.4)
Step 8 – Remove **Motor A & Motor B** Motor Shaft from the Hoist. (Refer to section 9.10)
Step 9 – Using a 4mm ball point Allen Key, remove the two over speed screws. (Arrowed)



Step 10 – Remove the strap pin.



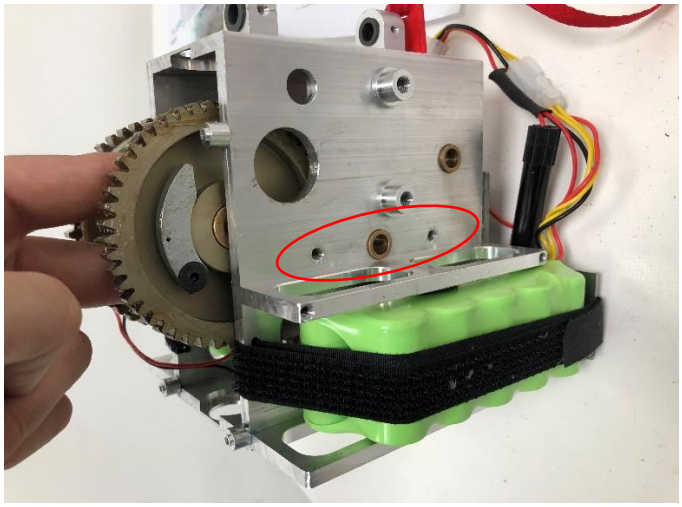
Step 11 – Slowly guide the Hub out of the Chassis. (As shown below)



Refitting / Replacement

Step 12 - Refitting is a reversal of the removal process noting the following point:

A) If replacing hub, grease with Morris Grease – K42EP multi-purpose.
B) When inserting the Hub back into the Chassis make sure the orientation is correct. The Over-Speed Cam must face the Chassis face with the Over-Speed Cam screws.



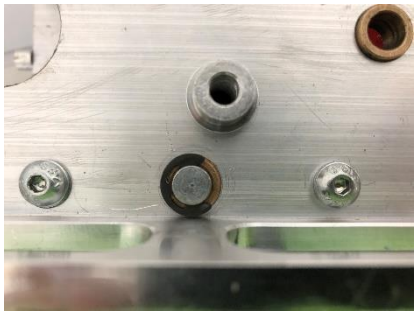
9.9 Lift Tape

Within this section it will explain the correct procedure on removing and reinstalling the Lift Tape for servicing procedures or replacement.

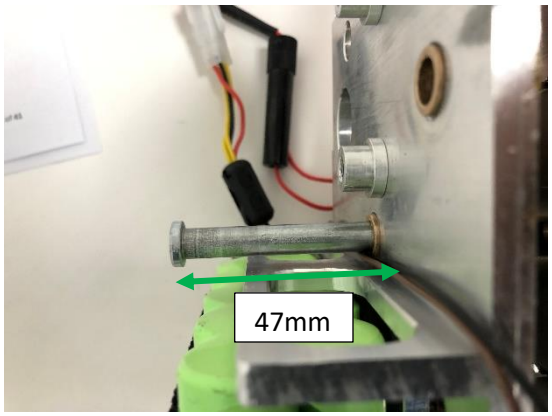
When performing a hub change, ensure to fully extend the lift tape prior to turning off the hoist power, this will allow quicker removal.

Removal

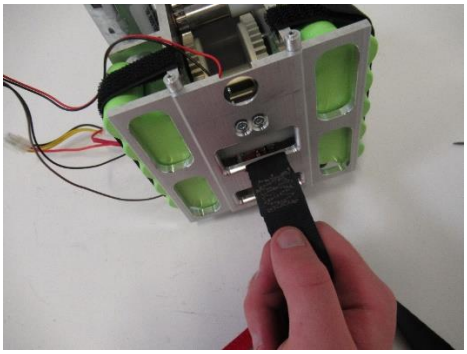
Step 1 - Remove external covers from the Hoist. (Refer to section 9.1)
Step 2 – Remove the PCB from the Hoist. (Refer to section 9.2)
Step 3 – Remove the Handset Wiring Cable from the Hoist. (Refer to section 9.12)
Step 4 – Remove Bottom QRS Hook from the Hoist. (Refer to section 9.5)
Step 5 – Remove Bottom cover from Hoist. (Refer to section 9.6)
Step 6 - Using a small slotted screwdriver remove the 8mm E-clip from the Strap pin.



Step 7 – Slide the strap pin from the chassis out until a minimum of 47mm of pin is showing. This will release the Lift Tape while securing the Hub.



Step 8 - Gently pull the lift tape through the limit switch rollers to release from the Hoist.

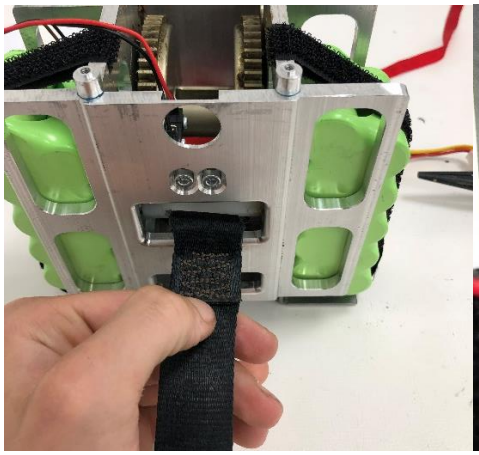


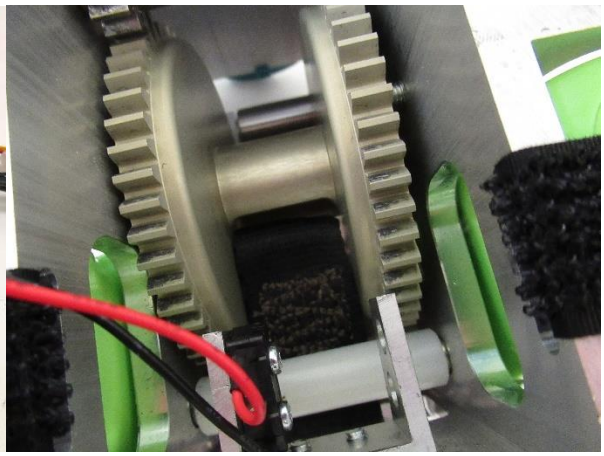
Refitting / Replacement

Step 9 - Refitting is a reversal of the removal process noting the following point:

A) When reinserting the lift tape through the limit switch rollers, make sure that the fold over lip is facing TOWARDS the E-Stop Cord on the underside of the Chassis. For a second reference, the arrow labels at the other end of the Lift Tape should also be facing away from the Handset Plug. Use image above for reference.

B) Before inserting the Lift Tape into the Hub, use your thumb to open the loop, this is to help the strap pin slide through once located in the Hub.





C) Use long noise pliers to reattach the 8mm E-Clip to the end of the strap pin.

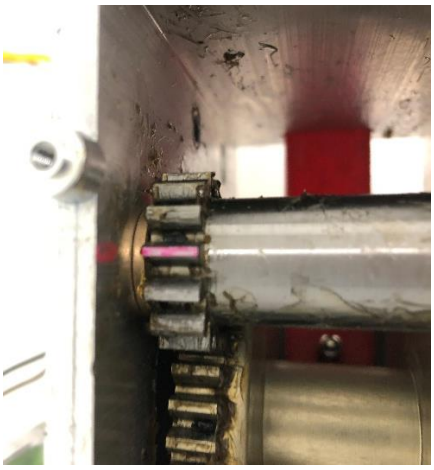
9.10 Motor Shaft

Within this section it will explain the correct procedure on removing and reinstalling the Motor Shaft for servicing procedures or replacement.

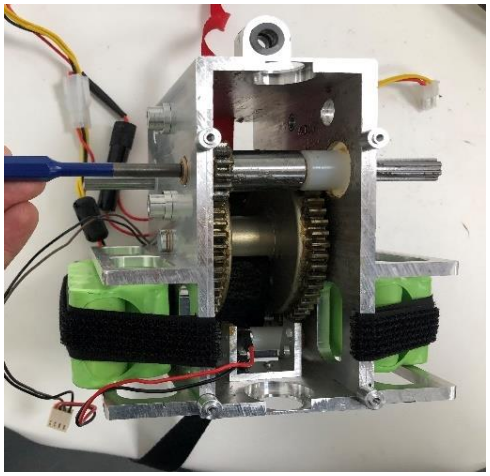
Removal

Step 1 - Remove external covers off the Hoist. (Refer to section 9.1)
Step 2 – Remove the PCB from the Hoist. (Refer to section (9.2)
Step 3 – Remove both Lift Motors from the Hoist. (Refer to section 9.4)

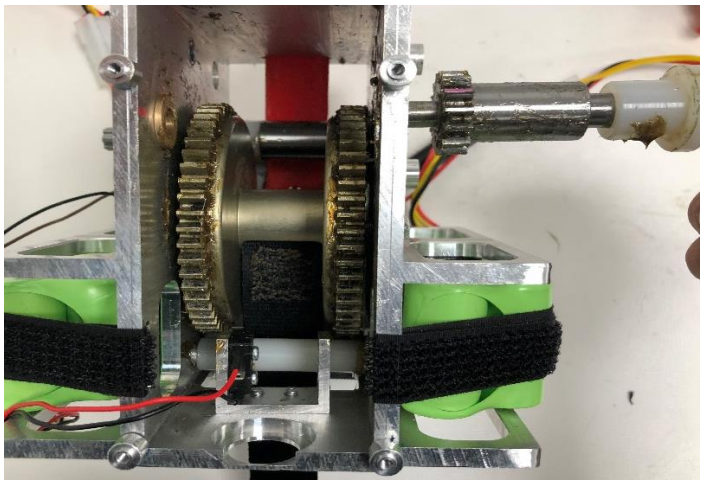
Step 4 - Mark a line between the Motor shaft tooth and Chassis as shown, when refitting this must realign.



Step 5 – Using a Parallel Punch and Hammer, lightly tap the Motor Shaft out of its Chassis fixing.



Step 6 – Remove the full assembly as shown.



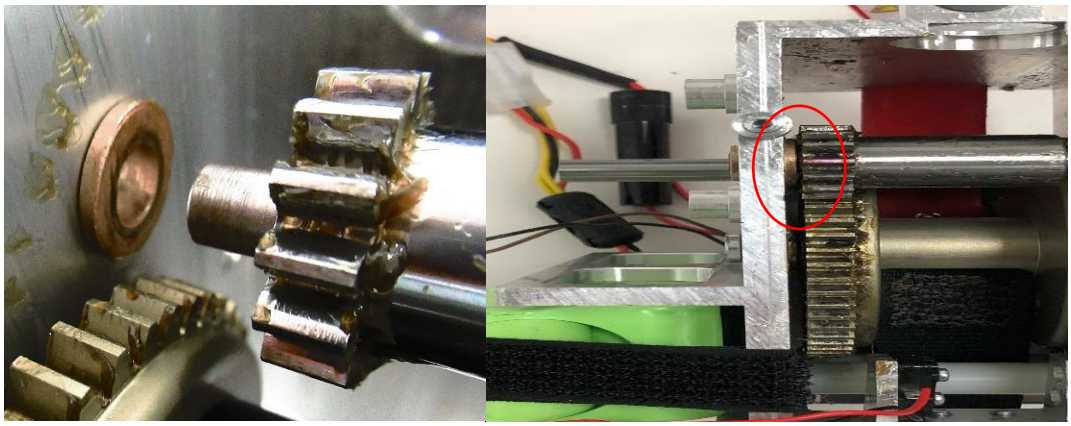
Step 7 – Repeat steps 4 and 5 to remove the second Motor Shaft.

Refitting / Replacement

Step 8 - Refitting is a reversal of the removal process noting the following point:

A) When assembling the Motor Shaft for refitting or replacement, ensure to assemble as shown in the image.

B) Ensure the Motor Shaft fits into the bush smoothly and is fully inserted.



C) Ensure that the Motor Shaft Gears mesh correctly with the Hub.

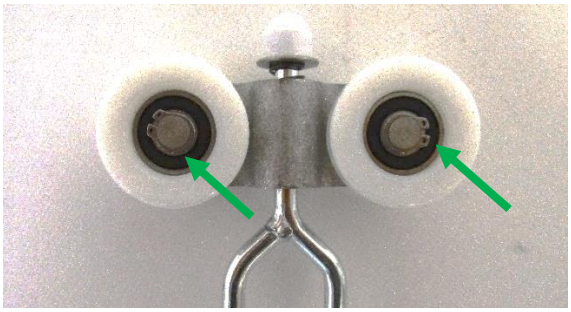
9.11 Trolley Wheels

Within this section it will explain the correct procedure on removing and reinstalling the Trolley Wheels for servicing procedures or replacement.

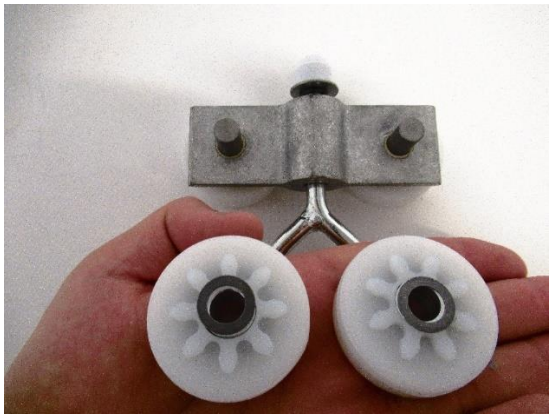
Removal

Step 1 – Detach the Hoist from the Trolley and remove the Trolley from the Ceiling Track. For correct instructions on this process, refer to the Commissioning Manual.

Step 2 – Using circlip pliers, remove the circlips from both wheels.



Step 3 – Remove the two Wheels from the Hoist as shown – Ensure the Spacers are situated within the Wheels. Ensure to also grab the washers.

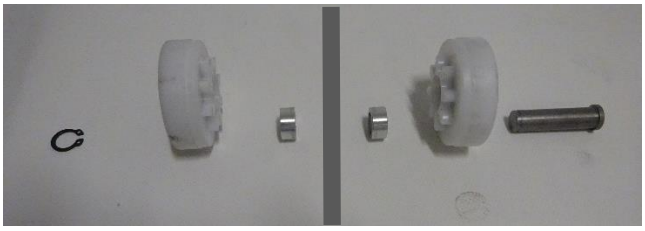


Step 4 – Remove the Axel along with the opposite set of wheels, spacers and washers.

Refitting / Replacement

Step 5 - Refitting is a reversal of the removal process noting the following points:

A) If replacing with brand new wheels, the below image is an exploded diagram of how the Wheels are fitted together along the axel. The Grey line indicates the Trolley. Ensure to fit washers either side if applicable.



9.12 Handset Cable Port

Within this section it will explain the correct procedure on removing and reinstalling the Handset Cable Port for servicing procedures or replacement.

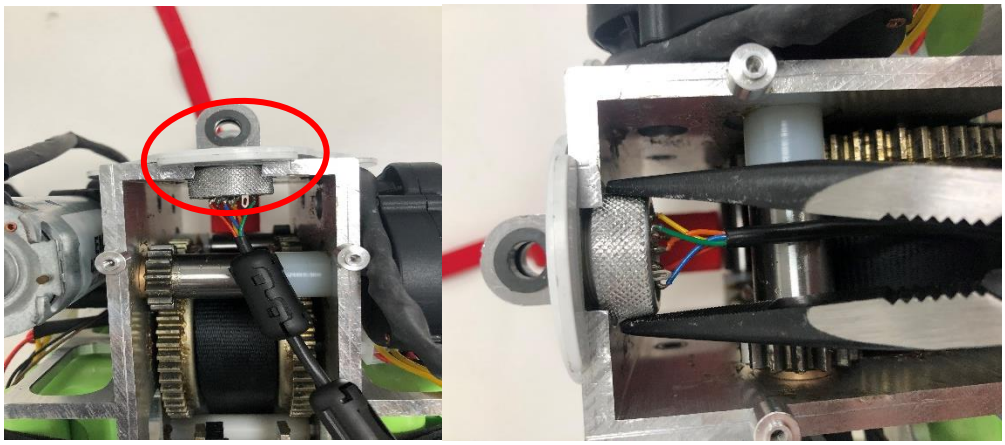
Removal

Step 1 - Remove external covers of the Hoist. (Refer to section 9.1)

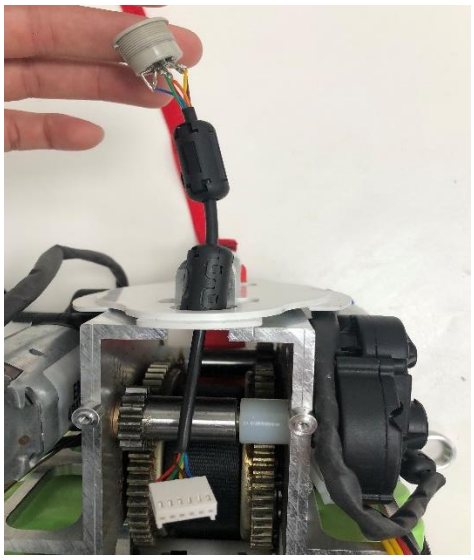
Step 2 – Remove the PCB from the Hoist. (Refer to section 9.2)

Step 3 – Remove the Bottom QRS Hooks (refer to section 9.5)

Step 4 – Twist the threaded port retainer anticlockwise to release the Handset Cable Port. Where necessary, use pliers.



Step 5 – Remove the Handset Cable Port by pulling it through the Bottom Cover as shown.



Refitting / Replacement

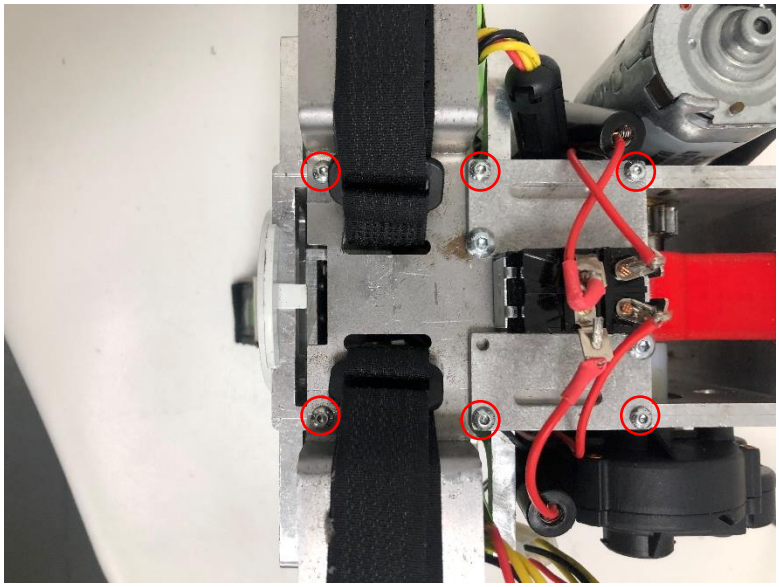
Step 6 - Refitting is a reversal of the removal process.

9.13 E-Stop Assembly

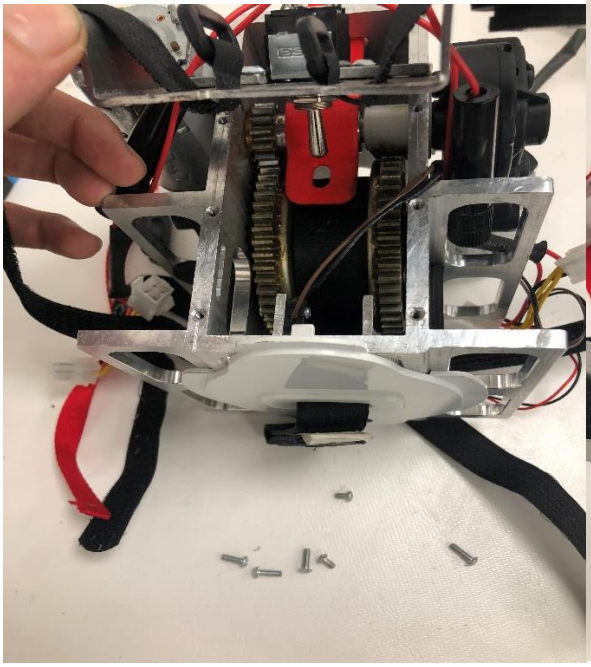
Within this section it will explain the correct procedure on removing and reinstalling the E-Stop Assembly for servicing procedures or replacement.

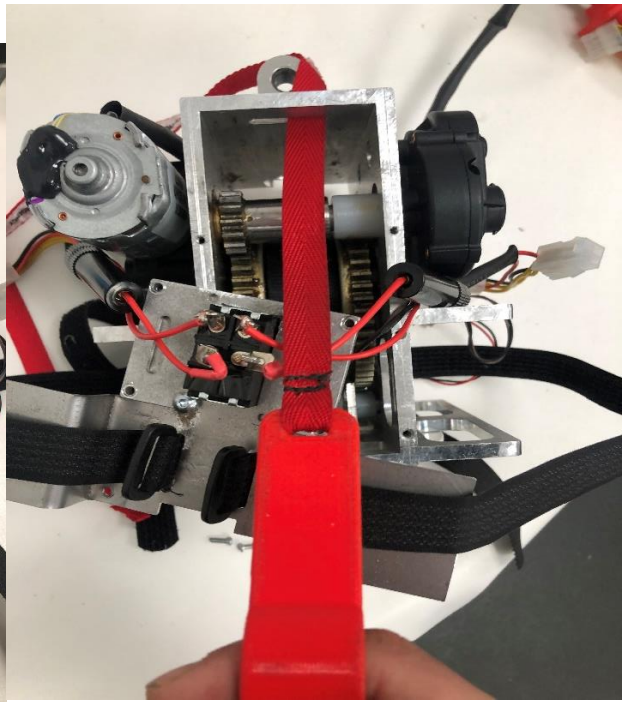
Removal

Step 1 - Remove external covers of the Hoist. (Refer to section 9.1)
Step 2 – Disconnect the Power from the PCB. (Refer to section 9.2 for guidance)
Step 3 – Remove the Batteries from the Hoist. (Refer to section 9.3)
Step 4 – Remove the six screws circled using a 2mm Allen Key.



Step 5 – Remove the E-Stop assembly from the hoist as shown.





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