AVANTI SERVICE LIFT

Model: OCTOPUS L95 HD Service Lift

User manual

Original instructions

CERTIFICATE

EC Type Examination

EC-Directive 2006/42/EC, Article 12, Section 3b
Machinery

Number of registration: 01/205/0833F/19

Certification body for machinery NB0035
at TÜV Rheinland Industrie Service GmbH
herewith confirms for the company

AVANTI WIND SYSTEMS TECHNOLOGY, S.L.
Calle Angeles (Los), Num. 88
Pol. Industrial Centrovia
50196 Muela (La) - (Zaragosa)
Spain

the close conformity of the product

Service lift inside wind turbine systems

Technical data:

Type:	Octopus L80	Octopus L95	Octopus L95 HD	Octopus XL120
- max. load capacity:	240 kg / 2 persons		350 kg / 2 persons	300 kg / 3 persons
- traction hoist:	M508		M608	
- fall arrest device FAD):	ASL508		ASL608	
- lifting speed:	18 m/min (50 Hz) or 21 m/min (60 Hz)			
- triggering speed of FAD:	30 m/min or 40 m/min			
- protection fences:	1.10 m			
- fence Interlock system:	Trapped-key or guard locking system	Trapped-key, guard locking system or electrical monitoring system	Trapped-key or guard locking system	Trapped-key or guard locking system
- max. distance between rung attachments:	3360 mm	2240 mm	1960 mm (one rung) 2240 mm (two rungs)	1960 mm (one rung) 2240 mm (two rungs)
- net weight:	205 kg	220 kg	233 kg	242 kg (one door) 250 kg (two doors)
- max. total travel height:	160 m	160 m	100 m	160 m
- Optional:		Wind turbine platform call or send/ call function		- 2 sliding doors, right & left - Wind turbine platform call or send/ call function

Modification E to the certificate 01/205/0833E/19 from 2019-02-18 - Change the max. travel height

with the requirements according to annex I of Directive 2006/42/EC about machinery and amending the Directive 95/16/EC of the European Parliament and the Council from May 2006 for adaptation of legal and administration regulations of the member countries regarding safety of machinery.

The verification was proved by EC-type approval test, Test-Report-No. 19_052-1 from 2019-07-20 and is valid only duly considering the requirements mentioned in this document.

This certificate is valid until 2024-07-29

Certification body
Notified under No. 0035
certifier

Dipl.-Ing. Walter Ringhausen

Cologne, 2019-07-29

TÜVRheinland® 0035 Notified Body

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TÜVRheinland®
Precisely Right.

Limited warranty

Avanti Wind Systems Technology, S.L. guarantees that commencing from the date of shipment to the Customer and continuing for a period of the longer of 365 days thereafter, or the period set forth in the standard Avanti warranty, the Product[1)] described in this Manual will be free from defects in material and workmanship under normal use and service when installed and operated in accordance with the provisions of this Manual.

This warranty is made only to the original user of the Product. The sole and exclusive remedy and the entire liability of Avanti under this limited warranty, shall be, at the option of Avanti, a replacement of the Product (including incidental and freight charges paid by the Customer) with a similar new or reconditioned Product of equivalent value, or a refund of the purchase price if the Product is returned to Avanti, freight and insurance prepaid. The obligations of Avanti are expressly conditioned upon return of the Product in strict accordance with the return procedures of Avanti.

This warranty does not apply if the Product (i) has been altered without the authorization of Avanti or its authorized representative; (ii) has not been installed, operated, repaired, or maintained in accordance with this Manual or other instructions from Avanti; (iii) has been subjected to abuse, neglect, casualty, or negligence; (iv) has been furnished by Avanti to Customer without charge; or (v) has been sold on an "AS-IS" basis. Except as specifically set forth in this Limited Warranty.

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This disclaimer shall apply even if the express warranty fails of its essential purpose. In any cases of dispute the English original shall be taken as authoritative.

1)Avanti service lift ("Product")

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Contents

1 Introduction

1.1 Symbols

DANGER

Immediate or possibly imminent danger. Risk of injury if not observed: Death or severe injury.

WARNING

Potentially hazardous situation. Risk of injury if not observed: Minor injury or material damage.

CAUTION

Hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Useful tips for optimum working procedure. Possible injury if not observed: None.

1.2 Terms and definitions

Terms	Definitions
Certified technician	Person who has gone through the relevant training associated with the scheduled task from Avanti or from a certified trainer and is in possession of a valid (non expired) certificate for the task.
User	Person who has gone through the relevant training associated with the Avanti service lift use and daily inspection and is in possession of a valid (non expired) certificate for the task.
Manual descent (Also manual no-powerdescent)	Action performed to descend the lift at a controlled speed without power supply by manually opening the hoist electromagnetic brake.

1.3 Observations

This lift must only be used by trained people.

Additional copies are available from the manufacturer upon request.

This manual must always be available to the personnel responsible for the installation, maintenance and operation of the service lift.

This manual, including, but not limited to, measurements, procedures, components, descriptions, instructions, recommendations and requirements, is subject to change without prior notice. Please see the manuals section in the Avanti Website for the latest revisions of the manuals.

Any additional cost relate to or arising from any changes in the manuals does not entitle the customer to any form of compensation or other legal remedies.

NOTICE

The pictures and diagrams in this manual may not reflect the exact appearance, colors or layout of the product. This has no impact on its functionality or safety.

1.4 Cautions

CAUTION

Avoid injury — follow all instructions.

Personnel must be of legal age. Personnel must be familiar with the relevant accident prevention instructions and must have received appropriate occupational heath and safety training.

The service lift must not be used by persons who are under the influence of alcohol or drugs and who may jeopardize working safety.

Personnel must wear PPE (safety helmet, ful l body harness, shock absorber, lanyard and slider) at all times and carry 2 way communication systems depending on local regulation.

The service lift is designed for a useful life of 20 years with an approximate use frequency of 12.5 h/year (250 h in total).

Installation and maintenance of the service lift must only be performed by certified technicians. The service lift must be inspected by a certified technician before its first use.

The service lift must be inspected at least once a year by a certified technician. In case of high use frequency or severe use conditions, more frequent inspections are required.

If more than one person is entrusted with installation, inspection or maintenance tasks, the employer must appoint a supervisor in charge of the operation.

Use and daily inspection of the service lift must only be performed by persons who have received the relevant training associated with the use and daily inspection of the Avanti service lift and who are in possession of a valid (not expired) certificate for the task.

If any damage or faults are found during operation, or if circumstances arise which may jeopardize safety: interrupt the work in progress immediately and notify the supervisor or employer.

The service lift must not be used in the event of a fire in the tower.

The service lift must only be used when the turbine is not generating power.

All wind farm regulations must be followed. The service lift must not be used during severe weather, including wind speeds over 18 m/s.

If any supporting parts are repaired or replaced, the operational safety of the system must be tested and verified by a certified technician.

All test / repairs of electrical installations must only be performed by a certified technician.

All repairs to the traction, braking and supporting systems may only be performed by a certified technician.

Only original fault-free parts must be used. Use of non-original parts renders the manufacturer's warranty void and invalidates any type of approval. No modification, extension or reconstruction of the service lift is allowed without the manufacturer's prior written consent. No warranty is provided against damage resulting from reconstruction or modification of equipment or use of non-original parts that are not approved by the manufacturer.

In case self-locking nuts are used, these nuts must not be used once it has become possible to loosen by hand and in no case should they be reused, but must be replaced.

NOTICE

The owner must verify the need for third-party service lift inspections with the local authority and comply with specified standards.

2 General information

2.1 Purpose

The purpose of the service lift is to transport persons, their tools and equipment to the most convenient height for performing work in the wind turbine (WTG).

Its use is limited to authorized users. Access to the WTG and consequently to the service lift is controlled and forbidden to the public.

The service lift is used primarily to transport technicians, their tools and spare parts from the bottom platform (or lowest accessible point) to the top platform (or highest accessible point).

The service lift is also used to access intermediate platforms for the inspection and maintenance of WTG connecting bolts and other equipment.

2.2 Scope

The product details are described throughout this manual.

The product consists of:

- A service lift, which is formed by:
  - A cabin
  - A traction system
  - A fall arrest device
  - Guiding system.
  - Control, safety and power systems (including an interlock system on platform fence doors).
  - A rescue pendant control (only mandatory if rescue route of service lift can be somehow blocked and in case of an external call control box is not installed at the bottom platform).

NOTICE

This manual contains instructions for one version of the Octopus lift:
Octopus L95 HD.

NOTICE

An EC type-examination by a Notified Body according to the Machinery Directive 2006/42/EC was performed.

2.3 Exclusions

The service lift must not be used outdoor or in potentially explosive atmospheres. The service lift is not designed to carry a person on the top.

Unless otherwise agreed with Avanti, the WTG manufacturer is responsible for integrating the service lift and ensuring compliance with the essential health and safety requirements as stated in the 2006/42/EC Machinery Directive and the applicable harmonized standards following Avanti recommendations.

This requires the supply of components, including but not limited to:

- Ladder system.
- Brackets for ladder sections.
- Platform fences with doors.
- Power supply protection.

2.4 Technical specifications

2.4.1 General specifications

Service lift	OCTOPUS L95 HD
Main door type	Full sliding door
Main door interlock system	Guard locking
Service lift speed	18 m/min ± 10 % (50 Hz)
	21,6 m/min ± 10 % (60 Hz)
Rated load	350 kg.
Lift weight (max.)	233 kg.
Max. no. of persons	2 persons
Max. traveling height	100 m.
Max. noise level	80 dB (A)
Power supply type	400V (50/60Hz) 3 Phase + N + PE
	690V (50/60Hz) 3 Phase + PE

Operating temperature

-15 ºC - +60 ºC

Survival temperature

-25 ºC - +80 ºC

An optional low temperature kit is also available.

Operational temperature for low temperature:

-25 ºC - +40 ºC

NOTICE

Depending on national regulations, it may be necessary for a third party to approve the final installation.

NOTICE

The tower manufacturer's risk assessment must include a service lift integration study.

2.4.2 Traction system

Service lift	Hoist	Lifting capacity	Speed	Power	Rated current	Unit weight approx.
Version	Traction system	Kg	m/min	kW	A	Kg
Octopus L95 HD	M608 / 400V 50Hz	600	18	2	4.4	55
Octopus L95 HD	M608 / 690V 50Hz	600	18	2	2.6	55
Octopus L95 HD	M608 / 400V 60Hz	600	21.6	2.4	5.3	55
Octopus L95 HD	M608 / 690V 60Hz	600	21.6	2.4	3.1	55

2.4.3 Fall arrest device

Service lift	Fall arrest device	Lifting capacity	Triggering speed	Approx. weight
Version	Type	Kg	m/min	Kg
Octopus L95 HD	ASL 608	600	30	7
Octopus L95 HD	ASL 608	600	40	7

2.4.4 Traction and safety wires ropes

Service lift	Wire ropes					Suspension
Version	Model - System	Diameter/ Construction	Surface treatment	Marking	Break resistance	
Octopus L95 HD	Traction and safety M608 / ASL 608	8.4 mm / 5x19	HDG	Blue cord	59 kN	2T shackle (EN13889)

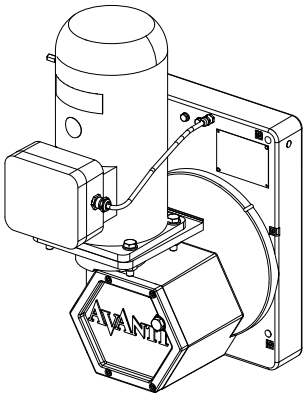

Figure 1 : Traction system M608

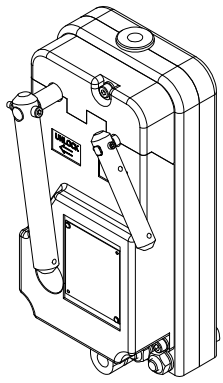

Figure 2 : Fall arrest device ASL608

2.5 Dimensions

2.5.1 Octopus L95 HD

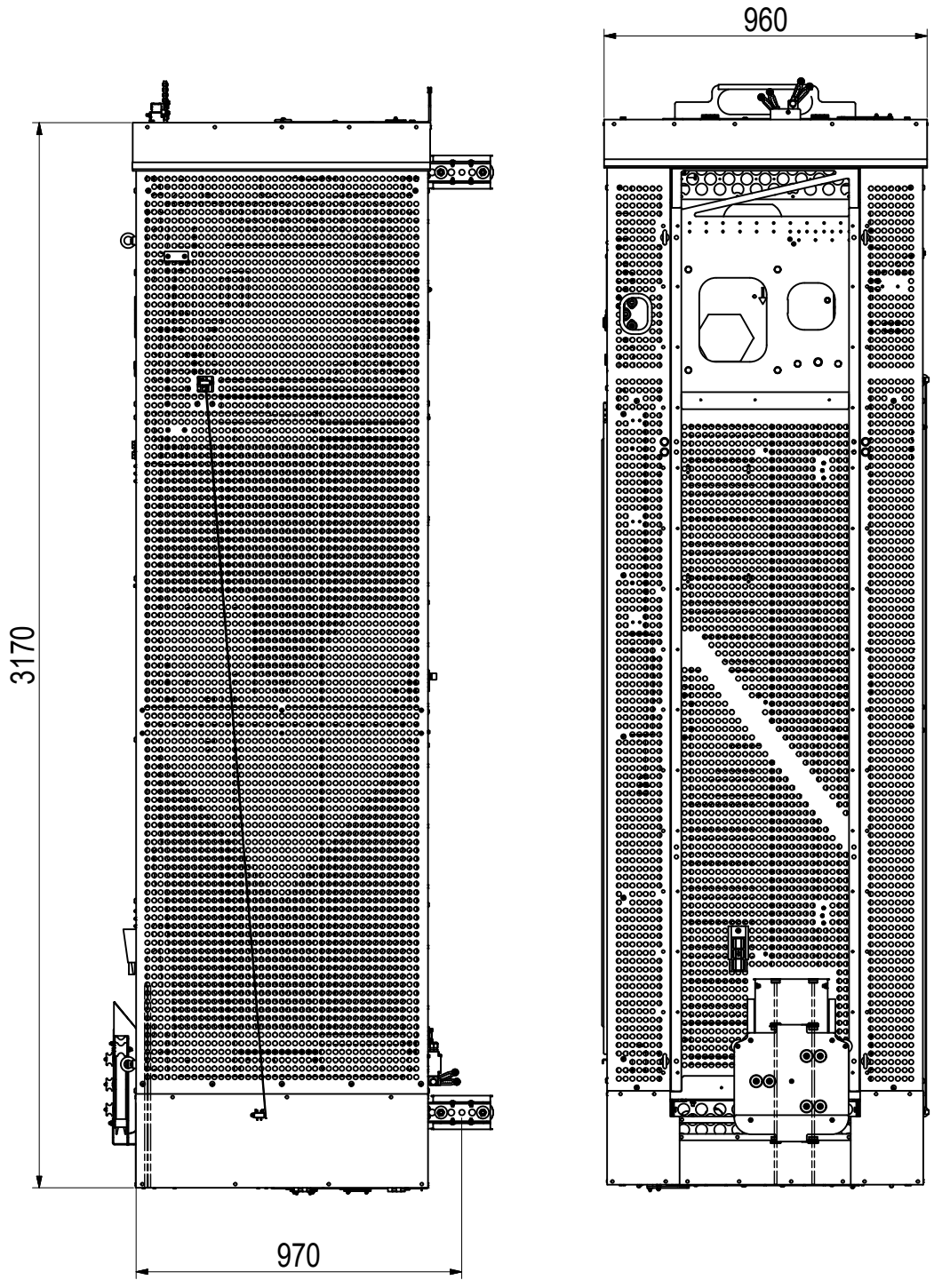

Figure 3: Octopus L95 HD dimensions

3 Description

3.1 Service lift overview

3.1.1 Octopus L95 HD

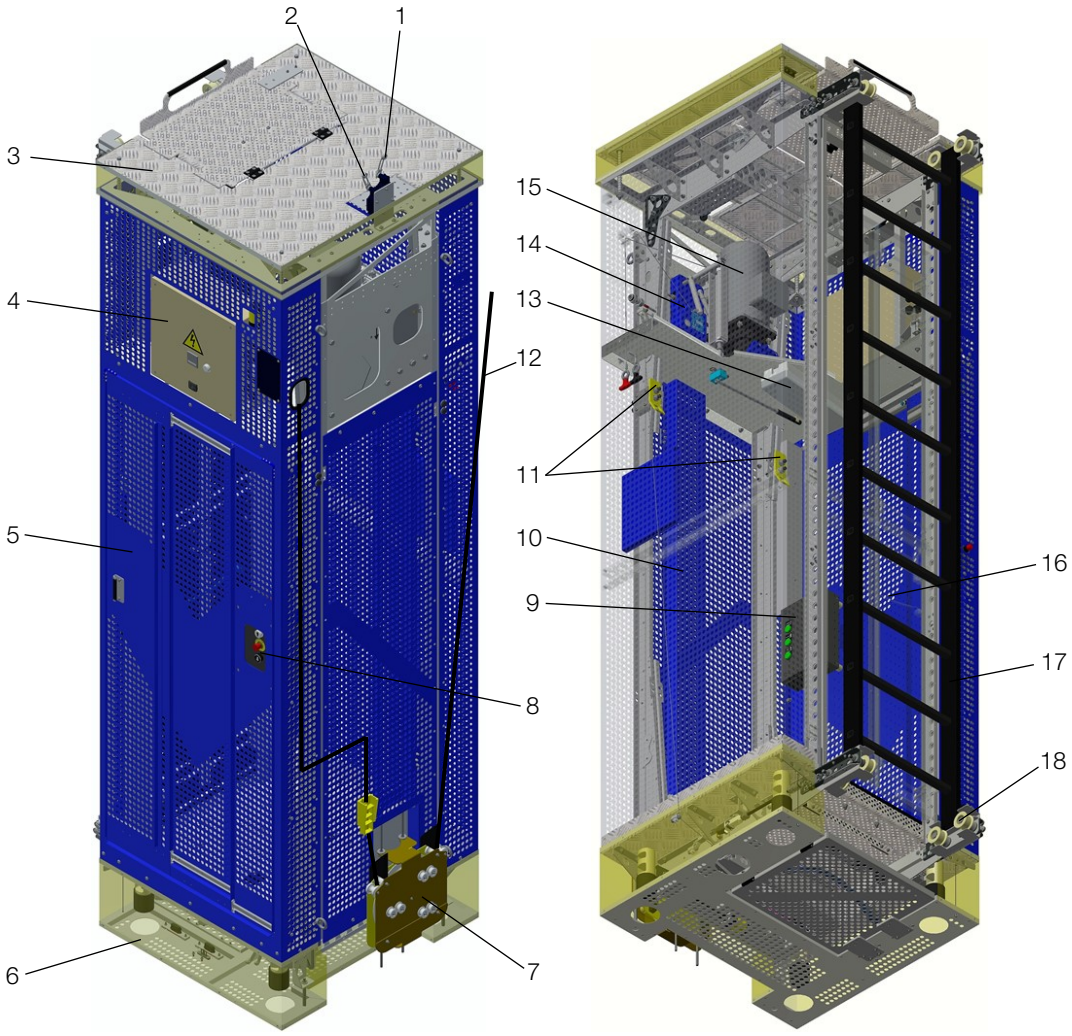

Figure 4: Octopus L95 HD components

Octopus L95 HD components			
1	Top limit switch	10	Wire inspection
2	Emergency top limit switch	11	cover Anchor points
3	Top obstruction device	12	(x2) Travelling cable
4	Main control box	13	Interior light
5	Main door	14	Fall arrest device
6	Bottom obstruction device	15	Traction system
7	Travelling cable pulley	16	Ladder access door
8	External controls for automatic function (automatic send configuration)	17	Guide ladder
9	User control box	18	Guiding rollers

3.2 Cabin

3.2.1 Service lift doors

3.2.1.1 Main service lift door

Full sliding door is available for the main ingress and egress of the service lift (on the right or on the left side).

It features a guard locking system that:

- Prevents service lift to travel if the door is open. This opening condition is monitored by the guard locking switch (S19.3).
- Permits door to be opened only when service lift is levelled with a platform. This levelling condition is monitored by a platform switch (S18). This switch is triggered by the platform activation plates, and the platform indicator, lights up on the cabin control box. Optionally, this platform switch could be replaced by a contactless device (photoelectric or magnetic sensor) activated by a reflector or by a magnet located at platform level respectively.

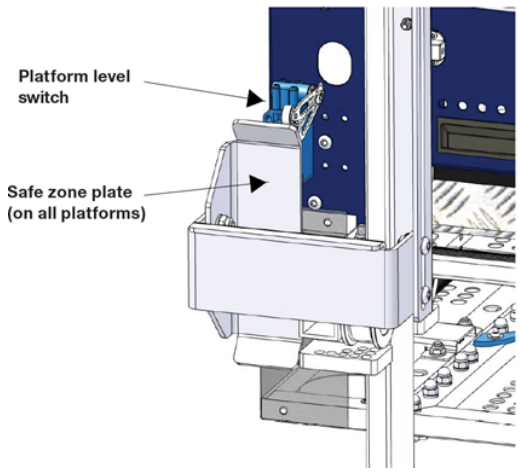

Figure 5: Platform level switch

It is possible to manually release guard locking system in order to open main door between platforms for maintenance tasks or installation of WTG parts.

Figure 6: Manual release of guard locking system

3.2.1.2 Ladder access door

The ladder access door permits direct access to ladder and ladder rail in case of evacuation.

A safety switch interrupts control when ladder access door is open.

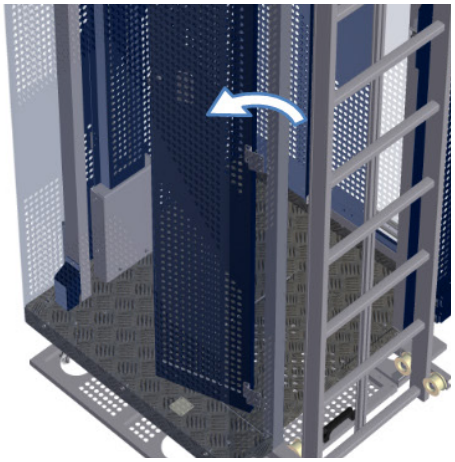

Figure 7: Ladder access door

3.2.1.3 Bottom hatches

The service lift has two bottom hatches, one on the floor of the cabin and the other on the bottom full cover obstruction device. These hatches allow egress and ingress from below.

The bottom hatches can be opened from both sides, the bottom cabin hatch opens inwards, and the bottom obstruction device hatch opens outwards. Each of them has a safety switch that interrupts control when hatch is opened.

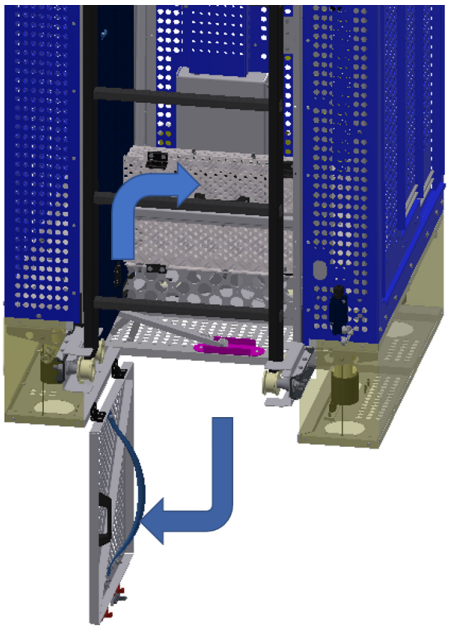

Figure 8: Bottom hatches

3.2.1.4 Top hatch

The top hatch is mounted over the top full cover obstruction device and can be opened from both sides, thus allowing egress to and ingress from above.

Top hatch opens outwards. It has a safety switch that interrupts control when hatch is opened.

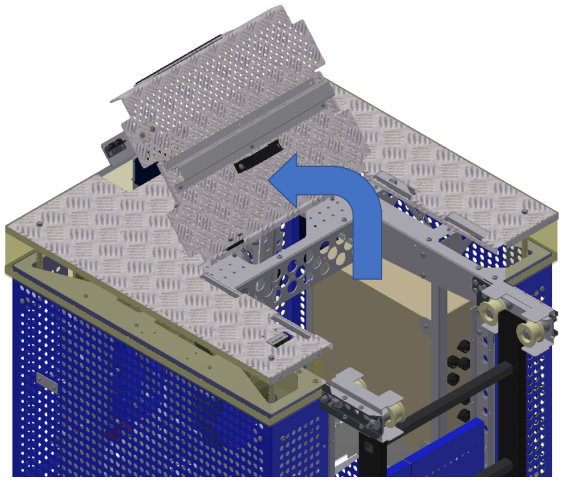

Figure 9: Top hatch

3.2.2 Wire inspection cover

Wire inspection cover allows safe and fast inspection of traction and safety wire ropes from inside the cabin while travelling.

The wire inspection cover must only be used for inspections and maintenance tasks.

WARNING

During maintenance tasks with the cable inspection cover open, the emergency stop of the user control box must always be activated.

3.2.3 Interior light

3.2.3.1 Service light

The service lift is optionaly equipped with a light inside the cabin. When service lift is connected to power supply, this light illuminates at all times.

3.2.3.2 Service light with emergency function

The internal light is battery packed in order to illuminate the inside of the cabin in case of a power failure. When fully charged, it will last at least for 90 minutes.

3.2.4 Anchor points

The service lift is equipped with anchor points inside the cabin. Personnel must attach themselves to these anchor points during the use of the service lift.

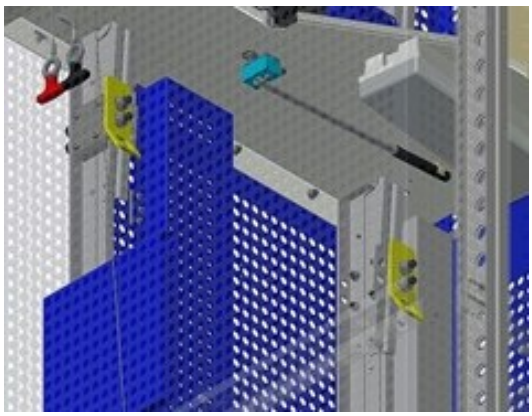

Figure 10: Anchor points

3.2.5 Fasten kit

The service lift features as option a special tool, called Fasten kit, for mechanically blocking the lift in order to perform installation/maintenance tasks below the suspended cabin. In case of the Fasten kit is available, it should be placed in the bottom platform.

It consists in a M16 screwed rod that must be inserted through a hole located on the top rollers, and depending on installations, also on the bottom rollers assembly and along one/two rung/s of the guiding ladder, and finally blocked with a M16 nut.

NOTICE

Optional feature.

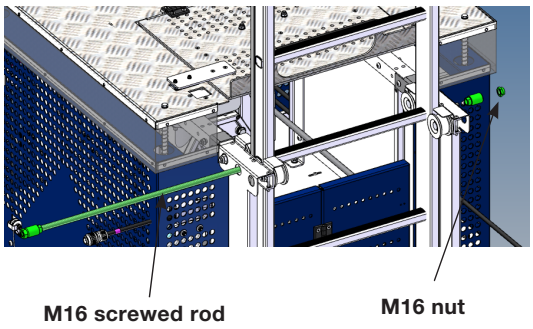

Figure 11: Fasten kit

3.3 Traction system

3.3.1 Traction hoist M608

Avanti M608 traction hoist is installed on the top of the cabin. It is an electrical powered hoist that powers the service lift up and down along a traction wire rope. It consists of a motor a gearbox and a traction system.

3.3.1.1 Electromagnetic motor brake

The M608 traction hoist is equipped with an electromagnetic motor brake that engages automatically when releasing the *UP* or *DOWN* control buttons, or following a power failure. Manual release of this electromagnetic motor brake is allowed in the M608 traction hoist. Once the electromagnetic motor brake is released, the motor speed is controlled by a centrifugal brake installed between the motor shaft and the gearbox.

3.3.1.2 Overload detection device

An overload detection device is built into the traction hoist. In case of an overload, it will prevent the upward travel of the service lift (by interrupting control) and a buzzer will sound, until overload condition is eliminated.

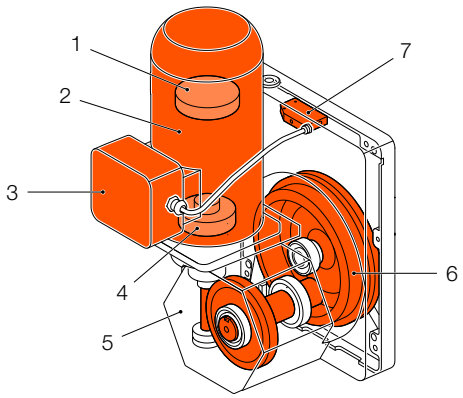

Figure 12: Traction system

Sistema de tracción	
1	Electromagnetic motor brake
2	Motor
3	Motor junction box
4	Centrífugal brake
5	Gearbox
6	Traction sheave
7	Overload detection device

3.4 Fall arrest device

3.4.1 ASL608 Fall arrest device

The service lift is equipped with the ASL608 fall arrest device which will be triggered in case of an overspeed condition.
The speed of the safety wire rope passing through the device is continuously monitored, and the jaws automatically close in the event of sudden excessive speed.
This device protects the service lift against traction wire rope breakages or traction system failures.
The fall arrest device can also be engaged or disengaged manually by acting directly on the fall arrest device levers.

3.4.2 Shock absorber

The fall arrest device is equipped with a shock absorber system.
Its function is to relieve the impact force on the cabin by means of the shock absorber displacement in case of the fall arrest device activation.

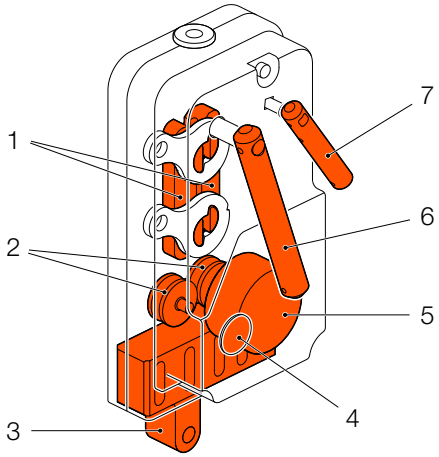

Figure 13: Fall arrest device components

Dispositivo anticaídas	
1	Jaws
2	Guide rollers
3	Shock absorber
4	Inspection window
5	Centrifugal system
6	Unlocking lever
7	Locking lever

3.5 Controls

3.5.1 Cabin control boxes

3.5.1.1 Main control box

Automatic send configuration

The main control box has the following components:

- An acoustic buzzer warns in case of overload or imminent movement of the cabin when UP or DOWN external button is pressed.
- Service lift operating hours counter.

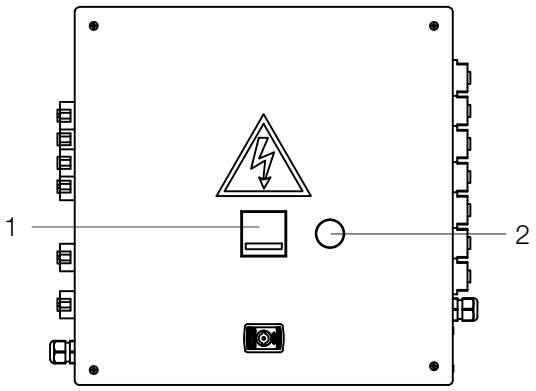

Figure 14: Main control box, automatic send configuration

Automatic send configuration	
1	Hour counter
2	Delay and overload buzzer

3.5.1.2 User control box

The user control box allows control of the service lift from inside and outside the cabin.

The following controls are available in the user control box:

- Emergency stop button (internal and external)
- Up button (internal and external)
- Down button (internal and external)

The user control box has the following lights that activate in the following cases:

- The service lift is ready (green).
- The cabin is positioned at platform level (green).
- ASL triggered (red).
- ASL spinning[1)] (white)

The following components are also available in the user control box:

- Bottom obstruction device override switch.
- Trapped key switch[1)]

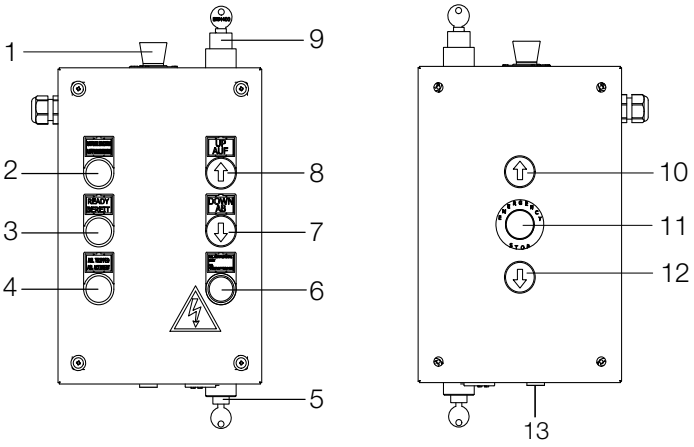

Figure 15: User control box

User control box	
1	Emergency stop button (internal)
2	Platform indicator light (green)
3	Ready light (green)
4	ASL triggered light (red)
5	Bottom obstruction device override switch
6	ASL spinning light[1)] (white)
7	Down button (internal)
8	Up button (internal)
9	Trapped key[1)]
10	Up button (external)
11	Emergency stop button (external)
12	Down button (external)
13	Warning movement buzzer (Optional device)

3.5.2 Platform control boxes

3.5.2.1 Bottom platform control box[1)]

Optionally, the bottom platform control box is located near the service lift access on the bottom platform.
The bottom platform control box in the automatic send configuration has a main switch that allows disconnecting the service lift power supply.

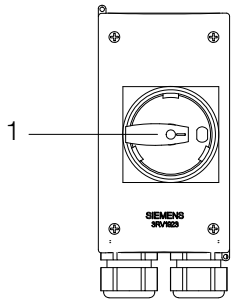

Figure 16: Bottom platform control box[1)]

User control box	
1	Main switch

NOTICE

[1)] *Optional function.*

3.5.3 Rescue pendant control

Rescue pendant control is only mandatory if rescue route of service lift can be somehow blocked and in case of an external call control box is not installed at the bottom platform. A blocked rescue route is an event where:

- A person is unconscious inside the service lift, blocking the bottom hatch,
- the rescuer is below service lift, and the service lift is stopped halfway through a platform hole, blocking rescue route since platform has no extra hatch.

NOTICE

See the Rescue guide placed next to the Rescue pendant control on the bottom platform fence.

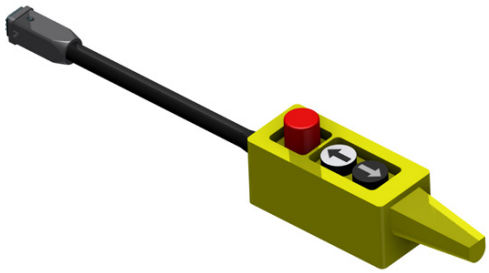

Figure 17: Rescue pendant control

CAUTION

There shall be one rescue pendant control per WTG; and it shall be stored in the WTG bottom platform. A clearly visible sign shall indicate its exact location.

It features three buttons: UP, DOWN and emergency stop button. When necessary, pendant control is plugged to cabin bottom socket. It has a 4 m long cable that permits service lift to be powered up/down that same distance. When plugged, pendant control does not override any safety switch. If any of them is triggered, no running will be possible; including the obstruction device switches. Therefore, there is no risk of moving service lift hitting rescuer. Pendant control overrides cabin control box, and service control box if installed.

3.6 Safety devices

3.6.1 Top obstruction device

The top obstruction detection device stops the ascent of the cabin:

- In case of detecting an obstacle in its travel path.
- In case of contacting the top limit device.

The descent of the cabin is possible in case of detecting an obstacle to be able to remove it and clear the travel path.

Top obstruction device features yellow flexible side covers.

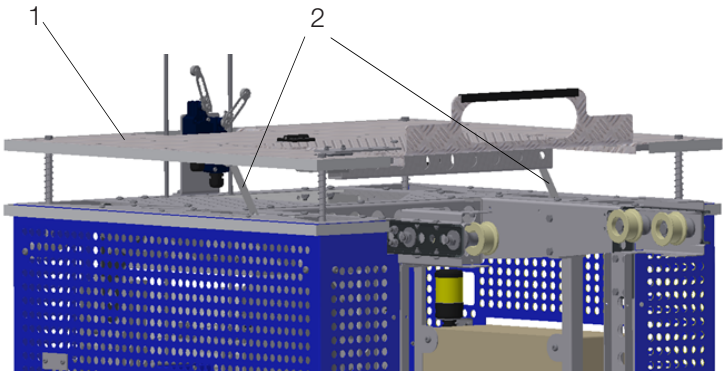

Figure 18: Top obstruction device

Top obstruction device	
1	Top obstruction device
2	Top obstruction device switches

3.6.2 Emergency top limit switch

The top limit switch and the emergency top limit switch are located at the top of the cabin, and triggered by a plate attached to the traction and safety wire ropes.

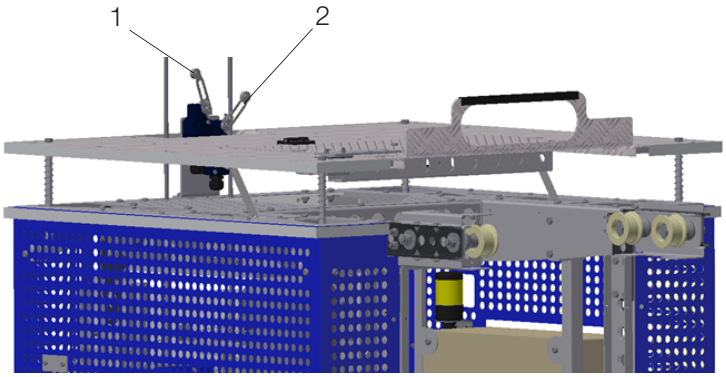

Figure 19: Top limit and Emergency top limit switches

Top limit and Emergency top limit switches	
1	Top limit switch
2	Emergency top limit switch

3.6.3 Bottom obstruction device

The bottom obstruction detection device stops the descent of the cabin:

- In case of detecting an obstacle in its travel path.
- In case of contacting the bottom platform.

The ascent of the cabin is possible in case of detecting an obstacle to be able to remove it and clear the travel path.

The bottom obstruction device override switch in the user control box allows canceling the operation of the device.

Bottom obstruction device features yellow flexible side covers.

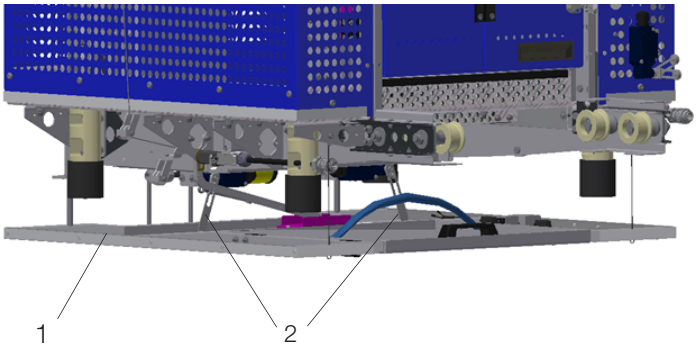

Figure 20: Bottom obstruction device

Bottom obstruction device	
1	Bottom obstruction device
2	Bottom obstruction device switches

3.6.4 Warning light

The warning light alerts the movement of the cabin.

The flashes of the warning lights alert during the delay time of movement of the cabin and during its movement.

The upper warning light is placed on the roof on the outside of the cabin. The lower warning light is placed under the floor on the outside of the cabin.

3.6.5 Acoustic buzzer

The acoustic buzzer emits an acoustic warning signal in the following cases:

- During the start delay time of the cabin movement (intermittent acoustic signal).
- Cabin overload (continuous acoustic signal).
- During the movement of the cabin (intermittent acoustic signal).

The acoustic buzzer is placed in the main control box of the cabin.

NOTICE

The buzzer during the movement of the cabin is an optional device in user control box.

3.7 Manual descent system

The manual descent system allows descent the service lift in the event of a power failure or in certain installation, inspection and maintenance operations.

When operating the manual descent system, the electromagnetic motor brake in the traction system is opened. The centrifugal brake installed between the motor shaft and the gearbox limits the speed of descent of the cabin.

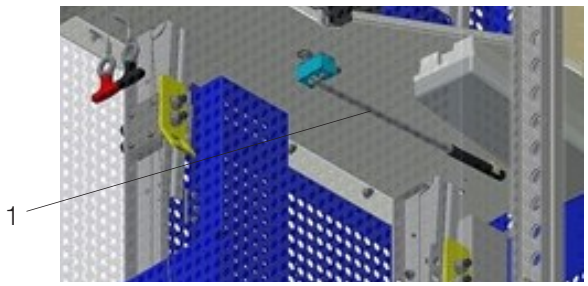

Figure 21: Manual descent system

Manual descent system	
1	Manual descent actuator

3.8 Guiding system

3.8.1 Guiding ladder

The service lift is guided by ladder. The guiding system function is to safely guide the service lift along the ladder stiles.
The guiding system consists of the guiding ladder and 4 sets of 2 guiding rollers each. The arrangement of the 4 sets is shown in the following figure.

Each roller is secured to the cabin supporting profiles and the surface of the rollers is made of a material that ensures smoothness though providing necessary endurance.

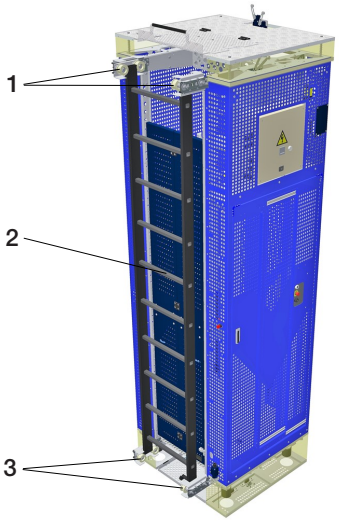

Figure 22: Guiding system

Guiding system	
1	Top guiding rollers
2	Guiding ladder
3	Bottom guiding rollers

3.9 Cable management

3.9.1 Travelling cable

Travelling cable is connected from power supply socket over mid tower´s height platform to service lift socket and it features a cable stocking on each end. A travelling cable pulley is suspended on the cable and is guided along the traction and safety wire ropes.
The service lift pulls the power cable and the traveling cable pulley during the ascent.
The effect of gravity pulls the traveling cable pulley and the power cable during descent.

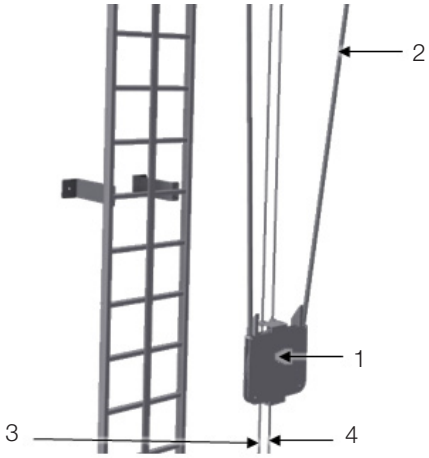

Figure 23: Travelling cable

Travelling cable	
1	Travelling cable pulley
2	Travelling cable
3	Traction wire rope
4	Safety wire rope

3.10 Platform fences

3.10.1 Fence door interlock system

3.10.1.1 Trapped-key system

The trapped key system blocks the fence door when the service lift is not on the platform and prevents movement of the service lift when the fence door is not closed and locked.

The key is attached to the service lift at all times through a steel chain or wire.

The key is caught in the safety lock while the fence door remains open or the safety lock is not locked.

The key is caught in the trapped key switch in the cabin while the switch is in the on position.

NOTICE

A locking system is compulsory for CE versions if the platform fences have doors.

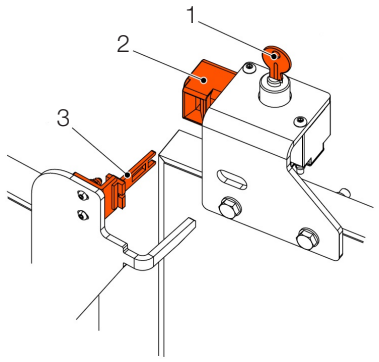

Figure 24: Trapped-key system

Trapped-key system	
1	Key
2	Safety lock
3	Actuator

3.10.1.2 Guard locking system

The guard locking system blocks the fence door when the service lift is not on the platform.

The service lift detection switch on the platform unlocks the electromechanical locking door switch when detecting the position of the service lift in the platform.

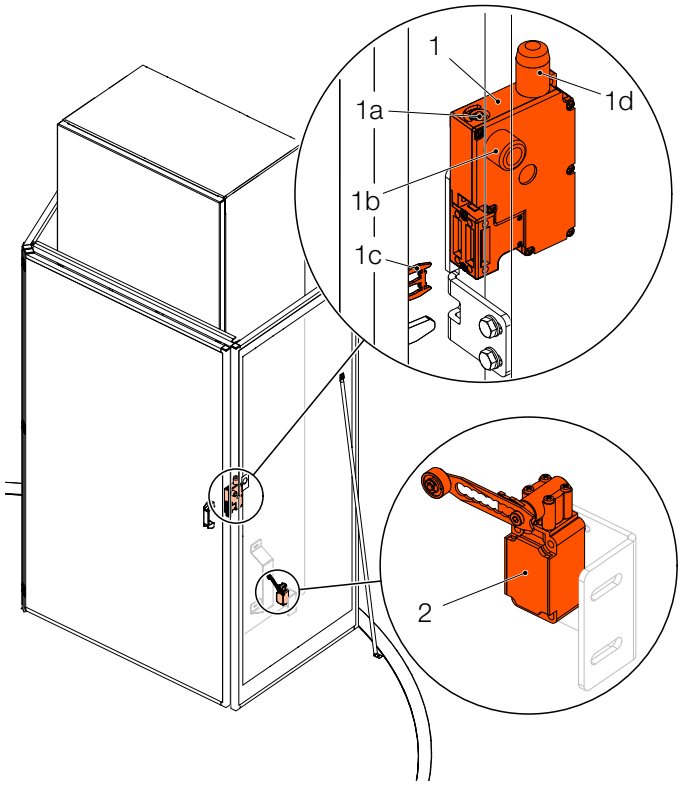

Figure 25 : Guard locking system

Guard locking system	
1	Electromechanical locking switch
1a	Manual emergency unlocking (interior of the fence)
1b	Manual emergency unlocking (external of the fence)
1c	Actuator
1d	Opening button (normal use)
2	Service lift detection switch on platform

3.11 Information signs and documents

The documentation, signs and labels supplied with the service lift must always be available and legible.

They show the user information on the service lift and instructions on safety and emergency situations.

Location	Documentation
Cabin	Serial number plate (including CE mark)
	Manuals (documentation bag)
	Quick guide
	Evacuation guide
	Use of PPE label sign
	Max. load / Nº persons label
	Wiring diagram (documentation bag)
	Non standing on top label
	Fasten kit label (if available)
	For one person only (Anchor point label)
	Manual descent label
	Main door guardlocking labels
	Fall arrest deactivation label
	Fall arrest activation label
	Remove eye nuts labels
	Pull to open label (ladder door)
	Push to open door (arrow label)
User/Main control box	Electrical hazard warning label
Bottom platform fence	Rescue guide
	Rescue pendant control emergency sign

4 Daily inspection and instructions for use

4.1 Daily inspection

NOTICE

The daily inspection must be recorded for future reference filling in the User Log Sheet Appendix.

4.1.1 Overall

Function/System	Operations
Cabin and Cabin components	Visually check the cabin and its components are assembled correctly and these are free of cracks, dents and disparities. • Cabin structure • Doors, hatches and covers • Internal light • Anchor points • Cabin control boxes • Hoist and Fall arrest device *(See figure 26: Check the FAD fixing adapter has moved downwards. In such case, DO NOT USE THE LIFT).* • Top and bottom obstruction devices • Switches • Warning lights • Guiding system (guiding rollers)
Installation components	Visually check that the WTG installation components are mounted in accordance with the specifications and without any noticeable defects or missing components. • Platform control boxes • Traction and safety wire ropes • Guiding system (guiding ladder) • Travelling cable pulley • Electrical cables and electrical plugs • Interlock system
Travel path	Visually check that there are no obstacles in the travel path which may obstruct the movement of the service lift.
Hour meter	Record the hour meter reading on the *User log sheet*.

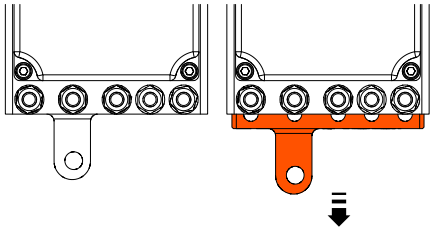

Figure 26: FAD fixing adapter

4.1.2 Control and safety devices

4.1.2.1 Internal cabin control

DANGER

If any faults occur during work:

- *Stop working*
- *If required secure the workplace*
- *Rectify the fault*

DANGER

Make sure that nobody is exposed to danger below the service lift, for instance from falling parts.

Function/System	Operations
Main switch	**1.** Turn the main switch of the bottom platform control box to the off position (if installed). **The ready light (green) must be off.** **2.** Press and hold the up button and then the down button. **The service lift must not go up or down.** **3.** Turn the main switch to the on position (if installed). **The ready light (green) must light up.**
Green light (ready) - Service lift	**1.** Close and lock the fence door of the bottom platform and the service lift. **2.** Turn the trapped key (if installed) to the on position. **The ready light (green) must light up.**
EMERGENCY STOP button	**1.** Press the *EMERGENCY STOP* button on the user control box. **2.** Press and hold the up button and then the down button. **The service lift must not go up or down.** **3.** Deactivate the emergency stop button and ascend the service lift 1 meter approximately.
Manual descent	**1.** Perform a manual descent test for one meter. **The service lift must descend and the buzzer (if installed) must sound.**
Service lift door switch	**1.** Pull the sliding door to open it. **The door should not open.** **2.** Turn the red opening lever of the cabin door lock switch. Pull the sliding door to open it. **The door must open. The ready light (green) must be off.** **3.** Press and hold the up button and then the down button. **The service lift must not go up or down.** **4.** Close and lock the service lift door.
Fall arrest device	**1.** Ascend the lift electrically a few centimetres and observe the centrifugal weight during this process. **2.** Activate the fall arrest device by turning the lock lever counterclockwise. **The triggered light red)must be on.** **3.** Press and hold the down button of the user control box. **The service lift should not descend.** **4.** Try to perform a manual descent and observe the centrifugal weight during this process. **The fall arrest device must support the load (if not, leave the lift and tag it out).** **5.** Ascend electrically again to unload the fall arrest device. **6.** Unlock the fall arrest device by turning the unlock lever clockwise. **There is an alternative method for checking the fall arrest device functionality, called the Stomp-test. The procedure is explained in the Stomp-test *Instruction Appendix*.**
Bottom obstruction device	**1.** Press and hold the down button of the user control box until the bottom obstruction detection device touches the bottom platform and stops.om platform. **The service lift must stop before the rubber bumpers hit the bottom platform.**
Top obstruction device	**1.** Activate the top stop by pressing it down. **2.** Press and hold the down button of the user control box. **The service lift should not ascend.**
EMERGENCY top limit switch	**1.** Press and hold the down button of the user control box and during upward travel, press the EMERGENCY top limit switch manually. **The service lift shall stop immediately. Neither upward nor downward travel should now be possible.**

4.1.2.2 External cabin control (Automatic Send)

The Automatic send mode function is only available from the control buttons outside of the cabin. It must be checked as follows (one technician inside the cabin / one technician outside):

Function/System	Operations
Ascend	1. Turn the main control box selector to *AUTOMATIC (if installed)*. 2. Press the external *UP* button on the Main control box. **The service lift should ascend.**
EMERGENCY STOP button	1. Press the external *EMERGENCY STOP* button on the user control box. **The service lift must stop.** 2. Press and hold the up button and then the down button. **The service lift must not go up or down.**
Descend	1. Deactive the external *EMERGENCY STOP* button on the user control box. 2. Press the external *DOWN* button on the user control box. **The service lift must descend until the bottom obstruction device engages.**

4.2 Prohibited uses

DANGER

Failure to comply with the prohibited uses is extremely dangerous for the physical integrity of the users

When using the service lift it is forbidden to:

- Use the service lift beyond its intended purpose.
- Operate the service lift without following the safety warnings and operating instructions.
- Overload the service lift.
- Try to repair machine components. Only certified technicians are allowed to perform service on the machine.
- Use the ladder, unless service lift is out of service, or in case of evacuation or rescue.
- Manipulate switches and safeties.
- Place objects on the service lift roof.
- Travel on the service lift roof.

- Use the emergency manual release of the guard locking of the door lift or the fence doors during normal use.
- Remove the trapped key (if installed) from the wire rope.
- Have a trapped key in addition to the one/s installed in the service lift (if installed).

4.3 Use of service lift

DANGER

Fall risk. Close and lock the door correctly.

DANGER

Accident risk. Evacuate the service lift in case of breakage in the traction wire rope or traction system failure.

DANGER

Risk of injuries. Ensure that PPE (lanyard and shock absorber) is not caught or entangled with the door and/or the surrounding elements before closing the cabin door.

DANGER

Risk of injuries. Keep the PPE (lanyard and shock absorber) properly attached to the harness to avoid being entangled with the surrounding elements. Stay away from the travel path of the service lift to prevent the PPE from being entangled with the cabin in motion.

To put into operation the service lift, turn the main switch (if installed) of the bottom platform control box to the on position.

4.3.1 Control from inside the cabin

- When the trapped key system is available in the fences door:

1. Turn the red opening lever of the cabin door lock switch and open the door.
2. Remove the trapped key from the switch located in the user control box.
3. Unlock and open the fence door with the trapped key.
4. Enter the cabin.
5. Close and lock the fence door with the trapped key.
6. Remove the trapped key from the fence door safety lock.
7. Insert the trapped key in the switch located in the user control box. Turn to the on position.
8. Close the cabin door.
9. Turn the main control box selector to AUTOMATIC (if installed).
10. Press and hold the up button or the down button of the user control box to move up or down the cabin.
11. Release the up button or the down button of the user control box once the desired level has been reached. The platform indicator light in the main control box lights up when the cabin is positioned at platform level.
12. Turn the red opening lever of the cabin door lock switch and open the door.
13. Remove the trapped key from the switch located in the user control box.
14. Unlock and open the fence door with the trapped key.
15. Exit the cabin.

- When the electromechanical guard locking system is available in the fences door:

1. Press the green button to open the fence door lock switch and open the fence door.
2. Manually unlock the cabin door lock switch and open the cabin door. Use the red manual unlocking external button.
3. Enter the cabin
4. Close the fence door.
5. Close the cabin door.
6. Turn the main control box selector to AUTOMATIC (if installed).
7. Press and hold the up button or the down button of the user control box to move up or down the cabin.
8. Release the up button or the down button of the user control box once the desired level has been reached. The platform indicator light in the main control box lights up when the cabin is positioned at platform level.
9. Press the green button to open the cabin door lock switch and open the cabin door.
10. Press the green button to open the fence door lock switch and open the fence door.
11. Exit the cabin.

4.3.2 Control from the outside of the cabin (Automatic send configuration)

DANGER

STOP *Risk of injuries. Forbidden to transport persons when the control is from the outside of the cabin.*

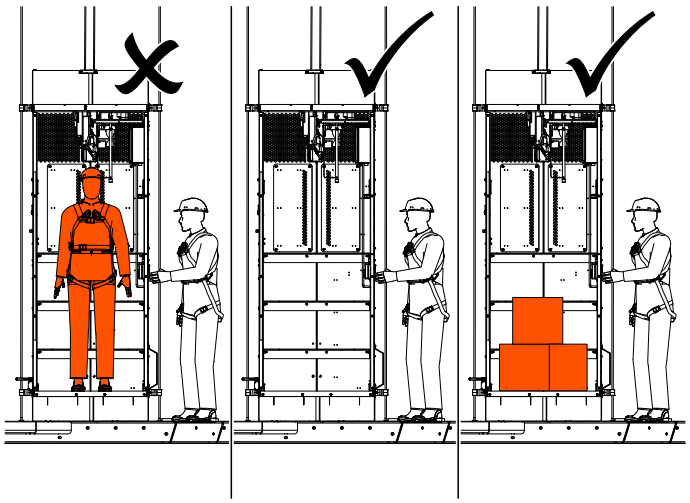

Figure 27 : Prohibition of transport of people

DANGER

STOP *Risk of injuries. Ensure that PPE (lanyard and shock absorber) is not caught or entangled with the door and/or the surrounding elements before closing the cabin door.*

DANGER

STOP *Risk of injuries. Keep the PPE (lanyard and shock absorber) properly attached to the harness to avoid being entangled with the surrounding elements. Stay away from the travel path of the service lift to prevent the PPE from being entangled with the cabin in motion.*

- When the trapped key system is available in the fences door:

1. Press the green button to open the cabin door lock switch and open the cabin door.
2. Remove the trapped key from the switch located in the user control box.
3. Unlock and open the fence door with the trapped key.
4. Enter the cabin.

5. Turn the main control box selector to AUTOMATIC (if installed).
6. Exit the cabin.
7. Close and lock the fence door with the trapped key.
8. Remove the trapped key from the fence door safety lock.
9. Insert the trapped key in the switch located in the user control box. Turn to the on position.
10. Close the cabin door.
11. Press the external up button or the external down button of the user control box to move up or down the cabin.

- When the electromechanical guard locking system is available in the fences door:

1. Press the green button to open the fence door lock switch and open the fence door.
2. Manually unlock the cabin door lock switch and open the cabin door. Use the red manual unlocking external button
3. Enter the cabin.
4. Turn the main control box selector to AUTOMATIC (if installed).
5. Exit the cabin.
6. Close the fence door.
7. Close the cabin door.
8. Press the external up button or the external down button of the user control box to move up or down the cabin.

4.3.3 Exit or enter the cabin in case of emergency or power failure

The manual unlocking of the cabin and fences door is possible to carry out evacuation and rescue operations or in the event of a power failure.

- From the inside of the cabin when the trapped key system is available in the fences door:

1. Manually unlock the cabin door lock switch and open the cabin door. Use the red opening lever of the cabin door lock switch.
2. Remove the trapped key from the switch located in the user control box.
3. Unlock and open the fence door with the trapped key.
4. Exit the cabin.

- From the inside of the cabin when the electromechanical guard locking system is available in the fences door:

1. Manually unlock the cabin door lock switch and open the cabin door. Use the red opening lever of the cabin door lock switch.
2. Manually unlock the fence door lock switch and open the fence door. Use the red opening lever of the fence door lock switch.
3. Exit the cabin.

- From the outside of the cabin when the trapped key system is available in the fences door:

1. Manually unlock the cabin door lock switch and open the cabin door. Use the red external button for manual unlocking.
2. Remove the trapped key from the switch located in the user control box.
3. Unlock and open the fence door with the trapped key.
4. Enter the cabin.

- From the outside of the cabin when the electromechanical guard locking system is available in the fences door:

1. Manually unlock the cabin door lock switch and open the cabin door. Use the red external button for manual unlocking.
2. Manually unlock the fence door lock switch and open the fence door. Use the red external button for manual unlocking.
3. Enter the cabin.

4.3.4 Overload

DANGER

Accident risk. Do not use the service lift in case of overload.

DANGER

Accident risk. Forbidden to perform a manual descent in case of overload.

In case of overload (acoustic buzzer or light activated) remove the excess load until the signal is deactivated.

NOTICE

The overload acoustic buzzer may sound briefly when entering the cabin and when starting or ending movement due to temporary load peaks.

4.3.5 Manual descent

DANGER

Risk of injuries. Keep doors and windows of the service lift closed during manual descent.

DANGER

Risk of injuries. Use a bi-directional communication device to inform staff before performing manual descent.

WARNING

Risk of breakage. Push the manual descent actuator all the way up to avoid excessive wear and overheating of the electromechanical motor brake.

WARNING

Risk of breakage Perform the manual descent by stopping the descent at most every 30 m. Wait for a minimum of 10 minutes between each manual descent to ensure proper cooling of the centrifugal brake.
In case of emergency (risk of death or danger to the integrity and safety of users) carry out the manual descent without intermediate stops. Record the manual descent in the Appendix: User log sheet and inform the supervisor. A certified technician should check the centrifugal brake.

1. Check that the fall arrest device is unlocked..
2. Visually check the absence of obstacles in the cabin path.
3. Release the manual descent actuator from its support.
4. Push up the manual descent actuator
5. Stop pushing up the manual descent actuator to stop the manual descent.
6. Record the manual descent in the Appendix: User log sheet

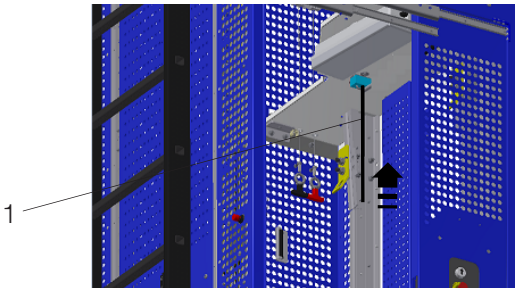

Figure 28: Manual descent system

Manual descent system	
1	Manual descent actuator

4.3.6 Fall arrest device

DANGER

Accident risk. Normally check the tension of the safety wire rope to guarantee the correct functioning of the fall arrest device.

DANGER

Fall risk. Evacuate the service lift according to the evacuation guide in the event of a power failure and the fall arrest device triggered with the safety wire rope in tension.

- What to do in case of activation:

  1. In case of activation of the fall arrest device due to failure in the traction system or traction wire rope, the suspension beam, the safety wire rope, the cabin and the fall arrest device are exposed to dynamic loads. Evacuate the service lift according to the evacuation guide, seal the service lift and inform the supervisor. A certified technician should inspect the service lift and replace the fall arrest device and damaged components.
  2. In case of accidental activation of the fall arrest device caused by a momentary acceleration, check if the FAD fixing adapter has moved and:

     a. In case of displacement of the FAD fixing adapter evacuate the service lift according to the evacuation guide, seal the service lift and inform the supervisor. A certified technician should inspect the sevice lift and replace the fall arrest device and damaged components.

     b. In case of the FAD fixing adapter is not displaced, follow the instructions for manual deactivation of the fall arrest device.

- Activation and deactivation of the fall arrest device manually:

  1. Verify that the safety measures are applied and check that the service lift door is closed.
  2. Pull down the red activation handle to activate the fall arrest device.
  3. Pull down the black deactivation handle to deactivate the fall arrest device.

- Manual deactivation of the fall arrest device when the safety wire rope is in tension:

  1. Verify that the safety measures are applied and check that the service lift door is closed.
  2. Press the up button to ascend the service lift a few centimeters until the tension of the safety wire rope is eliminated.
  3. Pull down the black deactivation handle to deactivate the fall arrest device.

4.4 Troubleshooting

DANGER

Risk of injuries. Immediately stop the service lift in case of damage or breakdown. Respect the instructions, procedures, conditions of use and warnings in this manual at all times.

DANGER

Fall risk. A damaged or defective traction hoist or fall arrest device seriously compromises the safety of the service lift. Replace or repair immediately the traction hoist or fall arrest device in case of damage or breakdown.

WARNING

Risk of breakage Do not use the service lift if the traction and safety wire ropes are dirty.

CAUTION

Electrical risk. Disconnect the power supply before opening any control box of the service lift.

Only certified technicians are authorized to perform the tasks of checking and repairing electrical components. The electrical diagram is in the blue bag that contains the documentation of the service lift.

Only certified technicians are authorized to perform repairs and adjustments to the traction hoist, fall arrest device and service lift components.

Cause	*Solution*
THE SERVICE LIFT DOES NOT MOVE UP OR DOWN.	
A1 Obstruction	
Cabin obstructed by the presence of an obstacle in the travel path.	**1.** Remove the obstacle with caution. **2.** Check the functional safety of the affected sections of the tower. **3.** Inform the supervisor.
A2 Safety switches	
Emergency top limit switch activated.	**1.** Perform a manual descent until the emergency top limit switch is deactivated. **2.** Check and if necessary adjust the emergency top limit switch.
Open door or door guard locking switch damaged or defective.	Close the door and check the door guard locking switch.
A3 Door guard locking switch	
Failure of the door guard locking switch and/or the control box of the guard locking system.	Check / Repair defective components.
A4 Trapped key system	
Cabin trapped key switch in off position.	Turn the trapped key to the on position.

Cause	*Solution*
THE SERVICE LIFT DOES NOT MOVE UP OR DOWN.	
A5 Fall arrest device	
Fall arrest device triggered by breakage of the traction wire rope.	**1.** Evacuate the service lift according to the Evacuation Guide. **2.** Inform the supervisor.
Fall arrest device triggered by traction system failure.	**1.** Evacuate the service lift according to the Evacuation Guide. **2.** Inform the supervisor.
A6 Emergency stop	
Emergency stop button activated in the user control box or in any platform control box (if installed).	Deactivate the emergency stop button.
A7 Main switch	
Main switch in off position.	Turn the main switch to the on position.
A8 Power failure	
Interrupted electrical power supply.	**1.** Perform a manual descent to the bottom platform. **2.** Find the cause of the fault or wait for the restoration of the electrical power supply. **3.** Check for possible faults in the control of the service lift.
A9 Phases	
Two phases exchanged in the electricity supply.	Correct the sequence of phases in the electrical power supply.
A10 Electromagnetic brake	
Electromagnetic brake closed.	Measure the voltage.
Defective electromagnetic brake.	Replace defective electromagnetic brake.
Defective rectifier.	Replace defective rectifier.
Power failure of the electromagnetic brake.	Inform the supervisor.
A11 Motor overheating protection	
A phase is missing.	Check electrical power supply and connections.
Motor is not cooling.	Clean the motor cover.
Voltage out of range.	**1.** Measure the voltage and power consumption of the motor under load. **2.** Correct electrical power supply voltage. **3.** Use a larger section cable if the voltage differs from the specified one.
A12 Knot in the traction wire rope	
Damaged or defective traction wire rope.	**1.** Stop the service lift immediately. **2.** Inform the supervisor.

Cause	*Solution*
SERVICE LIFT GOES UP BUT NOT DOWN	
B1 Obstruction	
Presence of an obstacle in the travel path below the cabin.	**1.** Ascend the service lift a few centimeters and remove the obstacle carefully. **2.** Check the functional safety of the affected sections of the tower. **3.** Inform the supervisor.
B2 Bottom obstruction detection switch	
Bottom obstruction detection switch activated.	Ascend the service lift a few centimeters and remove the obstacle carefully.
Defective bottom obstruction detection switch.	Check the connection and functionality of the bottom obstruction detection switch and, if necessary, replace it.
B3 Fall arrest device	
Fall arrest device triggered manually.	**1.** Ascend the service lift to eliminate the tension of the safety wire rope. **2.** Pull down the black deactivation handle to deactivate the fall arrest device.
Fall arrest device triggered accidentally.	**1.** Ascend the service lift to eliminate the tension of the safety wire rope. **2.** Pull down the black deactivation handle to deactivate the fall arrest device. **3.** Descend the service lift to the bottom platform. **4.** Check and replace the fall arrest device if the FAD fixing adapter is displaced. **5.** Inform the supervisor.
Defective fall arrest device	**1.** Replace the fall arrest device. **2.** Inform the supervisor.

Cause	*Solution*
SERVICE LIFT GOES DOWN BUT NOT UP	
C1 Obstruction	
Presence of an obstacle in the travel path above the cabin.	**1.** Descend the service lift a few centimeters and remove the obstacle carefully. **2.** Check the functional safety of the affected sections of the tower. **3.** Inform the supervisor.
C2 Upper obstruction detection switch	
Top obstruction detection switch activated.	Descend the service lift a few centimeters and remove the obstacle carefully.
Defective top obstruction detection switch.	Check the connection and functionality of the top obstruction detection switch and, if necessary, replace it.
C3 Ascent control circuit	
Fault in the ascent control circuit of the service lift.	Check and, if necessary, repair connections, wiring and relays.
C4 Overload	
Overload in the service lift.	Check and/or reduce the load until the overload warning disappears.
A LAMP IS NOT LIT ALTHOUGH THE OPERATION IS NORMAL	
D Lamps	
Fused or defective lamp.	Replace the lamp.
THE SERVICE LIFT GOES DOWN WHEN THE UP BUTTON IS PRESSED AND UP WHEN THE DOWN BUTTON IS PRESSED	
E Phases	
Two phases exchanged in the motor connection.	Correct the sequence of phases in the motor connection.
ELEVATED NOISE LEVEL AND/OR SMOKE FROM THE TRACTION HOIST MOTOR	
F Electromagnetic brake	
Electromagnetic brake totally or partially closed during movement.	**1.** Stop the service lift immediately. **2.** Inform the supervisor.
ELEVATED NOISE LEVEL OF THE MOTOR OR THE WIRE ROPES SQUEAK, BUT THE SERVICE LIFT CAN ASCEND AND DESCEND	
G1 Traction wire rope	
Dirty traction wire rope.	**1.** Clean and grease the traction wire rope. **2.** Inspect the traction wire rope and replace if necessary.
G2 Traction system	
Defective traction system.	**1.** Stop the service lift immediately. **2.** Inform the supervisor.
THE SERVICE LIFT CONTINUES TO DESCEND UNEXPECTEDLY	
H1 Electromagnetic brake	
Maladjusted electromagnetic brake.	Adjust the electromagnetic brake.
Electromagnetic brake worn out.	Replace worn electromagnetic brake.
Defective electromagnetic brake.	Replace defective electromagnetic brake.

Cause	*Solution*
THE SERVICE LIFT CONTINUES TO DESCEND UNEXPECTEDLY	
H2 Traction system	
Defective traction system.	**1.** Stop the service lift immediately. **2.** Inform the supervisor.
Traction wire rope excessively greased.	Remove excess grease from the traction wire rope.

NOTA

Consult a certified technician or contact the manufacturer in case these measures do not determine the causes and allow to solve the problems in the service lift.

4.5 Out of service

Follow the steps below to put the service lift out of service:

1. Descend the service lift until the bottom obstruction detection device stops the cabin on the bottom platform.
2. Turn off the main switch to interrupt the electrical power supply and avoid unintentional operation of the service lift.
3. Place a sign on the service lift indicating that it is out of service.
4. Record that the service lift has been put out of service in the Appendix: User log sheet and inform the supervisor.

Stomp-test Instructions

Alternative way to inspect the ASL during Daily Inspection before Operation

Purpose

The Stomp-test instruction can replace part of the daily lift verification and must be carried out by certified technician. The Stomp-test instruction describes an alternative way of checking the overspeed triggering and load arrest functions of the ASL models of the Avanti fall arrest device. Secondly, the test also documents that the safety brake maintains its grip on the safety wire rope after engagement. This test is called the Stomp-test.

The Stomp-test method can replace the daily obligations specified in the manual, such as lift descent, manual engagement of the fall arrest device, verification by short descent without power, unloading the fall arrest device by ascending, and observing the centrifugal weight unit through the window while using the lift. With the Stomp-test we test the capacity of the fall arrest device to activate in the event of overspeed and arrest the load.

Tools: None

Measuring equipment: None

Validity

The Stomp-test instructions are applicable for checking the installation of the fall arrest device (ASL). The Stomp-test must only be performed by trained users or certified technicians, and always following all the relevant safety rules.

Precautions

Take into account that the instruction only explains the steps to carry out the Stomp-test in the lift installation. It does not explain the safety precautions or the required use of the safety equipment.

Avanti recommends reading and understanding the physical steps in the Stomp-test and carrying out your own assessment of the risks and dangers according to the safety work procedures before starting the test.

1. Test preparation

The cabin ascends with an user inside and the bottom of the cabin is positioned at an approximate height of 3 m (10 ft) above the bottom landing floor platform.

2. Test

With the cabin parked at an approximate height of 3 m (10 ft) above the bottom landing floor, the user starts descending using electric current by pressing the *DOWN* button. When the cabin starts descending, the user stomps with one foot on the floor of the cabin. This is done by lifting one foot, positioning the lower leg at an angle of 90 degrees with the knee, and stomping the floor of the cabin. The user must make sure to have a solid footing during the stomping.

The stomp should activate the ASL and stop the electric descent of the cabin. The red light (if present on the control box) must light up and the cabin load must be hanging from the safety wire / fall arrest device.

If the ASL is not activated during the first test, restore the cabin to the position described in the preparation section above and stomp again with more force.

3. Test result

If the ASL is activated correctly after the stomp, the ASL will hold the cabin on the safety wire.

To ensure the proper grip of the safety brake, the user must activate the manual descent function. This must result in the ASL fall arrest device holding the cabin from the safety wire (manual descent is not possible).

If the activation of the ASL fall arrest device holds the cabin using the safety wires while manual descent is activated, the ASL fall arrest device is in good operating condition.

In order to release the ASL fall arrest device, push the *UP* button before unlocking the ASL fall arrest device manually.

If the ASL fall arrest device does not activate after the first or second Stomp-test, or cannot hold the cabin in fixed position:

- The user must descend the cabin immediately and park it on the landing floor on the bottom platform.
- Lock the installation to prevent use and contact Avanti to obtain more information.
- Document the execution of the procedure described in the User log sheet Appendix.
- In case of any queries about the instructions, please contact a local representative of Avanti to obtain assistance. -www.avanti-online.com

Changelog

Version	Date [mm/yyyy]	Description
01.01	08/2018	Service Lift User Manual Model Octopus L95 HD
02.01	03/2019	EC Certificate updated Manufacturer updated to Avanti Wind Systems Technology, S.L.
03.01	07/2019	EC Certificate updated

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