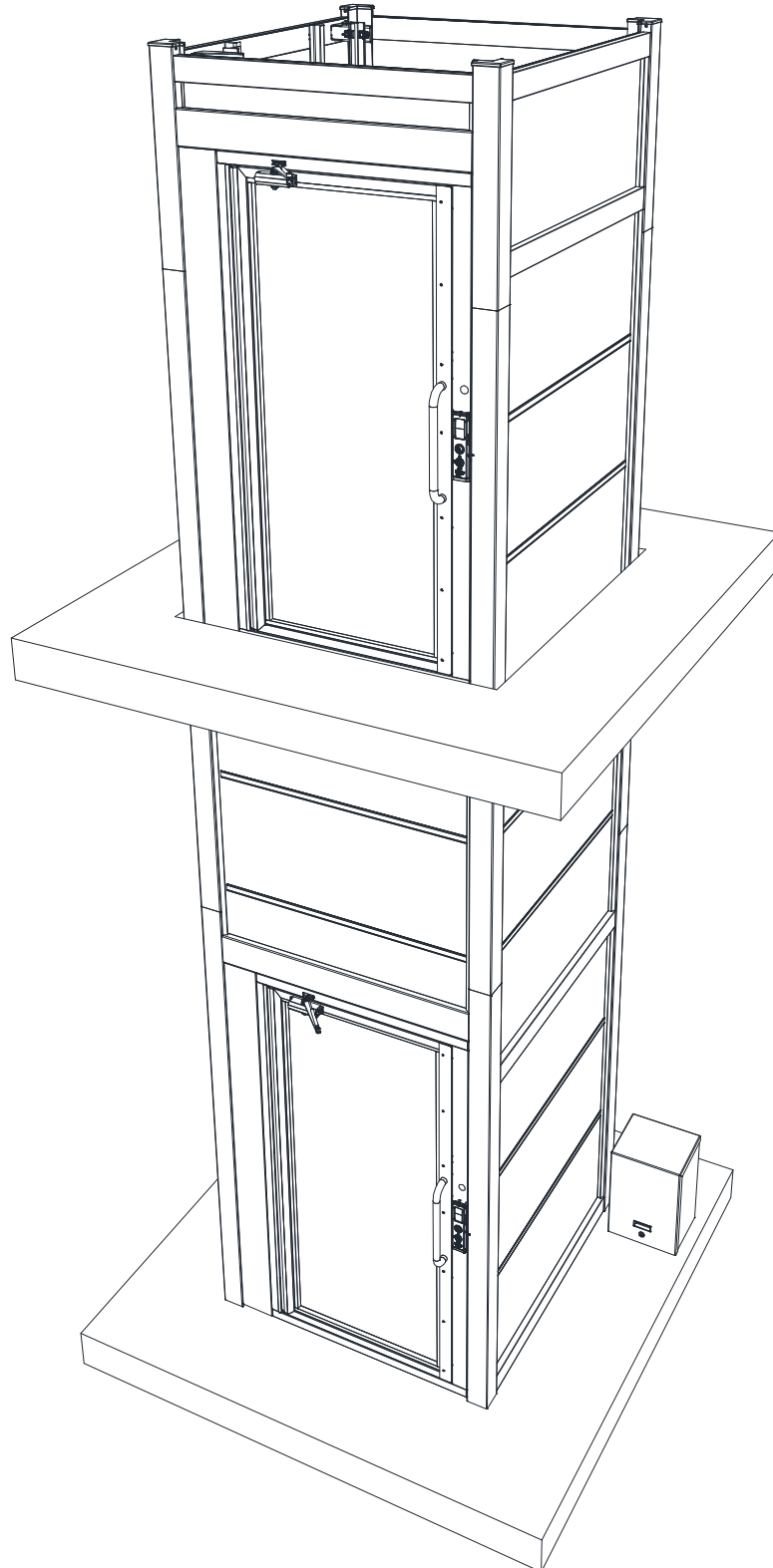




An independent  
family business  
since 1867

**Stannah**

# MIDLIFT SL *PLUS* MAINTENANCE GUIDE



## CONTENTS LIST

<b>1</b>	<b>INTRODUCTION</b> .....	<b>4</b>
<b>2</b>	<b>SAFETY</b> .....	<b>4</b>
<b>3</b>	<b>CLEANING</b> .....	<b>4</b>
<b>4</b>	<b>LIFT ACCESS AND PROCEDURES</b> .....	<b>4</b>
4.1	Cabin Access .....	4
4.2	Cabin operating panel (COP) removed .....	4
4.3	Ceiling removed .....	4
4.4	COP and rear wall removed .....	6
4.5	Load weighing device – Rated load setup .....	6
4.6	Load weighing device – Calibration .....	6
<b>5</b>	<b>SERVICING</b> .....	<b>6</b>
<b>6</b>	<b>CUSTOMER COMMUNICATIONS</b> .....	<b>6</b>
<b>7</b>	<b>TOOLING REQUIREMENT</b> .....	<b>6</b>
<b>8</b>	<b>MAINTENANCE BREAKDOWN</b> .....	<b>7</b>
8.1	Essential requirement / Visual checks .....	7
8.2	Phase 1 .....	7
8.3	Phase 2 .....	8
8.4	Phase 3 .....	8
8.5	Phase 4 .....	8
8.6	5 year check .....	8
8.7	Additional checks .....	8
<b>9</b>	<b>MAINTENANCE INSTRUCTION – ESSENTIAL MAINTENANCE</b> .....	<b>8</b>
9.1	Smoothness of ride .....	9
9.2	Cabin lighting .....	9
9.3	Floor covering .....	9
9.4	Name plate .....	9
9.5	Car fixtures .....	10
9.6	Car walls .....	10
9.7	Floor levels .....	10
9.8	Emergency equipment .....	10
9.9	Safety edges .....	10
9.10	Light Curtains .....	11
9.11	Control panels .....	11
9.12	Door operation .....	11
9.13	Landing door locks and beaks .....	12
9.14	Indicators (DDU's and push buttons etc...) .....	12
9.15	Visual inspection/light clean .....	12
9.16	Hydraulic System .....	12
9.17	Pump Unit .....	13
9.18	Uncontrolled Movement .....	14
9.19	Ram .....	14
9.20	Anti-creep .....	14
<b>10</b>	<b>MAINTENANCE INSTRUCTION – PHASE 1</b> .....	<b>15</b>
10.1	Risk assessment and general lift check .....	15
10.2	Car overload .....	15
10.3	Emergency lowering and manual release .....	15
10.4	Earth bonding, insulation and electrical .....	15
10.5	Pressure relief valve .....	16
<b>11</b>	<b>MAINTENANCE INSTRUCTION – PHASE 2</b> .....	<b>16</b>
11.1	Roof top .....	16
11.2	Ultimate limit switch .....	16
11.3	Encoder and timing belt .....	17
11.4	Guides and fixings .....	17
<b>12</b>	<b>MAINTENANCE INSTRUCTION – PHASE 3</b> .....	<b>18</b>
12.1	Trailing cable and chain .....	18
12.2	Sling and car fixtures .....	18
12.3	Ram support beam .....	19
12.4	Cabin floor .....	19
<b>13</b>	<b>MAINTENANCE INSTRUCTION – PHASE 4</b> .....	<b>19</b>
13.1	Pit clean .....	19

13.2 Thorough clean .....	19
<b>14 5 YEAR MAINTENANCE CHECKS.....</b>	<b>20</b>
14.1 Earth bonding, insulation and electrical visual .....	20
14.2 Oil check and clean .....	20
<b>15 ADDITIONAL CHECKS .....</b>	<b>21</b>
15.1 Autodialer .....	21
15.2 Telephone .....	21
15.3 Intercom .....	21
15.4 Power door operator .....	21
15.5 Fire alarm shut down.....	22
<b>16 APPENDIX A.....</b>	<b>23</b>
16.1 Cabin operating panel (COP) removed.....	23
16.2 Ceiling removed - Important note: persons are not permitted to stand on car roof .....	24
16.3 COP and rear wall removal.....	25
<b>17 APPENDIX B.....</b>	<b>26</b>
17.1 Safety chain switch locations .....	26
<b>18 DOCUMENT HISTORY .....</b>	<b>28</b>

### Figure List

Figure 1 - Valve block .....	13
Figure 2 - Ultimate limit switch .....	17
Figure 3 - Car slider inserts.....	18
Figure 4 - Ram support sliders.....	19
Figure 5 - COP access.....	23
Figure 6 - Ceiling removed.....	24
Figure 7 - COP trim being removed .....	25
Figure 8 - Rear wall being removed.....	25
Figure 9 - Cabin switches.....	26
Figure 10 - Door and call station switches .....	26
Figure 11 - Shaftwork switches and components .....	27

## 1 INTRODUCTION

This maintenance guide is to help provide understanding of the correct maintenance schedule.

Your Platform Lift has been manufactured and installed to comply with the Essential Safety Requirements of the Machinery Directive 2006/42/EC and a correct maintenance schedule will ensure that the lift will be kept in optimum condition.

This schedule has been designed for use by approved engineers/technicians who have completed the recognised training course.

## 2 SAFETY

As stated it is imperative that any work carried out the lift is performed by suitably trained technicians. When completing any component replacement, ensure that the lift is isolated from the mains electrical supply. This can be achieved using the mains isolation, usually situated within a 5m radius of the upper floor entrance.

If there is any doubt that a lift cannot be left in safe condition, then the customer and supervisor are to be consulted, advising that the lift may be removed from service. A report should be included in this procedure advising on the full remedial work. The ultimate decision of continued use rests with the owner, but should the owner ignore the advice to switch off, the branch manager should be informed.

## 3 CLEANING

As part of all maintenance checks to be complete on the lift, there will be a requirement of some level of cleaning. The following shows area of cleaning required and recommended cleaning procedures.

Paint finishes – These should be cleaned with a damp cloth using an aerosol type of furniture polish.

Stainless steel – This should be cleaned with a soft cloth soaked in light oil (“3 in 1” or “Johnson’s baby oil”) and then wiped off with a dry lint-free cloth.

Vinyl skin plate or laminate boards – This should be cleaned with a soft cloth using an aerosol type of furniture polish.

Mirrors or glass – These should be cleaned with a soft cloth and any glass cleaning product.

Note: The inside of the liftwell enclosure can be cleaned only by a competent lift maintenance engineer by using a suitable step ladder located inside the cabin and working through the hinged-down cabin ceiling.

Platform Flooring – This should be cleaned with a damp cloth and a mild detergent. Ensure that excess water is squeezed out prior to cleaning.

## 4 LIFT ACCESS AND PROCEDURES

For the various maintenance checks different levels of lift access will be required. These levels of access are listed below and can be displayed in more detail later within this document.

### 4.1 Cabin Access

Cabin access is the process of entering the lift to ride up and down completing simple routine checks.

### 4.2 Cabin operating panel (COP) removed

Behind the COP lays the load weighing device and the main lift controller. (*16.1 Cabin operating panel (COP) removed, pg 23*).

### 4.3 Ceiling removed

Behind the ceiling lays the cabin lighting and terminal rail for the light curtains. The ceiling must also be removed to access all items within the top of the shaft. **Important note: persons are not permitted to stand on car roof** (*16.2 Ceiling removed - Important note: persons are not permitted to stand on car roof*

- Remove the COP. Using ‘CEILING ACCESS’ key, unlock ceiling panel.

- Pull ceiling downwards to access (suction cups maybe be required to release).
- Swing ceiling downwards until hanging vertically.
- Follow instruction in reverse order to return ceiling to normal state.
- Ensure lock is secure and ball clips in corners are engaged.
- If access is required above the lift car simple remove centre board and top sling brace. There will be no fixings to remove from the centre board.
- ENSURE CEILING DOES NOT TWIST WHEN LOWERING!

#### **4.4 COP and rear wall removed**

To access such items as the ultimate limit switch, door ramps and encoder the whole rear panel must be removed. (16.3 COP and rear wall removal pg 25).

#### **4.5 Load weighing device – Rated load setup**

To complete various tests within the maintenance schedule it is sometimes necessary to alter the rated load setup on the load weighting device. (**Error! Reference source not found. Error! Reference source not found. pgError! Bookmark not defined.**).

#### **4.6 Load weighing device – Calibration**

If for any reason the load weighing device is not working in the correct manner, it may be necessary to recalibrate the unit. Refer to the Midlift SLplus Electrical wiring manual, Appendix I, for set up procedure.

### **5 SERVICING**

There will be 4 annual services consisting of various maintenance checks. Full instructions for all checks can be found within this document including diagrams where necessary. It has been assumed that all persons carrying out these checks will have prior servicing knowledge and be comfortable with basic lift maintenance.

The annual schedule is split into 2 areas. These will be essential checks (checks that must be complete at every visit) and phase checks (checks complete annually). These phases are broken down into 4.

To ensure that the maintenance visit remains as efficient as possible the 4 phases will consist of the 4 different areas of lift access. These phases have been clearly marked on the log card for ease of use by the engineer.

In addition to the essential and phase checks, it will be necessary for the engineer to complete additional supplementary checks. These will become apparent due to added options on the lift and checks that fall out of the annual category (more than 1 year per check).

### **6 CUSTOMER COMMUNICATIONS**

It is very important to talk to the customer about the lift, whilst not being an expert in the field, on occasions they may know about their specific lift better than the engineers. Listen to them and address the points raised or at least allay their fears in a sensitive way. It is rare that the passengers complain unnecessarily; however it is even rarer that they will describe it to you in engineering terms.

Although the service of the lift is within the responsibility of the service branch and engineer in question, the overall responsibility of the lift lies with the customer. Thus taking the lift out of service will be the final decision of the customer. For this reason, where appropriate the engineer will have the responsibility to convince the customer of the necessity to take the lift out of service.

### **7 TOOLING REQUIREMENT**

- General fitters tools plus the following more specialised items,
- Feeler gauge
- Torque wrench (capable of 5.5 Nm)
- Multi-meter
- Mega meter

- Labelled electrical shorting wires
- XLplus/ SLplus maintenance keys
- Secondary safety brackets (6203018 x 2)

## **8 MAINTENANCE BREAKDOWN**

### **8.1 Essential requirement / Visual checks**

- Smoothness of ride (*pg 9*)
- Cabin lighting (*pg 9*)
- Floor covering (*pg 9*)
- Name plate (*pg 9*)
- Car fixtures (*pg 10*)
- Car walls (*pg 10*)
- Floor levels (*pg 10*)
- Emergency equipment (*pg 10*)
- Safety edges (*pg 10*)
- Light Curtains (*pg 11*)
- Control panels (*pg 11*)
- Door operation (*pg 11*)
- Landing door locks and beaks (*pg 12*)
- Indicators, DDU's and push buttons etc... (*pg 12*)
- Visual inspection/light clean (*pg 12*)
- Pump unit (*pg 13*)
- Uncontrolled movement (*pg 14*)
- Ram (*pg 14*)

### **8.2 Phase 1**

- a) Risk assessment (*pg 15*)
- b) Car overload (*pg 15*)
- c) Manual release (*pg 15*)
- d) Earth bonding, insulation and electrical visual check (*pg 15*)

### **8.3 Phase 2**

- e) Roof top (pg 16)
- f) Ultimate limit (pg 16)
- g) Encoder and timing belt (pg 17)
- h) Guide and fixings (pg 17)

### **8.4 Phase 3**

- i) Trailing cable and chain (pg **Error! Bookmark not defined.**)
- j) Sling and car fixtures (pg 18)
- k) Ram support beam (pg 19)
- l) Cabin Floor (pg 19)

### **8.5 Phase 4**

- m) Pit clean (pg 19)
- n) Thorough clean (pg 19)

### **8.6 5 year check**

- o) Earth bonding, insulation and electrical visual check (pg 20)
- p) Oil check and clean

### **8.7 Additional checks**

- Autodialer (pg 21)
- Telephone (pg 21)
- Intercom (pg 21)
- Power door operator (pg 21)
- Fire alarm shut (pg 22)
- UPS (pg **Error! Bookmark not defined.**)

## **9 MAINTENANCE INSTRUCTION – ESSENTIAL MAINTENANCE**

As discussed earlier within this document, any engineer completing the service can be assumed to have had the relevant training and have a suitable knowledge of lift technology. Where further instruction is required, this will be contained in this section of the guide.

As part of the maintenance guide a detailed instruction to of the required standard will be given, if for any reason an area of the lift falls short of this required standard, this part of the guide will also state clearly the corrective action expected of the engineer.



### **9.1 Smoothness of ride**

- Required standard

Whilst travelling to top floor and back there must be no knocks, scrapes, groans, vibrations etc... There is to be minimum vibration with no jolts or juddering and a smooth speed change over.

- Required action

The cause of any unusual noise and vibration must be investigated and if not cured immediately, then reported to a supervisor with details of suggested remedial work.

A poor quality ride may also be down to the quality of guides and this can be solved by dressing the guides.

### **9.2 Cabin lighting**

- Required standard

There must be no sign of damage, the lighting should be equal, all retaining clips should be in place (where used) and diffusers (where used) to be free from cracks or damage.

If the lift is not in use, the cabin lights should switch off after approximately 3 minutes.

- Required action

If the required components are to hand and the work to restore lighting is possible, remedial work is to be completed and supervisor to be informed. If repair work is not possible and the lift is in an unsafe working condition the customer and supervisor must be informed of the removal from service until the required corrective work is completed.

### **9.3 Floor covering**

- Required standard

Floor covering to be secure, flat and without distortion and with no tripping hazards.

- Required action

If a tripping hazard cannot be made safe, then consult customer and report to supervisor that the lift may have to be removed from service, with details of suggested remedial work.

Note: more injuries are caused by tripping than lift component failure.

### **9.4 Name plate**

- Required standard

Name plate must be securely fixed and clearly show place of manufacture, CE mark, Lift job number and product name (Midilift).

Also clearly within the cabin should be the lifts working load. For a standard SL Plus lift, this will be 400kg. If in doubt of the working load ask.

- Required action

It is legally required to have above details indicated. If this is not in place consult with customer and supervisor about the possibility of taking the lift out of service.

## **9.5 Car fixtures**

- Required standard

The security of handrails and mirrors should be in good condition with no sharp edges.

- Required action

Make safe any condition likely to cause harm.

## **9.6 Car walls**

- Required standard

All walls should be secure and free from any damage. Pay particular attention to glass panels to check for any cracks or scratches.

- Required action

If there are any gaps in the car walls or damage to the walls that cannot be repaired immediately, then consult customer and report to supervisor that the lift may have to be removed from service, with details of suggested remedial work.

## **9.7 Floor levels**

- Required standard

As part of EN81-41 2009, the lift must stop within  $\pm 10$ mm of floor level.

- Required action

If floor levels are not within the required tolerance, remedial action must be taken. If floor levels cannot be attained, then an immediate report to supervisor is required, with suggested remedial works. If floor levels required cannot be achieved due to older or inadequate equipment, make note on report.

To reset the floor levels reference the SLplus wiring diagram usually contained within the trailer connection box.

## **9.8 Emergency equipment**

- Required standard

Alarm must work and be audible to others with lift electrical supply off. Emergency lighting must work when electrical supply to the lift is isolated. This can be achieved using the lift isolator switch situated within a 5m radius of the upper floor.

All stop switches must work correctly. All stop switches are positioned within the safety chain and when operated will remove all calls and prevent the lift from moving. The four stop switches in question are in the cabin, the pit, the cabin roof and the landing control panel itself.

- Required action

It is unsafe to leave a lift with no form of emergency communication. If the alarm device cannot be made to work, then consult customer and report to supervisor that lift may have to be removed from service, with details of suggested remedial work.

If any of the stop switches are not operational perform any remedial work necessary. If still not operational inform the customer and supplier that the lift must be taken out of service.

## **9.9 Safety edges**

- Required standard

Mechanical safety edges are installed on the SL Plus; these are situated at the top and bottom of each door aperture on the cabin. Activation of any of the mechanical safety edges must bring the lift to an immediate stop and drop the lift call. Every safety edge must move freely and spring-return to be flush with the cabin floor or roof. Every safety edge must be free of debris and must not be in contact with any other part of the lift (for example, the sling/cabin corners near the end of the safety edges).

- Required action

Any debris must be removed, and free movement of every safety edge must be verified. Any safety edge malfunction (e.g. lift continues to move, call is not dropped or safety edge binds) requires the lift to be taken out of service immediately and reported to the customer and supervisor with recommendations for remedial action.

### **9.10 Light Curtains**

- Required standard

The light curtains are situated at the sides of each door aperture on the cabin. Operation of the light curtain must bring the lift to a controlled stop and remove the lift call. The voice enunciator should inform the user 'Light ray activated, please keep clear of the entrances'.

- Required action

Light curtain failure requires the lift to be taken out of service immediately and report to the customer and supervisor with recommendations for remedial action. If an error is detected within the voice enunciator, inform the customer and supervisor of any remedial work required and the recommendation of the lift to be taken out of service.

### **9.11 Control panels**

- Required Standard

There are two areas to be checked, both the control unit behind the COP (*4.2 Cabin operating panel (COP) removed, pg 4*) and the junction box next to the ram at ground floor level. Contactors and relays when energised should not buzz or be excessively noisy. There must be no indications of excess contact wear, dust underneath relay or flash markings around contactors. Fuse holders must be intact with no damage. Check fuse rating and remove any discarded/used components or shorting wires. All PCB connections must be of sound nature and there must be no visible damage to the board.

- Required action

If a new contactor, PCB or relay is required, record manufacturer, type number, coil voltage, contact arrangement and inform supervisor immediately. If new fuses required, record rating and physical dimension.

If it is not possible to leave the lift in a safe working order, inform the customer and supervisor and advise the lift should be taken out of service.

### **9.12 Door operation**

- Required standard

The door operation is to be as smooth and as quiet as possible. There must be no vibration, juddering or rumbling at any stage of the door cycle. Speed changes in door travel are to be smooth and door closers must be able to close doors from any stopped position.

- Required action

Adjust doors and door closers as necessary to achieve correct operation. This will include altering the speed settings to ensure door closes smoothly and with the correct speed. If there is excessive damage to the door or door closer which are not immediately resolvable make note of required part numbers and inform customer and supervisor on possible lift shut down.

---

### **9.13 Landing door locks and beaks**

- Required standard

On the first 2-3 journeys of the lift ensure that on reaching floor level the required door opens easily and there is no catching or rubbing of the lock. Once the door has closed ensure the lock comes into operation smoothly and ensure each of the required doors locks correctly. Once outside the lift ensure that no doors are able to be opened when lift is not at required floor level. This test **MUST** be complete at every door as this is a severe safety risk. Ensure that when doors are not closed (i.e. door beaks are not engaged), lift operation is not possible. If the lift is in motion, the opening of the door (with door release key) should stop the lift.

- Required action

If there is no smooth operation of any lock, examine thoroughly to check there is any remedial work that can be carried out (application of lubrication and removal of debris). If there is any issue with lift, lock or beak operation that cannot be resolved immediately, the lift **MUST** be taken out of service immediately. Record component manufacture and part number and inform customer and supervisor.

### **9.14 Indicators (DDU's and push buttons etc...)**

- Required standard

Ensure that all call station and control panel push button halos work correctly. These should light up when a call is put in and stay lit until floor level is reached or call is removed.

Regarding DDU's, all LED's within the dot matrix should be operational. Floor level should also be indicated at the required floor level and when the lift is operational an arrow should indicate lift direction.

- Required action

If it is not possible to fix any of the faulty components, then make a note of type and manufacture and inform supervisor on required remedial work.

### **9.15 Visual inspection/light clean**

- Required standard

It is essential that all areas are visually inspected. This is best done whilst carrying out a light clean. This will also reduce the burden of the thorough clean (*13.1 Pit clean*

- Required standard

Before entering the pit, ensure the pit stop is activated and the pit prop is positioned. Ensure pit is clear from dust and debris, ensuring pit stop is de-activated on completion of clean. Thorough clean, *pg 19*).

- Required action

Any fault observed is to be rectified. Always repair, adjust, lubricate and clean as a first option. If it is not possible to rectify the fault, inform the customer and supervisor about remedial work and possible lift shut down.

### **9.16 Hydraulic System**

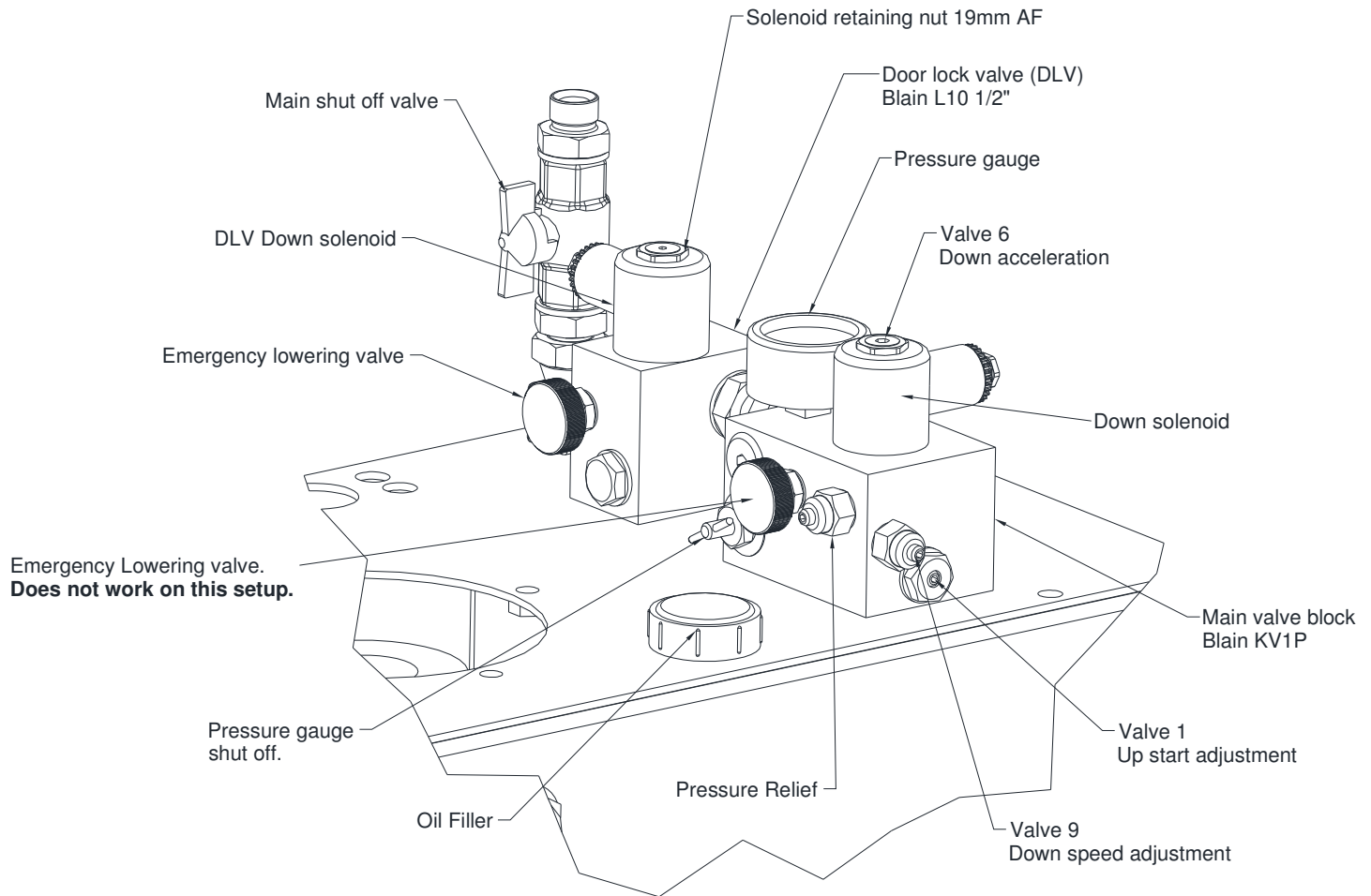
- Required standard

Check the pump unit, hose and ram for any signs of damage or leaks.

- Required action

If remedial work cannot be completed, inform the customer and supervisor on future work required and that the lift should be taken out of service.

### 9.17 Pump Unit.



**Figure 1 - Valve block**

- Required standard

Check that the pump unit is working correctly, with no signs of damage.

The following items also need to be checked:

1. Oil level. With the lift at ground floor level, the oil level should be so that it appears in the site glass.
2. The unit lid should require a key to open and close without one.
3. Emergency lowering. Ensure that this functions correctly and that the down speed does not exceed 0.15m/s.
4. Down speed. Ensure that the lift does not exceed 0.15m/s with rated load.
5. Pressure relief valve. Check that the setting is correct by slowly turning the main shut off valve with the lift going up. Reopen within 4 seconds to avoid the encoder movement fault FA. If it occurs, lift will need to be reset.
6. Soft start. Check operation of the soft start and stop.

- Required action

If oil level is low, top up with HVI 32 oil.

The lift down speed can be adjusted with a 3mm hexagon key by turning Valve 9 after releasing the locking screw. Very little movement will be required. Clockwise reduces the speed, anti-clockwise increases the speed. Retighten the locking screw. Adjustments should be made with rated load.

The up start can be adjusted by turning Valve 1. Clockwise shortens the delay, anticlockwise lengthens it.

The down soft start can be adjusted by turning valve 6 with a 3mm hexagon key. Clockwise provides a softer start and anti-clockwise a harder start. **Note: Setting a very soft start can result in the lift failing to lower with colder oil!**

If remedial work cannot be completed, inform the customer and supervisor on future work required and that the lift should be taken out of service.

### **9.18 Uncontrolled Movement**

- Required standard

Ensure that the lift stops and remains stationary when required to do so. This lift is fitted with an extra down valve to prevent uncontrolled movement due a fault with the main valve.

To check the operation, remove the two 19mm AF lock nuts above the solenoids. With the lift descending, briefly lift the solenoid off the main valve block. The lift should stop immediately. Quickly replace the solenoid so that the lift descends and repeat with the DLV solenoid. Again the lift should stop immediately.

**Note: if the lift is stationary for more than 4 seconds during a down call an encoder fault FA will occur. Do not leave the solenoids off the valve for more than a few seconds as they can overheat and become damaged.**

- Required action

Any failure of the valves must be investigated and corrected.

If it is not possible to leave the lift in a safe working order, inform the customer and supervisor and advise the lift should be taken out of service.

### **9.19 Ram**

- Required Standard

Ensure that the ram is synchronised. Check for leaks and that the oil collection bottle is not full. A small amount of oil on the ram is expected, but a large amount may indicate that the seals are wearing.

- required action

The ram can be re-synchronised by fully retracting it. With the lift at the ground floor, isolate the lift. Remove the COP and ceiling. Remove the retaining bolt at the top of the ram. With the emergency lowering valve opened, the ram can be sections can be pulled down fully. When the ram is fully closed, turn the power back on. The lift will reset by raising and lowering again. Ensure that the ram top has fully engaged back in its cup and replace the fixing bolt.

If the ram fails to synchronise properly, or fall out of sync after a few journeys, this may indicate that the ram internal seals or check valves are leaking and may need replacing.

### **9.20 Anti-creep.**

- Required Standard

Ensure that the anti-creep system maintains a floor level. With the lift at top or mid floor level, operate the manual lowering valve on the pump unit (Figure 1 - Valve block, pg13). The pump should drive the lift up to floor level to +/- 20mm.

- required action

If it is not possible to leave the lift in a safe working order, inform the customer and supervisor and advise the lift should be taken out of service.

---

## **10 MAINTENANCE INSTRUCTION – PHASE 1**

### **10.1 Risk assessment and general lift check**

Ensure assessment is still relevant, if hazard has been addressed or new hazard has been identified record as such on assessment. Record that assessment has been reviewed by dating and signing.

As in some instances, the finishing of the lift build may not tie in exactly with the lift handover date. For this reason it is essential that a general lift check is complete as these lifts may have been sat for prolonged periods of time in undesirable conditions.

### **10.2 Car overload**

- Required standard

The first item to check will be to check the load weighing device is set up correctly. Firstly remove the COP (4.2 *Cabin operating panel (COP) removed, pg 4*) and check the weight shown when the car is empty and when there is a known weight in the car. The load weighing controller will be positioned on top of the cabin controller.

To test the car overload is functional; Remove the wire in OL1 from plug PL18, 2nd left on the bottom of the main control board. The overload alarm should start immediately. Replace the wire to return to normal service.

- Required action

If the load weighing device is not functional or the device is not calibrated correctly, assess if there is any immediate remedial solution (4.6 *Load weighing device – Calibration, pg 6*). If not, then record manufacturer and part number and inform the supervisor and customer of remedial action and that the lift MUST be taken out of service immediately.

### **10.3 Emergency lowering and manual release**

- Required standard

Check that the manual lowering procedure label is fitted to the pump unit. With the power off, check the operation of the emergency lowering valve. The lift must stop immediately when the valve is released and the down speed must not exceed 0.15m/second.

Check that the lower door can be opened with the emergency release key.

- Required action

If the lowering and release system is not working correctly and any immediate remedial work cannot be completed, inform the customer and supervisor on future work required and that the lift should be taken out of service.

### **10.4 Earth bonding, insulation and electrical**

- Required standard

Ensure that all earth bonds are present and that any terminations are secure.

- Required action

If a lift fails to be sufficiently earthed, this will result in a substantial risk to the user. If immediate earth bonding cannot be achieved then the lift must be taken out of service and the customer and supervisor is to be informed on the future remedial work.

## 10.5 Pressure relief valve

---

- Required standard

Check the operation of the pressure relief valve by closing the shut off valve slowly during an up travel. Open again within 4 seconds to prevent an encoder movement fault. The setting should be approximately 47Bar for a 3 stage ram and 53Bar for a 2 stage ram.

The pressure relief valve can be adjusted by turning the screw clockwise to increase the setting and anticlockwise to reduce the setting. Always operate the manual lowering valve briefly after adjustment (9.17, Pump Unit.,pg13).

- Required action

Any failure of the valve must be investigated and corrected.

If it is not possible to leave the lift in a safe working order, inform the customer and supervisor and advise the lift should be taken out of service.

## 11 MAINTENANCE INSTRUCTION – PHASE 2

### 11.1 Roof top

- Required standard

**Important note: persons are not permitted to stand on car roof.** On access of the ceiling (4.3 Ceiling removed, pg 4), check all light fittings and check any loose electrical terminations or signs of overheating. The engineer must be able to access roof top and replace roof top with ease and ceiling must be secure once returned to normal operating position.

- Required action

If any terminals are loose, re tighten and assess the cause. If there is any damage to any component, record manufacturer and part number and inform supervisor and customer of any remedial work required. If there is any issue with ceiling access, carry out any remedial work required and inform supervisor and customer if any further remedial work is required.

### 11.2 Ultimate limit switch

- Required standard

The ultimate limit is located on the lift sling. Call the lift up to upper landing using upper landing call station and on arrival of lift remove COP and rear walls (4.4 COP and rear wall removed, pg 6).

With lift at ground floor, set switch 4 on the Learn Mode Interface located on the sling controller to 'Learn Mode' (up position) and wait for the reset routine. Run the lift to the top floor by pressing button 1 (constant pressure). Continue to run up until the ultimate limit is tripped. Short out between ?? and ??. Run the lift down to floor level and push the reset lever on the ultimate limit. Exit out of learn mode by switching off switch 4. Do not press the RECORD button as this will require the floor levels to be reset. Refer to Appendix C of the Midi-SLplus electrical manual for the learn mode procedure.

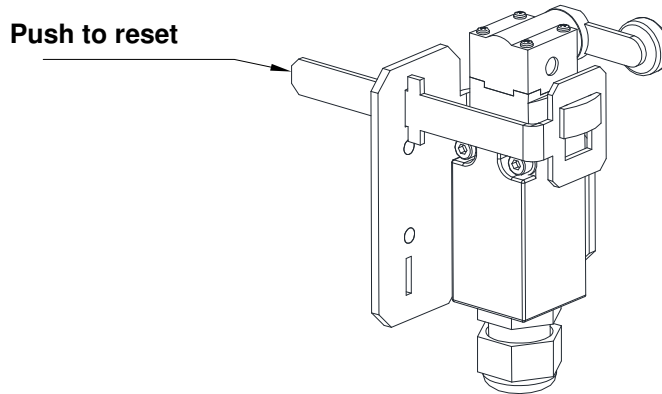
- Required action

If lift comes to a halt before the ultimate limit stops the lift, look the following areas.

- If the switch pin is activating but not cutting power to the motor, check wiring and carry out any immediate remedial work.



If the ultimate limit switch is still not functional record manufacturer and part number and inform customer and supervisor on further remedial work and recommend on lift shut down.



**Figure 2 - Ultimate limit switch**

### **11.3 Encoder and timing belt**

- Required standard

The general function of the encoder and timing belt will have been assessed in the checking of the floor level. If floor levelling is correct, check all fixings are secure and belt is running smoothly within pulleys.

Ensure that timing belt brackets are fixed securely and the encoder cable is clear from moving parts and free from damage.

- Required action

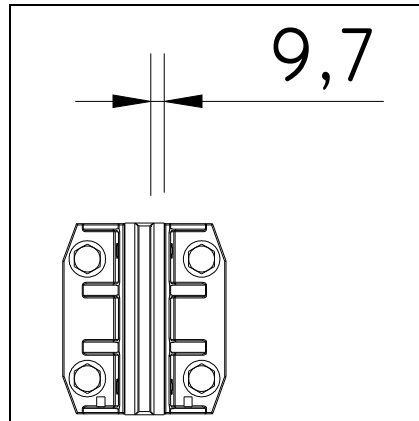
Tighten any loose fixings and carry out any immediate repair work. If there is any excessive damage to any component record manufacturer and part number and inform customer and supervisor on further remedial work.

### **11.4 Guides and fixings**

- Required standard

With COP and rear wall removed (*4.4 COP and rear wall removed, pg 6*), travel the whole length of the shaft checking all counterweight and car guide fixings are secure. Check for any excessive damage to guides and that all joints are of quality nature.

With the rear wall removed check the thickness of the slider inserts connecting the sling to the guides (Figure 3 - Car slider inserts). The correct thickness should be 9.7mm. The minimum thickness of this insert should be 6.7mm (a reduction of 3.0mm).



**Figure 3 - Car slider inserts**

- Required action

Tighten any loose fixings and replace where necessary. Investigate cause for missing fixings or excessive wear and make note. If there is any excessive damage to any guide, inform customer and supervisor on remedial work and possibility that lift will need to be taken out of service.

Dress guides where necessary.

If for any reason the slider inserts are below the minimum 6.7mm then new inserts must be ordered and replaced when possible. Inform the customer and supervisor on the possibility of taking the lift out of service when looking at lift cabin clearances.

## **12 MAINTENANCE INSTRUCTION – PHASE 3**

### **12.1 Trailing cable and chain**

- Required standard

Chains and cable must have no twisting or kinks and all anchorage points must be secure. There must be no surface wear, cracks or splits on any point of the cable and they must run clear of all fixed parts of the lift installation. Access to the cables can be made through the rear wall of the cabin (*4.4 COP and rear wall removed, pg 6*)

- Trailing cable and chain – Required action

If new cables or chains are required make note of type and length and inform customer and supervisor on remedial work.

### **12.2 Sling and car fixtures**

- Required standard

With COP and rear wall removed (*4.4 COP and rear wall removed, pg 6*), check all fixings are in place and secure. Ensure all contact washers are in places and locking nuts are in place at the bottom of the cabin uprights. Check for damage or excessive wear to sling.

- Required action

Tighten any loose fixings, replace where necessary and investigate cause for missing fixings. If it is not possible to replace missing fixings or there is any excessive damage to the sling, inform customer and supervisor on remedial work and possibility that lift will need to be taken out of service.

### 12.3 Ram support beam

- Required standard

Check the support beam sliders (Figure 4 - Ram support sliders). The original thickness of the slider should be 4.00 and this should not be less than 2.0mm.

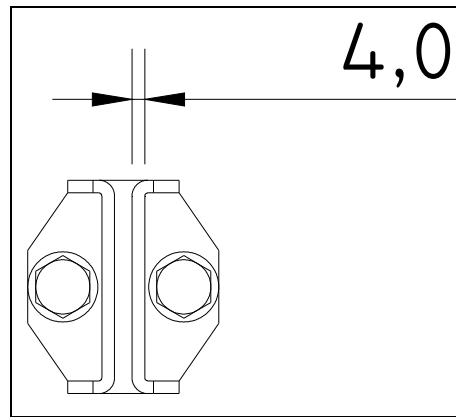


Figure 4 - Ram support sliders

- Required action

Tighten any loose fixings and replace where necessary. Investigate cause for missing fixings and make note. If unsolvable inform customer and supervisor on remedial work and possibility that lift will need to be taken out of service.

### 12.4 Cabin floor

- Required standard

Bring the cabin to approximately 2000mm above floor level and open door using lock release key. On entering the cabin press the pit stop switch to stop lift car movement. Remove the fixing screws from the underside of floors. Exit pit and move cabin down to 300mm above floor level. Remove cabin floor from car and check component integrity. Flooring should be free from damp patches, cracks or excessive wear.

- Required action

If any damage is identified cabin floor must be replaced. Inform customer and supervisor on remedial access and advise that lift should be taken out of service.

## 13 MAINTENANCE INSTRUCTION – PHASE 4

### 13.1 Pit clean

- Required standard

Before entering the pit, ensure the pit stop is activated and the pit prop is positioned. Ensure pit is clear from dust and debris, ensuring pit stop is de-activated on completion of clean.

### 13.2 Thorough clean

- Required standard

Within the thorough clean it gives the engineer both a perfect chance to give everything within the lift a visual inspection and also visually bring the lift up to the required standard.

## 14 5 YEAR MAINTENANCE CHECKS

### 14.1 Earth bonding, insulation and electrical visual

- Required standard

Ensure lift is first isolated and then check that metalwork enclosing live components, lift framework, lift carriage and cabin metalwork is earth bonded to the main earthing terminal by earth protective conductors and of a value not greater than **0.5Ω**.

Power circuits (select 500v test on meter). Turn off landing control station RCD. Test insulation to earth from both the L & N terminals on the RCD 'supply' side. **Value should be greater than 5MΩ?**

Power circuits (select 500V test on meter). Turn off carriage mains isolation switch & unplug PL26 from the trailer PCB. Test insulation to earth from both L & N terminals on the disconnected plug. **Value should be greater than 5MΩ?**

Check to see if RCD is present and operational and observe if the mains and control circuit voltage are within the required tolerance (Mains  $240 \pm 14.5V$ , control circuit  $27 \pm 3Vdc$ ).

- Required action

If a lift fails to be sufficiently earthed or safety insulated, this will result in a substantial risk to the user. If immediate earth bonding cannot be achieved then the lift must be taken out of service and the customer and supervisor is to be informed on the future remedial work.

Where there is a discrepancy in voltage recordings, an investigation must be complete on probable cause. Dependant on whether a solution can be found, it may be advised that the lift should be taken out of service. The customer and supervisor should be informed of future remedial work.

If a new RCD or any other electrical component is required, record manufacturer, type number and inform customer and supervisor immediately.

### 14.2 Oil check and clean

- Required standard

Check the condition of the oil, such as clouding of the oil, darker appearance than at time of filling, contaminants and sediments in the oil reservoir. Check the filters in the valve block as this can give a good indication of contamination.

- Required action

Poor oil condition or contaminated oil should be replaced. Clean out the reservoir and hydraulic system and refill with HVI 32 oil.

## **15 ADDITIONAL CHECKS**

### **15.1 Autodialer**

- Required standard

The autodialer must dial out correctly, and both the microphone and the speaker must be clear to the user and the operator. Before testing the autodialer, acquire the programmed number and inform the operator about the following test.

If autodialer is installed with induction loop, perform all the necessary tests to ensure system is working correctly.

- Required action

Carry out any immediate remedial work required, wiring or re-programming the unit. Access can be gained through the COP (*4.2 Cabin operating panel (COP) removed, pg 4*). If further work is required, inform supervisor and customer and record any manufacturer details and part numbers necessary.

### **15.2 Telephone**

- Required standard

The telephone must be free from damage and clear at both ends of the line.

- Required action

Carry out any immediate remedial work required, wiring or re-programming the unit. Access can be gained through the COP (*4.2 Cabin operating panel (COP) removed, pg 4*). If further work is required, inform supervisor and customer and record any manufacturer details and part numbers necessary

### **15.3 Intercom**

- Required standard

The intercom must connect correctly, and both the microphone and the speaker must be clear to the user and the operator. Before testing the intercom, inform operator of the subsequent test.

- Required action

Carry out any immediate remedial work required. Access can be gained through the COP (*4.2 Cabin operating panel (COP) removed, pg 4*). If further work is required, inform supervisor and customer and record any manufacturer details and part numbers necessary

### **15.4 Power door operator**

- Required standard

The door operation is to be as smooth and as quiet as possible. There must be no vibration, juddering or rumbling at any stage of the door cycle. Doors are to come to halt at open and closed points quietly and not slam into uprights. Speed changes in door travel are to be smooth and happen at the correct part of the door travel.

- Required action

Adjust doors and door closers as necessary to achieve correct operation. This will include altering the speed settings to ensure door closes smoothly and with the correct speed.

If there is excessive damage to the door or door closer which are not immediately resolvable make note of required part numbers and inform customer and supervisor on possible lift shut down.

Details on the operator setup can be found in the electrical manual, this should be stored in the trailer connection box. (Figure 11 - Shaftwork switches and components, **Error! Reference source not found.** pg27).

### **15.5 Fire alarm shut down**

- Required standard

If selected this option will ensure the lift is brought down to ground floor on the input of the building fire alarm. Once at ground the lift should announce that the user can exit the lift using the ground floor button. At this point the only function still effective will be the operation of the ground floor button situated in the cabin.

- Required action

If for any reason this function does not work as described, carry out any immediate remedial or inform the supervisor and customer on any future work required.

## 16 APPENDIX A

### 16.1 Cabin operating panel (COP) removed

- Using 'COP ACCESS' key, unlock control panel.
- Pull panel towards user.
- Lift panel off pivot bar to remove being careful not to damage controller or cables.
- Follow instruction in reverse order to return control panel to normal state.
- Ensure lock is secure and cables are free when replacing panel.

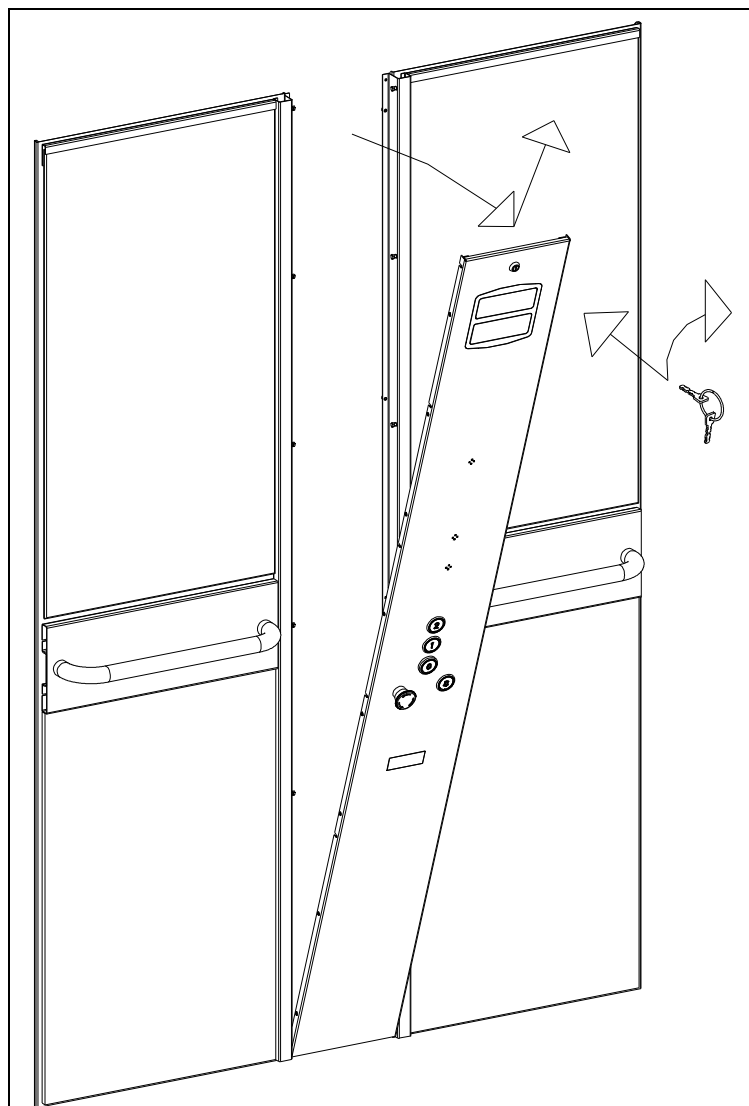


Figure 5 - COP access

## 16.2 Ceiling removed - Important note: persons are not permitted to stand on car roof

- Remove the COP. Using 'CEILING ACCESS' key, unlock ceiling panel.
- Pull ceiling downwards to access (suction cups maybe be required to release).
- Swing ceiling downwards until hanging vertically.
- Follow instruction in reverse order to return ceiling to normal state.
- Ensure lock is secure and ball clips in corners are engaged.
- If access is required above the lift car simple remove centre board and top sling brace. There will be no fixings to remove from the centre board.
- ENSURE CEILING DOES NOT TWIST WHEN LOWERING!

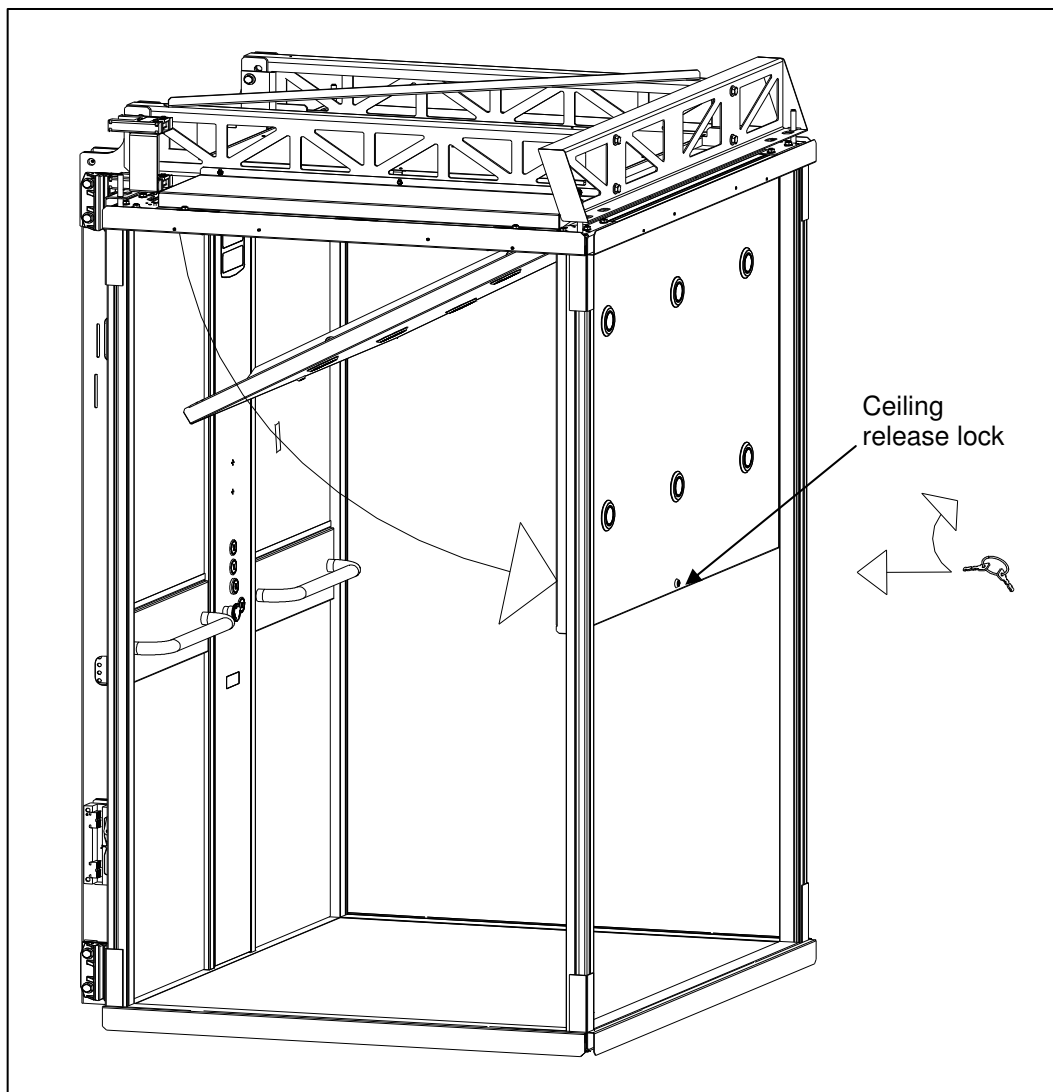


Figure 6 - Ceiling removed



### 16.3 COP and rear wall removal

- To access behind the rear wall, firstly the COP must be removed (4.2 Cabin operating panel (COP) removed, pg 4)
- Once removed the COP trim can be taken out (**Error! Reference source not found.**). Fixings on the trim's can easily be accessed.
- Using a suitable rated set of suction cups, lift the mirror upwards and remove. The weight of the individual mirror is approximately 7kg.
- Remove upper mirror channel.
- In the last stage the whole wall can be taken out in one assembly. Shown below is a wall from a custom cabin (wallboard, dado rail and handrail).
- Lift the wall upward and out of the aluminium extrusion.
- Pull wall assembly towards user and drop down out of top aluminium extrusion.
- To reassemble wall and COP reverse instruction.

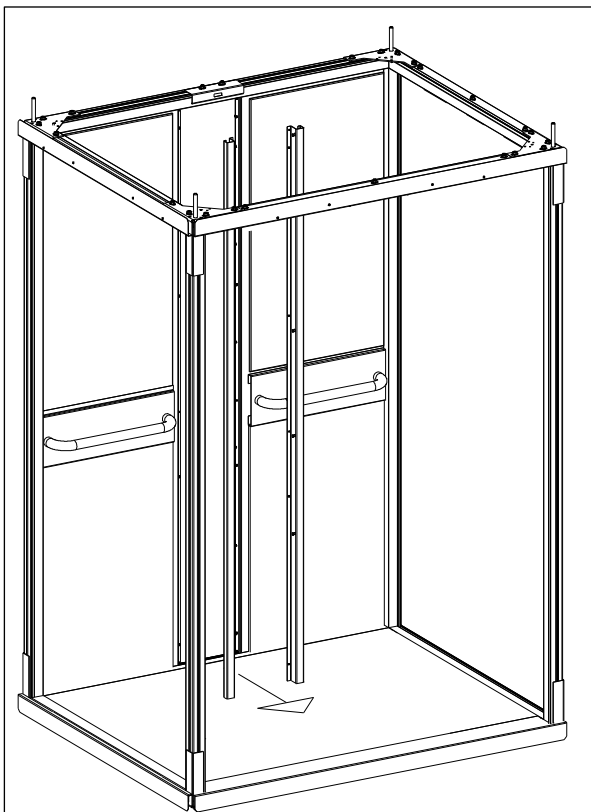


Figure 7 - COP trim being removed

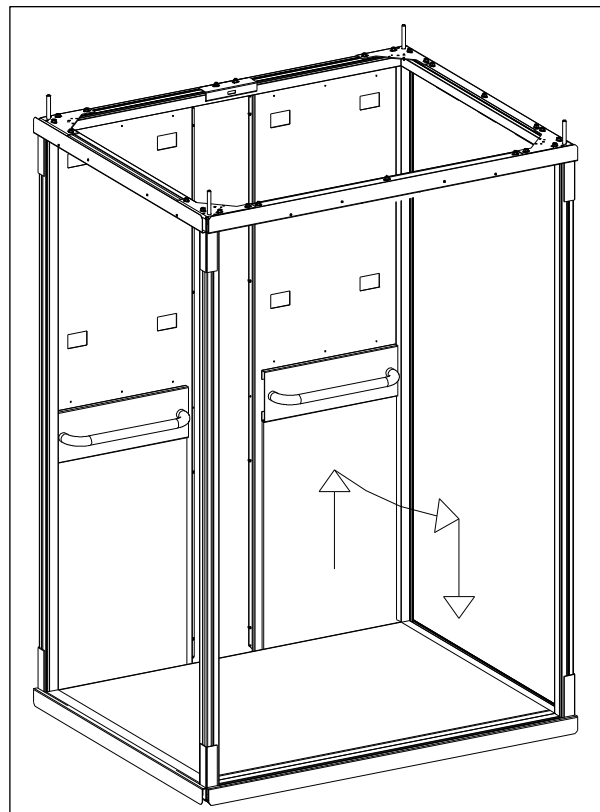


Figure 8 - Rear wall being removed

## 17 APPENDIX B

### 17.1 Safety chain switch locations

G1	Shutdown keyswitch	Main entrance landing station
G2	Pit stop and pit prop switches	Mounted on the base plate assembly (pit)
G3	Ultimate limit switch	Mounted on the outside of one sling upright
G4	Carriage stop switch	Mounted on the COP within the cabin
G5	Landing door beak contacts	Between the door and frame at each landing
G6	Solenoid lock switches	Mounted on each solenoid lock (at each landing)
G7	Solenoid feed monitor	G7 terminal can be found on carriage control PCB
G7A	Anti-creep relay	Located in the trailer connection box
G7B	Cabin floor safety edge	Mounted on the entrance side of the floor assembly
G7C	Cabin roof safety edge	Mounted on the entrance side of the roof assembly
G7D	Ceiling beak contacts	Mounted on the lock side of the ceiling
G8	Ceiling safety switch	Mounted on the slam side of the ceiling assembly

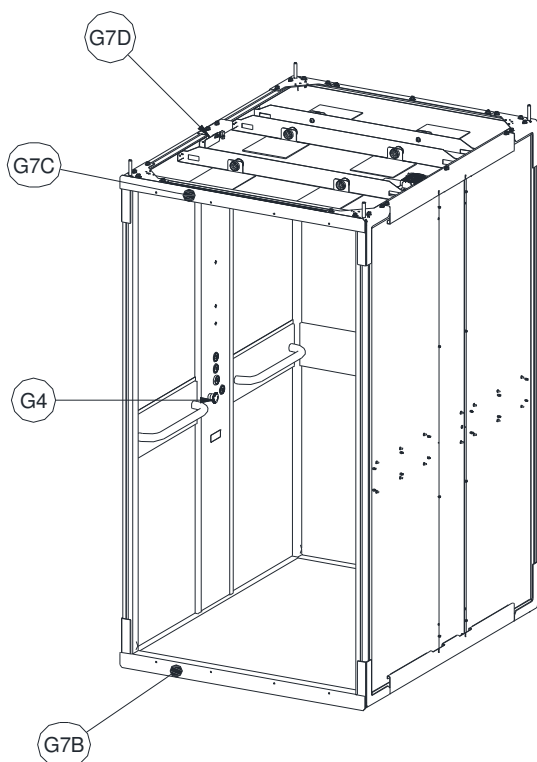


Figure 9 - Cabin switches

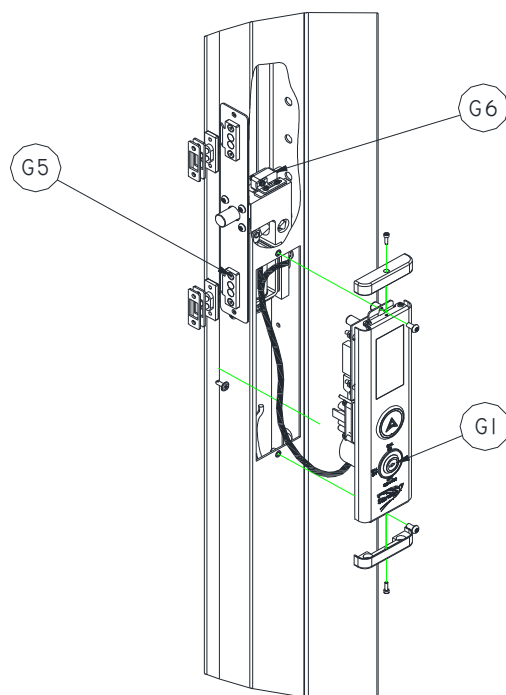
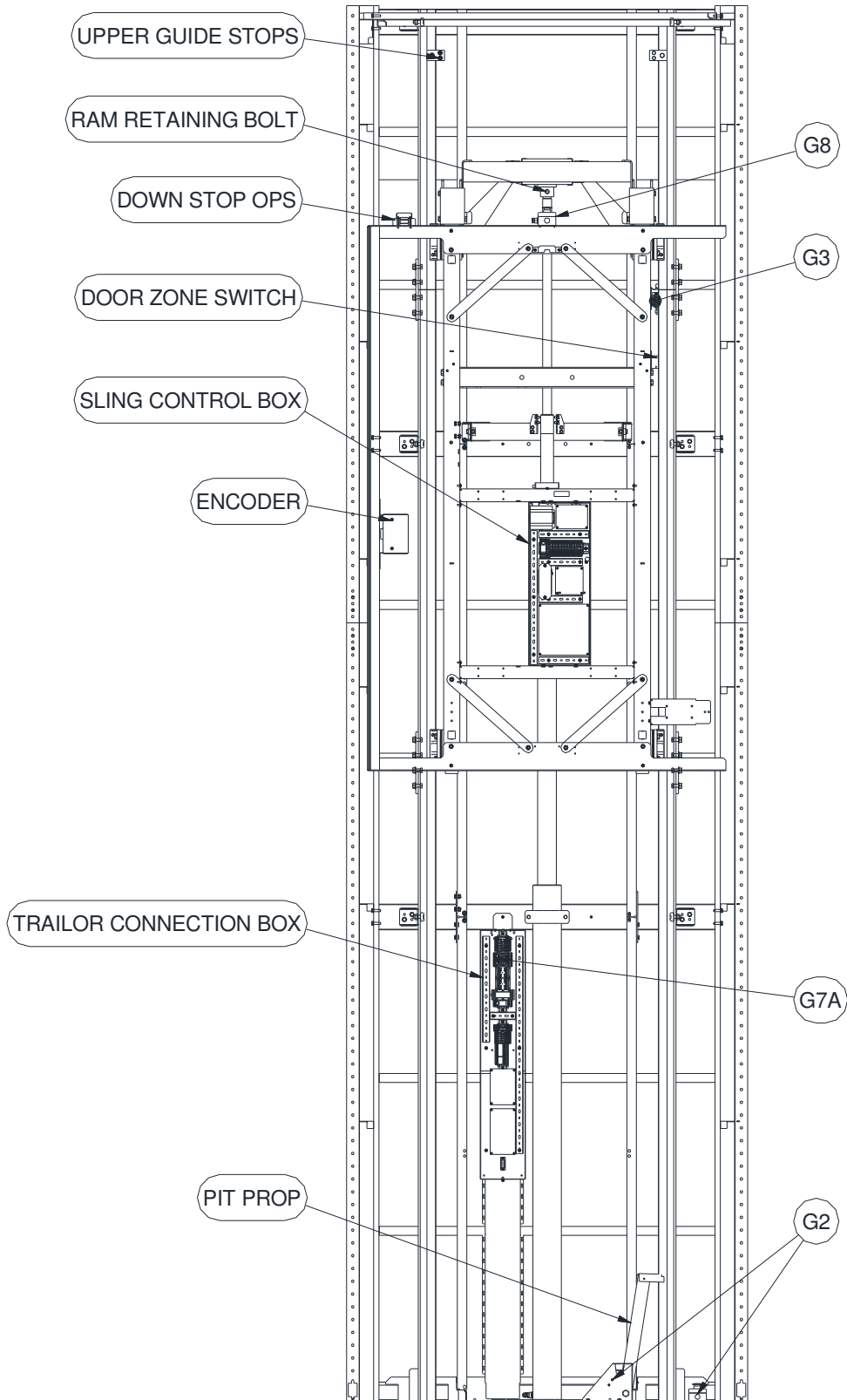


Figure 10 - Door and call station switches



***Shaftwork switches and components***

**Figure 11 - Shaftwork switches and components**

## **18 DOCUMENT HISTORY**

<b>Issue</b>	<b>Name</b>	<b>Changes</b>	<b>Date</b>
Issue 3	R Christopher	Update to mechanical safety edge required standards and actions. Document history section added.	12 Feb 2021