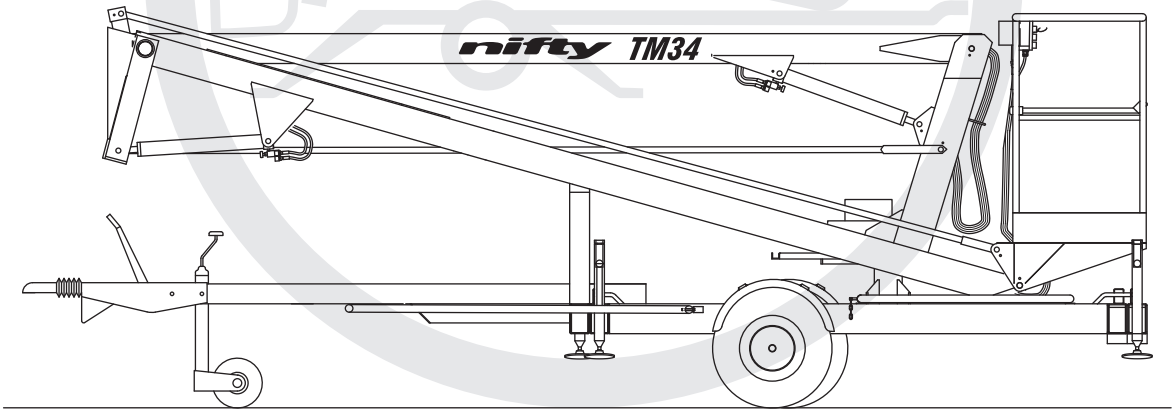
# TM34M

## Operating and Safety Instructions

## MODEL TM34M ECO SERIES




**Niftylift Limited**
1525 S.Buncombe Road
Greer
SC 29651
USA

www.niftylift.com
e-mail: niftyusa@niftylift.com
Tel: 864-968-8881
Fax: 864-968-8836

nqa. ISO 9001 Registered — UKAS QUALITY MANAGEMENT 015

CE

niftylift.com
info@niftylift.com

M50406/01

# Table of Contents


| | | |
|---|---|---|
| **1** | **INTRODUCTION AND GENERAL INFORMATION** | **PAGE** |
| | 1.1 Foreword | 2 |
| | 1.2 Scope | 3 |
| | 1.3 Introducing the TM34 Trailer Mount Series | 3 |
| | 1.4 General Specification | 4 |
| | 1.5 Identification | 5 |
| **2** | **SAFETY** | |
| | 2.1 Mandatory Precautions | 6-8 |
| | 2.2 Environmental Limitations | 9 |
| | 2.3 Noise & Vibration | 9 |
| **3** | **PREPARATION AND INSPECTION** | |
| | 3.1 Unpacking | 10 |
| | 3.2 Preparation for Use | 10 |
| | 3.3 Pre-Operational Safety Check Schedules | 11-12 |
| | 3.4 Placard, Decals and Installation | 13-14 |
| | 3.5 Torque Requirements | 15 |
| **4** | **OPERATION** | |
| | 4.1 Control Circuit Components | 16 |
| | 4.2 Setting up Procedures | 17-18 |
| | 4.3 Ground Control Operation | 19-20 |
| | 4.4 Basket Control Operation | 21-22 |
| | 4.5 Batteries and Charging | 23-24 |
| | 4.6 Transporting, Towing, Storage and Setting to Work | 25-28 |
| | 4.7 Traction Drive | 29-30 |
| **5** | **EMERGENCY CONTROLS** | |
| | 5.1 General | 31 |
| | 5.2 Emergency Procedures - Incapacitated Operator | 31 |
| | 5.3 Emergency Procedures - Machine Failure | 31 |
| | 5.4 Incident Notification | 31 |
| **6** | **RESPONSIBILITIES** | |
| | 6.1 Changes in Ownership | 32 |
| | 6.2 Manual of Responsibilities (USA only) | 32 |
| | 6.3 Inspection/ Service Check List | 33-34 |

# 1 Introduction and General Information

## 1.1 FOREWORD

The purpose of these manuals is to provide the customer with proper safety operating and maintenance instructions essential for proper machine operation.

All information in these manuals should be **READ** and fully **UNDERSTOOD** before any attempt is made to operate the machine. **THESE MANUALS ARE VERY IMPORTANT TOOLS** - Keep them with the machine at all times.

**The manufacturer has no direct control over machine application and use, therefore conformance with good safety practices is the responsibility of the user and his operating personnel.**

**All information in these manuals is based on the use of the machine under proper operating conditions. Alteration and/or modification of the machine are strictly forbidden.**

**One of the most important facts to remember is that any equipment is only as safe as those who operate it.**

**DANGER, WARNING, CAUTION, IMPORTANT, INSTRUCTIONS AND NOTICE**

Any place these topics may appear, either in this manual or on the machine, they are defined as follows:

**DANGER:** If not correctly followed there is a high probability of serious injury or death to personnel.

**WARNING OR CAUTION:** If not correctly followed there is some possibility of serious injury or death to personnel.

THE **'SAFETY ALERT'** SYMBOL IS USED TO CALL ATTENTION TO POTENTIAL HAZARDS THAT MAY LEAD TO SERIOUS INJURY OR DEATH, IF IGNORED.

**IMPORTANT AND INSTRUCTIONS:** Denotes procedures essential to safe operation and prevention of damage to or destruction of the machine.

**NOTICE:** Indicates general safety rules and/or procedures relating to the machine.

**It is the owner's/user's responsibility to know and comply with all applicable rules, regulations, laws, codes and any other requirements applicable to the safe use of this equipment.**

## 1.2 SCOPE

These operating instructions contain all the necessary information required to allow the safe operation of any Niftylift TM34, powered by electric (DC), diesel (D), gasoline (G) engine, or a combination of these.

For further technical information, circuit diagrams and specific instructions for all maintenance which may need to be carried out by specialist trained personnel, see the associated Workshop and Parts manual for your model of Niftylift TM34.

## 1.3 INTRODUCING THE TM34 TRAILER MOUNT (TM) SERIES

Please note at the time of going to press all information, illustrations, details and descriptions contained herein are valid. Niftylift reserves the right to change, alter, modify or improve its products without any obligations to install them on previously manufactured machines.

If you require further information after reading this manual, please do not hesitate to contact us at your nearest office.

**Niftylift Inc, 1525 S. Buncombe Road, Greer, SC 29651 USA**

Tel: **864 968 8881** Fax: **864 968 8836** Email: **niftyusa@niftylift.com**

The Niftylift TM34 trailer mount is an extremely versatile articulated boom basket of unique and simple design. It is capable of placing two men and their tools up to a height of 40ft or an outreach of 16ft 8in.

The booms are mounted via a 360$^{o}$ powered swing mechanism on to a compact base balanced on a single axle. The fully articulating booms give an outstanding working envelope. The large pneumatic wheels and minimal weight make the unit light and simple to manoeuvre.

A simple, all-hydraulic proportional control system gives smooth, reliable movement of the basket and maximum reliability in the harshest environments.

The Niftylift TM34 is available with **manual** or **hydraulically** powered outriggers (**TM34M** or **TM34H**), either option making setting up both swift and simple. A unique pressure sensitive microswitch system fitted to each outrigger prevents operation of the machine until all outriggers have been correctly deployed and also provides a loud audible alarm warning of a possibly hazardous situation. This Operating Manual provides instructions for both manual and hydraulic outrigger options.

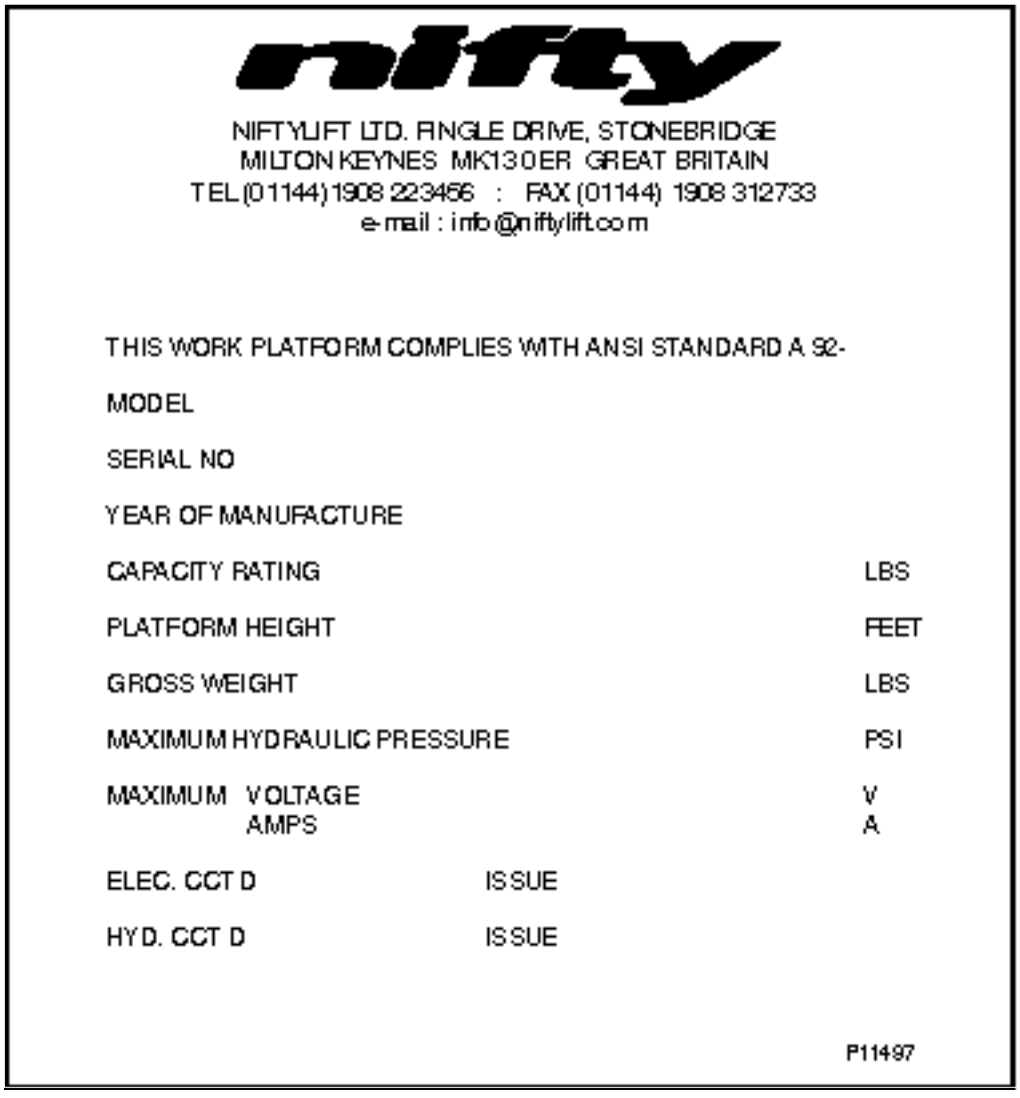
*Models include the following:*

| | |
|---|---|
| E: - DC ELECTRIC | DE: - BI-ENERGY (DIESEL & BATTERY) |
| AC: - AC ELECTRIC | GE: - GASOLINE & BATTERY |
| D: - DIESEL | GG: - GASOLINE & LPG (PROPANE) |
| G: - GASOLINE | T: - TRI - ENERGY (GASOLINE, PROPANE & BATTERY) |

## 1.4 GENERAL SPECIFICATION

| FEATURE | TM34 |
|---|---|
| MAXIMUM HEIGHT - WORKING | 40ft 5in |
| MAXIMUM HEIGHT - BASKET | 33ft 10in |
| MAXIMUM HEIGHT - STOWED | 6ft 3in |
| MAXIMUM OUTREACH | 16ft 8in |
| MAXIMUM WIDTH - TOWING | 5ft |
| JACK SPREAD | 8ft 11in |
| MAXIMUM LENGTH - STOWED | 18ft |
| MAXIMUM CAPACITY (USA) | 500lb |
| TURRET ROTATION | 360º |
| TURRET TAILSWING | Zero |
| MAXIMUM TRAVEL SPEED | 45 mph |
| BASKET SIZE - LENGTH X WIDTH | 25in x 44in |
| CONTROLS | Full proportional hydraulic |
| HYDRAULIC PRESSURE | 2900PSI |
| TIRES | 165 R13 8PR 175 R14C 8PR (Traction Drive)<br>4.5 bar (65 psi) |
| GROUND CLEARANCE | 8½in |
| GROSS VEHICLE WEIGHT (MAXIMUM) | 2794lb |
| MAXIMUM GROUND PRESSURE | 11250lb/ft$^2$ |
| POWER SOURCE | E (Electric) models – 2 x 6v 250 AH batteries (Manual)<br>4 x 6v 250 AH batteries (Hydraulic)<br>(G) Gasoline models - Honda GX200 Engine<br>D (Diesel) models - Yanmar L40 or Kubota OC60 engine |

## 1.5 IDENTIFICATION (USA PLATE)




**This manufacturer's plate is attached to Boom 1 on each machine at the time of manufacture on every Niftylift. Please ensure all sections have been stamped and are legible.**

# 2 Safety

## 2.1 MANDATORY PRECAUTIONS

When operating your Niftylift, your safety is of utmost concern. In order to fully appreciate all aspects of the machines operation it should be ensured that each operator has **READ** and fully **UNDERSTOOD** the relevant manual covering machine use, maintenance and servicing. If any doubts exist concerning any points covered in your manual, contact your local dealer or Niftylift Ltd.

Before using any Niftylift, thoroughly inspect the machine for damage or deformation to all major components. Likewise, check the control systems for hydraulic leaks, damaged hoses, cable faults or loose covers to electrical components. At no time should damaged or faulty equipment be used - Correct all defects before putting the Niftylift to work. If in doubt, contact your local dealer or Niftylift Inc. (see front cover for address).

**THE MANUFACTURER HAS NO DIRECT CONTROL OVER THE MACHINE APPLICATION AND USE. THEREFORE CONFORMATION WITH GOOD SAFETY PRACTICES IS THE RESPONSIBILITY OF THE USER AND HIS OPERATING PERSONNEL. FAILURE TO UNDERSTAND AND FOLLOW ALL SAFETY RULES COULD RESULT IN SERIOUS INJURY OR DEATH.**

**2.1.1** Only trained persons will be permitted to operate the Niftylift.

**2.1.2** Always operate the Niftylift in full accordance with the manufacturers Operating & Safety Instructions for that model.

**2.1.3** Before use each day and at the beginning of each shift the Niftylift shall be given a visual inspection and functional test including, but not limited to, operating and emergency controls, safety devices, personal protective clothing, including fall protection, air, hydraulic and fuel system leaks, cables and wiring harness, loose or missing parts, tires and wheels, placards, warnings, control markings and Operating and Safety Manuals, guards and guard rail systems and all other items specified by the manufacturer.

**2.1.4** Any problems or malfunctions that affect the safety of operations shall be repaired prior to the use of the Niftylift.

**2.1.5** Always ensure that all warning labels, instructions, placards, control markings and Safety Manuals are intact and clearly legible. If replacements are required contact your local dealer or Niftylift. Always observe and obey safety and operating instructions on such labels.

**2.1.6** Do not alter, modify or disable in any way the controls, safety devices, interlocks or any other part of the machine.

**2.1.7** Before the Niftylift is used and during use the user shall check the area in which it is to be used for possible hazards such as, but not limited to, uneven ground drop-offs, holes, bumps, obstructions, debris, floor and overhead obstructions, high voltage conductors, wind and weather, unauthorised persons and any other possibly hazardous conditions.

**2.1.8** Never exceed the maximum basket capacity, as indicated on the decals and machine serial plate.

**2.1.9** Never position any part of the Niftylift within 12ft of any electrical power line, conductor or similar not exceeding 66kV. (Minimum span 125m) Other distances for increased voltages and different spans are given in NZECP 34:1993.

**THIS MACHINE IS NOT INSULATED.**
If in doubt, contact the appropriate authorities.

**2.1.10** On entering the basket, ensure that the drop down entry bar is closed afterwards.

**2.1.11** Use of an approved safety belt and lanyard, hardhat and appropriate safety clothing is mandatory. Fasten harness to designated harness securing points within the basket and do not remove until leaving the basket whilst in the stowed position.

**2.1.12**

Always remain standing within the basket. Do not attempt to increase your height or reach by standing and/or climbing on the basket guardrails or any other object. **KEEP YOUR FEET ON THE BASKET FLOOR**. Do not sit, stand or climb on the guardrail, mid rail or boom linkage. Use of planks, ladders or any other devices on the Niftylift for achieving additional height or reach shall be prohibited.

**2.1.13** Do not use the basket levelling system to artificially increase the outreach of the Niftylift. Never use boards or ladders in the basket to achieve the same result.

**2.1.14** Do not use the basket to lift overhanging or bulky items that may exceed the maximum capacity or carry objects that may increase the wind loading on the basket. (e.g. notice boards etc.)

**2.1.15** The Niftylift shall not be operated from a position on trucks, trailers, railway cars, floating vessels, scaffolds or similar equipment unless Niftylift Ltd in Great Britain approves the application in writing.

**2.1.16** Always check below and around the Niftylift before lowering or rotating the booms to ensure that the area is clear of personnel and obstructions. Care should be taken when rotating the booms out into areas where there may be passing traffic. Use barriers to control traffic flow or prevent access to the machine.

**2.1.17** Stunt driving and horseplay, on or around the Niftylift, shall not be permitted.

**2.1.18** When other moving equipment and vehicles are present, special precautions shall be taken to comply with local ordinances or safety standards established for the work place. Warnings such as, but not limited to, flags, roped off areas, flashing lights and barricades shall be used.

**2.1.19** It shall be the responsibility of the user to determine the hazard classification of any particular atmosphere or location. Aerial baskets operated in hazardous locations shall be approved and of the type required. (For the USA refer to ANSI/NFPA 505-1987.)

**2.1.20** The operator shall immediately report to his supervisor any potentially hazardous location(s) (environment) which become evident during operation.

**2.1.21** If an operator encounters any suspected malfunction of the Niftylift or any hazard or potentially unsafe condition relating to capacity, intended use or safe operation he shall cease operation of the Niftylift and request further information as to safe operation from his management, or owner, dealer or manufacturer before further operation of the Niftylift.

**2.1.22** The operator shall immediately report to his superior any problems or malfunctions of the Niftylift, which becomes evident during operation. Any problems or malfunctions that affect the safety of operation shall be repaired prior to continued use.

**2.1.23** The boom and basket of the Niftylift shall not be used to jack the wheels off the ground.

**2.1.24** The Niftylift shall not be used as a crane.

**2.1.25** The Niftylift shall not be positioned against another object to steady the basket.

**2.1.26** Care should be taken to prevent rope, electric cords and hoses from becoming entangled in the aerial basket.

**2.1.27** Batteries shall be recharged in a well-ventilated area free of flame, sparks or other hazards that may cause explosion. Highly explosive hydrogen gas is produced during the charging process.

**2.1.28** When checking electrolyte levels great care should be taken to protect eyes, skin and clothing. Battery acid is highly corrosive and protective glasses and clothing is recommended.

**2.1.29**

When the machine is not in use always stow the booms correctly. **NEVER LEAVE THE KEYS IN THE MACHINE,** if it is to be left for any period of time. Use wheel chocks if leaving on an incline.

**2.1.30** If the basket or elevating assembly becomes caught, snagged or otherwise prevented from normal motion by adjacent structure or other obstacles, such that control reversal does not free the basket, all personnel shall be removed from the basket safely before attempts are made to free the basket using ground controls.

**2.1.31** The engine must be shut down while fuel tanks are being filled. Fuelling must be done in a well-ventilated area free of flame, sparks or any other hazard that may cause fire or explosion. **GASOLINE, LIQUID PROPANE AND DIESEL FUELS ARE FLAMMABLE.**

**2.1.32**

**NEVER START THE NIFTYLIFT IF YOU SMELL GASOLINE, LIQUID PROPANE OR DIESEL FUEL. THESE FUELS ARE HIGHLY FLAMMABLE.**

**2.1.32** The operator shall implement means provided to protect against use by unauthorised persons.

**2.1.34** Never remove anything that may affect the stability of the machine such as, but not limited to, batteries, covers, engines, tires or ballast.

## 2.2 ENVIRONMENTAL LIMITATIONS

All Niftylift Trailer Mounts are limited to operation as previously described and any slopes must be adjusted by use of the outriggers and jacks. Unless specifically configured otherwise, the machine will have short time rating for operation in extreme temperatures, i.e. reduced battery cycle times for low temperatures such as freezers, food storage etc. and cooling limitations for high temperatures as oil temperature must remain between -23° and 93° Celsius.

Extended operation in dusty environments is not recommended and frequent cleaning will be necessary. All dust, dirt, salt encrustation, excess oil or grease should be removed. Deposits of paint or bitumen, particularly on legends or labels should also be removed.

All standard Niftylift machines are rated for a wind speed of 28mph or force 6 on the Beaufort scale. No attempt should be made to operate a Niftylift in wind strengths above this limit and if the operator has any doubts over the wind speed he /she should cease operation immediately until it can be established that the wind speed has fallen to a safe level.

## 2.3 NOISE AND VIBRATION

The airborne noise emission on the 120 range of machines does not exceed 73dB(A), measured at a perpendicular distance of 4m, under equivalent continuous A-weighted sound pressure test conditions. This was based on a Diesel powered machine, working under load. All other models will exhibit significantly lower emissions than this figure, dependant on power option.

In normal operation the Vibration level to which the operator is subjected will not exceed a weighted root mean square acceleration value of 2.5 $m/s^2$.

# 3 Preparation and Inspection

## 3.1 UNPACKING

Since the manufacturer has no direct control over the shipping or carriage of any Niftylift it is the responsibility of the dealer and/or owner and/or leaser to ensure the Niftylift has not been damaged in transit and a Pre-operational Report has been carried out by a qualified engineer before the aerial basket is put into service.

A) Remove all ropes, straps and or chains used to secure the aerial basket during transit.

B) Ensure any ramp, loading dock or forklift used is capable of supporting or lifting the aerial basket.

*****Carry out the Pre-operational Report before placing machine in service.**

## 3.2 PREPARATION FOR USE

Whilst every effort has been made at the Niftylift factory to ensure your machine arrives in a safe and operable condition it is necessary to carry out a systematic inspection prior to putting the aerial basket into service.

**THIS IS NOT A REQUEST IT IS MANDATORY**

To assist the user in this task you will find enclosed an Inspection Check List (see section 6.3), which must be filled out upon delivery/receipt of the machine.

Before the user carries out the Inspection Check List he must have read and fully understood all the contents of the Operating, Safety and Maintenance Manual.

**WARNING - DO NOT OPERATE A POTENTIALLY DEFECTIVE OR MALFUNCTIONING MACHINE. CORRECT AND REPAIR ANY DEFECTS BEFORE OPERATING YOUR NIFTYLIFT.**

## 3.3 PRE-OPERATIONAL SAFETY CHECK SCHEDULES

Before use at the beginning of the work shift, the aerial basket shall be given a visual inspection and functional tests including, but not limited to the following. It is recommended that these be performed at regular intervals as indicated on each checklist.

### 3.3.1 DAILY SAFETY CHECKS

1) Check that all labels (decals) are in place and legible.
2) Visually inspect the machine for damaged or loose components.
3) Check that batteries are charged i.e. Charger has a solid green light and a pulsing red light.
4) Check the fuel level (if applicable).
5) Check that canopies/covers and guards are in place and secure.
6) Check that the boom rest switch is operable (if applicable).
7) Check that control levers are secure and operate freely.
8) Check that operating buttons and emergency stop buttons function properly.
9) Check the operation of the manual hand pump (If applicable).
10) Visually inspect all hydraulic hoses and fittings for damage or leaks.
11) Check operation of the outrigger alarm.
12) Check that jack footpads are secure.
13) Check that the basket pivot pins and their tag bolts are secure.
14) Check security and operation of the boom clamp.

### 3.3.2 WEEKLY SAFETY CHECKS

1) Inspect TIRES and wheels for damage and wear.
2) Check tires for correct pressure. 65psi (4.5 bar)
3) Check mudguards for security and damage.
4) Check battery fluid levels and specific gravity (after charging) and general condition.
5) Check hydraulic oil level, ISO Grade 22 (Europe), Grade 32 (Rest of World).
6) Inspect the engine air filter and clean or replace if necessary.
7) Check that the tow hitch ball lock, breakaway cable/chain and jacking wheel are secure.
8) Check operation and security of outrigger micro switches in conjunction with the alarm system.

### 3.3.3 MONTHLY SAFETY CHECKS

1) Check the engine oil level (if applicable).
2) Check the wheel nuts (torque 80ft lbs/110Nm or 110ft lbs/150Nm Traction Drive Option).
3) Check outriggers for condition, security and operation.
4) Check that the boom rotation gear worm is secure and correctly in mesh. Clean and re-grease.
5) Inspect brakes for operation and wear.
6) Grease the knuckle and centre post.
7) Inspect the engine fuel tank for damage or leaks.
8) Grease the tow hitch assembly.
9) Lightly oil the jack pad ball joints and outrigger housings.
10) Lightly oil the locating pins on outriggers and axles and the axle clamp bolts.
11) Oil and check the operation of manual outriggers.

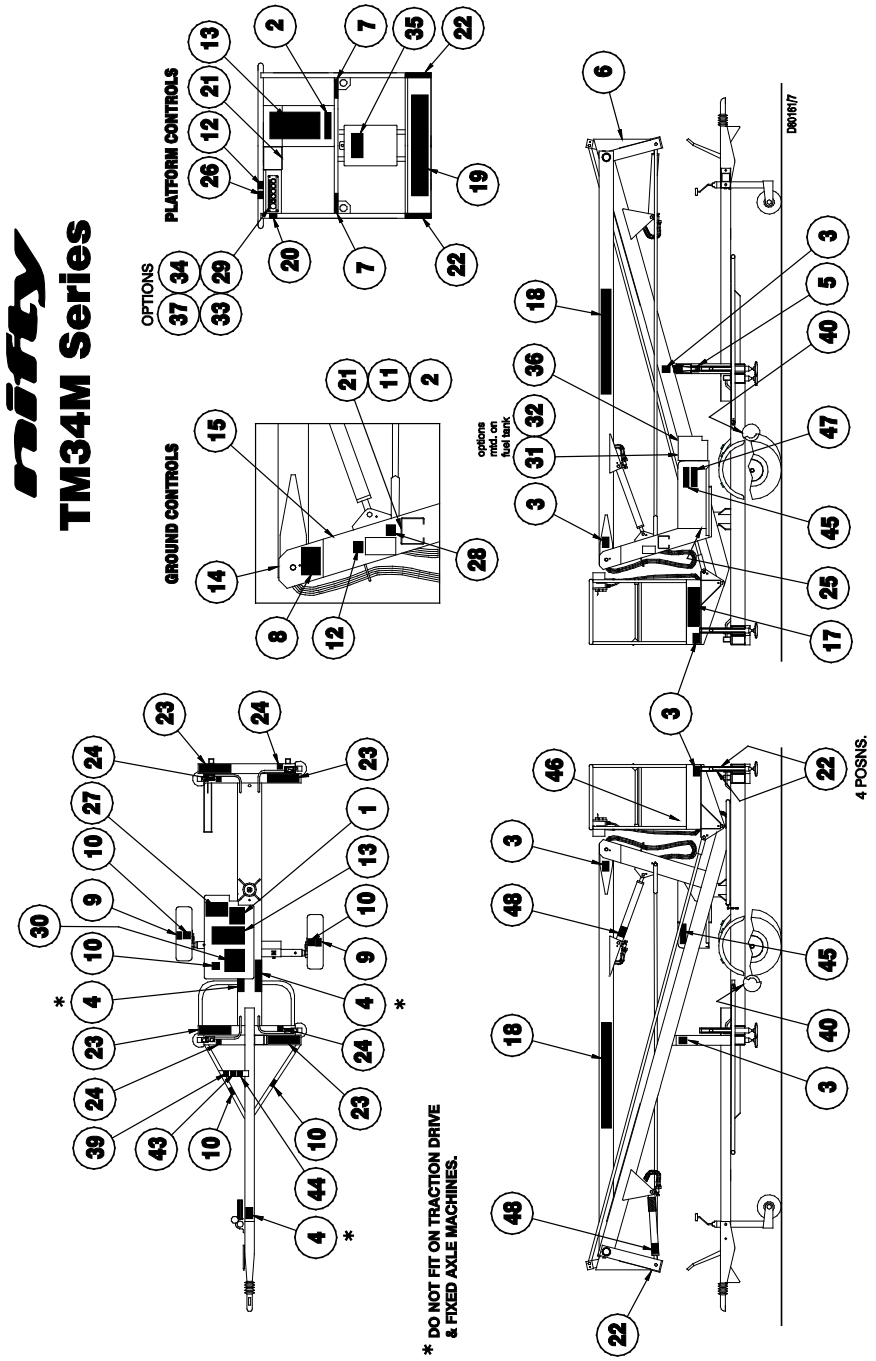
### 3.3.4 ANNUAL SAFETY CHECKS

1) Check that all pivot pins and their tag bolts are secure.
2) Inspect for any cracks or badly rusted areas on booms and chassis.
3) Change the hydraulic oil filters.
4) Inspect the suspension on each axle unit.
5) Check that rotation gear ring bolts are secure (torque 155ft lbs. 210Nm).
6) Inspect the wear of jack threads (manual outriggers).

## 3.4 PLACARD, DECALS & INSTALLATION (TM34M USA)

| ITEM | DESCRIPTION | NUMBER | QTY |
|---|---|---|---|
| 1 | Daily Safety Checks | P14908 | 1 |
| 2 | Tilt alarm | P18842 | 2 |
| 3 | General Crush | P14782 | 6 |
| 4 | Before Towing | P17341 | 3 |
| 5 | Boom Clamp | P19740 | 1 |
| 6 | Coupling instructions | P14896 | 1 |
| 7 | Harness Point | P14883 | 2 |
| 8 | Component Stability | P19708 | 1 |
| 9 | TIRE Pressure 65 psi | P14876 | 2 |
| 10 | No Step | P14785 | 7 |
| 11 | Manual Hand Pump | P19090 | 1 |
| 12 | Emergency Stop | P14864 | 2 |
| 13 | General Warning | P20330 | 2 |
| 14 | Head Protection | P14921 | 1 |
| 15 | Serial Plate | P15383 | 1 |
| 17 | SWL 500lbs | P17328 | 1 |
| 18 | Nifty TM34T | P14612 | 2 |
| 19 | Niftylift.com | P14390 | 1 |
| 20 | Push & Release | P19092 | 1 |
| 21 | Hydraulic Controls – 3 lever | P14926 | 2 |
| 22 | Warning Stripes | | A/R |
| 23 | Outriggers - Manual | P18634 | 4 |
| 24 | Point Load - 7.8kN | P14960 | 4 |
| 25 | Battery Isolator | P18600 | 1 |
| 26 | Basket Gate Warning | P18432 | 1 |
| 27 | Battery Charger | P14904 | 1 |
| 28 | Base Control | P15221 | 1 |
| 29 | Basket Control (E) | P15881 | 1 |
| 30 | General Notice | P18863 | 1 |
| 31 | Petrol Off | P19055 | 1 |
| 32 | Diesel ONLY | P14414 | 1 |
| 33 | Basket Control (Eco G/G) | P17150 | 1 |
| 34 | Basket Control (GE) | P14912 | 1 |
| 35 | Operating Instructions | P14892 | 1 |
| 36 | Noise Warning 73dB | P17123 | 1 |
| 37 | Basket Control (DE) | P14913 | 1 |

| ITEM | DESCRIPTION | NUMBER | QTY |
|---|---|---|---|
| 39 | Traction Drive - Engage | P18890 | 1 |
| 40 | Hand Crush (Traction Drive) | P14782 | 2 |
| 43 | Traction Drive – Release | P18975 | 1 |
| 44 | Traction Drive – On slope | P18976 | 1 |
| 45 | Rotating Machinery | P15010 | 2 |
| 46 | Footswitch | P14884 | 1 |
| 47 | Carb Regulations | P15334 | 1 |



## 3.5 TORQUE REQUIREMENTS

| SCREW QUALITY/SIZE | | Tightening torque in ft lbs (Nm) | | | |
|---|---|---|---|---|---|
| **Grade** | | | **8.8** | | **10.9** |
| M 6 | | 7.4 | (10) | 10 | (14) |
| M 8 | | 18.5 | (25) | 26 | (35) |
| M 10 | | 36 | (49) | 51 | (69) |
| M 12 | | 65 | (86) | 89 | (120) |
| M 14 | | 100 | (135) | 140 | (190) |
| M 16 | | 155 | (210) | 218 | (295) |
| M 18 | | 215 | (290) | 300 | (405) |
| WHEEL NUTS | Standard | 80ft lbs | | 110Nm | |
| | Traction Drive | 110ft lbs | | 150Nm | |
| ROTATION GEAR RING BOLTS | | 155ft lbs | | 210Nm | |

# 4 Operation

## 4.1 CONTROL CIRCUIT COMPONENTS

**4.1.1** **KLAXON: -** Mounted on the power control box is a klaxon which is interlocked into the stabiliser control circuit. It is this device that sounds continuously if a jack goes light in operation, with the booms raised, warning the operator of this condition. It will also sound if the Ground Control Key switch is turned to Basket position before the outriggers are deployed.

**4.1.2** **BOOM-SWITCH (TM34H ONLY): -** Mounted on the side of Boom 1 near the boom rest and operated by contact with the boom 3, this switch controls the changeover function between outriggers and basket. The outrigger control function is not available unless this switch is engaged with the boom, ensuring that the machine must be stowed to operate the hydraulic outriggers. It is also similarly linked into the basket control circuit, such that if the switch is not engaged with the booms, (i.e. machine is in operation) then the outrigger sensors are active and would warn the operator of an unsafe condition, should one of them loose contact with the ground. These control functions are of primary importance to safety of the machine and operator. Under no circumstances should this control function be isolated or by-passed.

**4.1.3** **BATTERY ISOLATOR: -** A red battery isolator handle is located on the power tray which allows the machine control and power circuits to be isolated from the battery. Under normal operation, the machine Key switch should be used to isolate the machine with the Battery Isolator only being required to disconnect the batteries for maintenance or in the event of a short circuit. The battery charging circuit is connected directly to the battery side, so charging is un-affected by use of this switch.

**4.1.4** **POWER SOURCE SELECTION (TM34H ONLY):-** On multiple power option machines, the machine is fitted with an 'instinctive' circuit for power source selection. Pressing the green button will automatically select battery operation. The engine can be started using the two position START/STOP selector in the basket and the machine will 'default' to engine operation via a flow switch in the hydraulic circuit. Stopping the engine by selecting STOP on the two position selector in the basket and pressing the green button will return the machine to battery mode.

**4.1.5** **DIESEL ENGINE: -** Generally a Yanmar L40 or Kubota 0C60 engine, described in the maintenance section of the Workshop Manual, driving a single bodied pump with direct mounted pump dump valve.

**4.1.6** **GASOLINE ENGINE: -** Generally a Honda GX 160 engine, described in the maintenance section of the Workshop Manual, driving a single body pump with direct mounted pump dump valve.

## 4.2 SETTING UP PROCEDURES

**FAILURE TO DEPLOY THE OUTRIGGERS CORRECTLY COULD RESULT IN DEATH OR SERIOUS INJURY.**

### ALL MODELS

1) Read and fully comply with all safety precautions and operating instructions in the Operating and Safety manual and the warning decals on the machine.

2) Position Niftylift on firm ground, bearing in mind range of boom movement so that any overhead obstructions or possible hazards such as, but not limited to, power cables, telephone lines, drains, manhole covers, etc. can be safely avoided

3) **APPLY HANDBRAKE:** Chock wheels and cordon off the area using appropriate cones, barriers and flags.

4) Levelling the machine using the outriggers can accommodate a slope of up to 12 degrees, if necessary using suitable load bearing pads to support the downhill outriggers. Do not elevate the basket unless the base can be corrected to within three degrees of level.

5) If the load bearing capacity of the ground is in any doubt the machine must **NOT** be used.

6) Release boom travelling clamp.

7) Check all red emergency stops are not engaged (i.e. fully out).

8) Follow instructions below for either manual or hydraulic outrigger models.

### MANUAL OUTRIGGER (TM34M) MODELS

9) Leave ground control key in 'OFF' position until outriggers are deployed. Turning this key to the 'BASKET' position will cause the Klaxon to sound, as the outriggers will detect that the outriggers are not in contact with the ground.

10) All four outrigger beams must be fully extended with all of the retaining pins engaged (i.e. dropped) and all jack feet screwed down hard onto a firm, level surface.

11) Check that the base is level using the spirit level adjacent to boom clamp post as a guide.

12) To operate the booms from the ground, turn the key switch selector at the ground control station to 'GROUND', (i.e. clockwise). Depress and hold green power button and select appropriate control lever. *Note: If no power is available check that all retaining pins are engaged and that all jack feet are in contact with the ground and taking equal weight.*

13) To operate the booms from the basket turn the key switch selector at the ground control station to 'BASKET' (i.e. anti-clockwise). Then, depending on key switch type, either remove and use the key from the ground control station or use the spare (Second) key to turn the key switch selector in the basket control station to 'ON' (clockwise).

    *Note: If alarm sounds return key switch to centre "OFF" position (ground control station) and check that all retaining pins are engaged and that all jack feet are in contact with the ground and taking equal weight.*

**HYDRAULIC OUTRIGGERS (TM34H) MODELS**

9) Ensure that the key switch at the ground control station is turned to the "ON" position (i.e. clockwise).

10) At the outrigger control station press down and hold the power lever on the right hand side. This activates the power and diverts hydraulic flow to the legs for setting up. Then select the appropriate control lever to begin set up. *Note: No power will be available if the booms are not stowed onto the boom rest.*

11) Using the four outrigger control levers, lower each outrigger onto a firm, surface and level the machine base ensuring each outrigger foot is taking equal weight with the wheels clear of the ground. ***Note: Deploy the front two outriggers first to minimise the risk of damaging the jockey wheel.***

12) Check that the base is level using the spirit level adjacent to outrigger control station.

13) The booms can now be operated from the ground control station by pressing and holding the green power button. *Note: If the klaxon alarm sounds, check that each outrigger is lowered and each footpad is taking equal weight.*

14) To operate the booms from the basket, remove the key from the ground control station (turn key anti-clockwise) and put the key in the basket control station and switch to "ON" (clockwise). *Note: If the klaxon alarm sounds, check that each outrigger is lowered and each footpad is taking equal weight*.

**ALL MODELS**

15) Always lower booms fully before adjusting, raising, retracting or moving the outriggers in any way.

16) Never alter, modify or block any of the safety circuits on the Niftylift.

**THIS MACHINE IS NOT ELECTRICALLY INSULATED. DO NOT WORK WITHIN 10FT OF OVERHEAD CABLES EXCEEDING 415 VOLTS**

## 4.3 GROUND CONTROL OPERATION

**ALWAYS ALLOW THE ENGINE TO WARM UP BEFORE OPERATING**

### 4.3.1 GROUND CONTROL INSTRUCTIONS

**ALL MODELS**

1) Check below, above and around the basket for any obstructions or hazards before operating any function.

2) Ensure all red emergency stops are out.

3) For the **hydraulic outrigger** model (**TM34H**), turn the key switch at the ground control station to the "ON" position (i.e. clockwise). For **manual outrigger** model (**TM34M**) turn the key switch at the ground control station to "Ground" (i.e. fully down)

4) Battery/Electric models go to step 13).

**DIESEL ENGINE OR BI-ENERGY MODELS**

5) For a cold engine start go to step 6) or for a warm engine start go to step 7).

6) **COLD ENGINE** - turn the main engine ignition switch (located beneath the front cover) through ON to GL. This engages the glow plug pre-heat system. Hold for 3-5 seconds then turn key fully to ST (start) position and the engine will fire.

7) **WARM ENGINE** – turn the main engine ignition switch (located beneath the front cover) through ON to ST (start) position and the engine will fire.

8) Go to step 13).

**GASOLINE ENGINE OR GASOLINE/ELECTRIC MODELS**

9) For a cold engine start go to step 8) or for a warm engine start go to step 9).

10) **COLD ENGINE**: - turn the engine fuel tap "ON" and engage the choke lever. Turn the main engine ignition through "ON" to "ST" (Start) and the engine will fire. Return the choke lever to its normal running position after the engine is started.

11) **WARM ENGINE:** - turn the engine fuel tap on and turn the main engine ignition through "ON" to "ST" (start) position and the engine will fire.

12) Go to step 13).

**ALL MODELS**

13) Push and hold green power button.

14) Select the boom function required and operate hand levers in full accordance with manufacturers Operating and Safety manual.

15) When not in use return machine to stowed position, fully raise and stow all outriggers, turn the key to the "OFF" position (i.e. anti-clockwise), remove key and chock wheels.

**EMERGENCY PROCEDURES**

1) Push in red emergency stop to shut down all functions.

2) Turn the release valve anti-clockwise on the relevant cylinder and manoeuvre the machine as normal using the hand levers (Basket or Base).

## 4.3.2 BOOM FUNCTIONS

A) Push and hold green power button.

**1** **2** **3**

B) Select lever 1, 2, or 3 for desired boom function.

| | | |
|---|---|---|
| **1** Operates Lower Boom | **UP** for up | **DOWN** for down. |
| **2** Operates Upper Boom | **UP** for up | **DOWN** for down |
| **3** Operates Swing | **UP** for right | **DOWN** for left |

**ALWAYS ENSURE THE NIFTYLIFT IS ON A FIRM SURFACE AND THE AREA IS FREE OF ANY OVERHEAD OBSTRUCTIONS.**

**ENGAGING THE RED EMERGENCY STOP BUTTON WILL SHUT DOWN THE ENGINE, AND THE ELECTRIC CIRCUIT PREVENTING OPERATION OF ANY FUNCTION.**

## 4.4 BASKET CONTROL OPERATION

**NEVER START THE NIFTYLIFT IF YOU SMELL GASOLINE, LIQUID PROPANE OR DIESEL. THESE FUELS ARE FLAMMABLE.**

**BEFORE OPERATING THE NIFTYLIFT ENSURE THAT EACH OPERATOR HAS READ AND FULLY UNDERSTOOD THE OPERATING MANUAL. FAILURE TO DO SO MAY RESULT IN DEATH OR SERIOUS INJURY.**

*****FOR COLD START PROCEDURES SEE SECTION 4.3.1*****

**ALWAYS ALLOW THE ENGINE TO WARM UP BEFORE OPERATING.**

### 4.4.1 BASKET CONTROL INSTRUCTIONS

**ALL MODELS**

1) **NEVER** exceed the maximum basket capacity.
2) Check below, above and around the Niftylift for any obstruction or hazards before operating any function.
3) Ensure all red emergency stops are out.
4) For **hydraulic outrigger** models (**TM34H**), remove the key from the ground control station (turn key anti-clockwise) and put the key in the basket control station and switch to "ON" (clockwise). For **manual outrigger** models (**TM34M**) turn the key switch at the ground control station to "Basket" (anti-clockwise) then depending on key switch type, either remove and use the key from the ground control station or use the spare (Second) key to turn the key switch selector in the basket control station to 'ON' (clockwise).
5) Battery electric models go to step 11).

**DIESEL ENGINE OR BI ENERGY MODELS ONLY**

6) Ensure that the main engine ignition switch is "ON". Turn the "Engine Start" switch on the basket control box clockwise and the engine will fire.
7) Go to step 11). Note – Unless the diesel engine is running, the 120 will automatically default to the primary power source (usually battery).

**GASOLINE ENGINE OR GASOLINE/ELECTRIC MODELS ONLY**

8) Ensure that the fuel tap is turned to the "ON" position and that the main engine ignition switch is "ON". Turn the "Engine Start" switch on the basket control box clockwise and the engine will fire.
9) Go to step 11). Note – Unless the gasoline engine is running, the TM34 will automatically default to the primary power source (usually battery).
10) If the engine is too cold to start from the basket, try starting from the ground controls as described in step 8) of the ground control operation section (4.3.1).

**ALL MODELS**

11) Push and hold green power button.

12) Select the boom function required and operate hand levers in full accordance with manufacturers Operating and Safety manual.

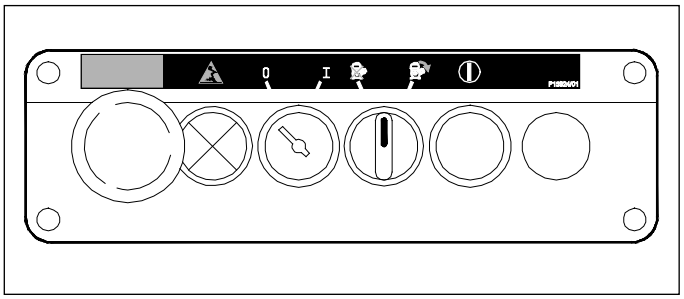
13) When not in use return machine to stowed position, fully raise and stow all outriggers, turn the key to the “OFF” position (anti-clockwise), remove key and chock wheels.

**EMERGENCY PROCEDURES**

1) Push in red emergency stop to shut down all functions.

2) Turn the release valve anti-clockwise on the relevant cylinder and manoeuvre the machine as normal using the hand levers (Basket or Base).

**BASKET CONTROL STATION**



**(BI-ENERGY MODEL)**

## 4.4.2 BOOM FUNCTIONS

A) Push and hold green "Power Control" button

**1** **2** **3**

B) Select lever 1, 2, or 3 for desired function

| | | |
|---|---|---|
| **1** Operates Lower Boom. | **UP** for up | **DOWN** for down |
| **2** Operates Upper Boom | **UP** for up | **DOWN** for down |
| **3** Operates Swing | **UP** for right | **DOWN** for left |

## 4.5 BATTERIES AND CHARGING

**BATTERIES MUST BE RECHARGED IN A WELL-VENTILATED AREA FREE OF FLAME, SPARKS OR OTHER HAZARDS THAT MAY CAUSE EXPLOSION. HIGHLY EXPLOSIVE HYDROGEN GAS IS PRODUCED DURING THE CHARGING PROCESS.**

1) Recharge batteries at the end of every working day or shift.

   (**Note:** To recharge batteries fully from flat takes approx. 12 Hours, this consists of 8 hours bulk charging plus 4 hours equalisation).

2) Plug charger into suitable power supply, 110 volts AC (see **Charging Limitations**). (Note: If using 240V, use of a suitably rated Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD) at the point of supply is highly recommended.)

3) Take note of the indicators provided:

   **Red Light** - Batteries are charging.

   **Pulsing Green light** - the charge is equalising.

   **Constant Green light and pulsing Red light** - the batteries are fully charged.

**UNDER NO CIRCUMSTANCES SHOULD BATTERIES BE LEFT ON CHARGE FOR PERIODS IN EXCESS OF 24 HOURS**

4) **DISCONNECT FROM POWER SUPPLY ONCE BATTERIES ARE FULLY CHARGED.** The machine can now be left unattended, however, in the event of the machine being left unused for extensive periods then a **4 to 6 hour** 'top-up' charge every **4 weeks** is recommended. A 'top-up' charge the day before use ensures a full day of operation from the machine.

**UNDER NO CIRCUMSTANCES SHOULD A MACHINE BE LEFT FULLY DISCHARGED AS SEVERE BATTERY DAMAGE CAN OCCUR IN A RELATIVELY SHORT TIME.**

5) To avoid damage to charger disconnect from mains supply before using machine.

**Note:**

1) If the charger is reconnected to the power supply shortly after it has gone through its full charging cycle the Red LED may come on although the batteries may be fully charged. The charger would then go through its complete cycle again at an accelerated rate, depending on the time difference between connection, reconnection and level of battery charge.

2) Some Niftylifts are fitted with a Battery Management System, which permanently monitors the condition of the batteries. When the batteries become discharged to 20% of their capacity the management system will begin to "shut down" the hydraulic power packs. This causes the drive/boom operating system to alternately stop and start, signalling to the operator that re-charging is necessary. However, there is sufficient power remaining to enable the operator to drive slowly to the nearest charging point.

Should the operator ignore the onset of the battery discharge warning the "shut down" of the motors will continue, until the machine is rendered in-operative. **Immediate charging will then be required.**

**CHARGING LIMITATIONS**

Battery charging times will increase slightly if using an 110V supply as opposed to a 240V supply. This is due to the connection of the primary coils being in parallel, which in effect only allows the transformer to see 220V. Similarly, the capacity of the 110V supply will decide the input current available; hence a small hand-tool transformer will not operate the battery charger efficiently, therefore:
- charging times will increase further due to input limitations.

Attention should also be given to the use of extension cables as power leads. Excessive cable lengths from the supply point to the battery charger will result in significant voltage drop, leading to a reduction in the chargers efficiency. In addition, inadequate sized cable cores will have a limiting effect on its current carrying capacity, which will again lead to a reduction in the chargers efficiency. Both of these can result in over-heating of the cable with the attendant risk of fire, short circuits or damage to the components themselves.

The charger requires a minimum battery voltage of 4.5 volts per battery (overall for two batteries 9 volts, for 4 batteries 19 volts for 8 batteries 38 volts). If the voltage is below these values then the charger will not function (Charger will not detect batteries to begin charge.) If the batteries have fallen to such a poor state they will have to be removed from the machine and charged individually with an independent charger until the optimum voltage has been reached. This is best performed at very low currents to ‘recover’ the batteries if sulphation has already started i.e. a ‘trickle’ charger. This can take several hours, possibly days. Careful monitoring of the rise of battery voltage will indicate when recovery has been achieved.

**TOPPING UP**

During the course of normal operation, the batteries should be inspected at least once a fortnight to check the level of electrolyte. During the end of charge, gassing takes place, which will cause a slight reduction in the volume of acid in the battery. This can be topped up with de-ionised water as required. During this inspection, it is useful to note any imbalance in the fluid levels. One indication of a faulty cell would be an increase in the loss of battery acid, which would then require more frequent topping up on that cell, or cells. Faulty cells can liberate excess hydrogen, even during normal operation, with the resulting risk of explosion if ignited. **Any faulty batteries should be replaced as soon as possible with an equivalent sized and rated unit.**

**Note: BATTERIES CONTAIN ACID, therefore: - protective safety glasses and gloves (Appropriate PPE) MUST be worn whilst performing these checks.**

# 4.6 TRANSPORTING, TOWING, CRANEAGE, STORAGE AND SETTING TO WORK

## 4.6.1 TRANSPORTING

If a work basket is to be moved over a longer distance, whether the machine is trailer mounted, vehicle mounted, self propelled or tracked, the following procedure should be read before restraints are attached to the machine. Cross loading is most frequently the cause of problems, as the method of loading is no longer in sight of our own personnel. The recommendations made herein should be passed on to subsequent carriers, such that the entire journey is carried out without incident.

- Always ensure the truck or trailer you are loading or towing the Niftylift with can carry it legally.
- If loading by crane the use of shackles and an adequately rated spreader beam, with four leg slings, is **MANDATORY.**
- When loading or un-loading from the side of the vehicle, the use of the forklift pockets to retain one of the forks is recommended. (If fitted). Spread the forks to their widest capacity, with due regard to the components fitted to the machine. Never forklift or crane an entire machine under the booms, always lift beneath the spine or under the ends of the axle mountings in the case of a self-propelled unit. Ensure forklift is adequately rated for the load to be carried.
- Once positioned on the transport carrier ratchet straps should be used to secure the machine. The machine should be positioned to allow easy access around the machine in transit, and to ensure that 'creepage' during transport does not permit the machine to come into contact with other goods being shipped, or the container itself. Some movement of the machine structure might occur during transit, which could lead to fretting or other damage.
- If the machine is equipped with a transit device such as a boom clamp etc, this should be securely applied.
- Strap booms carefully to constrain them from sideways movement. When using straps or chains, adequate packing should be applied to stop any damage to the structure and paintwork. Due regard of the movement of the straps or chains must be taken into account.
- Where a machine has designated points for strapping, lifting or forking, these can be used for tie-down duty. When they are absent, the major structure of the basket can be used, giving due consideration to the design and function of the area chosen. Where possible, use the spine of the machine or axle mounts over which to apply the holding down forces. Using a single plate, such as an outrigger or stabiliser support plate might be unsuitable. If the component was clearly not designed to accommodate a side load, one should not be applied.
- Under no circumstances should straps or chains be applied over booms or through the basket support structure or the basket itself. The relative strength of the carrying structure is not conducive to the massive forces capable of being applied through ratchet chains or slings. Severe damage to the steelwork can be caused, as well as deformation to sensitive mechanisms such as basket weigh assemblies, which would render them useless. Such catastrophic damage to say, an electronic load cell would require the component to be replaced before the machine would function.

## 4.6.2 TOWING

**THE MAXIMUM RECOMMENDED TOWING SPEED OF A NIFTYLIFT IS 45 MPH WITH A VEHICLE THAT COMPLIES WITH ALL ROAD TRAFFIC REGULATIONS. SPEEDING MAY RESULT IN DEATH OR SERIOUS INJURY.**

**DO NOT TOW THE MACHINE ON THE ROAD AT SPEED WITHOUT EXTENDING THE AXLES. (IF FITTED). PLEASE REFER TO DECALS ON MACHINE FOR INSTRUCTIONS.**

It is recommended that the maximum towing speed of 45mph be adhered to for the greatest safety. In other than perfect conditions it is sensible to further reduce your speed in order to ensure full control over your vehicle and trailer. The importance of the suitability of your towing vehicle must be stressed. The manufacturers' details concerning each model will give you recommended Gross Vehicle Weights (GVW) or Gross Train Weights (GTW) neither of which should be exceeded.

### Brake Adjustment

Trailer brakes are adjusted for gradual over-run braking on initial build. After being towed for the **first week or 150 miles**, the brake shoes will 'bed-in' and **require adjustment** for this wear. Adjust the brake shoe clearance and check the hand brake lever travel in accordance with the manufacturer's instructions. Please contact Niftylift Service Department for the correct adjustment procedure for your specific brake/tow hitch combination.

**POSITION THE TOWING VEHICLE AND TRAILER ON LEVEL GROUND BEFORE ATTEMPTING TO COUPLE/DE-COUPLE.**

### Coupling Instructions

1) Depress the trigger on the lever mechanism and lift the handle upwards and forward.
2) Place the unlocked coupling head onto the towing ball and apply slight downward pressure. The head will automatically lock onto the ball.
3) Ensure that the trigger has returned to its free position before attempting to tow, and that the coupling head is securely on the towing ball.
4) Connect the breakaway cable/chain to the towing vehicle hitch - not to the tow ball itself.
5) Connect the lighting plug to the vehicle and check the light functions.
6) Raise the jacking wheel to its stowed position and secure for transit.

### De-coupling Instructions

1) Apply trailer handbrake and chock wheels.
2) Lower the jacking wheel to the ground. Disconnect the breakaway cable/chain and lighting plug.
3) Operate the handle by depressing the trigger and manually lift the coupling head clear of the towing ball or screw down the telescopic jacking wheel to achieve the same effect.

### Handbrake Operation

1) To operate the trailer parking brakes pull the handbrake lever upwards and backwards. The spring loaded mechanism will engage and stay in the operated position until re-set.

2) To disengage the parking brakes, firmly grasp the handbrake lever and pull upwards. Depress the ratchet release button in the end of the handbrake lever and return the lever to the horizontal position. Care should be taken when operating the handbrake lever due to the forces involved in engaging the ratchet mechanism.

### 4.6.3 CRANEAGE

1) Observe all of the limitations relating to straps and chains stated above under 'Transporting'. (Section 4.6.1).

2) When utilising the designated lifting points never apply a 'snatch' load, i.e. lift slowly to take up the load before raising. Similarly, do not drop machine when positioning after lifting.

3) If the machine is to be lifted by crane, use the designated lifting points and observe the recommendations regarding spreader beams. Individual drawings are available for each machine type, on request. (See list below.)

| | |
|---|---|
| **D81193** | **TM34M** |
| D80541 | TM34H/T |

### 4.6.4 STORAGE

If being stored for any length of time without use, then the machine should be thoroughly inspected for the following: -

1) Grease all bearings /slides, worm drives, etc.

2) Check batteries for electrolyte levels, state of charge, damage, dirt, etc. Never leave in a state of discharge for any length of time. If no use of the basket is intended, an occasional "top-up" charge of the batteries will serve to equalise their charge level.

3) Leave battery disconnect switch in OFF position to prevent discharge of batteries through leakage.

4) If machine is to be left on an incline, chock wheels to prevent creep.

5) If machine is to be left out-of-doors or in a hostile environment, cover with suitable weatherproof media to prevent deterioration.

### 4.6.5 SETTING TO WORK

Before use each day and at the beginning of each shift the machine shall be given a visual and functional test including, but not limited to, the following

1) Check all lubrication points for adequate application of grease, oil etc.

2) Inspect all threads for ease of operation.

3) Check level and quantity of oil. Remove any contaminants – water, etc.

4) Check batteries for electrolyte and state of charge.

5) Check electrics for damage and insulation.

6) Using base controls, cycle machine over complete envelope in accordance with the Operating Instructions. Cure any defects.

7) Ensure that all safety devices and controls operate in accordance with the instructions.

8) If necessary, perform a load test to establish the machine stability before putting the machine to work.

9) On completion of an extended period of road transport, the machine might need additional inspection to identify any transit degradation, which could render the machine unsafe. Perform a P.D.I. inspection on the unit before it enters service. Record any faults found and rectify them immediately.

Niftylift Limited is not liable for any third party damage caused during transport. Careful attention to correct procedures will prevent many of the small snags that can happen in transit. Re-work is both expensive and time consuming. A defective machine arriving at the place of work is a poor advertisement for our product, the company's reputation and those of our dealers and clients. The responsibility for safe and damage-free transport rests with the haulier or his representatives.

## 4.7 TRACTION DRIVE

On those trailer machines equipped primarily with fixed width axles, a traction drive system is an available option. This function allows the machine to be manoeuvred by one man, and provides the machine with the capability of ascending or descending a slope of 10% (5.7 degrees). Slopes in excess of this angle should not be attempted and a towing vehicle used instead.

The traction system is hydraulically driven, the supply being taken from the same power source as the base machine. The drive speeds and gradeability are therefore linked into the available power from the vehicle prime mover. The engagement of the traction system is also hydraulic, using a single hand lever to bring the drive cradles into contact with the road wheels. The control of the traction function is then possible from a single joystick permitting the machine to be moved forwards, backwards and steered on either side.

### ENGAGING DRIVE

1) Before engaging the traction drive system, ensure that the machine is de-coupled from the towing vehicle, the jockey wheel deployed and securely fixed, and the parking handbrake is fully engaged.

2) Check that all of the emergency stops are released, i.e. 'Out', and that the Base Key switch is in the 'On' position, thereby directing the electrical feed to the drive joystick and jack station.

3) The Drive joystick has a single pushbutton located on the handle. Pushing and holding this button allows the power unit to produce hydraulic flow, which is directed to the drive manifold. It is not necessary to operate the jack selector lever, as this would deviate the hydraulic flow to the jack manifold and render the drive inoperative.

4) Whilst holding the joystick button and keeping the drive lever in the upright position, it is possible to use the third horizontal control lever to engage the traction drive. By pulling the lever upwards, the engagement cylinder will rotate the twin drive motors until the cradles come into contact with the road wheels. This function is pressure protected, and the lever should be held to allow the cradles to 'push' into the pneumatic TIRES for best grip when driving. This pressure is set to 80 bar in the factory, and should not need adjustment.

5) When the engagement cylinder achieves full travel and the cradles are in adequate contact with the road wheels, the lever and drive button can be released, locking the engagement cylinder in this position. Only then should the parking handbrake be released, holding the machine on the traction drive assembly.

6) The machine can now be manoeuvred using the drive joystick, holding the button whilst moving the joystick in the direction of travel. It should be noted that the machine drives in the direction the handle is moved, such that if the joystick is released, the machine will not drive towards the direction the lever was being pulled. This decreases the risk of entrapment of the operator. To halt the drive function, release either the joystick, which will return to the centralised 'Off' position, or release the button to stop the hydraulic flow. The Emergency Stops can be similarly used to halt the machine drive at any time.

## DISENGAGING DRIVE

1) Unless the machine has been manoeuvred to allow it to be coupled to a towing vehicle (as described in the appropriate section of this handbook), before disengaging the traction drive system the parking handbrake must be fully engaged. On no account disengage the traction drive system unless the handbrake is engaged, the wheels are securely chocked or the machine is connected to a towing vehicle. It is also recommended that the machine be positioned on flat, level ground before the drive system is disengaged.

2) Push and hold the drive joystick button to develop hydraulic flow, and using the third horizontal lever push downwards to retract the engagement cylinder. The traction drive cradles will swing clear of the road wheels, which should be allowed to travel outwards to their fullest extent. Releasing the third lever will then lock them in the retracted position, ready for towing.

**On no account should the machine be towed with the traction drive system still engaged – serious damage may result.**

**Do NOT use the traction drive as a brake – the parking handbrake must be utilised for this purpose.**

**Never disengage the traction drive unless the handbrake is engaged, OR the wheels chocked, OR the machine directly and securely connected to a suitable towing vehicle.**

**Always position the machine on flat, level ground before disengaging the traction drive system.**

**Do NOT engage or disengage the traction system whilst on the move. Stop the machine first and engage the handbrake.**

**It is recommended that any slopes be approached in the direction that allows the tow hitch to be lower than the rest of the machine, ensuring that the jockey wheel keeps adequate weight throughout. Descending a slope with the tow hitch highest might allow the machine to tip backwards, particularly if a sudden stop is made. To maximize the residual load on the jockey wheel, allow the tow hitch to run as low as possible to the ground whilst supporting the nose weight on the retracted jockey wheel.**

**Do not ride on the machine whilst using the traction drive, nor stand inside the machine structure as serious injury may occur.**

# 5 Emergency Controls

## 5.1 GENERAL

**CHECKING THE OPERATION OF THE EMERGENCY CONTROLS EVERY DAY AND/OR BEFORE EACH SHIFT IS AN ESSENTIAL PART OF THE OPERATOR'S DUTIES**

The operator and all ground personnel must be thoroughly familiar with the location and operation of the EMERGENCY CONTROLS.

## 5.2 IN THE EVENT OF AN INCAPACITATED OPERATOR

**MANUAL OUTRIGGER (TM34M)**

Turn the key switch selector at ground control station to “Ground” (clockwise). Then lower on the ground controls as detailed under section 4.3 Ground Control Operation.

**HYDRAULIC OUTRIGGER (TM34H)**

Place the spare key in the ground control station and switch “ON” (clockwise). Then lower on the ground controls as detailed under section 4.3 Ground Control Operation.

## 5.3 IN THE EVENT OF MACHINE FAILURE

Turn release valve anti-clockwise on the relevant cylinder and lower basket to the ground using either basket or base controls.

**Note** If the machine is fitted with a basket overload system, and the basket comes into contact with a fixed object whilst operating at height, this would be detected as an overload condition. All power to the machine controls would be lost, requiring the machine to be recovered using the release valves. It is sufficient for the basket to be manoeuvred away from the collision point to release the basket weigh system, thereby restoring normal machine operation. The basket could then be brought down using the controls as described previously.

**FOLLOWING AN EMERGENCY DESCENT RECOVERY OF THE BASKET, ENSURE BOTH RELEASE VALVES ARE FULLY CLOSED (TURN CLOCKWISE UNTIL TIGHT). FULLY EXTEND AND RETRACT ALL CYLINDERS FROM THE GROUND CONTROL STATION BEFORE USING THE MACHINE.**

## 5.4 INCIDENT NOTIFICATION

It is a mandatory requirement that any accident or incident involving a Niftylift, regardless of whether any party received injury or property was damaged is reported by telephone directly to Niftylift. Failure to do so may render any warranty on the machine void.

# 6 Responsibilities

## 6.1 CHANGES IN OWNERSHIP

When a change of ownership of a Niftylift occurs, it shall be the responsibility of the seller to notify Niftylift direct of the unit, model and serial number and the name and address of the new owner within 60 days. This important step is required so that all future Technical Bulletins are able to reach the registered owner of each machine without delay. Please note warranties are not transferable.

## 6.2 MANUAL OF RESPONSIBILITIES

You are required by ANSI/SIA 92.2 1990, to read and understand your responsibilities before you use or operate this aerial basket.

Please read the enclosed document, as failure to do so could result in death or serious injury.

Wherever any contradiction may appear, the Manual of Responsibilities shall take precedence over all other documents.

## 6.3 INSPECTION/SERVICE/PRE-HIRE CHECK LIST

**MACHINE SERIAL NO** _____

| TOWING | PASS | FAIL | N/A |
|---|---|---|---|
| Operation of tow coupling | | | |
| Operation of handbrake | | | |
| Operation of jacking wheel | | | |
| **OUTRIGGERS** | | | |
| Micro-switches secure | | | |
| Locating pins operating freely and oiled | | | |
| Stabilisers operate smoothly | | | |
| Operation of each micro-switch and klaxon (if fitted) | | | |
| Operation of jack control valve and buttons | | | |
| Operation of each hydraulic jack | | | |
| Operation of each micro-switch including siren | | | |
| Operation of boom rest micro-switch | | | |
| **AXLES, WHEELS AND BRAKES** | | | |
| Axles slide freely (90/120), or are secure (170/180) | | | |
| Wheels are secure, TIRE condition acceptable | | | |
| Wheel bearings OK | | | |
| Mudguards are secure | | | |
| Locating pins operate freely and oiled | | | |
| Lock bolts are tight | | | |
| Wheels spin freely when handbrake is released | | | |
| Brakes come on equally when handbrake is applied | | | |
| Brake linkages and cables secure | | | |
| Brake shoe wear not excessive | | | |
| Breakaway cable fitted and operable | | | |
| Lighting board fitted, lights function | | | |
| TIRE pressure correct | | | |
| Wheel nut torque correct | | | |
| **BASE** | | | |
| Operation of base control valve and buttons | | | |
| Operation of all booms over full range | | | |
| Cylinders are silent | | | |
| Basket is level over full range | | | |
| Booms, levelling rods not damaged or distorted | | | |
| Booms, levelling rods, cylinders not fouling | | | |
| Hoses not tight, kinked or fouled | | | |
| Operation of manual descent valves | | | |

| BOOM ROTATION | PASS | FAIL | N/A |
|---|---|---|---|
| Boom rotation assembly and motor are secure | | | |
| Worm/wheel mesh correct, no excessive wear | | | |
| No end float of worm in housing | | | |
| Rotation gear wheel bolts secured | | | |
| Boom rotation gear guards secure | | | |
| **BASKET** | | | |
| Operation of control valve and buttons | | | |
| Operation of all booms over full range | | | |
| Cylinders are silent | | | |
| Basket levelling over full range | | | |
| Boom rotation smooth over full range | | | |
| Operation of boom 4 over full range (if fitted) | | | |
| **INTERNAL (POWER PACK)** | | | |
| Power pack and all components secure | | | |
| All cables and terminals secure | | | |
| All hose connections secure | | | |
| Hoses not kinked or fouled | | | |
| Charger/control box secure | | | |
| Battery secure | | | |
| Electrolyte level and specific gravity | | | |
| Charger operation | | | |
| Hydraulic oil level | | | |
| **FINISH** | | | |
| Operation of boom clamp | | | |
| Pivot pin tag bolts | | | |
| Correct decals, all visible | | | |
| Canopy/bonnets | | | |
| Grease nipples (Feet, Knuckle, Centre Post) | | | |
| (Tow coupling, Boom rotation Gear, Boom 4-170) | | | |
| **LEAK CHECK** | | | |
| Cylinders (Lift, Outriggers, Telescope, Levelling) | | | |
| Control valves | | | |
| Check valves | | | |
| Power pack/pump | | | |
| Boom rotation motor | | | |
| Hose connections | | | |

**Comments, remedial work required etc;**

**INSPECTED BY:** _____ **DATE:** ___/___/0___