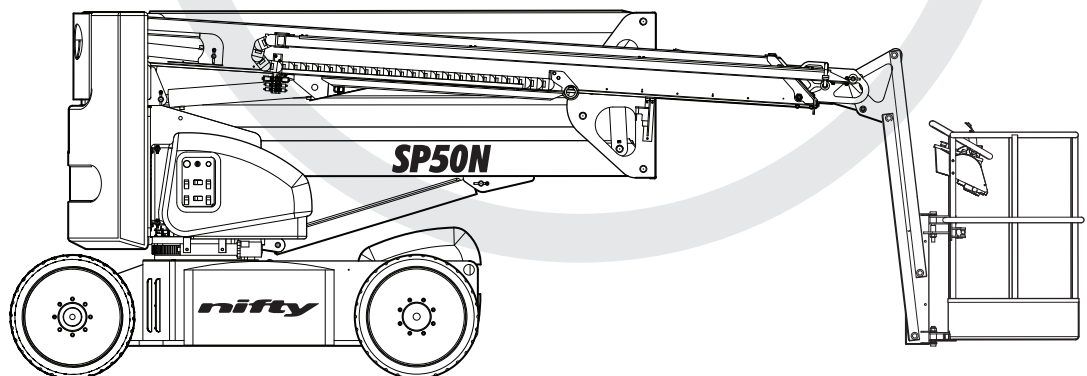
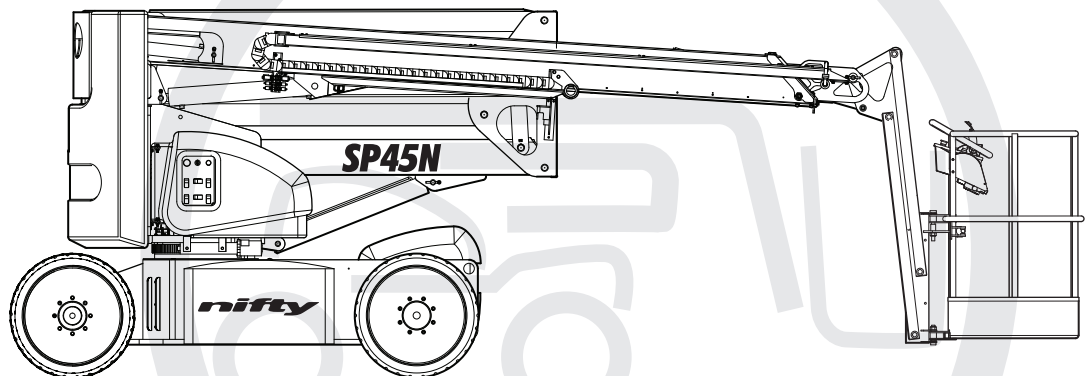


nifty

SP45N/SP50N

Operating & Safety Instructions

**MODEL SP45N &
SP50N SERIES**



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info@niftylift.com

M50412/01



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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 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 SP45N or 50N, powered by electric (DC), diesel (D), 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 SP.

1.3 INTRODUCING THE SP SELF-PROPELLED (SP) 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, after reading this manual you require further information, please do not hesitate to contact us.

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

Tel: +01 864 968 8881

Fax: +01 864 968 8836

Driven from the basket, the Niftylift SP45N or 50N is an extremely versatile articulated boom basket of unique and simple design. In the case of the SP50N it is capable of placing two men and their tools up to a height of 56ft 6in or an outreach of 31ft 6in. The SP45N can place two men and their tools at a height of 51ft or an outreach of 31ft 6in.

The booms are mounted via a 360° powered swing mechanism onto a compact narrow base with a tight turning circle that ensures excellent manoeuvrability and maximum efficiency.

High traction tyres and powerful hydraulic wheel motors give unsurpassed performance with the option of fast drive speed when the booms are in the stowed position. Automatic braking and audible alarms activated by a four degree (SP45N) or three degree (SP50N) tilt sensor help to prevent the operator from working on unsafe terrain whilst elevated.

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

Models include the following:

E: - DC ELECTRIC

DE: - BI-ENERGY (DIESEL & BATTERY)


D: - DIESEL

LPG: - PROPANE GAS

Operating & Safety Instructions**1.4 GENERAL SPECIFICATION**

FEATURE	SP45N	SP50N
MAXIMUM HEIGHT - WORKING	51ft	56ft 6in
MAXIMUM HEIGHT - BASKET	44ft 5in	50ft
MAXIMUM OUTREACH	31ft 6in	
MAXIMUM HEIGHT – STOWED	6ft 11in	
MAXIMUM WIDTH	4ft 11in	
MAXIMUM LENGTH – STOWED	16ft 5in	
BASKET CAPACITY - Europe	500lbs	
WHEELBASE	6ft 5in	
TURNING RADIUS – OUTSIDE	14ft 5in	
TURRET ROTATION	355°	
TURRET TAIL SWING	Zero	
TRAVEL SPEED	0-2.5mph	
BASKET SIZE	5ft x 2ft 4in	
CONTROLS	Proportional electric over hydraulic	
HYDRAULIC PRESSURE	2900 psi	
TYRES	Solid, non marking optional	
GRADE-ABILITY	25%	
MINIMUM VEHICLE WEIGHT	14700lbs	15900lbs
MAXIMUM GROUND PRESSURE	0.119kN/cm ² 24958lbs/ft ²	0.128kN/cm ² 26817lbs/ft ²
POWER SOURCE	E (Electric) models - 8 x 6v 350 AH batteries D (Diesel) models - Kubota 722 DE (Diesel & Battery) – Diesel Bi-Energy	

1.5 IDENTIFICATION (USA PLATE)

	
NIFTYLIFT LTD. RINGLE DRIVE, STONEBRIDGE MILTON KEYNES MK13 0ER GREAT BRITAIN TEL (01144) 1908 223456 : FAX (01144) 1908 312733 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
P114-97	

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)



EC DECLARATION OF CONFORMITY

MANUFACTURER AND
PERSON RESPONSIBLE
FOR DOCUMENTATION:

**NIFTYLIFT LTD
MALCOLM NORTH**

ADDRESS:

**FINGLE DRIVE,
STONEBRIDGE,
MILTON KEYNES,
MK13 0ER,
ENGLAND.**

MACHINE TYPE:

MOBILE ELEVATING WORK PLATFORM

MODEL TYPE:

SERIAL NUMBER:

NOTIFIED BODY:

RWTUV Anlagentechnik GmbH

NOTIFIED BODY NUMBER: 0044

ADDRESS:

POSTFACH 10 32 61
D-45141 ESSEN
GERMANY

CERTIFICATE NUMBER:

APPLICABLE STANDARDS:

EN 280:2001+A2:2009
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: 14th 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 Niftylift 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 basket, 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). **Ensure wheels are chocked before carrying out any maintenance that involves gearbox disengagement as described in Section 4.6.2.**
- 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.

Operating & Safety Instructions

- 2.1.8** Never exceed the maximum basket 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 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 basket ensure that the drop down entry bar is closed afterwards.
- 2.1.12** Use of an approved safety belt and lanyard, hard hat 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.

2.1.13



Always remain standing within the basket. Do not attempt to increase your height or reach by standing and/or climbing on the basket guard rails or any other object. **KEEP YOUR FEET ON THE BASKET FLOOR.** Do not sit, stand or climb on the guard rail, 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 basket levelling system to artificially increase the outreach of the basket. Never use boards or ladders in the basket to achieve the same result.
- 2.1.15** 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.)
- 2.1.16** The Niftylift shall not be operated from a position on trucks, trailers, railway cars, floating vessels, scaffolds or similar equipment unless the application is approved in writing by Niftylift Ltd in Great Britain.
- 2.1.17** Always check that the area below and around the basket is clear of personnel and obstructions before lowering or rotating the booms. 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.
- 2.1.18** 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** Before and during driving while the booms are elevated the operator shall maintain a clear view of the path of travel, maintain a safe distance from obstacles, debris, drop offs, holes, depressions, ramps and other hazards to ensure safe elevated travel. Maintain a safe distance from overhead obstacles.

- 2.1.21** Under all travel conditions the operator shall limit travel speed according to conditions of ground surface, congestion, visibility, slope, location of personnel and other factors causing hazards of collision or injury to personnel.
- 2.1.22** The Niftylift shall not be driven on grades, side slopes or ramps exceeding those for which the machine is rated by the manufacturer.
- 2.1.23** 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 suitable for the duty. (See ANSI/NFPA 505-1987 where applicable).
- 2.1.24** The operator shall immediately report to his supervisor any potentially hazardous location(s) (environment) which become evident during operation.
- 2.1.25** 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.
- 2.1.26** 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.
- 2.1.27** The boom and basket of the Niftylift shall not be used to jack the wheels off the ground.
- 2.1.28** The Niftylift shall not be used as a crane.
- 2.1.29** The Niftylift shall not be positioned against another object to steady the basket.
- 2.1.30** Care should be taken to prevent rope, electric cords and hoses from becoming entangled in the aerial basket.
- 2.1.31** Batteries shall be recharged in a well-ventilated area free of flame, sparks or other hazards, which may cause explosion. Highly explosive hydrogen gas is produced during the charging process.
- 2.1.32** 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.
- 2.1.33** 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 machine, all personnel shall be removed from the basket safely before attempts are made to free the booms or basket using ground controls.
- 2.1.34**



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.

Operating & Safety Instructions

- 2.1.35** 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.**

2.1.36



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

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

- 2.1.38** 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

Unless specifically configured otherwise, the machine will have a short operational time in extreme temperatures such as freezers and cold storage, due to reduced battery performance. For electrical cables and components, the temperature must be within the range -5°C to 60°C.

The machine is limited in high temperatures because of the cooling requirement for engines and hydraulic oil. Coolant temperatures must be within the range -37°C to 110°C (at 50% mixture of water to anti-freeze). Oil temperature must not exceed -23°C to 93°C.

The recommended operational range for these machines is - 5°C to +40°C. Please contact Niftylift Ltd for special considerations if the machine is required to operate outside these temperatures.

Extended operation in dusty environments is not recommended, 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 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.



DO NOT USE THE NIFTYLIFT IN ELECTRICAL STORMS

2.3 NOISE AND VIBRATION

The airborne noise emission on the SP range of machines does not exceed 79dB(A), measured at a perpendicular distance of 13', under equivalent continuous A-weighted sound pressure test conditions. This was based on a Diesel powered machine, working on high throttle, and 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/s².

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 lessee 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 machine during transit.
- B) Ensure any ramp, loading dock or forklift used is capable of supporting or lifting the machine
- C) If the machine is to be driven off, please ensure that the operator has read and fully understood this entire manual. Refer to the appropriate section for precise operating instructions.

*****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 a Pre-operational Report, which must be filled out upon delivery/receipt of the machine.

Before the user carries out the Pre-operational Report 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 each day and at the beginning of each shift the aerial basket shall be given a visual inspection and functional test including, but not limited to, the following:

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 (Refer to Section 4.5 for further information).
- 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 that the basket pivot pins and their tag bolts are secure.
- 12) Check that the tilt alarm is functioning properly (On a slope of 3° (SP50N), 4° (SP45N) or more the alarm should sound and drive should be disabled)

3.3.2 WEEKLY SAFETY CHECKS

- 1) Inspect tyres and wheels for damage and wear.
- 2) Check battery fluid levels and specific gravity (after charging) and general condition.
- 3) Check hydraulic oil level, ISO Grade 32
- 4) Inspect the engine air filter and clean or replace if necessary.
- 5) Inspect hose track for damage or missing parts.

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3.3.3 MONTHLY SAFETY CHECKS

- 1) Check the engine oil level (if applicable).
- 2) Check the wheel nuts (torque 110ft lbs / 150Nm).
- 3) Check that the boom rotation worm is secured and correctly in mesh. Clean and re-grease.
- 4) Check the track rod linkage.
- 5) Inspect brakes for operation and wear.
- 6) Inspect the engine fuel tank for damage or leaks.
- 7) Check telescopic boom wear pads and nylon studs (if applicable).

3.3.4 ANNUAL SAFETY CHECKS

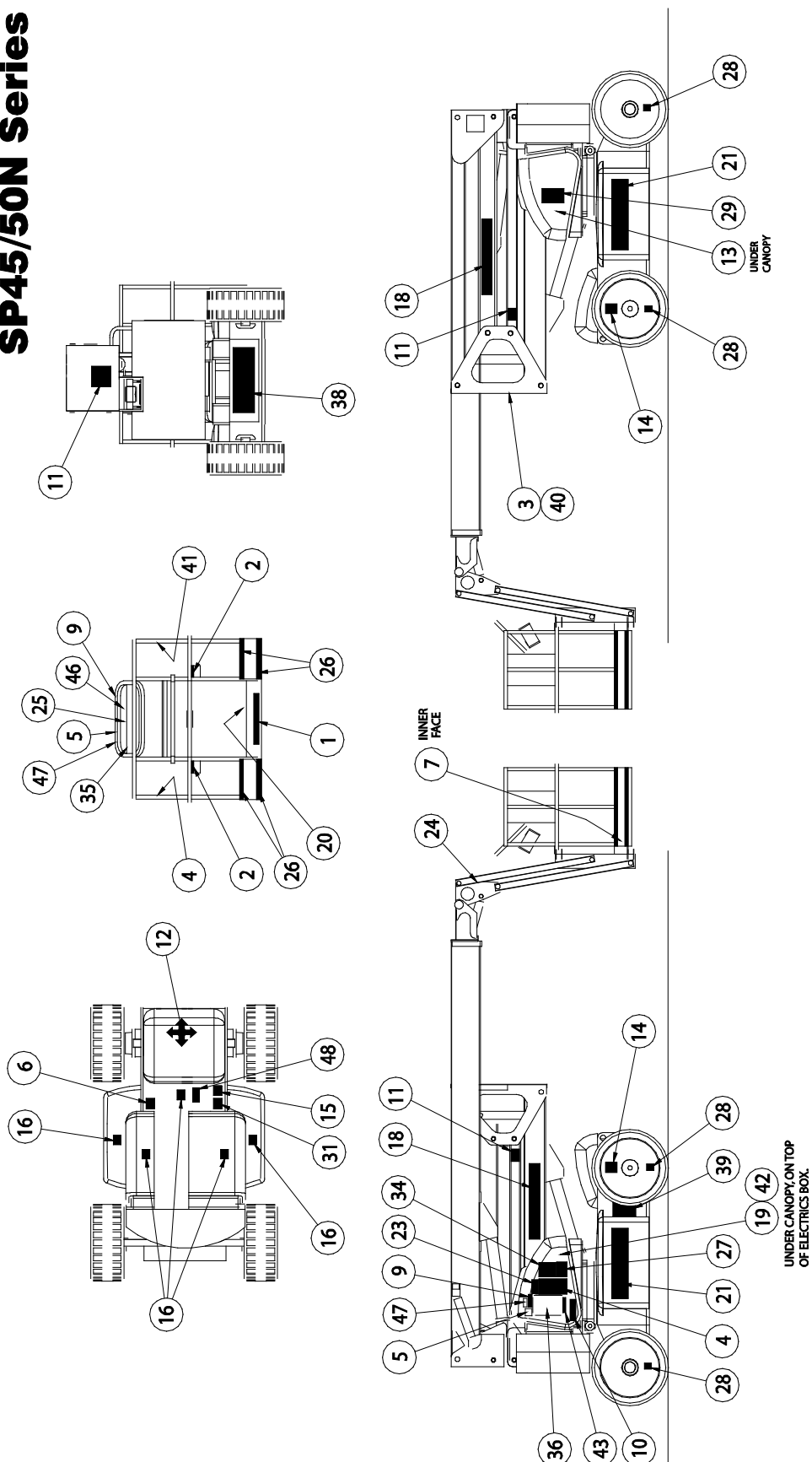
- 1) Check that all pivot pins and their tag bolts are secure.
- 2) Inspect for any cracks or badly rusted areas on booms and chassis.
- 3) Change the hydraulic oil filters.
- 4) Check the bushes in the front wheel hubs for wear.
- 5) Check that boom rotation ring bolts are secure (torque 220ft lbs. 300Nm).

3.4 PLACARD, DECALS & INSTALLATION (USA SPEC)

ITEM	DESCRIPTION	NUMBER	QTY
1	"Niftylift.com"	P14390	1
2	Harness Point	P14883	2
3	Head Protection	P14921	1
4	General Warning	P21970	2
5	"If E-stop disabled"	P14864	2
6	Hydraulic Oil	P14415	1
7	SWL 500lbs	P17328	1
8	Basket Gate Warning	P18335	1
9	"If tilt alarm sounds"	P14868	2
10	Rotating machinery	P15010	2
11	General Crush	P14782	4
12	Travel Direction	P14784	1
13	Blank serial plate	P15383	1
14	Gearbox Disengage	P19180	2
15	Battery Isolator	P18600	1
16	No Step	P14785	5
18	Logo	Nifty SP45N P14617	2
		Nifty SP50N P19184	2
19	Trip – Push to reset	P19056	1
20	"If footswitch disabled"	P14884	2
23	Component Stability	P19708	1
24	"Raise basket"	P19442	1
25	Basket Controls	P18336	1
26	Warning Stripes	N/A	A/R
27	Daily Check List	P14908	1
28	Point Load	SP45N P20709	4
		SP50N P20710	4
29	Battery Charger Warning	P14904	1
31	Diesel Warning	P14414	1
34	General Notice HR's	P18870	1
36	Base Controls	P18337	1
39	Oil Level Indicator	P14676	1
41	Operating Instructions	P14892	1
42	Manual Hand Pump	P14811	1
46	Soft Stop Warning	P17460	1
48	Noise Warning	P17124	1

nifty SP/SP Series
Operating & Safety Instructions

nifty
SP45/50N Series



3.5 TORQUE REQUIREMENTS

SCREW QUALITY/SIZE		Tightening torque in ft lbs (Nm)		
Grade		8.8		10.9
M 6	7.0	(10)	10	(14)
M 8	19	(25)	26	(35)
M 10	36	(49)	51	(69)
M 12	63	(86)	89	(120)
M 14	99	(135)	140	(190)
M 16	155	(210)	218	(295)
M 18	214	(290)	300	(405)
WHEEL NUTS	110ft lbs		150Nm	
WHEEL MOTOR NUTS	99ft lbs		135Nm	
BOOM ROTATION RING BOLTS	220ft lbs		300Nm	

4 Operation

4.1 CONTROL CIRCUIT COMPONENTS

- 4.1.1 MAIN CONTROL BOARD:** - Situated under the left-hand superstructure canopy, the principle electrical box houses the Main Control Box. This PCB (Printed Circuit Board) incorporates all of the relays to control the machines operation. The control board is common to all models and contains functions, which might not be utilized on your particular machine. Thermal trips are integral to the box, the functions of which are described in a later section of this manual. (See 4.1.14) The purpose of the Main Control Board is to interpret the signals received from the two control stations and energise the machine movements accordingly.
- 4.1.2 BASE CONTROL BOARD:** - Adjacent to the Main Control Board and attached to the same bracket is the Ground Control Station. Situated behind the Ground Control Pushbuttons will be found the Base Control Board. This PCB incorporates all of the relays to control the ground functions of the machine. The purpose of the Ground Control Board is to generate all of the signals required to operate the machine, which are then fed to the Main Control Board.
- 4.1.3 BASKET CONTROL BOARD:** - Situated in the basket is the Basket Control Station. Behind the basket control pushbuttons will be found the Basket Control Board. This PCB incorporates all of the relays to control the basket functions of the machine. The purpose of the basket control board is to generate all of the signals required to operate the machine, which are then fed through to the Main Control Board.
- 4.1.4 TILT ALARM:** - Fitted to the superstructure behind the base controls cover, the tilt alarm is a solid-state sensor, which monitors the inclination of the machine. It directly controls the BRV (Brake Release Valve) and when the basket is in use, i.e. Booms are raised, if the inclination exceeds the pre-set limit, it will disable the drive to the machine and sound the alarm. In order to recover the machine, the basket operation is unaffected, allowing the operator to restore drive when the machine is stowed. It is then possible to drive back onto level ground, fully restoring machine operation.
- 4.1.5 SOUNDER:** - Situated on the back of the base control box is a small electric sounder, which is used to provide an intermittent alarm whenever the machine is in operation. Pushing a green "power control" button or depressing the foot switch in the basket (if fitted) will energise this sounder. This serves to warn personnel of the operation of the machine.
- 4.1.6 KLAXON:** - Also mounted on the top of the control board box is a klaxon, which performs several functions: Firstly, it can be used as a manual alert, by pushing the "Horn" button at the basket control position. Secondly, it is this device, which sounds continuously if the tilt alarm sensor detects excessive inclination, with the booms raised. Thirdly this will sound when the fuel warning light comes on. Lastly, it is linked into the battery management system, such that when low battery state is reached the "pulsing" of the DC motors is mimicked by the klaxon, re-enforcing the message to the operator to recharge the batteries.

- 4.1.7 DRIVE CONTROL VALVE (DCV):-** The motion control valve comprises several individual components all directly involved in the hydraulic supply to the wheel drive motors. Principal amongst these are the drive control valves, which electrically change the drive motor hydraulics supply from series flow to parallel, or vice versa. This control function is only available when the booms are lowered, and allows the operator to select "Hi" or "Lo" drive. "Hi" drive gives fast speed of travel, but low gradeability, "Lo" drive gives best gradeability, but slow speed. "Lo" drive is used for climbing inclines and delicate positioning of the machine.
- 4.1.8 BRAKE RELEASE VALVE (BRV):-** The motion control valve also incorporates a solenoid operated dump valve, which controls the brake function on the machine. This valve must be energised to allow the machine to move. If no voltage is present, the wheel motors will not be able to develop drive torque, whilst at the same time, the parking brakes will remain engaged. Only when a green "Power Control" push-button is being used (or the Basket Foot-switch is depressed) will the BRV operate. If the tilt alarm sensor detects an excessive inclination whilst the booms are raised it is the BRV which is de-energised to isolate the machine. (At the same time the klaxon tone changes to a continuous tone to indicate this condition).
- 4.1.9 BOOM SWITCH: -** Mounted on the links knuckle and operated by the raising of any boom, this switch controls both the operation of the tilt alarm sensor, and the speed control function. With the booms in the stowed position, the tilt alarm sensor is by-passed, allowing the machine to negotiate slopes in excess of the permissible working angle, without isolating the drive function. At the same time, "Hi" drive is possible, as is fast throttle on those machines so equipped. When the booms are raised, the tilt alarm sensor becomes activated, only slow speed operation is possible and only "Lo" drive is permitted. 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.
- 4.1.10 BATTERY MANAGEMENT: -** Battery condition is permanently monitored by the control circuit, such that when available power has decreased to 20% of full charge, the battery status circuit begins to "chop" the power to the hydraulic power packs. This function causes the drive system to alternately stop and start, signalling to the operator that re-charging is necessary. At the same time the Klaxon will begin to sound intermittently re-enforcing the charge warning. At this point, sufficient power remains to drive to the nearest power point. Should the operator ignore the on-set of the discharge warning, the "chopping" will continue until the machine is rendered inoperative. Immediate charging will then be required.
- Under no circumstances should a machine be left fully discharged or severe battery damage can occur in a relatively short time.
- 4.1.11 BATTERY ISOLATORS: -** The battery-disconnect handle is located beneath the central canopy. In order to isolate the machine control and power circuits from the batteries it is necessary to pull the release handle, which in turn also disconnects the supply to the PCB control box. Under normal operation, the machine key switch should be used to isolate the machine, with the battery isolator handle only being required for emergencies, in the event of a short circuit, or during routine maintenance.

4.1.12 DUTY SELECTOR: - On multiple power option machines, one of the functions on the basket control station will be a duty selector. This key switch allows the selection of either power option, i.e. from Diesel to Battery or Petrol to battery, or vice-versa. On other machines this same key switch serves as an "On-Off" control.

4.1.13 DIESEL ENGINE: - Generally a Kubota 722 engine, driving a twin bodied pump with direct mounted pump dump valves (one per section), and integral relief valve on the rear pump. The arrangement allows two speed operation, fast throttle and automatic relief for ramp climbing.

4.1.14 FUSES & TRIP SWITCHES: -

Electric Power Tray

225A Fuse, in Main Box

Bi-energy Power Tray

125A Fuse, in Fuse Box

225A Fuse, in Fuse Box

10A Circuit Breaker, in Fuse Box

Main Control Box

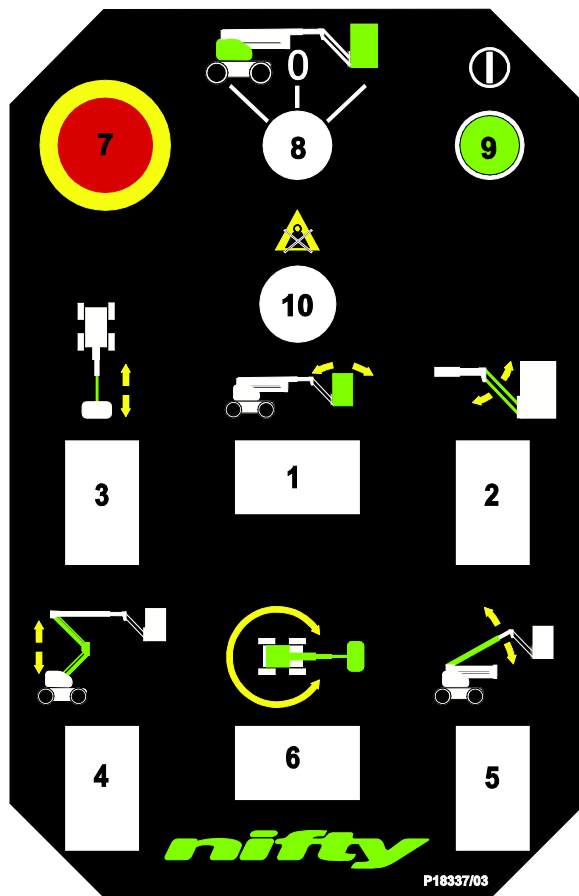
1A Circuit Breaker

10A Circuit Breaker

4.1.15 LOAD SENSING CONSOLE - SiOPS™ (If fitted): - This machine may incorporate a load sensing basket console that senses if the operator has been pushed or has fallen against the console. If the load applied to the front of the console is greater than the pre-determined amount, the footswitch will be disabled to increase operator safety and reduce the possibility of sustained involuntary operation of the basket controls. For further information refer to Section 4.3.3.

4.2 GROUND CONTROL OPERATION

4.2.1 GROUND CONTROL FUNCTIONS



(Ground Control Station)

1 Operates Basket Levelling	Left for Forward **	Right for Backward **
2 Operates the Flyboom	Up for Up	Down for Down
3 Operates Telescoping	Up for In	Down for Out
4 Operates the Link Booms	Up for Up	Down for Down
5 Operates the Upper Boom	Up for Up	Down for Down
6 Operates Boom rotation	Left for Left	Right for Right
7 Emergency Stop	Push to Stop Operation	Twist to Enable Operation
8 Base Key Switch	Anti-clockwise for Base	Clockwise for Basket
9 Green Power Button	Push and hold for Power	Release to Cease operation
10 Basket overload indicator		

****** Basket levelling only active when booms are down.

4.2.2 OPERATION**ALWAYS ALLOW THE ENGINE TO WARM UP BEFORE OPERATING****ALL MODELS**

- 1) Ensure all red emergency stops are out.
- 2) Turn key switch at ground control station to **Ground** (fully anti-clockwise).
- 3) For **Battery** powered operation, go to step 8).
- 4) For **Diesel** powered operation, go to step 5).

DIESEL ENGINE OR BI-ENERGY MODELS

- 5) Turn the duty selector in the basket to **Engine** (fully clockwise). For a cold engine start go to step 6), for a warm engine start go to step 7).
- 6) **COLD ENGINE:** - turn the main engine ignition key switch (located beneath the central cover) to the **Glow** position (anti-clockwise). This engages the glow plug pre-heat system. Hold for 3-5 seconds then turn the key to the **Start** position (fully clockwise) and the engine will fire.
- 7) **WARM ENGINE:** - turn the main engine ignition switch (located beneath the central cover) to the **Start** position (clockwise) and the engine will fire.

Note: Unless the diesel engine is running, the HR15N/17N will automatically default to the primary power source (usually battery).

ALL MODELS

- 8) Push and hold green power button on the base control box.
- 9) Select a function and operate the appropriate rocker switches in full accordance with manufacturers operating and safety manual.
- 10) To return control to the basket, turn base control key-switch to the **Basket** position (fully clockwise).
- 11) When not in use return machine to stowed position, turn the base control key-switch to centre **Off** position, remove key and chock wheels.

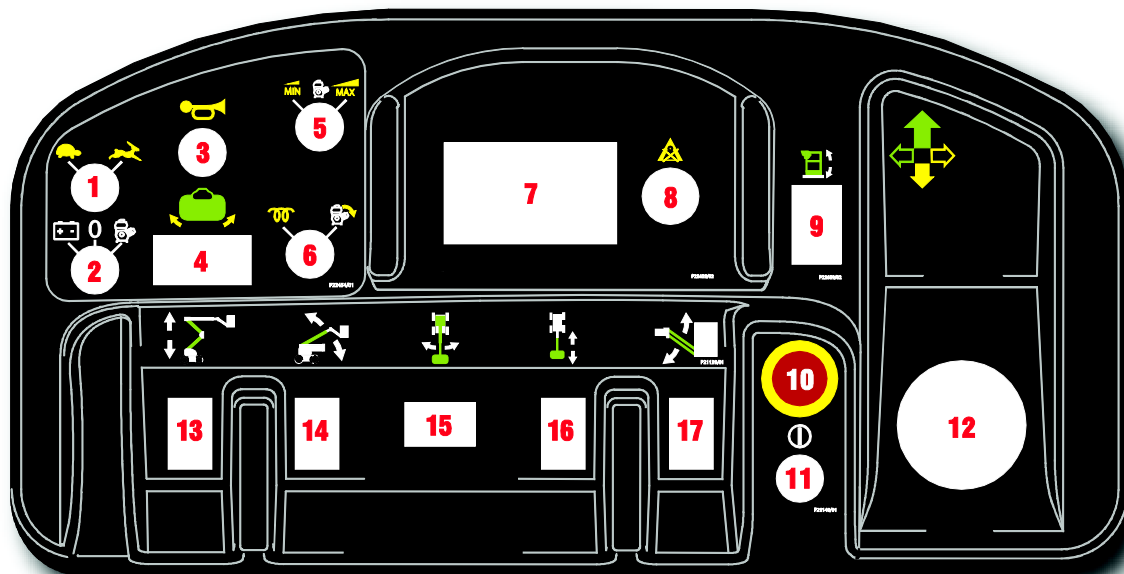
Note: Unless the diesel engine is running, the SP45N/50N will automatically default to the primary power source (usually battery).

EMERGENCY PROCEDURES

- 1) Push in red emergency stop to shut down all functions.
- 2) Operate the emergency descent valves located under the base control panel on the superstructure. These must be pulled in or out depending on the direction of travel required. Refer to the decal inside the panel for the relevant controls.
- 3) With the relevant descent valve pushed in or pulled out operate the manual hand pump, located inside the same panel.
- 4) If hand pump locks up, check that the **Booms** tap on the DCV is open. (See section 5.3)

4.3 BASKET CONTROL OPERATION

4.3.1 BASKET CONTROL FUNCTIONS

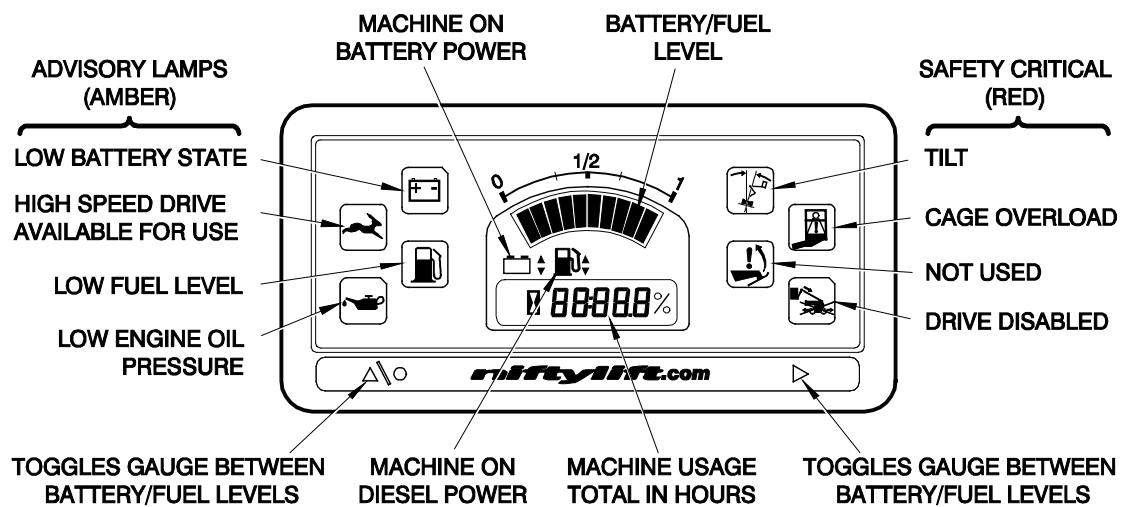


* Drive function for HR17N only active when telescopic boom is fully retracted.

** Basket levelling only active when booms are down.

1 Drive Speed	Anti-clockwise for Slow *	Clockwise for Fast *
2 Duty Selector	Anti-clockwise for Battery	Clockwise for Engine
3 Horn	Press & hold to Sound	
4 Basket rotation	Right for Anti-clockwise	Left for Clockwise
5 Engine Revs	Anti-clockwise for ½ Revs (gradient)	Clockwise for Max Revs (level ground)
6 Engine Start	Anti-clockwise for Glow	Clockwise for Start
7 Digital Gauge	See diagram on page 24	
8 Basket Overload Indicator		
9 Basket Levelling	Up for Forward **	Down for Backward **
10 Emergency Stop	Push to Stop Operation	Turn clockwise to Release
11 Green Power Button	Push and hold to activate machine	
12 Joystick	Grip the joystick and hold the trigger switch at the front. Machine movement is achieved by slowly moving the joystick away from the neutral position in the required direction. Steer by using the thumb rocker switch located on top of the joystick.	
13 Operates the Link Booms	Up for Up	Down for Down
14 Operates the Upper Boom	Up for Up	Down for Down
15 Operates Boom rotation	Left for Left	Right for Right
16 Operates Telescoping	Up for Tele-In	Down for Tele-Out
17 Operates the Flyboom	Up for Up	Down for Down

Situated on the Basket Control Panel, this gauge provides a warning indication for a range of functions. The red warning lamps on the right hand side indicate a safety critical situation where **immediate** action is required; the amber lamps on the left are advisory. It also displays fuel or battery levels when machine is in operation, automatically reverting to fuel level when diesel engine is started. Refer to diagram below.



4.3.2 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.

ALL MODELS

- 1) Ensure all red emergency stops are out.
- 2) Turn key switch at ground control station to **Basket** (fully clockwise).
- 3) For **Battery** powered operation, go to step 8).
- 4) For **Diesel** powered operation, go to step 5).

DIESEL ENGINE OR BI ENERGY MODELS

- 5) Turn the duty selector in the basket to **Engine** (fully clockwise). For a cold engine start go to step 6), for a warm engine start go to step 7).
- 6) **COLD ENGINE:** - turn the engine ignition switch (on the basket control box) to the **Glow** position (anti-clockwise). This engages the glow plug pre-heat system. Hold for 3-5 seconds then turn the switch to the **Start** position (fully clockwise) and the engine will fire.
- 7) **WARM ENGINE:** - turn the main engine ignition switch (on the basket control box) to the **Start** position (clockwise) and the engine will fire.

Note: Unless the diesel engine is running, the SP45N/50N will automatically default to the primary power source (usually battery).

ALL MODELS

- 8) Depress the footswitch or push and hold green power button on the basket control box.
- 9) Select a function and operate the appropriate proportional paddles (levers) in full accordance with manufacturers operating and safety manual.
- 10) To return control to the base, turn base control key-switch to the **Base** position (fully anti-clockwise).
- 11) When not in use return booms to the stowed position. Turn key switch on the ground control station to the centre **Off** position, remove key and chock wheels.

Note: Unless the diesel engine is running, the SP45N/50N will automatically default to the primary power source (usually battery).



ALWAYS ENSURE THE NIFTYLIFT IS ON A FIRM LEVEL 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.

4.3.3 SiOPS™ - LOAD SENSING CONSOLE (If fitted)

WHEN OPERATING THIS MACHINE THE USER MUST BE AWARE OF ANY OVERHEAD OBSTRUCTIONS.

This machine incorporates a load sensing basket console that senses if the operator has been pushed or has fallen against the console. If the load applied to the front of the console is greater than the pre-determined amount, the footswitch will be disabled to increase operator safety and reduce the possibility of sustained involuntary operation of the basket controls.

Note: The green button will illuminate once the footswitch has been disabled, but continues to be available for use at all times. This allows the operator to use the basket control functions and manoeuvre the machine to a safe position.

To reset the footswitch:

- 1) Release the load from the front of the console.
- 2) Ensure basket controls are in the neutral position and clear of objects.
- 3) Raise foot clear of footswitch then lower foot onto footswitch.
- 4) Footswitch is now active and full control has been restored.

4.4 DRIVING CONTROLS



DO NOT OPERATE THE NIFTYLIFT WHILST ELEVATED UNLESS ON A FIRM, LEVEL SURFACE FREE FROM ANY POSSIBLE OBSTRUCTIONS OR HAZARDS BOTH AT GROUND LEVEL AND OVERHEAD.

- 1) Check proposed route for possible hazards, obstructions and personnel.
- 2) Depress foot switch located in basket floor (if applicable).
- 3) Use the **Drive Speed** selector on the basket control station to determine speed.
High Drive (Hare) - GIVES HIGH SPEED AND LOW GRADEABILITY.
Low Drive (Tortoise) - GIVES LOW SPEED AND HIGH GRADEABILITY.

Note: Drive function on the sp50N is only available when the telescopic boom is in its fully retracted position. High Drive is only available when the booms are in the stowed position. The SP45N or SP50N will default to Low Drive speed whenever the booms are elevated. Drive speed can only be changed when the joystick is in the neutral position.

- 4) Select drive joystick from the basket control box.
 - A. Up for **FORWARD**
 - B. Down for **REVERSE**

Steering is controlled by the rocker-switch button on the top of the joystick

- C. Left for **STEER LEFT**
- D. Right for **STEER RIGHT**

The driving horn is activated by the button on the front of the joystick and there is also a separate horn button on the basket controls for use when the drive and boom controls are switched off.

- 5) All control levers give a fully proportional response therefore the more the lever is moved away from the centre **Off** position the faster the function will become.
- 6) Maximum drive speed is only attainable when all booms are fully stowed and the **Drive Speed** selector is in the HI position.
- 7) When driving with the booms fully stowed, the Tilt Alarm is bypassed to allow the Niftylift to be driven in areas where the slope exceeds the four degree working limit. In normal operation the drive is therefore unaffected when driven onto a slope in excess of four degrees, until the booms are raised, whereupon the drive would be disabled and the tilt alarm sounds continuously.



ALL NIFTYLIFTS ARE FITTED WITH A TILT ALARM - PRE-SET IN THE FACTORY. ONCE ENERGISED THE NIFTYLIFT WILL LOSE ALL POWER TO DRIVE FUNCTIONS AND A LOUD AUDIBLE ALARM WILL BE ACTIVATED. TO DE-ACTIVATE, LOWER THE BOOMS FULLY TO STOWED POSITION AND RE-POSITION BASE ON FIRM, LEVEL GROUND.

IF ALARM SOUNDS - DESCEND IMMEDIATELY AND RE-LEVEL MACHINE BASE.

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, either 240 volts or 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:

TRANSFORMER CHARGER

Red Lamp - Batteries are charging.

Pulsing Green lamp - the charge is equalising.

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

DIGITAL CHARGER

Amber lamp - Batteries are charging.

Amber lamp & Green 80% lamp - Batteries are charging and between 80% & 100% capacity.

Green 100% lamp - the batteries are fully charged.

Red lamp – Fault (see 'Charging Limitations' or refer to charger manufacturer's manual).



IF USING THE TRANSFORMER TYPE CHARGER, 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 transformer type charger may show a Red light although the batteries may be fully charged. Alternatively, the digital charger will show an Amber light, immediately followed by the Green 80% lamp. 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 machines 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

Transformer Charger: - 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.

Digital Charger: - The capacity of the 110V supply must be capable of 2kW (18A current); hence a small hand-tool transformer will **not** operate the battery charger.

Digital Charger Fault Conditions

Red LED status	Description
Constant ON	Defective battery pack or cell
Single flash	Output open circuit or short circuit, or output terminals are reversed. Battery voltage is too high (Possibly incorrect voltage battery)
Double flash	22 Hour timer has deactivated charger due to a battery problem

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

Operating & Safety Instructions

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 Niftylift 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.

Operating & Safety Instructions**4.6.2 TOWING**

If the Niftylift needs to be towed in case of an emergency, it may be necessary to chock the wheels before starting any of the following actions.

GEARBOX DISENGAGEMENT

In order to safely tow the SP45N or SP50N, the drive mechanism and parking brakes will need to be bypassed. The drive gearboxes located on the rear wheel hubs must be disengaged as follows;

- 1) Remove both retaining bolts that secure the cover disc to the centre of the wheel hub.
- 2) Partially screw one of the retaining bolts into the end of the central disengage pin and pull the pin out fully, ensuring the recess on the pin is visible.
- 3) Place the cover disc over the pin, ensuring the retaining disc is engaged in the pin recess and secure in place using the remaining retaining bolt.
- 4) Once gearboxes are disengaged the Niftylift can now be towed over short distances – maximum speed 5mph.
- 5) To re-engage the gearbox, complete the above instructions in reverse order, ensure gearbox drive is free to engage before pushing the pin 'home'. If necessary, jack up each wheel & rotate slightly to allow re-engagement of pin.

4.6.3 CRANEAGE

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

D80935
D81301

HR15N
HR17N

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 outside 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 - especially descent valves, brake release valve etc.
- 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 ground 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 basket 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 basket needs to be fully levelled forwards and backwards, using the basket-levelling lever whilst not standing in the basket (i.e. with the operator standing adjacent to the basket side whilst simultaneously operating the lever and green button to move the basket). Take care not to become trapped between the moving basket and a fixed object, and ensure those around you are clear of the moving basket. When the system has been charged in both directions, the basket 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 at the ground control station to **ground** (Anti-clockwise).
Manoeuvre the machine using the ground controls as described previously in Section 4.2.

5.3 IN THE EVENT OF MACHINE FAILURE

If all machine power is lost, the **Manual hand pump** can be used to provide the hydraulic power to manoeuvre the machine.

- 1) Operate the emergency descent valves located under the base control panel on the superstructure. These must be pulled in or out depending on the direction of travel required. Refer to the decal inside the panel for the relevant controls.
- 2) With the relevant descent valve pushed in or pulled out operate the manual hand pump, located inside the same panel. 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 basket to the ground.

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 **Manual Hand Pump**. It is sufficient for the basket to be manoeuvred away from the collision point to re-set the basket weigh mechanism, 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, 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 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 (USA only)

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.

Operating & Safety Instructions**6.3 INSPECTION/SERVICE/PRE-HIRE CHECK LIST****MACHINE SERIAL NO** _____

TOWING	PASS	FAIL	N/A
Machine secured on trailer			
Straps correctly positioned and tightened			
Wheels chocked if necessary			
AXLES, WHEELS AND BRAKES			
Wheels are secure, tyre condition acceptable			
Wheel bearings O.K.			
Brake linkages and cables secure			
Brake shoe wear not excessive			
Machine climbs slope			
Brakes hold machine on slope			
Rear hub nut secure			
Track rod secure, not fouling axle plate			
BASE			
Operation of ground control valve and buttons			
Operation of all booms over full range			
Wheel bearings OK			
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 hand pump			
BOOM ROTATION			
Boom rotation assembly and motor are secure			
Worm/wheel mesh correct, no excessive wear			
No end float of worm in housing			
Boom rotation wheel bolts secure			
Boom rotation guards secure			
BASKET			
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			
Basket levelling over full range			
Boom rotating smooth over full range			
Operation of boom 4 over full range (if fitted)			
No excessive movement of boom 4 and boom 3			

nifty SP/SP Series
Operating & Safety Instructions

TILT ALARM	PASS	FAIL	N/A
Booms raised on slope - drive disabled, siren tone constant			
Boom operation unaffected			
Booms lowered - drive restored			
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			
Batteries secure			
Electrolyte level and specific gravity			
Charger operation			
Hydraulic oil level			
Engine/Gear box oil			
FINISH			
Pivot pin tag bolts			
Correct decals, all visible			
Canopy/bonnets			
Grease nipples (Feet, Knuckle, Centre Post)			
LEAK CHECK			
Cylinders (Lift, Jacks, Telescope, Levelling)			
Control valves			
Check valves			
Power pack/pump			
Boom rotation motor			
Hose connections			
Filter			
Wheel motors			

Comments, remedial work required etc;

INSPECTED BY: _____

DATE: ____ / ____ / ____