

65001067 Issue 2

V1 Windlass

GB

Owner's Installation, Operation &
Basic Servicing Manual



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65001067 Issue 2. V1 Windlass.

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To the best of our knowledge, the information in this manual was correct when it went to press. However, Lewmar cannot accept liability for any inaccuracies or omissions it may contain. In addition, our policy of continuous product improvement may change specifications without notice. As a result, Lewmar cannot accept liability for any differences between the product and the manual.

 This manual forms part of the product and **MUST BE RETAINED** along with, OR incorporated into, the Owner's Manual for the vessel to which the windlass is fitted.

Introduction

Dear Customer,

Thank you for choosing Lewmar windlass. Lewmar products are world renowned for their quality, technical innovation and proven performance. With a Lewmar windlass you will be provided with many years of outstanding service.

Product support

Lewmar products are supported by a worldwide network of distributors and Authorised Service Representatives. If you encounter any difficulties with this product, please contact your national distributor, or your local Lewmar dealer. Details are available at:

www.lewmar.com

CE Approvals

For CE approval certificates contact Lewmar. Important information about this manual

Safety notices

General

Please read before installing and operating your Windlass.

Classification Societies and Lewmar require that a vessel at anchor must have its rode held by a chain stopper or equivalent strong point at all times!

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 powerboats, because an anchor accidentally deploying while under way can cause considerable damage. An anchor windlass 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 windlass may only be used infrequently, the risk of corrosion is further increased. It is essential that the windlass is regularly examined, operated and given any necessary maintenance.

Please ensure that you thoroughly understand the operation and safety requirements of the windlass before commencing the installation. Only persons who are completely familiar with the controls and those who have been fully made aware of the correct use of the windlass should be allowed to use it. If there is any doubt of how to install or operate this unit please seek advice from a suitably qualified engineer.

- Windlasses used incorrectly could cause harm to equipment or crew.
- Windlasses should be used with care and treated with respect.
- Sailing, like many other sports can be hazardous. Even the correct selection, maintenance and use of proper equipment cannot eliminate the potential for danger, serious injury or death.
- Lewmar windlasses are designed and supplied for anchor control in marine applications and are not to be used in conjunction with any other use.
- It is the unavoidable responsibility of the owner or master or other responsible party to assess the risk of any operation on the vessel.

Important information about this manual

Throughout this manual, you will see safety and product damage warnings. You must follow these warnings carefully to avoid possible injury or damage.

The type of warnings, what they look like, and how they are used in this manual are explained as follows:

Warning!
This is a warning against anything which may cause injury to people if the warning is ignored. You are informed about what you must or must not do in order to reduce the risk of injury to yourself and others.

Safety Symbol
When you see the safety symbol it means: "Do not..."; "Do not do this"; or "Do not let this happen".

- Lewmar recommends the use of appropriate Personal Protective Equipment and hands free communication equipment by any person going aloft, and only then where the person going aloft is properly trained in the use of that equipment and where there remain sufficient trained and experienced personnel on deck to ensure constant observation and the continued safe conduct both of the vessel and the hoisting operation.

Fitting

- This equipment must be installed and operated in accordance with the instructions contained in this manual. Failure to do so could result in poor product performance, personal injury and/or damage to your boat.
- Consult the boat manufacturer if you have any doubt about the strength or suitability of the mounting location.

Electrical

- Make sure you have switched off the power before you start installing this product.
- If in doubt about installing electrical equipment please seek advice from a suitably qualified electrical engineer.

Electromagnetic compatibility

- It is essential that this product does not cause any electromagnetic disturbance to any other electrical or electronic equipment installed in the vessel. This will be achieved if the windlass is connected to the same battery as the vessel's starter motor and not to the service battery to which other equipment is connected. In addition, the run of the wiring, from the battery to the windlass, should be kept as far apart from the other wiring on the vessel as possible. For instance, if the main wiring loom is to starboard, fit the windlass wiring to port.

It should be noted that there is no evidence to indicate that windlass installations do cause magnetic interference but the installer is advised to carry out checks when the installation is complete.

1. Installation

1.1 Gypsy Suitability

Gypsies fitted to the V1 range of windlasses are ideally suited to handling our factory made Rope/Chain combination rodes, which consist of rope spliced to a chain tail.

Model	Gypsy	Chain	Rope
V1	000	7 mm (1/4") High Test G-4 ISO	12-14 mm (1/2") 3 strand medium lay or 8 plait nylon
	001	8 mm DIN766, 8 mm ISO	12-16 mm (1/2" - 5/8")
	002	5/16" ACCO G40	1/2" 3 strand medium lay or 1/2" 8 plait nylon
	006	6 mm DIN766	12 mm

Ropes used must be windlass grade, medium lay nylon. Ropes from different manufacturers have wide variations in stretch and consistency in diameter. Therefore, rope and chain from other manufacturers may require some experimentation to determine the optimum size.

Should you have difficulty in matching a gypsy to your chain please consult your local agent or our international network of Lewmar distributors worldwide.

1.2 Package contents

- Windlass
- Intelligent Mounting Studs, Washers and Nuts
- Winch Handle
- Base Gasket Seal
- Safety Instructions
- Mounting Template
- Instruction Booklet
- Warranty Registration Card
- Breaker/Isolator
- Control Switch
- 12 V Motor Gearbox

1.3 Additional requirements

Each installation requires:

WINDLASS INSTALLATION

The following tools:

- 10 mm (3/8") Drill
- 75 mm (3") Hole Saw
- An appropriate marine sealant

WIRING INSTALLATION

- Crimping Pliers/Wire Stripper
- Suitable electrical cable and crimp terminals

1.4 Accessories

Use only genuine Lewmar parts and accessories to ensure top performance and eliminate the risk of voiding your warranty. For replacement parts, please see Sec. 6 or visit your dealer or the Lewmar web site.

1.5 Specifications

Typical working figures:

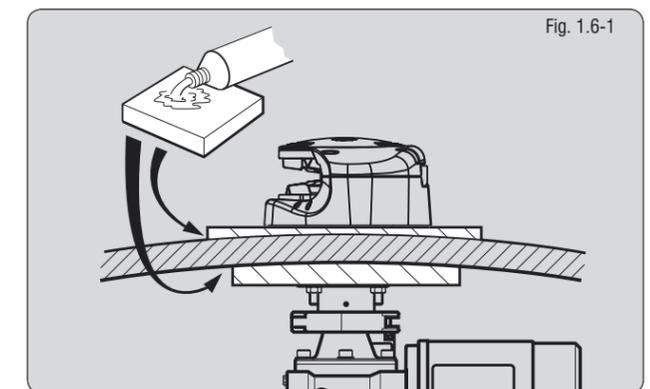
V1 Windlass	
Max. Pull	454 kg (1,000 lb)
Max. Line Speed	Freefall
Typical Working Load	114 kg (250 lb)
Normal Line Speed	14 m/min (46 ft/min)
Line Weight	20 kg (65 lb)
Boat Size	up to 13.7 m (45 ft)

1.6 Fitting the windlass to the deck

- If the deck is not flat, a suitable mounting pad may be required to take up camber or sheer.

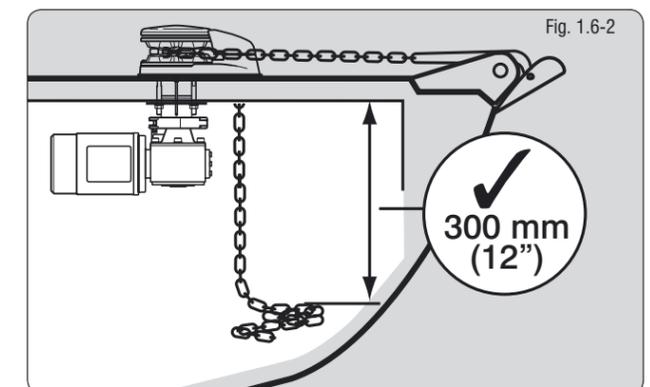
Decks that are thin, or of foam or balsa laminate construction, will require reinforcement in order to spread the loads that will be applied to the deck while the windlass is in use.

The standard 8 mm threaded mounting studs supplied suit deck and packing thickness of up to 60 mm (2 1/4"). These are adequate for most installations.



- Place the windlass on the deck and decide upon a position for it with reference to the vessel's bow roller (Fig. 1.6-2) and the chain locker below. Rode lead from the roller should ideally be fed horizontally back to the top of the gypsy and along its centerline (Fig. 1.6-3).

There must be sufficient vertical fall for the chain or rope, even with a full locker, to draw the rode from the gypsy when hauling in.



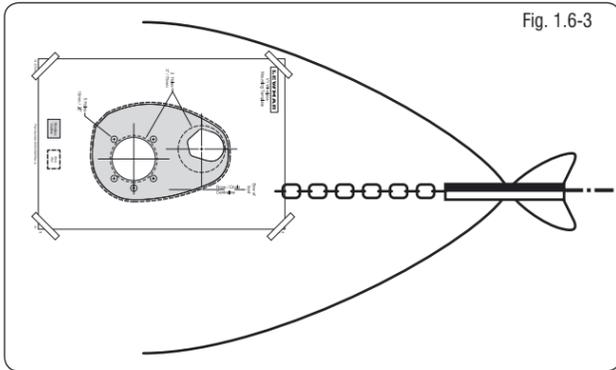


Fig. 1.6-3

- Place the mounting template on the deck or mounting pad in the desired position for the windlass and hold it in place using adhesive tape.

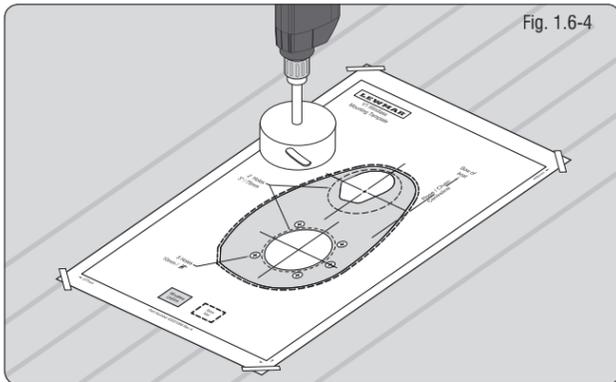


Fig. 1.6-4

- Using a 10 mm (3/8") diameter drill, make the five holes for the mounting studs and sensor. With a 75 mm (3") diameter hole saw, make two holes for the rode and down tube to pass through.

When all the holes have been made, remove the template. To help avoid water absorption by the deck, apply an appropriate marine sealant to the freshly cut hole edges.

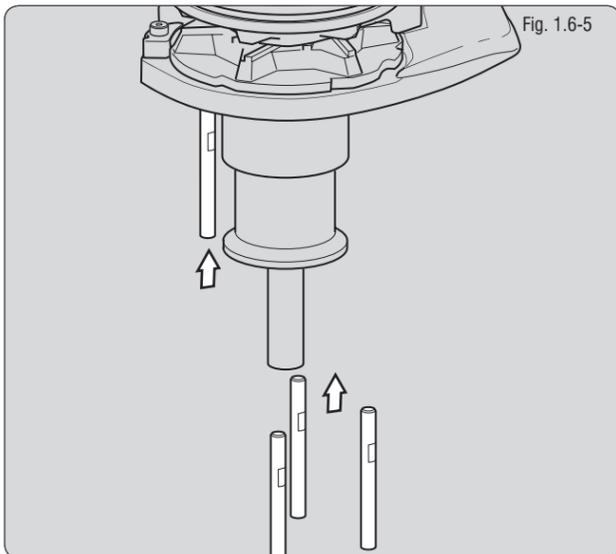


Fig. 1.6-5

- Fully screw the four mounting studs into the base of the windlass. Screw the studs into the base finger tight, with the flats towards the base as shown (Fig 1.6-5).

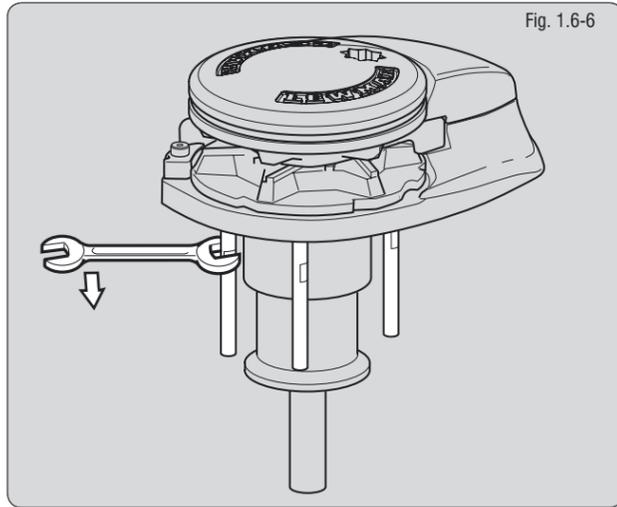


Fig. 1.6-6

- Next, using a 7 mm (1/4") spanner on the flats, tighten the studs until they bottom out in their holes. Do this to each of the studs in turn.

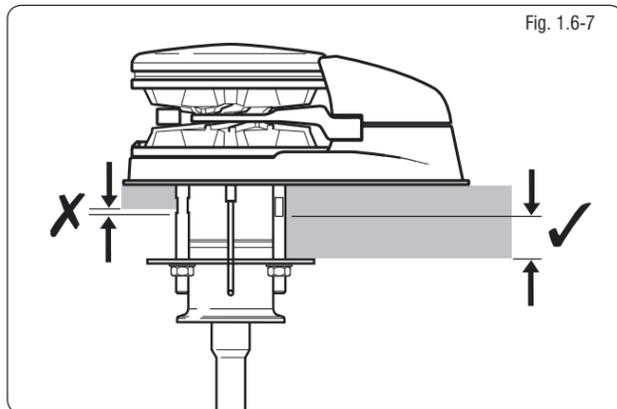


Fig. 1.6-7

- Place the base mat in position on the deck, optionally, apply a suitable sealant to the base of the windlass, any mounting pad or around the studs.

DO NOT use a permanent adhesive/sealant, e.g., 5200

As a rule of thumb, if the flats on the studs are visible below deck, the deck and/or any packing is likely to be too thin to offer adequate support when the windlass is under load.

- **NOTE: If using silicone or other rubbery type sealant, it is advisable to allow curing of the sealant before final tightening of the mounting nuts.**

1.7 Fitting the motor gearbox

- Under the deck lightly coat the shaft with grease before assembling the motor gearbox.

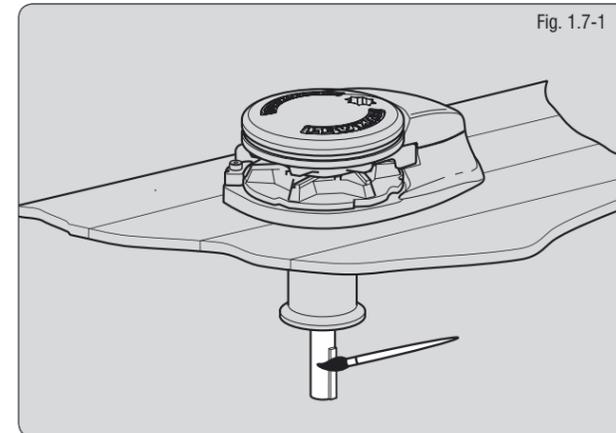


Fig. 1.7-1

- Remove the nyloc nut from the end of the Fast Fit clamp bolt and screw the bronze nut up to the end of the thread.

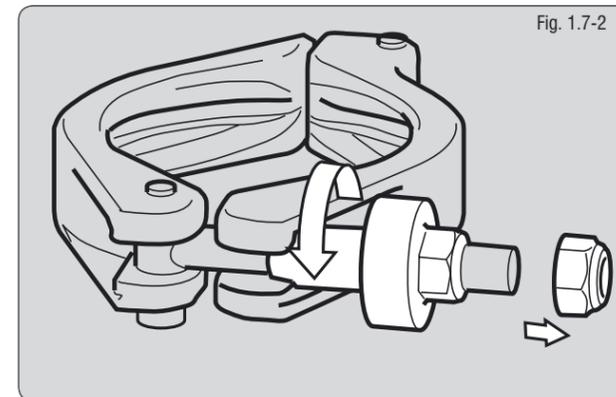


Fig. 1.7-2

- Open up the Fast Fit clamp and offer the gearbox up to the above deck unit, sliding the shaft into the gearbox. Ensure the drive key is in place.

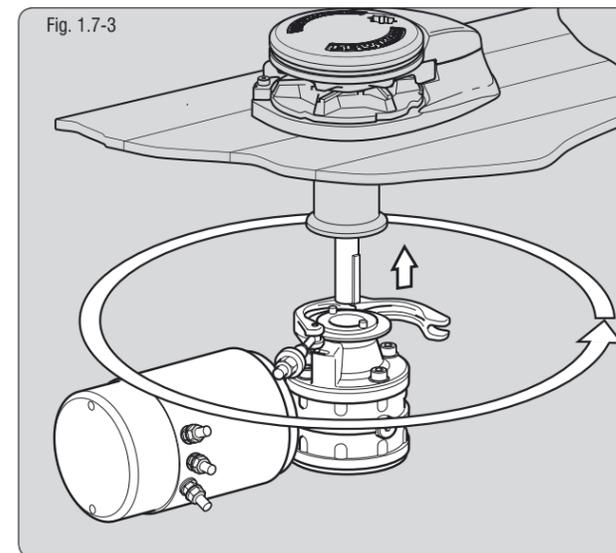


Fig. 1.7-3

- Place the gearbox up the shaft and rotate it into a suitable position before finally pushing home onto the location dowels.

Swing the Fast Fit clamp shut and tighten up the bronze nut by hand. If required you can remove the plastic location plug holding the Fast Fit clamp in place and rotate the clamp around the gearbox flange to give a better location for tightening up the nut.

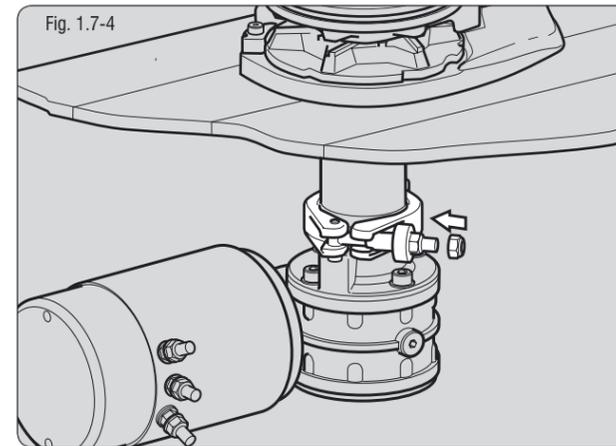


Fig. 1.7-4

- Tighten up the bronze nut to 15 Nm (11 lb/ft) before adding the Nyloc nut. Tighten the Nyloc nut up behind the bronze nut.

2. Electrical wiring installation

2.1 Electric cable selection

To achieve the best performance and to safeguard your electrical system it is essential that any electrical windlass be 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 10%.

The following table gives recommended cable sizes. The recommendations are based on total length of cable required, from the battery, following the route of the cables.

- **Total length of cable run is from the battery to the windlass, and from the windlass back to the battery.**

DO NOT confuse cable Length with the length of the vessel!

Boat Length		Cable Length Up To		Cable Size	
m	(ft)	(ft)	(m)	(AWG)	(mm ²)
7	25	0 - 33	0 - 10	6	16
9	30	34 - 60	11 - 18	3	25
11	35	61 - 80	19 - 24	2	35
14	45	81 - 125	25 - 38	0	50

- In Multi Station installations 14 AWG wire (1.5 mm² cross sectional area, 21/0.30 PVC covered) is used to connect the switches to the reversing control box.

2.2 Wiring

Plan the installation to suit the controls and give the operator a full view of the windlass. The wiring system should be of the two cable fully insulated return type, which avoids possible electrolytic corrosion problems. We recommend the use of Type III stranded, tinned copper wire with copper crimp terminals. Most modern installations are negative return (negative ground) but polarity should be checked. If necessary add a grounding strap between the mounting studs and an earthing point.

DO NOT install the contactor in the anchor locker.

If a contactor is installed in an anchor locker it is exposed to harsh conditions it is not designed to withstand. Furthermore this type of installation will void your warranty.

Overload protection, in the form of the circuit breaker/isolator supplied, must be built into the windlass wiring circuit. This protects the wiring and prevents undue damage to the windlass motor, in the event of its being stalled by an excessive load in service.

It is advisable to site the circuit breaker/isolator in a dry, readily accessible place. The Breaker/ Isolator supplied must be manually reset should an overload occur that causes it to trip to the off position.

- **NOTE: Prior to fitting crimps on the motor end of the cables fit a rubber boot supplied, to the end of each cable. Apply a layer of grease to the inside of the rubber boot to further protect the connection.**
- **NOTE: Crimp terminals should be used on all wire ends wherever possible for good electrical contacts.**

If you are not sure you understand these guidelines, seek professional help. Ensure that the installation complies with USCG, ABYC, NMMA or other local regulations.

2.3 Control switch installation

Follow the mounting instructions supplied with the switch. Remember, in a multi station installation all switches must be wired in a parallel circuit.

2.4 V1 Wiring diagram

Choice of cable thickness depends on total cable length:

$$A + B + C + D + E =$$

Battery to windlass, windlass to battery.

Model	Motor	Breaker / Isolator	Contactor
V1	12 V	90 A (68000349)	N/A

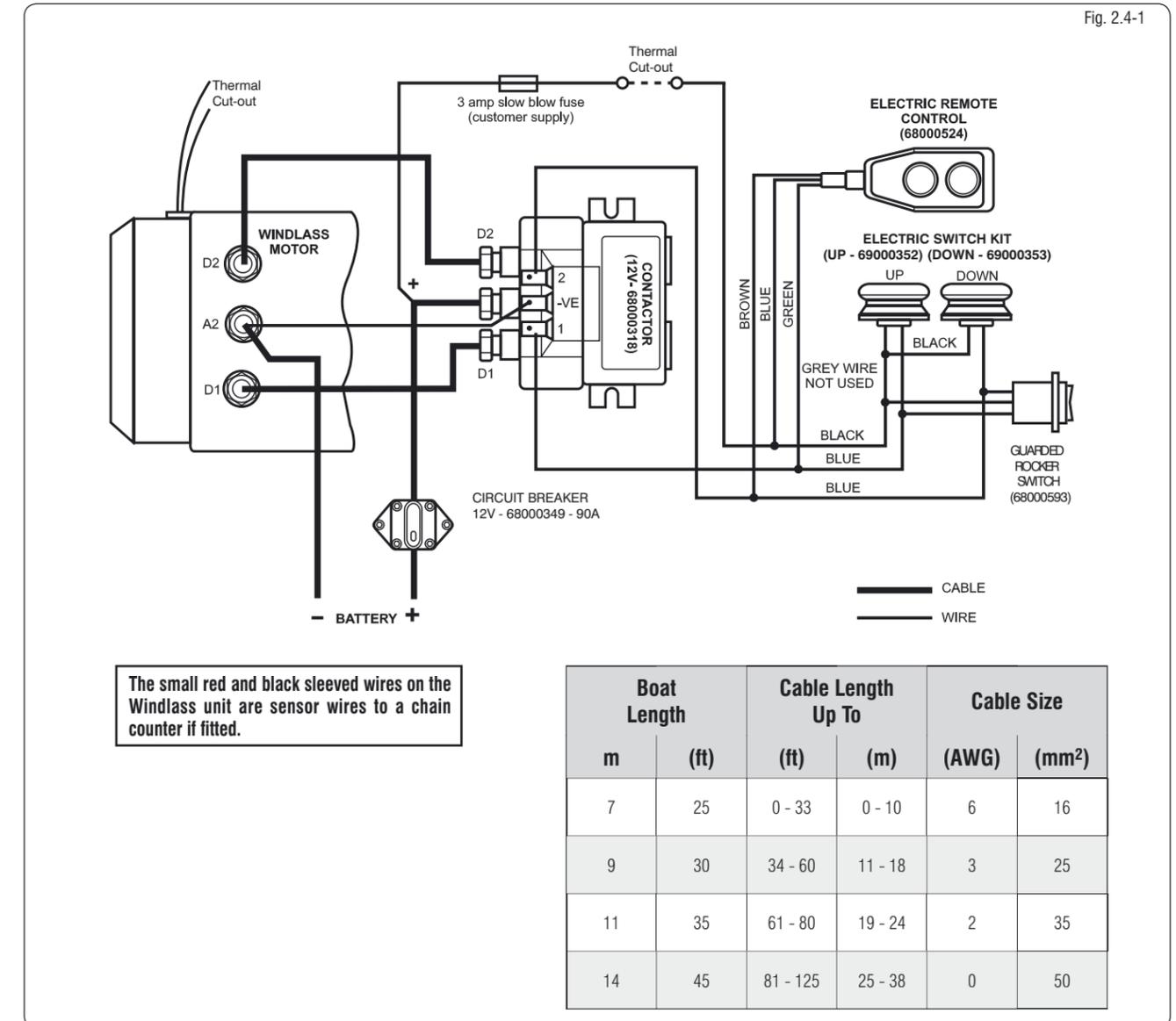


Fig. 2.4-1

The small red and black sleeved wires on the Windlass unit are sensor wires to a chain counter if fitted.

Boat Length		Cable Length Up To		Cable Size	
m	(ft)	(ft)	(m)	(AWG)	(mm ²)
7	25	0 - 33	0 - 10	6	16
9	30	34 - 60	11 - 18	3	25
11	35	61 - 80	19 - 24	2	35
14	45	81 - 125	25 - 38	0	50

- **NOTE: Wireless remote also available.**
- **NOTE: Wireless remote can only be used if a contactor is fitted. See wireless remote instructions for wiring details.**

Model	Item	Description
Wireless Remotes	68000844	3 Button Windlass only
	68000845	5 Button Windlass & Thruster

3. Operating your windlass

As a prudent act of seamanship, anchor recovery operations require the undivided attention of skipper and crew to prevent personal injury or damage to the vessel.

In a typical anchor recovery situation, the windlass will pass through a number of operational phases.

3.1 Safety first

To avoid personal injuries ensure that limbs, fingers and clothing are kept clear of the anchor rode and windlass during operation. Always ensure that there are no swimmers or divers nearby when dropping your anchor.

- **NOTE: Electric motors can get hot during (and for some time after) use - DO NOT touch the motor gearbox!**

3.2 Use of clutch

To tighten the clutch - using the winch handle supplied, rotate the gypsy drive cap (22) clockwise, this will grip the gypsy, effectively locking it to the windlass geartrain.

To slacken the clutch - turn the gypsy drive cap anti-clockwise, this will free the gypsy allowing it to turn independently of the windlass geartrain.

⚠ Always remove the handle after use.

3.3 Letting go under gravity

⚠ Always check the fallsafe pawl (32) is disengaged from the gypsy and held clear of it by the fallsafe lever (34).

Insert the winch handle into the gypsy drive cap (22) (top cap lock nut (24), manual recovery version) and turn it clockwise to ensure that the clutch is tight. Release any independent anchor locks. If it is safe to do so, pull back on the clutch lever until the anchor and rode begin to pay out. Control the rate of decent of the anchor by pushing the clutch lever forwards. When sufficient rode has been paid out, fully tighten the gypsy drive cap once again.

3.4 Letting go under power

Release any independent anchor locks.

If it is safe to do so, let go under power by operating a 'Down' control. Release the control when sufficient rode has been paid out.

3.5 Lying to anchor safely

Vessels at anchor will snub on the rode and this can cause slippage or apply excessive loads to the windlass.

⊘ For maximum safety and to prevent damage, the fallsafe pawl MUST NOT be left to take the entire force from the anchor rode while at anchor. The rode should be made fast directly to a bollard, sampson post or cleat.

3.6 Hauling in

Untie the bridle or replace the rode in the gypsy.

If it is safe to do so, operate an 'Up' control.

The fallsafe pawl (12) does not need to be disengaged during retrieval as it will act as a ratchet. When the anchor has been retrieved and is stowed in the bow roller, the fallsafe pawl should be left engaged in the gypsy to prevent accidental deployment of the anchor whilst underway.

REMEMBER - The fall safe pawl DOES need to be disengaged from the gypsy before the anchor can be let go again.

Having retrieved the anchor, ensure it is independently secured to prevent its accidental release.

3.7 Manual recovery

Turn the power off at circuit breaker. Engage fall safe pawl (12), in the gypsy. Undo the manual recovery top nut (24) by approximately half a turn using the winch handle. Place the winch handle into the bi-square in the gypsy cap (25) and wind clockwise to haul in rode. When the rode is fully hauled in it should be made fast directly to a bollard, Sampson post or cleat.

⚠ Always remove the handle after use.

3.8 Operating tips

When anchoring, it is best to power the rode out, allowing the vessel to take up stern way before full scope is let out. This helps prevent the rode from becoming tangled on top of your anchor on the seabed.

To aid anchor recovery, we recommend that the vessel's engine be used to assist by moving the vessel towards the anchor. We do not recommend that the vessel be motored over and beyond the anchor, as this can cause the rode to damage your topsides.

As the anchor approaches the stemhead, the last few feet of rode should be inched in by judicious use of controls to avoid damage to the vessel.

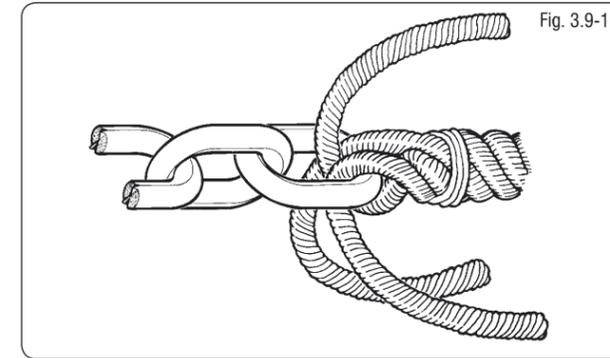
Having retrieved the anchor, ensure the fall safe pawl is engaged in the gypsy to lock it and prevent accidental deployment of the anchor whilst underway.

When mooring stern to, at a suitable distance from the jetty, deploy the anchor to prevent the bow from swinging. Gently pay out the rode under the influence of the stern way of the vessel as it approaches the jetty. Make fast your vessel with warps from the stern.

3.9 Joining rope to chain

When splicing rope to chain, select a length of chain that will avoid having the splice positioned in the gypsy when the anchor comes over the stemhead. Furthermore, ensure that the splice is no tighter than the rope. A hard splice is not desired.

- With whipping twine or similar, seize your rope 200 mm (8") from the rope's end and unlay the strands.
- Pass one strand through the chain link from one side and the other two strands from the opposite side. Remove seizing and complete a back splice in the normal manner for four full tucks.
- With a hot knife pare down the three strands by one half of their diameter and continue with two further tucks.
- With a hot knife, carefully melt the ends back into the line. Because of wide variations in rope type and construction some experimentation may be required.
- Whip the line with permanent whipping at the beginning of the taper.
- The above method of joining is designed to minimize chafe between the rope and chain but as a matter of prudent seamanship the splice should be checked regularly and remade if there is any evidence of wear.



4. Maintenance

4.1 General recommendations

⚠ Isolate the windlass electrically, before carrying out any maintenance work and tie rode off to a suitable secure point.

- After the first two or three anchor recoveries, check the mounting nuts to ensure that the windlass is still fastened tightly to your deck, as it should now be bedded-in.
- Regularly wash down the exterior of your windlass with fresh water.

- Examine all electrical connections for possible corrosion, clean and lightly grease as necessary.
- Anchor rode splice should be checked regularly and remade if there is any evidence of wear.
- The gypsy should be examined on a regular basis, because it is a high wear item. The gypsy is designed for short scopes of chain and will last longer if properly used.
- At least every six months - Check mounting studs and nuts for condition and tightness.
- The bearing is self lubricating and should not require servicing.

5. Dismantling procedures

⚠ Isolate the windlass electrically, before carrying out any maintenance work.

5.1 Gypsy replacement

Remove the two socket head cap screws (34) that retain the chain pipe cover (11) using a 5 mm Allen key and lift the chain pipe cover off. Remove the rode from the gypsy. Remove the gypsy drive cap (22) anti-clockwise using the winch handle.

Remove the washer (5) and top cone (15). Pull the control arm (23) back to clear the gypsy (31) and remove the gypsy assembly from the unit. To replace the gypsy assembly, reverse the above procedure. Grease the threads of the chain pipe cover and stripper screw prior to re-assembly.

5.2 Manual recovery gypsy replacement

Remove the two socket head cap screws (34) that retain the chain pipe cover (11) using a 5 mm Allen key and lift the chain pipe cover off. Remove the rode from the gypsy. Remove the manual recovery top nut (24), anti-clockwise using the winch handle. Remove the manual recovery gypsy cap (25) and washer (4) together.

Remove the washer (5) and top cone (15). Pull the control arm (23) back to clear the gypsy (31) and remove the gypsy assembly from the unit. To replace the gypsy assembly, reverse the above procedure. Grease the threads of the chain pipe cover and stripper screw prior to re-assembly

5.3 Control arm replacement

This should be carried out with the gypsy (31) removed as detailed above. To remove the control arm (23). Unscrew the

control arm shoulder screw (8) using a 4 mm Allen wrench and remove screw. Remove the control arm (23) and torsion spring (7) from the base plate. To replace the control arm, reverse the above procedure.

5.4 Motor gearbox maintenance

Regular visual inspection of the unit, electrical connections and cables is required. Repair/renew cables if damage is evident. Re-grease the terminals as required.

If corrosion is evident on the motor or gearbox, clean and repaint with a suitable marine grade oil based enamel paint.

Annually- Remove motor and cover and blow (use face mask) dust away using foot pump or similar.

5.5 Fall safe pawl replacement

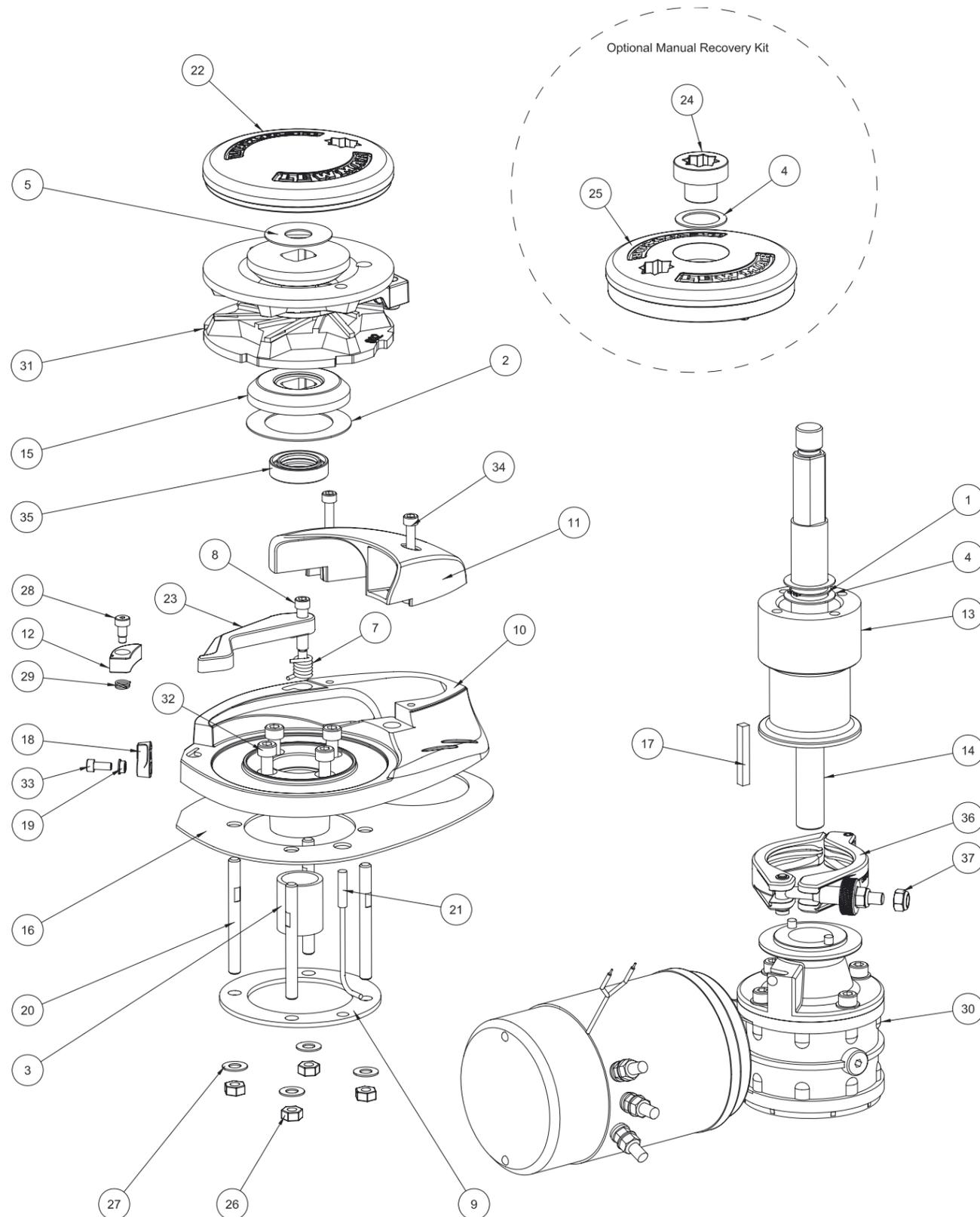
This should be carried out with the Gypsy (31) removed as detailed above. Turn the fall safe lever (18) so it is horizontal. Remove fall safe shoulder screw (28) using allen wrench. Lift off fall safe pawl (12). Remove fall safe spring (29). Replace new parts by reversing the above procedure.

5.6 Fall safe lever replacement

Turn fall safe lever (18) so it is horizontal. Remove socket screw (33) using allen wrench. Remove fall safe lever (18) & spacer (19). Replace new parts by reversing the above procedure.

6. Parts list

6.1-1



6.1 Service kits

Kit	Description	Items Included (Qty)
66000060	Cap Kit	22(1)
66000624	V1 Base	3(1), 10(1), 35(1)
66000625	Chain Pipe Cover	11(1), 34(2)
66000626	Fastener Kit	1(1), 2(1), 4(3), 5(1), 8(1), 17(1), 28(1), 33(1), 34(2)
66000627	Drive Kit	1(1), 2(1), 3(1), 4(3), 5(1), 14(1), 15(2), 17(1), 35(1)
66000628	Manual Recovery Pawl Kit (Fall Safe)	12(1), 18(1), 19(1), 28(1), 29(1), 33(1)
66000629	Motor Gearbox	30(1)
66000631	Mounting Kit (Metric)	9(1), 16(1), 20(1), 26(4), 27(4)
66000632	Fast Fit Assy.	36(1), 37(1)
66000633	Deck Spacer Kit	13(1), 32(4)
66200076	Sensor & Magnet Kit	21(1), Magnet(1)
66810030	Control Arm Kit	7(1), 8(1), 23(1)
66810065	Motor Gearbox Kit	17(1), 30(1), 36(1), 37(1)
66840054	Manual Recovery Kit	4(1), 24(1), 25(1)
68000360	V Range Gypsy & Stripper Kit (000)	31(1), Magnet(1)
68000361	V Range Gypsy & Stripper Kit (001)	31a(1), Magnet(1)
68000362	V Range Gypsy & Stripper Kit (002)	31b(1), Magnet(1)
68000840	V Range Gypsy & Stripper Kit (006)	31c(1), Magnet(1)

6.2 Parts list key

Item	Description	Qty.	Part No.
1	Circlip	1	66000626 or 66000627
2	Rubber Washer	1	66000626 or 66000627
3	Bush	1	66000624 or 66000627
4	Washer	3	66000626 or 66000627 or 66840054
5	Washer	1	66000626 or 66000627
7	Spring	1	66810030
8	Shoulder Arm	1	66000626 or 66810030
9	Ring Washer	1	66000630 or 66000631
10	V1 Baseplate Machining	1	66000624
11	V1 Chainpipe Cover	1	66000625
12	V1 Manual Recovery Pawl	1	66000628
13	Fast Fit Deck Unit Adaptor	1	66000633
14	Mainshaft	1	66000627
15	Cone	2	66000627
16	Basemat	1	66000630 or 66000631
17	Key	1	66000626 or 66000627 or 66810065
18	V1 Fall Safe Lever	1	66000628
19	Fall Safe Lever Spacer	1	66000628
20	V1 Stud (Metric)	4	66000631
21	Reed Switch 6 x 25	1	66200076
22	Top Nut V2/3	1	66000060
23	V2 & V3 Control Arm (Mk2) Finishing	1	66810030
24	Top Cap Lock Nut V2/3 Manual Recovery	1	66840054
25	Top Cap V2/3 Manual Recovery	1	66840054
26	M8 Nut	4	66000631
27	M8 & 5/16" Washer	4	66000630 or 66000631
28	Fall Safe Shoulder Screw	1	66000626 or 66000628
29	V700 Fall Safe Spring	1	66000628
30	V1 Motor Gearbox Assy.	1	66000629 or 66810065
31	Gypsy & Stripper (000)	1	68000360
31a	Gypsy & Stripper (001)	1	68000361
31b	Gypsy & Stripper (002)	1	68000362
32	Socket HD Cap Screw	4	66000633
33	Socket HD Cap Screw	1	66000626 or 66000628
34	Socket HD Cap Screw	2	66000625 or 66000626
35	Seal	1	66000624 or 66000627
36	Fast Fit Clamp	1	66000632 or 66810065
37	Nylock Nut	1	66000632 or 66810065

7. Troubleshooting

7.1 Anchor rode pays out independently while windlass is not in use

This problem is a result of not securing the anchor rode combined with the gypsy drive cap (22) being slack. Tighten the gypsy drive cap using the tool provided and always secure the anchor rode independently of the windlass whenever it is not being deployed or recovered.

7.2 Electrical troubleshooting

As with most electrical marine equipment the majority of problems that arise are electrical in nature. Therefore it is essential that the proper voltage be maintained. The proper voltage on a 12 volt system is 13.5 volts. (Constant low voltage will destroy the motor). Ensure that electrical cable size is large enough to handle 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 10%.

Follow the charts to troubleshoot the problem.

Failure to Operate Troubleshoot Chart: Reversing Toggle Control Switch (Part No. 0052519)	
Is there voltage at the input terminal (positive) to the control switch?	If no voltage is present, the battery isolation switch is OFF, the breaker is tripped or a fuse has blown. The battery may also have been dead or disconnected.
YES ↓ NO →	
Check voltage at the output terminals of the control switch with the switch on forward then reverse. Is there voltage at either output terminal for forward then reverse?	Control switch is defective.
YES ↓ NO →	
Replace motor.	

Sluggish Operation Troubleshoot Chart	
Is windlass overloaded?	Ease the load and ensure the battery is well charged.
YES ↓ NO →	
Check the voltage across the motor leads with the windlass on. (Proper voltage is 13.5 V. Constant low voltage will destroy the motor). Is the voltage low? (Below 11.0 V on a 12 V system).	There is a severe voltage drop in the circuit. Check for undersized cables, poor connections or corroded connections. Also check for resistance across the battery isolation switch or solenoid. (Feel them to see if they are heating up).
YES ↓ NO →	
Is the voltage correct? (Above 11.0 V and anchor is not fouled).	The motor is defective. Replace the motor.
YES →	

8. Lewmar limited warranty

LIMITED WARRANTY and KEY TERMS OF SUPPLY BY LEWMAR

Lewmar warrants that in normal usage and with proper maintenance its products will conform with their specification for a period of five years from the date of purchase by the end user, subject to the conditions, limitations and exceptions listed below. Any product, which proves to be defective in normal usage during that five-year period, will be repaired or, at Lewmar's option, replaced by Lewmar.

A CONDITIONS AND LIMITATIONS

- i Lewmar's liability shall be limited to the repair or replacement of any parts of the product which are defective in materials or workmanship.
- ii Responsibility for the selection of products appropriate for the use intended by the Buyer shall rest solely with the Buyer and Lewmar accepts no responsibility for any such selection.
- iii Lewmar shall not be liable in any way for Product failure, or any resulting loss or damage which arises from:
 - a use of a product in an application for which it was not designed or intended;
 - b corrosion, ultra violet degradation or wear and tear;
 - c a failure to service or maintain the product in accordance with Lewmar's recommendations;
 - d faulty or deficient installation of the product (unless conducted by Lewmar);
 - e any modification or alteration of the product;
 - f conditions that exceed the product's performance specifications or safe working loads.
- iv Product subject to a warranty claim must be returned to the Lewmar outlet which supplied the product for examination unless otherwise agreed by Lewmar in writing.
- v This warranty does not cover any incidental costs incurred for the investigation, removal, carriage, transport or installation of product.
- vi Service by anyone other than authorised Lewmar representatives shall void this warranty unless it accords with Lewmar guidelines and standards of workmanship.
- vii Lewmar's products are intended for use only in the marine environment. Buyers intending to use them for any other purpose should seek independent professional advice as to their suitability. Lewmar accepts no liability arising from such other use.

B EXCEPTIONS

Cover under this Warranty is limited to a period of one year from the date of purchase by the end user in the case of any of the following products or parts of products:

- Electric motors and associated electrical equipment
- Electronic controls
- Hydraulic pumps, valves and actuators
- Weather seals
- Products used in "Grand Prix" racing applications

C LIABILITY

- i Lewmar's liability under this warranty shall be to the exclusion of all other warranties or liabilities (to the extent permitted by law). In particular (but without limitation):
 - a Lewmar shall not be liable for:
 - Any loss of anticipated turnover or profit or indirect, consequential or economic loss ;
 - Damages, costs or expenses payable to any third party;
 - Any damage to yachts or equipment;
 - Death or personal Injury (unless caused by Lewmar's negligence).

Some states and countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

- b Lewmar grants no other warranties regarding the fitness for purpose, use, nature or satisfactory quality of the products.
- ii Where applicable law does not permit a statutory or implied warranty to be excluded, then such warranty, if permitted by that state or country's law, shall be limited to a period of one year from the date of purchase by the end user. Some states and countries do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you.

D PROCEDURE

Notice of a claim for service under this warranty shall be made promptly and in writing by the end user to the Lewmar outlet which supplied the product or to Lewmar at Southmoor Lane, Havant, Hampshire, England PO9 1JJ.

E SEVERANCE CLAUSE

If any clause of this warranty is held by any court or other competent authority to be invalid or unenforceable in whole or in part, the validity of the remaining clauses of this warranty and the remainder of the clause in question shall not be affected.

F OTHER RIGHTS

This warranty gives you specific legal rights, and you may also have other legal rights, which vary, from state to state and country to country. In the case of European States a Consumer customer (as defined nationally) has legal rights under the applicable national law governing the sale of Consumer Goods; this Warranty does not affect those rights.

G LAW

This warranty shall be governed by and read in accordance with the laws of England or the state or country in which the first end user is domiciled at the time of purchase of the product.

H DISPUTES

Any dispute arising under this warranty may, at the option of the end-user, be referred to alternative dispute resolution under the rules of the British Marine Federation or to the Courts of the State whose law shall govern the warranty or to the Courts of England and Wales.

The British Marine Federation may be contacted at Marine House, Thorpe Lea Road, Egham, England, TW20 8BF



www.lewmar.com

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