SLT (Solar Lighting Tower)
OPERATION AND PROGRAMMING

N21990

Manufactured by Global Traffic Equipment
A Quality Management System Approved to
AS/NZS ISO 9001:2008 – Reg. C31071

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1.1 IMPORTANT SAFE WORK INSTRUCTIONS

- **Always use the SLT unit in a safe manner**
- **Do not use the SLT at any time while the vehicle is in motion.**
- **SLT must not be raised unless stabilizer legs have been deployed.**
- **All electrical work should be carried out by a qualified auto electrician. Failure to do so may void the warranty.**
- **The SLT must be turned off lowered and stowed correctly whenever the trailer is to be moved. Damage caused to the SLT or vehicle will not be covered under the warranty for failure to do so.**
- **Ensure that the area surrounding and ABOVE the SLT is clear of obstructions and OVERHEAD POWER LINES BEFORE raising or lowering the mast.**
- **Keep ALL body parts clear of the winch when raising or lowering the SLT. DON'T HOLD OR GRAB THE WINCH CABLE WHEN RAISING OR LOWERING MAST.**
- **Always tow the SLT in a safe manner.**
- **DO NOT USE THE EQUIPMENT FOR ANY OTHER PURPOSE THAN IT WAS INTENDED FOR!**
- **READ ALL Instructions before using this equipment.**

Note! - Once raised and rotated into position, and BEFORE leaving the SLT unattended, the mast locking pin and brake locking device MUST be securely key locked (pad locked) in position, and the winch handle removed to prevent potential unauthorised tampering with the SLT.

2. Maintenance

- Solar panels should be cleaned weekly (more often depending on environmental factors) for best performance.
- The SLT unit contains no user serviceable parts. Should a malfunction occur, please contact the supplier of the system for assistance. Any tampering with the internal parts of the SLT unit will void the warranty.
- The SLT unit cannot be damaged by incorrect operation. If there is no response, please check that the battery voltage is above 24 volts.
- If the battery voltage is below 24 volts, the unit will need to be recharged by exposing the solar panels to direct sunlight or connecting a suitable battery charger.
- Check that the securing bolts are tight that hold the winch cable to the mast monthly.
- Check the securing bolts are tight where the solar panels and mast mounts to the trailer monthly.
- Perform a visual inspection of the mechanical fastenings that hold the solar panels and the mast monthly.
- Check the wiring and wiring glands for signs of wear or damage monthly, and replace as necessary.
- Check the winch cable signs of wear or damage BEFORE EVERY USE and replace as necessary.
- Check all lamps are securely held with bracket bolts.
- Maintain wheel bearings as you would with any vehicle or trailer.
- Check that all wheel nuts are tightened before transporting the SLT.
- Read **ALL INSTRUCTIONS** before using this SLT.

3. Transportation/Lifting of the SLT

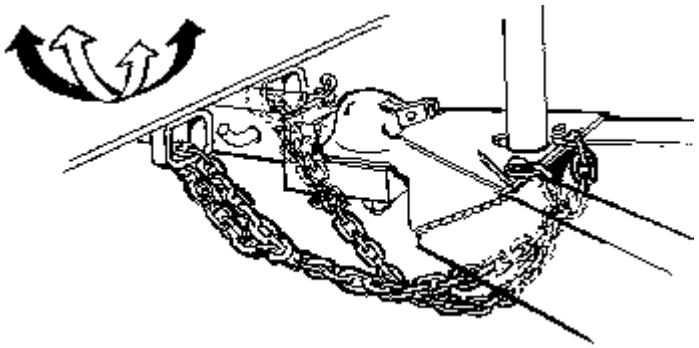
Due to the specific nature of this item of plant, it is not designed or intended for lifting purposes, rather, was designed to be towed behind a suitable vehicle or winched on board a tilt tray truck for transportation.

The trailer and SLT have a combined ATM of 750kg and is classified as a light trailer, and may be towed by any vehicle with a suitable towing capacity.

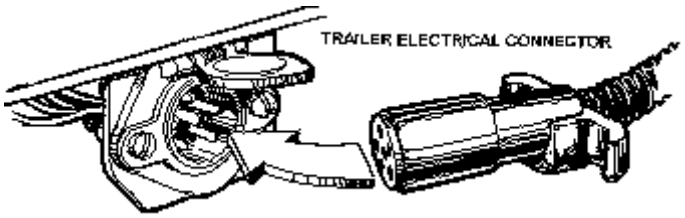
Transportation by means of a tilt truck/trailer must ONLY be performed by a trained operator, as incorrect loading may cause loss or death.

3.1 Coupling the trailer to the tow vehicle

- Before towing, ensure the tow vehicle's hitch and tow ball have been inspected by a qualified mechanic to be adequate and in good working order.
- Ensure the drawbar pins are inserted and locked into the removable drawbar.
- Fit the trailer tow hitch securely to the vehicles tow ball and ensure the locking tongue (retainer) is closed on the ball. The ball should be lightly greased so the hitch rotates smoothly on it.
- Fit the R Clip to ensure the coupling cannot become detached whilst towing.
- Fit the supplied safety chains to the tow vehicle via correctly rated D shackles.
- Cross the safety chains over (right to left and left to right). As per diagram to the right. This will help create a "saddle" should a tongue failure occur and will help maintain control while stopping.
  Note: Do not allow the chains to drag on the pavement, because they can be ground to an unsafe condition in a very short amount of time.



- Next connect the trailer electrical connector and check the operation of all trailer lights.



- Finally ensure the jockey wheel and all jack legs are swivelled up into their horizontal position before towing the trailer.

4. On Site Preparation

4.1 SLT Positioning

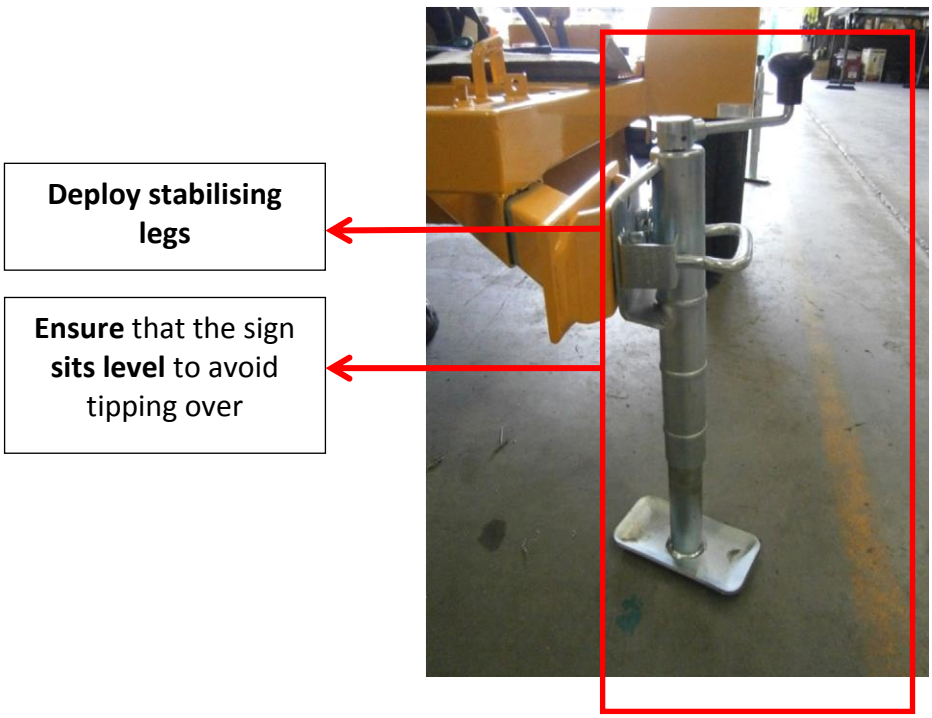
The SLT must be positioned on reasonably flat stable ground in a safe position clear of obstructions, traffic and pedestrians. When positioning the trailer the solar panels are recommended to be facing in a north direction to capture the maximum amount of sun. The solar panels need to be positioned in order to achieve maximum sunlight.

DO NOT PLACE SLT UNDER OBSTRUCTIONS THAT WILL SHADE THE SOLAR PANELS. IT IS RECOMMENDED THAT THE UNIT BE PLACED IN DIRECT SUNLIGHT FOR MAXIMUM CHARGING PERFORMANCE.

- Before removing the trailer from the tow hitch of the tow vehicle, the stabilising legs of the trailer should be deployed to prevent the possibility of the trailer from rolling once unhitched.
- Deploy the stabilising legs from their travelling position (horizontal) to their set up position (vertical) by pulling out the spring loaded leg locking pin, and pivoting the leg 90 degrees until the locking pin re-locks the leg in position.
- Wind the leg down until a firm footing is made with the ground.

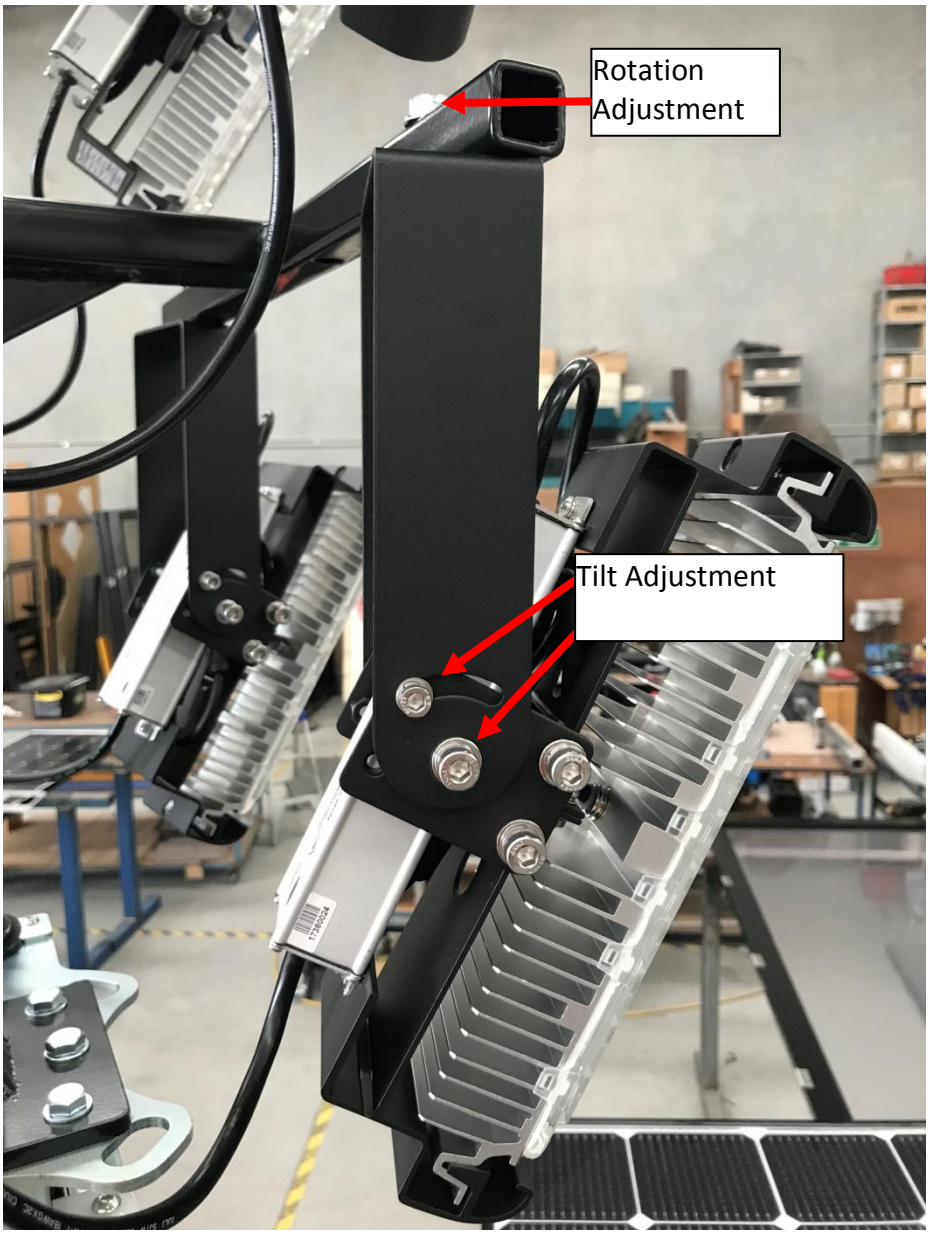
Note! - All 4 legs MUST be deployed and trailer levelled BEFORE raising the mast!

Level the SLT by adjusting opposing leg heights. The trailer wheels should be just touching or clear of the ground.



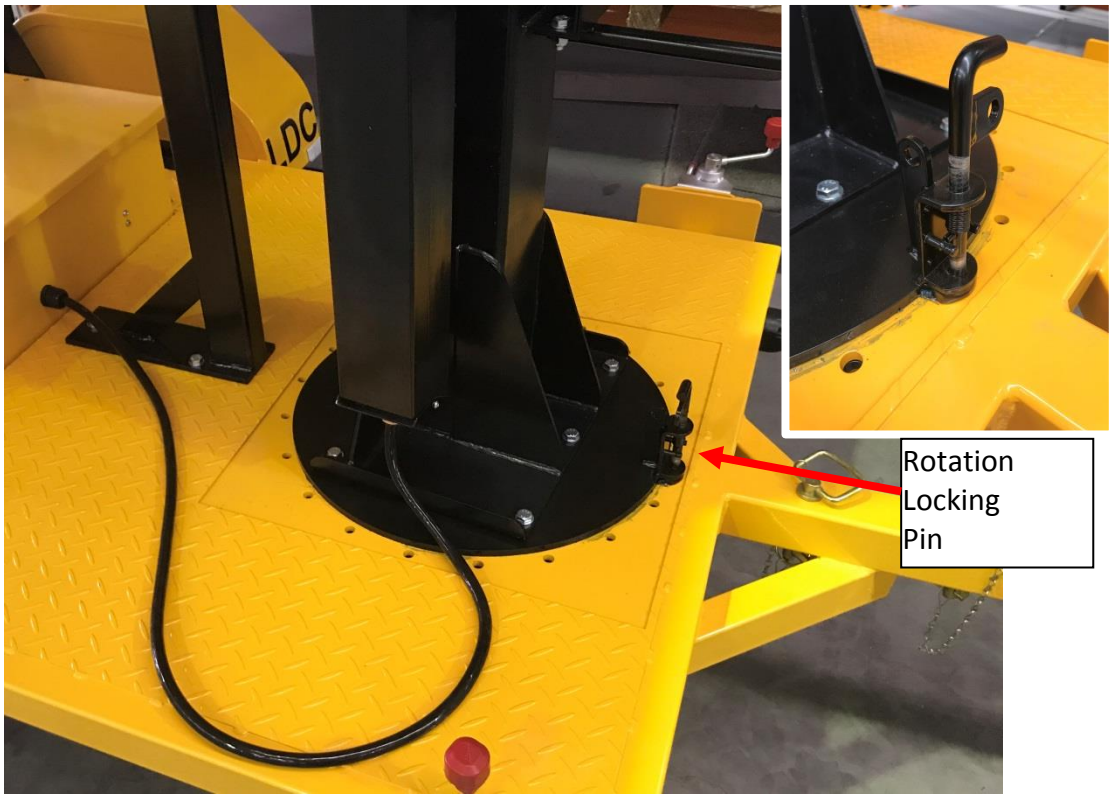
4.2 Adjusting angle and direction of Lamps

The lamps are preconfigured to the desired position but can be adjusted to meet the lighting requirements for the SLT. Each lamp is held by a bracket which can be rotated on the main lamp mounting frame by loosening and securing the bolts. The angle of the lights can also be adjusted by loosening the allen bolts located on the side of the lamp and then securing.



4.3 Rotating the SLT Mast

- The mast can be rotated up to 180 degrees in either direction from the transport position (facing the area that is required to be lit). To rotate the mast, the locking pin needs to be lifted to clear the locking holes. The handle on the mast can then be used to rotate the mast to the desired position. Once in the correct position the locking pin can then be used to secure the mast.



4.4 Raising the SLT Mast

Hand Winch

- To raise the mast, check for overhead obstructions before raising the mast.

- Check that the winch handle is secure with both bolts in place and wind the winch handle clockwise to raise the mast.

- Continue winding until the hole in the inner mast and the outer mast align, there are no holes until the mast reaches full travel. Once the pin is secure and the R clip is in place, unwind the winch so the pin takes the load of the mast and no load is placed on winch.
  (To lower the mast, take load off pin, remove pin, wind the winch handle in the anti-clockwise direction).

Mast Winch

Mast Locking pin (Transport Position)

Mast fully extended with locking pin in place

R Clip used to secure the Mast

4.5 Solar Panels (Transit and Tilted)

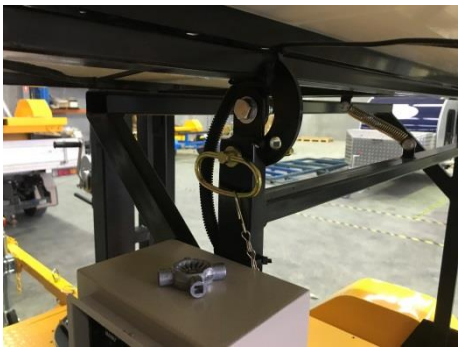
The solar panels can be used in two positions both positions are described below.

Transit Mode

The solar panels are in a horizontal position and are secured in two locations. There is an over centre latch securing the front of the solar panels and the pivot locking pin.
NOTE: Both these securing mechanism's must be secured before transit

Over Centre latch

Pivot Locking



Tilted Mode

Undo the over centre latch holding down the front of the solar panel, move to the pivot point locking pin located just above the main control box. Remove the locking pin and push the solar panel up until the second locking position is located and insert the locking pin. Care must be taken when tilting the solar panels as the wind can catch the panels.

SLT in Tilted Mode and locking pin secured in Tilted Mode

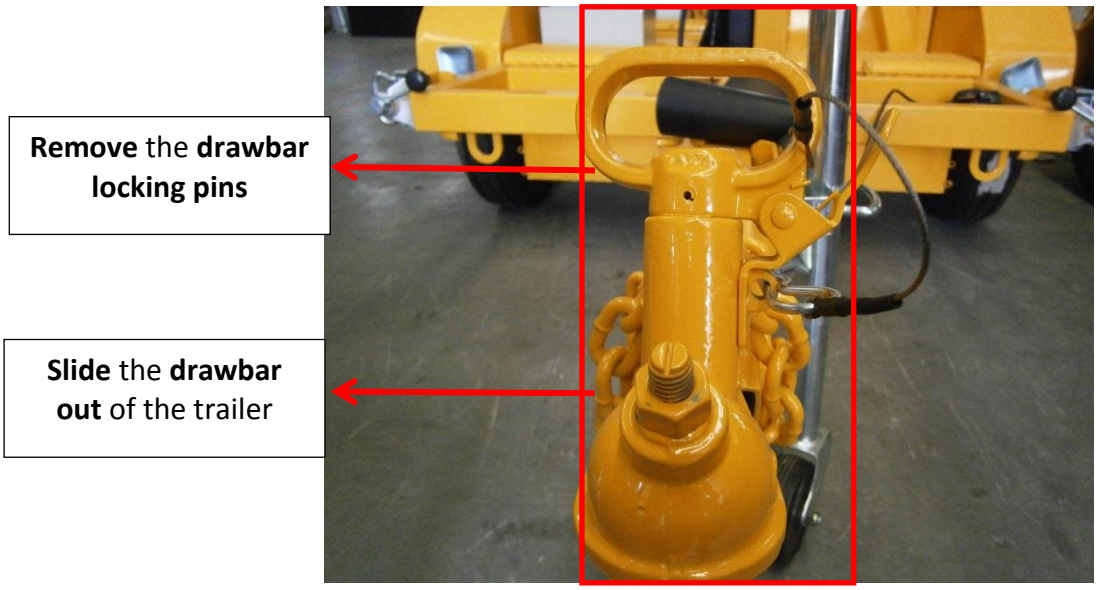
4.6 Leaving the SLT Unattended

Note! - Once raised and rotated into position, and BEFORE leaving the SLT unattended, the mast locking pin, rotation locking pin MUST be securely key locked (pad locked) in position, and the winch handle removed to prevent potential unauthorised tampering with the sign. The control box also needs to be secured.

As a further fail safe measure, the tow hitch drawbar maybe removed to prevent possible theft and to reduce the trailer footprint in the workspace.

NOTE: Both Drawbar pins must be secure and in place before towing.

- To remove the drawbar, remove the two drawbar locking pins and slide the drawbar out of the tailer.



To remove/relocate the trailer, complete the above steps in the reverse order.

5. Operation

All operations of the SLT are controlled via the control panel which is located within the control box mounted to the side of the solar panel frame.

Control Box Location

Control Panel

5.1 Control Panel Layout

The control panel consists of 1 control switch to change the mode of operation, 2 lamp control switches, Voltmeter with a test button.

All the switches are described below.

5.2 Configuration

There are two Configuration of operation for the SLT.

Auto – The lamps are turned on when the light sensor registers night time and the Lamp control Row switch is ON.
Manual – The lamps are controlled via the two lamp control switches.

5.3 Staging of Lamps

There is a 2 second delay between the staging of lamps. This delay may change depending on the configuration of the lights on the Top Lamp Control Box.

The firing order of the lamps looking at the top control box is as follows

	TOP OF CONTROL BOX	
LAMP 1	TOP ROW	LAMP 3
LAMP 2	TOP ROW	LAMP 4
LAMP 5	BOTTOM ROW	LAMP 7
LAMP 6	BOTTOM ROW	LAMP 8

For example: If a 4 lamp configuration SLT is used there will be a 4 second delay between each lamp starting LAMP 1, LAMP 3, LAMP 5 and LAMP 7

5.4 Lamp Control

Top Row
This switch controls (ON or OFF) all lamps that are connected to the top row connections.
Bottom Row
This switch controls (ON or OFF) all lamps that are connected to the bottom row connections.

NOTE: In order to switch lamps off entirely, turn the lamp control switches to the OFF position.

5.5 Voltage Test

The control panel has a Voltmeter installed so that the battery voltage can be measured. There is a test button below the Voltmeter which can be pressed to read the current voltage of the batteries.

NOTE: If the solar panels are charging the batteries the true state of the batteries charge level will not be indicated.

Low Voltage Cut OFF

If the measured voltage of the batteries drops below 21.5V then the lamps will turn off after approximately 3 minutes.

High Voltage TURN ON

If the measured voltage of the batteries returns above 24V then the lamps will turn on after approximately 3 minutes.

5.6 MPPT (Solar Controllers)

There are two solar controllers used on the SLT. These are mounted behind the control panel. These solar controllers control the load to the lamps. If the measured voltage of the batteries drops below 21.5V then the lamps will not run on until the battery voltage returns above 24V.

There are LED indicator lights on the MPPT.

The Green LED indicates that it is currently connected to battery and should be solid on.
The Yellow LED indicates the charge sequence.
OFF – No power from solar panel
Blinking fast- bulk charge (batteries in partially charged state)
Blinking slow-absorption charge (batteries charged 80% or more)
Solid – batteries fully charged

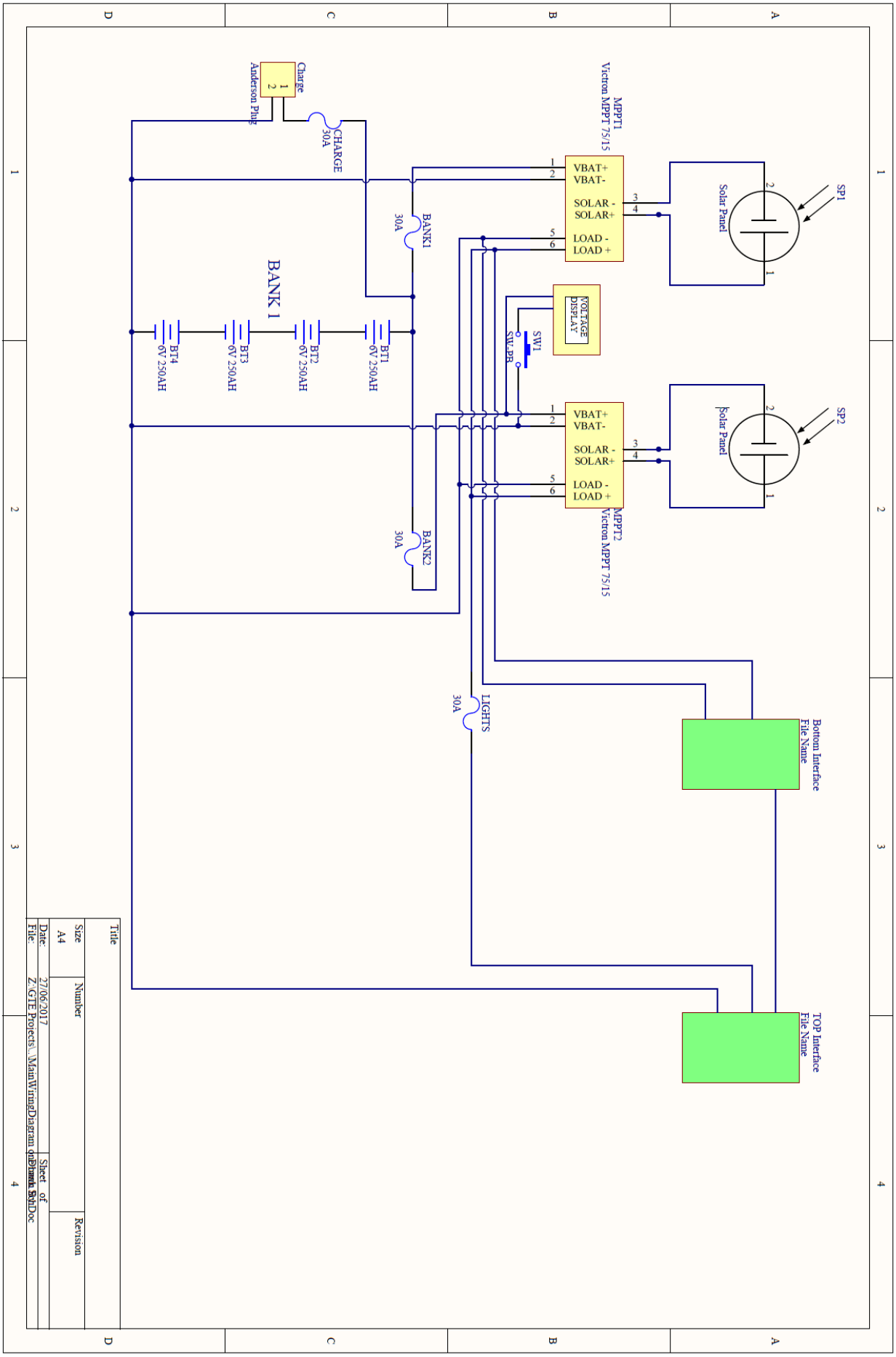
5.7 Battery Charging

The batteries for the SLT can be charged via the Anderson connection located on the main battery box housing. This connection is fused to protect the batteries; only a recommended 24V battery charger should be used.

5.8 Fuse sizes

All wiring fuse sizes are 30A, Battery, Load, Battery Charger. The MPPT have built in 20A fuses to protect the MPPT.

5.9 Wiring Diagram



6. Spare Parts Listing

PART #	DESCRIPTION	COLOUR
GT6078	Top SLT Interface Board	
GT6079	Bottom SLT Interface Board	
BW6080	Control Lamp Switches	
BW6081	Mode Control Switch	
GM6082	Bottom Control Panel Plate	
BW6083	LED Light DC 24V 50W	
BS6084	MPPT 75/15 Solar Controller	
BW6085	Solar Panel 330W	
BW6086	PB -600 -24 Battery Charger	
BS1126	Mast Locking Pin	Silver
GM5032	Removable Drawbar - Complete	Yellow/silver
BS1027	19mm Drawbar Pin	Silver/Gold
BW3066	Jacking leg	Red Handle
BS3005	Jockey Wheel	Red Handle
BS1030	Brake winch	Silver
BS1031	Brake winch handle	Silver
BW3015	Brake winch cable	Stainless Steel
BS1001	Spare wheel and tyre	BLACK
BS1048	Tail Light – Multi Voltage	Yellow/Red
GM5126	7 Pin Electrical Trailer Lead	Black
BS6087	Control Box KEY	

Note: The SLT controller, contains no user serviceable parts.

7. SLT – Specifications

- Primary Power Supply: 250AH@24VDC (4 x 6V Series wired) AGM, Deep Cycle
- Nominal Operational Voltage Range: 21.5V to 28.5V
- Power Source: Solar Array 660W (2 x 330W @ 24VV)
- Optional - Auxiliary Battery Charger: 240VAC, 600W, 8 Stage
- Light Specifications – Single Lamp 50W 24VDC, 5000K 40 degree beam
- Mast – Extended height 6M, retracted height 1.68M sections 4
  Hand Winch 1200 lbs

8. Disclaimer

This document provides information on our products and all efforts are made to ensure the accuracy of the information contained within. The specifications of the products are subject to change and continual improvement without notification.

9. Troubleshooting

FAULT	CAUSE
Lamps won't turn on	Check battery voltage Low battery need to charge
	Check fuses
	Check configuration Auto or manual

10. DOCUMENT REVISION HISTORY:

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27/09/2017	2.0	Document created from Draft	J. S.
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