



# STORM

## VR - VRC 850 VERTICAL WINDLASS

ITEM	PART NUMBER	DESCRIPTION	QTY
1	P07-CLN316VRC0850	CLUTCH NUT SS316 VRC850	1
2	P04-CAPSS00850A	CAPSTAN SS316 VRC850A	1
3	K06-SFTVRC0850A	SHAFT ASSEMBLY VRC850A	1
4	R41-ORC02082501.8	O RING SEAL 28.5X25X1.75 (BS022)	1
5	R43-SEA0350025.08.5	SEAL 25 X 35 X 7 (TG12463)	1
6	P19-S-TR3040850AF	STRIPPER SS304 VRC850AF-SPOON TYPE	1
7	P22-BSE31600850A	BASE SS316 VRC850A	1
8	S13-30408.00030	BOLT HEX HD SS304 8MM X 30MM	4
9	S45-30408.00070	SCREW SHCS SS304 8MM X 70MM	4
10	S33-30408.00020	SCREW CSK SL MT 304 8MM X 20MM	1
11	R61-DU252830	BASE BUSH BRONZE SELF LUBRICATING	1
12	S33-30404.76010	SCREW CSK SL MT 304 0-3/16 X 0-3/8 INCH	2
13	S76-30410.00	WASHER SPRING SS304 10MM	3
14	S75-30410.00	WASHER FLAT SS304 10MM	3
15	S20-30410.00	NUT HEX SS304 10MM	3
16	P24-STD3040850A	STUD SS304 VRC850A	3
17	P05-PLR3160850	PEELER SS316 VRC850AF SPOON TYPE	1
18	P05-CV3160850A	CHAIN COVER SS316 VRC850A	1
19	P05-CV3160850AINS	CHAIN COVER INSERT	1
20	P02-304012.2008.109	BUSH SS304 VRC1000A CHAIN COVER	1
21	S45-30408.00030	SCREW SHCS SS304 8MM X 30MM	1
22	R40-FGRPVRC850A	FINGER PVC VRC850A	1
23	S36-SPR304FGRATL	SPRING FINGER ATLANTICS	1
24	S35-30408.0006	SCREW GRUB 304 1/8 X 8MM	1
25	P15-PIN30419.05X27	PIN - FINGER ATLANTICS	1
26	F90-HANDHDPZ00	HANDLE HDPE Ø (200mm)	1
27	R60-DADDP049P00850NY	VRC850 ATLANTIC ADAPTOR BASE	1
28	S46-30408.00030	SCREW THUMB SS303 1/8 X 30MM	1
29	R41-ORG01100701.8	O RING SEAL 11 X 10.7 X 1.75 (BS011)	1
30	S75-30410.00030	WASHER SS304 30 X 10 X 2.5MM	1
31	S76-30410.00	WASHER SPRING SS304 10MM	1
32	S36-30410.00025	SCREW HEX HD SS304 10MM X 25MM	1
33	P22-BSE31600850B	BASE INSULATION PAD	1

A GYPSY  
B MOTOR / GEARBOX ASSEMBLY

**TOLERANCES (mm)**  
 X ±  
 XX ±  
 XXX ±  
 UNLESS OTHERWISE SPECIFIED

**MATERIAL**

**FINISH**

**WINDLASSES AUSTRALIA**

**TITLE** STORM VRC850  
**EXPLODED VIEW**

**PART No.** K08-STORMVRC0850

**DRN** T  
**DATE** 22/5/07  
**APP1** APP2  
**SCALE** NTS  
**SIZE** A4

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# Contents

**Introduction** page 3

Important Information  
Safe Operation

**Installation** page 4

Installation Instructions  
Rope Chain Management System Installation  
Depth of the Chain Locker

Handy Hints Page 7

**Electrical information** page 7

Circuit Breaker  
Deck Switch  
Isolating Switch  
Batteries  
Direction of Rotation  
Solenoid Installation  
Wiring Layout

**Operation and Servicing** page 9

Manual Operation  
Anchoring  
Retrieving Chain  
Rope Hauling on Capstan  
Servicing Instructions  
Maintenance and Assembly Instructions  
Rope Chain Management System Adjustment

**Troubleshooting** Page 12

**Warranty and Warranty Registration Card** Page 13

## Drawings

Deck Template  
Wiring diagram for 12/24V DC Two wire 600W motor  
Exploded Views for the **STORM VR and VRC 850**

ITEM	PART NUMBER	DESCRIPTION	QTY
1	P07-CLN316VR00850A	CLUTCH NUT SS316 VR850A	1
2	P23-316050_8022_305	ID WASHER SS 316 2" x 7/8" x .5MM	1
3	K06-SFTV/R00850A	SHAFT ASSEMBLY VR850A	1
4	R41-ORC0280501 B	O RING SEAL .28 X.65X1.75 (BS022)	1
5	R42-SEA036025_06.5	SEAL .25 X .35 X .7 (IC12463)	1
6	P19-S-TR3040850AF	STRIPPER SS304 VRC850AF-SPOON TYPE	1
7	P22-B-BE31600850A	BASE SS316 VRC850A	1
8	S13-30406 00030	BOLT HEX-HD SS304 6MM X 30MM	4
9	S45-30408 00070	SCREW SHCS SS304 8MM X 70MM	1
10	S33-30408 00020	SCREW CSK SL MT 304 8MM X 20MM	1
11	R51-DU252830	SCREW CSK SL MT 304 6-3/16 X 0-3/8 INCH	2
12	S33-30404 76010	WASHER SPRING SS304 10MM	3
13	S76-30410 00	WASHER FLAT SS304 10MM	3
14	S75-30410 00	NUT HEX SS304 10MM	3
15	S20-30410 00	STUD SS304 VRC850A	3
16	P24-STD3040850A	PEELER SS316 VRC850AF SPOON TYPE	1
17	P05-PLR3160850	CHAIN COVER SS316 VRC850A	1
18	P05-CCV3160850A	CHAIN COVER INSERT	1
19	P02-304012 2008 109	BUSH SS304 VRC1000A CHAIN COVER	1
20	S45-30408 00030	SCREW SHCS SS304 8MM X 30MM	1
21	R40-FGRPVC0850A	FINGER PVC VRC850A	1
22	S36-SPR304FGRA TL	SPRING FINGER ATLANTICS	1
23	S36-30408 0008	SCREW GRUB 304 1/8 X 8MM	1
24	P15-PIN30410 05927	PIN L FINGER ATLANTICS	1
25	F90-HANDHDP E200	HANDLE HDPE Ø (200mm)	1
26	R50-DADP049P00850NY	VRC850 ATLANTIC ADAPTOR BASE	1
27	S45-30408 00030	SCREW THUMB SS303 M8 X 30MM	1
28	R41-ORG01100701 B	O RING SEAL 1" X ID7.5 X T.75 (BS011)	1
29	S76-30410 00030	WASHER SS304 30 X 10 X 2.5MM	1
30	S76-30410 00025	WASHER SPRING SS304 10MM	1
31	P22-B-BE31600850B	BASE INSULATION PAD	1
32	P22-B-BE31600850B	BASE INSULATION PAD	1
33	P22-B-BE31600850B	BASE INSULATION PAD	1

**A** GYPSY

**B** MOTOR / GEARBOX ASSEMBLY

**WINDLASSES AUSTRALIA**

**STORM VR850**

**EXPLODED VIEW**

PART No. **K08-STORMVR0850**

DATE: **22/5/07**

DRG No. **K08-ATLVR0850**

APP1

APP2

SIZE **A4**

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**TOLEANCES (mm)**

X ±

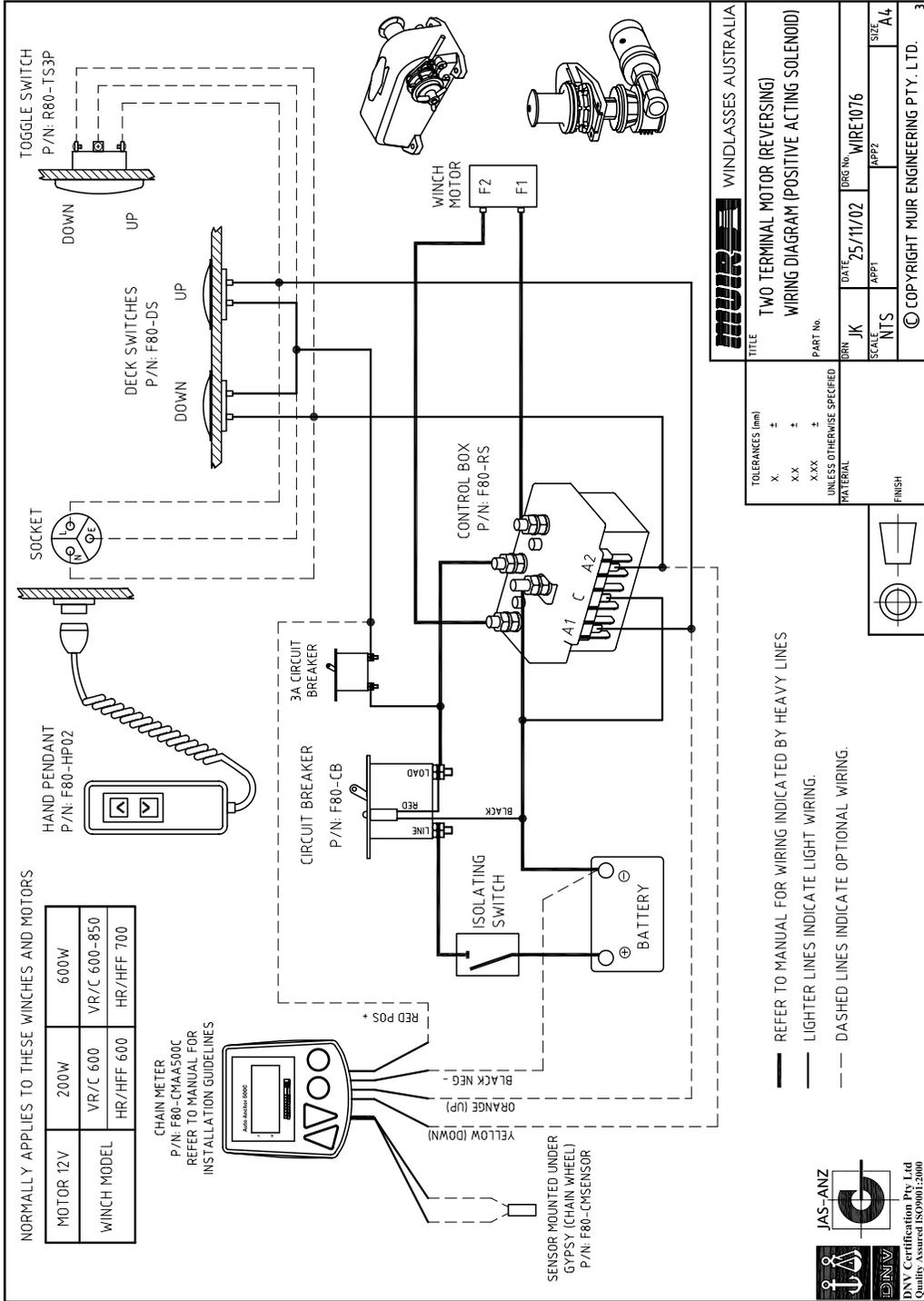
XX ±

XXX ±

UNLESS OTHERWISE SPECIFIED

MATERIAL

FINISH



**INTRODUCTION**

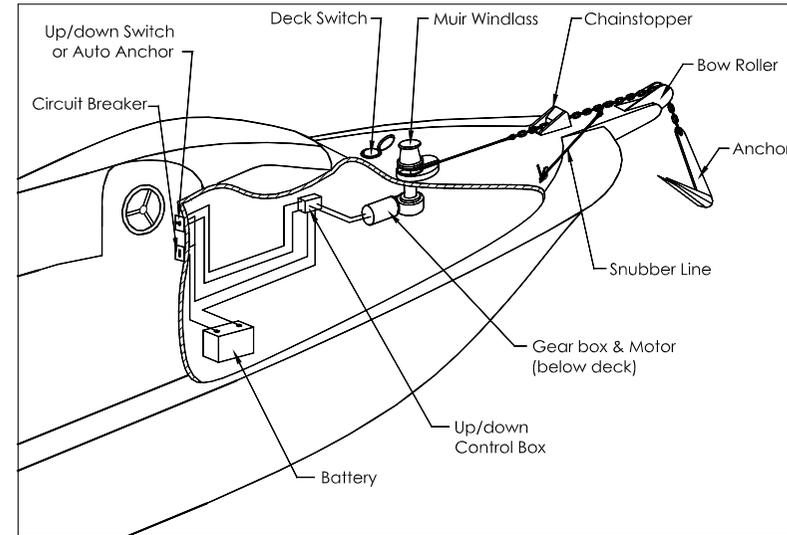
Thankyou for purchasing a Muir Windlass. Muir go to great lengths to develop anchoring systems that meet all your performance and safety requirements and are designed with a style and finish that enhances the aesthetics of your vessel. With Muir's commitment to quality and use of superior materials and processes we know you will be pleased with your investment. Rest assured that through the correct installation, operation and maintenance your new Muir Windlass will give you years of reliable performance.

**IMPORTANT INFORMATION**

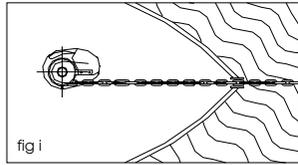
To avoid damage to the gear drive, windlass or vessel when bringing the anchor up hard, it is a preferred practice to mark the chain at approximately 5-meter intervals from the anchor, to alert the operator to the anchor position. Alternatively an Auto Anchor can be used.  
 Under no circumstances should the windlass be operated if it is stalled or overloaded.  
 If anchor retrieval is impaired by high wind, heavy seas or the anchor is snagged, ease the load by motoring slowly forward into the wind with a chain stopping device in place. The rope or chain should be cleated off and the anchor driven out by the engine, otherwise the gearbox or shaft can be damaged.

**SAFE OPERATION**

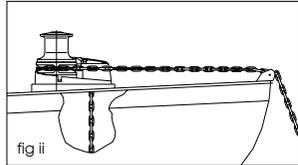
- Ensure that hands, feet, hair and clothing are kept clear of the windlass and other loose gear when in operation.
- Ensure no one is swimming nearby as anchor is lowered or retrieved.
- Keep hands well clear of capstan, gypsy, chain and line.
- The windlass should never be used for lifting people aloft.
- Do not use a windlass as a bollard for mooring, towing or being towed.
- Always ensure that the windlass clutch is tightened with the clutch handle. When the windlass is not in use a Chain lock, Devils claw or Snubber Line should be fitted to retain the anchor. The use of these accessories will prevent excessive loads on the geardrive and accidental release of the anchor when travelling.



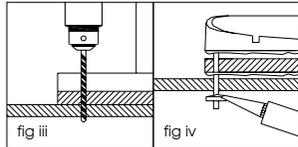
**INSTALLATION INSTRUCTIONS**



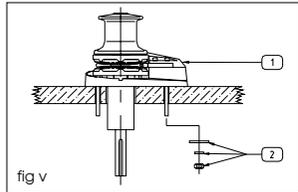
**Figure (i)**  
Locate the windlass centrally fore and aft. Check that the chain leads unhindered to the anchor roller. The chain runs onto the starboard side of the gypsy, wraps around 180° and falls below deck through the chain pipe. Ensure there is sufficient room around the windlass to allow full rotation of the manual/clutch handle (if supplied).



**Figure (ii)**  
The centre height of the gypsy must be in the same plane as the chain lead from the bow roller. If the deck is angled (fore & aft) or curved (port to starboard) a suitably shaped mounting block will be required to spread the load evenly over the deck surface and mount the windlass base on a level and even footing.



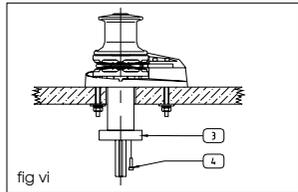
**Figure (iii)**  
Place the shaped mounting block (if required) onto the deck. Using the layout template supplied, mark the mounting centres and drill the holes. (Refer template).



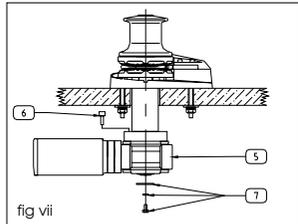
**Figure (iv)**  
The Nylon insulation gasket supplied with your windlass must be fitted between the deck or mounting block (if required) and the windlass base. Apply an appropriate sealant to the Nylon gasket and mounting block (if required).

The Nylon insulation gasket also acts to insulate between dissimilarity of metals and helps avoid corrosion. For Aluminium or Steel hull vessels, it is important to insulate the mounting bolts, nuts and washers with a non-conductive gasket to avoid corrosion. Apply Loctite 222 or equivalent to the threaded studs under the deck and carefully tighten the nuts & washers. Remove excess sealer.

Where the deck construction is light or of foam sandwich construction, a plywood stiffener of at least 16mm (5/8") should be fitted to the underside of the deck to spread the load and to prevent the bolts from pulling through the deck. Large diameter washers on the underside of the stiffener assists to spread the load.



**Figure (v)**  
1. Mount the windlass from above as shown.  
2. From below, apply Loctite 222 or equivalent and place washers and nut on each stud and tighten.



**Figure (vi)**  
3. Locate adaptor and align holes.  
4. Apply Loctite 222 or equivalent and fasten using cap screws provided.

**Figure (vii)**  
5. Grease shaft, key, and gearbox hub, slide geardrive onto shaft ensuring key is aligned. Rotate gearbox to preferred mounting position and secure with bolts provided.  
6. Locate gearbox, apply Loctite 222 or equivalent and bolt through adaptor.  
7. Apply Loctite 222 or equivalent and place washers and bolt in the end of the shaft and tighten.

**NOTE:** On assembly, grease all moving parts with a Lithium / Teflon based grease. The Motor / gear drive assembly should be protected with anti-corrosion film or grease tape.

**Warranty**  
**Limited for period of Three years (First Owner)**

We warrant each new product manufactured by us to be free from defects in material and workmanship for a period of 3 years (first Owner).

This warranty shall become effective only upon receipt of a completed warranty registration, which shall identify the product so registered by serial number. This warranty shall remain in effect for a period of three (3) years from the date of purchase. For vessels in charter or hire the warranty is one (1) year due to various operators and overloading which may occur.

**Conditions**

While this warranty applies to defects in material and workmanship, it does not apply to:

- Normal worn parts or to damage caused by neglect, lack of maintenance, accident or improper service/installation or service by persons other than an authorised Muir representative.
- Muir shall not be responsible for failures due to products being used in applications that they are not intended for, or exceed the products performance specifications.
- For warranty claim, defective product must be returned to Muir for inspection.
- Muir will not be responsible for freight charges, removal or installation labour on warranty claims.
- Damage due to unsatisfactory storage or use of equipment prior to installation in the approved/intended manner.

**Exclusions**

Warranty is limited to twelve months for:

- Electric motors / controls / equipment
- Hydraulic pumps / controls / valves
- Weather seals
- Use on charter/hire/commercial boats

All incidental and/or consequential damages are excluded from this warranty. Warranties of merchantability and fitness are excluded from this warranty. Implied warranties are limited to the life of this warranty. Some countries do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above may not apply to you.

We reserve the right to improve the design or materials used on any product without assuming any obligation to modify any product previously manufactured or used.

**Liability**

Muir Engineering liability under this warranty shall be to the exclusion of all other warranties or liabilities (to the extent permitted bylaw). In particular (but without limitation):

Muir Engineering shall not be liable for:  
Any indirect or consequential loss including (without limitation) any loss of anticipated profits, damage to reputation or goodwill, loss of expected future business, damages, costs or expenses payable to any third party or any other indirect losses. Any damage to yachts or equipment. Death or personal injury (unless caused by Muir Engineering negligence).

**WARRANTY REGISTRATION CARD**

**Return To**  
MUIR ENGINEERING PTY. LTD.  
100 Browns Rd, Kingston  
Tasmania, Australia, 7050

**WARRANTY VOID UNLESS CIRCUIT BREAKER OR RELIEF VALVE FITTED**

Customer Name :	Address / Contact :
Winch Model :	Serial No :
Date of Purchase :	
Supplier Name :	Address :

## Trouble Shooting

### ELECTRICAL

1. Check the battery circuit breaker and ensure the isolating switch is on.
2. Check battery is charged up to 12 or 24 volts.
3. Check that the foot switch plunger is contacting
4. Check remote control solenoid is contacting, if this is clicking the problem may be low voltage, a faulty solenoid or a wire not properly connected.
5. Check wiring between controls, solenoid and motor are in-tact.
6. If the motor will not turn after checking the above points, check that the motor bushes are not worn or sticking.

### MECHANICAL

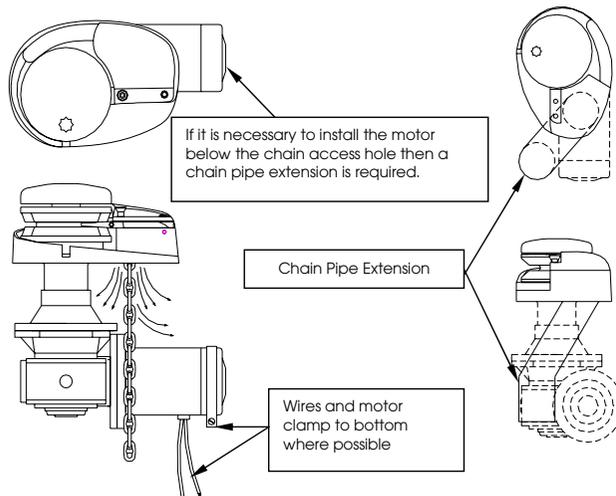
If the windlass running gear will not turn or operate check the following

1. Check that the clutch above the chain gypsy is tightened to the chain gypsy drive using the manual handle supplied (see operating instructions).
2. If the line slips check the tension on the finger and increase spring tension (see RCMS adjustment on previous page).
3. Check the drive key on main shaft to gearbox output.
4. Check the drive key between the gearbox and motor input.

### HYDRAULIC MOTOR

Refer any problems with your hydraulic motor to a Muir service agent or Muir Hobart.

### WATER PROTECTION DIAGRAM



#### NOTE:

It is important to thoroughly lubricate all mating surfaces with a grease suitable for marine applications.

Corrosion protection should be applied to the external surfaces of the motor, gearbox and adaptor and also in any areas that water may lie.

Recommended products for anti corrosion protection are Techtyl under body anti corrosion film and Denso grease tape.

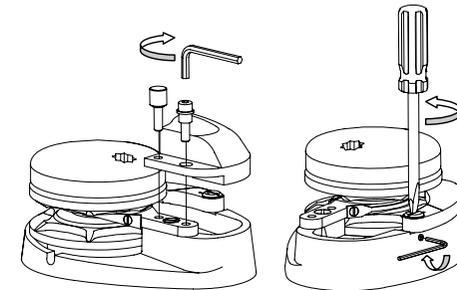
## ROPE CHAIN MANAGEMENT SYSTEM INSTALLATION

If you require the use of the Rope Chain Management System (RCMS), follow these instructions to fit and adjust the finger and spring. You will require Allen keys, and a large flat tip screw driver to fit and adjust the RCMS, which is easy to do and will only take 5 minutes to complete.

Firstly, ensure the windlass is isolated so it can not accidentally operate whilst you are working on it and that it is safe to work on or near it. It is also recommended to store all removed parts in a secure place, so that they do not roll off the deck during this operation.

Refer to the Windlass manual exploded view to help identify parts.

1. Remove the chain cover, by removing the Thumb screw and swivel the chain cover around so it is out of the way.
2. Using the right size Allen key loosen the grub screw and remove the finger pin from the base.
3. Fit the spring into the hole and slot in the finger, with spring ends pointing upwards.
4. Fit the finger and spring to the base, by lining up the finger and spring hole over the finger pin hole in the base, and reinstall the finger pin. The hole in the finger pin must fit over the end of the spring that is sticking up.
5. To tension the spring, use the flat tip screw driver to turn the Finger Pin anti-clockwise to line up the slot in the pin with the slot in the finger, then whilst holding against the spring tension, tighten the grub screw to lock the Finger Pin in place which applies the correct tension to the finger.

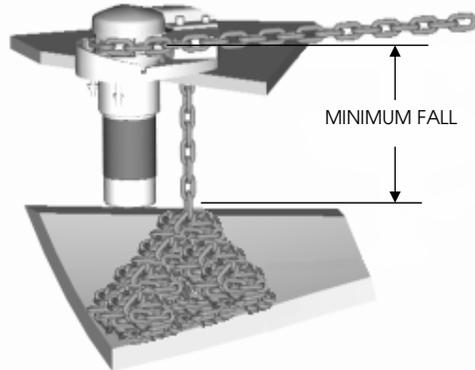


6. Re-fit the chain cover and tighten the thumb or socket head cap screw as appropriate.

Once installed and adjusted, proper maintenance and operation will provide many years of service.

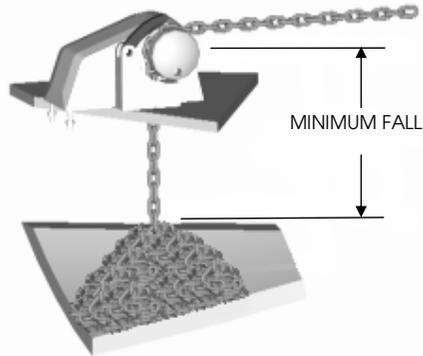
**DEPTH OF THE CHAIN LOCKER**

Measuring the vertical distance (minimum fall) underside of the deck and the top of the completely stored and heaped anchor rode in the locker will assist in determining the installation to suit your vessel. Refer to the fall depth diagrams to the left, and the options detailed below. It is also recommended that the chain be directed to the center of the chain locker.



**Vertical Windlass:**

The running gear, gypsy and capstan are positioned above the deck with the motor and gear drive below. Vertical windlasses operate at best with greater anchor rode fall than the horizontal windlass and a minimum fall of 300mm from top of stacked anchor rode is recommended. This is particularly important if using nylon line, which does not fold and stack as well as chain. Vertical windlasses minimise deck intrusion and the modern curved lines of the Muir windlass enhance the look of any vessel. A vertical windlass provides the advantages of a 180-degree wrap of the anchor rode around the gypsy.



**Horizontal Windlass:**

Fully enclosed, above deck, this style is usually preferred where locker space is limited or additional fall is required. The motor and gear drive is fully enclosed in the housing with nothing protruding below deck. The horizontal windlass operates with optimum anchor rode fall of at least 300mm from the top of the stacked anchor rode, and due to the horizontal orientation of the anchor rode, and due to the horizontal orientation of the gypsy higher above the deck there is additional fall provided. These units are ideally suited for vessels with less locker space.

Vertical Windlass Model	Horizontal Windlass Model	Minimum Fall (Dist. Top of Pile)
VR/C 600	HR 600 / 700 / 806 / 808	300 mm
VR/C 850 / 1250 / 2200	HR 1200	450 mm
VR/C 2500 / 3500	HR 2500 / 3500	650 mm
VR/C 4000	HR 4000/- 4200	800 mm

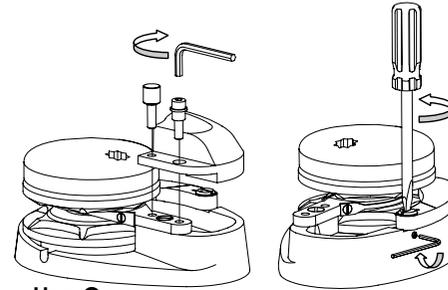
**ROPE CHAIN MANAGEMENT SYSTEM (RCMS) ADJUSTMENT**

Firm tension of the finger is required to reduce rope (nylon line) slipping through gypsy. To adjust this tension (if your line is slipping) refer to the two diagrams and procedure below.

**PROCEDURE:**

Tools Required: Allen keys and a large flat screwdriver.

1. Undo the Thumb Screw and open the chain cover by rotating it.
2. Loosen the grub screw on the side of base with an Allen key for finger adjustment.
3. Turn screwdriver **anti-clockwise** to tension the spring, while holding the tension re-tighten grub screw.
4. Re attach the chain cover to finish the adjustment.

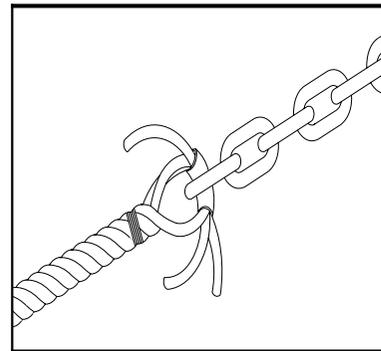


**Line Care**

Using the wrong type of line may cause the line to jam causing excessive line wear. Muir Windlasses are designed to run on 3-strand nylon line (supplied by Muir) which has been specially treated with fabric softener to prevent it from hardening. It is recommended to soak your rope in fresh water containing fabric softener every 3 months.

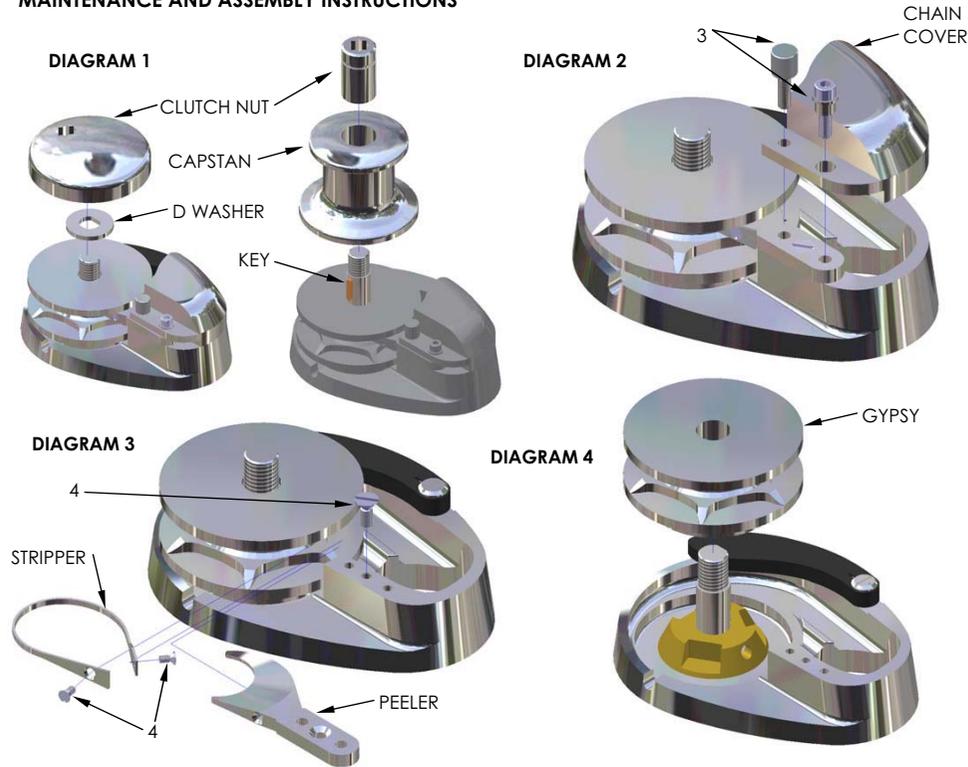
In case of a rope jam, slacken off the windlass clutch to free the jammed line. When retrieving the anchor rode do not continue to run the windlass if the anchor or chain is jammed, as line slippage in the gypsy will cause damage to the line.

**Rope/Chain Splice.**



1. To stop rope unravelling, seize rope 400mm(16") from end with whipping twine. Unlay strands.
2. After placing 20mm (3/4") of heat shrink sleeve tubing through the last link of chain, pass one strand of rope through sleeve and chain from one side and the other two strands of rope from the opposite side. (See illustration).
3. While pulling all three strands tight, shrink the sleeve tightly onto the rope using a hairdryer / fan heater or by immersing in boiling water.
4. Remove seizing and complete back splice in normal manner for two full tucks. With a hot knife pare down the three strands by 1/3 and insert two further tucks. Pare down by another 1/3 and finish with two tucks. Cut any remaining tails.

MAINTENANCE AND ASSEMBLY INSTRUCTIONS



PROCEDURE:

Tools Required: Clutch handle, Allen keys, a small and large flat screwdriver & Marine, Teflon or Lithium based grease.

VR MODELS ONLY (DIAGRAM 1 LHS)

1. Remove the clutch nut with handle supplied
2. Slide the d washer off the shaft.

VRC MODELS ONLY (DIAGRAM 1 RHS)

1. Remove clutch nut with handle supplied
2. Slide the capstan off the shaft taking care not to lose the shaft key

VR AND VRC MODELS

3. Undo the Thumb Screw and Socket Head Screw with an Allen key to remove the chain cover.
4. Undo the stripper screws into the peeler with a small flat head screwdriver and remove the stripper. The securing screw for the peeler should now be removed with a large flat head screwdriver and then the peeler.
5. The gypsy can now be removed from the main shaft.

NOTE: We recommend the use of Lithium/Teflon based grease.

- Before re-assembly, grease the exposed Main Shaft/Cone & Gypsy bore.
- The Motor / geardrive assembly should be protected with anti-corrosion film or grease tape.

HANDY HINTS

It is a common error to locate the windlass too far forward, or too close to the bulk head, where there is insufficient room for chain and anchor stowing. The chain fall should be positioned in the centre of the chain locker to maximise the fall of the chain. If the chain falls alongside a bulkhead or onto the stem it will pyramid and jam.

If the windlass requires positioning such that chain falls into an undesirable position, a metal tube can be fitted under the hawser to redirect the chain to a preferred position. This pipe should be at least 2 times the diameter of the chain. It should also be as vertical as possible. Position the windlass in the best location with the chain hawser facing forward.

Ensure sufficient room to run electric cables to the windlass. Follow the installation instructions, including underdeck stiffening, deck camber, alignment, mounting blocks and sealing procedures. The gearbox and motor can be located in one of 8 positions.

ELECTRICAL

See Wiring Diagrams for wiring instructions.

Circuit breaker (must be fitted to ensure warranty)

If the windlass is overloaded or stalled the circuit breaker will automatically cut power to the windlass and protect the wiring and motor. The circuit breaker should not be used as an isolating switch.

Deck Switches are best located out to either port or starboard or directly behind the windlass in a position where it can be easily reached with your foot or knee, preferably where you can view the anchor and chain coming aboard.

Isolating Switch. This should be fitted in an accessible position for safety, ideally close to the battery or switches. The isolating switch is not a circuit breaker.

Batteries are best located as close to the windlass as possible. Larger cables will reduce the voltage drop to the motor and the heat generated when running the windlass. Small diameter cables drop voltage considerably. Use the following table as a guide to your required wire size:

Distance from battery to motor (m)	Cable Size		Cable Diameter (mm)
	(mm <sup>2</sup> )	AWG	
7 (23')	25	3	8 (5/16")
9 - 17 (30' - 55')	50	1/0	10 (3/8")

Rotation: Windlasses may be wired for single or dual direction, using single or dual deck switches for raising or lowering. Alternatively a remote control solenoid package with Toggle Switch, Hand Pendant or Auto Anchors are available.

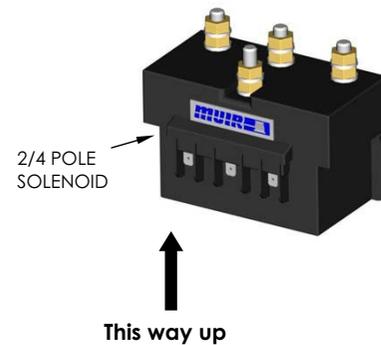
Solenoid Installation

We recommend that the solenoid is installed in an upright position, where it has **no exposure** to sea water and in close proximity to the electric motor of the windlass.

Do not place the solenoid in the chainlocker.

For wiring information, please refer to the appropriate wiring diagram listed in the table below.

WINCH MODEL	MOTOR SIZE	MOTOR TYPE
VR/C 850	600 W	2 POLE

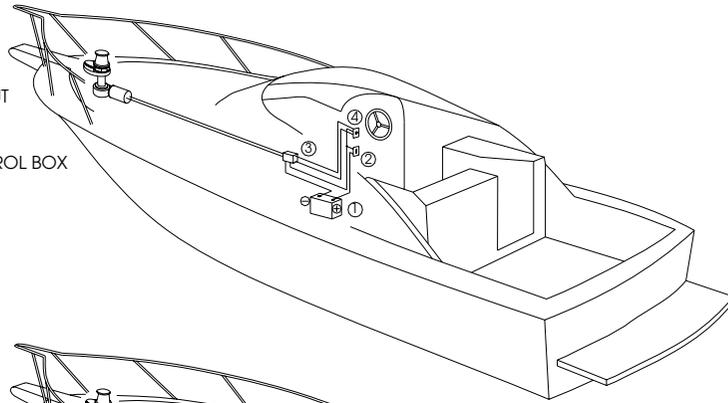


**WARNING: Keep solenoid away from salt and fresh water**

WIRING LAYOUT

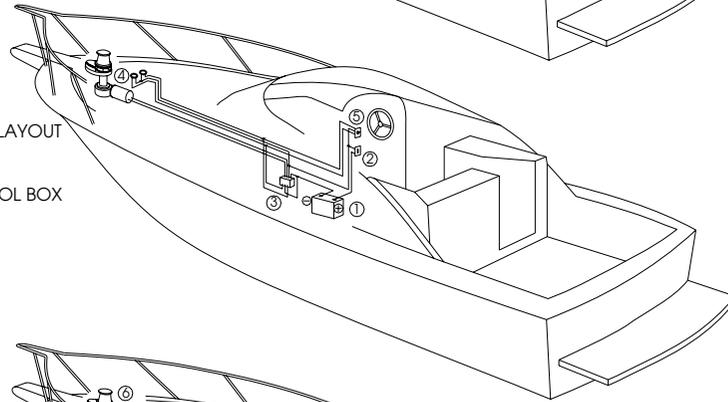
REMOTE SWITCH LAYOUT

1. BATTERY
2. CIRCUIT BREAKER
3. SOLENOID/CONTROL BOX
4. REMOTE SWITCH



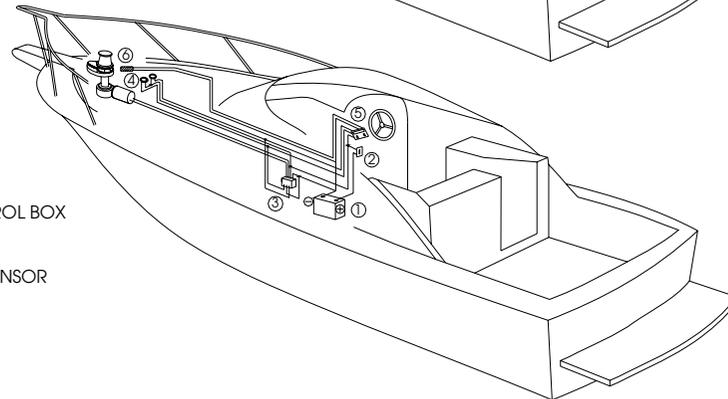
REMOTE / DECK SWITCH LAYOUT

1. BATTERY
2. CIRCUIT BREAKER
3. SOLENOID/CONTROL BOX
4. DECK SWITCHES
5. REMOTE SWITCH



AUTO ANCHOR LAYOUT

1. BATTERY
2. CIRCUIT BREAKER
3. SOLENOID/CONTROL BOX
4. DECK SWITCHES
5. AUTO ANCHOR
6. AUTO ANCHOR SENSOR



NOT TO BE USED AS WIRING DIAGRAMS

OPERATING INSTRUCTIONS

**Manually Releasing chain:** To release the anchor rode, place the handle into the clutch drive Bi-square as shown in the diagram at the bottom of the page and turn **anti-clockwise** to release the clutch brake. Let the anchor fall and control the run of the chain by tightening handle **clockwise** using the clutch mechanism as a brake.

**Anchoring:** When laying at anchor use a chain stopper, nylon/chain bridle or snubber line to prevent snatching and direct loading on the windlass main shaft. Never use the windlass as a mooring bollard!

**Retrieving Chain:** Before operating the windlass tighten the clutch with the handle in a **clockwise** direction, then remove the handle. If the anchor is buried hard, motor forward to pull it free after hardening up on the windlass, to ease the load on the windlass.

**Rope hauling on the Capstan:** The capstan can be operated independently of the gypsy. Secure the anchor rode (via Chainlock, Gypsy lock or Snubber) then release the clutch. The capstan can then be operated using the manual handle or by operating the windlass motor.

**Electric / Hydraulic operation:** Releasing and retrieving the Anchor rode is identical when operating an electric or hydraulic windlass. Always keep well clear of the windlass when releasing or retrieving chain and anchor. Keep fingers, hair and clothing well clear when the windlass is in operation.

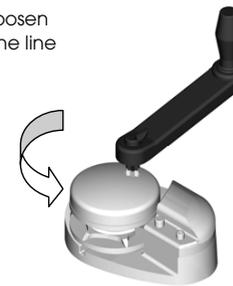
**Auto Anchor Launching:** If the anchor roller can be positioned so that the anchor falls as soon as the windlass is reversed, the whole operation can then be carried out remotely. Remote switching controls are self centering and stop the windlass when the switch is released. Mark the anchor end of the chain at 2 and 5 metre (6.5' & 16.5') intervals to enable the operator to judge when the anchor is almost up. Go slowly for the last few metres of retrieval by letting go of the switch, rather than waiting for the anchor to fly up over the roller and bang tight, this will put excessive load onto the bow roller, windlass and fore deck so should be avoided.

SERVICING

Rinsing all deck gear with fresh water after every excursion ensures that salt deposits and corrosion are kept to a minimum. We recommend the windlasses of Pleasure Vessels are stripped yearly and all moving parts cleaned and greased with a Marine Grease, Teflon or Lithium based grease (e.g. Duckhams'Keenol'; 'Castrol LMX'.). In the case of Work and Charter Vesels we suggest it is carried out more frequently. **Do not use soap based grease.**

The geardrive is filled and sealed at factory with long life synthetic oil that does not require replacement for the life of the geardrive.

Gradually loosen to release the line manually



Tighten to brake the outgoing line



Fully tighten retrieve the anchor under power