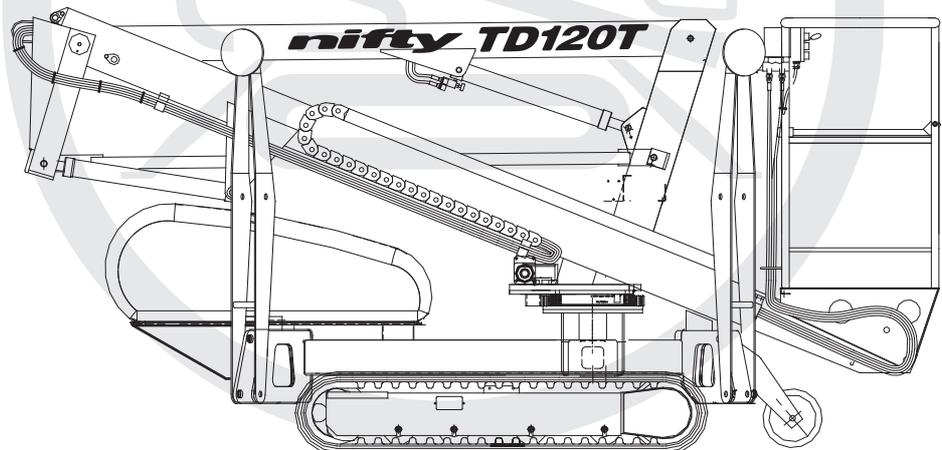


# nifty

## TrackDrive

Operating & Safety Instructions  
**MODEL TD120T/TD34T SERIES**



Manufactured by:  
**Niftylift Limited**

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M50261/04



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# 1 Introduction and General Information

## 1.1 FOREWORD

The purpose of these manuals is to provide the customer with appropriate 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 HHAZARDS 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 TD120T (TD34T), mains electric (AC), diesel (D), petrol/gasoline (P) 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 TD120T (TD34T).

## 1.3 INTRODUCING THE TD120T TRACK DRIVEN (TD) 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, 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.

**Niftylift Ltd, Fingle Drive, Stonebridge, Milton Keynes MK13 0ER, Great Britain**

**Tel: +44 (0) 1908 223456 Fax: +44 (0) 1908 312733**

**Niftylift Inc, 32 Concourse Way, Greer, SC 29651 USA**

**Tel: +01 864 968 8881 Fax: +01 864 968 8836**

**Nifty Pty Ltd, 11 Kennington Drive, Tomago, NSW 2322, Australia**

**Tel: +61 (0) 2 4964 9765 Fax: +61 (0) 2 4964 9714**

The Niftylift TD120T (Track Drive) is an extremely versatile articulated boom platform of unique and simple design. It is capable of placing two men and their tools up to a height of 12.20m (40ft) or an outreach of 6.10m (20ft 1in).

The booms are mounted via a 406<sup>0</sup> powered swing mechanism on to a compact base mounted on rubber tracks. The fourth boom is telescopic, and when combined with the use of the articulating booms gives an outstanding working envelope. The powered tracks enable the machine to reach areas previously thought unattainable.

The four outriggers make a simple and swift set up possible. A unique pressure sensitive micro switch 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.

Standard build is four fully hydraulically operated outrigger legs, with integral load holding valves mounted on each outrigger cylinder.

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

*Models include the following:*

DAC: - DIESEL & AC ELECTRIC

D: - DIESEL ONLY

P: - PETROL ONLY

PAC: - PETROL & AC ELECTRIC

PG: - PETROL & LPG (PROPANE)

# **nifty** TrackDrive (TD) Series

## Operating & Safety Instructions

### 1.4 GENERAL SPECIFICATION

| <b>FEATURE</b>                               | <b>TD120T (TD34T)</b>   |                           |
|--|---|---------------------------|
| MAXIMUM HEIGHT - WORKING                     | 12.2m<br>40ft   |                           |
| MAXIMUM HEIGHT - PLATFORM                    | 10.2m<br>34ft   |                           |
| MAXIMUM HEIGHT - STOWED                      | 1.9m<br>6ft 3in   |                           |
| MAXIMUM OUTREACH                             | 6.1m<br>20ft 1in  |                           |
| MAXIMUM WIDTH - TRANSIT                      | 1.1m<br>3ft 7in   |                           |
| MAXIMUM WIDTH – TRANSIT<br>(VARIABLE TRACKS) | 1.5M<br>4ft 11in  |                           |
| JACK SPREAD                                  | 3.55m<br>11ft 8in   |                           |
| MAXIMUM LENGTH - STOWED                      | 3.95m<br>12ft 11in  |                           |
| MAXIMUM CAPACITY - (EUROPEAN)<br>(USA)       | 200kg (440lbs)<br>500lb   |                           |
| TURRET ROTATION                              | 406°  |                           |
| TURRET TAIL SWING                            | Zero  |                           |
| MAXIMUM TRAVEL SPEED                         | 1.04 mph (High)<br>1.67 kph   | 0.62 mph (Low)<br>1.0 kph |
| PLATFORM SIZE - LENGTH X WIDTH               | 0.65m x 1.1m<br>25in x 44in   |                           |
| CONTROLS                                     | Full proportional hydraulic   |                           |
| HYDRAULIC PRESSURE                           | 200bar  |                           |
| TRACKS                                       | 1745 x 250 Rubber   |                           |
| GRADEABILITY                                 | 60% (31°)   |                           |
| GROSS VEHICLE WEIGHT (MAXIMUM)               | 1,850kg<br>4,078lb  |                           |
| MAXIMUM GROUND PRESSURE                      | 0.037kN/cm <sup>2</sup><br>7,716lb/ft <sup>2</sup>                                      |                           |
| POWER SOURCE                                 | P (G) (Petrol/Gasoline) models - Honda Engine<br>D (Diesel) models - Kubota 722E engine |                           |

## 1.5 IDENTIFICATION (UK PLATE)

|  |         |   |        |
|--|---------|---|--------|
|    |         |   |        |
| NIFTYLIFT LTD. FINGLE DRIVE, STONEBRIDGE<br>MILTON KEYNES MK13 0ER ENGLAND<br>TEL 01908 223456 : FAX 01908 312733<br>e-mail : info@niftylift.com |         |   |        |
| SERIAL No  |         |   |        |
| TYPE   |         |   |        |
| YEAR OF MANUFACTURE  |         |   |        |
| WEIGHT   |         |   | kg     |
| RATED LOAD   | PERSONS | + | kg     |
| MAXIMUM SAFE WORKING LOAD  |         |   | kg     |
| MAXIMUM PULL   |         |   | N      |
| MAXIMUM WIND SPEED   |         |   | m/s    |
| MAX. ALLOWABLE INCLINATION   |         |   | Deg.   |
| MAXIMUM HYDRAULIC PRESSURE   |         |   | bar    |
| MAXIMUM VOLTAGE  |         |   | V      |
| AMPS   |         |   | A      |
| ELEC. CCT D  | ISSUE   |   |        |
| HYD. CCT D   | ISSUE   |   |        |
|  |         |   | P10805 |

**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.**

# **nifty** TrackDrive (TD) Series

## **Operating & Safety Instructions**

### **1.5a IDENTIFICATION (USA PLATE)**

|   |       |
|---|-------|
|   |       |
| NIFTYLIFT LTD. FINGLE DRIVE, STONEBRIDGE<br>MILTON KEYNES MK13 0ER GREAT BRITAIN<br>TEL (01144)1908 223456 : FAX (01144) 1908 312733<br>e-mail : info@niftylift.com |       |
| THIS WORK PLATFORM COMPLIES WITH ANSI STANDARD A 92-  |       |
| MODEL   |       |
| SERIAL NO   |       |
| YEAR OF MANUFACTURE   |       |
| CAPACITY RATING   | LBS   |
| PLATFORM HEIGHT   | FEET  |
| GROSS WEIGHT  | LBS   |
| MAXIMUM HYDRAULIC PRESSURE  | PSI   |
| MAXIMUM VOLTAGE   | V     |
| AMPS  | A     |
| ELEC. CCT D   | ISSUE |
| HYD. CCT D  | ISSUE |
| P11497  |       |

**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.**

## 1.6 EC DECLARATION OF CONFORMITY (Typical)



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**EC DECLARATION OF CONFORMITY**

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|  |   |
|--|---|
| MANUFACTURER AND PERSON RESPONSIBLE FOR DOCUMENTATION: | <b>NIFTYLIFT LTD<br/>MALCOLM NORTH</b>  |
| ADDRESS:   | <b>FINGLE DRIVE,<br/>STONEBRIDGE,<br/>MILTON KEYNES,<br/>MK13 0ER,<br/>ENGLAND.</b> |
| MACHINE TYPE:  | MOBILE ELEVATING WORK PLATFORM  |
| MODEL TYPE:  |   |
| SERIAL NUMBER:   |   |
| NOTIFIED BODY:   | RWTUV Anlagentechnik GmbH   |
| NOTIFIED BODY NUMBER:                                  | 0044  |
| ADDRESS:   | POSTFACH 10 32 61<br>D-45141 ESSEN<br>GERMANY                                       |
| CERTIFICATE NUMBER:                                    |   |
| APPLICABLE STANDARDS:                                  | EN 280:2001+A2:2009<br>DIN EN 60204-1, 2006/42/EC                                   |

*We hereby declare that the above mentioned machine conforms with the requirements of the Machinery Directive, 2006/42/EC and EMC Directive 2004/108/EC*

SIGNED:  DATE: 14<sup>th</sup> December 2009

NAME: Malcolm North POSITION: Engineering Manager

**NOTE:**

THIS DECLARATION CONFORMS WITH THE REQUIREMENTS OF ANNEX II-1.A OF THE COUNCIL DIRECTIVE 2006/42/EC. ANY MODIFICATIONS TO THE ABOVE MENTIONED MACHINE WILL INVALIDATE THIS DECLARATION, AND THE MACHINE'S APPROVAL.

## **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 platform to work. If in doubt, contact your local dealer or Niftylift Ltd (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, tyres 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 operational safety must be repaired prior to use of the platform, with specific regard to any safety components refer to the Parts Manual for part numbers and details. If in doubt, contact Niftylift Ltd (Details on page 3).
- 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 platform capacity, as indicated on the decals and machine serial plate.
- 2.1.9** Only operate the Niftylift on a firm level surface.
- 2.1.10** Never position any part of the Niftylift within 4.0m, (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.

- 2.1.11** On entering the platform, ensure that the drop down entry bar is closed afterwards.
- 2.1.12** Use of an approved safety belt and lanyard, hardhat and appropriate safety clothing is mandatory. Fasten harness to designated harness securing points within the platform and do not remove until leaving the platform whilst in the stowed position.

**2.1.13**



Always remain standing within the platform. Do not attempt to increase your height or reach by standing and/or climbing on the platform guardrails or any other object. **KEEP YOUR FEET ON THE PLATFORM 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.

- 2.1.14** Do not use the platform levelling system to artificially increase the outreach of the platform. Never use boards or ladders in the platform to achieve the same result.
- 2.1.15** Do not use the platform to lift overhanging or bulky items that may exceed the maximum capacity or carry objects that may increase the wind loading on the platform. (e.g. Notice boards etc.)
- 2.1.16** 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.
- 2.1.17** Always check the area below and around the platform before lowering or slewing to ensure that it is clear of personnel and obstructions. Care should be taken when slewing out into areas where there may be passing traffic. Use barriers to control traffic flow or prevent access to the machine.
- 2.1.18** Stunt driving and horseplay, on or around the Niftylift, shall not be permitted.
- 2.1.19** 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.
- 2.1.20** It shall be the responsibility of the user to determine the hazard classification of any particular atmosphere or location. Aerial platforms operated in hazardous locations shall be approved and of the type required. (For the USA refer to ANSI/NFPA 505-1987.)

## **nifty** TrackDrive (TD) Series

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### **Operating & Safety Instructions**

- 2.1.21** The operator shall immediately report to his supervisor any potentially hazardous location(s) (environment) which become evident during operation.
- 2.1.22** 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.
- 2.1.23** 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.
- 2.1.24** The boom and platform of the Niftylift shall not be used to jack the wheels off the ground.
- 2.1.25** The Niftylift shall not be used as a crane.
- 2.1.26** The Niftylift shall not be positioned against another object to steady the platform.
- 2.1.27** Care should be taken to prevent rope, electric cords and hoses from becoming entangled in the aerial platform.
- 2.1.28** 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.
- 2.1.29** 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.



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 platform 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 platform, all personnel shall be removed from the platform safely before attempts are made to free the platform 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. **PETROL (GASOLINE), LIQUID PROPANE AND DIESEL FUELS ARE FLAMMABLE.**

**2.1.32**



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

- 2.1.33** 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, tyres or ballast.

## **2.2 ENVIRONMENTAL LIMITATIONS**

All Niftylift machines 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 12.5 m/s, which equates to 45kph / 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.



**DO NOT USE THE NIFTYLIFT IN ELECTRICAL STORMS**

## **2.3 NOISE AND VIBRATION**

The airborne noise emission on the 120T range of machines does not exceed 85dB(A), measured at a perpendicular distance of 10m, 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<sup>2</sup>.

## **2.4 TEST REPORT**

All Niftylift machine models are subjected to a comprehensive 'type test' which duplicates all combinations of safe working load (SWL), overload, windage, inertia and pull force to assess the various safe stability criteria. Self propelled machines are also subjected to kerb and braking tests at the SWL to satisfy additional 'worse case' stability requirements.

Each individual machine is then subjected to static overload tests on flat level ground with 150% of the SWL, exceeding the requirements of EN280 for power operated MEWPs. Self propelled machines are also tested at the maximum working angle **plus** 0.5° with a test load of 125% of the SWL. Finally, on all machines, a functional test is performed with 110% of SWL.

All safety devices are checked for correct operation, operating speeds are checked against benchmark figures and the dynamic functions ensure that all acceleration and deceleration forces are within acceptable limits. All noted defects are rectified and recorded before the machine is permitted to enter into service.

## 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 hirer 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 platform is put into service.

- A) Remove all ropes, straps and or chains used to secure the aerial platform during transit.
- B) Ensure any ramp, loading dock or forklift used is capable of supporting or lifting the aerial platform.

**\*\*\*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 platform 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.**

## **Operating & Safety Instructions**

### **3.3 PRE-OPERATIONAL SAFETY CHECK SCHEDULES**

Before use at the beginning of the work shift, the aerial platform 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 battery is charged.
- 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.
- 10) Visually inspect all hydraulic hoses and fittings for damage or leaks.
- 11) Check operation of the stabiliser alarm.
- 12) Check that outrigger footpads are secure.
- 13) Check that the platform pivot pins and their tag bolts are secure.
- 14) Check security and operation of the boom clamp (if applicable).
- 15) Check the operation of the cage weigh system (If fitted). See section 4.5.3 for testing and verification procedure.

#### **3.3.2 WEEKLY SAFETY CHECKS**

- 1) Inspect tracks and wheels for damage and wear.
- 2) Check tracks for correct tension – see manufacturers' handbook.
- 3) Check battery fluid levels and specific gravity (after charging) and general condition.
- 4) Check hydraulic oil level, ISO Grade 22 (Europe), Grade 32 (Rest of World).
- 5) Inspect the engine air filter and clean or replace if necessary.
- 6) Check operation and security of stabiliser micro switches in conjunction with the alarm system.
- 7) Inspect hose track for damage or missing parts.

### **3.3.3 MONTHLY SAFETY CHECKS**

- 1) Check the engine oil level (if applicable).
- 2) Check outriggers for condition, security and operation.
- 3) Check that the slew gearbox is secure and correctly in mesh. Clean and re-grease.
- 4) Grease the slew ring.
- 5) Inspect the engine fuel tank for damage or leaks.
- 6) Check telescopic boom wear pads and nylon studs (if applicable).
- 7) Check that the end cap on the main knuckle pin is secure and the roll pin is in place.
- 8) Lightly oil the jack pad ball joints and outrigger housings.
- 9) Check and adjust if necessary the Nylatron studs around the telescope boom.
- 10) Every **three** months check and verify the calibration of the cage weigh system (If fitted). See section 4.5.4 for the calibration procedure.
- 11) Every **Six** months perform a **thorough examination** in accordance with the 'Lifting Operation and Lifting Equipment Regulations' (LOLER) 1998, Regulation (9)(3)(a).

### **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 and the oil filters.
- 4) Check that slew ringbolts are secure (torque 155ft lbs. 210Nm).

# **nifty** TrackDrive (TD) Series

## Operating & Safety Instructions

### 3.4 PLACARD, DECALS & INSTALLATION (UK SPEC)

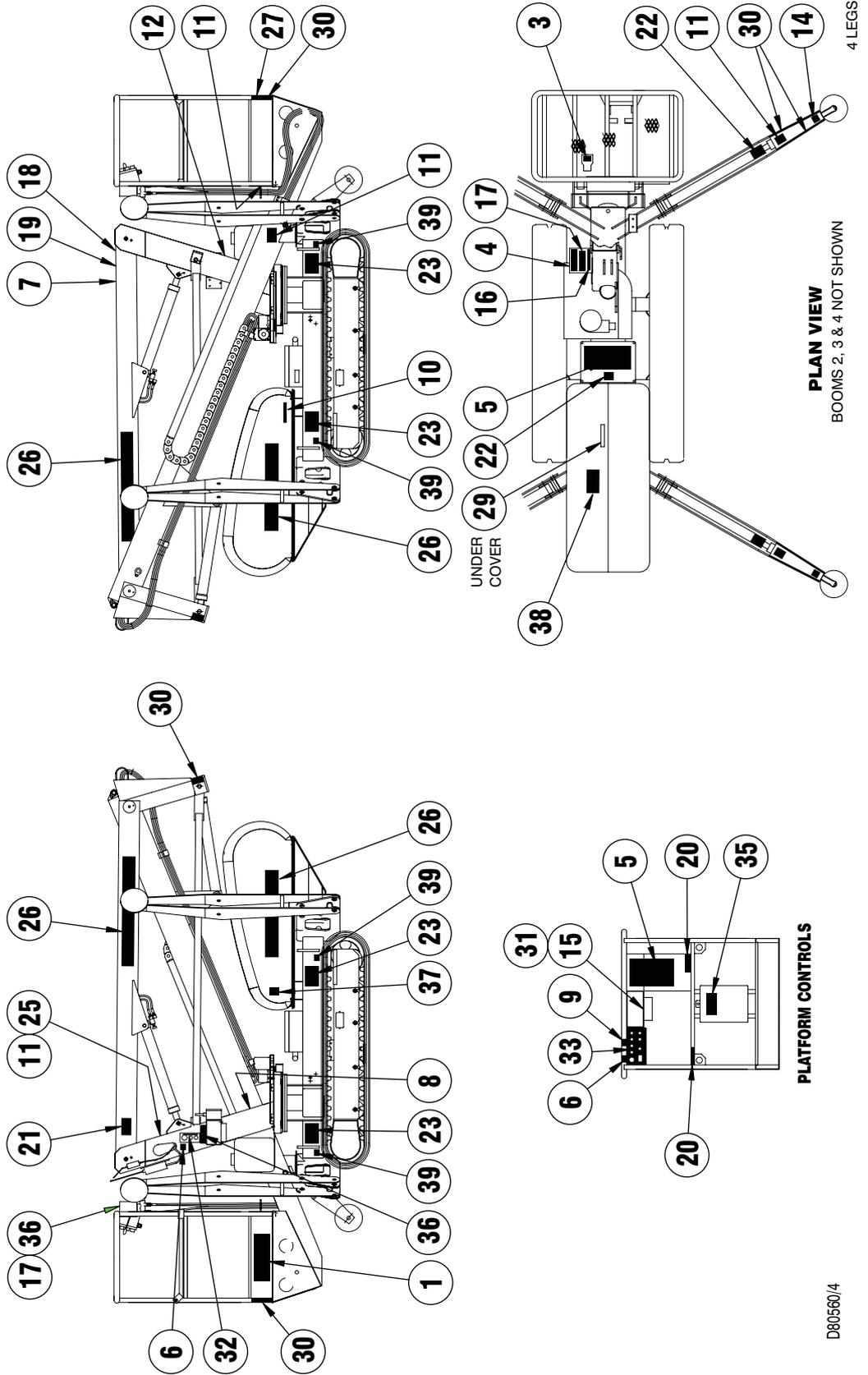
| ITEM | DESCRIPTION                  | NUMBER            | QTY    |   |
|------|------------------------------|-------------------|--------|---|
| 1    | SWL 200kg                    | P14801            | 1      |   |
| 3    | Footswitch                   | P14884            | 1      |   |
| 4    | Hydraulic Controls – 3 lever | P14926            | 1      |   |
| 5    | General Warning              | P18672            | 2      |   |
| 6    | E-Stop warning               | P14864            | 2      |   |
| 7    | Head Protection              | P14921            | 1      |   |
| 8    | Machine Plate                | P15383            | 1      |   |
| 9    | Cage Gate Warning            | P18432            | 1      |   |
| 10   | Charging Point               | P16367            | 1      |   |
| 11   | Crush Hazard                 | P14782            | 7      |   |
| 12   | Diesel Fuel Only             | P14414            | 1      |   |
| 14   | Point Load 13kN              | P14965            | 4      |   |
| 15   | Hydraulic Controls – 5 lever | P14927            | 1      |   |
| 16   | Manual Hand Pump             | P19090            | 1      |   |
| 17   | Outrigger Alarm              | P18842            | 2      |   |
| 18   | Outrigger                    | P16363            | 1      |   |
| 19   | Track Drive                  | P16364            | 1      |   |
| 20   | Harness Points               | P14883            | 2      |   |
| 21   | Component Stability          | P17203            | 1      |   |
| 22   | No Step                      | P14785            | 1      |   |
| 23   | Outriggers                   | P14841            | 4      |   |
| 25   | Union Jack                   | P10780            | 1      |   |
| 26   | Nifty TD120T                 | P17595            | 2      |   |
| 27   | Niftylift.com                | P14390            | 1      |   |
| 29   | Tank Pressure                | P16365            | 1      |   |
| 30   | Black/Yellow Warning Stripes | N/A               | A/R    |   |
| 31   | Cage Levelling               | P10853            | 1      |   |
| 32   | Base Controls                | <i>Standard</i>   | P15881 | 1 |
|      |                              | <i>Cage weigh</i> | P17219 | 1 |
| 33   | Cage controls                | <i>Standard</i>   | P11828 | 1 |
|      |                              | <i>Cage weigh</i> | P17213 | 1 |
| 35   | Operating Instructions       | P14892            | 1      |   |
| 36   | Overload Warning             | P18848            | 2      |   |
| 37   | Noise Warning – 85dB         | P17124            | 1      |   |
| 38   | Daily Safety Check List      | P14908            | 1      |   |
| 39   | Tie Down Point               | P14958            | 4      |   |

# nifty

## TD120T Series

# nifty TrackDrive (TD) Series

## Operating & Safety Instructions



D80560/4

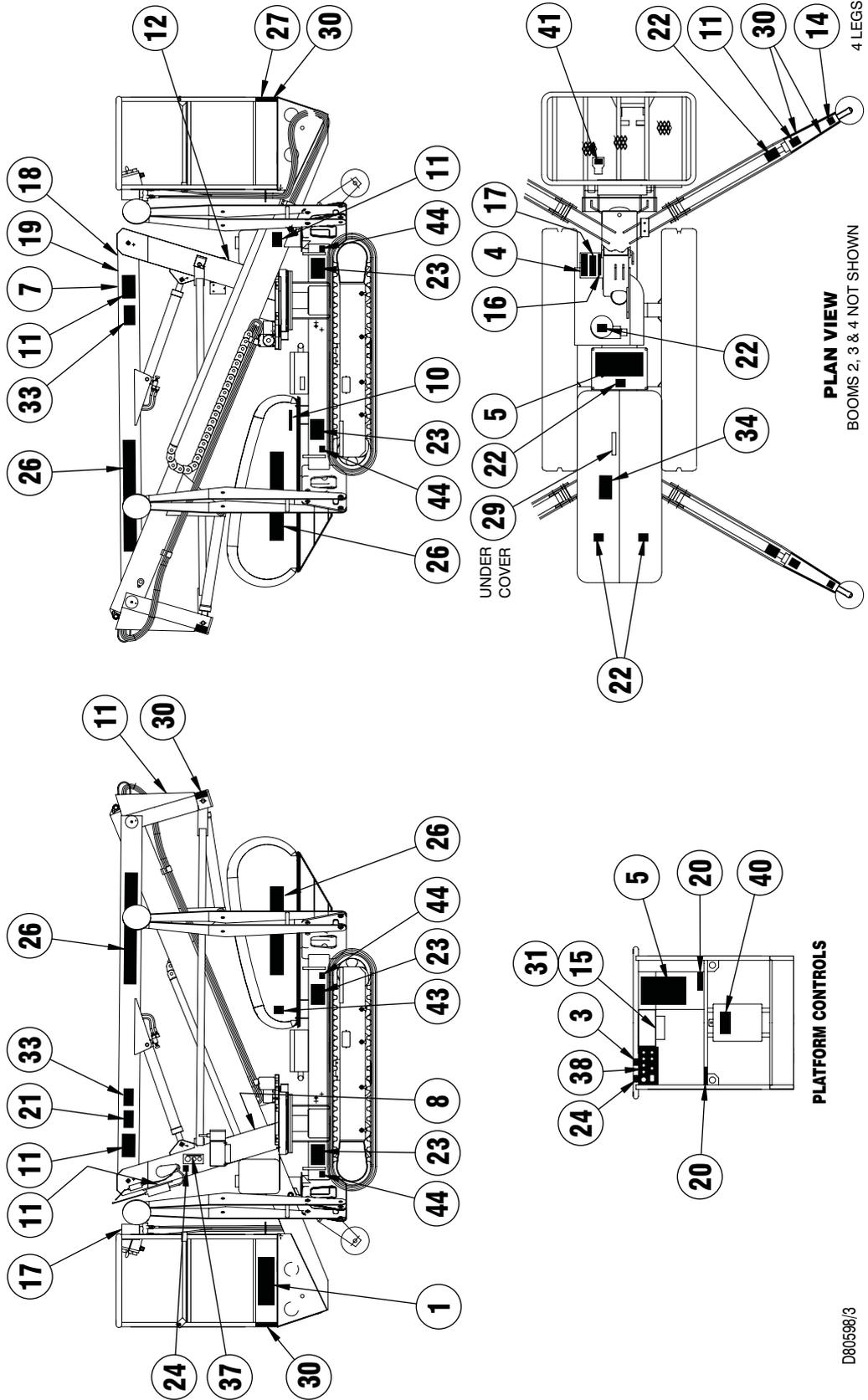
## **nifty** TrackDrive (TD) Series

### Operating & Safety Instructions

#### 3.4a PLACARD, DECALS & INSTALLATION (USA SPEC)

| ITEM | DESCRIPTION                  | NUMBER | QTY |
|------|------------------------------|--------|-----|
| 1    | Safe Working Load            | P14801 | 1   |
| 3    | Cage Gate Warning            | P18432 | 1   |
| 4    | Hydraulic Controls Base      | P14926 | 1   |
| 5    | Danger                       | P18672 | 2   |
| 7    | Head Protection              | P14921 | 1   |
| 8    | Machine Plate                | P15383 | 1   |
| 10   | Charging Point               | P16367 | 1   |
| 11   | Crush Hazard                 | P14782 | 9   |
| 12   | Diesel Fuel Only             | P14414 | 1   |
| 14   | Point Load 13kN              | P14965 | 4   |
| 15   | Hydraulic Controls Platform  | P14927 | 1   |
| 16   | Manual Hand Pump             | P19090 | 1   |
| 17   | Outrigger Alarm              | P18842 | 2   |
| 18   | Outriggers                   | P16363 | 1   |
| 19   | Track Drive                  | P16364 | 1   |
| 20   | Harness Points               | P14883 | 2   |
| 21   | Component Stability          | P17203 | 1   |
| 22   | No Step                      | P14785 | 8   |
| 23   | Outriggers                   | P14841 | 4   |
| 24   | Emergency Stop               | P14864 | 2   |
| 26   | Nifty TD34T                  | P17596 | 4   |
| 27   | Niftylift.com                | P14390 | 1   |
| 29   | Tank Pressure                | P16365 | 1   |
| 30   | Black/Yellow Warning Stripes | N/A    | A/R |
| 31   | Platform Levelling           | P10853 | 1   |
| 33   | Rotating Machinery           | P15010 | 2   |
| 34   | Daily Safety Check list      | P14908 | 1   |
| 37   | Base Controls                | P15881 | 1   |
| 38   | Cage Controls                | P11831 | 1   |
| 40   | Operating Instructions       | P14892 | 1   |
| 41   | Foot Switch                  | P14884 | 1   |
| 43   | Noise Warning                | P17124 | 1   |
| 44   | Tie Down Point               | P14958 | 4   |

**nifty**  
**TD34T Series**



D80598/3

**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) |
| SLEW RING BOLTS    | 155ft lbs                        |       | 210Nm |       |

## 4 Operation

### 4.1 OVERVIEW

#### 4.1.1 CONTROL CIRCUIT COMPONENTS

**CONTROL BOARD:** - Situated under the canopy, the control board comprises a PCB (printed circuit board) design which incorporates all of the relays to control the machine operation. The control board is common between models with the same power source, and will contain, where appropriate, discrete fuses for the circuits concerned.

**KLAXON:** - Also mounted on the base is a klaxon, which performs several functions: - Firstly, it can be used as a manual alert, by pushing the “Horn” button at the platform control position. Secondly, it is this device which sounds continuously is a jack goes light during operation, with the booms raised, warning the operator of this condition. It will also sound if the Ground Control Key switch is turned to “Platform” before the jacks are deployed properly.

**BOOM-SWITCH:** - 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 jacks and platform. The jack control function is not available unless this switch is engaged with the boom, ensuring that the machine must be stowed to operate the hydraulic jacks. It is also similarly linked into the platform 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.

**HYDRAULIC DUTY SELECTOR VALVE:** - Mounted on the top of Boom 1, and accessible from the platform is the Duty Selector. This manual lever allows the selection of either ‘Booms’ or Outrigger’ control.

**DIESEL ENGINE:** - Generally a Kubota 722E engine, described in the maintenance section of the Workshop Manual, driving a single bodied pump with direct mounted pump dump valve.

**CONTROL BOX:** - Located adjacent to the Diesel engine, the control box combines all of the functions for Dual power operation (Bi-energy machines), as well as controlling the Diesel engine. The relays in this box control Starting, High Throttle, Pump Dump, Duty Selector and Diesel stop timer. There is also an integral Thermal trip, which protects the Throttle solenoid and other functions.

**PETROL ENGINE:** - Generally a Honda engine, described in the maintenance section of the Workshop Manual, driving a triple body pump with direct mounted pump dump valve.

**PETROL BOX:** - Located adjacent to the Petrol engine, the Petrol Box combines all of the functions for dual power operation, as well as controlling the petrol engine itself. The relays in this box control Starting, High Throttle, Pump Dump, Duty Selector and Engine Stop. There is also an integral Thermal Trip, which protects the Throttle solenoid and other functions.

### **Operating & Safety Instructions**

**LPG OPERATION:** - On machines equipped for LPG operation (propane), the Honda engine will also have an LPG vaporiser, valve lock and micro-vac switch. The vapour take-off system requires a vaporiser to convert the liquid gas into an airborne mixture. This is then held by the micro-vac switch and valve lock until the engine turns over, creating a vacuum on the inlet to the engine carburettor. The micro-vac switch then tells the valve lock to open, admitting the gas to the engine. If the engine is halted, the system returns to normal, holding the gas until a re-start is attempted. When running on petrol, the main tap to the gas bottle should be securely closed to prevent the engine from trying to run on a mixture of the two fuels. If starting to run on LPG, it should be ensured that all petrol is discharged from the carburettor bowl before changing to LPG, since the engine will not run satisfactorily if any petrol is in the carburettor bowl.

#### **4.1.2 POWER SELECTION**

The Kubota engine, AC power pack, hydraulic reservoir and starter battery are all packaged beneath a two-piece fibreglass canopy, sandwiched between the two front jacks. Cold-starting the engine (See section 4.3.1) is permissible from the side of the canopy, and once running, all controls are situated at the head of the lowest boom.

If the machine is to be used in an enclosed area, or within a domestic setting, the diesel engine can be switched off and AC power selected. The auxiliary motor is a 1.5 kW single-phase motor (refer to motor plate for voltage) driving a direct coupled 1,5cc gear pump. This can be manually selected to provide hydraulic flow to either the Outriggers or the Booms.

Once plugged in, the electric motor will run whenever the platform Key switch is turned to the 'I' position. If the diesel engine is running, this will stop it. This interlock is there to prevent both power sources providing hydraulic flow at the same time. When the electric motor is running, hydraulic flow is available for switching between the Booms or the Outriggers. This is achieved by using the same control system described previously. The electric motor will provide adequate flow to deploy the outriggers, although their speed will be somewhat reduced. When directed to the Boom function, speeds are roughly the same as the diesel engine.

**NB:** If the diesel engine is needed for faster movement between work locations, it will be necessary to remove the mains plug from the socket, to allow the diesel engine to be started.

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



### **4.1.3 MANOEUVRING**

Once the engine is running, the operator can manoeuvre the machine from the platform. On entering the platform, the operator can now reach forward and grasp the two drive handles to enable the drive function. Depressing the platform mounted footswitch will energise the drive dump solenoids, at the same time bringing the diesel engine to full revs, if selected. If the levers are moved forwards or backwards, the twin tracks will drive the machine in the desired direction. If the levers are moved in opposition, the machine will turn. The control function of each handle is fully proportional, in as much as the final speed will be dependant on how far the lever is moved. Two drive speeds are available, one being a 'fast' tick over and the other high throttle. This function is selectable from within the platform, but is also limited by the tilt transducer, such that high travel speeds become unavailable when excessive working angles are encountered. It is recommended that all ramp angles are approached at minimum revs, allowing the machine to climb at the best speed for controllability.

To halt the drive function, release either the Drive handles or the footswitch. The drive motors feature automatic braking for load holding on un-level ground, as well as flow control devices to prevent over-speed when driving down gradients.

If difficult terrain is to be tackled, the operator can walk alongside the machine in 'Pedestrian' mode and manoeuvre the machine whilst adjacent to the right hand track. Two-travel speeds are available, the 'fast' mode being controlled by the on-board tilt transducer, which denies the use of high throttle when on an excessive slope. The Operator also has control of when high throttle is used, permitting the creep speed to remain under control. The drive system works from the platform mounted footswitch, controlling both the engine speed and the drive pump dump valve, for increased safety.

### **4.1.4 RAMPS AND INCLINES**

The ability of the Track Drive machine to ascend and descend slopes of up to 60% (31 degrees) introduces a new level of complexity to the use and operation of the machine. The operator must now be additionally responsible for assessing the suitability of the terrain to be tackled. Although within the capabilities of the machine, some areas would be undesirable for access, and present a real danger to the operators themselves or other people around at the time. In order to ascend a slope safely, it is best if the incline is approached 'square-on' to the angle, in order to maximise the grip and ensure an even drive effort by both tracks. The operator can quickly judge the maximum permitted angle by comparing the maximum angle of the slope to the front angled plate on the machine. If the slope is steeper than the approach plate, then the angle is outside the capability of the machine. Under no circumstances should an excessive slope be attempted.

When driving up a slope, it is recommended that the machine drive forwards, when driving down a slope, again drive forwards down it. The operator should be aware of the response of the machine when reaching or departing the top of a slope. The machine will climb, or descend until the balance of the tracks places more of the weight beyond the point of contact with the ramp and the tracks. The machine will then topple forwards or backwards to meet the next level. If the operator is in the platform, this sudden change of level will cause a fast angular movement, which they will have to counteract. Ensure a firm grip is taken of the platform handrail, keep the legs loose and do not lock the knees, and release the drive joystick as the machine changes level. If the drive speed becomes erratic at any time, this can be due to operator-induced oscillations on the drive levers. Again, release the levers, stabilise the machine and start driving again. Avoid sudden changes of drive lever position; a smooth driving action is much preferred.

### **Operating & Safety Instructions**

When climbing steps, a further judgement will be needed as to whether the weight of the machine, or the traction required to climb or descend would cause damage. Many domestic installations feature soft edge strips or boards to provide the front edge of the step. These edging strips are unlikely to tolerate the action of climbing and might detach causing degradation of the steps themselves. More importantly, the edge reliability is critical to the tractive effort and if less than adequate might cause the machine to 'slew' sideways on a step rather than climb. The risks to the operator are obvious, whether in the platform or driving from the side. A stair built from flagstones or loose blocks is not likely to support the weight or accept the track movement over it. Loose ramps or ply sheets to spread the track forces can be used, but again must be securely anchored to prevent the tracks from 'gripping' the surface and shooting the boards out from under the machine.



The single greatest factor affecting the ability of the Track Drive 120T to attack any slope, incline or stair is **traction**.

If there is inadequate adhesion between the tracks and the surface to which the machine is presented **it will not climb**.

Driving across a slope is not recommended, but if this is unavoidable then the outriggers legs can be used, if space permits. Deploying the downhill legs gives the operator a further protection against toppling, but with the additional risk of damage to the machine. Better safe than sorry.

#### **4.1.5 VARIABLE WIDTH TRACK OPTION**

On machines fitted with variable width tracks, (i.e. the 'Light weight' version of the Track Drive machines) it is recommended that whenever the machine is driven across a slope, or for added safety when climbing or descending, the tracks should be extended to their maximum width. To achieve this, the two position, four port valve can be moved to the cross position, (i.e. lever horizontal). When the drive function is next used, the tracks will automatically extend to their maximum width and stay in this position. If the drive controls are operated gently, exerting pressure in the drive circuit, but not sufficient flow being supplied to start the machine moving, the tracks will change their width with the machine virtually stationary. If the machine is on a particularly rough floor, it might be advantageous to move the machine forward and backwards to allow the tracks to change width whilst moving the machine. If the machine is already on a slope, selecting width change will cause the tracks to move briskly the next time the drive function is operated. This is because the width change cylinders will see the high pressure and all the flow available will 'default' to the width change circuit. To change back to minimum travelling width, the two position, four-port valve is moved back to the in-line position (i.e., upright) and the drive function used again. When minimum width is achieved, the tracks will again stay at this width. The Operator should make any adjacent personnel aware of the machine operation, particularly in respect of the extending tracks, and ensure that no one is close enough to the machine when the tracks are moving in or out. If a track 'digs in' whilst changing width the machine can slew slightly along its length and could cause injury.

## **nifty** TrackDrive (TD) Series Operating & Safety Instructions



Minimum width – Selector in line.



Maximum width – Selector sideways.



Minimum width – Track in.



Maximum width – Track extended.

### **4.1.6 OUTRIGGERS**

The four outriggers are deployed using the individual levers behind the main turret. Each lever controls the movement of an outrigger leg, their relative positions being indicated by the lever spacing. The left hand lever controls the left rear jack, the next the left front, then the right front and lastly the right rear. To allow the outrigger circuit to generate flow to the individual legs, the hydraulic selector valve is gripped and held. This diverts flow to the outrigger circuit and at the same time energises the boom/jack dump valve. If high throttle is selected, the engine will go to high revs, allowing the four outriggers to be deployed in the best possible time. As the feet reach the end of travel, the high throttle control can be turned 'off' allowing fine positioning of each leg and assisting in the levelling process. The machine should be levelled using the indicator mounted on the machine base, clearly visible between the outrigger controls and the platform edge. If necessary, each jack foot should have a spreader plate inserted beneath it to spread the foot load and prevent sinking. The machine must be set up level before the booms are elevated, on firm ground or with the working area adequately consolidated.

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



### **4.1.7 BOOM CONTROLS**

As soon as all four outriggers are making contact with the ground, the four sensing switches will activate allowing the Booms to be elevated. Releasing the Hydraulic Duty Selector automatically re-sets the circuit to permit this. If the Ground Station Key Switch is turned to the 'On' position, the adjacent green button will allow the Booms to be moved, using the Ground control levers. At the same time, the Foot Switch in the platform would be inoperable. Turning the Ground control Key Switch to the 'Off' position allows the Platform footswitch to be used to elevate the Boom using the platform controls. As soon as the Booms are raised sufficiently to clear the 'booms-down' switch, the outrigger controls are isolated, preventing any ground personnel from taking control of the outriggers, when elevated. At the same time, the drive control levers also become isolated.

The machine can now be manoeuvred through its entire working envelope, allowing both operators to ascend to a working height of 12.2 metres and an outreach of 6.1 metres. The slew control gives an effective slew angle of 406 degrees (203 each way from rest.) allowing the machine to project further over the nose of the machine. It is necessary to return back the opposite way to stow the machine before raising the outriggers.



When the machine is fully stowed, with the booms in-line with the major axis of the machine, the four outriggers can be raised, reversing the controls used previously and gripping the Hydraulic Duty Selector. If the machine is being moved a short distance over a level surface, or for fine positioning of the outriggers themselves, the legs can be left down and the Drive function used at the same time. This imposes a greater level of responsibility on the operator to ensure that all areas are clear and particularly that any ground personnel are aware of the movement of the machine. Ideally the operating area should be coned off whilst this is achieved.

#### **4.1.8 EMERGENCY CONTROLS**

Emergency descent and/or machine recovery is achieved by the use of the standby hand pump, mounted on the base of Boom 1. This can accommodate all functions, with the exception of the drive system.

The Ground controls are located primarily to permit the machine to be recovered if the operator is unable to manoeuvre the machine himself. To enable the Ground controls a second key is required other than the one in the platform. The second key turns the ground station 'On' and the Platform controls 'Off' allowing the machine to be moved using the ground controls. It should be noted however, that if the platform operator has turned the platform Key switch to the 'Off' position, then neither power function is selected, effectively isolating the machine.

The Manual hand pump can be used to move the machine in all directions permitting recovery of the elevated booms and personnel. Attention should be given to the direction of recovery of the work platform, since the hand pump gives the ground operator the ability to manoeuvre the machine in all planes, including slewing towards or lowering into a potentially unstable area. It is always recommended to evaluate the nature of the emergency before recovery is attempted, and if appropriate, the machine can be moved to limit the projection of the booms in the prohibited direction.

Once stowed, the outriggers can be fully raised to enable the machine to be recovered for attention, although it might be desirable to leave the front outriggers deployed to permit the canopies to be removed. The Manual hand pump does not allow the drive controls to be operated, minimal flow being available in any event.

If the diesel engine requires 'jump' starting, external connection points are provided adjacent to the starter battery on the vehicle nearside. Connecting a separate 12V battery of adequate size to the terminals provided, positive-to-positive, negative-to-negative, will allow the Diesel Key switch to turn the engine over, even in the event of a dead on-board battery. Once started, the jump leads can be removed, the engine giving sufficient feed to the starter battery to recover and also power the control circuit. The diesel engine should not be allowed to stop until sufficient charge has been restored to the battery, otherwise another 'jump' start would be needed.

Shutting down all functions is possible by depressing the Emergency stops, positioned at both platform and ground control stations. The diesel engine can be stopped in a similar fashion, or by turning off the selector key in the platform or the diesel Key switch. Selection of the power source is only possible from the platform, effectively interlocking the two available options.

## 4.2 SETTING UP PROCEDURES

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



### **TRACK DRIVE MODELS ONLY**

- 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) If the load bearing capacity of the ground is in any doubt the machine must **NOT** be used.
- 4) Levelling the machine using the hydraulic outriggers can accommodate a slope of up to 12 degrees, if necessary using suitable load bearing pads to support the downhill jacks. Do not elevate the platform unless the base can be corrected to within three degrees of level.
- 5) Cordon off area using appropriate cones, barriers and flags, (if applicable).
- 6) Check all red emergency stops are not engaged (i.e. fully out).
- 7) Ensure that the key switch at the ground control station is turned to the "ON" position (i.e. clockwise).
- 8) From the platform control station, press and hold the Duty Selector whilst pressing the platform foot switch to give hydraulic power to the outriggers and select the appropriate control lever. Note: No power will be available if the booms are not fully stowed.
- 9) Using the four outrigger control levers, lower each outrigger onto a firm, level surface and level the machine base ensuring each outrigger foot is taking equal weight with the tracks clear of the ground.
- 10) Check that the base is level using the spirit level on the machine base.
- 11) Releasing the Duty Selector valve automatically sets the control circuit to the 'Booms Enabled' condition. The booms can now be operated from the platform or ground control station by use of the foot switch, or by depressing and holding the base green power button. Note: If no power is available, check that each outrigger is lowered and each footpad is taking equal weight.
- 12) Always lower booms fully before adjusting, raising, retracting or moving the outriggers in any way.
- 13) Never alter, modify or block any of the safety circuits on the Niftylift.

**THIS MACHINE IS NOT ELECTRICALLY INSULATED. DO NOT WORK WITHIN 10FT (3M) 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 platform for any obstructions or hazards before operating any function.
- 2) Ensure all red emergency stops are out.
- 3) Ensure key switch at platform control station is turned to either position 'I' for AC power or position 'II' for diesel power. Refer to Section 4.4.1.
- 4) Turn the key switch at the ground control station to the "ON" position (i.e. clockwise).
- 5) Battery/Electric models go to step 12).

#### DIESEL ENGINE OR BI-ENERGY MODELS

- 6) Turn the main engine ignition switch, located on the side of the canopy through "ON", to the "ST" (start) position and the engine will fire.
- 7) Go to step 12). Note – Unless the diesel engine is running, the TD120T will automatically default to the primary power source (usually mains AC)

#### PETROL (GASOLINE) ENGINE OR PETROL (GASOLINE)/ELECTRIC MODELS

- 8) For a cold engine start go to step 9) or for a warm engine start go to step 10).
- 9) **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.
- 10) **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.
- 11) Go to step 12). Note – Unless the petrol engine is running, the TD120T will automatically default to the primary power source (usually mains AC).

#### ALL MODELS

- 12) Push and hold green power button.
- 13) Select the boom function required and operate hand levers in full accordance with manufacturers Operating and Safety manual.
- 14) 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) and remove key.

# nifty TrackDrive (TD) Series

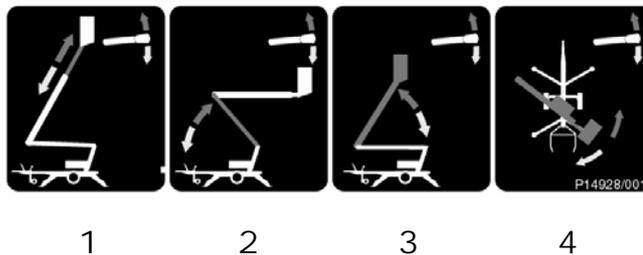
## Operating & Safety Instructions

### EMERGENCY PROCEDURES

- 1) Push in red emergency stop to shut down all functions.
- 2) Use manual hand pump to provide motive power and manoeuvre the machine as normal using the hand levers (Platform or Base).

### 4.3.2 BOOM FUNCTIONS

- A) Push and hold green power button.



- B) Select lever 1, 2, 3 or 4 for desired boom function.

|                              |                     |                        |
|------------------------------|---------------------|------------------------|
| <b>1</b> Operates Telescope  | <b>UP</b> for out   | <b>DOWN</b> for in. ** |
| <b>2</b> Operates Lower Boom | <b>UP</b> for up    | <b>DOWN</b> for down   |
| <b>3</b> Operates Upper Boom | <b>UP</b> for up    | <b>DOWN</b> for down   |
| <b>4</b> Operates Swing      | <b>UP</b> for right | <b>DOWN</b> for left   |

\*\* (If applicable, Ground control of telescoping is optional)



**ALWAYS ENSURE THE AERIAL PLATFORM 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 PLATFORM CONTROL OPERATION



**NEVER START THE NIFTYLIFT IF YOU SMELL PETROL (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 PLATFORM CONTROL INSTRUCTIONS

#### ALL MODELS

- 1) **NEVER** exceed the maximum platform capacity.
- 2) Check below, above and around the platform for any obstruction or hazards before operating any function.
- 3) Ensure all red emergency stops are out.
- 4) Remove the key from the ground control station (turn key anti-clockwise) and put the key in the platform control station and switch 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 platform control box clockwise and the engine will fire.
- 7) Go to step 11). Note – Unless the diesel engine is running, the TD120T will automatically default to the primary power source (usually mains AC).

#### PETROL ENGINE OR PETROL/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 platform control box clockwise and the engine will fire.
- 9) Go to step 11). Note – Unless the petrol engine is running, the TD120T will automatically default to the primary power source (usually mains AC)
- 10) If the engine is too cold to start from the platform, try starting from the ground controls as described in step 8) of the ground control operation section (4.3.1).

# nifty TrackDrive (TD) Series

## Operating & Safety Instructions

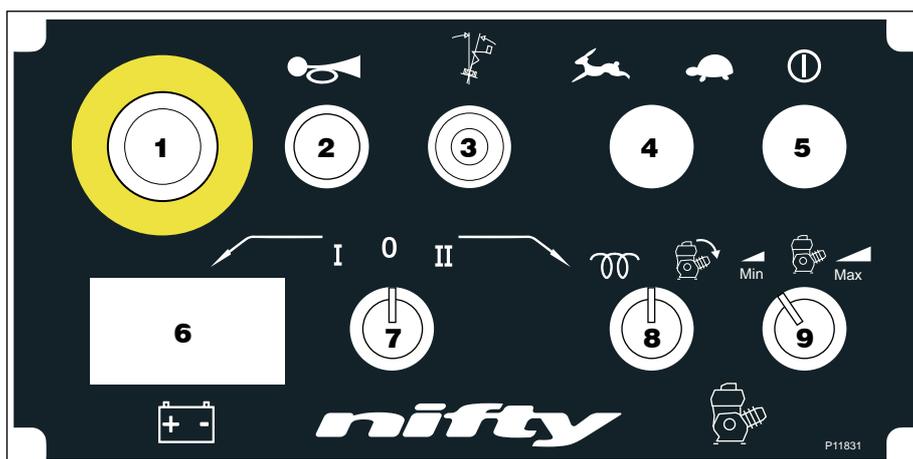
### ALL MODELS

- 11) Push and hold green Power Control button (if fitted), or depress footswitch.
- 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) and remove key.

### EMERGENCY PROCEDURES

- 1) Push in red emergency stop to shut down all functions.
- 2) Use manual hand pump to provide motive power and manoeuvre the machine as normal using the hand levers (Platform or Base).

### PLATFORM CONTROL STATION



- 1) **Emergency Stop Button** – Push to operate, twist knob to re-set to the 'Out' position.
- 2) **Horn** – Operates audible alarm.
- 3) **Tilt Alert** – Illuminates when excess drive angle is detected. High speed drive is lost until machine returns to level.
- 4) Hi/Lo Drive – **Not used.**
- 5) Power Control Button – **If fitted.**
- 6) Battery Condition Meter – **Not used.**
- 7) **Key Switch** – Turn to left (position I) for AC power, turn to right (position II) to permit the diesel or petrol engine to start.
- 8) **Glow/Start Selector** – Turn to the left and hold for 3 – 4 seconds to energise the glow function before starting. Turn to the right to fire the engine, release when engine fires.
- 9) **Max RPM Selector** – Switches between the High and Low Rev setting on the engine. High speed is not available if booms are in operation or machine is driven on an excessive slope ( $>10^\circ$ ).

**4.4.2 BOOM FUNCTIONS**

- 1) Push and hold green "Power Control" button (if fitted) or depress footswitch



1                      2                      3                      4                      5

- 2) Select lever 1, 2, 3, 4 or 5 for desired function

|                                 |                        |                      |
|---------------------------------|------------------------|----------------------|
| <b>1</b> Operates Platform Lev. | <b>FWD</b> for forward | <b>BACK</b> for back |
| <b>2</b> Operates Telescope     | <b>UP</b> for out      | <b>DOWN</b> for in.  |
| <b>3</b> Operates Lower Boom    | <b>UP</b> for up       | <b>DOWN</b> for down |
| <b>4</b> Operates Upper Boom    | <b>UP</b> for up       | <b>DOWN</b> for down |
| <b>5</b> Operates Swing         | <b>UP</b> for right    | <b>DOWN</b> for left |



**IF ALARM SOUNDS, DESCEND IMMEDIATELY AND RE-LEVEL THE MACHINE BASE USING THE FOUR OUTRIGGER CONTROL LEVERS**

## **Operating & Safety Instructions**

### **4.5 CAGE WEIGH SYSTEM**

#### **4.5.1 MECHANICAL VERSION**

The Niftylift range of machines are available fitted with mechanical cage weigh systems. These are configured to sense a vertical cage overload, which when detected will halt the machine movement. No further use of the platform is then permitted until the overload has been removed. This must be done in a responsible manner and not one in which a greater hazard might be induced. Therefore, if the addition of external items such as light fittings; brickwork or tiles etc were allowed into the cage, the machine would not operate. In order to restore the functions, the excess load should be safely removed, NOT by discharging them out of the basket to the detriment of persons below.

The mechanical cage weigh system works on the principle of a pre-loaded spring, rated to the cage safe working load. Excess load in the cage forces the spring to further compress, the movement of which is detected by a precision micro-switch. With the machine turned 'On', this movement first gives an audible alarm in the cage, as well as a visual indication at both control positions (cage and base). Additional deflection due to increased load serves to cut off the machine control circuit, effectively halting all machine movements.

Under the circumstances where the cage overload cannot be removed, the machine can only be manoeuvred by use of the manual hand pump. Great care must be taken when utilising this facility, especially if the machine is significantly overloaded; any motion that causes the machine outreach to increase could induce instability. The machine must be manoeuvred in such a manner as to reduce outreach, then height, until a safe level is reached to permit the operator to dis-mount or the overload to be removed.

#### **4.5.2 FUNCTION**

The cage overload system is powered from the machine control circuit, so the system is inactive if the machine is turned 'Off'.

'Enabling' the emergency stops allows the system to become 'active', when either the cage or base key switch is turned 'On'. If the cage is overloaded, the control circuit will immediately indicate this by the audible and visual alarm. Pressing the emergency stop or turning the key switch to the 'Off' position merely silences the alarm. The alarm will continue to sound as long as the overload persists, unless the machine is turned 'Off'.

Whilst the overload is detected, pressing the green button at base or cage will generate no response from the control circuit. The machine will not function under power until the overload is removed. Removing the overload as previously described will re-set the system automatically, requiring no additional intervention from the operator. All machine functions will be restored.

#### **4.5.3 TESTING**

At the simplest level, before working on the platform, the function of the cage overload can be checked by the following method: - Place two men into the cage and a larger quantity of tools than is permitted to be carried. (Typically 40 kg). The alarm should sound and all functions should be lost. Reducing the cage contents to the safe working load should silence the alarm and restore the machine operation.

#### **4.5.4 CALIBRATION**

If a closer examination of the system is required, typically for testing and approval, the safe working load should be placed in the cage, carefully weighing the test load to ensure accuracy. The addition of a 5kg weight, to any of the four corners of the cage, should sound the alarm. If the alarm does not sound, carefully inspect the weigh mechanism for signs of damage. All parts of the weigh mechanism should be free to move, and the inspection should look for any impact damage that might have caused the assembly to become disabled, for any reason. If the mechanism seems to be functioning correctly, the adjustment of the weigh sensing micro-switch should be checked. A competent person, who has the authority to perform such adjustments, must perform this. Adjustment must not be permitted by anyone without the approval of the person responsible for the platform.

With the machine emergency stops 'enabled' and either the cage or base key switches turned 'On', the cage weigh micro switch is adjusted to bring the bolt into contact with the micro-switch roller. Continue adjustment until the alarm sounds, then back off slightly to silence the alarm. The locknuts supporting the adjustment bolt can be partially tightened to lock the bolt in place.

The addition of a 5 kg weight should now be used to prove that the system detects the applied overload, sounds the alarm and disables the machine. The sensitivity of the assembly is such that the alarm will sound slightly before the functions are disabled. The mechanism should be adjusted to allow the alarm to sound and functions to be lost within this 5 kg limit. Lock the adjustment screw securely.

The over-travel adjusters can now be used to protect the micro-switch from excess forces should a substantial overload be applied to the cage. (Typically if the machine is manoeuvred into contact with a fixed object, snagging the cage assembly, this would be detected as an overload to the system.) Adjust the screws forward until they come into contact with the cage weigh mechanism, then with the cage overload still applied and the alarm sounding, functions disabled and machine not operating, lock them in this position. Care should be taken to not turn the adjuster screws in too far; otherwise the overload signal might be lost.

The machine can then have the overload removed and the functions of the machine checked for correct operation.

#### **4.5.5 INSPECTION**

The cage weigh system is controlled through the detection printed circuit board, part number P16164. This PCB is connected directly to the safety micro-switch and monitors the function of the cage weigh system. The two relays are configured such that both need to operate to permit safe operation of the assembly. Should either of them fail, an error signal is generated which can be seen on the printed circuit board itself. This occurs if pressing the green button does not allow the machine to operate, no overload signal to be given, with no load in the cage. In this case, open the cage pushbutton box or separate box containing the PCB and look at the printed circuit board.

There are three LED's (Light Emitting Diodes) on the board, Red LD1 for 'Overload', Red LD2 for 'Relay 1/2 failed' and Green LD3 for 'Machine enable'. The first indicates the overload when the machine is turned 'On', the second indicates a relay failure when the green button is pressed, and the third shows the machine is enabled, again when the green button is pressed.

### **Operating & Safety Instructions**

The failure signal is generated if either relay fails to respond to the 'safe' cage weigh signal from the safety micro-switch, either due to a coil or contacts failing or if a contact sticks in place due to welding. Under either circumstance the 'enable' signal is blocked, instead generating the error message, illuminating the red LD2. The machine will not operate under this situation. The red error signal from LD2 requires the board to be changed, as the relays are not serviceable items.

#### **4.5.6 MAINTENANCE**

The cage weigh mechanism is supported on maintenance-free precision needle roller bearings for smooth running and friction-free operation. The accuracy of the entire assembly and in particular the hysteresis is dependent on these components. Keeping them free of dust and dirt is recommended; and an occasional application of WD40 to the external faces should keep them mobile and deny the entry of dust and moisture.

The hysteresis is the amount of load required to be removed before the system re-sets allowing continued operation.

If the assembly is subjected to any external impact force, typically whilst manoeuvring the machine under power, or in the case of trailer units, whilst being reversed into position, the cage assembly will require close inspection. If there is evidence of any deformation in any part of the structure, then the advice of a Niftylift Service technician should be sought. Physical damage to the assembly is liable to render the cage weigh system inactive, or to affect the accuracy of the result. Under no circumstance permit a damaged machine to enter service without performing a thorough inspection and calibration of the weigh assembly.

For this reason it is not recommended to restrain the machine in transit using strap or chains passed through or over the cage itself. This is particularly true of the electronic load cell system, which could be permanently damaged by the application of such excessive external forces. Whilst the mechanical system could be considered to be more robust in operation, the same restraint forces that could be generated through ratchet straps and the like, is likely to cause some severe deformation in the lightweight cage structure. Use only the designated tie-down points on your Niftylift when strapping the machine down for transport. Failure to observe this instruction could render the machine unusable, and a considerable repair bill for the damaged components.

#### **4.5.7 REPLACEMENT**

If components are replaced, they must be genuine Niftylift parts. The accuracy and function of the cage weigh system relies on the like-for-like application of the component parts. A switch from a similar manufacturer might reverse the contact arrangement and critically affect the function of the mechanism. Similarly, the accuracy of the sensing circuit relies on the duplication of the contact travel within the switch itself. Using a non-equivalent component will render the cage weigh system inactive. Under no circumstances should you permit a machine with a defective cage weigh assembly to enter service.

If in doubt about the operation or function of your machine, always request the circuit diagram that goes with the machine serial number. Look at the bottom of the machine serial plate; one of the final two numbers stamped there will give the electrical circuit for the machine. ('D80000' number, plus the issue status immediately afterwards: - /01;/02;/03; etc, see Section 1.5 & 1.5a, pages 5/6)

If in doubt, contact the Niftylift Service Department on (44) 01908 223456, Fax: 01908 227460.

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

### **4.6.1 TRANSPORTING**

If a work platform 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 platform 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 cage support structure or the cage 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 cage 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.

## **Operating & Safety Instructions**

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### **4.6.2 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.)

**D80932**  
D80933

**TD120**  
TD170

### **4.6.3 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 platform is intended, an occasional "top-up" charge of the batteries will serve to equalise their charge level.
- 3) Leave diesel engine switch in the OFF position to prevent discharge of batteries through leakage.
- 4) If machine is to be left on an incline, chock the track 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.

### **4.6.4 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.
- 10) If left un-attended for an extended period, it is likely that the hydraulic cage levelling will become un-pressurised. Normal operation is then lost, with a noticeable delay in the forwards or backwards motion as the booms move. To restore normal function, the cage needs to be fully levelled forwards and backwards, using the cage-levelling lever whilst not standing in the cage (i.e. with the operator standing adjacent to the cage side whilst simultaneously operating the lever and green button to move the cage). Take care not to become trapped between the moving cage and a fixed object, and ensure those around you are clear of the moving cage. When the system has been charged in both directions, the cage levelling function should be restored. If the system operates but is 'jerky' in either direction, this indicates air in the system. Repeat the procedure as described above until the movements are smooth and un-interrupted. If in doubt, contact our Service Department for further advice.

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.

## **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**

Turn the key switch selector at ground control station to ground (i.e. fully down). Lower on ground controls as detailed under section 4.3 Ground Control Operation.

### **5.3 IN THE EVENT OF MACHINE FAILURE**

Operate manual hand pump (located adjacent to the base controls) and lower platform to the ground using either platform or base controls. If initial movement of the machine allows the master alarm to reset, normal controls will be available. This is then the fastest method of lowering the platform to the ground.

**Note:** If the machine is fitted with a cage overload system, and the cage 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 **Manual Hand Pump**. It is sufficient for the cage to be manoeuvred away from the collision point to release the cage weigh system, thereby restoring normal machine operation. The cage could then be brought down using the controls as described previously.



**FOLLOWING AN EMERGENCY DESCENT RECOVERY OF THE PLATFORM, FULLY EXTEND AND RETRACT ALL CYLINDERS FROM 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, be 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 platform.

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.

# nifty TrackDrive (TD) Series

## Operating & Safety Instructions

### 6.3 Inspection/Service/Pre-Hire Check list

**MACHINE SERIAL NO** \_\_\_\_\_

| <b>TOWING</b>   | <b>PASS</b> | <b>FAIL</b> | <b>N/A</b> |
|---|-------------|-------------|------------|
| Machine secured on trailer                                  |             |             |            |
| Straps correctly positioned and tightened                   |             |             |            |
| Machine chocked if necessary                                |             |             |            |
| <b>TRACK ASSEMBLY</b>                                       |             |             |            |
| Tracks are complete and engaged with drive sprockets        |             |             |            |
| Track tension correct – grease in tensioner.                |             |             |            |
| Machine climbs slope  |             |             |            |
| Brakes hold machine on slope                                |             |             |            |
| <b>BASE</b>   |             |             |            |
| Operation of base control valve and buttons                 |             |             |            |
| Operation of all booms over full range                      |             |             |            |
| Wheel bearings OK   |             |             |            |
| Cylinders are silent  |             |             |            |
| Platform 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 hand pump                               |             |             |            |
| <b>SLEWING</b>  |             |             |            |
| Slew assembly and motor are secure                          |             |             |            |
| Gearbox mesh correct, no excessive wear                     |             |             |            |
| No excessive back-lash                                      |             |             |            |
| Slew wheel bolts secure                                     |             |             |            |
| Slew guards secure  |             |             |            |
| <b>PLATFORM</b>   |             |             |            |
| Operation of control valve and buttons                      |             |             |            |
| Levelling lock valve holds in both directions, lines vented |             |             |            |
| Operation of all booms over full range                      |             |             |            |
| Cylinders are silent  |             |             |            |
| Platform levelling over full range                          |             |             |            |
| Slewing smooth over full range                              |             |             |            |
| Operation of boom 4 over full range (if fitted)             |             |             |            |
| No excessive movement of boom 4 and boom 3                  |             |             |            |

| <b>TILT ALARM</b>  | <b>PASS</b> | <b>FAIL</b> | <b>N/A</b> |
|--|-------------|-------------|------------|
| Machine driven on to excessive slope - drive disabled, siren tone constant |             |             |            |
| Hi drive operation affected  |             |             |            |
| Return to level ground – Hi drive restored                                 |             |             |            |
| <b>INTERNAL (POWER PACK)</b>   |             |             |            |
| 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                                     |             |             |            |
| Hydraulic oil level  |             |             |            |
| Engine/Gear box oil  |             |             |            |
| <b>FINISH</b>  |             |             |            |
| Pivot pin tag bolts  |             |             |            |
| Correct decals, all visible  |             |             |            |
| Canopy/bonnets   |             |             |            |
| Grease nipples (Feet, Knuckle, Centre Post)                                |             |             |            |
| <b>LEAK CHECK</b>  |             |             |            |
| Cylinders (Lift, Jacks, Telescope, Levelling)                              |             |             |            |
| Control valves   |             |             |            |
| Check valves   |             |             |            |
| Power pack/pump  |             |             |            |
| Slew motor   |             |             |            |
| Hose connections   |             |             |            |
| Filter   |             |             |            |
| Tack Motors  |             |             |            |

**Comments, remedial work required etc:**

**INSPECTED BY:** \_\_\_\_\_ **DATE:** \_\_\_\_ / \_\_\_\_ / 0