



NEPEAN
Transport

™

NEPEAN NIGHTOWL™ BALLOON LIGHT TOWER



OPERATIONAL MANUAL

BALLOON LIGHT TOWER

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SECTION 1

1.1 INSTRUCTIONS FOR ORDERING SPARE PARTS

To obtain prompt delivery of spare parts, it is essential that the customer provides the following information to the Customer Services Division of Bliss-Fox Ground Support Equipment.

- MACHINE JOB NUMBER
- TYPE OF MACHINE
- MACHINE SERIAL NUMBER
- PART NUMBER OF PART REQUIRED
- NUMBER OF PARTS REQUIRED

If this information is not supplied, or is incorrectly supplied, then the customer could purchase incorrect parts which would be costly and time consuming in re-manufacture.

DISPATCH OF PARTS

The customer should state the method of dispatch on the Official Order.

Parts supplied against orders marked "URGENT" or "BREAKDOWN" will be sent 'Airfreight' unless otherwise instructed.

All crating and freight costs will be charged to the customer.

The Machine Serial Number is stamped on the Name Plate, which is attached to the machine.

BLISS-FOX GROUND SUPPORT EQUIPMENT PTY LTD	
	SERIAL NUMBER

If there is any doubt in ordering spare parts, please phone, fax or email the Customer Service Division of Bliss-Fox Ground Support Equipment.

SERVICE – SPARE PARTS WARNING

Bliss-Fox Ground Support Equipment's aim is to be of service to the Customer at all times. Advice on operation of the machine and the use of ancillary equipment is always readily available, and it is respectfully suggested that you contact Bliss-Fox should any difficult problems of operation or manufacture arise.

SPARE PARTS

Many spare parts for this machine are carried in stock and are available at short notice to the customer. Please refer to Section 5 for details on identifying the part required and the information required for dispatch.

To assist the customer, and help in ensuring continuous productivity from this equipment, a copy of the spare parts recommendation is enclosed in this instruction manual. Preventative maintenance is vital to productivity, and if these spare parts are held in stock in the customer's plant, it would reduce downtime from waiting for spare parts to be obtained or manufactured.

Prices and delivery are available upon request.

MAINTENANCE

The services of an experienced maintenance fitter, or fitters, can be made available to any customer by contacting the Customer Service Division of Bliss-Fox Ground Support Equipment, Narellan, NSW Australia or by e-mail at:

nightowl@nepean.com

WARNING

The purchaser of this machine is reminded that Factory Acts of all States provide (inter-alia) that all machines shall be adequately guarded, and/or fenced against all possible hazards to life and limb. This protection is the responsibility of the company using the machine.

1.2 SPECIFICATIONS

OVERALL HEIGHT (MAST LOWERED)	2,200 mm
OVERALL HEIGHT (MAST RAISED TO FULL EXTENSION)	9,500 mm
OVERALL LENGTH (DRAW BAR RETRACTDED)	2,450 mm
OVERALL LENGTH (DRAW BAR EXTENDED)	3,250 mm
OVERALL WIDTH	1,800 mm
GROUND CLEARANCE	280 mm
GROSS VEHICLE MASS	1,400 kg
MAXIMUM TOWING SPEED	100 km/h
ENGINE	Kubota D1105
ELECTRICAL SYSTEM	12 Volt
LIGHTS	3000 Watt
OPERATING TIME	66 hrs approximately
FUEL TANK SIZE (USABLE)	100 Litres
MAXIMUM WIND SPEED OPERATIONS	60 km/h
ALTERNATOR	Mecc-Alte CT03-2L/4
AXLE	50mm square beam
BRAKES	Mechanical disc
TYRES	650-16 Light truck
WHEELS	Toyota Landcruiser 5 stud

1.3 INTRODUCTION

The Bliss-Fox GSE Nepean Night Owl “Balloon Light Tower” is a towable, self sufficient, wide area lighting system that does not rely on an external source for the supply of electrical power. The unit is designed to be operated by one person

This manual outlines the necessary precautions for proper and safe usage of the Lighting Tower, and also comprises of a detailed parts listing and service manual. For proper Lighting Tower use, it is mandatory that a daily routine be established based on the content of this manual.

The operator of the Lighting Tower should not accept operating responsibility until this manual has been read, training is accomplished, and operation of the Lighting Tower has been completed under the supervision of an experienced and qualified trainer.

If there are any questions with regards to safety, training, inspection, maintenance, application and operation please contact Bliss-Fox Ground Support Equipment.

SECTION 2

2.1 SAFETY PRECAUTIONS

- ✚ Only authorised and qualified personnel can operate this Lighting Tower
- ✚ Read, understand and obey all dangers, warnings and cautions and operating instructions on the Lighting Tower and in this manual
- ✚ Use this Lighting Tower in a manner which is in the scope of its intended application set by Bliss-Fox Ground Support Equipment.
- ✚ All operating personnel must be familiar with the operation of the Lighting Tower as specified in this manual
- ✚ Understand and obey all applicable employer, local and governmental regulations as they pertain to operation of the Lighting Tower
- ✚ The operator is to take safety measures to avoid all hazards in the work area prior to Lighting Tower operation
- ✚ Modifications or alterations to the Lighting Tower are not permitted without the prior written permission of Bliss-Fox Ground Support Equipment
- ✚ Failure to comply with the safety precautions listed here and elsewhere in this manual may result in injury
- ✚ Prior to erecting the mast, the operator should ensure that no overhead obstructions are within a 6 metre radius of the base of the machine

 **WARNING**

**THERE IS AN
ELECTROCUTION HAZARD TO
THE OPERATORS IF THE
MACHINE IS OPERATED NEAR
OVERHEAD POWERLINES**

The following chart is a guide to the applicable safe operating distances from overhead powerlines.

Voltage Range (Phase to phase)	Minimum Safe Distance in metres (feet)
0-300V	Avoid contact
300V – 50 KV	3 (10)
50KV – 200KV	5 (15)
200KV – 350KV	6 (20)
350KV – 500KV	8 (25)
500KV – 750KV	11 (35)
750KV – 100KV	14 (45)

- ✚ Ensure the ground is suitable to support the machine, particularly under each of the outrigger pads. A suitable packing material such as a timber block may be required on soft surfaces to ensure that the outriggers do not sink under the weight

 **WARNING**

**FAILURE OF THE
OUTRIGGERS TO SUPPORT
THE MACHINE DUE TO SOFT
SURFACES COULD CAUSE
THE MACHINE TO TIP OVER IN
WINDY CONDITIONS.**

- ✚ Do not erect the lighting tower in winds greater than 60 km/h.
- ✚ Shutdown engine, switch off all circuit breakers and allow 10 minutes for ballast capacitors to discharge before replacing lamps. Check capacitors are below 10VDC before servicing lamp sockets or ballast circuits by trained personnel only

 **WARNING**

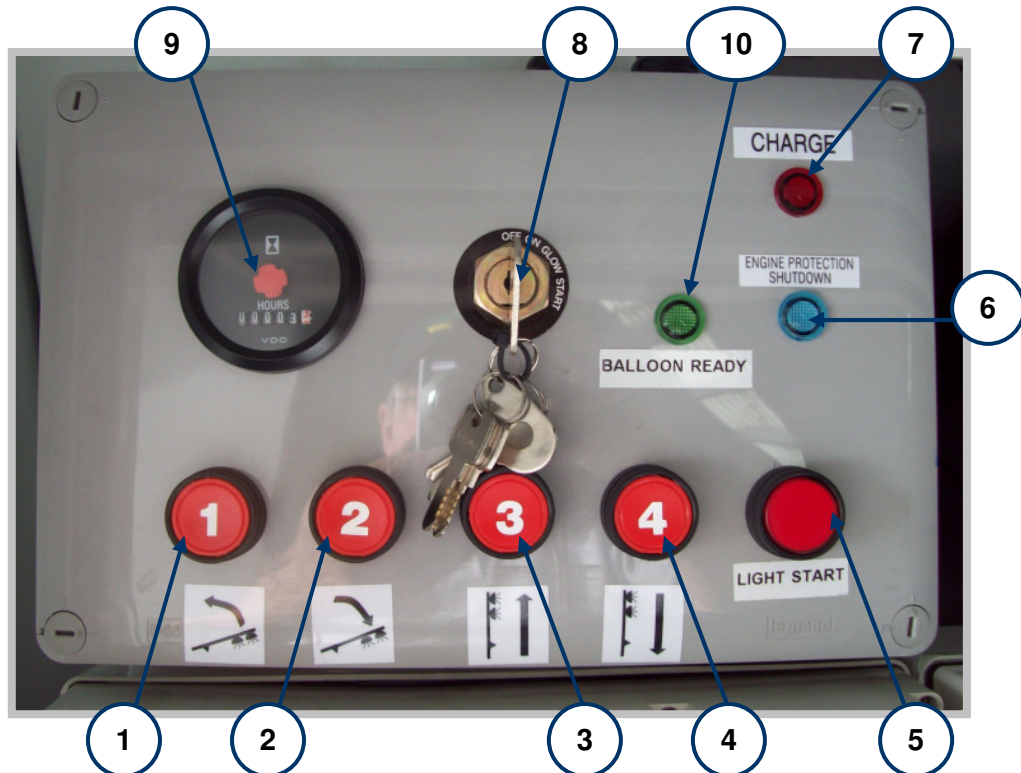
**DO NOT TOUCH LAMP
TERMINALS OR SOCKETS.
DANGEROUS VOLTAGE MAY
BE PRESENT EVEN WHEN
POWER IS OFF**

- ✚ The hydraulically operated mast has hazardous crush and pinch points. Do not place arms and hands near the assembly while it is in operation
- ✚ The lamp fixtures can get extremely hot during operation. Do not operate the lights in easy reach of people's hands. Even after the lights have been extinguished, the lamp fixtures can remain hot for up to 20 minutes
- ✚ The mast of the lighting tower is designed to carry the four lights supplied. Do not use the mast to attach extra lights or use it as a crane
- ✚ Prior to carrying out any maintenance checks or accessing the engine area, ensure engine is shutdown
- ✚ A visual inspection of the Lighting Tower must be carried out prior to use, refer section 'Daily inspection'
- ✚ Do not operate the Lighting Tower that is not working properly or that has not had the required 'Periodic hourly' inspection carried out
- ✚ Never operate the 'Mast raise/lower' buttons and the 'Mast extend/retract' buttons at the same time

SECTION 3

2.1 CONTROLS IDENTIFICATION

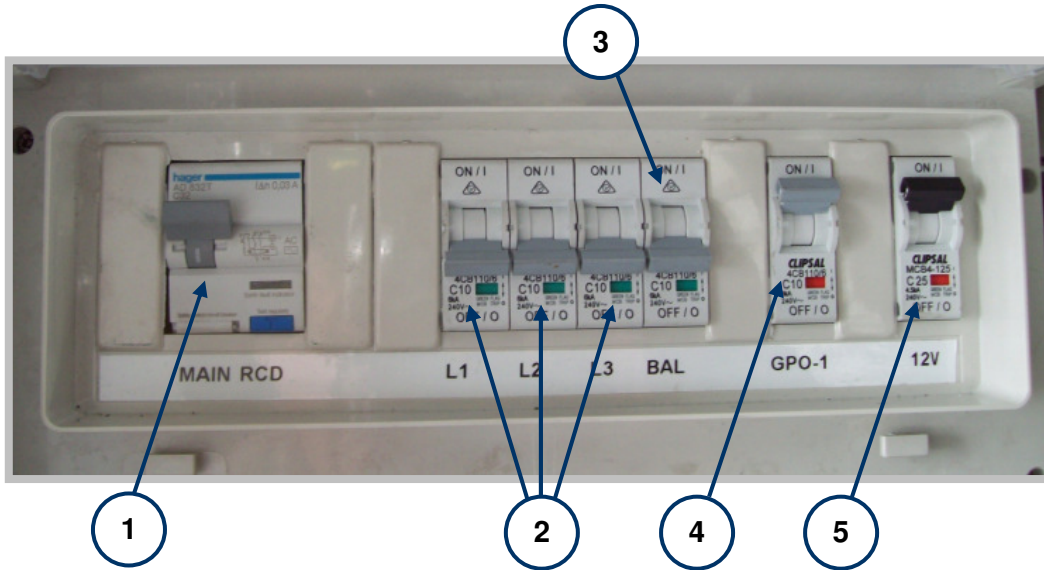
ENGINE CONTROL PANEL



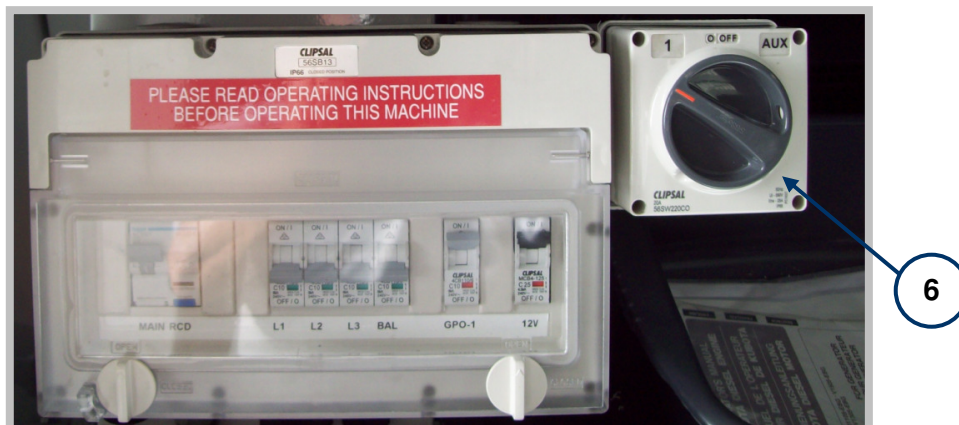
1. Mast raise. Raises the mast from the horizontal position to the vertical position
2. Mast Lower. Lowers the mast from the vertical positions to the horizontal position
3. Mast extend. Extends the mast in the vertical position
4. Mast retract. Retracts the mast in the vertical position
5. Light Start. Ignites the lamps. Please note this switch will not function until the “Balloon Ready” Light is on. (See Item 10)
6. Engine protection Shutdown light.
7. Charge light.
8. Ignition key, 4 positions -

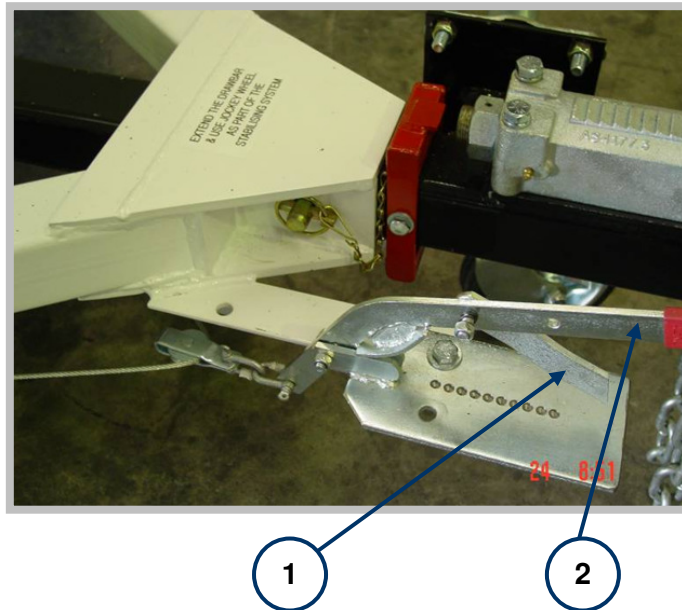
Off	: turns the engine off.
On	: is the position for normal engine operations.
Glow	: used for heating glow plug for starting in cold weather used for starting the engine.
Start	: turns the engine on.
9. Hour meter. Displays the number of hours that the machine has been operating
10. Balloon Ready. This light turns on once the balloon is sufficiently inflated indicating that the light are now ready to be turned on.

LIGHT CONTROL PANEL



1. Main RCD Circuit Breaker.
2. Circuit breakers RCD for lights one to three. These switches turn the lights on and off.
3. Circuit breaker RCD for balloon. This inflates / deflates the balloon.
4. Circuit breaker RCD for external power point (**Optional**).
5. 12 V circuit breaker. This switch turns the power on to the unit for operation of the hydraulics and for starting the engine
6. Change-Over Switch. In the “1” position, the balloon and lights operate on power supplied from the engine, and in the “AUX” position, the power is supplied to the balloon and lights from an external source (240V AC) (**Optional**).



PARK BRAKE

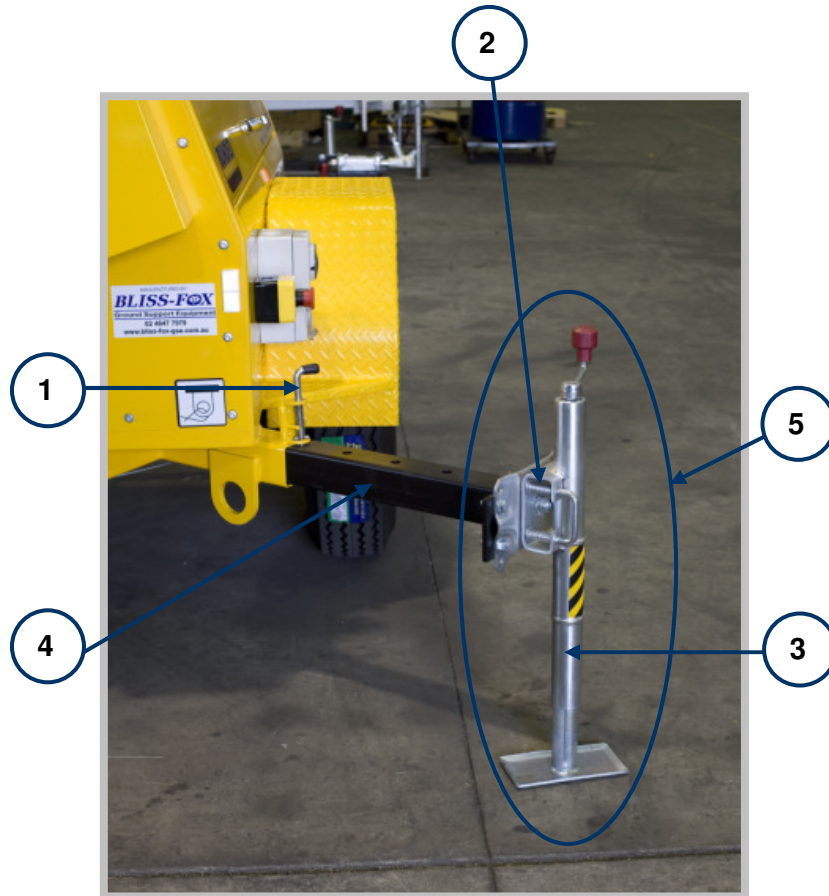
1. Ratchet bar
2. Handle

The park brake is located on the right hand side of the drawbar and is operated by pulling the handle up until the ratchet bar is engaged in one of the holes. To release, lift the handle slightly to dis-engage the ratchet bar from the hole and then lower the handle down.

 **WARNING**

**PRIOR TO TOWING THE
LIGHTING TOWER, ENSURE
THE BRAKE IS RELEASED
AND THE RATCHET BAR IS
SWUNG OUT OF THEWAY**

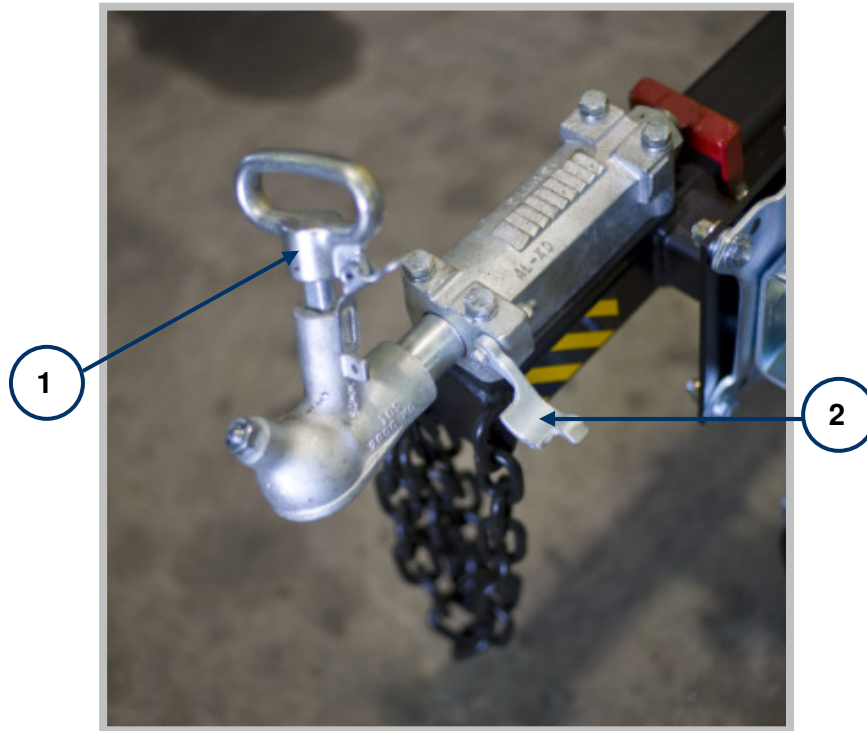
OUTRIGGERS



1. Outrigger arm lock
2. Outrigger foot lock
3. Outrigger leg
4. Outrigger arm
5. Outrigger corner stand assembly

The machine has four outriggers, two at the front and two at the back. They are operated by disengaging the lock and pulling the outrigger to its stop and engaging the lock. The outrigger feet are then rotated and locked in position so they can be wound down.

TOW HITCH



1. Tow fitting lock handle- depress this lock with thumb and lift the handle to disengage/engage the tow fitting on the tow vehicle
2. Tow fitting reverse lock- engage this lock when the tow vehicle and unit are to be reversed, this prevents the brakes being applied

3.2 OPERATION

TOWING

1. Before the unit is to be towed, ensure the following has been completed:-
 - Light mast has been lowered and locked with the turnbuckle
 - Engine has been turned off
 - Engine compartment doors are closed
 - Outriggers have been retracted and locked
 - Draw bar has been extended and locked
2. Position the tow coupling over the tow ball on the tow vehicle either by pushing the lighting tower or reversing the tow vehicle with the assistance of a second person.
3. Once in position, lift the 'tow fitting lock handle' and slowly wind down the jockey wheel so the tow fitting can engage on the tow ball on the vehicle. Once all of the weight has been taken off the jockey wheel, release the tow fitting lock handle so the tow fitting is locked on the tow ball.
4. Pull the lock handle out of the jockey wheel and rotate it 90 degrees and then re-engage the lock handle. Attach both safety chains to the tow vehicle, connect the electrical cable between the unit and the tow vehicle
5. Carry out a test of each of the turn indicators, the brake lights and the number plate light.
6. Disengage the tow fitting reverse lock if not required. The lock is only used when the lighting tower and the tow vehicle are to be reversed

SET-UP

1. Assess the work area and select a firm, flat level surface for the machine to be set-up. If the ground is soft, packing will be required to be placed on the ground underneath the outriggers.



THE MAXIMUM INCLINE SIDE-TO-SIDE OR FORE AND AFT IS 3°

2. Engage the park brake, lower the jockey wheel so it takes the weight of the trailer and disconnect both safety chains and electrical connector. Lift the tow fitting lock handle and wind down the jockey wheel so the tow fitting clears the tow vehicle then drive the tow vehicle clear of the unit
3. Do not retract the drawbar, the drawbar must remain extended for extra stability



NEVER RAISE THE MAST WITHOUT FIRST SETTING ALL 4 OUTRIGGERS AND ENSURING THE LIGHTING TOWER IS LEVEL.

4. Release outrigger arm locks, extend outriggers to full travel and then re-engage the outrigger arm locks. Do this for all four outriggers then wind down the feet till they just touch the ground.

5. Wind each outrigger foot down until it takes the weight of the unit and ensure the unit is level. If the outrigger feet sink into the ground, raise the feet and place packing underneath the feet and then lower the feet again. If the feet still sink into the ground, relocate the unit onto a surface that is more firm. The wheels do not have to be clear of the ground for the unit to be set-up safely.
6. Wind down the jockey wheel until it firmly contacts the ground but do not wind it too far so that it lifts the front of the unit.
7. Remove protective bag from balloon and store in compartment provided.

PLEASE ENSURE THAT THE BALLOON BAG ZIPPER IS DONE UP BEFORE START-UP.

MAST OPERATION – Raising the Mast

1. Disconnect the mast stowage turnbuckle.

Note

The engine does not have to be started for mast operations, but it is advisable to start the engine so the battery does not discharge

2. Turn the 'Battery Isolator' switch to the 'On' position (if fitted as an option)
3. Ensure all four of the light circuit breakers are turned 'Off' before starting the engine
4. Select the '12 V' circuit breaker to the 'On' position
5. Turn the key to the 'On' position
6. For cold weather starting turn the key to the 'Glow' position for 15 seconds
7. Turn the key to the 'Start' position until the engine starts and then return the key to the 'On' position
8. If the engine does not start, turn the key to the 'Glow' position for approximately 15 seconds to preheat the glow plug. Proceed to start the engine as per steps 3 to 8
9. Once the engine has started, allow it to stabilise for approximately 1 minute to ensure the engine is at operating temperature before operating mast controls or lights

WARNING

Ensure mast and lights are clear of all obstructions when raising mast

10. Ensure the Mast lock / stowage turnbuckle has been disconnected / released
11. Press the 'Mast Raise' button (button #1) and observe that the mast raises and is clear of all obstructions. Once the mast is in the fully vertical position, release the button. The mast will not extend until the mast is in the vertical position
12. Press the 'Mast Extend' button (button #3) until the desired height of the lights is achieved. When extending the mast, ensure the mast and lights are clear of all obstructions and observe minimum distance requirements of all overhead electrical wires, refer 'Safety precautions' chapter

LIGHT (BALLOON) OPERATION

1. Once the engine has been successfully started and the mast extended to the desired height, Switch the main RCD on, and then switch “L1”, “L2”, “L3” and Balloon circuit breakers to the on position.
2. The balloon will begin to inflate (takes approx. 30 seconds).
3. When the balloon is fully inflated, the green light marked “Balloon Ready” on the control panel will illuminate.
4. Push the “Light Start” button on the control panel to ignite the lamps.
5. Shutting Down → Turn off circuit breakers “L1”, “L2”, “L3” and Balloon, then turn off the engine.

IMPORTANT: With the mast is upright position, allows sufficient time (approx. 20 minutes) for the lamps to cool before attempting to re-stow balloon in its protective bag.

MAST OPERATION – Lowering the Mast

1. Ensure the lights are turned off and the balloon is adequately deflated
2. The engine does not have to be started for mast operations, but it is advisable to start the engine so the battery does not discharge
3. Press the ‘Mast Retract’ button (button #4) until the mast is fully retracted. Release the ‘Mast Retract’ button
4. Press the ‘Mast Lower’ button (button #2) until the mast is lowered to its stop
5. If the engine is running, turn the key to the ‘Off’ position
6. Select the ‘Main power circuit breaker’ to the ‘Off’ position
7. Lock the mast in the lowered position by using the mast turnbuckle

PACK-UP

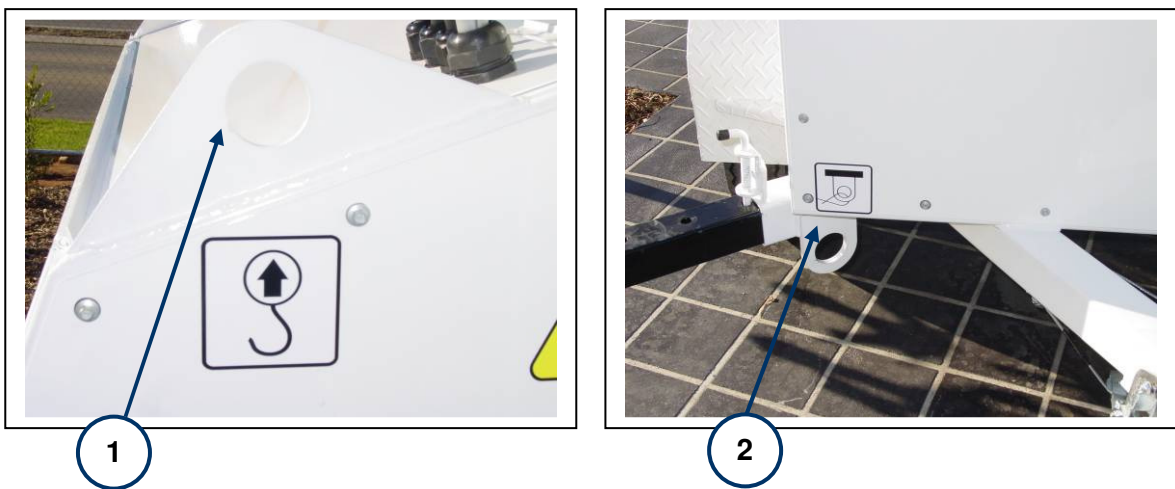
1. Ensure the light mast is lowered and locked with the mast lock turnbuckle
2. Ensure the engine has been turned off
3. Ensure the ‘Battery Isolator’ is turned ‘Off’ (if fitted as an option)
4. Re-stow the balloon, ensuring that the extension rod, located inside the balloon is fully retracted.

PLEASE NOTE THAT THE BALLOON BAG ZIPPER IS UNDONE BEFORE PACKING THE BALLOON.

5. Ensure the jockey wheel is lowered, locked and is contacting the ground
6. Wind the rear outrigger feet up until they can be rotated 90 degrees

7. Pull the outrigger foot lock and rotate the foot 90 degrees and then re-engage the lock
8. Unlock the outrigger arms and push the outrigger to the fully retracted position. Re-engage the lock
9. Do the same procedure for the forward two outriggers, but do not retract the jockey wheel.
10. Ensure the drawbar is fully extended and locked
11. The unit is now ready to be connected to a tow vehicle as per the 'Towing' chapter

LIFTING AND TIE-DOWN



1. Lifting attach point – one lifting point positioned at all four corners
2. Tie-down point – one tie-down point positioned at all four corners

Lifting

When the unit is to be lifted it is to be done via the four lifting points on the top of the chassis. Be careful not to damage the lights when attaching the lifting equipment and lifting the unit.

Tie-down

1. There are four tie-down points on the base of the chassis to be used for tying down the unit onto a truck or trailer.
2. Place the unit/s on the truck/trailer either by lifting with a crane or by manual re-positioning.
3. Extend all four outriggers as per the 'Setup' procedure and stabilize the unit.
4. Raise the jockey wheel (if extended), retract and lock the drawbar.
5. Attach the tie downs to the unit in such a way that the unit is level on the truck/trailer and that all four tie-downs are tensioned evenly

SECTION 4

4.1 SERVICE AND MAINTENANCE

DAILY INSPECTION

Every day before the unit is operated, a daily inspection must be carried out as detailed below.

Inspect the hour-meter to see if a periodic hourly inspection is due before operating the unit. If it is due, remove the unit from service and organise the unit to have its periodic inspection and maintenance carried out as per the Yanmar Engine Operator's Manual.

Carry out a visual inspection of the following items:-

Engine oil level –

Inspect the engine oil dipstick to determine if the oil level is in between the full and refill marks. When inspecting the oil level, the unit should be in a level position to gain an accurate reading.

Replenish engine oil, if required, via the 'oil fill' cap.

Engine coolant level –

Look at the water level in the engine coolant tank. If the water level is below the 'LOW' mark, it requires replenishing.

WARNING

Be careful when opening the cap on the reservoir, fluid inside can be hot

Before opening the lid on the tank, ensure the engine coolant is not hot by gently touching the radiator cap. If the cap is hot, DO NOT open the lid on the coolant tank, wait until it has cooled down before replenishing.

Add water until the fluid is between the 'Low' and 'Full' marks

Battery water level –

The battery water level is identified by looking at the front of the battery and determining if the water level is in between the two marks. If the water level is below the lower mark on any or all of the individual cells, unscrew the cap for the appropriate cell and top up with distilled water. Be careful not to overfill the battery by exceeding the upper limit on the battery.

Mast and mast attach points –

Inspect the structure of the mast, mast attach pin, light structure, light globes, light lenses, hydraulic actuators, associated wiring and hydraulic lines. Inspect these items for cracks, severe rust, evidence of fluid leakage and exposed or damaged wiring.

Balloon and Fittings –

Inspect the inspect the balloon to ensure that there are no signs of tearing. Check all the globe fitting etc inside the balloon, including the lamp retaining springs to ensure it is in good condition.

Trailer chassis-

Check the structure of the trailer for severe rust, cracks and structural damage. Inspect all indicator and brake light lenses, trailer wiring connector, park brake handle assembly, safety chains, hydraulic pump/motor and engine.

PERIODIC HOURLY INSPECTION

Carry out the periodic maintenance schedule as per the Yanmar Engine Operator's Manual. Periodic hourly inspections are due at intervals of 50, 100, 150, 300 and 500 hours.

SECTION 5

2.1 SPARE PARTS LISTING

Part No.	Description
0736-0024	Gas Strut
0512-0273	Tee Handle (Lockable)
0131-0039	Die Cast Locking Can - Bunded
0721-0018	Turnbuckle - Standard
0721-0022	Turnbuckle - Rated
0321-0063	Surface Level
0609-0070	Corner Stand Assembly
0436-0026	Outrigger Arm
0736-0031	Leaf Spring
0510-0056	Spring Bolt
0863-0200	Jockey Wheel (H/Duty)
0508-0078	Adjustable Leg / Jockey Wheel Handle
0618-0103	Drawbar Pin
0475-0316	LED Amber Indicator Lamp
0475-0317	LED Stop / Tail Lamp
0512-0308	Rubber Grommet to suit LED Lamps
0125-0104	2 Pin Plug and Lead Set
0684-0069	3 Pin Plug
0475-0309	12V Licence Plate Lamp
0732-0441	Mast Limit Switch
0732-0396	Chassis Limit Switch
0125-0096	Mast Cable (13m)
0125-0111	Rhino (10.1m)
0165-0385	13 Pole Clipsal Enclosure
0521-1182	Engine Mount
0171-0017	Fuel Cap
0444-0259	Nylon Roller Kit - Four Head Mast
0444-0296	Mast Lift Cylinder Repair Kit
0444-0297	Mast Tilt Cylinder Repair Kit
0177-0073	Chain - Double Row (2180mm)
0177-0074	Chain - Single Row (2050mm)
0475-0353	1000W Gear Tray (Ballast)
0475-0354	1000W Globes
MP-3172	Power Supply
61-36-018	Fan
61-33-067	Igniter (1000W)
61-32-061	Pressure Sensor
10-10-401	Balloon (Envelope)
60-26-013	Cage

SECTION 6

WIRING DIAGRAM

SECTION 7

7.1 TROUBLESHOOTING GUIDE

Symptom	Cause	Solution
ENGINE		
No response from Start Key	1: No electric power to engine	1A: Check battery isolator is turned on 1B: Check 12V circuit breaker is on 1C: Check for flat battery
Engine only runs when key is held in Start position	1: One or both E-stops are activated 2: Low fuel (activates Shut-Down system and indicated by blue Shut-Down light illuminating)	1: Reset E-Stops 2: Re-fuel
Engine runs for approx 15 seconds then stops (Blue Shut-Down light on)	1: Low oil level 2: Low oil pressure	1: Top-up oil level 2: Contact Bliss-Fox or seek advice from engine manufacture
Engine stops during operation	1: Low fuel 2: Engine over-heating 3: Low oil pressure 4: Low water level	1: Re-fuel 2: Contact Bliss-Fox or seek advice from engine manufacture 3: Contact Bliss-Fox or seek advice from engine manufacture 4: Contact Bliss-Fox or seek advice from engine manufacture
Charge Light is on when engine is running	1: Broken Fan Belt 2: Alternator failure	1: Replace Fan Belt 2: Repair/replace alternator
HYDRAULICS		
No response from Push-Buttons	1: No electric power	1A: Check battery isolator is turned on 1B: Check 12V circuit breaker is on
Pump runs but no response	1: Low hydraulic oil level	1: Top-up hydraulic oil
Mast retracts but will not lay down	1: Mast not fully retracted 2: Light frame not facing rear of unit (interlock system is activated)	1: Fully retract the mast 2: Line-up Red Arrows painted on mast
LIGHTING		
Light switched on but not working	1: Faulty globe 2: Faulty ballast	1: Replace globe 2: Contact Bliss-Fox for further assistance
Light Switch will not stay on (Circuit Breaker)	1: Short-circuit 2: Earth leakage	1: Contact Bliss-Fox for further assistance 2: Contact Bliss-Fox for further assistance



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