



TL37



OPERATOR'S MANUAL

**Part Number 511116-000-EN-A
Jan 2022**

Serial number 007625 and after

DANGER

The aerial platform is not electrically insulated. Death or serious injury will result from contact with, or inadequate clearance from, an energized conductor.

Do not go closer than the minimum safe approach distance as defined by the Minimum Safe Approach Distance section in Chapter 3—Safety.

Regard all conductors as energized.

Allow for electrical wire sag and aerial platform sway.

If the platform, boom structure, or any part of the aerial platform contacts a high-voltage electrical conductor, the entire machine can become electrically charged.

If that happens, remain on the machine and do not contact any other structure or object. This includes the ground, adjacent buildings, poles, and any other objects that are not part of the aerial platform.

Such contact could make your body a conductor to the other object, creating an electrical shock hazard resulting in death or serious injury.

If an aerial platform is in contact with an energized conductor the platform operator must warn ground personnel in the vicinity to stay away. Their bodies can conduct electricity creating an electrical shock hazard resulting in death or serious injury.

Do not approach or leave the aerial platform until the electricity has been turned off.

Do not attempt to operate the lower controls when the platform, boom structure, or any part of the aerial platform is in contact with a high-voltage electrical conductor or if there is an immediate danger of such contact.

Personnel on or near an aerial platform must be continuously aware of electrical hazards, recognizing that death or serious injury can result from contact with an energized conductor.

California

Proposition 65 Warning

Battery posts, terminals, and related accessories contain lead and lead components, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

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Chapter 1 – Introduction

Aerial Platform Features

The aerial platform is a class leader, offering several features as standard.

Features of the aerial platform include a powered platform rotation and fully proportional hydraulic controls at both platform and ground level.

The aerial platform also has an independent hydraulically operated flick-out boom and rotating platform for extra maneuverability. It guarantees access to the most hard to reach places, while the 90 degrees platform rotation provides the precision positioning that is vital for working in tight spaces.

The aerial platform has a simple boom configuration that provides maximum safety and control ability combined with a robust construction to withstand a demanding working environment

The aerial platform is designed for a two man capacity (200 kg Safe Working Load). The machine incorporates a bottom boom with a tie-rod, a short vertical boom and a top boom with a telescope section.

The hydraulic system design incorporates a failsafe with built in hydraulic lock valves on all of the rams as a precaution against hose failure. The aerial platform is controlled by means of proportional manual controls of the 'direct hand' lever operating type.

Emergency lowering valves are also fitted to allow the machine to be lowered from the ground or platform controls.

The machine has four hydraulically operated outriggers which are fitted with load sensing interlocks to prevent the booms from being raised without the outriggers being extended and under load. An interlock prevents the hydraulic outriggers from being accidentally retracted while the booms are raised. Warning lights are also available to show the power supply is on and each of the outriggers is under load.

The standard machine includes the following features:

- Upper controls
- Lower controls
- Emergency lowering
- Platform overload / cantilt alarm
- Outriggers
- Tie down lugs
- Guardrail
- Platform
- Hydraulic proportional system
- 3 stage lift cylinder
- Stabilizer feet

The aerial platform has been manufactured to conform to all applicable requirements of the following organizations.

- Occupational Safety and Health Administration (OSHA)
- American National Standards Institute (ANSI)
- Canadian Standards Association (CSA)
- Machinery Directive 2006/42/EC (CE)

Options

The following options may be provided on the machine:

- Flashing Amber light
- Nylon Spreader Pads
- Work Lights in Platform
- Friction Drive Assist Package

Operator's Manual

This manual provides information for safe and proper operation of the aerial platform. Some information in this manual refers to options that may or may not be on your machine. Read and understand the information in this Operator's Manual before operating the aerial platform on the job.

Additional copies of this manual may be ordered from Snorkel. Supply the model and manual part number from the front cover to assure that the correct manual will be supplied.

All information in this manual is based on the latest product information at the time of publication. Snorkel reserves the right to make product changes at any time without obligation.

Safety Alerts

A safety alert symbol is used throughout this manual to indicate danger, warning, and caution instructions. Follow these instructions to reduce the likelihood of personal injury and property damage. The terms danger, warning, and caution indicate varying degrees of personal injury or property damage that can result if the instruction is not followed.

Danger

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be used in the most extreme situations.

Warning

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Caution

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Chapter 1 – Introduction

Notes

Notes are used to provide special information or helpful hints to assist in aerial platform operation, but do not indicate a hazardous situation.

Operation

The aerial platform has built-in safety features and has been factory tested for compliance with Snorkel specifications and industry standards. However, any personnel lifting aerial platform can be potentially dangerous in the hands of untrained or careless operators.

⚠ Warning

The potential for an accident increases when the aerial platform is operated by personnel who are not trained and authorized. Death or serious injury could result from such accidents. Read and understand the information in this manual and on the placards and decals on the machine before operating the aerial platform on the job.

Training is essential and must be performed by a qualified person.

- Become proficient in knowledge and actual operation before using the aerial platform on the job.
- The operator must be trained and authorized to perform any functions of the aerial platform.
- Operation of the aerial platform must be within the scope of the machine specifications.

The operator bears ultimate responsibility for following all manufacturer's instructions and warnings, regulations and safety rules of their employer and/or any state or federal law.

Maintenance

Every person who maintains, inspects, tests, or repairs the aerial platform must be qualified to do so. Following the daily prestart inspection in this Operator's Manual will help keep the aerial platform in optimum working condition. Other maintenance functions must be performed by maintenance personnel who are qualified to work on the aerial platform.

⚠ Caution

Welding current can be very intense. Damage to electronic components may result. Connect the ground clamp as close as possible to the area being welded. Disconnect battery cables and any microprocessors and control modules before welding on the machine.

If it becomes necessary to weld aerial platform components as a method of repair, take all precautions to prevent damage to electronic circuitry and devices on the machine. This includes, but may not be limited to, disconnecting battery cables and electronic devices.

Do not modify this aerial platform without prior written consent of the Snorkel Engineering Department. Modifi-

cation may void the warranty, adversely affect stability, or affect the operational characteristics of the aerial platform.

Manual of Responsibilities

All owners and users of the aerial platform must read, understand, and comply with all applicable regulations. Ultimate compliance to OSHA regulations is the responsibility of the user and their employer.

ANSI publications clearly identify the responsibilities of all personnel who may be involved with the aerial platform. A reprint of the "Manual of Responsibilities for Dealers, Owners, Users, Operators, Lessors and Lessees of ANSI/SIA A92.6-2006 Self-Propelled Elevating Work Platforms" is available from Snorkel dealers or from the factory upon request.

Copies are also available from:

Scaffold Industry Association, Inc.
P. O. Box 20574
Phoenix, AZ 85036-0574 USA

MEWP Safe Use – AS/NZS

All owners and users of the aerial platform must read, understand, and comply with all applicable regulations as stated in AS/NZS 2550.10:2006. Ultimate compliance is the responsibility of the user and their employer.

AS/NZS 1418.10 Commissioning

Per AS/NZS 1418.10, a machine has been commissioned upon return to Snorkel of a satisfactory completed Pre-Delivery and Inspection Record (PDIR). The PDIR inspection is performed by Snorkel, or its agent, before the machine is delivered to the customer. A completed PDIR form can be obtained, by request, from the sales agent.

CE Compliance

The aerial work platform meets and exceeds the requirements of both EN280:2013 and ANSI A92.6-2006.

Additional Information

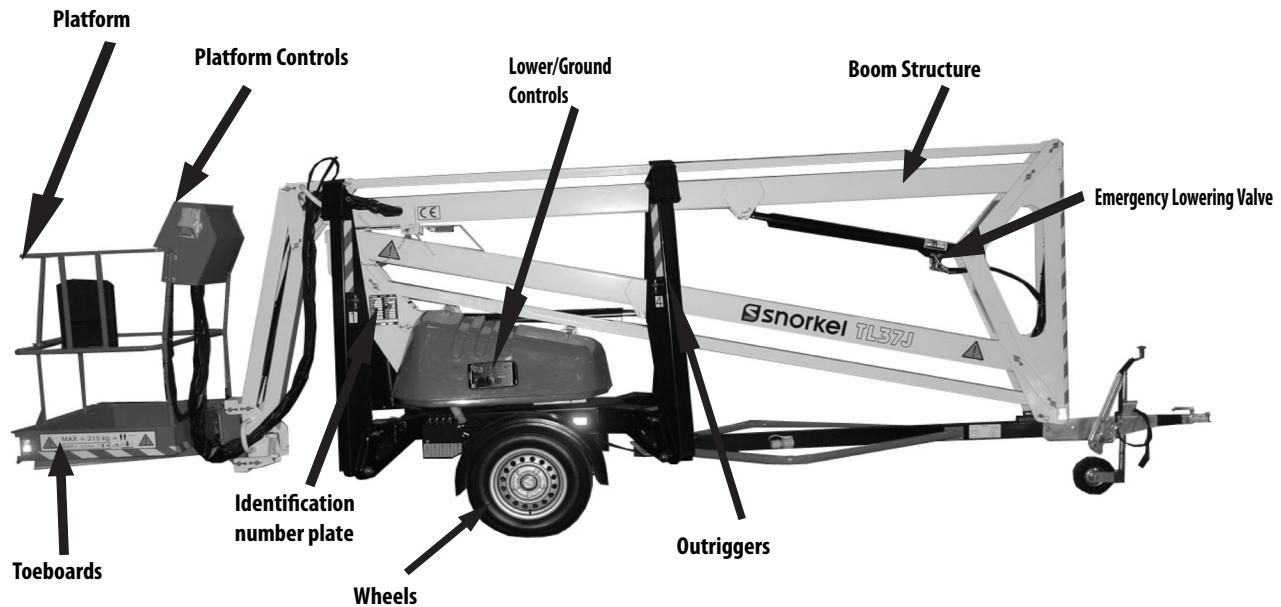
For additional information contact your local dealer or Snorkel at:

Snorkel International
P.O. Box 1160
St. Joseph, MO 64502-1160 USA
1-800-255-0317
<http://www.snorkellifts.com>

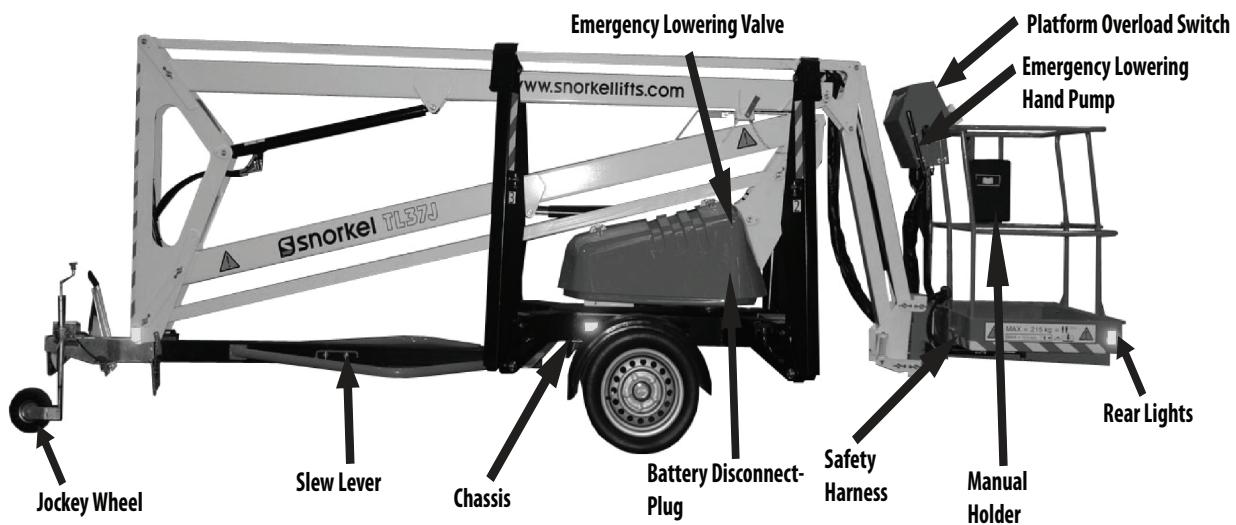
Regional contact information is located on the back cover of this manual.

Chapter 2 – Specifications

Component Identification



Right Side



Left Side

General Specifications

Operating Dimensions

Maximum platform height	36' (11.1m)
Guard rail height	44.5"(1.13m)
Maximum working height	40'(12.23m)
Platform length	47"(1.2m)
Platform width	31.5"(0.8m)
Toeboard height	6.3"(0.16m)
Maximum outreach (from centre of rotation)	18'(5.6m)
Outrigger raised height	37.8"(0.96m)

Electrical System

Energy source	24V battery 4 X 6V 225 Ampere hour/ 230V mains power/ bi-energy/ petrol & battery power
System voltage	24 DC
Battley duty cycle	70.5% in 67.87 minutes
Battery charger input :	Auto selectable dual AC input 100-240V 50-60 Hz 8A Output: 24V - 18A

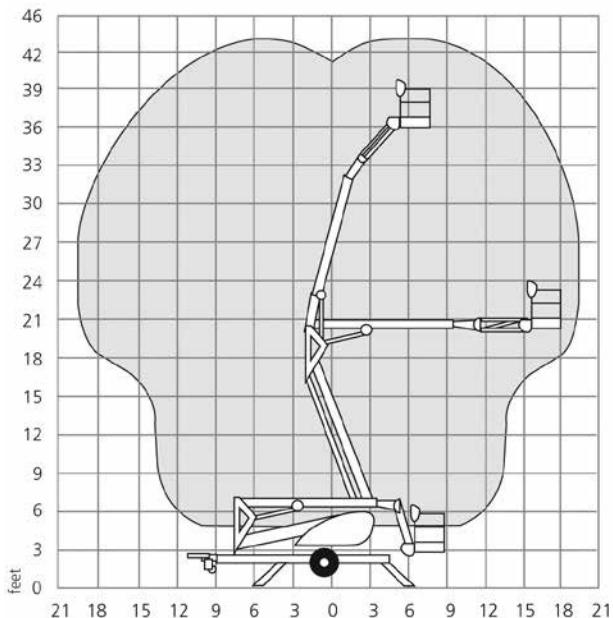
Travel Dimensions

Towing length	23'(6.9m)
Towing width	5'(1.47m)
Stowed height	7'(2.02m)

Maximum Wind Speed

28 mph (12.5 m/s)

Operating Envelope



Weight

Weight (battery model)	
UN-LADEN	3483.3 lb(1580kg)
Weight (battery model + friction drive) UN-LADEN	3747.9 lb(1700kg)
Weight(bi-fuel model)	3549.4 lb(1610kg)

Operating Parameters

Safe working load	473.99 lb(215kg)
Maximum horizontal pull	89.9 lbs(400N)
Maximum wind speed	28 mph(12.5m/s)
Rotation	700°
Platform slew	90°
Lift system	3 stage lift cylinder
Control system	Hydraulic proportional
Outrigger raise	53 seconds
Outrigger lower	60 seconds
Platform raise	83 seconds
Platform lower	38 seconds
Maximum ground slope	5°
Stabilizer feet to accomodate ground unevenness of at least 10°	+/-5°

Tires

185R14C

Brakes

Hand brake (spring release)

Hydraulic System

Hydraulic reservoir capacity	3.96 US gal (15 litres)
Maximum hydraulic system pressure	3045.79 psi (210 bar)
Hydraulic fluid temperature normal above 32 °F (0°C)	ISO #22

Chapter 3 – Safety

Knowledge of the information in this manual, and proper training, provide a basis for safely operating the aerial platform. Know the location of all controls and how they operate to act quickly and responsibly in an emergency.

Safety devices reduce the likelihood of an accident.

- Never disable, modify, or ignore any safety device.
- Safety alerts in this manual indicate situations where accidents may occur.

If any malfunction, hazard or potentially unsafe condition relating to capacity, intended use, or safe operation is suspected, stop aerial platform operation and seek assistance.

The operator bears ultimate responsibility for following all manufacturer's instructions and warnings, regulations and safety rules of their employer and/or any state or federal law.

Electrocution Hazards

The aerial platform is made of metal components and is not insulated. Regard all conductors as energized. Do not operate outside during a thunderstorm.

OUTRIGGERS: Take care when lowering outriggers, ensure outriggers are located on firm solid ground. Ensure all cables and other obstructions are removed before lowering, electrical cables can get damaged under outriggers.

Minimum Safe Approach Distance

Minimum safe approach distances to energized power lines and their associated parts must be observed while operating the aerial platform.

Danger

The aerial platform is not electrically insulated. Death or serious injury will result from contact with, or inadequate clearance from, an energized conductor. Do not go closer than the minimum safe approach distance as defined by National Regulations.

ANSI publications define minimum distances that must be observed when working near bus bars and energized power lines. Table 1 and Figure 3 are reprinted courtesy of Scaffold Industry Association, ANSI/SIA A92.6.

Voltage Range (Phase to Phase)	Minimum Safe Approach Distance	
	Feet	Meters
0 to 300V	Avoid Contact	
Over 300V to 50kV	10	3.05
Over 50kV to 200kV	15	4.60
Over 200kV to 350kV	20	6.10
Over 350kV to 500kV	25	7.62
Over 500kV to 750kV	35	10.67
Over 750kV to 1000kV	45	13.72

Table 1 – Minimum Safe Approach Distance

Prestart Inspection

Perform a prestart inspection before each shift as described in Chapter 8. Do not use the aerial platform on the job unless you are trained and authorized to do so.

Work Place Inspection and Practices

Do not use the aerial platform as a ground connection when welding.

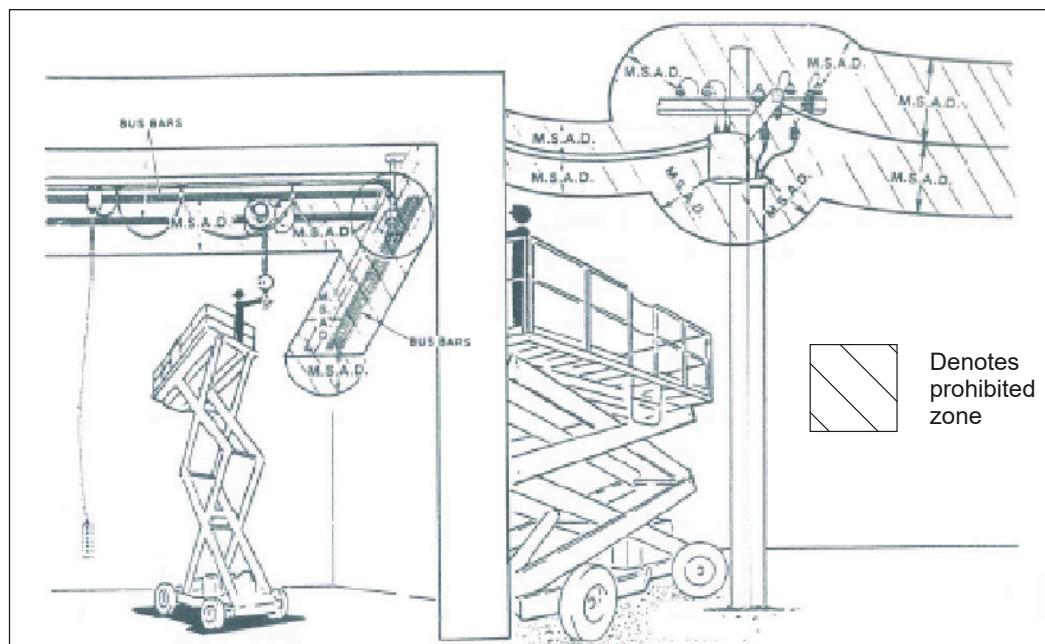


Figure 3 – Minimum Safe Approach Distance

Chapter 3 – Safety

- The welding ground clamp must be attached to the same structure that is being welded.
- Electrical current flow can be very intense, causing serious internal damage to some components.

Inspect the area before and during aerial platform use. The following are some potential hazards that may be in the work place:

- Debris
- Slopes
- Drop-offs or holes
- Bumps and floor obstructions
- Overhead obstructions
- Unauthorized persons
- High voltage conductors
- Wind and weather conditions
- Inadequate surface and support to withstand load forces applied by the aerial platform in all operating configurations

Before using the aerial platform in any hazardous (classified) location, make certain it is approved and of the type required by ANSI/NFPA 505 for use in that particular location.

Know and understand the job site traffic-flow patterns and obey the flagmen, road signs and signals.

While operating the aerial platform, a good safety practice is to have qualified personnel in the immediate work area to:

- Help in case of an emergency
- Operate emergency controls as required
- Watch for loss of control by platform operator
- Warn the operator of any obstructions or hazards that may not be obvious to them
- Watch for soft terrain, sloping surfaces, drop-offs, etc. where stability could be jeopardized
- Watch for bystanders and never allow anyone to be under while operating the aerial platform

⚠ Danger

Pinch points may exist between moving components. Death or serious injury will result from becoming trapped between components, buildings, structures, or other obstacles. Make sure there is sufficient clearance around the machine before moving the chassis or platform. Allow sufficient room and time to stop movement to avoid contact with structures or other hazards.

Always look in the direction of movement.

- Do not engage in any form of horseplay or permit riders any place other than in the platform.

Secure all accessories, containers, tools and other materials in the platform to prevent them from accidentally

falling or being kicked off the platform. Remove all objects that do not belong in or on the aerial platform.

Never steady the platform by positioning it against another platform.

⚠ Warning

The potential for an accident increases when operating an aerial platform that is damaged or malfunctioning. Death or serious injury could result from such accidents. Do not operate the aerial platform if it is damaged or malfunctioning.

Do not operate the aerial platform if it is damaged or not functioning properly. Qualified maintenance personnel must correct the problem before putting the aerial platform back into service.

Operation

Use three points of support when entering or exiting the platform. For example, use two hands and one foot when climbing into the platform.

Make sure the area below the platform is free of personnel before lowering.

Keep both feet positioned firmly on the platform floor.

- Operate the controls slowly and deliberately to avoid jerky and erratic operation.
- Always stop the controls in neutral before going in the opposite direction.

Do not dismount while the aerial platform is in motion or jump off the platform.

Properly stow the aerial platform and secure it against unauthorized operation at the end of each work day, before transporting, or if it is left unattended.

Tip-Over and Falling Hazards

Operate the aerial platform only on a firm, flat, level surface capable of withstanding all load forces imposed by the aerial platform in all operating conditions. Refer to the General Specifications chart for the maximum wheel load and outrigger level sensor information. Raise the platform only when the aerial platform is on level ground. Take care when lowering outriggers, ensure outriggers are located on firm solid ground. Ensure all cables and other obstructions are removed before lowering, electrical cables can get damaged under outriggers.

⚠ Danger

The aerial platform can tip over if it becomes unstable. Death or serious injury will result from a tip-over accident. Do not drive or position the aerial platform for elevated use near any drop-off, hole, slope, soft or uneven ground, or other tip-over hazard. Do not raise the platform outdoors in wind speeds above 28 mph (12.5 m/s).

Do not operate the aerial platform within 4' (1.2 m) of any drop-off or hole.

Do not raise the platform in winds above 28 mph (12.5 m/s). Do not add anything to the aerial platform that will increase the wind loading such as billboards, banners, flags, etc.

Never operate the aerial platform without all parts of the guardrail system in place and the entry doors closed. Make sure that all protective guards, cowlings, and doors are securely fastened.

Do not exceed the platform capacity nor the platform-extension capacity as indicated on the platform rating placard on the platform. Do not carry loads that extend beyond the platform guardrails without prior written consent from Snorkel.

Do not operate the aerial platform from trucks, trailers, railway cars, floating vessels, scaffolds, or similar equipment unless the application is approved in writing by Snorkel.

Do not use the aerial platform as a crane, hoist, jack or for any purpose other than to position personnel, tools, and materials.

Do not climb on the guardrails or use ladders, planks, or other devices to extend or increase the work position from the platform.

Take care to prevent rope, electrical cords, and hoses, etc., from becoming caught in or on the aerial platform.

- If the platform or boom structure becomes caught on an adjacent structure or other obstacle and is prevented from normal motion, reverse the control to free the platform.

It is best not to transfer from the platform to another structure or from the structure to the platform, unless that is the safest way to do the job. Judge each situation separately taking the work environment into account. If it is necessary to transfer from the platform to another structure the following guidelines apply:

1. If you are using a fall restraint, transfer your anchorage from one structure to the other before stepping across.
2. Remember that you might be transferring to a structure where *personal fall arrest* is required.
3. Use the platform entrance, do not climb over or through the guardrails.

Electrical System

Charge the batteries in a well-ventilated area free of flame, sparks, or other hazards that might cause fire or explosion.

Do not operate any of the aerial platform functions while the battery charger is plugged in.

⚠ Warning

Batteries give off hydrogen and oxygen that can combine explosively. Death or serious injury could result from a chemical explosion. Do not smoke or permit open flames or sparks when checking the batteries.

Battery acid can damage the skin and eyes. Serious infection or reaction could result if medical treatment is not given immediately. Wear face and eye protection when working near the batteries.

- Batteries contain sulfuric acid that can damage your eyes or skin on contact.
- Wear a face shield, rubber gloves, and protective clothing when working around batteries.
- If acid contacts your eyes, flush immediately with clear water and get medical attention.
- If acid contacts your skin, wash off immediately with clear water.

Hydraulic System

The hydraulic system contains hoses with hydraulic fluid under pressure.

⚠ Danger

Hydraulic fluid escaping under pressure can have enough force to inject fluid into the flesh. Serious infection or reaction will result if medical treatment is not given immediately. In case of injury by escaping hydraulic fluid, seek medical attention at once.

Do not place your hand or any part of your body in front of escaping hydraulic fluid. Use a piece of cardboard or wood to search for hydraulic leaks.

Placards and Decals

The aerial platform is equipped with placards and decals that provide instruction for operation and accident prevention. Do not operate the aerial platform if any placards or decals are missing, damaged, or illegible.

Chapter 4 – Safety Devices

This aerial work platform is manufactured with safety devices, placards, and decals to reduce the likelihood of an accident.

- For the safety of all personnel, do not disable, modify, or ignore any safety device.
- Safety devices are included in the daily prestart inspection.

⚠ Warning

The potential for an accident increases when safety devices do not function properly. Death or serious injury could result from such accidents. Do not alter, disable, or override any safety device.

If any safety devices are defective, remove the aerial platform from service until qualified maintenance personnel can make repairs.

Emergency Stop Buttons

Emergency stop buttons are fitted on the machine to stop operation in an emergency. There are two emergency stop buttons; one on the upper control panel and the other on the lower control panel.

At the lower controls, the emergency stop is a two-position red push button (refer to Figure 4.1).

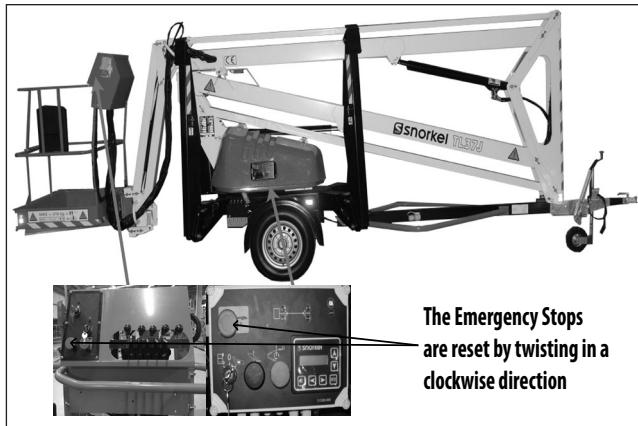


Figure 4.1 – Emergency Stop Buttons

- Push the emergency stop button inward to disconnect power to all control circuits.
- Twist and pull the button outward to restore power.

Note

The lower controls override the upper controls. If the upper control emergency stop button is engaged, the lower controls can still be used to operate the aerial platform. Push the emergency stop button inward when the upper controls are not in use to protect against unintentional operation.

At the upper controls, the emergency stop is a two-position red push button (refer to Figure 4.1).

- Push the emergency stop button inward to disconnect power to the upper control circuits.
- Twist and pull the button outward to restore power.

Control Select/Ground Operation Switch

The switch controlling operation of the machine is split into 3 categories namely the upper controls position, the Off position and the lower controls position as shown in Figure 4.2

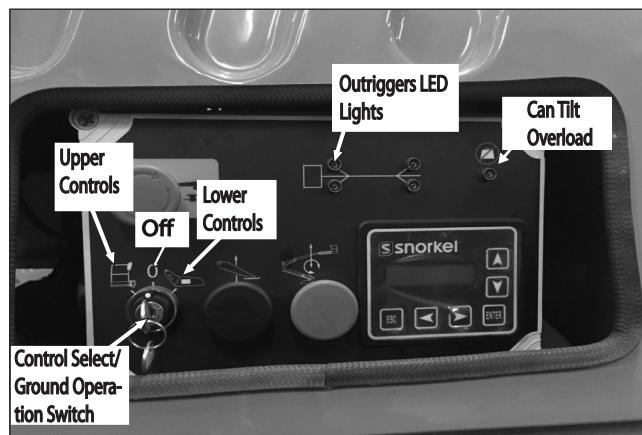


Figure 4.2 - Control Select Positions

To be able to control the aerial platform, the control select/ground operation switch must either be set to the lower controls position or the upper controls position. When the aerial platform is not in use, the control select/ground operation switch should be set to the off position.

Note

The control select positions are only available at the lower control station.

Outrigger Indicators

The LED lights at the lower control station as shown in Figure 4.2 are indicators for outrigger stability.

To operate the outriggers;

- Firstly, ensure the aerial platform is not within 4'(1.2m) of any drop-off or hole and also clear of person(s).
- Set the key switch as shown on Figure 4.2 to the lower controls position.
- Pressing down on the outrigger raise/lower button as shown in Figure 4.2, drop or raise the outriggers using the outrigger raise/lower levers as shown in Figure 4.3.

Note

When the outriggers are being raised or lowered, an alarm sounds to make all person(s) around the machine aware of the outrigger movements.

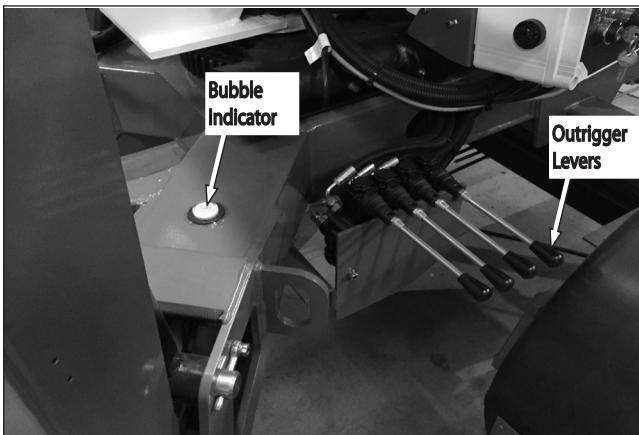


Figure 4.3 – Outrigger Location & Bubble Indicator

When the outriggers are securely under load, the LED lights on the ground control station begin to illuminate showing a green colour as shown in Figure 4.4.

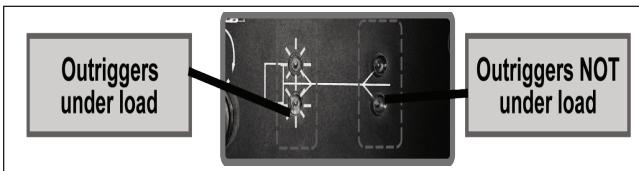


Figure 4.4 – LED Indicator of Outrigger Under Load/Not Under Load

The bubble indicator as shown in Figure 4.3 must be used always to ensure the aerial platform is level on the ground and safe to use. The Cantilt alarm will sound and the LED on the Lower Controls will flash if the machine is out of level.

Danger

The aerial platform can tip over if it becomes unstable. Death or serious injury will result from a tip-over accident. Do not drive or position the aerial platform for elevated use within 4' (1.2 m) of any drop-off, hole, or other tip-over hazard.

Emergency Slew

The emergency lowering lever may be used to lower the platform if there is a malfunction in the hydraulic or electrical system.

In the event of a failure, the machine can be manually slewed by moving the slew platform clockwise or anti-clockwise by inserting the slew lever into the insert and rotating the gearbox (refer to Figure 4.5).

The slew lever for the aerial platform is located on the side of the chassis as shown in Figure 4.5.

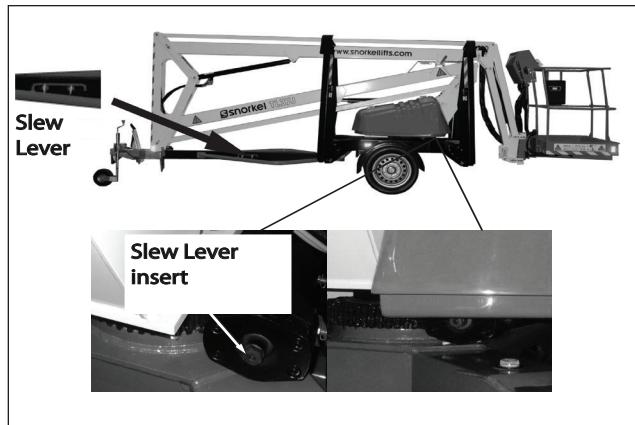


Figure 4.5 – Slew Lever Location and Insert

Emergency Lowering Valves

In the event of a power failure, the emergency lowering valve on the ram can be used to lower the booms.

This process involves assistance from the ground.

- Operate the lower ram valve first because it is closer to the ground
- Press on the lowering valve button to initiate lowering and facilitate access to the top ram valve.

Note

Each emergency ram valve will automatically close when the button is released.



Figure 4.6 – Emergency Valve Location

Danger

If the emergency lower is used due to a machine defect, do not use the machine. Contact your local Snorkel representative.

Warning

If the emergency lower is used, the top and bottom booms must be fully extended then fully lowered before work can continue.

After emergency lowering, any further powered lowering could cause an airlock in the hydraulic system. This could cause the hydraulic operation to fail.

All booms must be fully extended/raised, then lowered before work can recommence.

Emergency Lowering Hand Pump

The emergency lowering hand pump procedure is available from the upper control station. In the event of a power failure, the hand pump procedure to use is as follows:

- Insert the hand pump into the pump shaft.
- Move the platform raise/lower levers to the required direction of movement and operate the hand pump.
- Continue pressing down on the platform raise/lower levers when the machine starts to lower.

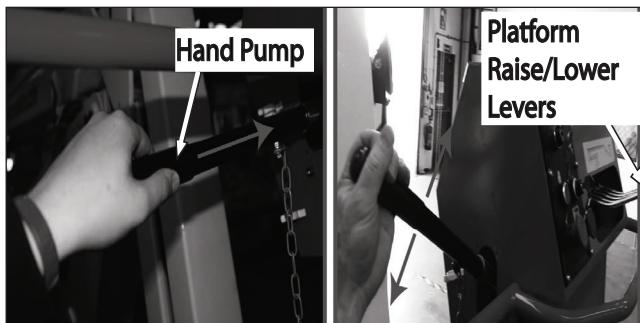


Figure 4.7 – Hand Pump Emergency Lowering Procedure

Guardrails

The guardrails help protect personnel from falling off the platform.

The guard rail system includes:

- Top rail
- Mid rail
- Lock rail strap
- Toeboards around the sides of the platform

The lock rail allows for access to the platform. The lock rail must be securely closed except when personnel are entering or leaving the platform.

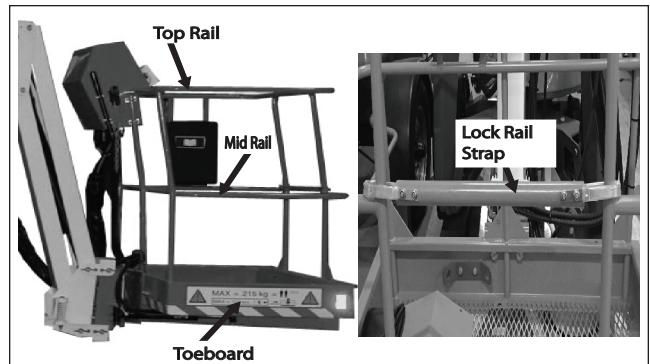


Figure 4.8 – Platform

Chapter 5 – Gauges and Displays

The aerial platform is equipped with several gauges to monitor the condition of the machine before and during operation.

Battery Charge Indicator

The battery charger has three LED's (refer to Figure 5.1) which indicate the charger status.



Figure 5.1 – LED Charge Indicators

The LED's are visible on the battery charger.

- 50% green LED blinking – indicates that the batteries are 0% to 50% charged.
- 50% solid green LED light and 75% green LED blinking – indicates that the batteries are 50% to 75% charged.
- 50% solid green LED light, 75% solid green LED light and green LED blinking – indicates that the batteries are 75% to 100% charged.
- 50% solid green LED light, 75% solid green LED light and a 100% solid green LED light – indicates that the charge cycle is complete.

Diagnostic Center Display

The diagnostic center LCD display (refer to Figure 5.2) is located at the lower control station. The LCD display shows:

- The accumulated aerial platform operating time.
- The available battery power to operate the machine.

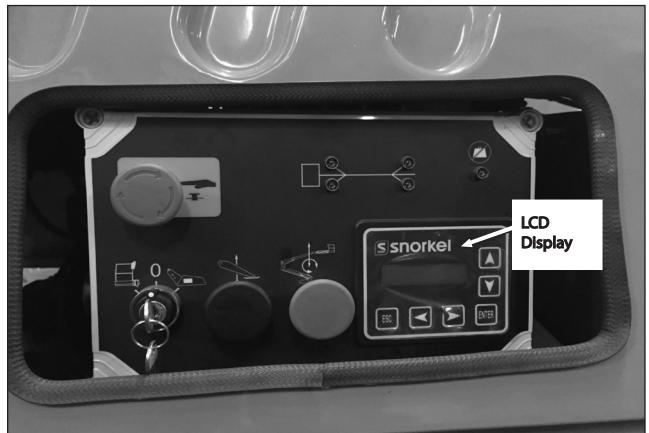


Figure 5.2 – Diagnostic Center LCD Display

Chapter 6 – Batteries

The battery tray contains four, 6 volts 225ah batteries. These batteries supply 24 volt DC electrical power to operate the aerial platform control systems. Proper machine operation depends on well maintained and charged batteries.

General Maintenance

Always keep the batteries clean, free of dirt and corrosion. A film on top of the battery can accelerate discharge.

⚠ Warning

Battery acid can damage the skin and eyes. Serious infection or reaction can result if medical treatment is not given immediately. Wear face and eye protection when working near the batteries.

Use distilled water to refill the batteries. Avoid water containing metallic solids such as iron which can reduce the life of the batteries.

Consult a battery charger specialist if extreme temperature use is unavoidable.

- Cold reduces battery capacity and retards charging.
- Heat increases water usage and can result in over-charging.
- Very high temperatures can cause thermal run away which may lead to an explosion or fire.

Charging

The aerial platform is equipped with a manual plugin battery charger that will completely recharge the batteries.

⚠ Warning

Batteries give off hydrogen and oxygen that can combine explosively. Death or serious injury can result from a chemical explosion. Charge the batteries only in a well ventilated area away from sparks or flame.

It may take from 1 1/2 to 16 hours to recharge the batteries depending on the amount of discharge. If the charging cycle exceeds 16 hours without the batteries being fully recharged, shut off the charger and have the batteries checked.

Fully recharge the batteries, immediately after use.

- One charging cycle per day is preferred.
- Fully charged batteries perform best.
- The deeper the discharge, the fewer number of cycles a battery will deliver. Deep discharges deteriorate the battery quicker than light shallow cycles.
- An overly discharged battery may need to be cycled a few times before it can fully recover.

- If a battery begins to heat before becoming fully charged, it may be necessary to recharge and discharge the battery a few times.

Use the following procedure to charge the batteries.

1. Check the battery water level. Add water to individual cells only if the plates are exposed. Replace the battery caps.
2. Plug the charger into a properly grounded AC outlet using a 3 conductor, 12 gauge or larger extension cord. The extension cord must be as short as possible and in good electrical condition.
3. Leave the charger plugged in until the batteries are fully charged.
4. Unplug the extension cord after turning the charger off. Allow the batteries to cool off after charging.
5. Check the battery water level. Add water to individual cells only if the plates are exposed. Replace the battery caps.

Chapter 7 – Controls

⚠ Danger

Pinch points may exist between moving components. Death or serious injury will result from becoming trapped between components, buildings, structures, or other obstacles. Make sure all personnel stand clear while operating the aerial platform.

- Controls to position the platform are located on the lower control panel on the chassis and on the upper control panel in the platform.

Lower Controls

The lower controls are located on the side of the chassis as shown in Figure 7.1. Upper control functions can also be operated from the lower controls.

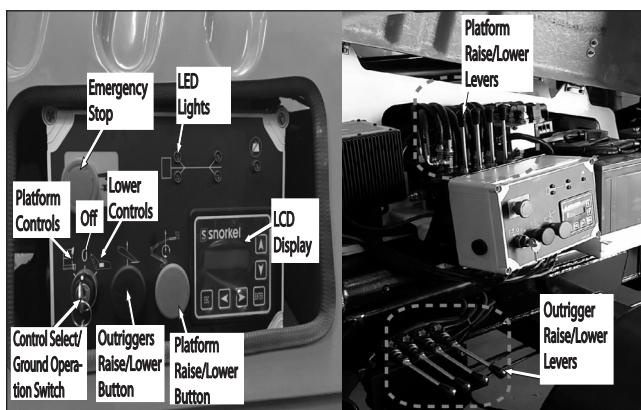


Figure 7.1 – Lower Controls

The following are located on the lower control panel:

- Emergency Stop Button
- Control Selector Switch
- Platform Raise/Lower Button
- Platform Raise/Lower Levers
- Outriggers Raise/Lower Button
- Outriggers Raise/Lower Levers

⚠ Caution

Only authorized personnel should operate the aerial platform. Unqualified personnel may cause injury to coworkers or property damage.

Emergency Stop Button

The emergency stop is a two-position red push button.

- Push the emergency stop button inward to disconnect power to all control circuits.
- Twist and pull the button outwards to restore power.

Control Select/Ground Operation Switch

Insert the key into the control selector switch.

- In the Off position, neither the platform controls nor the ground controls will work.

- Turn the switch to the right to enable lower controls to work
- Turn the switch to the left to enable upper controls to work.

Note

The lower controls override the upper controls. To operate the machine from the upper controls, turn the switch to upper controls(to the left) before mounting the platform.

Push the emergency stop button inward when the upper controls are not in use to protect against unintentional operation.

Platform Raise/Lower Button

The platform raise/lower button is used together with the platform raise/lower levers to raise or lower the platform.

- Hold down on the platform raise/lower button.
- Still holding the platform raise/lower button down, use the platform raise/lower levers to raise/lower the platform.

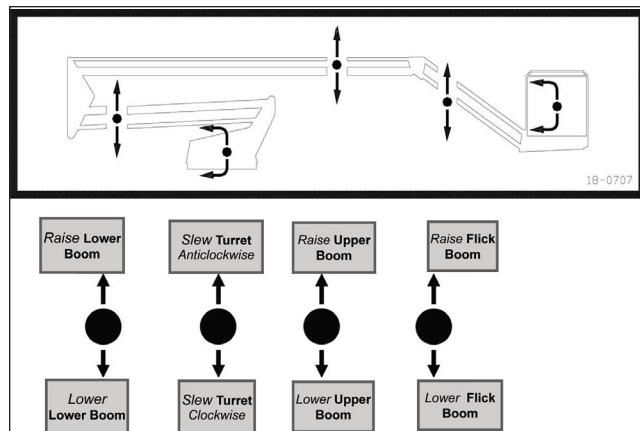


Figure 7.2 – Lower Controls Platform Raise/Lower Levers

Outrigger Raise/Lower Button

The outrigger raise/lower button is used together with the outrigger raise/lower levers to raise/lower the outriggers.

- Hold down on the outrigger raise/lower button.
- Still holding the outrigger raise/lower button down, use the outrigger raise/lower levers to raise/lower the outriggers.
- An alarm sounds as the outriggers lower or raise.

Upper Controls

The upper controls (refer to Figure 7.3) are located on the control panel in the platform.

The following are located on the platform control station:

- Emergency Stop Button
- Platform Raise/Lower Button
- Platform Raise/Lower Levers

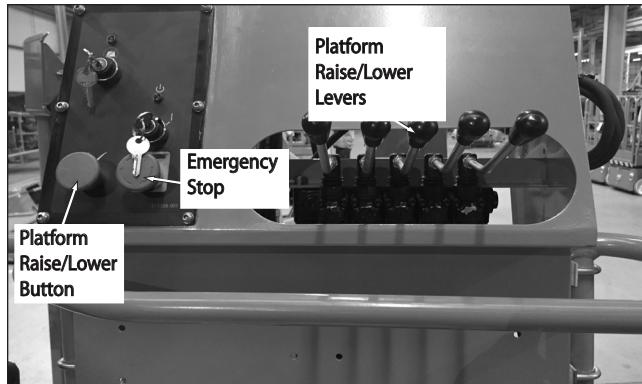


Figure 7.3 – Upper Control Station

Emergency Stop Button

The emergency stop (refer to Figure 7.3) is a two-position, red push button on the front of the upper control panel.

- Push the button inward to disconnect power from all control circuits at the upper controls.
- Twist and pull the button outward to restore power.
- Push the emergency stop button inward when the upper controls are not in use to protect against unintentional operation.

Note

The lower controls override the upper controls. If the upper control emergency stop is engaged, the lower controls can still be used to operate the aerial platform.

Platform Raise/Lower Button

The platform raise/lower button is used together with the platform raise/lower levers to raise or lower the platform.

- Hold down on the platform raise/lower button.
- Still holding the platform raise/lower button down, use the platform raise/lower levers to raise/lower the platform.

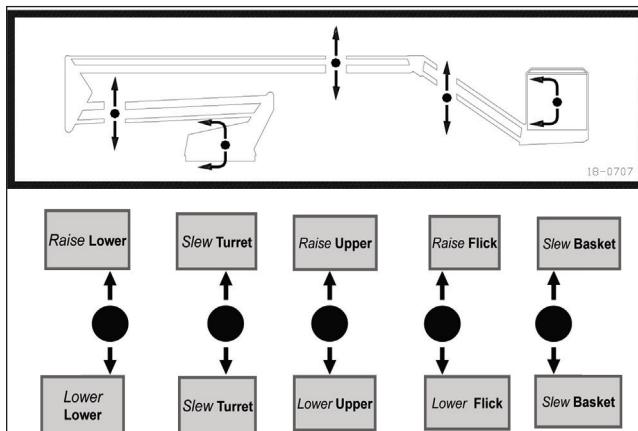


Figure 7.4 – Upper Controls Platform Raise/Lower Levers

Chapter 8 – Prestart Inspection

Potential service and safety problems may be detected by inspecting the aerial platform. This chapter includes information on properly inspecting the aerial platform and includes a prestart inspection check list at the end of this chapter to ensure that no areas are overlooked.

⚠ Warning

The potential for an accident increases when operating an aerial platform that is damaged or malfunctioning. Death or serious injury could result from such accidents. Do not operate the aerial platform if it is damaged or malfunctioning.

Perform a prestart inspection at the beginning of each shift, before using the aerial platform on the job. The inspection site must have a smooth and level surface.

Operator's Manual

The manual holder is located underneath the platform controls on the platform (refer to Figure 8.1).

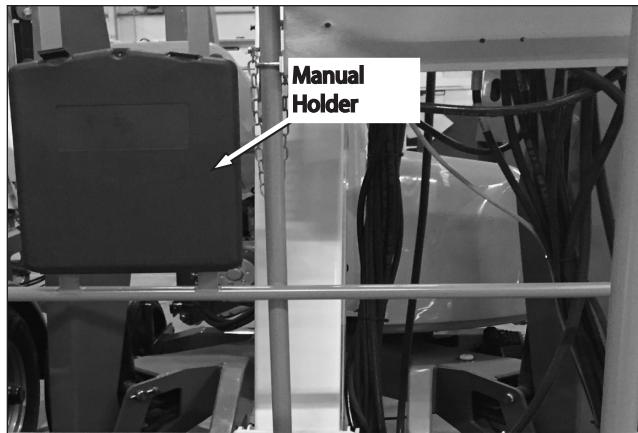


Figure 8.1 – Operator's Manual Holder

To inspect the operator's manual and manual holder:

1. Make certain the Operator's Manual holder is securely fastened in place.
2. Check to see that the proper Operator's Manual is in the holder.
3. Check to see that the manual is complete with all pages intact and in readable condition.
4. Make certain ANSI publication "Manual of Responsibilities for Dealers, Owners, Users, Operators, Lessors and Lessees of ANSI/SIA A92.6-2006 Self-Propelled Elevating Work Platforms" is in the manual holder.

Electrical System

Electrical power is supplied from four, 6 volt batteries. The batteries supply 24 volt DC electrical power to operate the aerial platform control system. There is a battery tray on each side of the machine. Each tray contains two batteries.

⚠ Warning

Batteries give off hydrogen and oxygen that can combine explosively. Death or serious injury could result from a chemical explosion. Do not smoke or permit open flames or sparks when checking the batteries.

⚠ Caution

Even with low voltage electrical systems, severe arcing can occur. Electrical shock or component damage may result from contact with energized conductors. Use caution when working with any electrical device.

For optimal battery performance, the battery fluid level must be maintained and the battery connections must be kept clean.

Battery Terminals

To inspect the battery terminals:

1. Check the top of the battery, the terminals and cable ends (refer to Figure 8.2). They should be clean and free of corrosion.
2. If necessary, clean the top of the battery. Clean the terminals and cable ends with a wire brush or terminal cleaning tool.
3. Make sure all cable ends are securely fastened to the terminals.

Battery Fluid Level

To inspect the battery fluid level:

1. Remove the caps from the batteries (refer to Figure 8.2).

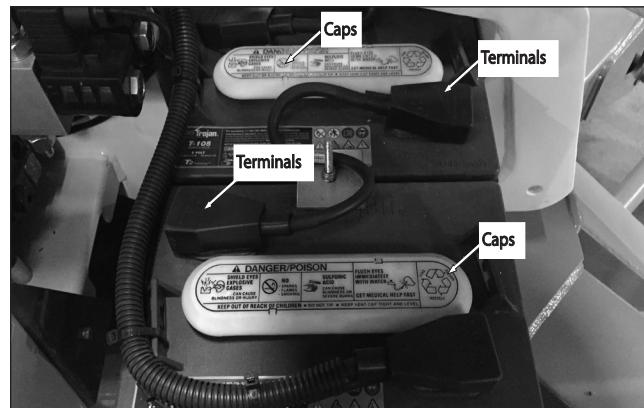


Figure 8.2 – Battery tray

2. Visually check the battery fluid level making sure the level is $\frac{1}{4}$ " (6 mm) above the plates.
3. If necessary, add distilled water.

Note

Use only distilled water when refilling the battery. Tap water may contain metallic solids such as iron which can reduce the life of the battery.

- Replace the caps on the battery. The caps must be in place and tight during machine operation and battery charging.

Safety Switches

To inspect the safety switches:

- Visually check that the platform overload / cantilt switch is free from damage.
- Check all limit switch arms are free from damage and move easily.
- Check to make sure the platform does not extend when outriggers are raised.
- Check to make sure outrigger controls do not work when the outriggers are deployed under load and the top or bottom boom is raised approximately 1.97" (50mm).

Battery Charger

Inspect the battery charger (refer to Figure 8.3) to ensure that it is operating properly.

- Plug the charger into a source of power.
- Observe the LED's on the charger to determine the charger status. If necessary, refer to the charger decal or to the battery charge indicator in chapter 5 to determine when the batteries are fully charged.



Figure 8.3 – LED Charge Indicator

- Unplug the charger

Damaged or Loose Fittings

Visually inspect the machine for signs of wear and tear, damage, loose or missing parts.

Wheels

Check tires are at the correct pressure of 55 psi(3.8 bar) and that the wheel nuts are tightened using the correct torque settings 110.63 ft lbs(150Nm).

Cables and Wiring Harness

To inspect the cables and wiring harness:

- Visually inspect all cables and wiring for wear and/or physical damage such as loose connections, broken wires, and frayed insulation.
- Check the wiring in areas where a change in routing direction may cause them to become pinched.
- Make sure the cables and wires are properly routed to avoid sharp edges, pinching, and scuffing.

Hydraulic System

Hydraulic power is supplied from three stage hydraulic pumps.

⚠ Danger

Hydraulic fluid escaping under pressure can have enough force to inject fluid into the flesh. Serious infection or reaction will result if medical treatment is not given immediately. In case of injury by escaping hydraulic fluid, seek medical attention at once.

The hydraulic reservoir, pump, and filter are located in the hydraulic tray on the left side of the chassis. swing out the cover to inspect the hydraulic components.

Fluid Level

To inspect the fluid level:

- Make sure the aerial platform is fully stowed on a level surface. Swing out the hydraulic cover and visually check the fluid level using the dipstick (refer to Figure 8.4). Some machines may have a fill cap with a dipstick. The fluid must be visible on the dipstick.

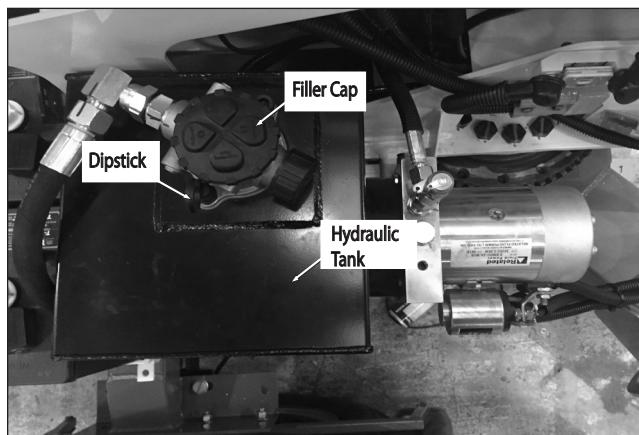


Figure 8.4 – Hydraulic Tank

⚠ Caution

Not all hydraulic fluid is suitable to use in the hydraulic system. Some have poor lubricating characteristics and may increase component wear. Only use hydraulic fluid as recommended.

2. If necessary, add fluid of the proper type.

Note

Refer to Chapter 2 for the proper type and grade of hydraulic fluid to use. The need to regularly add fluid indicates a leak that should be corrected.

3. Replace the cap making sure it is secured in place.

Hoses, Tubes, and Fittings

To inspect the hoses, tubes and fittings:

1. Inspect all hydraulic hoses, tubes, and fittings for wear, leakage, or damage.
2. Make sure the hoses are properly routed to avoid sharp edges, kinking, and scuffing.
3. Inspect the tubes for dents or other damage that may restrict fluid flow.
4. Make sure all hoses and tubes are held firmly in their support brackets.
5. Check under the chassis for fluid that has leaked. Hydraulic fluid leaks are easily visible on the ground.

Lower Control Station

With no personnel or materials on the platform, test the operation of each control from the lower controls (refer to Figure 8.5)

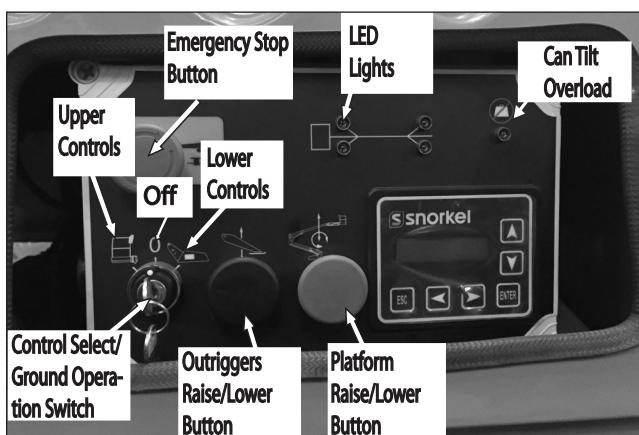


Figure 8.5 – Lower Control Station

Operating Controls

Use the following procedure to operate and test the machine from the lower controls:

1. Unplug the battery disconnect.
2. At the lower controls, twist and pull the emergency stop switch outwards to the ON position.
3. Turn the control select switch to lower controls (turn to the right).

⚠ DANGER

Pinch points may exist between moving components. Death or serious injury will result from becoming trapped between components, buildings, structures or other obstacles. Make sure all personnel stand clear of the aerial platform while performing the pre-start inspection.

⚠ WARNING

The potential for an accident increases when operating an aerial platform that is damaged or malfunctioning. Death or serious injury could result from such accidents. Do not operate the aerial platform if it is damaged or malfunctioning.

4. Pressing down on the platform raise/lower button, test the operation of the platform raise/lower switch in both directions.
5. Unplug the battery disconnect. The platform should not raise or lower with the disconnect in this position.

Emergency Stop

To test the emergency stop button from the lower controls:

1. Push the emergency stop button inward to turn off electrical power.
2. Test the lower control functions to make sure they do not operate with the emergency stop in this position.

Emergency Lower/Slew

Use the following procedure to test the emergency lowering system.

⚠ DANGER

Pinch points may exist between moving components. Death or serious injury will result from becoming trapped between components. stand clear of moving components while test operating the machine.

With the top and bottom booms each raised approximately 19.69"(500 mm) and the unit switched off, check:

1. The emergency slew can be operated with the slew lever provided.

2. The emergency lower valves located on the lift cylinders lower the boom when pushed in a slow and controlled manner and the boom movement is stopped on releasing the valve.

Structures

Visually inspect all weldments and related components. It is important to inspect the fasteners that connect the components.

Weldments

To inspect weldments:

1. Visually inspect all weldments for abnormal wear, abrasion or deformation that could cause interference between moving parts.
2. Inspect the welds on the structural components. The area to be inspected should be clean and free of dirt and grease.
3. Look for visible cracks in the welds and at the weld to parent material joints. A bright light may be used to provide adequate visibility of the inspection area.
4. Pay close attention to welds in areas where changes in cross section take place and near the attachment points of highly loaded components.

Fasteners

To inspect the fasteners:

1. Visually inspect all fasteners to see that none are missing or loose.
2. Inspect all of the bolts, nuts, rollpins, collars, and snap rings. They should all be present, tight, and not damaged in any way.

Upper Control Station

Inspect the platform and upper controls only if all functions operated properly from the lower controls.

Guardrail System

The guardrail system includes (refer to Figure 8.6):

- A top rail
- A mid rail
- Lock rail strap
- Toeboards around the sides of the platform

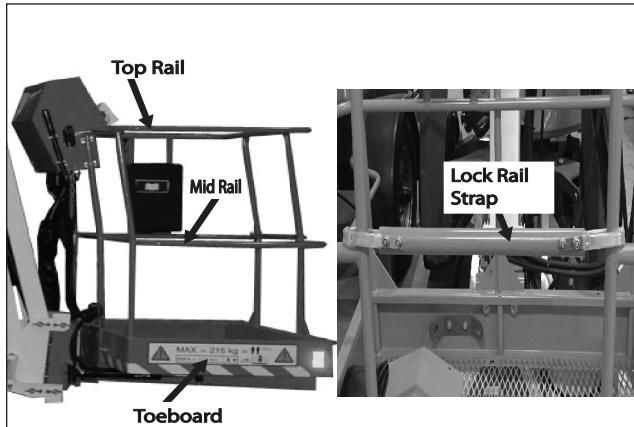


Figure 8.6 – Guardrail System

The lock rail allows for access to the platform. The lock rail must be securely closed except when personnel are entering or leaving the platform.

To inspect the guardrail system:

1. Visually inspect all components of the guardrail system. Make sure the rails and toeboards are all in place and free of any damage or deformation.
2. Visually check the rail and toeboard welds for cracks.
3. Visually check all bolts and nuts fastening the platform and guardrails in place. They must be present and not show any signs of looseness.
4. Inspect the entry doors to see that they swing freely and are not deformed in any way. Make sure the doors are secure when they are closed.

Emergency Hand Pump

With the outriggers down, under load, the machine level with the wheels clear of the ground, turn the control select switch to upper controls (turn switch to the left).

- Insert the lever into the pump shaft.
- Move the control lever to the required direction of movement and operate the hand pump.
- Continue pressing down on the control lever when the machine starts to lower.

Emergency Stop

To test the emergency stop button from the upper controls:

1. Push the emergency stop button inward to turn off electrical power.

2. Test the upper control functions to make sure they do not operate with the emergency stop in this position.

Placards and Decals

To inspect the placards and decals:

1. Inspect all safety and operational placards and decals. Make certain they are in place, in good condition, and are legible.
2. Clean the placards and decals with soap and water, and a soft cloth if the words or pictures cannot be seen.

⚠ Caution

Solvents may contain hazardous ingredients. Follow the manufacturer's label for proper use and disposal. Wear protective gloves and splash-proof safety glasses when using solvents.

3. Remove wet paint overspray with a natural biodegradable solvent and a soft cloth.
4. Replace any missing, damaged, or illegible placards or decals before operating the aerial platform.

Placard and decal kits are available from Snorkel.

The safety related placards and decals are illustrated on the following pages.

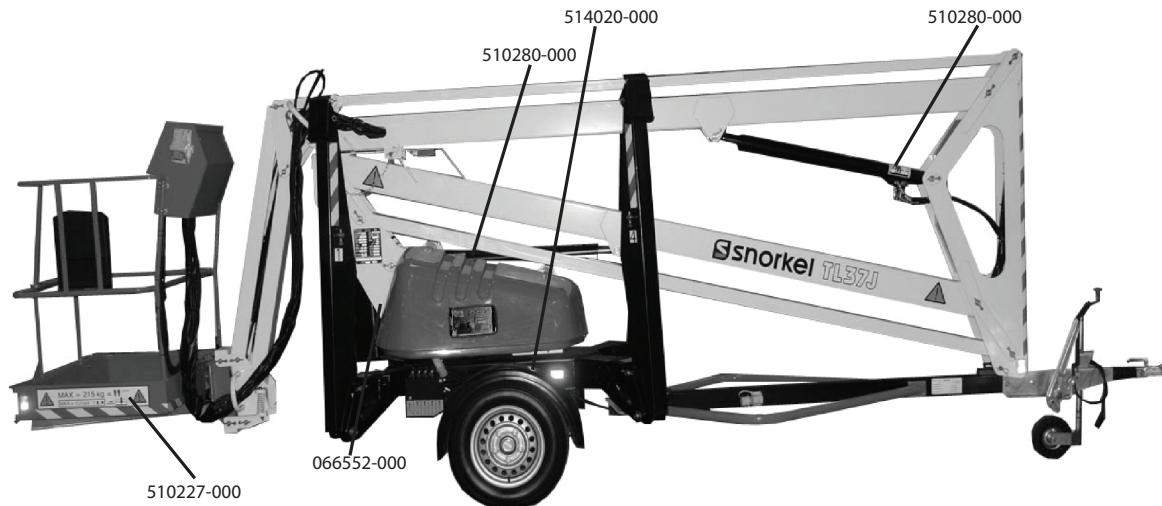


Figure 8.7 – Right Side Decals

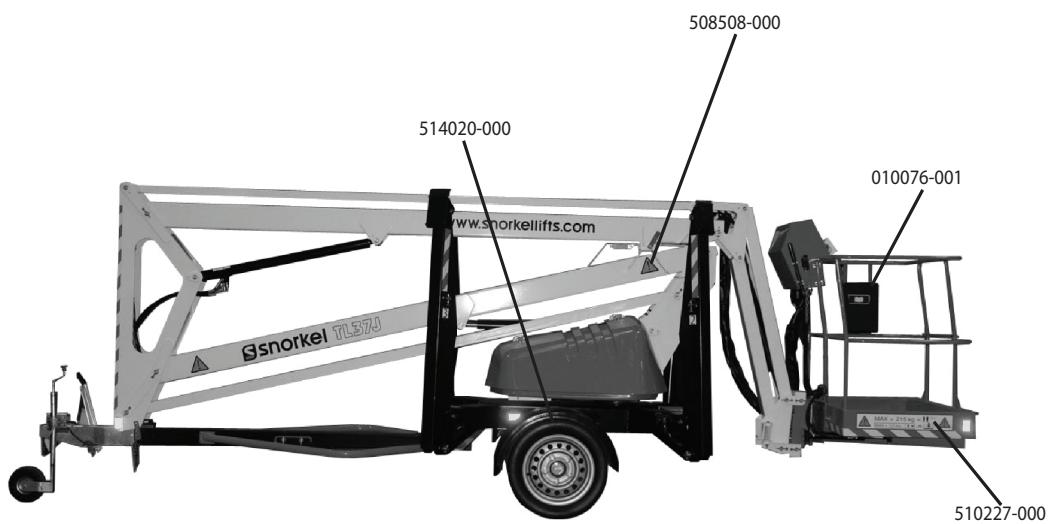
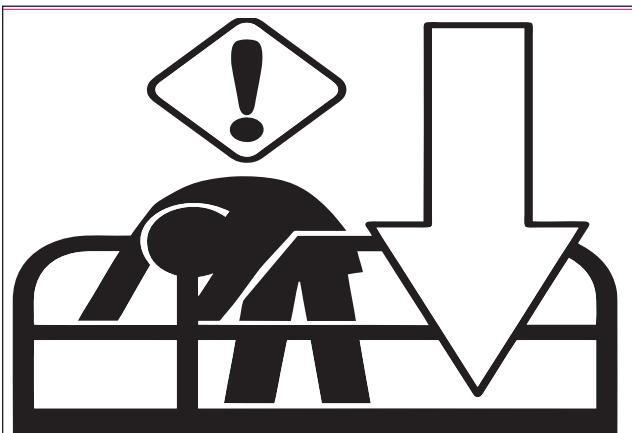


Figure 8.8 – Left Side Decals



510280-000



010076-001



514020-000

ABREVIATED OPERATING INSTRUCTIONS

WARNING

THIS MACHINE MUST NOT BE OPERATED UNLESS YOU ARE FULLY CONVERSANT WITH THE INSTRUCTIONS CONTAINED IN THE OPERATING MANUAL

UNHITCHING

MACHINE MUST BE UNHITCHED FROM VEHICLE BEFORE SETTING UP

1. Apply handbrake
2. Remove lighting plug and safety chains from vehicle
3. Lower trailer jack
4. Release ball hitch from vehicle

SETTING UP

Select ground controls with key switch

1. Ensure emergency stop buttons are released
2. Using outrigger levers lower each outrigger to within 2-4 inches from ground
3. Lower the two outriggers closest to the ball hitch until the trailer jack is clear of ground
4. Level machine referring to level bubble
5. Ensure wheels are clear of ground
6. Check all outrigger lights show green and buzzer has stopped
7. Ensure each outrigger foot is in firm contact with the ground

BOOM OPERATION

1. Remove transport stowing pins
2. Select ground or basket controls with key switch
3. Press 'enable' button and operate levers as required

STOWING MACHINE

1. Fully lower each boom into transport position
2. Using outrigger levers, raise outriggers fully starting at the cage end
3. Fit boom locking pins

TOWING MACHINE

Warning: Do not tow machine unless:

- The booms are fully lowered
- The boom locking pins are in place
- All outriggers are fully retracted
- 1. Fit ball hitch to tow bar on towing vehicle
- 2. Attach safety chains
- 3. Attach lighting plug, ensuring lighting wire cannot be damaged in transit
- 4. Check lights are working correctly
- 5. Fully raise trailer jack and release handbrake
- 6. The trailer weight must not exceed the vehicle towing capacity
- 7. Do not exceed maximum towing speed

EMERGENCY LOWERING PROCEDURE

From basket (if fitted)

In the event of power failure the basket may be lowered using the emergency hand pump

1. Attach hand-pump handle
2. Select function required with control lever(s)
3. Pump hand-pump

From ground

1. Press red emergency lowering valve on base of bottom boom lift cylinder, stand clear of descending structure
2. Press red emergency lowering valve on top boom cylinder, stand clear of descending structure

Emergency rotation—locate emergency rotation handle on red hex-shaft on rotation gearbox turn handle to rotate structure

FOR MORE DETAILED INSTRUCTIONS REFER TO OPERATOR'S MANUAL

508711-000



510227-000



066552-000

Prestart Inspection Checklist

Item	Inspect For	OK
Operator's Manual	In manual holder, all pages readable and intact	
Electrical System		
Battery fluid level	Proper level	
Battery terminals	Clean, connectors tight	
Battery charger	Proper operation	
Cables and wiring harness	No wear or physical damage	
Hydraulic System		
Fluid level	Visible in sight glass/on dipstick with platform stowed	
Hoses, tubes and fittings	No leaks, all fittings tight	
Diagnostic Center Display	Displays operating time/battery power	
Tires and Wheels	Good condition	
Lower Control Station		
Operating controls	Proper operation	
Emergency stop	Shuts off lower controls/proper operation	
Outrigger Raise/Lower alarm	Sounds when platform raises or lowers	
Chassis	Check cables for pinch or rubbing points	
Emergency Lowering	Proper operation	
Structures		
Weldments – Chassis, platform, etc.	Welds intact, no damage or deformation	
Fasteners	In place, tight, and no damage	
Upper Control Station		
Guardrail system	Welds intact, no damage or deformation All fasteners in place, no loose or missing parts	
Operating controls	Proper operation	
Emergency stop	Shuts off upper controls	
Placards and Decals	In place and readable	

Chapter 9 – Operation

The aerial platform may be operated from either the lower or upper controls.

Danger

The aerial platform is not electrically insulated. Death or serious injury will result from contact with, or inadequate clearance from, an energized conductor. Do not go closer than the minimum safe approach distance as defined by ANSI.

Pinch points may exist between moving components. Death or serious injury will result from becoming trapped between components, buildings, structures, or other obstacles. Make sure there is sufficient clearance around the machine before moving the chassis or platform. Allow sufficient room and time to stop movement to avoid contact with structures or other hazards.

The aerial platform can tip over if it becomes unstable. Death or serious injury will result from a tip-over accident. Operate the aerial platform on a firm, flat, level surface. Avoid travel speeds and/or rough terrain that could cause sudden changes in platform position. Do not drive or position the aerial platform for elevated use near any drop-off, hole, slope, soft or uneven ground, or other tip-over hazard. Do not raise the platform in wind speeds above 28 mph (12.5 m/s).

The platform rated work load is the total weight of the personnel and equipment that may be lifted in the platform.

The work loads are stated on the platform rating placard at the entrance to the platform.

Danger

The aerial platform can tip over if it becomes unstable. Death or serious injury will result from a tip-over accident. Do not exceed the capacity values indicated on the platform rating placard.

Capacity values indicate the rated lifting capacity and do not indicate aerial platform stability.

The operator bears ultimate responsibility for ensuring that the aerial platform is properly set up for the particular conditions encountered.

Preparing for Operation

Use the following procedure to prepare the aerial platform for operation:

1. Perform a prestart inspection (refer to Chapter 8).
2. Connect the battery disconnect plug.
3. Close and latch the swing-out tray cover.

Lower Controls

The platform raise and lower functions and the outrigger raise and lower functions can be operated from the lower controls. The lower controls may be used for initial set up of the aerial platform, and for testing and inspection.

Use the following procedure to raise or lower the platform using the lower controls.

1. Twist and pull the emergency stop button outward (refer to Figure 9.1).

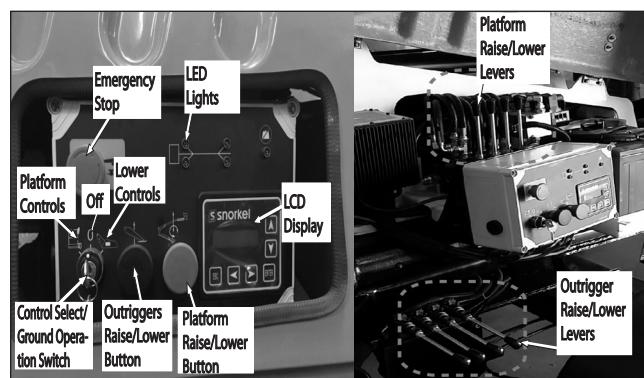


Figure 9.1 – Lower Control Station

2. Hold down on the platform raise/lower button.
3. Still holding the platform raise/lower button down, use the platform raise/lower levers to raise/lower the platform.
4. Release either the button or lever to stop movement.

Use the following procedure to raise or lower the outriggers using the lower controls.

1. Twist and pull the emergency stop button outward (refer to Figure 9.1).
2. Hold down on the outrigger raise/lower button.
3. Still holding the outrigger raise/lower button down, use the outrigger raise/lower levers to raise/lower the outriggers.
4. Release either the button or lever to stop movement.

Push the emergency stop button inward when the upper controls are not in use to protect against unintentional operation.

Upper Controls

The upper controls can be used to position the aerial platform while on the job.

Before operating the upper controls, properly set up the aerial platform as described under Preparing for Operation.

Chapter 9 – Operation

Use the following procedure to operate the aerial platform from the upper controls:

1. From the lower controls, twist and pull the emergency stop button outward (refer to Figure 9.1).
2. Switch the control select/ground operation switch to the upper controls position.

Note

The upper controls will not operate while the control selector is in the lower position.

3. Enter the platform and secure the lock rail.
4. From the upper controls, twist and pull the emergency stop button outward (refer to Figure 9.2).

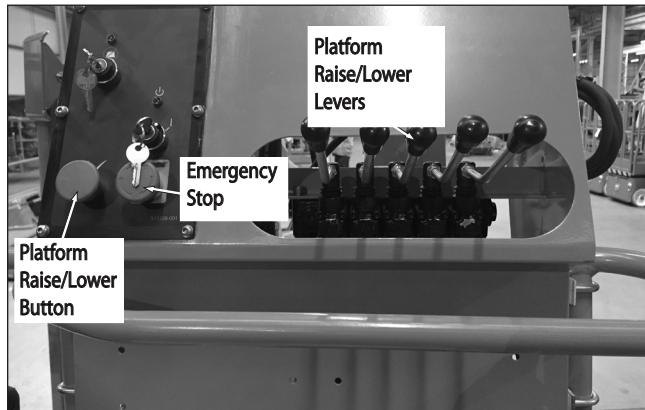


Figure 9.2 – Upper Controls

5. The aerial platform can be raised and lowered from the upper controls.
6. Hold down on the platform raise/lower button.
7. Still holding the platform raise/lower button down, use the platform raise/lower levers to raise/lower the platform.
8. Release either the button or lever to stop movement

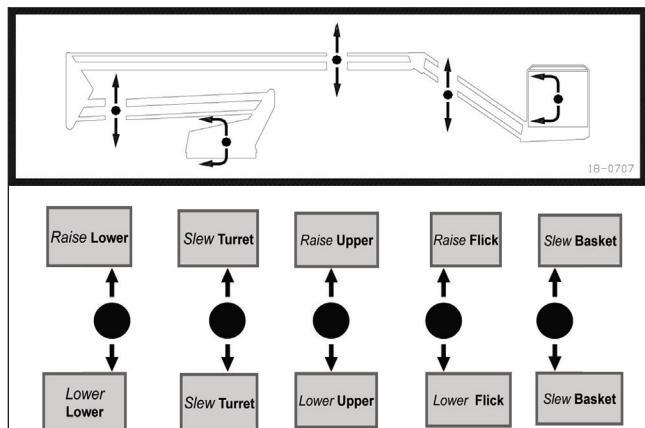


Figure 9.3 – Upper Controls Raise/Lower Levers

Platform

Use care when entering and exiting the platform to avoid slipping and/or falling. Securely close the lock rail when the platform is occupied.

Bi-Fuel Option

The Bi-Fuel option gives the user the ability to switch between battery power and engine power. The machine functions operate exactly the same regardless of which power source is selected.

Prior to operating the engine, follow these simple guidelines;

- a) Ensure there is adequate fuel in the engine for the task in hand
- b) Check engine oil level prior to starting the engine.
- c) Check battery electrolyte level. (Where applicable, Lead Acid batteries Only)

Note:

This manual does not cover the maintenance of the engine. For engine maintenance details refer to the manufacturers handbook supplied with the machine.

Operation

1. To use the engine, simply switch the fuel valve on, with the lever (refer to Figure 9.4).



Figure 9.4 – Fuel valve

2. With the key inserted into the engine (petrol engine only), turn the ignition to start the motor, release the starter when the engine fires (refer to Figure 9.5). Diesel engines are started from the basket controls.



Figure 9.5 – Engine enable switch (Petrol only)

3. Alternatively, if using the basket controls turn the Enable Key Switch to engine and push the start button (refer to Figure 9.6).

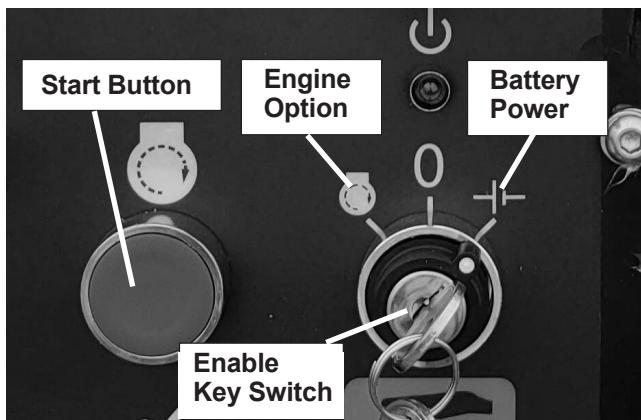


Figure 9.6 – Basket Controls

4. With the engine running, It will now be possible to operate the machine controls as long as there is power in the main batteries.

Swing-Out Tray Covers

Batteries and hydraulic components are enclosed in trays covered by a swing out cover (refer to Figure 9.7) on each side of the chassis.

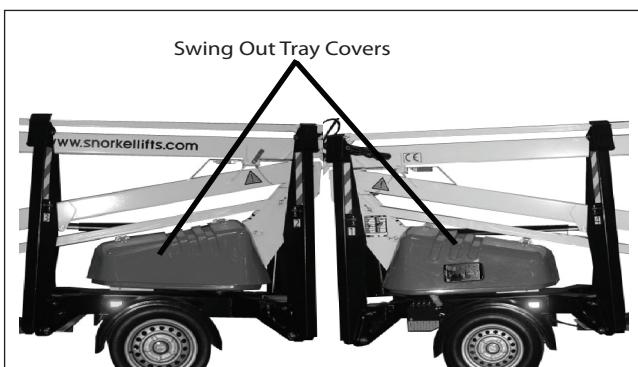


Figure 9.7 – Swing-Out Tray Cover

- The battery trays each contain two batteries. There are batteries on both sides of the chassis.
- The right side of the chassis contains the battery charge indicator. The diagnostic center LCD display is also on this tray.
- The hydraulic tray on the left side of the chassis contains the hydraulic pump, reservoir and fluid filter.

⚠ Danger

The aerial platform can tip over if it becomes unstable. Death or serious injury can result from a tip-over accident. Do not open the trays when the platform is raised more than eight feet.

- To open the tray, pull upward on the latch(step 1), turn clockwise(step 2) and swing the tray open (refer to Figure 9.7).
- The latched tray cover must be opened first to enable access to the battery tray.
- When closing the tray cover, reverse the process to lock it in place.

Electrical Power Outlet

The electrical power outlet has two, 3-prong, 125 volt AC electrical connectors (refer to Figure 9.5).



Figure 9.5 – Electrical Power Outlet

Power is supplied to the outlet by connecting an external power source to the power-input connector on the chassis.

To use the outlet, plug a source of power into the power-input connector. Unplug the source of power before moving the aerial platform.

Chapter 10 – Stowing and Transporting

To prevent unauthorized use and damage, properly stow the aerial platform at the end of each work day. It must also be properly stowed while transporting.

Stowing

Use the following procedure to properly stow the aerial platform.

1. Fully lower all the booms.
2. Engage the Transit Pins and lock in place using an 'R' clip.
3. Set the platform keyswitch to 'Ground'.
4. Raise the outriggers by simultaneously pressing down on the 'Outrigger raise/lower button' and using the appropriate control levers, two at a time until the road wheels are in contact with the ground (refer to Figure 10.1).

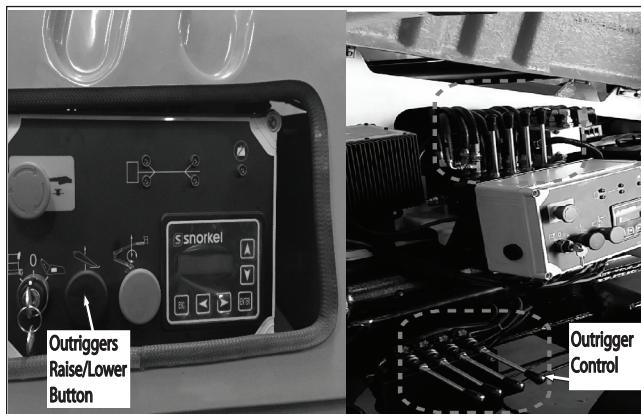


Figure 10.1 – Outrigger Operation

5. Only when the road wheels are in contact with the ground should the unit be lowered further until the jockey wheel makes contact with the supporting surface.
6. Fully raise the outriggers until they are in the stowed position.
7. Switch off the aerial platform controls and ensure all loose items/covers are secure.

Transporting

The aerial platform may be moved on a transport vehicle or towed.

The equipment used to load, unload, and transport the aerial platform must have adequate capacity. The empty vehicle weight is listed in Chapter 2 and is stamped on the serial number placard.

The user assumes all responsibility for:

- Choosing the proper method of transportation.
- Choosing the proper selection and use of transportation and tie-down devices.
- Making sure the equipment used is capable of supporting the weight of the aerial platform.
- Making sure all manufacturer's instructions and warnings, regulations and safety rules of their employer, the DOT, and/or any other state or federal law are followed.

Securing for Transport

Use the following procedure to secure the aerial platform on the transport vehicle.

1. Chock the wheels.
2. Remove all personnel, tools, materials or other loose objects from the platform.
3. Properly stow the aerial platform.
4. Place the lower controls emergency stop switch in the off position.
5. Unplug the battery disconnect.

Caution
Ratchets, winches, and come-alongs can produce enough force to damage machine components. Do not over tighten the straps or chains when securing the aerial platform to the transport vehicle.

6. Use chains or straps to securely fasten the aerial platform to the transport vehicle using the rear tie-down lugs (refer to Figure 10.2) as attachment points. Proper tie-down and hauling is the responsibility of the carrier.

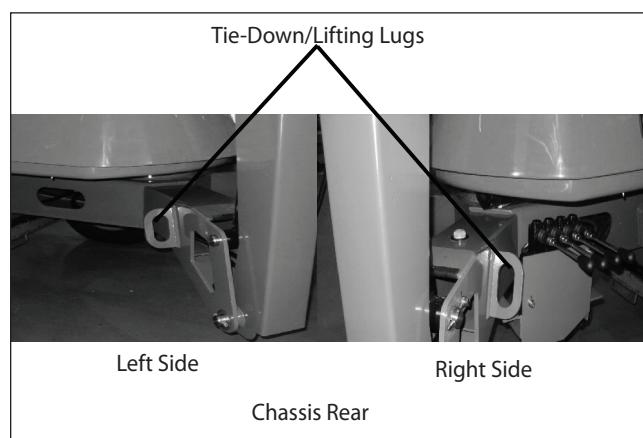


Figure 10.2 – Tie Down Lug Locations

Towing

Trailer mounted machines may be safely towed behind a vehicle at a speed set by state traffic regulation or up to 50 mph (80km/h), whichever is the lowest.

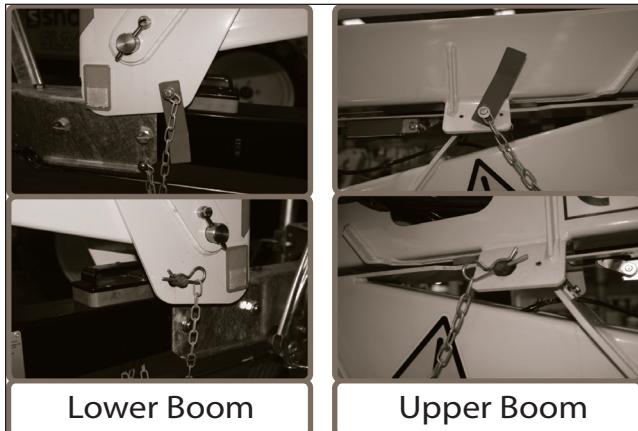


Figure 10.3 – Transport Pin Locations

1. Before towing, check the capacity of the vehicle being used. Machine weight will increase if optional extras are fitted.
2. Ensure that the road tires and brakes are in good serviceable condition.
3. Ensure that all booms are fully lowered and both the transit pins are fitted through the loops and secured with the "R" clip on the end of the chain.

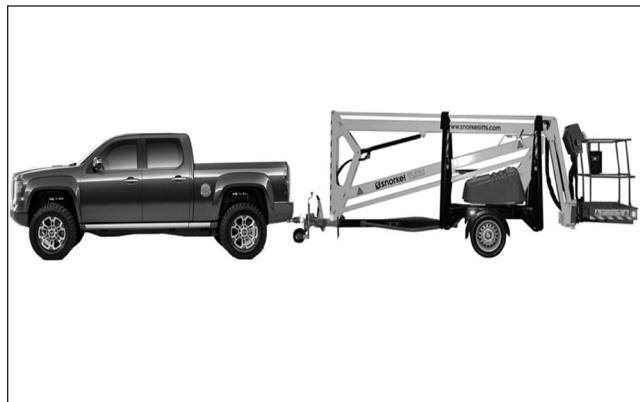


Figure 10.4 – Mounted Trailer on a Vehicle

4. Ensure that all outriggers are fully raised.
5. Use the jockey wheel to raise or lower the tow bar coupling to position the machine above the 50mm ball hitch on the towing vehicle (refer to Figure 10.5).

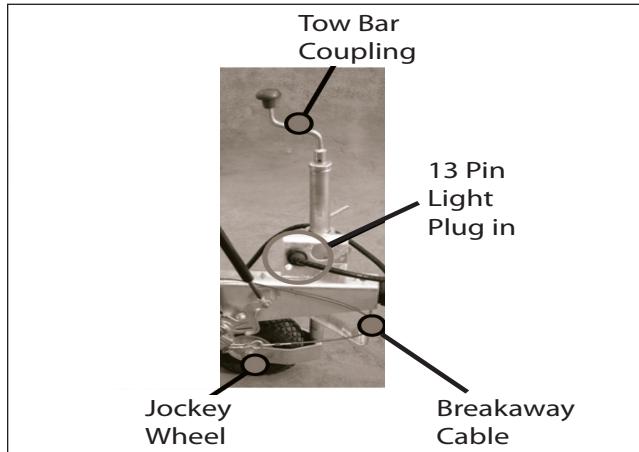


Figure 10.5 – Illustration of a Jockey Wheel

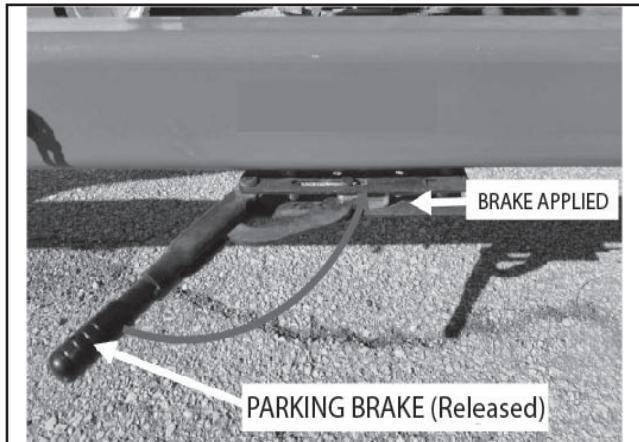


Figure 10.6 – Illustration of a Parking Break

6. Apply the Parking Brake (refer to Figure 10.6).
7. Lower the tow bar coupling down onto the ball hitch using the jockey wheel.
8. Secure the breakaway cable, (Ensure correct engagement of 50mm ball).
9. Fully raise the jockey wheel and lock in position.
10. Release the Parking Brake (refer to Figure 10.6).
11. Plug in the trailer lights (13 pin) plug and check that both vehicle and trailer lights operate correctly.

Friction Drive Assist Package

The friction drive assist package is an option to have attached to the aerial platform. It allows for the aerial platform to be moved over short distances with ease.

Use the following procedure to operate the friction drive:

1. Ensure that the booms are fully lowered and all outriggers are fully raised.

2. Push down on the friction drive hand lever to engage the drive cylinders against the tires until they lock overcentre (refer to Figure 10.7).



Figure 10.7 – Friction Drive Hand Lever

3. Turn the Control select/ground operation switch to lower controls.
4. Disengage the Parking Brake and ensure that the jockey wheel directional locking pin is removed.



Figure 10.8 – Directional Locking Pin Disengaged

5. Using the 2 hydraulic cylinders on the right side of the chassis (refer to Figure 10.9);
 - Push both levers forward to move the aerial platform in a straight direction.
 - Push both levers backwards to reverse the aerial platform in a straight direction.
 - Push the left lever only forwards or backwards to turn the machine to the right.
 - Push the right lever only forwards or backwards to turn the machine to the left.



Figure 10.9 – Hydraulic Levers

6. Ensure the Parking brake is engaged when the machine is in position

Chapter 11 – Emergency Operation

The aerial platform may be lowered using the emergency lowering slew, lowering valves or hand pump.

⚠ Danger

Pinch points may exist between moving components. Death or serious injury will result from becoming trapped between components. Make sure all personnel stand clear while lowering the platform with the emergency lowering system.

⚠ Warning

The potential for an accident increases when safety devices do not function properly. Death or serious injury could result from such accidents. Fully close the emergency lowering valve before operating the aerial platform.

⚠ Warning

The potential for an accident increases when safety devices do not function properly. Death or serious injury can result from such accidents. Immediately push the emergency stop button inward to disable the control system before using the emergency lowering system in the event of an emergency.

Use the following procedure to operate the emergency lowering system.

1. Immediately push the emergency stop button inward to disable the control system in the event of an emergency.
2. Locate the emergency lowering control.
3. Make sure there is nothing in the way to obstruct the platform when it lowers.
4. Stand clear of the boom structure.

Emergency Slew

The emergency lowering slew may be used to lower the platform if there is a malfunction in the hydraulic or electrical system.

In the event of a failure, the machine can be manually slewed by moving the slew platform clockwise or anticlockwise by inserting the slew lever and rotating gearbox.

The slew lever for the aerial platform is located on the side of the chassis as shown in Figure 11.1 below.

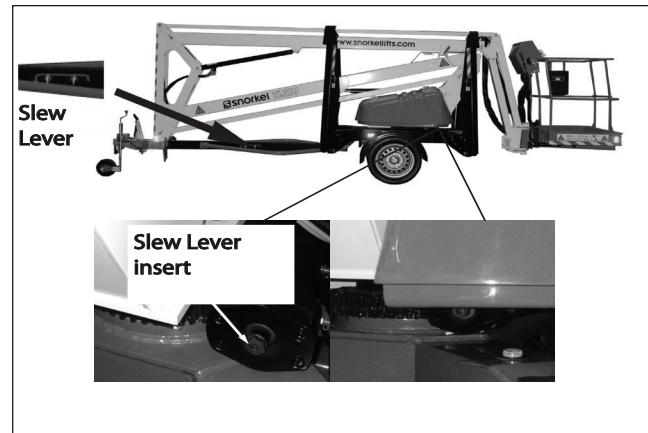


Figure 11.1 – Slew Lever Location and Insert

Emergency Lowering Valves

In the event of a power failure, the emergency lower valve on the ram can be used to lower the booms.

This process involves assistance from the ground.

- Operate the lower ram valve first because it is closer to the ground
- Press on the lowering valve button to initiate lowering and facilitate access to the top ram valve.

Note

Each emergency ram valve will automatically close when the button is released.



Figure 11.2 – Emergency Valve Location

⚠ Danger

If the emergency lower is used due to a machine defect, do not use the machine. Contact your local Snorkel representative.

⚠ Warning

If the emergency lower is used, the top and bottom booms must be fully extended then fully lowered before work can continue.

After emergency lowering, any further powered lowering could cause an airlock in the hydraulic system. This could cause the hydraulic operation to fail.

All booms must be fully extended/raised, then lowered before work can recommence.

Emergency Lowering Hand Pump

The emergency hand pump lowering procedure is available from the upper control station. In the event of a power failure, the hand pump procedure to use is as follows:

- Insert the hand pump into the pump shaft.
- Move the platform raise/lower levers to the required direction of movement and operate the hand pump.
- Continue pressing down on the platform raise/lower levers when the machine starts to lower.

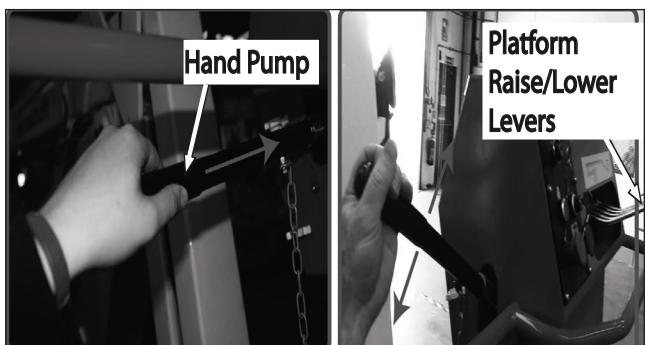


Figure 11.3 – Hand Pump Emergency Lowering Procedure

Chapter 12 – Troubleshooting

The troubleshooting chart may be used to locate and eliminate situations where machine operation may be interrupted. If the problem cannot be corrected with the

action listed, stow the machine and remove it from service. Repairs must be made by qualified maintenance personnel.

Troubleshooting Chart

Symptom	Possible Cause	Corrective Action
All functions stop working.	Motor or pump failure.	Manually stow the machine using the emergency slew/emergency lowering valves/emergency handpump.
	Low fluid level in reservoir.	Check hydraulic fluid level. Add correct type of fluid if necessary.
	Batteries discharged.	Recharge batteries.
	Electrical system malfunction.	Stow the machine and do not operate until repairs are made.
Platform will not raise or lower from lower controls.	Control select/ground operation switch is in the upper control or the off position.	Place the switch in the lower control position.
	Battery disconnect plug is removed.	Plug in the battery disconnect.
	Emergency stop button is pushed inward to the off position.	Twist and pull the emergency stop button outward to the on position.
	Emergency lowering lever is not properly disengaged.	Make sure the lever returns to the normal operating position, is removed and stowed in its rest hold.
Platform will not raise or lower from upper controls.	Control select/ground operation switch is in the lower control or the off position.	Place the switch in the upper control position.
	Emergency stop button is pushed inwards to the off position	Twist and pull the emergency stop button outwards to the on position.
	Emergency lowering slew not properly disengaged.	Make sure the slew is removed and stowed in its rest hold.
Platform will not raise, or raises slower than normal.	Emergency slew lever not disengaged.	Make sure the slew lever is removed and stowed.
	Platform capacity has been exceeded.	Remove load from platform. Refer to platform capacity placard for maximum capacity.
	Low battery charge.	Check the battery charge indicator and recharge the batteries if necessary.
Platform drifts down.	Emergency slew lever not disengaged.	Make sure the slew lever is removed and stowed.
	Hydraulic system malfunction.	Stow the machine and do not operate until repairs are made.

Chapter 12 – Troubleshooting

Symptom	Possible Cause	Corrective Action
Wheels won't turn when winching or pushing.	Parking Brake is engaged.	Manually release the Parking brake
Battery charger does not indicate a reading when charging batteries.	No source of power.	Make sure power source is plugged in and turned on.
	Faulty batteries or charger.	Stow the machine and do not operate until repairs are made.
Severe hydraulic leak.	Failure of hose, tube, fitting, seal, etc.	Stow the machine and do not operate until repairs are made.
Cantilt Alarm sounds	Machine exceeded tilt angle	Lower the platform and level Chassis using outrigger controls

Appendix A – Glossary

aerial platform – a mobile device that has an adjustable position platform, supported from ground level by a structure.

ambient temperature – the air temperature of the immediate environment.

authorized personnel – personnel approved as assigned to perform specific duties at a specific location.

base – the relevant contact points of the aerial platform that form the stability support (e.g. wheels, casters, stabilizers).

battery tray – a fixed compartment that holds all, or some, of the machine batteries.

center of gravity – the point in the aerial platform around which its weight is evenly balanced.

chassis – the integral part of the aerial platform that provides mobility and support for the scissors structure.

control valve tray – a fixed compartment that holds the control valve levers and the diagnostic display.

fall restraint – a system that is used while working on a boom lift within the boundaries of platform guardrails to provide restraint from being projected upward from the platform. This system includes a harness or belt, lanyard, and a lanyard anchor. Although federal regulations, OSHA, ANSI, and Snorkel do not require the use of additional fall protection beyond the platform guardrails on scissor lift aerial platforms, local, state, or employer rules may require their use.

floor or ground pressure – the maximum pressure, expressed in pounds per square inch, a single wheel concentrates on the floor or ground.

gradeability – the maximum slope that the aerial platform is capable of travel.

guardrail system – a vertical barrier around the platform to prevent personnel from falling.

hazardous location – any location that contains, or has the potential to contain, an explosive or flammable atmosphere as defined by ANSI/NFPA 505.

hydraulic tray – a swing-out compartment that holds the hydraulic pump, fluid reservoir and the fluid filter.

lower or ground controls – the controls located at ground level for operating some or all of the functions of the aerial platform.

manufacturer – a person or entity who makes, builds or produces an aerial platform.

maximum travel height – the maximum platform height or the most adverse configuration(s) with respect to stability in which travel is permitted by the manufacturer.

maximum wheel load – the load or weight that can be transmitted through a single wheel to the floor or ground.

Minimum Safe Approach Distance (M.S.A.D.) – the minimum safe distance that electrical conductors may be approached when using the aerial platform.

operation – the performance of any aerial platform functions within the scope of its specifications and in accordance with the manufacturer's instructions, the users work rules, and all applicable governmental regulations.

operator – a qualified person who controls the movement of an aerial platform.

Outrigger Level Sensor – a device that detects a preset degree of variation from perfect level. The level sensor is used to sound an alarm if the outriggers are not fully under load.

personal fall arrest system – a fall protection system that is used while working on an unprotected edge (such as a roof top with no guardrail). This system includes a harness, lanyard or other connecting device, a fall arrestor, an energy absorber or decelerator, an anchorage connector, and a secure anchorage such as a building beam, girders or columns. An aerial platform is not a fall arrest anchorage.

platform – the portion of an aerial platform intended to be occupied by personnel with their tools and materials.

platform height – the vertical distance measured from the floor of the platform to the surface upon which the chassis is being supported.

prestart inspection – a required safety inspection routine that is performed daily before operating the aerial platform.

qualified person – a person, who by reason of knowledge, experience, or training is familiar with the operation to be performed and the hazards involved.

rated work load – the designed carrying capacity of the aerial platform as specified by the manufacturer.

stow – to place a component, such as the platform, in its rest position.

unrestricted rated work load – the maximum designed carrying capacity of the aerial platform allowed by the manufacturer in all operating configurations.

upper controls – the controls located on or beside the platform used for operating some or all of the functions of the aerial platform.

wheelbase – the distance from the center of the rear wheel to the center of the front wheel.

working envelope – the area defined by the horizontal and vertical limits of travel that the platform may be positioned in.

working height – platform height plus six feet (1.8 meters).

Appendix B – EC Declaration of Conformity



DECLARATION OF CONFORMITY

This declaration is issued under the sole responsibility of the manufacturer

Manufacturer's Name and Full Address	Snorkel Europe Ltd Vigo Centre, Birtley Road, Washington, Tyne & Wear, NE38 9DA, UK
Description and Identification of the Machinery	
Product Description	Mobile elevating work platform
Model	TL37
Serial Numbers	XXXXXX- --- (model)-(manufacturer)-(YYMM)-(5-digit sequential starting at 00001)
This machinery conforms to all the requirements of the Machinery Directive 2006/42/EC	
This machinery also conforms to the following Directives	EMC Directive 2014/30/EU
The following standards have been used	EN 12100: 2010, EN 280: 2013 + A1: 2015, EN 60204-1: 2018
The machinery has been examined by	Kuiper Certificering Kuiper Certificering B.V. Van Slingelandstraat 75, 7331 NM Apeldoorn, The Netherlands
Notified Body Number	XXXXXXXXXXXX
Certificate Number	XXXXXXXXXXXX
Name and address of the person authorised to compile the technical file (based in the European Community)	Snorkel Europe Ltd Vigo Centre, Birtley Road, Washington, Tyne & Wear, NE38 9DA, UK
Person authorised to make this declaration	Snorkel Europe Ltd Vigo Centre, Birtley Road, Washington, Tyne & Wear, NE38 9DA, UK
Name	XXXXXXXXXXXX
Function	Head of Engineering
Place of Declaration	Snorkel Europe Ltd Vigo Centre, Birtley Road, Washington, Tyne & Wear, NE38 9DA, UK



Snorkel Product Warranty Policy

1. Snorkel warrants, its authorized sales and service centers (herein referred to as "SSC"), each new machine manufactured and sold by it to be free from defects in material and workmanship for a period of two (2) years from date of delivery to any customer. The warranty will apply subject to the machine being operated in accordance with the rules, precautions, instructions and maintenance requirements outlined in the relevant Snorkel Operator and Parts/Service manuals. Snorkel further warrants the structural components, specifically the mainframe chassis, turntable, booms and/or scissor arms of each new machine manufactured by it to be free from defects in material and workmanship for an additional period of three (3) years. Any such part or parts which, upon examination by the Snorkel Warranty Department or appointed representative, are found to be defective will be replaced or repaired by Snorkel through local authorized Dealers. The structural warranty specifically excludes adverse effects on the machine structure arising from damage, abuse or misuse of the equipment.
2. Machines may be held in an authorized Distributor/ SSC's stock for a maximum period of six (6) months from the date of shipment from Snorkel, before the warranty period is automatically initiated on each machine.
3. It is the responsibility of the Distributor/SSC to complete and return to Snorkel a Pre-delivery Inspection Record, Warranty Registration Form, before the act of rental / loan / demonstration of the machine or delivery to an end user. In the case of direct sale to end customers the same responsibility lies with the end customer.
4. Any end customer, SSC, distributor or dealer shall not be entitled to the benefits of this warranty and Snorkel shall have no obligations here under unless the "Pre-Delivery and Inspection Record" has been properly completed and returned to the Snorkel Warranty department within fifteen (15) days after delivery of the Snorkel product to the Customer or Dealer's demonstration / rental fleet. Snorkel must be notified, in writing, within ten (10) days, of any machine sold to a Customer from a Dealer/SSC's rental fleet during the warranty period.
5. Any part or parts which upon examination by the Snorkel Product Support Department are found to be defective within the specified warranty period, will be replaced or repaired at the sole discretion of Snorkel through its local Authorized Distributor/SSC, at no charge. Any parts replaced under warranty must be original Snorkel parts obtained through an authorized Snorkel Distributor/SSC unless expressly agreed otherwise in writing and in advance by Snorkel's warranty department.
6. All parts claimed under warranty must be held available for return and inspection upon request for a period of 90 days from date of claim submission, it is necessary that all parts are individually tagged or marked with their part number and the warranty claim number. All parts returning should be still in a factory state, free of any alteration to the original design. If the parts are subject to repair it will need to be pre authorized by the Snorkel Product Support Group and or Warranty Department prior to the repair being completed. After 90 days all parts replaced under warranty which have not been returned, to Snorkel should be destroyed. Failure to produce parts requested by the Warranty Administrator for inspection within a period of 14 days will result in the claim being automatically rejected in full. Materials returned for warranty inspection must have the following procedure:
 - Carefully packaged to prevent additional damage during shipping
 - Drained of all contents and all open ports capped or plugged
 - Shipped in a container tagged or marked with the RMA number
 - Shipped PREPAID (ground service only). Any item(s) returned for warranty by any other means
 - may be refused and returned, unless prior approval is agreed with Snorkel.



Snorkel Product Warranty Policy

7. At the direction of the Snorkel Warranty department, any component part(s) of Snorkel products to be replaced or repaired under this warranty program must be returned freight prepaid for inspection. An RMA (Returns material authorization) must be requested from Snorkel Warranty department, a copy to be placed with the returning component part(s).
8. All warranty replacement parts will be shipped freight prepaid (standard charges, ground shipping only) from the Snorkel Parts department, Service Department or from the Vendor to Dealer/SSC or Customer. Any other shipping method is the customer responsibility.
9. All warranty claims are subject to approval by Snorkel Service department. Snorkel reserves the right to limit or adjust claims with regard to defective parts, labor or travel time based on usual and customary guidelines.
10. Reimbursement policy, labor will be paid at 75% of posted hourly shop rate. Travel time will be paid at \$50 per hour up to a maximum of 3 hours. Snorkel will pay 1 hour of troubleshooting time per warranty claim, unless expressly agreed otherwise in writing and in advance by Snorkel's Warranty Department. An annual rate declaration must be supplied to the Snorkel Warranty administrator by January 31st and will be used as the reimbursable rate for that calendar year.

REPLACEMENT PARTS WARRANTY

- Any part replaced under this limited warranty is not subject to further warranty cover beyond the normal warranty period of the machine upon which the part was installed.
- Any replacement parts sold (not delivered under a warranty claim) will be subject to a warranty period of (6) six months from the date of invoice.
- Parts held by an authorized Distributor/SSC are covered under warranty for a period of (12) twelve months from the date of invoice, provided that those parts have been subject to appropriate storage to prevent damage and deterioration (conditional on Snorkel review).

CLAIM PROCEDURE

The Snorkel Warranty department must be notified within forty-eight hours (48) of any possible warranty situation during the applicable warranty period. Personnel performing major warranty repair or parts replacement must obtain specific approval by the Snorkel Warranty department prior to performing the warranty repair or replacement.

When a Distributor/SSC/Customer perceive a warranty issue to exist the following steps must be adhered to:

- Customer/SSC/Distributor to place a purchase order for genuine Snorkel replacement parts.
- Snorkel to dispatch parts via the requested method (in line with the required response time).
- Confirmation that a qualified technician is available to replace the part and that this person has been accepted by Snorkel to carry out such work under the warranty of the machine. Failure to do this may nullify the warranty.
- Customer/SSC/Distributor to allocate a warranty claim number to the repair.
- All correspondence in respect of the claim to be on an official Snorkel warranty claim form as supplied by Snorkel's warranty department.
- All warranty claims must be submitted within 30 days of the date of the machine repair.

FREIGHT DAMAGE

- If a machine is received in a damaged condition, then the damage must be noted on the bill of lading and/or delivery documents and photographs must be taken at the point of delivery, prior to signing acceptance of the consignment.
- The freight company and Snorkel must be contacted by the Distributor and a damage claim registered by either party immediately.
- The above requirements apply only to freight damage associated with equipment supplied by Snorkel transport. Customer freight issues are excluded from this warranty policy.



Snorkel Product Warranty Policy

THIS PRODUCT WARRANTY POLICY SPECIFICALLY EXCLUDES:

1. Engines, motors, tires and batteries are manufactured by specialist suppliers to Snorkel, who furnish their own warranty policies. Snorkel will, however, to the extent permitted pass through any such warranty protection to the Distributor/SSC/Customer.
2. Any Snorkel product which has been modified or altered outside Snorkel factories without written approval, if such modification or alteration, in the sole judgment of Snorkel Engineering and/or Service Departments, adversely affects the stability, reliability or service life of the Snorkel product or any component thereof.
3. Any Snorkel product which has been subject to misuse and abuse, improper maintenance or accident. "Misuse" includes but is not limited to operation beyond the factory-rated load capacity and speeds. "Improper maintenance" includes but is not limited to failure to follow the recommendations contained in the Snorkel Operation, Maintenance, and repair Parts Manuals.
4. Normal wear of any Snorkel component part(s). Normal wear of component parts may vary with the type, application or type of environment in which the machine may be used; such as, but not limited to sandblasting applications.
5. Routine maintenance, routine maintenance items and minor adjustments are not covered by this warranty, including but not limited to hydraulic fluid, filters and lubrication, paint and decals, engine tune-up, brake adjustments etc. Snorkel will not cover leaks from fittings, hoses and any other connection points after the unit has been in service for 90 days or 150 hours of operation which ever comes first.
6. Any Snorkel product that has come into direct contact with any chemical or abrasive material.
7. Incidental or consequential expenses, losses, or damages related to any part or equipment failure, including but not limited to freight cost to transport the machine to a repair facility, downtime of the machine, lost time for workers, lost orders, lost rental revenue, lost profits, expenses or increased cost. This warranty is expressly in lieu of all other warranties, representations or liabilities of Snorkel, either expressed or implied, unless otherwise amended in writing by Snorkel.
8. Snorkel warranty policy does not cover any duties, taxes, environmental fees including without limitation, disposal or handling of tires, batteries and petrochemical items.
9. Items specifically excluded are: fuel injectors, motor brushes, glow plugs, contactor tips and springs, filters, lamp bulbs, lamp lenses, coolants, lubricants, brake pads and cleaning materials.
10. Failure of replacement parts due to fault misdiagnosis or incorrect fitting by the Distributor/SSC/Customer.

**SNORKEL MAKES NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THIS LIMITED WARRANTY.
SNORKEL MAKES NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE
AND DISCLAIMS ALL LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED
TO INJURY TO PERSONS OR PROPERTY.**



Snorkel Product Warranty Policy

Wherever possible the end customer shall obtain all warranty support and make all warranty claims through the local Snorkel authorized Distributor/SSC/Dealer. Warranty support should be from the Distributor/SSC/Dealer from whom the Snorkel product was purchased. Where Snorkel equipment is supplied directly from the factory the end customer, or if unable to contact the Distributor/SSC/Dealer, may contact the Snorkel Warranty Department for further assistance.

APPEAL

The buyer may appeal in writing against a rejected or adjusted claim to Snorkel warranty department within a period of 21 days of receiving the rejection or adjustment notice. The appeal should be grounded on express reasons and supported by relevant evidence. Appeals received outside of this time limit will not be considered.

SNORKEL WARRANTY SCHEDULE

Limited Warranty Periods

Item	Warranty Period
New machine materials and workmanship	2 year parts replacement
Structural components (Chassis, Turntable, Booms, Scissors)	5 years parts replacement or repair
Parts held in a Distributor's stock	12 months from date of invoice, subject to adequate storage/protection
Parts sold (non warranty)	6 months from date of invoice
Batteries supplied on new machines	6 months from warranty registration date
Other specifically excluded parts: Fuel injectors Motor brushes Glow plugs Contactor tips and springs Oils Filters Lamp bulbs Lamp lenses Coolants Lubricants Cleaning materials All consumable/wear parts	Not covered by Warranty

Manufacturer's Address

Snorkel Europe Ltd
Vigo Centre, Birtley Road,
Washington, Tyne & Wear, NE38 9DA, UK

Local Distributor / Lokaler Vertiebshändler / Distributeur local
El Distribuidor local / Il Distributore locale

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