

C500 CAPSTAN

simpson-lawrence

# pacific

installation, operation & maintenance instructions

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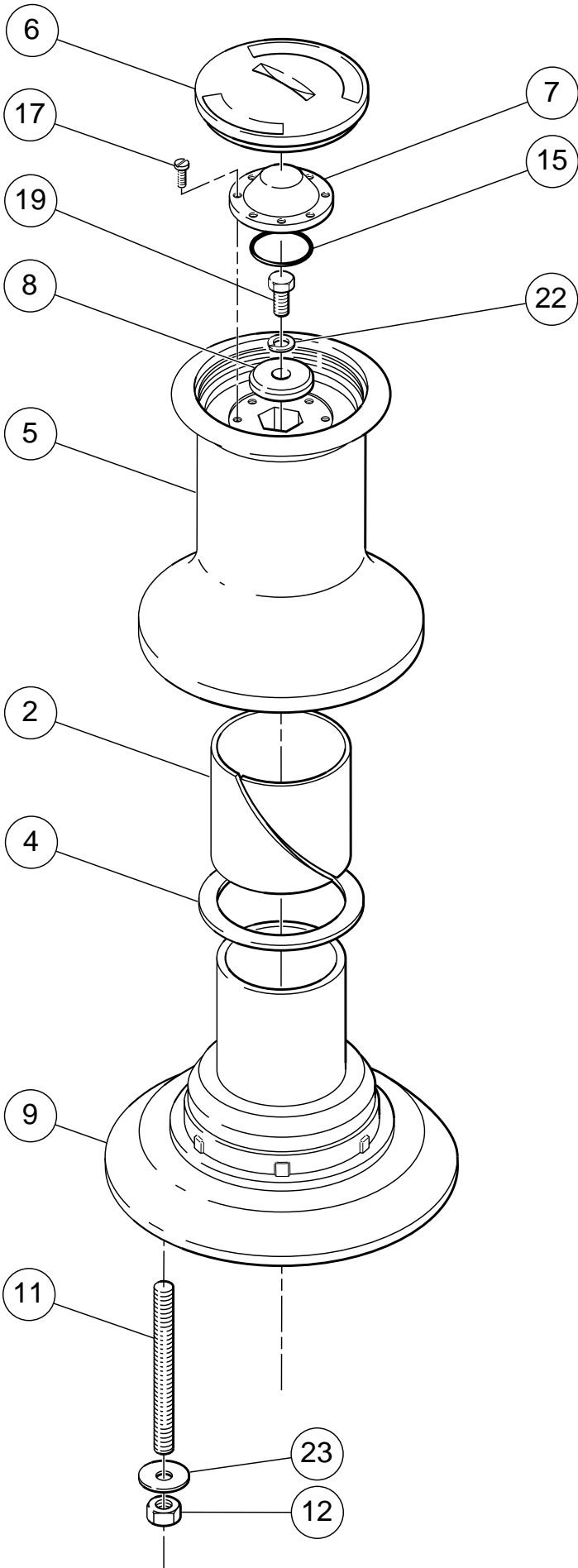
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C500

1.0 PARTS

1.1 Exploded Diagram



1.2 For Future Reference

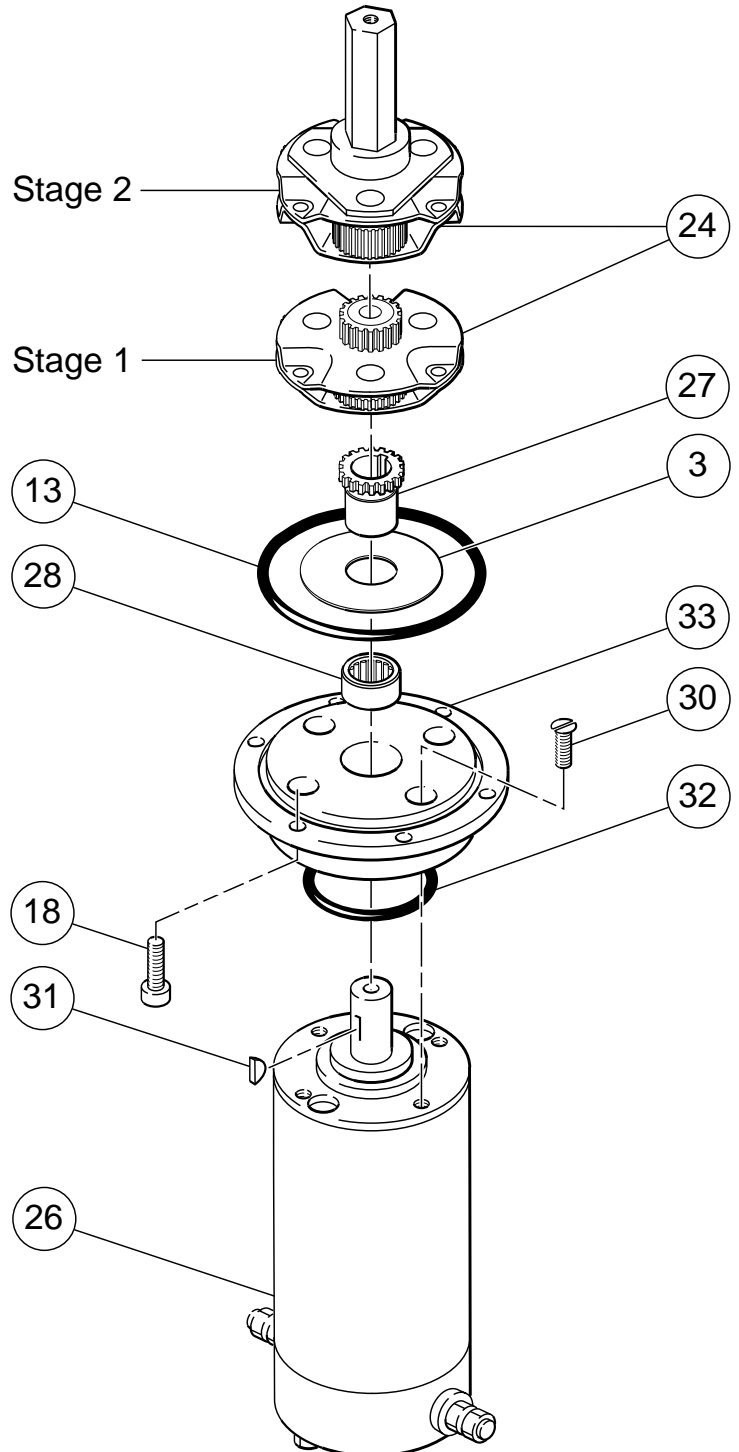
After you have read this instruction booklet, please keep it safe on board your vessel for future reference.

1.2.1 Identify your model

Type	List No.	Voltage	Tick
Pacific C500	0031010	12v	

1.2.2 Please note your serial number and voltage (printed on motor label). This information is essential when ordering spares.

	12v
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## 1.3 PARTS LIST

Item	Part No.	Part Description	Quantity
2	P103065	Shim Bearing - Main	1
3	P103036	Shim Bearing - Gears	1
4	P103037	Shim Washer - Drum	1
5	P106009	Drum	1
6	P106201	Cap - Top	1
7	P106210	Cap - Inner Seal	1
8	P106215	Cap - Lock	1
9	P109007	Deck Housing	1
11	P154000	Stud	4
12	P339017	Nut	4
13	P342000	O Ring	1
15	P342050	O Ring	1
17	P354101	Screw	6
18	P354014	Screw	6
19	P354231	Screw	1
22	P366042	Washer	1
23	P366046	Washer	4
24	P418023	Gear Set (Stage 2)	1
	P417000	Gear Set (Stage 1)	1
26	P336041HMS	Motor (12v)	1
27	P118011	Pinion	1
28	P303104	Spragg Clutch	1
30	P354325	Screw	4
31	P113020	Key	1
32	P342030	O Ring	1
33	P136007	Flange	1

## 2.0 PLANNING THE INSTALLATION

### 2.1 Suitability

Suitable for vessels up to **9.1m** (30ft) LOA.

### 2.2 Package Contents

Capstan  
 Mounting Studs, Washers & Nuts  
 Mounting Template  
 Safety Instructions  
 Installation Warning Label  
 Instruction Manual

### 2.3 Additional Requirements

Each capstan installation requires :

- a. A solenoid. (Unless using High Load Foot Switch).
- b. A control switch (or switches) by preference.
- c. A breaker/isolator for overload protection which can also be used as a main isolating switch. (Simpson-Lawrence recommend the breaker/isolators listed under **3.0 Accessories**)

- d. The following tools:

#### Capstan Installation

Flat Blade Screwdriver  
**10mm** (<sup>3</sup>/<sub>8</sub>" ) Diameter Drill  
**13mm** A/F (<sup>1</sup>/<sub>2</sub>" ) Spanner (Wrench)  
 Jig Saw or Trepanning Tool

#### Wiring Installation

Flat Blade Screwdriver  
 Crimping Pliers / Wire Stripper  
**13mm** A/F (<sup>1</sup>/<sub>2</sub>" ) Spanner or Socket  
**10mm** A/F (<sup>3</sup>/<sub>8</sub>" ) Spanner or Socket

- e. Marine grade silicone sealant. **DO NOT use permanent adhesive/sealant.**
- f. Suitable electrical cable and crimp terminals.

## 2.4 Electric Cable Selection

To achieve the best performance and safeguard your electrical system, it is essential that any electric capstan is fitted with sufficiently large diameter cable to cope with the current draw imposed upon it and, to keep the voltage drop within acceptable limits. In any circumstance, voltage drop due entirely to cable resistance should not exceed 5%, roughly 0.5V for a 12v installation.

The following tables give recommended cable sizes. The recommendations are based on the total length of cable required, from the battery to the capstan and back to the battery, following the route of the cables. (See the **Wiring Diagram** for the definition.)

**DO NOT** confuse Cable Length with the length of the vessel!

### METRIC or STARTER CABLE

Voltage	Cable Length m (ft.)	Size (mm <sup>2</sup> )
12	<b>18.0m</b> (60ft.)	16
	<b>24.0m</b> (80ft.)	16
	<b>37.0m</b> (120ft.)	25

### AMERICAN CABLE

Voltage	Cable Length m (ft.)	Size (AWG)
12	<b>18.0m</b> (60ft.)	6
	<b>24.0m</b> (80ft.)	4
	<b>37.0m</b> (120ft.)	2

Thin wire of **1.5mm<sup>2</sup>** cross sectional area, 21/0-30 PVC covered (American equivalent 14 AWG) is required for the control switch circuits. This is used to connect the switch(es) to the solenoid(s).

## 3.0 ACCESSORIES

Item		List Number
Breaker/Isolator (50 Amp)	12v Installation	0050710
12v Solenoid	Single direction	0052505
Foot Switch	Single direction	0052514
High Load Foot Switch	Single direction	0052516
USA list number for above (Black)		LEWP49C
USA list number for above (White)		LEWP49CW
C500 Capstan Cover	White	0031001
C500 Capstan Cover	Blue	0031002

## 4.0 SPECIFICATION

### 4.1 Performance Data:

#### Typical Working Figures (12v) Anchoring

Load	Speed	Current Draw
<b>45kg</b> (99lb)	<b>18m</b> (60ft)/min	<b>40 Amp</b>

Motor Weight                      500W 4 Pole Permanent Magnet  
**8.0kg** (17.6lb)

## 5.0 INSTALLATION

### 5.1.0 Fitting Capstan To Deck

#### 5.1.1 Preparation

The capstan must always be mounted vertically. **DO NOT** mount capstan in a horizontal direction as oil will leak from the gearbox and the capstan will wear out prematurely. If the deck top is uneven a suitable mounting pad may be required to take up camber or sheer. Decks which are thin, of foam or balsa laminate construction, will require a backing piece in order to spread the load which will be applied locally to the deck while the capstan is in use. Care must be taken if the deck is of uneven thickness and a mounting pad and/or backing piece fitted that the top and bottom surfaces are parallel for optimum clamping.

#### 5.1.2 Position of Capstan

Select a site for the capstan on the deck that is a comfortable position for the operator to tail rope off the drum and preferably feed rope straight into the storage area. A position for the switch should be found that makes it accessible to the capstan operator's foot or knee.

#### 5.1.3 Access

Allow for access to the top of the drum during maintenance.

#### 5.1.4 Mounting Template

Place the mounting template in the desired position. Drill a clearance hole for the motor to pass through as detailed and four **10mm** (3/8") holes for the studs. The studs supplied suit decks and mounting pads up to **55mm** (2 1/8") thickness.

#### 5.1.4 Fitting

Place the capstan and studs through the holes in the deck, when satisfied that all is correct, fit any packing, the clamping ring, the nuts and washers, and tighten evenly and firmly using a **150mm** (6") long spanner.

#### 5.1.5 Longer Studs

For thicker than standard decks, simply fit longer studs as appropriate (Thread M8 x 1.25). Studs to special lengths may be obtained from Simpson-Lawrence Engineering Limited.

### 5.2.0 Wiring

#### 5.2.1 General Recommendations

**Warning!** Carefully check to ensure that the capstan motor is wired to correct polarity. It is possible to damage the gearbox if the motor is wired to the wrong polarity.

The wiring system should be of the two cable fully insulated return type, which avoids possible electrolytic corrosion problems. Most modern installations are negative return (negative earth) but polarity should be checked.

Solenoids should be mounted as close to the battery as possible, in a dry location using the mounting holes provided. Under no circumstances should solenoids or solenoid control boxes be installed in chain lockers or similar damp or semi exposed areas.

Overload protection must be built into the capstan wiring circuit. This protects the wiring and prevents undue damage to the capstan motor, in the event of it being stalled by an excessive load in service. It is advisable to site the breaker/isolator in a dry, readily accessible place, as it must be manually reset should an overload occur that causes it to trip to the **OFF** position.

If you are **NOT** using the Breaker/Isolator recommended, an alternative **MUST** have identical characteristics.

**NB:** Crimp terminals should be used on all wire ends for good electrical connections.

#### 5.2.2 Control Switch Installation

Follow the mounting instructions supplied with the switch. Remember when using more than one control switch, it is important to their correct operation, that they are wired in a parallel circuit.

### 5.3 Test

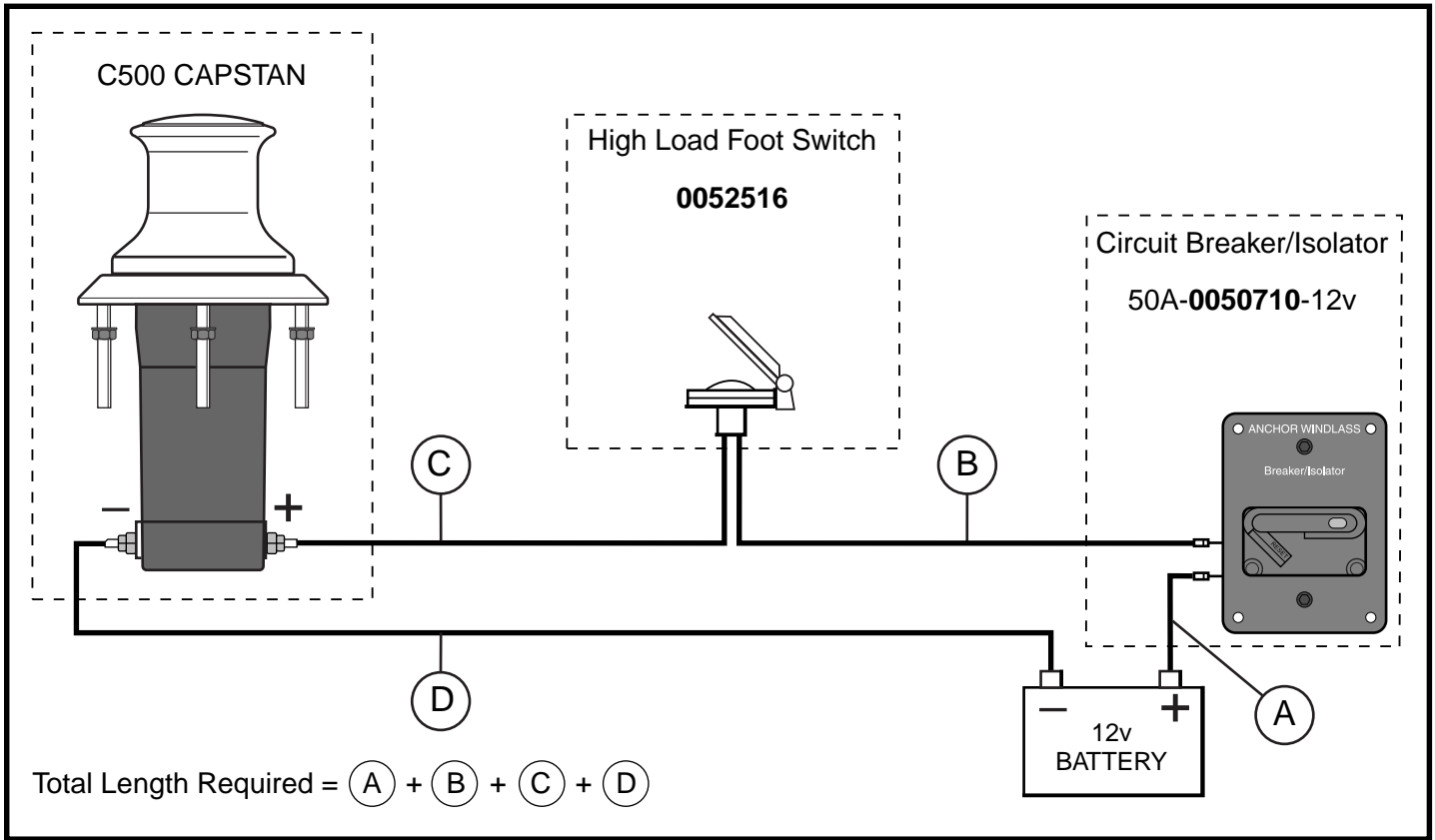
**Immediately after installation**, it is recommended that the capstan is tested to ensure it functions correctly, i.e., that it rotates freely, in a clockwise direction.

### 5.4 Protection of Below Deck Parts

Check all terminals or connections are firmly secured. Coat **ALL** below deck surfaces, including the terminals, with rubber or plastic type paint (automotive underseal is one convenient way) **OR** wrap completely in self amalgamating tape **OR** coat/protect in a similar way with some other system suitable for a marine environment.

5.5.0 Wiring Diagrams

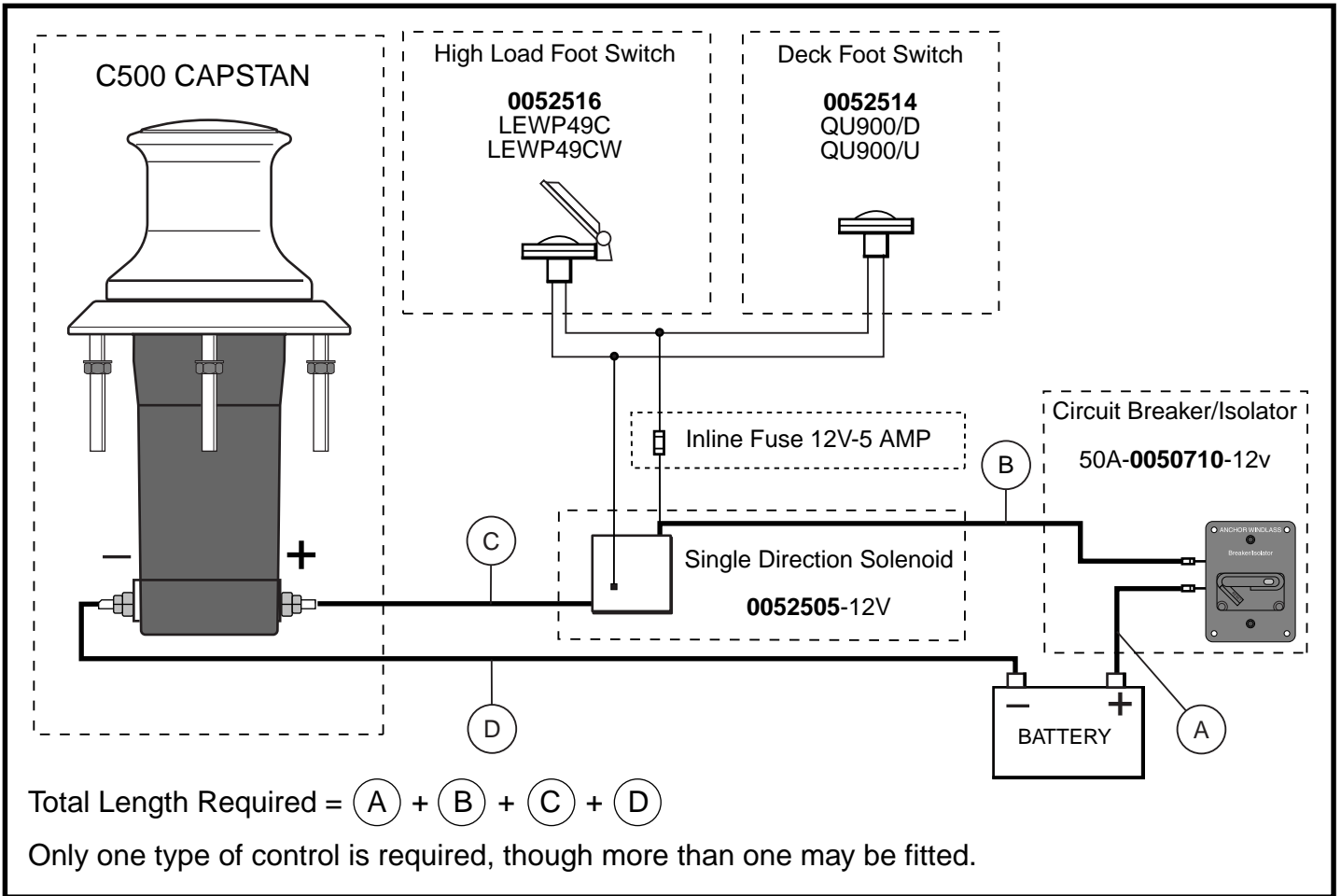
5.5.1 Single Direction Wiring (High Load Foot Switch Only)



**Note:** Reversing polarity will result in permanent damage to the capstan (see 5.2.1). ALL installations must be carried out in accordance with USCG, ABYC and NMMA requirements. If you have any questions regarding this installation contact nearest Simpson-Lawrence Agent.

WIRE	FROM	TO
Thick cable	Positive battery terminal	Breaker/Isolator
Thick cable	Breaker/Isolator	High Load Foot Switch
Thick cable	High load foot switch	Capstan positive terminal
Thick cable	Negative battery terminal	Capstan negative terminal

## 5.5.2 Single Direction Wiring



**Note:** Reversing polarity will result in permanent damage to the capstan (see 5.2.1). ALL installations must be carried out in accordance with USCG, ABYC and NMMA requirements. If you have any questions regarding this installation contact nearest Simpson-Lawrence Agent.

WIRE	FROM	TO
Thick cable	Positive battery terminal	Breaker/Isolator
Thick cable	Breaker/Isolator	Solenoid
Thick cable	Solenoid	Capstan positive terminal
Thick cable	Negative battery terminal	Capstan negative terminal
Thin wire	Solenoid	Control switch(es)
Thin wire	Control switch(es)	Main circuit (positive)
Thin wire	Solenoid	Main circuit (negative)

**Warning!** If you are not sure that you understand the above guidelines seek professional advice. **NB:** Use a minimum wire gauge of 1.5mm<sup>2</sup> (14 AWG) to connect switches.

## 6.0 OPERATING INSTRUCTIONS

### 6.1 Safety First!

Your Simpson-Lawrence Pacific capstan is a powerful piece of equipment and should be respected as such. Keep young children and observers, who are unfamiliar with anchoring procedures, away from the operating area when in use. To avoid personal injury, ensure that fingers, limbs and clothing are kept clear of the rode and capstan during operation. Always ensure there are no swimmers nearby when dropping your anchor.

Always keep the Isolator switch **OFF** except when in use.

### 6.2.0 Hauling In

#### 6.2.1 Warping

Anchor warp should be laid onto the drum, two or three turns in a clockwise direction. The operator should stand (or kneel) in a comfortable position to activate the deck switch whilst tailing the warp behind and into the storage area, if possible.

#### 6.2.2 Apply Tension

Apply a light even tension to the warp before activating the switch. If very heavy pulls are necessary apply power in short bursts of about 10 seconds duration. The speed of hauling depends on the load on the anchor and will increase after the anchor breaks free.

### 6.2.3 Caution!

Should the capstan stall, switch off and wait a few seconds before trying again. If the recommended breaker/isolator has tripped, it will require to be manually reset before the capstan can operate again. It is important to the future, good performance of the capstan's motor that the capstan is not allowed to stall for more than a few seconds and therefore, sensible to avoid stalling your capstan whenever possible.

### 6.2.4 Recovery

On retrieval, always remember to secure your anchor independently of the capstan so as to prevent accidental launch when under way.

### 6.2.5 Caution!

For safety, it is best not to wrap chain around the capstan barrel, however, if it is necessary, be aware that marking of the drum will occur.

### 6.2.6 Power off

Turn the power isolator **OFF** after use.

### 6.2.7 Warning!

**Serious damage can be caused by incorrect assembly and your guarantee may be invalidated as a result. Always proceed with care.** The Pacific family of capstans have been designed for ease of installation and removal. It should not, therefore, be necessary to remove any parts other than the nuts and washers.



## 7.0 IMPORTANT USER INFORMATION

Classification Societies require that a vessel lying to anchor should have its rode held by a chain stopper or equivalent **independent strong point** as capstans are not designed to withstand the loads generated under storm conditions. This rule should be applied to all craft!

At all times it is the responsibility of the boat user to ensure that the anchor and rode are properly stowed for the prevailing sea conditions. This is particularly important with high speed power boats as an anchor accidentally falling into the water whilst under way can cause considerable damage.

A capstan is mounted in the most exposed position on a vessel and is thus subject to severe atmospheric attack resulting in a possibility of corrosion in excess of that experienced with most other items of deck equipment. As the capstan may only be used infrequently, the risk of corrosion is further increased.

When the capstan is mounted in an anchor well with a closing lid, due to lack of ventilation and consequent high saline conditions, the rate of corrosion is accelerated. It is essential that the capstan is regularly examined, operated and given any necessary maintenance.

## 8.0 MAINTENANCE

### 8.1 General Recommendations

Isolate the capstan electrically, before carrying out any maintenance work. After the first two or three operations, check that the capstan is still fastened tightly to the deck as it should now be **bedded-in**.

Regularly wash down the above deck parts of your capstan with fresh water.

Ensure that all below deck parts are kept dry. The gears and gearbox bearings have been lubricated for you and require no regular attention. It is recommended that the gearbox and motor exteriors are regularly treated with a water repellent spray when mounted exposed within a chain locker.

Examine all electrical connections for possible corrosion. Clean and lightly grease as necessary.

### 8.2.1 Winter Laying Up

As with all items of marine equipment, poor installation or neglect is often responsible for damage caused during the winter lay up period. Given correct installation and maintenance your capstan will require little attention prior to, or after, winter lay up. Check between the deck plate and deck for signs of water ingress. Should it occur, remove, clean and reseal the deck plate.

**WARRANTY COVERAGE:** SIMPSON-LAWRENCE ENGINEERING LIMITED., warrants to the original purchaser, subject to the limitations and exclusions described below, that this product will be free from defects, in material and workmanship under normal use and service, for a period of three (3) years from the date of its original sale, except that the warranty shall be for a period of one (1) year for seals, electric motors, electrical equipment, electronic controls, composite gipsies and hydraulic pumps. Simpson-Lawrence will repair or replace any part which proves to be defective in normal use during the period of the warranty.

**WARRANTY CLAIMS PROCEDURES:** If a defect is discovered during the applicable warranty period, Buyer must promptly notify Simpson-Lawrence of such, in writing, at the nearer address below, providing proof of purchase. For warranty service, the product must be returned to Simpson-Lawrence for examination. This examination will be performed by Simpson-Lawrence at no charge to Buyer. Buyer is responsible for any labour costs associated with preparing the product or parts for shipping and the cost of shipping or transporting the product or parts to and from Simpson-Lawrence.

**REMEDY:** Simpson-Lawrence will repair any defect in material or workmanship or, at it's option, correct such defect by replacing non-conforming goods or parts. Such repairs and/or new parts are warranted for the unexpired portion of the original warranty, or for 90 days, whichever is later. Warranty work (parts and/or Labour) shall be at Simpson-Lawrence's expense; however, product preparation and shipping costs to or from Simpson-Lawrence shall be borne by Buyer. These remedies are the Buyer's exclusive remedies for breach of warranty.

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The model described in this document is subject to a policy of continual improvement. **Simpson-Lawrence Engineering Limited** reserve the right to alter specifications and recommendations without notice. For the latest information regarding any aspect of your windlass please contact your local agent or Simpson-Lawrence Engineering Limited:-

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