

TRIDENT-3000
3000mm dia. Ocean Buoy
Installation & Service Manual

Technical Specifications

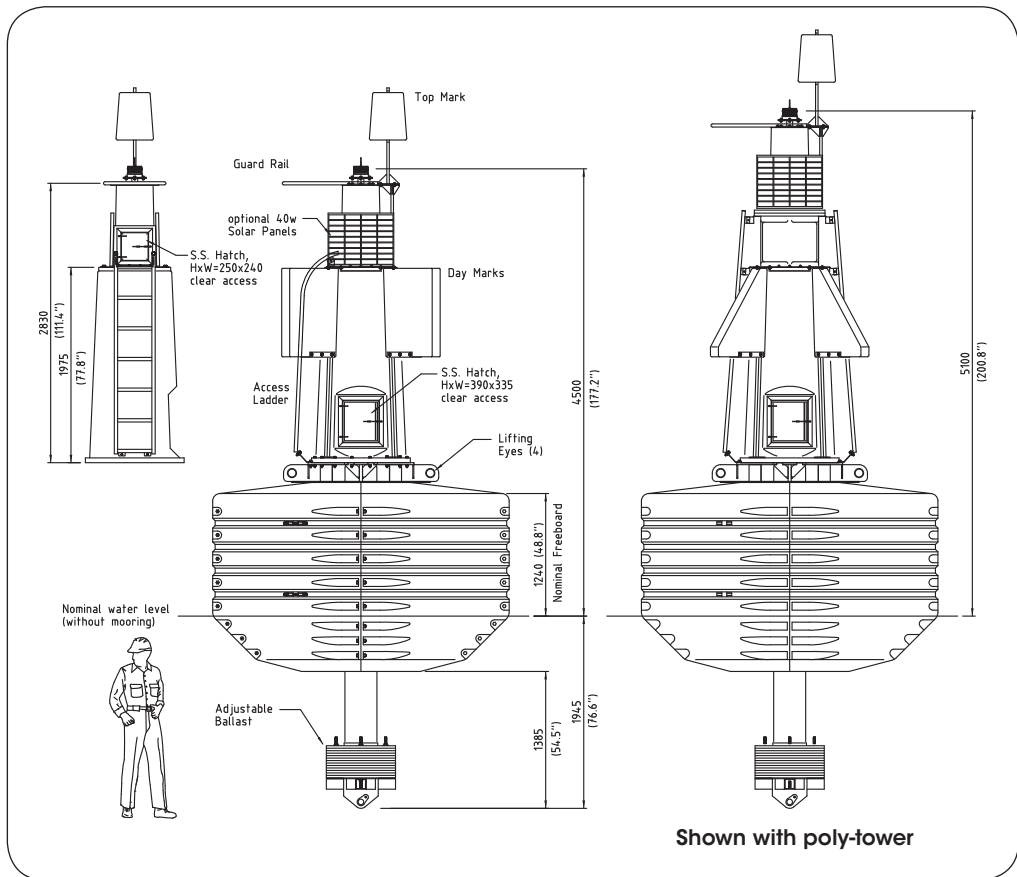


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Version No.	Description	Date	Approved
1.0	Manual Launch	Nov 2009	A. Dixon
1.1	Addition of 5.1m Trident	June 2010	M. Henry
1.2	Technical Drawings & Warranty Updated	July 2010	K. Paton
1.3	Update: Spec table	June 2012	J. Dore
1.4	Update: Annual maintenance	May 2015	S. Amirhalingam



Introduction

Congratulations! By choosing to purchase a Sealite Buoy, you have become the owner of one of the most advanced rotationally-moulded polyethylene marine buoys in the world.

Sealite Pty Ltd has been manufacturing buoys for over 25 years, and particular care has been taken to ensure your buoy gives years of service.

As a commitment to producing the highest quality products for our customers, Sealite has been independently certified as complying with the requirements of ISO 9001:2008 quality management system.

By taking a few moments to browse through this booklet, you will become familiar with the versatility of your buoy, and be able to maximise its operating function.

Sealite Buoy Division

Sealite marine buoys are manufactured on-site from rotationally-moulded UV-stabilised polyethylene, and are designed to offer a low-maintenance, high visibility solution to marine navigation.

The Sealite buoy division provides turn-key production of navigation buoys. From tooling development, raw materials selection, and production, to final testing and inspection, Sealite guarantees superior quality and fast turn-around times.

Sealite's buoy products are available in a wide range of configurations and sizes, and can be economically shipped worldwide.

Why Choose Polyethylene Buoys?

- No painting
- Inhibits growth
- Increased interval between servicing
- Routine maintenance on location
- Easily repaired in the unlikely event of damage
- Lightweight for ease of deployment and maintenance
- Environmentally friendly – no use of toxic antifouling paint

Mooring Requirements & Regulations

Please contact your local authority for any specific requirements regarding the deployment of buoys. IALA also has guidelines and recommendations that should be followed.

All information given in this manual is advisory only. Please consult with your local authority before deploying your buoy products.

Local conditions that need to be considered include:-

- Water depth
- Maximum currents
- Maximum wind speeds
- Sinker size and weight

TRIDENT-3000 Ocean Buoy

The TRIDENT-3000 is one of the largest rotationally moulded buoys available, with a float diameter of 3 meters and lantern focal height of up to 5 meters.

The float section of the TRIDENT-3000 is built from four (4) roto-moulded quadrants, which fasten together to form an incredibly robust 3 meter wide float section standing 1.8m tall. Each quadrant is moulded from UV-stabilised virgin polyethylene, and has an 18mm wall thickness.

Number of Lifting Points = 4

Visual area = 7.1m² (with daymark)

Estimated roll period (bare) = 2.2sec

SWL for 2 or more lifting points = 8630kg (mooring point)

SWL for 1 point lifting = 6000kg (deck and primary structure)

Estimated roll period (moored) = 1.6sec

SPECIFICATIONS * *

TRIDENT-3000

Polyethylene Tower

Stainless Steel Tower

General Characteristics

Available Colours

Focal Plane Height (mm/inches)

Total Float Volume (ltrs/US gallon)

Nominal Freeboard (mm/inches)

Nominal Draft (mm/inches)

Reserve Buoyancy (kgs/lbs)

Maximum Mooring Load (kgs/lbs)

Draft, Maximum (mm/inches)

Freeboard, Minimum (mm/inches)

Safe Working Load, 1pt (kgs/lbs)

Safe Working Load, 2pt (kgs/lbs)

Submergence (kg/cm, lb/inches)

Visual Area (m²/ft²)

Water Area (m²/ft²)

Physical Characteristics

Material

Wall Thickness (mm/inches)

Ballast (kg/lbs)

Filling

Height (mm/inches)

Width (mm/inches)

Mass (kg/lbs)

Radar Reflector

Product Life Expectancy

Certifications

IALA

Quality Assurance

Intellectual Property

Trademarks

Warranty *

Lantern Options

Options Available

Red, Green, White, Yellow as per IALA Recommendations

4500 / 177.2

11000 / 2906

1240 / 48³/₄

1945 / 76¹/₂

3170 / 6990

2750 / 6063

2400 / 94¹/₂

800 / 31¹/₂

6000 / 13228 (one lifting point)

8630 / 19025 (two lifting points)

72 / 403

7.1 / 76.4 (with daymark)

6.4 / 68.9 (without daymark)

2.1 / 22.6

Rotationally-moulded
UV-stabilised virgin polyethylene float section, tower assembly, top marks and panelling.
316-grade stainless steel fixtures.

18 / ³/₄

765 / 1687 external steel

Closed-cell polyurethane foam (float section)

7900 / 311

3000 / 118¹/₈

2580 / 5688 (depending on payload)

Echomax

>20 years

Surface colours compliant to IALA E-108
ISO9001:2008

SEALITE® is a registered trademark of Sealite Pty Ltd
5 years

Sealite SL-C310, SL-C410, SL-C415, SL-C420
SL-125 Series or SL-155 Series

- Mould-in graphics
- Day marks
- Rotationally-moulded side-panelling
- Monitoring Systems (AIS, GSM)
- Unfilled Float Section
- Tower Extension (Focal Plane height: 5100mm / 200³/₄inches)

Red, Green, White, Yellow as per IALA Recommendations

5700 / 224¹/₂

11000 / 2906

1270 / 50

1915 / 75³/₈

3365 / 7420

2750 / 6063

2400 / 94¹/₂

800 / 31¹/₂

6000 / 13228 (one lifting point)

8630 / 19025 (two lifting points)

72 / 403

5.7 / 61.3 (without daymark)

2.1 / 22.6

Rotationally-moulded
UV-stabilized virgin polyethylene float section, top marks and panelling.
316-grade stainless steel tower assembly.

18 / ³/₄

680 / 1500 external steel

Closed-cell polyurethane foam (float section)

8500 / 334¹/₂

3000 / 118¹/₈

2385 / 5258 (depending on payload)

Echomax

>20 years

Surface colours compliant to IALA E-108
ISO9001:2008

SEALITE® is a registered trademark of Sealite Pty Ltd
5 years

Sealite SLC310, SLC420,
Apollo-155 or SL125 series lantern

- Mould-in graphics
- Sealite IALA recommended top marks
- Day marks
- Rotationally-moulded side-panelling
- Monitoring Systems (AIS, GSM)
- Unfilled Float Section



* Specifications subject to change or variation without notice
• Subject to standard terms and conditions



TRIDENT-3000 Lantern Options

- SL-C310 Compact Solar Marine Lantern
- SL-C420 Compact Solar Marine Lantern
- SL-125 Series LED Marine Lantern Series
- SL-155 Marine Lanterns

TRIDENT-3000 Accessory Options

- Mould-in graphics
- Monitoring Systems (AIS, GSM Cell-Phone)

TRIDENT-3000 Product Components

Float Section and Mooring Post	
Description	Qty
Float Sections	4
Mooring Post	1
M16 x 80mm Long S/S Bolt	32
Ø16 S/S Flat Washer	64
Ø16 S/S Spring Washer	40
M16 Nut	48
M16mm Tie Rods	4
Float Straps	4
Tie Rods	4
Ballast Plates	*
Rubber Collar Insulator	1
Rubber Ballast Mounting Squares	4
Ballast Rods	4
M20 Nuts	8
Ø20 Flat Washer	8
Ø20 Spring Washer	8
Mooring Pin	1
Mooring Pin Sleeve	1
M48 Nut	1
M10 x 30mm Long Bolt	1
Ø10 Spring Washer	1

* Varies depending on local conditions and installation requirements

4.5 mtr Tower Assembly with 1 Ladder

Description	Qty
Tower Assembly complete with 1 Ladder Assembly and Solar Panels attached	1
Top Mark	1
M8 x 25mm Long Socket Head Cap Screws	4
Ø8 Penny Washer	8
Ø8 Spring Washer	4
M8 Nuts	4
Day Marks	4
Ladder Mounting Plate	1
M12 x 100mm Long Bolts	16
Ø12 Penny Washer	32
Ø12 Spring Washer	16
M12 Nut	16
M10 x 25mm Long Bolts	4
M10 x 45mm Long Bolts	2
Ø10 Penny Washer	12
Ø10 Spring Washer	6
M10 Nut	6
12V 55AH SLA Battery	1

5.1 mtr Tower Assembly with 2 Ladders

Description	Qty
Tower Assembly complete with 2 Ladder Assemblies and Solar Panels attached	1
Top Mark	1
M8 x 25mm Long Socket Head Cap Screws	4
Ø8 Penny Washer	8
Ø8 Spring Washer	4
M8 Nuts	4
Day Marks	4
Ladder Mounting Plate	2
M12 x 100mm Long Bolts	16
Ø12 Penny Washer	32
Ø12 Spring Washer	16
M12 Nut	16
M10 x 25mm Long Bolts	12
M10 x 45mm Long Bolts	4
Ø10 Penny Washer	60
Ø10 Spring Washer	30
M10 Nut	30
12V 55AH SLA Battery	1
M10 x 110mm Long Bolts	14

Assembly Instructions

Check Components

Unpack all components from container. Inspect all components for any damage. Please alert Sealite if any component is missing or damaged.

Assembly

Step 1

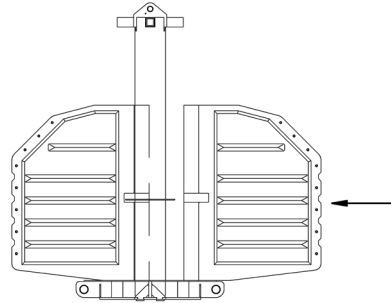
Position the Mooring Post upside down on flat level ground.

Step 2

Turn the 4 x Float Sections upside down, to match the mooring post.

Position the 4 x Float Sections around the Mooring Post and start securing 2 x float sections together using 8x M16 Bolts, nuts and washers.

Please coat each bolt in Anti-Seize or Grease before fitting Nuts.



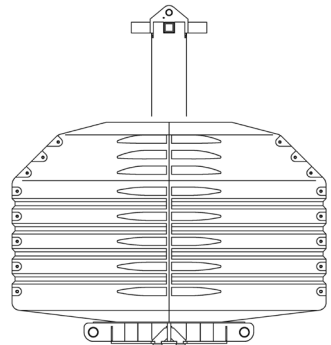
Step 3

Place a flat washer on the bolt before sliding it through the hole in the Float Section, then fit a second flat washer and a Spring washer on to the bolt before securing with a nut.

Hand tighten 2 – 4 bolts per side until all four Float sections are secured around the mooring post.

Secure 8 x bolts down each joint on the Float Sections.

Leave the Mooring post and Float to settle for 4 hours or overnight before tightening each bolt a second time. *Giving the buoy time to relax in the fitted position will create a better joint.*



Step 4

Fit and secure the 4 x Float Straps around the top and bottom of the Float.

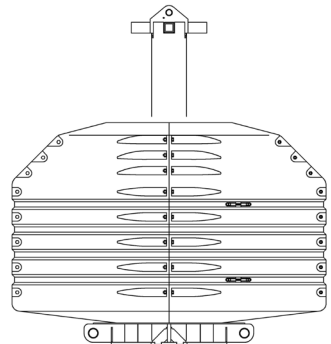
Position 2 x Float Straps on the ground and join the two Straps together by placing 1 x Tie Rod through the holes and 1 x M16 Nut on each side.

Repeat this for the second set of Straps.

Wrap the Float Straps around the Float Section and join the loose side using a Tie Rod and 2 x nuts.

Repeat for the second Float Strap

When the Float Straps are fitted in position tighten the nuts on the Tie Rods and add a Spring Washer and second nut to each side. Tighten all nuts securely.



Step 5

Use a crane to turn the Float and Mooring Post upright.

Please Note: The buoy weighs over 2.3 tonnes. Please be careful when rotating the Buoy.

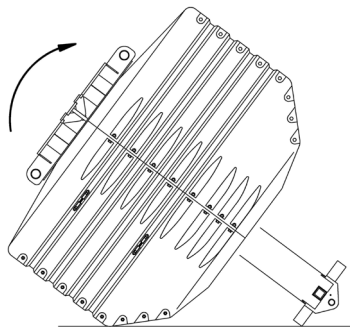


The buoy is still unstable even when fitted with the supporting timber and assembly staff must be careful if standing on the Float Sections.

Step 6

Open the door at the base of the Tower Assembly. Position and secure the 55Ah battery in the base of the Tower Assembly using the 2 x Hand Wheels and Battery Clamp.

Please Note: Push the door inwards and hold while releasing the latch, then open the door.



Step 7

Connect the negative (-) and positive (+) leads to the battery terminals.

Please Note: Cover the terminals with a protective grease after connection and testing is finalised.

Step 8

Test the Light by covering it with a dark cloth or jacket and wait 1 minute for activation.

Please refer to the SL125 Manual for more information on setting flash codes, intensity and troubleshooting.

Step 9

Position and secure the top mark to the Tower Assembly, using 4 x M8 Socket Head Cap Screws, Flat and Spring Washers and Nuts.

Step 10

Lift and secure the Tower Assembly onto the Mooring Post.

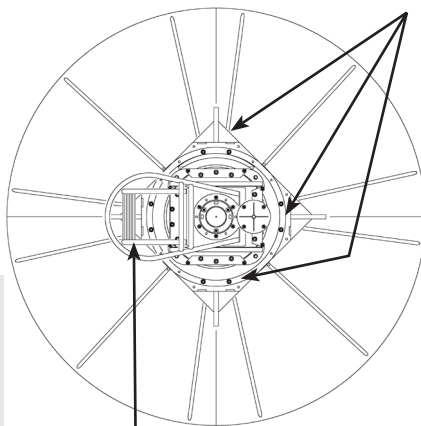
The Tower Assembly MUST be positioned with the ladder and Hatch located on a corner of the Mooring Post between the Lifting Eyes.

Secure the Tower to the Mooring Post in 8 x places using M12 x 100mm Long Bolts, Flat and Spring Washers and Nuts.

USE THE Bolt Holts either side of the Lifting Eyes when securing the Tower Assembly.



- **DO NOT USE THE GUARD RAIL AS A LIFTING POINT**
- **DO NOT USE THE TOP MARK AS A LIFTING POINT.**
- **DO NOT USE THE LADDER AS A LIFTING POINT**
- **DO NOT USE SOLAR PANELS AS A LIFTING POINT.**
- **ONLY USE A SLING AROUND THE BODY OF THE TOWER TO MOVE INTO POSITION**



Secure Tower Assembly using 2 x Bolt Holts either side of Lifting Eye.

Ladder to be positioned as shown.



Step 11

Slide the Day Marks into position. The top of the Day Mark post fits over the Locating Post on the Day Mark Mounting Bracket, fitted below the corners of the Solar Panels. Secure the base of the Day Mark Post to the base of the Tower Assembly using two M12 x 100mm Long Bolts Nuts, Flat and Spring Washers per post.

Please Note: The Locating Post on the Day Mark Mounting Bracket may have to be loosened when fitting Day Marks. Please ensure the Location Posts are secured afterward.

Step 12

Fit the ladder to the Tower Assembly.

Secure the Ladder Mounting Plate to the base of the ladder using two M10 x 25mm Long Bolts, Nuts, Flat and Spring Washers.

Secure the Ladder Mounting Plate to the Mooring Post using 2 x M10 x 45mm Bolts, Nuts, Flat and Spring Washers.

Step 13

Finish securing the Tower Assembly to the Mooring Post.

Check that all M12 x 100mm Long Bolts Nuts, Flat and Spring Washers are secured correctly.

Step 14

Lift the Buoy, ONLY using the Lifting Eyes on the Mooring Post.

Position the Rubber Collar Insulator around the base of the mooring post. Secure it in position.

Position 4 x Rubber Ballast Mounting Squares on each leg of the Mooring Post.

Fit the 2 x Ballast Plates on to the base of the Mooring Post.

Position a second set of 2 x Ballast plates on top of the first set.

Make sure second set of plates is fitted with the joint perpendicular to the first pair. Criss-cross the joints.

Secure the plate to the mooring post using 4 x 20mm Ballast Rods, Nuts, Flat and Spring Washers.

Weld the nuts to the Ballast Rod when the assembly is complete.

Step 15

Fit and secure the Mooring Pin in the base of the Mooring Post.

Position and Secure the Mooring Pin to the base of the Mooring Post using the M10 Bolt and Spring Washer.

Tighten the M48 Nut on to the Mooring Pin and secure it by drilling and fitting a 5/16" Roll Pin.



Please do not leave the Buoy lying on the Float Sections, they may deform while in this position if left of more than 1 hour.



Apply marine grease over any exposed thread for ease of maintenance

Diagram 1.
4.5 mtr TRIDENT-3000

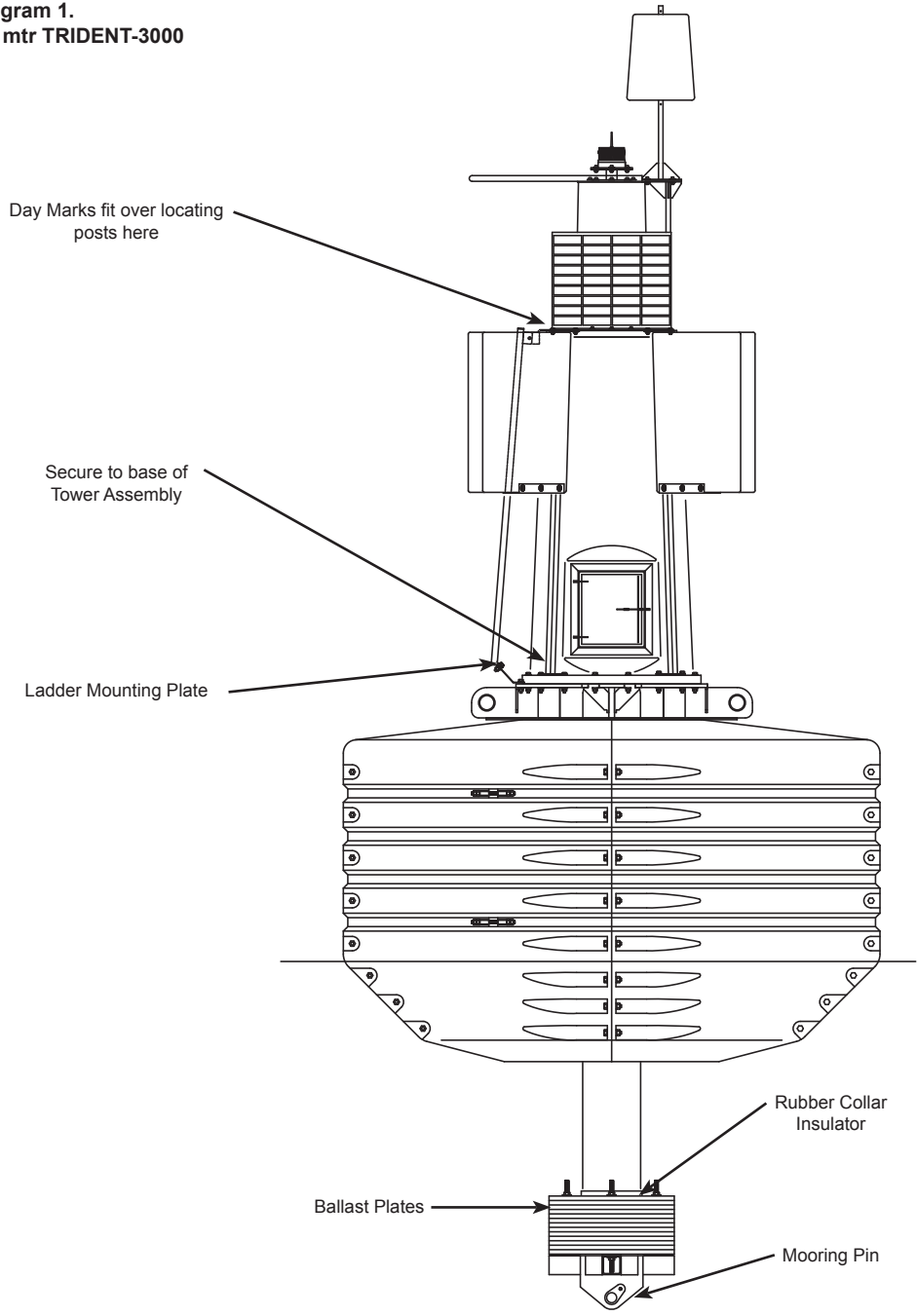
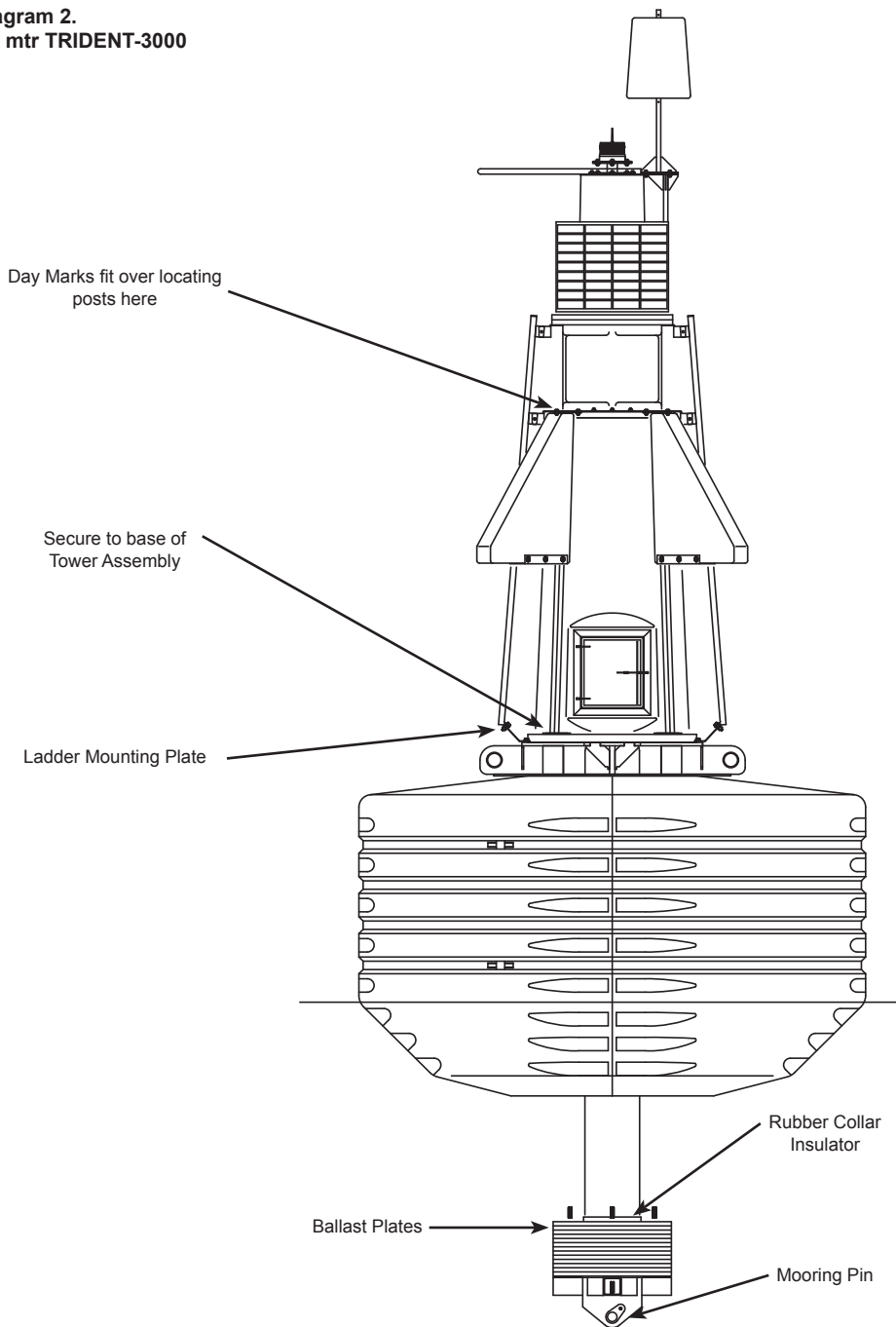


Diagram 2.
5.1 mtr TRIDENT-3000



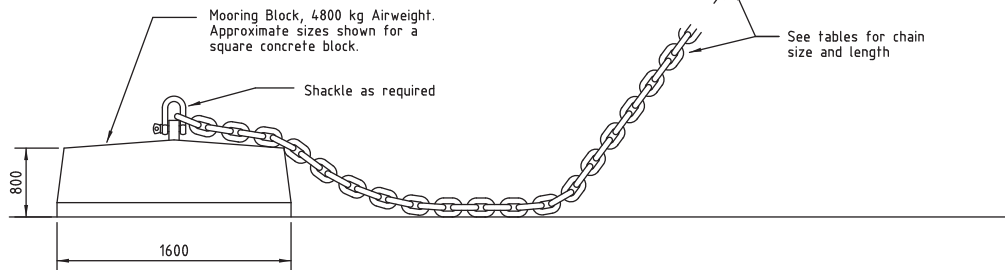
TRIDENT-3000 Mooring Diagram

Water Depth		Recommended Chain Size (mm) (from swivel to mooring block)
Metres	ft	
10 to 85	33 to 280	38
85 - 110	280 - 360	32
110 - 150	360 - 492	28

CHAIN SIZE

	Recommended Length of Chain	Maximum Water Depth (m)
Best Practice (up to 6kts current)	3 x Water Depth	150
For Reduced Watch Circle (where current is 2 to 4 kts)	2-1/2 x Water Depth	150
For minimum Watch Circle (use only where current < 2kts)	Not less than 2 x Water Depth	150

CHAIN LENGTH



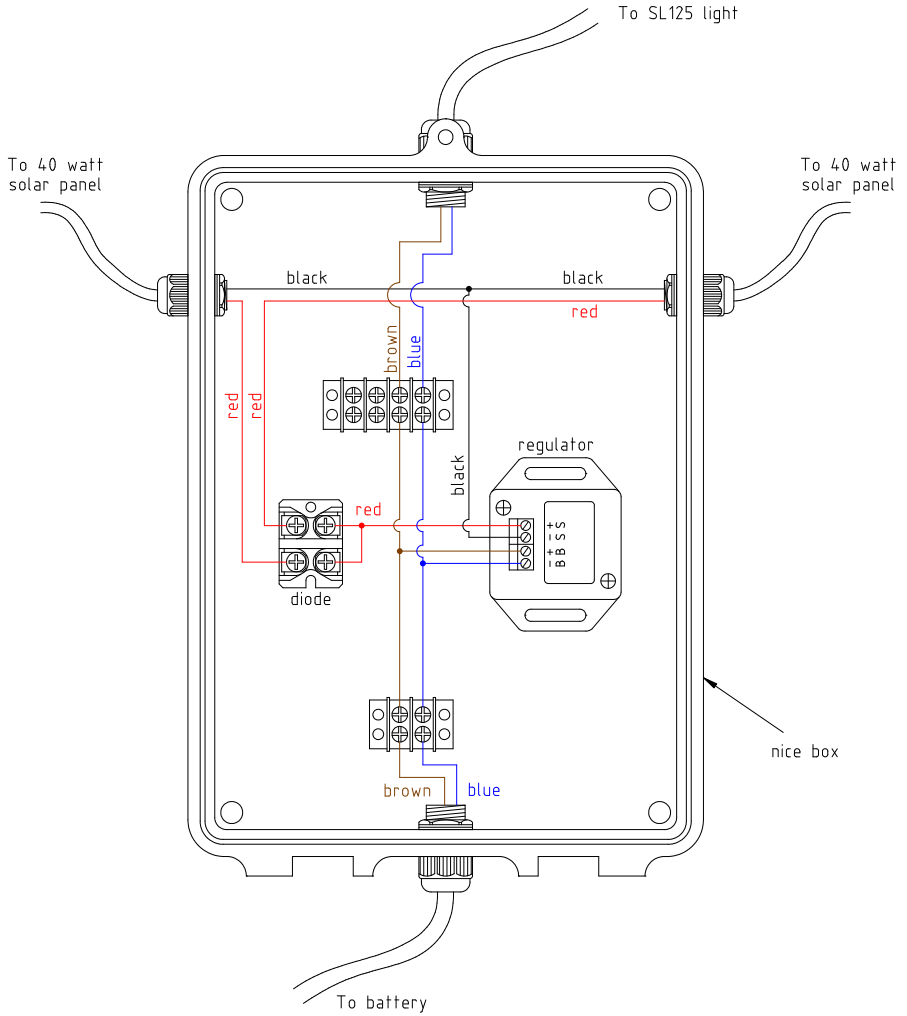
General Note

Recommendations given herein are advisory only. As each buoy installation varies, the buoy operator should establish fitness for purpose prior to installation.

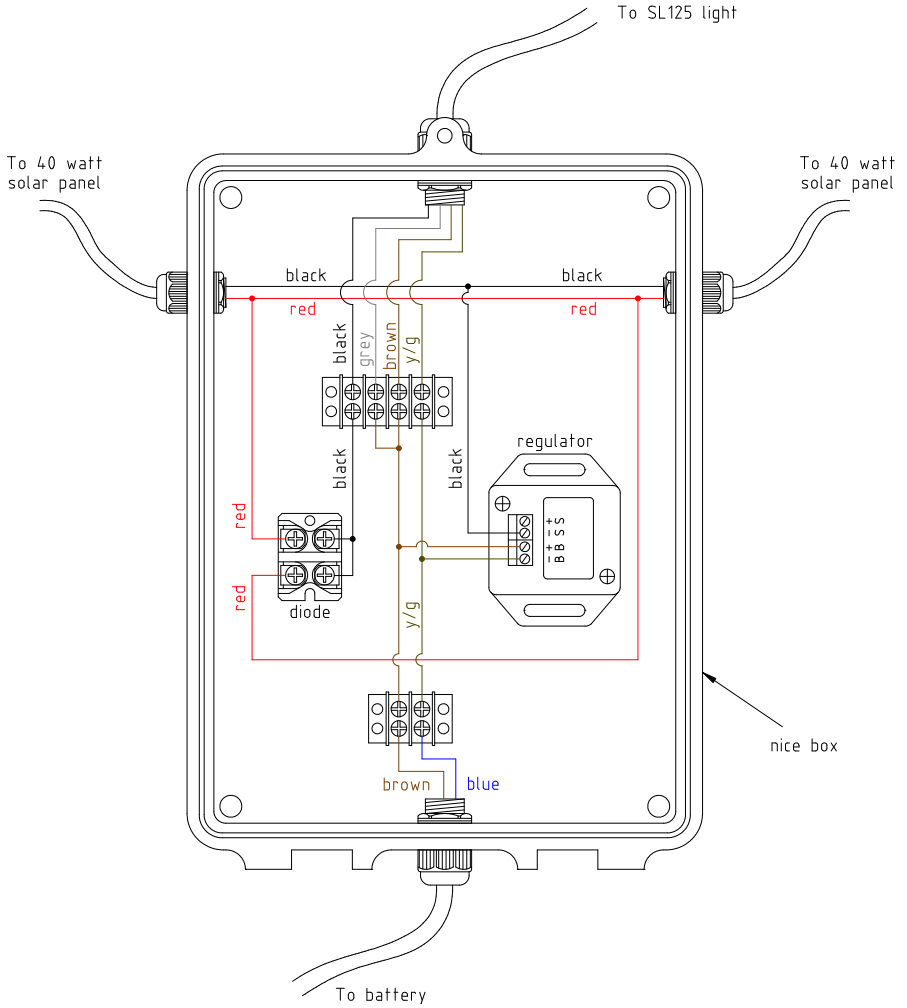
NOTES:-

- 1/ Shackles, swivel and chain are load rated products.
- 2/ All shackle pins are to be positively locked, eg using 3mm S.S. wire to lock pin eye, or use shackle pin with nut and split-pin.

Standard Wiring Diagram



GSM Wiring Diagram



Marine Buoy Maintenance

Sealite Marine Buoys are designed to require very little maintenance. We recommend the buoy be inspected annually. Inspection may need to increase depending on the local conditions and the position of the buoy.

IALA Recommendation AISM E-107 suggests moorings are inspected annually.

Spare Parts required for annual maintenance

Description	Qty
Mooring Pin	1
Mooring Sleeve	1
Roller Pin	1
Washer	1
Nut	1
Anodes	4

Marine Buoy – Annual Maintenance

- Visually inspect buoy for damage
- Inspect the top mark for any damage. Repair any broken or damaged section.
- Clean buoy of animal debris

Mooring – Annual Maintenance

- Check and clear the tail and ride chains from shells and algae.
- Check for wear on any swivel and shackle axis and check the tapered pins on the mooring pin. Any worn swivels and shackles must be replaced.
- Check the free movement of each swivel around its head. If any swivel head sticks it must be replaced.
- Check every link of the thrash length of the chain. Check the diameter of the nips and sides and also inspect the welds on every link.
- If depth allows, a worn riding chain may be reversed.
- Change a chain when any link shows excessive wear. Chain must be replaced if any link wears to less than 3/5 of the original diameter.

Mooring – Biannual Maintenance

- Inspect the ground chain and sinker.

Lanterns – Maintenance

- Please refer to the Installation Manual for the specific Marine Lantern fitted to the Buoy.



Notes



Sealite Buoy Warranty V2.2

Activating the Warranty

Upon purchase, the Sealite Pty Ltd warranty must be activated for recognition of future claims. To do this you need to register online. Please complete the Online Registration Form at:

www.sealite.com

Sealite Pty Ltd will repair or replace your buoy product in the event of failure for a period of up to twelve months (small buoy products less than 1500mm diameter) & a period of up to five years (large buoy products 1500mm diameter & larger) from the date of purchase.

The unit must be returned to Sealite freight prepaid.

Warranty Terms

1. Sealite Pty Ltd warrants that any rotationally-moulded buoy products ("Buoy Products") will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of twelve (12) months for small buoy products up to under 1500mm diameter, and for a period of five (5) years for large buoy products including and over 1500mm in diameter from the date of purchase by the original purchaser.
2. Sealite Pty Ltd will repair or replace, at Sealite's sole discretion, any Buoy Products found to be defective in material and workmanship in the relevant warranty period so long as the Warranty Conditions (set out below) are satisfied.

Warranty Conditions

This Warranty is subject to the following conditions and limitations:

1. The warranty is applicable to buoys manufactured from 1/1/2009.
2. The warranty is void and inapplicable if:
 - a. the product has been used or handled other than in accordance with the instructions in the owner's manual and any other information or instructions provided to the customer by Sealite;
 - b. the product has been deliberately abused, or misused, damaged by accident or neglect or in being transported; or
 - c. the defect is due to the product being repaired or tampered with by anyone other than Sealite or authorised Sealite repair personnel.
3. The customer must give Sealite Pty Ltd notice of any defect with the product within 30 days of the customer becoming aware of the defect.
4. No modifications to the original specifications determined by Sealite shall be made without written approval of Sealite Pty Ltd.
5. The product must be packed and returned to Sealite Pty Ltd by the customer at his or her sole expense. Sealite Pty Ltd will pay return freight of its choice. A returned product must be accompanied by a written description of the defect and a photocopy of the original purchase receipt. This receipt must clearly list model and serial number, the date of purchase, the name and address of the purchaser and authorised dealer and the price paid by the purchaser. On receipt of the product, Sealite Pty Ltd will assess the product and advise the customer as to whether the claimed defect is covered by this warranty.
6. Sealite Pty Ltd reserves the right to modify the design of any product without obligation to purchasers of previously manufactured products and to change the prices or specifications of any product without notice or obligation to any person.

Limitation of Liability

To the extent permitted by acts and regulations applicable in the country of manufacture, the liability of Sealite Pty Ltd under this Warranty will be, at the option of Sealite Pty Ltd, limited to either the replacement or repair of any defective product covered by this Warranty. Sealite will not be liable to Buyer for consequential damages resulting from any defect or deficiencies.

Limited to Original Purchaser

This Warranty is for the sole benefit of the original purchaser of the covered product and shall not extend to any subsequent purchaser of the product.

Miscellaneous

Apart from the specific warranties provided under this warranty, all other express or implied warranties relating to the above product is hereby excluded to the fullest extent allowable under law. The warranty does not extend to any lost profits, loss of good will or any indirect, incidental or consequential costs or damages or losses incurred by the purchaser as a result of any defect with the covered product.

Warrantor

Sealite Pty Ltd has authorised distribution in many countries of the world. In each country, the authorised importing distributor has accepted the responsibility for warranty of products sold by distributor. Warranty service should normally be obtained from the importing distributor from whom you purchased your product. In the event of service required beyond the capability of the importer, Sealite Pty Ltd will fulfil the conditions of the warranty. Such product must be returned at the owner's expense to the Sealite Pty Ltd factory, together with a photocopy of the bill of sale for that product, a detailed description of the problem, and any information necessary for return shipment.

Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor.
Sealite products are subject to certain Australian and worldwide patent applications.

Other Sealite Products Available



**Marine Lanterns
(1-19NM)**



**Monitoring
& Control Systems**



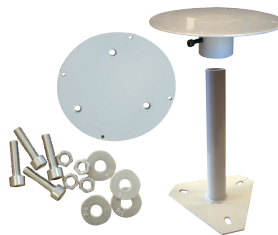
Bridge & Barge Lights



**Marine Buoys
(up to 3mt in diameter)**



Area Lighting



**Mooring Systems
& Accessories**



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