# RC12-HD Vertical Rope/Chain Windlass

## VETUS-MAXWELL APAC Ltd

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Illustrations and specifications are not binding as to detail.

### INTRODUCTION

- Read this manual thoroughly before installation and using the windlass. Failure to adhere to the correct procedures, recommendations and guidelines described in this Owner's Manual may invalidate the warranty.
  - Correct selection of windlass together with correct installation, care in use and maintenance, are essential for long life and reliable performance.
  - In addition to this instruction manual, the following components should be included with the windlass:
  - Clutch Handle
  - Emergency Retrieval handle
  - 24V reversing solenoid
  - Deckplate Gasket
  - Deck Cutout Details (at rear of manual)
  - Motor Bolt Kit
  - Small parts
  - Nuts (x5)
    - Flat washers (x 5)
      - Spring washers (x 5)

The following accessories may be required to complete your installation:

- Remote up/down control panel
- Circuit breaker/isolator panel (required but not supplied)

#### **IMPORTANT INFORMATION**

- The RC12 windlass must have a minimum pull capacity of three times the combined weight of the anchor and rope/chain.
- Keep hands, feet, loose clothing and hair well clear of the windlass and rope/chain during operation.
- Never operate the windlass from a remote station without having a clear view of the windlass.
- Do NOT use the windlass as a mooring point. When anchoring or mooring, secure the line directly to a bollard or deck cleat.
- Do NOT use the windlass to pull the boat forward when raising the anchor. Use the boat's engine to drive the boat up to the anchor.
- Do NOT attempt to break free a fouled anchor with the windlass. Secure the line to a bollard or cleat and use the boat's engine to break the anchor out.
- Always firmly tie down the anchor when under way or in heavy seas. Do not rely on the windlass as a securing device.
- Always turn the circuit breaker/isolator switch off when the windlass is not in use and before you leave the boat.
- Do NOT use the windlass to haul a person up a mast.

#### **ROPE AND CHAIN SELECTION**

Correct fit of rope and chain to chainwheel is essential for the windlass to operate properly.

- The ground tackle should be selected taking into account:
- a) Boat size, displacement and windage.
- b) Conditions of operation such as maximum depth of water, type of bottom and likely weather conditions.
- c) Holding power and size of anchor, taking special note of the manufacturers' recommendations.

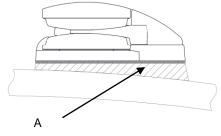
Please refer Specifications on page 5 for rope and chain selection.

### INSTALLATION

- For automatic operation to be possible, the anchor must be self launching.
- Tie the end of the anchor rope/chain to a secure fixture in the rope/chain locker.

#### Foredeck layout

Ensure the deck is flat, if not; a plinth (A) will be required to ensure the windlass sits on a flat surface.



#### **Required clearances**

Identify any bulkheads, wiring or piping under the deck that should be avoided.

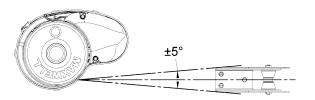
Position the windlass so the rope/chain falls directly into the rope/chain locker with at least 200mm (8") unobstructed fall from the lowest part of the windlass.

Ensure the rope/chain does not foul on the windlass motor.

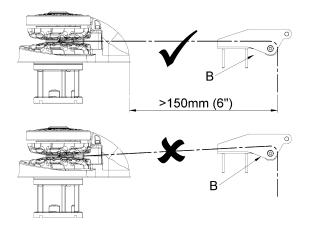
#### Aligning the windlass

"UP" is the clockwise rotation when looking down on the windlass.

The windlass must be positioned to allow the rope/chain to have a clear run from the bow roller (B) to the chainwheel without deflection.



The deck plate should be mounted pointing in the direction of the incoming rope/chain. This arrangement allows the rope/chain to have maximum engagement with the chainwheel.



#### Installation Procedure

Use the Deck Cutout Details drawing, as a guide for marking and cutting the holes.

**Tip**: On GRP boats, running the drill in reverse first will reduce chipping of the gel coat.

Using hole saws, cut the holes for the spacer tube and rope/chain pipe.

On GRP or wooden decks, seal the edges of the holes with epoxy to avoid ingress of moisture.

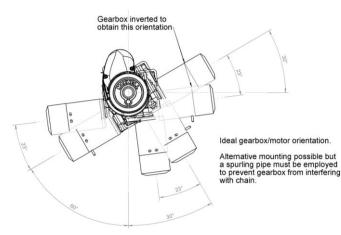
Place the gasket onto the deck. Use sealant, to seal the windlass to the deck, is recommended

Note: For installations where the deckplate is to be mounted directly to aluminium we recommend the windlass, studs, nuts, washers and chain are fully insulated from the aluminium.

- Bolt the deckplate to the deck using mounting studs washers and nuts. Tighten the nuts progressively and evenly. Do NOT use power tools. Make sure the installation is firm, but do not over tighten the nuts.
- Offer up, from below deck, the drive assembly sliding the mainshaft through the deckplate, taking care not to damage the deck bearing.
- 3. After aligning them correctly, bolt the deckplate and spacer tube together, from above deck, using the M10 hex head screws and spring washers. Tighten them evenly to 35-40 Nm (25-30 ft lb). Make sure the installation is firm, but do not over tighten the nuts.
- Re-check that the position of the drive assembly is satisfactory and convenient for connecting power supply lines to the motor. Also, make sure that the drive is not in the way of rope/chain coming into the locker.
- 5. If a chain counter is used, its sensor should be fitted into the Ø15mm hole in the deckplate, currently covered with

a plastic plug. Make sure the deck is drilled below for the sensor cable. See brochure supplied with chain counter or detailed assembly instructions.

- Insert the two retaining clips into the upper groove in the mainshaft; apply some grease to help keep them in position.
- Apply anti-seize compound generously over the mainshaft and keyway. Insert key into the keyway on the mainshaft.
- Assemble the lower clutch cone making sure it sits nicely on the retaining clips. Apply lithium based marine grease generously to the conical surface of the clutch cone, to assist with free falling the anchor.
- 9. Put the Belleville washer on top of the lower clutch cone and install the chainwheel assembly. Put the other Belleville washer on top of chainwheel assembly.
- 10. Insert key on mainshaft and install upper clutch cone, after applying marine grease to its conical surface
- 11. Insert key on mainshaft, assemble drum and washer (Capstan models only).
- 12. Assemble clutch nut .
- 13. Put retaining washer on top of the mainshaft and secure it with the screw.
- 14. Insert the cap into the clutch nut.



#### Important note to Boat Builders

Experience has shown that, on long ocean deliveries as deck cargo, sulphur from the ships exhaust and condensation can damage the chrome plating and stainless steel of the windlass.

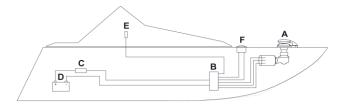
We recommend, after completing installation, you spray the top works of the windlass with CRC 3097 "long life" and wrap the windlass with plastic film and tape.

### WIRING INSTRUCTIONS

Installation must be carried out in accordance with USCG, ABYC, NMMA or other relevant local electrical requirements.

We recommend that connection of the power lines and control circuitry to the windlass be done by qualified technicians, to ensure reliable and safe operation of the windlass.

After all connections have been made and system tested, seal terminals against moisture by spraying with: CRC2043 "Plasti-Coat", CRC3013 "Soft Seal" or CRC2049 "Clear Urethane".



#### Solenoid pack (Required)

The solenoid pack (B) should be located in a dry area close to the windlass, not in the rope/chain locker.

#### Circuit breaker/isolator (Required -not supplied)

FOR SAFETY - The winch circuit requires protection provided by an isolator switch and either a fuse or circuit breaker, rated as follows:

RC12-HD 24V : 135amp

Position the circuit breaker/isolator (C) no further than 1.8 m (6 ft) away from the battery (D) in an accessible and dry location.

#### **Remote control panel (Recommended)**

The remote control panel (E) should be mounted in a convenient location (such as the bridge, helm or cockpit) so that the operator can see the windlass.

#### Footswitch (Optional).

For safe operation, the footswitch (F) should be approximately 500 mm (20") from the windlass (A).

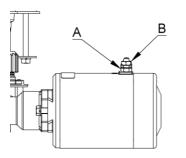
The below-deck part of the footswitch must be in a dry environment and the breather holes must be kept clear.

The arrows on the footswitch should be arranged to indicate the direction of operation.

Fit the switch according to the instructions supplied. Connect wiring as shown.

#### Motor

When tightening the cables to the motor, ensure the lower nut (A) is secure against turning when tightening the upper nut (B). This will prevent damage occurring within the motor



Connect wiring as shown on wiring diagram (page 7).

#### OPERATION CAUTION:

When operating the windlass:

-Keep fingers, hair or other loose items clear of the chainwheel.

-Do not switch immediately from one direction to the other. Wait for the windlass to stop in one direction before applying power in the other direction.

-Run the boat's motor(s) at sufficient rpm to activate the charging system.

When operating the Capstan:

Make sure that you do not operate the footswitch accidentally while putting extra turns on the capstan.

Keep your fingers clear of the chainwheel and/or capstan.

Always make sure the isolator switch is turned off when the system is not being used.

#### Lowering the Anchor

Insert the clutch handle into the clutch nut and tighten the clutches by turning the nut clockwise. Only tighten sufficiently so that you can easily pull up the anchor. <u>Remove the clutch handle</u>.

Operate the windlass by pressing the toggle switch down on the remote up/down control panel to pay out the rope/chain (or press the "Down" footswitch if fitted).

Pay out sufficient rope/chain to set the anchor.

Watch as the rope/chain is being fed out. Any jam might cause damage to the windlass.

Always use a chainstopper, snubber or cleat to tie off when anchoring. This will protect the windlass from shock loading.

#### **Raising the Anchor**

Insert the clutch handle into the clutch nut and tighten the clutches by turning the nut clockwise. Only tighten sufficiently so that you can easily pull up the anchor. <u>Remove the clutch handle</u>. NOTE: Over tightening the clutches can cause damage to the motor when docking the anchor.

Operate the windlass by pressing the toggle switch up on the remote up/down control panel (or press the "Up" footswitch if fitted).

Motor up to the anchor while retrieving it. Do not use the windlass to pull the boat to the anchor.

To avoid damaging the bow fitting, retrieve the last meter (3') of rope/chain slowly and take care when docking the anchor.

**Note:** To avoid applying the full force of the windlass to the bow fitting when docking the anchor, adjust the clutch nut so that there is some slippage when docking the anchor.

DO NOT use the windlass to secure the anchor into the bow roller. Use an appropriate tensioner or snubber.

#### Free falling the Anchor

- 1. Check that the rope/chain has unrestricted travel over the bow roller.
- 2. Standing well clear of the chain, insert the clutch Handle into the clutch nut and loosen by slowly turning the handle anticlockwise.
- 3. Tightening the clutch nut clockwise will control the rate of descent.

**CAUTION:** Do not allow the chainwheel to free wheel uncontrolled as this will allow dangerously high speeds to build up.

#### **Raising the Anchor Manually**

#### Pressure arm and spring replacement

- Tie off the rope/chain so that it does not pay out when 1. the clutch is released.
- Insert the clutch handle into the clutch nut and turn 2. anticlockwise to loosen the clutch. Remove cap, washer, screw and clutch nut... (capstan and key if capstan version)
- 3. Fit emergency handle on shaft.



Use clutch handle to 4. tighten emergency handle on shaft.



- 5. Ensure that emergency handle pawl is engaged with upper chainwheel (not sitting above)
- 6. Engage pawl with chainwheel to stop freefall



7. Release rope/chain and use lever to pull in line.

Tie off the rope/chain before removing emergency handle.

#### Using the Capstan Drum for Rope Warping:

The vertical capstan can be used independently from the chainwheel. This is ideal for handling mooring or docking lines, or retrieving a second anchor. For safety reasons, a footswitch is highly recommended.

To haul in using the capstan: Make sure the anchor is secured.

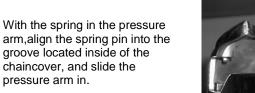
Insert the clutch handle into the clutch nut and turn anticlockwise until rotation stops. This will release the mechanism so that the chainwheel remains stationary while you operate the capstan.

Wind up to three turns of rope onto the drum in a clockwise direction. Maintaining a light 'tailing' pull on the free end, start the capstan using the UP foot switch.

As the capstan rotates, increase pull and 'tail' hand over hand to haul the rope. Reduce pull to slip the rope if required. To hold, stop the capstan while maintaining pull on the rope.

- Using a 5mm hex key undo the 1. capscrew on chaincover. Be careful when releasing the capscrew as the pressure arm spring may spring out.
- 2. Remove the spring and pressure arm
- 3. Apply liberal amounts of grease to the spring and insert it into the pressure arm
- Ensure the lower spring 4. pin sits in the groove of the pressure arm as shown.

5.



6. Looking from above align the pressure arm with the hole for the capscrew.

pressure arm in.



While holding the pressure arm 7. in this position, assemble the capscrew.











### MAINTENENCE

Every Trip

- Ensure clutch is adjusted correctly
- · Wash down topworks with fresh water
- Check rope for wear and wash down with fresh water
- Spray fresh water into drainage slot on gearbox, to breakdown and flush away any build up of salt/debris which may have accumulated

#### **Every 3 Months**

- Remove chainwheel. Strip and grease clutch
- Split gearbox from spacer tube, clean and re-grease mating faces
- Clean the Windlass with a cloth damp with Kerosene (paraffin). Spray preferably with CRC3097 "Long Life" or alternatively, CRC6-66 or WD40. Polish off with a clean non-fluffy cloth.
- The under deck components should be sprayed, preferably with CRC 3097 "Long Life" or alternatively, CRC6-66 or WD40.
- Check tightness of all fasteners.

#### Every Year.

- The motor should be serviced by a qualified technician
- Remove any rust build up from the casing and paint with a suitable coating

#### **Every 3 Years**

• The gearbox should be inspected for damage to the seals, the gearbox is lubricated for life so does not require replacing the oil.

### Specifications

Electric Motor Voltage Rated Output Max Pulling Force Continuous Pull Force Haulage Speed Working Load Limit	: Direct Current motor : 24V DC : 2000W : 1820kg (4000lbs) : 300kg (660lbs) : 12-20m/min (39-59ft/min) : 610kg (1335lbs)	
Hydraulic Motor Recommended Flow Relief Valve setting Max Pulling Force Continuous Pull Force Haulage Speed (At Recommended Flo Working Load Limit Motor port size (Pressure and return) Minimum size of hydra	: 2000 psi (138bar) : 1200kg (2640lbs) : 1200kg (2640lbs) : 15m/min (49ft/min) w) : 610kg (1335lbs) : 7/8" -14 UNF ulic supply/return lines :	16mm (5/8")

Rope size	: RC12-12: 22mm(7/8")		
Chain size	: RC12-12: 12/13mm (1/2") short link		
Net weight DC motor	: RC12 LP: : RC12 Capstan:	37 kg (64lbs) 40 kg (71lbs)	
Hyd motor	:RC12 LP: :RC12 Capstan:	28.5 kg (51lbs) 31.5 kg (57lbs)	

#### **Recommended lubricants:**

#### Gearbox oil:

Capacity: 900ml

Type: SAE viscosity grade 90-110 (e.g., Shell Omala 320, Castrol Alpha SP320 or other approved equivalents).

Main shaft, bearing, and clutch surfaces:

Marine grease, Lithium or Lithium complex based with a consistency between NLG No.1. & No.3.

#### WARNING:

When re-assembling care must be taken to ensure the key/keys are properly seated in the shaft. DO NOT wrap the motor with grease cloth as this prevents the cooling of the motor.

### **Ordering Spare Parts**

Always consult manual supplied with product as details may have been revised.

When ordering spare parts, please quote the following details.

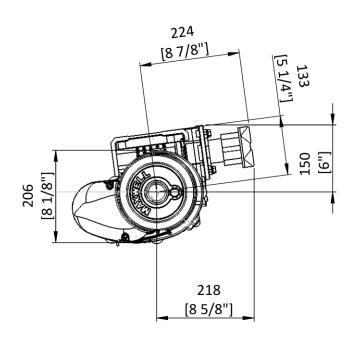
Windlass Model\_

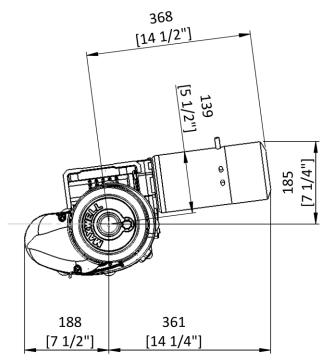
Serial number \_\_\_\_\_

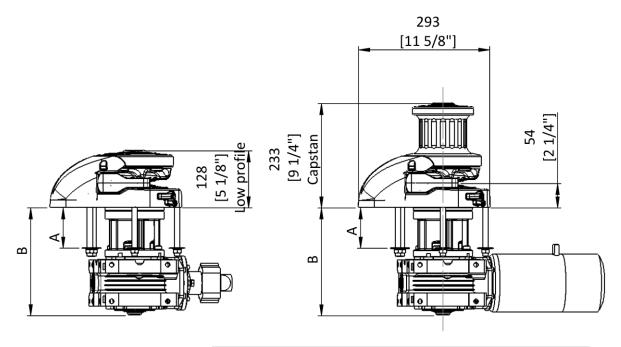
Power supply\_\_\_\_\_

**Note:** For your nearest retailer, service agent or representative please refer to our website www.maxwellmarine.com

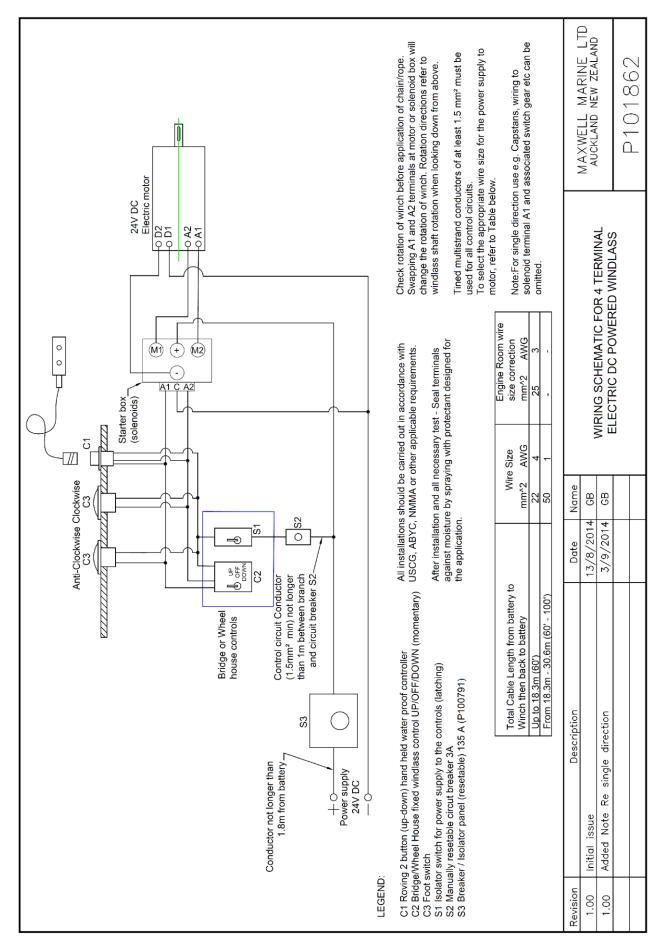
## **Overall Dimensions**

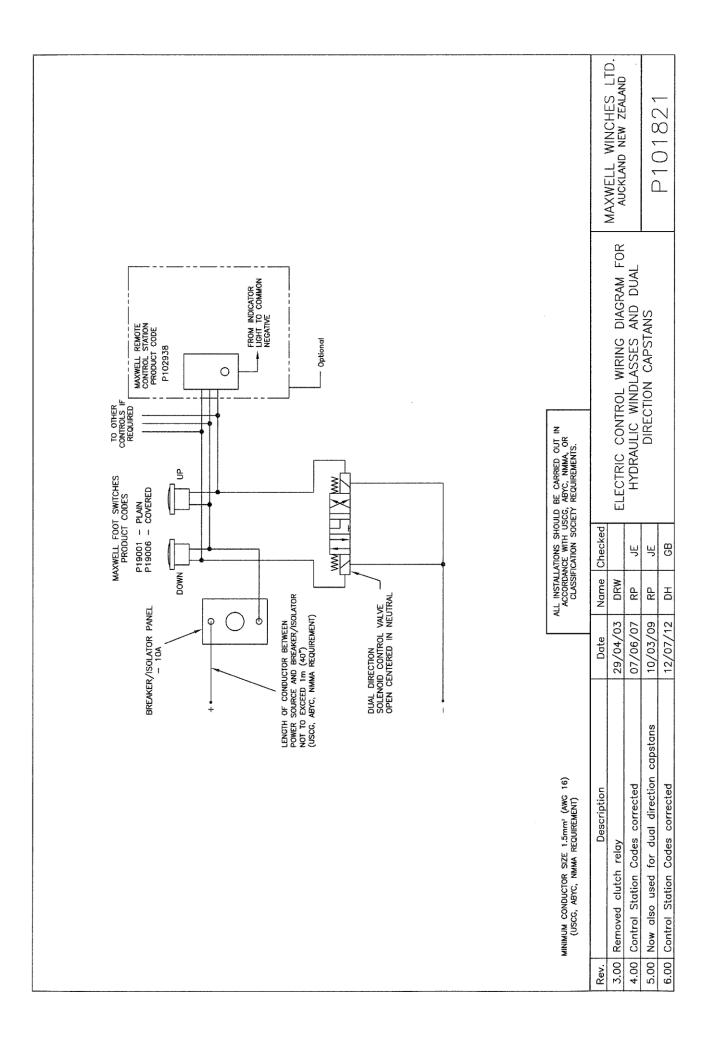






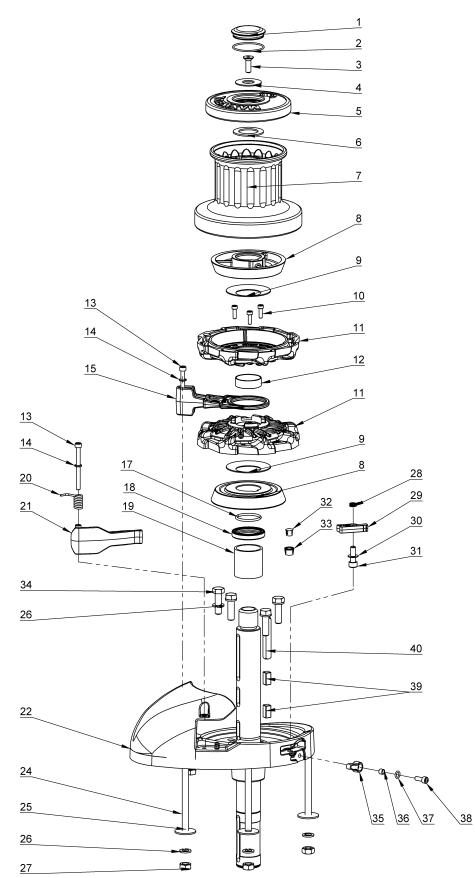
	100TDC	200TDC
A	95 [3 3/4'']	195 [7 3/4'']
В	241[9 1/2"]	348 [13 3/4"]





MAXWELL WINCHES LTD. AUCKLAND NEW ZEALAND P101820 pressure setting 100 138 135 138 138 138 138 103 Case drain can only connect to return line if return line pressure is below 25 PSI. Oherwise case drain must connect to tank bar Relief valve Chart refers to MAXWELL "standard build". Lower flow or lower pressure can be accommodated - refer to manual or consult MAXWELL. Ensure that selected hydraulic components are adequate for recommended flow PSI 1970 2000 2000 1450 2000 2000 2000 1500 I/min US gal/min Recommended flow 9.5 8.5 8.5 5.3 5.3 Ξ Ξ 13.2 HYDRAULIC SCHEMATIC WINDLASSES 20 20 35 32 40 50 1000 - 4000Galtech 2SM-A-19 GRESEN MGG2-16 GRESEN MGG2-16 GRESEN MGG2-25 **GRESEN MGG2-25** GRESEN MGG2-25 **GRESEN MGG2-25 GRESEN MGG2-30** Motor Windlass 1000 P14366 1500 P14366 2200 P14369 P14368 P14368 RC12 P14368 3500 P14368 SP2250 2500 Liberty 4000 DRW RP/JE Series Name rate. Ч Ч 08/10/09 29/04/03 22/10/04 20/03/07 Riser loop for case drain Date -Return line filter Case drain (4000 only) X 4000 motor changed from SP2224 to SP2250 Removed pressure switch, Added liberty Directional control valve changed back m Tank Riser loop for case drain added Description Windlass hyd. motar--Pump Dual direction solenoid control valve open centred in neutral (see chart for — pressure settings) ſ Suction filter-Relief valve 10.00 Revision 7.00 9.00 8.00

## **Windlass Parts**

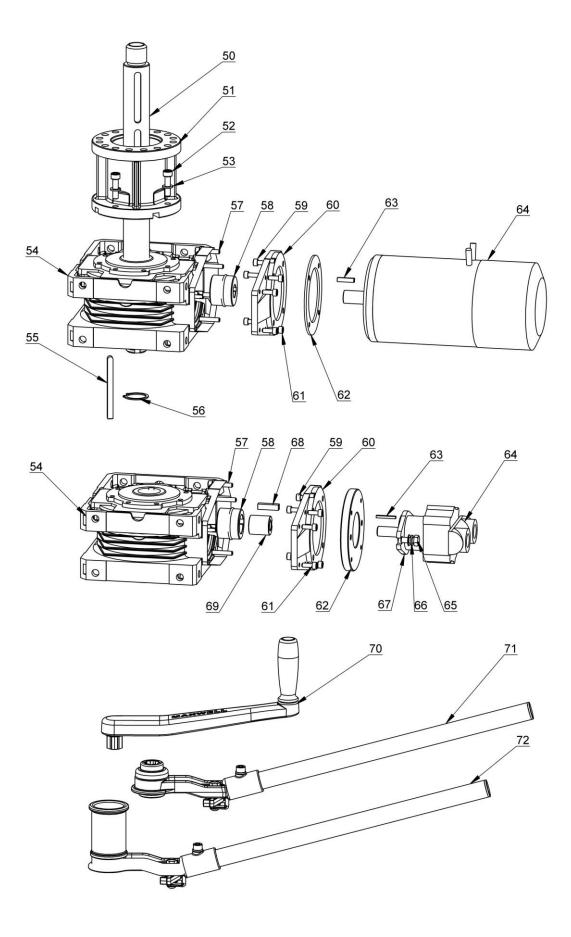


## Windlass parts

ltem	Component description	Qty	Part to order	Includes
1	Сар	1	7191	
2	O-ring	1	SP2790	
3	Screw CSK M8 x 24	1	SP0095	
4	Retaining Washer	1	3267	
_	Clutch Nut	1	7440	
5	Clutch Nut Capstan	1	7441	
6	Washer - Capstan only	1	7527	
7	Capstan	1	7443	
8	Clutch Cone	2	7439	
9	Bellville Washer	2	5015	
10	Cap screw -M5 x 16	3	SP0178	
	Chainwheel 12mm/13mm -1/2" CW	1	P103318	10(x3),11,12,15
	Chainwheel 12mm/13mm -1/2" ACW	1	P103322	10(x3),11,12,15
12	Bush	1	7544	
13	Cap screw -M6 x 70	2	SP4509	
14	Spring washer	2	SP0474	
15	Stripper	1	7444	
17	Retaining Clip	2	2311	
18	Seal	1	SP2799	
19	Bearing	1	SP0657	
	Spring CW	1	7037	
20	Spring ACW	1	7436	
21	Pressure Arm	1	7435	
	Deckplate CW	1	7430	
22	Deckplate ACW	1	7431	
22	Gasket	1	7515	
	Stud - 100TDC	4	5225	
<b>A</b> (	Stud - 100TDC	1	7652	
24	Stud - 200TDC	4	7482	
	Stud - 200TDC	1	4710	
25	Washer	5	3843	
26	Spring Washer	9	SP0466	
27	Nut - M10	5	SP0371	
28	Spring	1	7458	
29	Pawl	1	7456	
30	Washer	1	SP0413	
31	Cap screw -M8 x 25	1	SP0158	
32	Plug	1	SP3519	
33	Bush	1	SP3518	
34	Screw -M10 x 35	4	SP3221	
35	Pawl	1	7457	
36	Bush	1	7480	
37	O-ring	1	SP2785	
38	Cap screw -M6 x 16	1	SP0170	
39	Key	2	7465	
40	Key – Capstan	1	3150	

\*For Chainwheel listing see page 13 CW - clockwise ACW - anticlockwise

## **Bottomworks/Handle list**



## **Bottomworks/Handle list**

Item	Component description	Qty	Part to order
	Shaft -LP-100TDC	1	7951
50	Shaft -Capstan -100TDC	1	7952
50	Shaft -LP-200TDC	1	7953
	Shaft -Capstan - 200TDC	1	7954
51	Spacer tube - 100TDC	1	5497
51	Spacer tube - 200TDC	1	7955
52	Cap Screw -M10 x 35	4	SP0171
53	Spring washer	4	SP0467
54	Gearbox (excludes item #60)	1	SP5029
55	Кеу	1	4635
56	Circlip	1	SP0879
57	Cap screw M6x30	4	SP2459
58	Splined Drive bush – DC Electric	1	SP5044
28	Splined Drive bush – Hydraulic	1	SP5030
59	Cap screw M6 x 25	4	SP0175
60	Gearbox input flange	1	SP5026
61	Cap screw M6 x 16	4	SP0170
62	Motor Adaptor – DC Electric	1	7942
62	Motor Adaptor – Hydraulic	1	7957
63	Key – DC Electric only	1	4577
C 4	Motor – DC electric 2000W 24V	1	SP5027
64	Motor – Hydraulic Gerotor	1	SP0996
65	Hex hd bolt M8 x 20 – Hydraulic only	2	SP0254
66	Spring washer – Hydraulic only	2	SP0467
67	Flat washer – Hydraulic only	2	SP0413
68 Key – Hydraulic only		1	5280
69 Shaft Coupling – Hydraulic only		1	7965
70			P103865
74	Emergency handle - LP CW	1	P103319
71	Emergency handle - LP ACW	1	P103323
70	Emergency handle -Capstan CW	1	P103320
72	Emergency handle -Capstan ACW	1	P103324

Some listed parts are sold as a kit only.

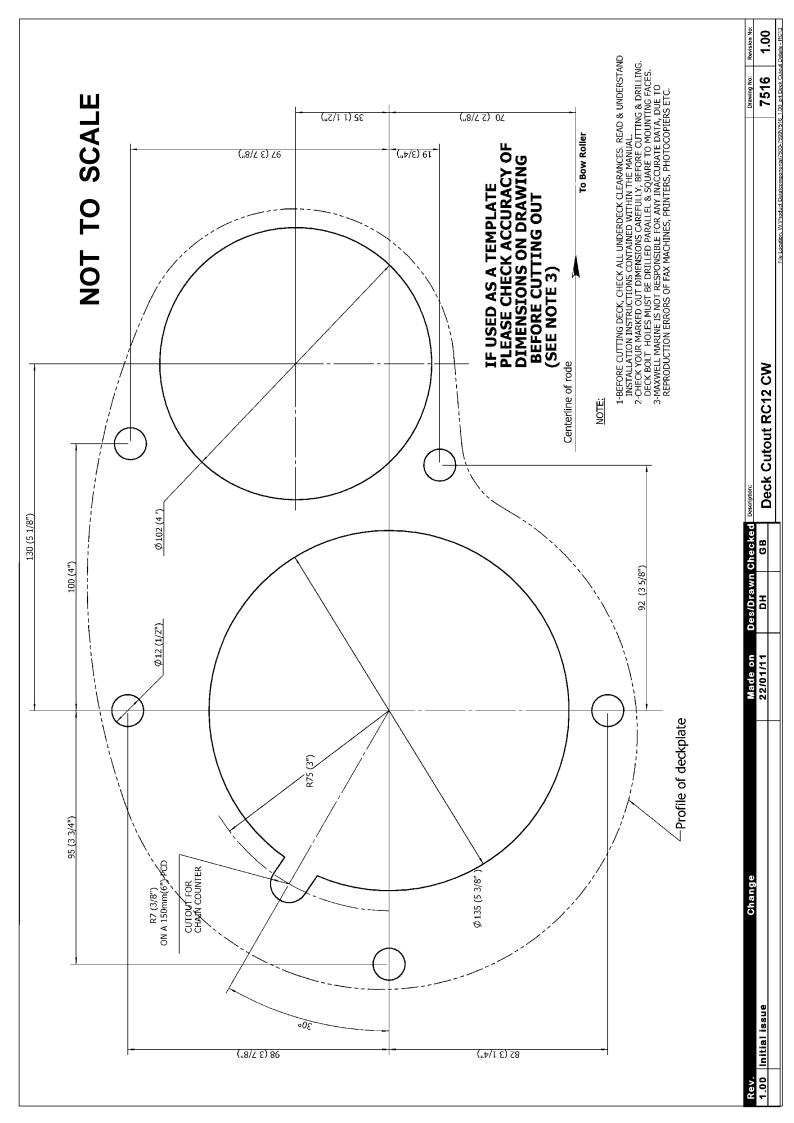
CW - clockwise

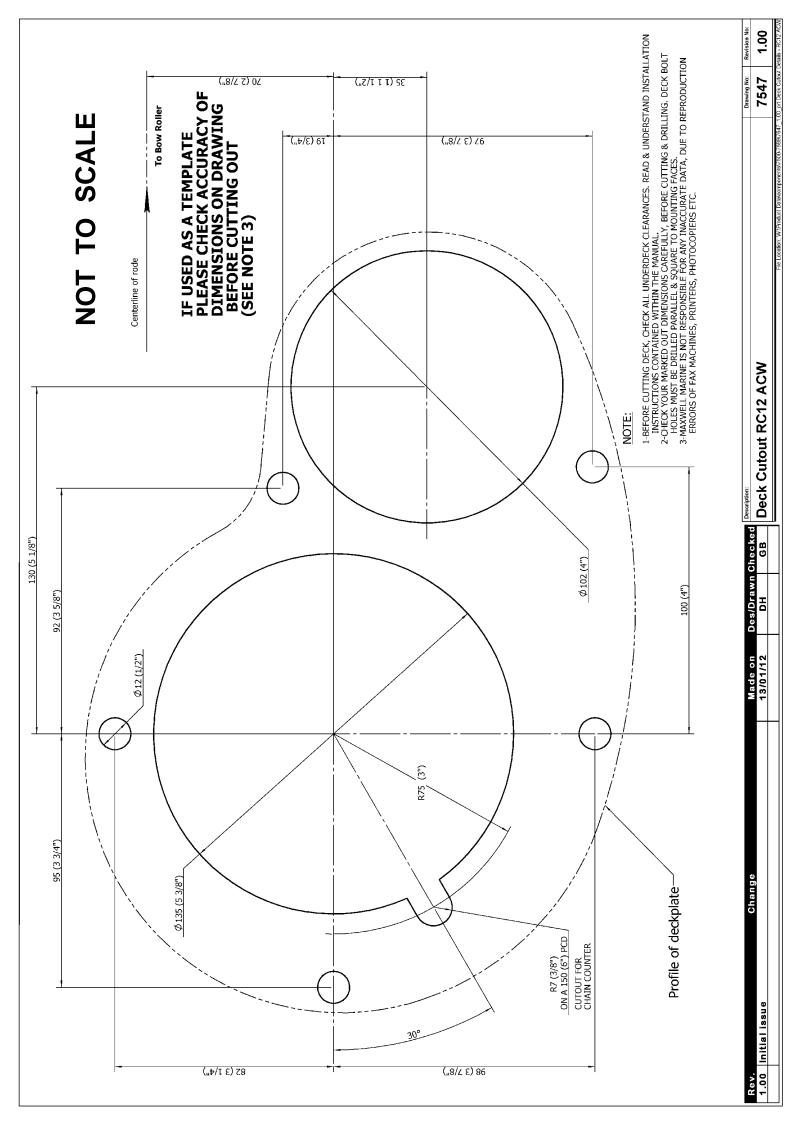
ACW – anticlockwise

### \* Chainwheel Listing

		Lower	
	Upper Chainwheel	Chainwheel	Chainwheel assembly
10mm -3/8" Chainwheel CW	part no: 7448	part no: 7447	P103317
Chainwheel 11mm- 3/8" CW	part no: 7757	part no: 7758	P103325
12mm/13mm -1/2" Chainwheel CW	part no: 7452	part no: 7451	P103318
10mm -3/8" Chainwheel ACW	part no: 7447	part no: 7448	P103321
Chainwheel 11mm- 3/8" ACW	part no: 7758	part no: 7757	P103326
12mm/13mm -1/2" Chainwheel ACW	part no: 7451	part no: 7452	P103322

Replacement Brushes (Motor 24V) SP3369 (x8)





## LIMITED WARRANTY

Warranty: Vetus-Maxwell APAC Ltd provides a three year limited warranty on windlasses for pleasure boat usage, and a one year limited warranty for those systems used on commercial or charter vessels. Warranty, service and parts are available around the world. Contact your nearest Vetus-Maxwell office for a complete list of service centres and distributors.

- This warranty is subject to the following conditions and limitations: 1. This Warranty will be null and void if (a) there is any neglect
  - This Warranty will be null and void if (a) there is any neglect or failure to properly maintain and service the products.
    - (b) the products are serviced, repaired or maintained improperly or by unauthorised persons.
    - (c) loss or damage is attributed to any act, matter or omission beyond the reasonable control of Vetus-Maxwell or the purchaser.

- -

- 2. Vetus-Maxwell liability shall be limited to repair or replacement (as determined by Vetus-Maxwell) of the goods or parts defective in materials or workmanship.
- 3. Determination of the suitability of the product and the materials for the use contemplated by the buyer is the sole responsibility of the buyer, and Vetus-Maxwell shall have no responsibility in connection with such suitability.
- 4. Vetus-Maxwell shall not be liable for any loss, damages, harm or claim attributed to:
  - (a) use of the products in applications for which the products are not intended.
  - (b) corrosion, wear and tear or improper installation.
  - (c) improper use of the product.
- 5. This Warranty applies to the original purchaser of the products only. The benefits of the Warranty are not transferable to subsequent purchasers.
- 6. Vetus-Maxwell shall not be responsible for shipping charges or installation labour associated with any warranty claims.
- 7. There are no warranties of merchantability, fitness for purpose, or any other kind, express or implied, and none shall be implied by law. If any such warranties are nonetheless implied by law for the benefit of the customer they shall be limited to a period of three years from the original purchase by the user.
- 8. Vetus-Maxwell shall not be liable for consequential damages to any vessel, equipment, or other property or persons due to use or installation of Vetus-Maxwell equipment.
- 9. This Warranty sets out your specific legal rights allowed by Vetus-Maxwell; these may be varied by the laws of different countries. In addition, the purchaser may also have other legal rights which vary from country to country.
- 10. To make a claim under this Warranty, contact your nearest Vetus-Maxwell office or distributor. Proof of purchase and authorisation from Vetus-Maxwell will be required prior to any repairs being attempted.

Purchaser			To be eligible for warranty protection, please either complete the form below at the time of purchase and return it to the appropriate retailer or supplier of the goods, or fill out the electronic warranty form on our website, www.maxwellmarine.com	
Name:			Address:	
Telephone:	Facsimile			
Supplier / Dealer				
Name:			Address:	
Telephone:	Facsimile			
Windlass Model			Serial Number	
Date of Purchase		Boat Type	Windlasses Supplied	
			With boat	
Name		L.O.A.	Fitted by boat yard/dealer	
Built by			Purchased from dealer/chandler	