Windlass
Product Training

For four decades the name Maxwell has been synonymous with the highest standards of performance in providing anchoring solutions for pleasure boats Super yachts and commercial vessels. Our international reputation for excellence has evolved through ongoing R & D, innovative design, customer service and a commitment to style and quality that is unparalleled in the industry.

Maxwell recognises that boat owners not only want equipment that works flawlessly, they want products that look great and perform to the highest standards.

Maxwell products are renowned for their reliability and performance throughout the international marine leisure boat industry. Our range of windlasses, capstans and accessories is extensive, providing anchoring solutions for vessels from 6 metres (20 feet) to over 90 metres (300 feet).

Maxwell's history is one of innovation and today is no exception. From the introduction of the world's first automatic rope/chain windlass during the mid 1990's to the custom built Super yacht series of the future, Maxwell continues to exceed client expectation over and over again in every aspect of reliability, functionality and design

In addition to our head office and manufacturing facility in Auckland, New Zealand, Maxwell has offices in California (USA), and Queensland (Australia). An extensive global dealer network throughout North and South America, Europe, Indo Asia, South Africa, Middle East and the Gulf States supports these main centres.

The Anchoring system on a boat is an important part of the safety equipment, faultless operation of the windlass is essential to prevent harm to the occupants and to the boat itself.

Effectively Setting and Retrieving an Anchor

May 2, 2007 Alan Sorum

Placing an Anchor - Placing and retrieving an anchor is always easier with two people, one at the bitter end of the rode and the other warm and dry in the cockpit. A suitable anchorage needs a good holding bottom and allows enough room for the boat to swing around on the anchor as the wind and current change. It is easy to set a plow or danforth anchor in a clay, silt or sandy bottom. Once you have selected the best spot to anchor, have the boat operator turn the vessel slowly into the wind. Ensuring the anchor is firmly attached to the rode, pay it out until you feel the anchor hit bottom. At this point, ask your boat operator to slowly back up as you pay out the scope required for the selected anchorage. When you have reached your desired scope, ask the operator to stop, secure the rode to the vessel and then ask the operator to back on the rode slowly. This action will take up the slack on the rode and drive the anchor sharply into the bottom. Once you are sure the anchor is set, the vessel can be shut-down and you can then move on to other tasks.

Retrieving an Anchor - The process is nearly the reverse of placing the anchor. While you are on the cold, wet bow of the boat, have your operator slowly approach the set anchorage. If everything is right in the world, the rode will be vertical in position and the flukes of the anchor will come free of the bottom. Retrieving an anchor with an appropriate anchor saves a great deal of pain and energy. If the anchor doesn't come free immediately, there are a couple things that can be tried. Have the operator reposition the boat to give the anchor stock a pull from a different direction. A couple pulls from a couple different angles is usually enough the solve the problem. Another trick is to use a anchor trip line. Most anchors have an attachment point for a trip line. It is at a point on the anchor where a pull on the line will back the anchor out of the bottom.

Anchoring Hints – Anchoring a boat is an exercise in physics. All is a function of heavy gear, applied force, friction and proper angles. Lean towards heavy ground tackle and invest in an anchor winch to retrieve it. Carry one anchor system onboard that is fully ready to be deployed during an emergency. Trying to find all the parts and pieces won't be enjoyable just after hitting a log or rock. Attaching a heavy weight near the junction of the chain and line of the rode can greatly keep the anchor stock down on the bottom. A heavy trolling or downrigger weight with a snap connector works well. Never attach an anchor rode to the stern of the boat. The boat won't ride well on the rode and water can be forced over the transom of many smaller boats.

Recommended Ground Tackle

- Main and backup anchors sized for the vessel and bottom conditions, equipped with shackles, chain and line rode
- Sea anchor with at least 200 feet of line
- Optional Items: Trip line and rode weight

Contents

Maxwell Windlass Naming

Traditional types.

– Windlass type followed by maximum pull in pounds e.g. VW 3500 = Vertical windlass 3500lb

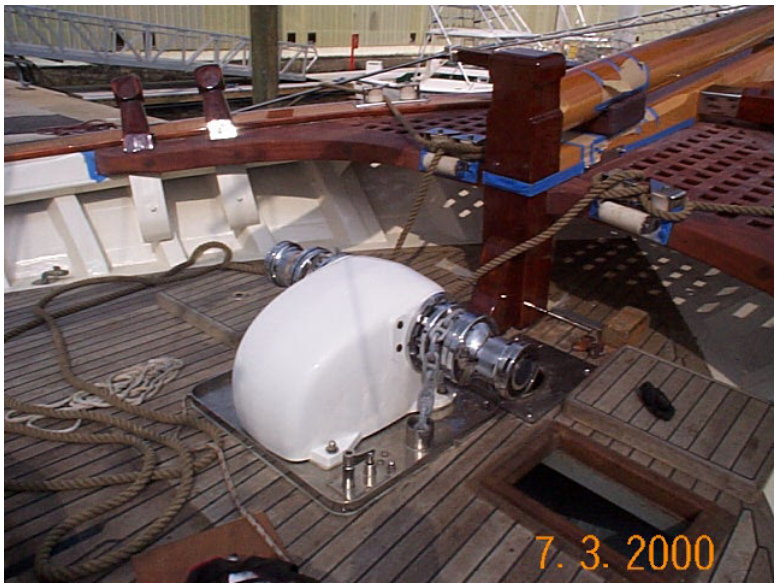
VW- **V**ertical **W**indlass

VWC- **V**ertical **W**indlass with integral **C**hainpipe

VWLP / VWCLP – **V**ertical **W**indlass **L**ow **P**rofile / **V**ertical **W**indlass with integral **C**hainpipe **L**ow **P**rofile

VC – **V**ertical **C**apstan

HWC/ HWVC – **H**orizontal **W**indlass with **C**hainpipe/



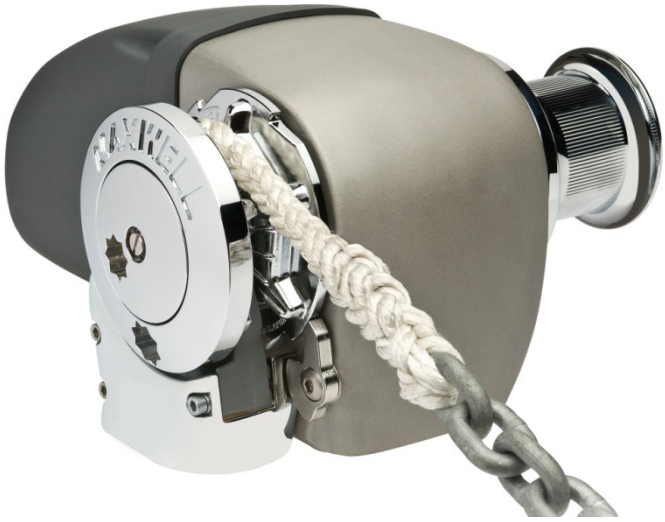
Horizontal **W**indlass with chainpipe & **V**ertical **C**apstan

New type.

- Windlass type followed by design chain size in mm e.g. RC8-8 – Rope chain windlass 8mm chain

RC – **R**ope **C**hain

HRC – **H**orizontal **R**ope **C**hain



Other Maxwell Products

Bow Rollers

Anchor chain snubbers and tensioners

Chain Stoppers

Anchor swivels

Circuit Breakers

Solenoids

Windlass controls – Panel mount, Hand held remotes, Footswitches , Chain counters

PRODUCT RELEASE NOTES FOR **AnchorMax**

Product is: NEW / IMPROVED INNOVATION

Release Date (estimated): March 2011

Product Codes:

P100461 Anchormax – 12V

Product Replaces: Anchormax P9510005

NEW Features	Benefit of Features
Stainless Steel Drum	No Chrome to damage
Closed top drum and superior seal	Reduced chance of water ingress
Improved gearbox efficiency	Reduced current draw for same pull
More compact under deck	Easier to fit.

Product Specifications

Model	Anchormax
Maximum Pull	386kg 850lb
Chain Short Link	N/A
Rope Size (3 strand or 8 plait)	N/A
Chain Speed (Normal working load)	N/A
Rope Speed (Normal working load)	24m/min 76ft/min
Power Supply (DC)	12V
Motor Power	500W
Net Weight (Electric)	6kg 13.2lbs

PRODUCT RELEASE NOTES FOR **RC6**

Product is: NEW / IMPROVED INNOVATION

Release Date : August 2010

Product Codes:

P102569 RC6 – 12V
P102570 RC6 – 24V

Product Replaces: N/A – New product

NEW Features	Benefit of Features
Stainless steel deckplate.	Corrosion free* durable deckplate
Stainless steel Pressure Arm	Break free
Large chain pipe hole	Reduced chance of jamming rode
Patented wave design chainwheel	Improved rode handling
No disassembly needed for installation	Easy to install
One tool topworks disassembly	Easy to maintain

Product Specifications

Model	RC6 6, 7mm– 1/4"
Maximum Pull	300kg 660lbs
Chain Short Link	6mm 7mm 1/4"
Rope Size (3 strand or 8 plait)	12mm 1/2"
Chain Speed (Normal working load)	24m/min 79ft/min
Rope Speed (Normal working load)	21m/min 69ft/min
Power Supply (DC)	12 or 24V
Motor Power	500W
Net Weight (Electric)	8.5kg 18.7lbs

PRODUCT RELEASE NOTES FOR **RC8 Range**

Product is: NEW / IMPROVED INNOVATION

Release Date : March 2009

Product Codes:

P102550 RC8-6 154DMC 12v
P102551 RC8-6 154DMC 24v
P102552 RC8-6 154DMC 12v - Capstan
P102553 RC8-6 154DMC 24v - Capstan
P102558 RC8-8 154DMC 12v
P102559 RC8-8 154DMC 24V
P102560 RC8-8 154DMC 12V – Capstan
P102561 RC8-8 154DMC 24V – Capstan

Product Replaces: Freedom Range (if applicable)

NEW Features	Benefit of Features
Stainless steel deckplate.	Corrosion free* durable deckplate
Stainless steel Pressure Arm	Break free
Large chain pipe hole	Reduced chance of jamming rode
Patented wave design chainwheel	Improved rode handling
Bolt in replacement for Freedom	Identical bolt pattern to Freedom (chain pipe hole may need to be enlarged)

Product Specifications

Model	RC8 - 6mm/7mm - 1/4	RC8 8mm - 5/16"
Maximum Pull	350kg 770lbs	600kg 1320lbs
Chain Short Link	6mm/7mm 1/4"	8mm 5/16"
Rope Size **(3 strand or 8 plait)**	12mm 1/2"	14mm-16mm 9/16"- 5/8"
Chain Speed **(Normal working load)**	29m/min 92ft/min	32m/min 105ft/min
Rope Speed **(Normal working load)**	24m/min 79ft/min	28m/min 92ft/min
Power Supply (DC)	12 or 24V	12 or 24V
Motor Power	600W	1000W
Net Weight (Electric)	12.5kg 27.5lbs	16.5kg 36.3lbs

PRODUCT RELEASE NOTES FOR **RC10 Range**

Product is: **NEW**

Release Date: November 2009

Product Codes:

P102571 RC10-8 100TDC 12v
P102572 RC10-8 100TDC 24v
P102573 RC10-8 100TDC 12v - Capstan
P102574 RC10-8 100TDC 12v - Capstan
P102575 RC10-10 100TDC 12v
P102576 RC10-10 100TDC 24v
P102577 RC10-10 100TDC 12v - Capstan
P102578 RC10-10 100TDC 24v - Capstan

Product Replaces: 1000/1500 (if applicable)

NEW Features	Benefit of Features
Rope / Chain handling	Able to run combination rodes
Stainless steel deckplate.	Corrosion free* durable deckplate
Stainless steel Pressure Arm	Break free
Large chain pipe hole	Reduced chance of jamming rode
Patented wave design chainwheel	Improved rode handling
Composite plastic coated StSt Stripper	Improved durability with minimal noise

Product Specifications

Model	RC10 8mm - 5/16"	RC10 10mm - 3/8"
Maximum Pull	700kg 1540lbs	850kg 1870lbs
Chain Short Link	8mm 5/16"	10mm 3/8"
Rope Size (3 strand or 8 plait)	14mm 9/16"	16mm 5/8"
Chain Speed (Normal working load)	24m/min 79ft/min	24m/min 79ft/min
Rope Speed (Normal working load)	20m/min 65ft/min	20m/min 65ft/min
Power Supply (DC)	12 or 24V	12 or 24V
Motor Power	1000W	1200W
Net Weight (Electric)	19kg 42lbs	20kg 44lbs

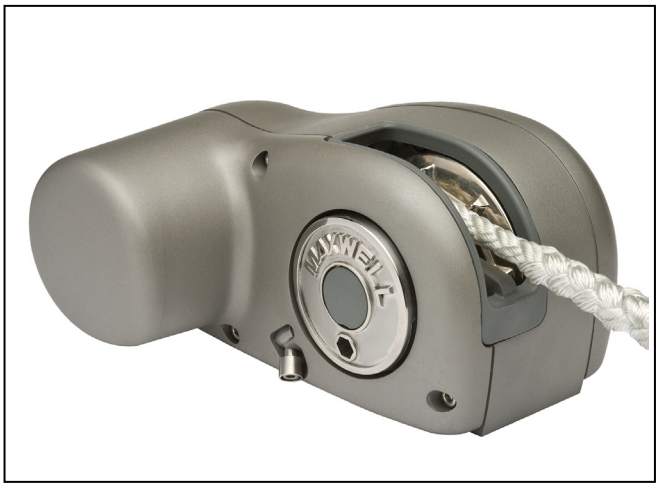
PRODUCT RELEASE NOTES FOR **HRC-FF**

Product is: NEW / IMPROVED INNOVATION

Release Date : February 2011

Product Codes:

P102820 HRC-FF 6mm 12V
P102822 HRC-FF 7mm 1/4” 12V
P102825 HRC-FF 8mm 5/16” 12V
P102826 HRC-FF 8mm 5/16” 24V



Product Replaces: HRC6 & HRC8

NEW Features	Benefit of Features
Auto free fall capability	Rapid deployment of anchor
Anodized aluminum cases	Better durability
Improved gear train strength	Reduced chance of gear damage
Helical cut input gear	Reduced noise level
Lower profile case	Reduced above deck profile
Patented wave design chainwheel	Improved rode handling

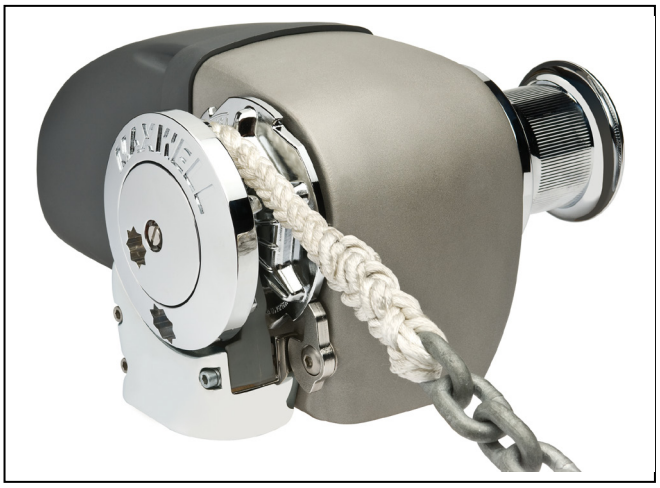
Product Specifications

Model	HRC-FF 6mm	HRC-FF 7mm – 1/4"	HRC-FF 8mm – 5/16"
Maximum Pull	270kg 600lbs	270kg 600lbs	405kg 900lbs
Chain Short Link	6mm	7mm 1/4"	8mm 5/16"
Rope Size **(3 strand or 8 plait)**	12mm 1/2"	12mm 1/2"	12-14mm 1/2 - 9/16"
Chain Speed **(Normal working load)**	25m/min 81ft/min	25m/min 81ft/min	33m/min 108ft/min
Rope Speed **(Normal working load)**	22m/min 72ft/min	22m/min 72ft/min	28m/min 92ft/min
Power Supply (DC)	12 V	12 V	12 or 24V
Motor Power	400W	400W	600W
Net Weight (Electric)	11kg 24lbs	11kg 24lbs	11.5kg 25lbs

PRODUCT RELEASE NOTES FOR **HRC-10 Range**

Product is: NEW / IMPROVED INNOVATION

Release Date : July 2010



Product Codes:

P100240	HRC10-8 SCW/SD 12V
P100241	HRC10-8 SCW/SD 24V
P100242	HRC10-10 SCW/SD 12V
P100243	HRC10-10 SCW/SD 24V
P100244	HRC10-8 SCW/SD Hyd
P100245	HRC10-10 SCW/SD Hyd
P100246	HRC10-8 SCW 12V
P100247	HRC10-8 SCW 24V
P100248	HRC10-10 SCW 12V
P100249	HRC10-10 SCW 24V
P100250	HRC10-8 SCW Hyd
P100251	HRC10-10 SCW Hyd

Product Replaces: HWC 1500

NEW Features	Benefit of Features
Rope / Chain Handling	Ability to run combination rodes
Integral chainpipe	Ease of installation
Over 90° wrap on chainwheel	Improved chain handling
Emergency crank	Easy to use Emergency crank
Two piece case removable without taking off deck	Ease of maintenance access gearbox and motor without removing from deck
Stainless steel drum	No damage to chrome , flaking
Composite plastic coated StSt stripper	Stronger and break resistant
Stainless steel pressure arm	No plastic to break
Compact design	Smaller deck profile

Product Specifications

Model	HRC10 8mm - 5/16"	HRC10 10mm - 3/8"
Maximum Pull	700kg 1540lbs	850kg 1870lbs
Chain Short Link	8mm 5/16"	10mm 3/8"
Rope Size (3 strand or 8 plait)	14mm-16mm 9/16-5/8"	16mm 5/8"
Chain Speed (Normal working load)	24m/min 79ft/min	24m/min 79ft/min
Rope Speed (Normal working load)	20m/min 65ft/min	20m/min 65ft/min
Power Supply (DC)	12 or 24V	12 or 24V
Motor Power	1000W	1200W
Net Weight (Electric)	19kg 42lbs	20kg 44lbs

PRODUCT RELEASE NOTES FOR **RC12**

Product is: NEW / IMPROVED INNOVATION

Release Date (estimated): 2nd 1/2 2011

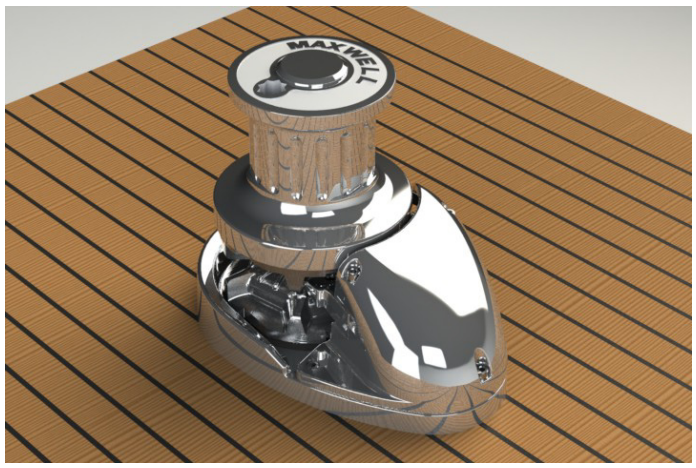
Product Codes:

P104900	RC12 10mm – 12V
P104901	RC12 10mm – 24V
P104902	RC12 10mm – Hyd
P104903	RC12 12mm – 12V
P104909	RC12 10mm Capstan – 12V
P104912	RC12 12mm Capstan – 12V

All versions available 12, 24 & Hyd CW or ACW

Extra deck clearance versions available (190TDC)

Product Replaces: 2200 (if applicable) Liberty
3500 (if applicable)



NEW Features	Benefit of Features
Stainless Steel Topworks *2	Corrosion free* durable topworks
Rope Chain (10 & 12mm)	Able to run combination rodes
Integral ratcheting pawl	No need to put hands in harms way
Robust Emergency crank system	Simple to use ratcheting E'crank
Large chain pipe hole	Reduced chance of rode jamming
Patented wave design chainwheel	Improved rode handling.

Product Specifications

Model	RC12 10mm – 3/8"	RC12 13mm - 1/2"
Maximum Pull	1134kg 2500lbs	1590kg 3500lbs
Chain Short Link	10mm 3/8"	13mm 1/2"
Rope Size **(3 strand or 8 plait)**	16mm-20mm 5/8-3/4"	16mm-20mm 5/8-3/4"
Chain Speed **(Normal working load)**	24m/min 79ft/min	15m/min 50ft/min
Rope Speed **(Normal working load)**	20m/min 65ft/min	13m/min 43ft/min
Power Supply (DC)	12 or 24V	12 or 24V
Motor Power	1200W	1200W
Net Weight (Electric)	29kg 64lbs	29kg 64lbs

PRODUCT RELEASE NOTES FOR **HRC12**

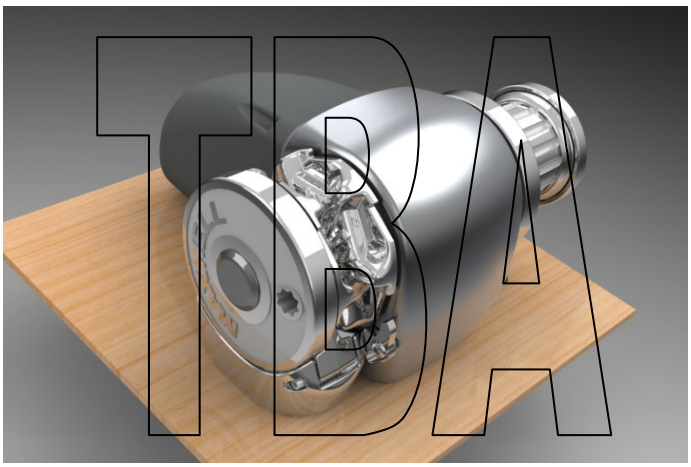
Product is: NEW / IMPROVED INNOVATION

Release Date (estimated): Mid 2012

Product Codes:

TBA ,	12V, 24V & Hydraulic version
TBA,	Single chainwheel single drum
TBA	Double chainwheel double drum
TBA	Double chainwheel single drum
	(note final configurations yet to be confirmed)

Product Replaces: HWC 2200 (if applicable)
HWC 3500 (if applicable)



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Rope Chain (10 & 12mm)	Able to run combination rodes
Integral ratcheting pawl	No need to put hands in harms way
Robust Emergency crank system	Simple to use ratcheting E'crank
Large chain pipe hole	Reduced chance of rode jamming
Patented wave design chainwheel	Improved rode handling.

Product Specifications

Model	HRC12 10mm – 3/8"	HRC12 13mm - 1/2"
Maximum Pull	1134kg 2500lbs	1590kg 3500lbs
Chain Short Link	10mm 3/8"	13mm 1/2"
Rope Size **(3 strand or 8 plait)**	16mm-20mm 5/8-3/4"	16mm-20mm 5/8-3/4"
Chain Speed **(Normal working load)**	24m/min 79ft/min	15m/min 50ft/min
Rope Speed **(Normal working load)**	20m/min 65ft/min	13m/min 43ft/min
Power Supply (DC)	12 or 24V	12 or 24V
Motor Power	1200W	1200W
Net Weight (Electric)	TBA kg	TBA kg

Common Terms

Bollard
An upright round post with projecting arms, for belaying and snubbing dock or anchor lines.

Capstan
Often referred to as a drum, rope drum, or warping drum used for hauling rope whilst being tailed by the operator.

Chain locker
The compartment in which the chain is stored.

Chain pipe
Mounted on deck, it is the conduit that guides the chain from deck level to below deck. It can be a separate item or integral part of a windlass.

Chain Stopper
Located between the winch and bow roller. Secures chain and anchor and takes the load off the windlass. A chain stopper must be used for systems utilising all chain and for rope and chain systems.

Chainwheel
Often referred to as gypsy, cable lifter or wildcat. A special wheel with pockets, to accommodate a specified chain size, for hauling up the chain and anchor. With automatic rope/chain systems, the gypsy is designed to haul both rope and chain.

Contactor(s) / Solenoid Box
A heavy duty relay(s) for opening and closing a power circuit, typically to a motor.

Displacement
Weight of water displaced by the submerged part of a boat while it is afloat.

Draught (Draft)
The depth of water which a vessel requires to float her.

Fly bridge
A control station on top of the deckhouse that provides high visibility for deep sea fishing and navigation.

Free Fall / Auto Free Fall
Release of the winch clutch mechanism allowing the anchor and rode to run out freely with no engagement of winch gearbox or motor.
Auto free fall is where the release of the clutch mechanism is built into the windlass such that when a helm switch is pressed the clutch is released.

Gypsy
See Chainwheel .

Hauling
Often referred to as weighing or lifting. The operation of lifting the anchor and rode.

Hawse pipe
Mounted between the deck and the hull it is the conduit that guides the chain from deck to the hull where the anchor is stowed. It can accommodate the anchor shank when stowed.

Horizontal
Pertaining to the winch or windlass. Drive shaft, capstan and chainwheel axis is positioned horizontally to the deck.

Line
A rope used for a specific purpose aboard a vessel.

Maximum Pull
Sometimes referred to as rated lift, stall load, or simply lift/pull. The maximum pull or lift load of the winch.

Rode
An anchor line. Refers to chain, rope, or rope/chain lines.

Rope
Generally speaking, when a piece of rope is put to use on a vessel it becomes a line.

Snub
To check the movement of a line by taking a turn around a snubbing capstan, a cleat or a post.

Spurling pipe
Mounted below deck, it is the conduit that guides the chain within or to the chain locker.

Tailing
Controlling the exit or entry of a line at the top of a capstan. The tailing force is a reduction of the hauling load due to the grip of the line wraps around the capstan.

Tensioner
The device used to hold the anchor tight to avoid the anchor flogging against the yacht due to the yacht's motion.

Topworks
The parts of the windlass that are above the deck.

Vertical
Pertaining to the windlass or capstan. The drive shaft, capstan and gypsy axis are positioned vertically to the deck.

VFD
Variable Frequency Drive. An electronic device used to control AC motors by varying the alternating frequency of the voltage supplied to the motor from a consistent source.

Warping - warp
To move a vessel from one place to another by means of a rope made fast to some fixed object, typically in a marine context. A warp is a piece of rope used for warping.

Weigh
To lift, as to weigh anchor.

Windlass
A machine designed to raise or lower an anchor.

Working load
Often referred to as the normal working load or the typical lift of the winch. The working load should approximately correspond to the total weight of the anchor and rode aboard the boat.

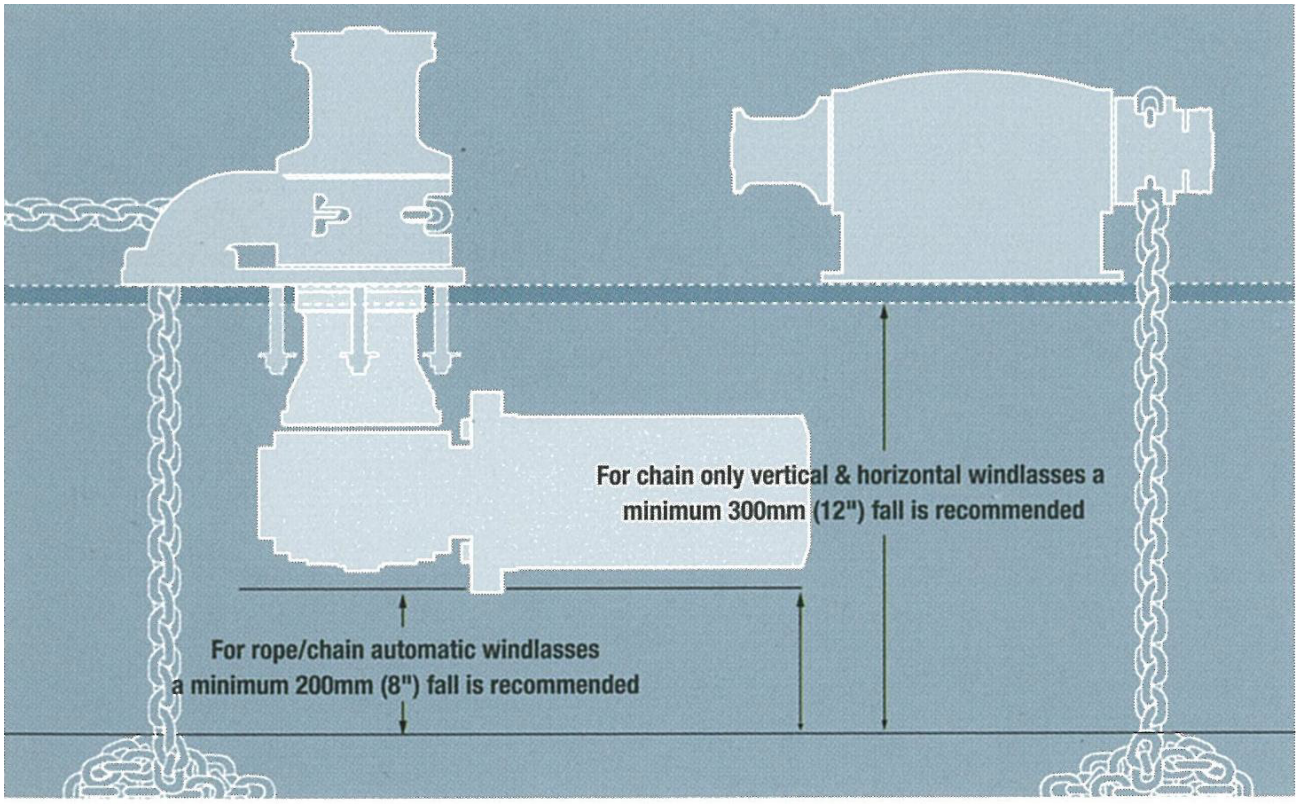
Winch Selection Guide

In the Catalogue and on the web page we have a page devoted to windlass selection. This is a rough guide only and a number of other factors should be considered when assisting a customer in selecting a windlass.

The Criteria for selecting windlass include the vessel size, displacement, windage, anchor size, rode selection, Locker size and space, vessel usage (commercial or recreational), anchoring conditions (wind, depth etc) and power system.

The customer should be allowed to make a selection from the guide and then with the assistance of the sales person adjust this selection to suit the application.

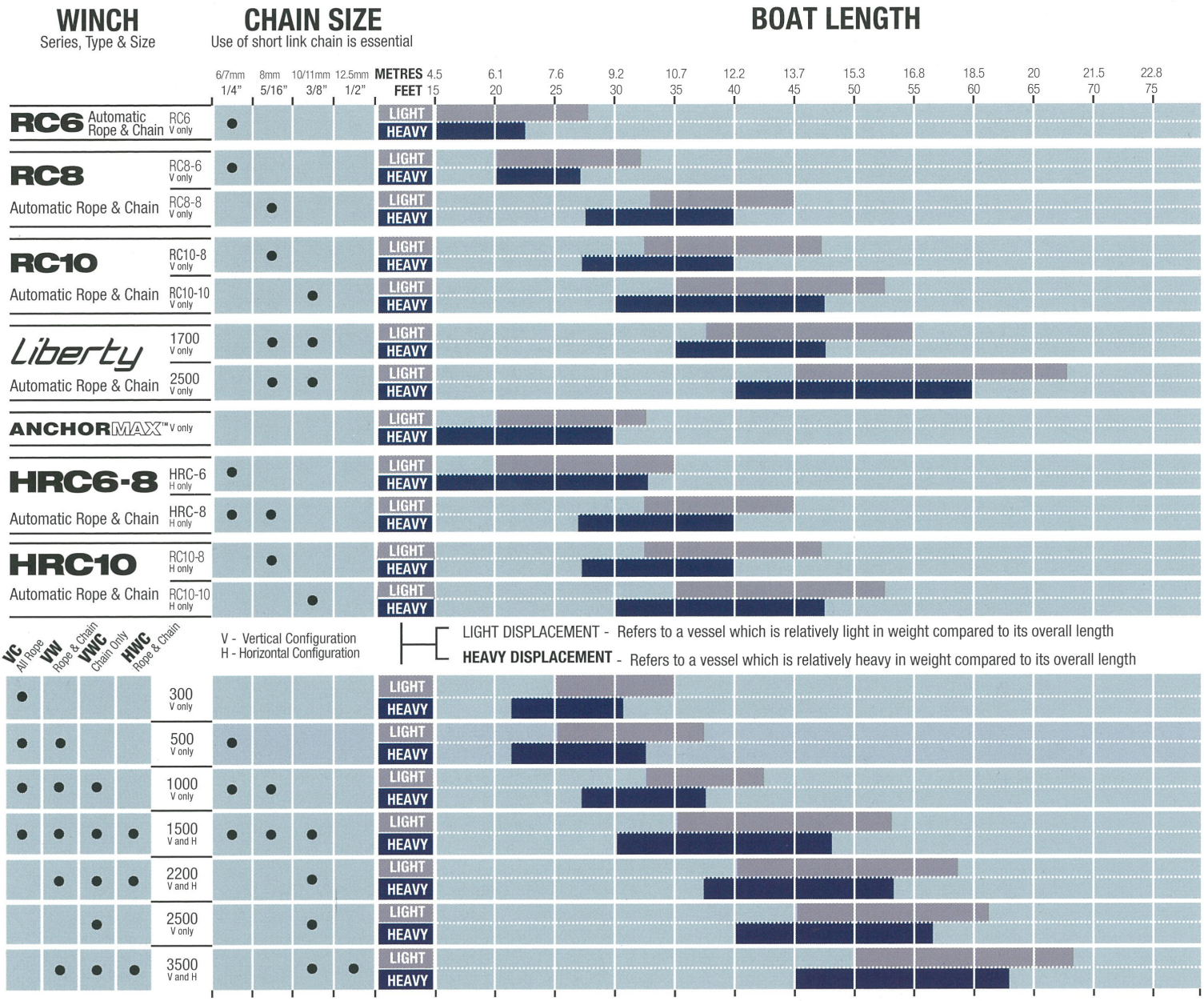
For commercial and or heavy use operations selecting a windlass one size larger is generally regarded as being a good idea to reduce the % load on the windlass and extend the service life.
Additionally for commercial boats it may be necessary to comply with society rules e.g. MSA, DNV, Lloyds etc This question should be asked at time of ordering. In some cases the society does not have any requirements for the windlass but will include the chain in the certification.



WINDLASS AND CAPSTAN SELECTION CHART

This chart serves as a basic guide to assist in selecting the appropriate anchor winch system for your boat.

Please note: Size, displacement and type of vessel, as well as anchoring conditions, must be taken into consideration when selecting an anchor winch. Vessels of heavy displacement and/or high windage will require larger windlasses. All systems assume the use of a chain stopper, chain snubber or mooring cleat to remove the load when setting or breaking the anchor loose. The maximum pulling capacity of the windlass should not be less than three times the total weight of the ground tackle. Should you require any assistance or information, please do not hesitate to contact Maxwell Marine or any one of our distributors or service centres world-wide.



This chart refers to anchor windlass selection only. When selecting a stern capstan for the same boat, Maxwell uses one size smaller drive, or down to a minimum of 50% of the pull rating of the windlass (unless specified otherwise).

Chain Dimensioning and Chainwheel Selection

When selecting a chainwheel for a customer you will need to get the dimensions of the chain they intend to use. There is a form on S:\Winchinfo Power and Sail motor and accessories\Chain dimensioning-specification questionnaire .doc, also available on the website that can guide the customer to measure the chain.

The most important measurement in terms of chainwheel fit is P – Pitch length, 2nd most important is W2 width outside link. With an accurate measure of these two dimensions a chainwheel can be selected.

The other 4 dimensions can be used to check for any discrepancies
Length outside the link should be pitch + 2 x wire diameter
Chain wire diameter should match up with a chain specification for the pitch e.g. 24mm pitch should have a 8mm wire diameter - an unusually long pitch for wire diameter indicates a stretched chain.
Width inside the link should be at least wire diameter
11 links measurement divided by 11 should = Pitch , Wire diameter should match a chain size of the same pitch

Once you have these dimensions then a chainwheel can be selected from the Maxwell Chainwheel listing available on S:\Winchinfo Power and Sail motor and accessories \ which is also available on the website.

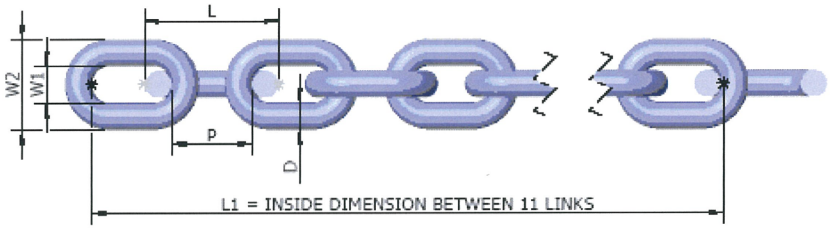
When selecting a chainwheel for a particular chain first check the dimensions make sense i.e. 11 link measure agrees with pitch W1-W2 = 2 x wire diameter.

Once happy dimensions are correct you can find the closest match to the chain pitch in row 3, scroll down to the desired windlass and read off the Part number.

For the RC range of windlasses with the new chainwheel a much broader range of chains can be accepted on each chainwheel.

Horizontal windlasses need a better match to chain pitch than vertical windlasses due to the reduced wrap.

E.g.

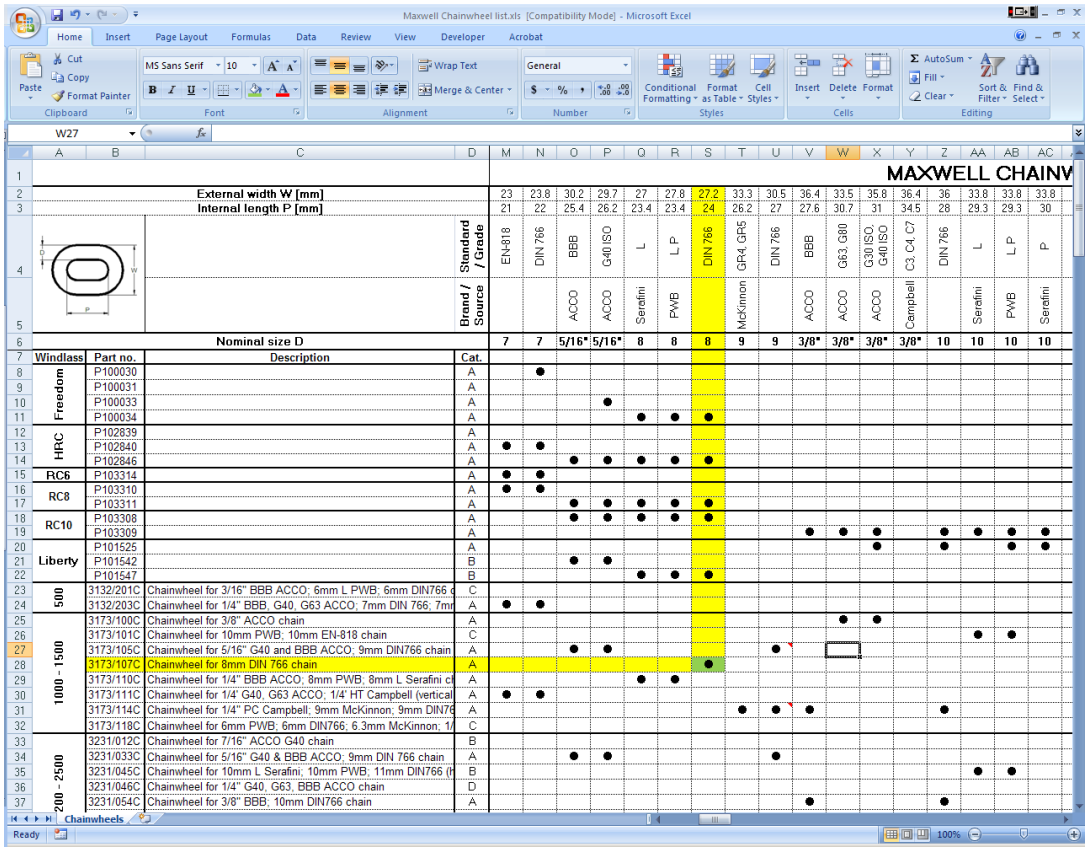


P = pitch inside link L = length outside the link D = Chain wire diameter
W1 = width inside link W2 = width outside the link L1= inside dimension between 11 links

Customer Chain Specifications	
Manufacturer/Supplier name	
Chain standard/code	
Chain type: Short link/stud link	Short link
Manufacturers specification if known	—
Material	Mild steel
Grade	—
Finish	Galv
P – Pitch length inside link	24.35
L – Length outside the link	40.35
D – Chain wire diameter	8.20
W1 – width inside the link	11.0
W2 – width outside the link	27.2
L1 – inside dimension between 11 links	267

267/11 = 24.27 = Pitch = 24.35 – OK

all others look ok, customer wants a chainwheel for 1000 VWC.



Windlass accessory guide

The windlass accessory guide shows which accessories suit each particular windlass, which accessories are standard which must be added at point of sale and which are optional.

Note: The accessory guide is subject to change please check you are referring to the latest version and avoid storing the guide locally on your computer.

Maxwell Marine
Power and Sail Range
Motor and Accessories Selection Guide

Model		AnchorMax	300VC	500VC	HRC6 FF	HRC7 FF	HRC8 FF	RC6	RC8-6	RC8-8
		400W	600W	600W	600W	600W	600W	400W	600W	1000W
Motor	12V	SP4189	P10068	P10068	SP4160	SP4160	SP4160	SP4189	P10068	P12072
	24V	N/A	P10069	P10069	N/A	N/A	SP4159	SP4190	P10069	P12074
	Hyd *	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acessories										
Breaker	12V (Amp)	P102903 (70A)	P100790 (80A)	P100790 (80A)	P102902 (50A)	P102903 (70A)	P102903 (70A)	P100789 (40A)	P100790 (80A)	P100791 (135A)
	24V (Amp)	N/A	P100789 (40A)	P100789 (40A)	N/A	N/A	P100789 (40A)	TBA	P100789 (40A)	P100790 (80A)
Footswitch - Black with cover			P19006	P19006	P19006	P19006	P19006	P19006	P19006	P19006
Footswitch - Black no cover		P19008								
Footswitch - White with cover			P19007	P19007	P19007	P19007	P19007	P19007	P19007	P19007
Footswitch - Chromed no cover			P19001	P19001	P19001	P19001	P19001	P19001	P19001	P19001
Footswitch - Stainless with cover			P100735	P100735	P100735	P100735	P100735	P100735	P100735	P100735
Chain Wheel Prefix										
Brake Band *(3500 BB series only)*										
RSP	12V				P100715	P100715	P100715	P100715	P100715	P19045
	24V				N/A	N/A	P11121	P11121	P11121	P19046
Remote Panel *(multi voltage)*					P102938	P102938	P102938	P102938	P102938	P102938
Optional 12V *(upon request only)*					P19220	P19220	P19220	P19220	P19220	P19220
Optional 24V *(upon request only)*							P19221	P19221	P19221	P19221
Roving Control 2 Button					P102933	P102933	P102933	P102933	P102933	P102933
Roving Control 4 Button **										
AA341 Roving Control 2 Button					P102992	P102992	P102992	P102992	P102992	P102992
AA342 Roving Control 4 Button **										
AA150 Chain Counter					P102939 ***	P102939 ***	P102939 ***	P102939	P102939	P102939
AA560 Chain Counter & Control					P102944 ***	P102944 ***	P102944 ***	P102944	P102944	P102944
6.5mtr Sensor Cable Extn Pack †					SP4156	SP4156	SP4156	SP4156	SP4156	SP4156
15.0mtr Sensor Cable Extn Pack †										
20.0mtr Sensor Cable Extn Pack †										
AA710 Wireless Control & Counter					P102979 ***	P102979 ***	P102979 ***	P102979	P102979	P102979

Items with no colour coding are supplied as standard with the unit and do not require ordering.
Standard accessory must be added at point of sale.
Optional accessory. Can replace standard accessory where applicable. To be confirmed by customer and added at point of sale.
HRC, RC and Liberty series units customer to advise chain specification. Chainwheel part of assembly
Customer to advise Chain size and specification (ref: Chainwheel Listing). 5437/ is prefix for 3500 VW/VWC/VWCLP Brake Band Series
These units have a power indicator LED and are voltage sensitive.
Auto Anchor Roving Control - alternative to standard.
*Hydraulic units are supplied with out controls unless specified by purchaser. All controls listed are suitable for use with Hydraulic systems.
** Can be used as single control of twin installations (CW - ACW vertical units) or Windlass and auxillary control
*** P102909 Sensor and Magnet Kit to be ordered when fitting these products to HRC6/HRC7/HRC8 series.
† Plug and Play Sensor Cables Cables are the preferred recommendation. Length to Windlass size is recommendation only, can be mixed and matched to suit Customers

Maxwell Marine

Power and Sail Range

Motor and Accessories Selection Guide

Model		RC10-8	RC10-10	HRC10-8	HRC10-10	Liberty 1700	Liberty 2500	1000	1500	2200	2500	3500
		1000W	1200W	1000W	1200W	1000W	1200/1500W	1000W	1200W	1200W	1500W	1200W
Motor	12V	P12072	P12073	P12072	P12073	P12072	P12073	P12072	P12073	P12073	N/A	P11165
	24V	P12074	P12074	P12074	P12074	P12074	SP2960	P12074	P12074	P12074	SP2960	P11166
	Hyd *	N/A	N/A	P14366	P14366	N/A	N/A	P14366	P14366	P14369	N/A	P14368
Acessories												
Breaker	12V (Amp)	P100791 (135A	P100791 (135A	P100791 (135A	P100791 (135A	P100791 (135A	P100791 (135A	P100791 (135A	P100791 (135A	P100791 (135A	N/A	P100791 (135A
	24V (Amp)	P100790 (80A)	P100790 (80A)	P100790 (80A)	P100790 (80A)	P100790 (80A)	P100790 (80A)	P100790 (80A)	P100790 (80A)	P100790 (80A)	P100790 (80A)	P100790 (80A)
Footswitch - Black with cover		P19006	P19006	P19006	P19006	P19006	P19006	P19006	P19006	P19006	P19006	P19006
Footswitch - Black no cover												
Footswitch - White with cover		P19007	P19007	P19007	P19007	P19007	P19007	P19007	P19007	P19007	P19007	P19007
Footswitch - Chromed no cover		P19001	P19001	P19001	P19001	P19001	P19001	P19001	P19001	P19001	P19001	P19001
Footswitch - Stainless with cover		P100735	P100735	P100735	P100735	P100735	P100735	P100735	P100735	P100735	P100735	P100735
Chain Wheel Prefix								3173/	3173/	3231/	3231/	3182/
												5437/
Brake Band *(3500 BB series only)*												P101967
RSP	12V	P19045	P19045	P19045	P19045	P19045	P19045	P19045	P19045	P19045	N/A	P19045
	24V	P19046	P19046	P19046	P19046	P19046	P19046	P19046	P19046	P19046	P19046	P19046
Remote Panel *(multi voltage)*		P102938	P102938	P102938	P102938	P102938	P102938	P102938	P102938	P102938	P102938	P102938
Optional 12V *(upon request only)*		P19220	P19220	P19220	P19220	P19220	P19220	P19220	P19220	P19220	P19220	P19220
Optional 24V *(upon request only)*		P19221	P19221	P19221	P19221	P19221	P19221	P19221	P19221	P19221	P19221	P19221
Roving Control 2 Button		P102933	P102933	P102933	P102933	P102933	P102933	P102933	P102933	P102933	P102933	P102933
Roving Control 4 Button **										P102934	P102934	P102934
AA341 Roving Control 2 Button		P102992	P102992	P102992	P102992	P102992	P102992	P102992	P102992	P102992	P102992	P102992
AA342 Roving Control 4 Button **										P102995	P102995	P102995
AA150 Chain Counter		P102939	P102939	P102939	P102939	P102939	P102939	P102939	P102939	P102939	P102939	P102939
AA560 Chain Counter & Control		P102944	P102944	P102944	P102944	P102944	P102944	P102944	P102944	P102944	P102944	P102944
6.5mtr Sensor Cable Extn Pack †		SP4156	SP4156	SP4156	SP4156	SP4156	SP4156	SP4156	SP4156			
15.0mtr Sensor Cable Extn Pack †		SP4157	SP4157	SP4157	SP4157	SP4157	SP4157		SP4157	SP4157	SP4157	SP4157
20.0mtr Sensor Cable Extn Pack †												SP4153
AA710 Wireless Control & Counter		P102979	P102979	P102979	P102979	P102979	P102979	P102979	P102979	P102979	P102979	P102979

Items with no colour coding are supplied as standard with the unit and do not require ordering.

Standard accessory must be added at point of sale.

Optional accessory. Can replace standard accessory where applicable. To be confirmed by customer and added at point of sale.

HRC, RC and Liberty series units customer to advise chain specification. Chainwheel part of assembly

Customer to advise Chain size and specification (ref: Chainwheel Listing). 5437/ is prefix for 3500 VW/VWC/VWCLP Brake Band Series

These units have a power indicator LED and are voltage sensitive.

Auto Anchor Roving Control - alternative to standard.

*Hydraulic units are supplied with out controls unless specified by purchaser. All controls listed are suitable for use with Hydraulic systems.

** Can be used as single control of twin installations (CW - ACW vertical units) or Windlass and auxillary control

*** P102909 Sensor and Magnet Kit to be ordered when fitting these products to HRC6/HRC7/HRC8 series.

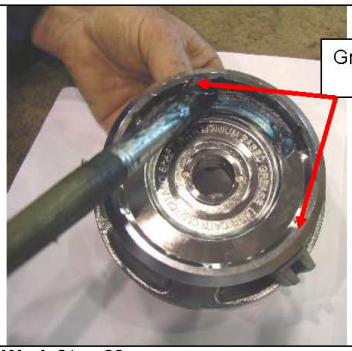
† Plug and Play Sensor Cables Cables are the preferred recommendation. Length to Windlass size is recommendation only, can be mixed and matched to suit Customers requirement.

Quality control checks

Our outsource suppliers assemble Maxwell products using “Standard Operating Procedures”, SOP’s, supplied by Maxwell.

An example of one page of the RC8 SOP is attached

Maxwell Marine International Limited	**RC8 Windlass assembly Process**			Procedure No: W0025
Standard Operating Procedure				Issue Date: 04/12/09
Cell 1 winch manufacture	Prepared by: A Morris/DH	Checked by: Operators	Revision No:1.00	Revision Date:

		
Work Step 81 ▪ Install a Bellville washer onto shaft ensuring that it is the correct way up (Concave upwards)	**Work Step 82** ▪ Take chain wheel assembly ▪ Apply lithium grease to conical surfaces on lower half of chain wheel with excess in grooves	**Work Step 83** ▪ Place chain wheel on to winch shaft pulling pressure arm away to permit chain wheel to fit into place. ▪ Ensure that Bellville washer has been fitted correct way up before fitting chain wheel
PPE Required Dust coat	**PPE Required** Dust coat	**PPE Required** Dust coat
Tools required	**Tools required**	**Tools required**
Materials required Bellville washer	**Materials required**	**Materials required**
Safety and Critical Points	**Safety and Critical Points**	**Safety and Critical Points** Ensure that Bellville washer has been fitted correct way up before fitting chain wheel

W:\Standard Operating procedures and Visual Aids\Windlass SOP, VA\RC Series\W0025_1.00_SOP_RC8 Capstan windlass assembly.doc P 29 of 46 dh 041209

The assembled windlasses are then packaged and a final Quality Control check sheet is used to confirm that the product is correct and acceptable and that the packaging and contents including accessories is correct.

MAXWELL

Windlass Assembly and Packaging Checklist

Manufacturing Order No. _____

Winch code No on Pick list: **P**.....

Winch serial number: ..... **Winch type**: .....

Winch power source: DC 12 Volt ☐ 24 Volt ☐

Assembly and Packaging Checks **Tick if OK or tick NA**

Item to be checked	Assembly		Check		Comments
	OK	NA	OK	NA	
Motor key and Motor mounting bolt kit					
Deck plate attachment nut kit					
Clutch handle included & secure in packaging					
Deck plate free from damage					
Drum ☐ SS ☐ Chrome					
Pressure arm central in chainwheel and free to move					
Deck plate Gasket (correct size)					
Instruction manual included					
Gearbox oil checked					
Foam packaging OK					
Serial number on gearbox, windlass ID label, on outside of case/carton and on Job sheet all match?					
Chain wheel secure & with magnet fitted					

Motor	No Motor	Included	Fitted	Included	Fitted	No Motor

Assembled by.....Date:.....

Final check at MML by:.....Date:.....

Accessories included or added by dispatch – add to list below if necessary - Tick if OK or tick NA

Item to be checked	Quantity		Check		Item to be checked	Quantity	Check	
	12V	24V	OK	NA			OK	NA
Motor					Chain counter			
Reversing Solenoid box					Chain wheel (With magnet fitted) code			
Breaker/Isolator switch					Foot switch			
Remote control switch								

Dispatch items added by:.....Date:.....
Dispatch items checked by:.....Date:.....

Comments:
.....

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TEL +64 9 985 6600 / **FAX** +64 9 985 6699 / **WEB** www.maxwellmarine.com
Maxwell Marine International Ltd is an ISO 9001 certified company

Lead Times as at January 2011

Product	Std Lead Time
Anchormax	8 weeks +**
HRC FF	8 weeks +**
RC series (inc HRC)	8 weeks +**
VC 300-500	8 weeks
1000-1500 incl *LP*	8 weeks
2200 – 4000	8 weeks
1500-3500 Horizontal	8 weeks
Liberty	8 weeks
3500 HWVC	12 weeks
Super Yacht	12 weeks
Chain Stoppers	12 weeks
RST	12 weeks
Bandbrakes	12 weeks
Chain wheel	8 weeks
SY22 – SY32	20 weeks

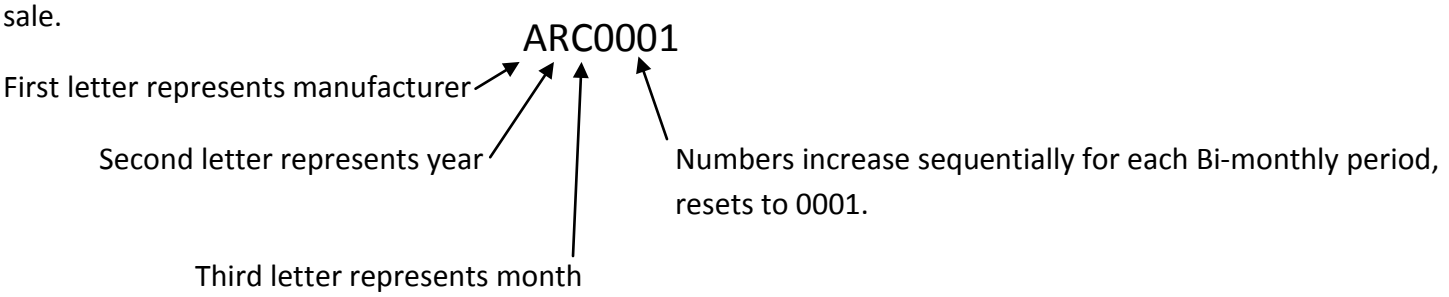
**** based on forecasted outsourced assemblies**

Where to find serial numbers

Maxwell Serial number system

With outsourcing of Maxwell windlasses we need to identify who made the product and when. We have therefore introduced a new numbering system as follows.

Product will be tracked by top works as opposed to gearbox as we have in the past. This change is necessary due to top works assemblies being outsourced, and potentially having gearboxes and motors added at point of sale.



The above Number would represent a windlass made by Maxwell NZ, May-June 2010

Manufacturer Code

A Maxwell New Zealand
B Techwin
M MM Gears

Year Code

R is 2010 S is 2011 etc

Month Code

Jan-Feb is A
Mar-Apr is B
May-Jun is C etc.

For Power and Sail product the serial number is printed onto permanent 15x10mm adhesive label and applied to the deckplate as shown below. A second label would be placed on the underside of the deckplate. The serial number will be applied by the company assembling the top works assembly.

Serial numbering of Super Yacht product will remain unchanged.

Identifying Maxwell products.

Traditional style or new style ?

Traditional - Numbers on top ? label 800,1000,1200,1500,2200,3500 etc or remnants of a round black label. This will directly identify the range of windlass e.g. 800.

If there is no label because it has peeled off or faded then size of the unit can be used to help narrow it down, If it is running 6mm chain and has no dogs on chainwheel it will be a 500 or 800 series.

If the unit is running 6 – 10mm chain and has dogs on the chainwheel it will be in the 1000-3500 range

It must then be established what type of windlass it is i.e. VWC, VW, HWC etc

Freedom – black aluminium deckplate fully covers chainwheel – Inside the outer bi-square will be a number indicating chain size and hence model e.g. 800 = Freedom 800, Note: this is not always the case it is not uncommon to find freedom 800 motor and gearbox bolted to a freedom 500 topworks.

Part numbers on bottom of shafts.

Chainwheel ID – chainwheel diameter and thickness

Problem resolution

- Motor slows down longer I run it. – Gearbox may have lost its oil, as the gearbox heats up it melts the wormwheel onto the worm. If it has got to this point then gearbox will be toast.

  Could be but unlikely loose connections – as the connection heats up resistance will increase dropping voltage.

- Circuit breaker keeps popping – see above, could be damaged motor – check for no load current draw – 30-60amp is normal for 1000-3500.

- Rope slips – frequently brand new rope will slip, this is because it is very soft and easily compressed out of shape. Once it has got wet (and swells) it will harden and work a lot better.

  Rope could be too hard and not conforming to chainwheel – put rope in water with fabric softener.

- Splice slips – Pressure arm not working ? splice not tapered ?

- Up/down back to front – easy fix – swap the two outer control wires on solenoid ref – wiring diagrams

- Not working – number of things

- Clutch slips – Tighten the clutch nut.

- Chain twists – Swivels help but do not eliminate problem, could be anchor design wind milling on way up to surface.

- Rope jamming in chain pipe – ensure hole through deck has no sharp edges and is flared out. (when upgrading from Freedom to RC8 the chain pipe hole will need modification)

- Windlass leaks down shaft – This is a common complaint on sail boats etc where the windlass motor and gearbox are mounted over the berth with the chainpipe just on the other side of bulkhead. Maxwell windlasses are not designed to be water tight in this regard and will always leak a little.

- Pressure arm keeps breaking (HRC, Freedom) loose threads on the rope can catch on the pressure arm and break it as can twisted chain links and stiff splices. The plastic pressure arm is considered a consumable and will need to be replaced on occasion.

Maintenance & Servicing

Wash down topworks regularly with fresh water, failure to do so will result in build up of rubbish under the chainwheel and lead to debris getting into the deckbearing.

Wash out the spacer tube and gearbox drain slot, failure to do so will result in salt building up on top of the gearbox around the seal and in the drain slot, eventually the drain slot will become blocked, corrosion will occur around the seal and seawater will get into the gearbox displacing the oil and lead to gearbox failure.

Grease the clutch cones and ensure clutch is not over tightened. Failure to grease the clutch cones regularly results in the clutches running dry and in many cases binding up solid. The clutch should be adjusted such that the anchor can be brought up without slipping but not so tight that the windlass will rip the front of the boat off if anchor is jammed into bow roller.

Grease the spacer tube and shaft where they fit into gearbox, this will greatly aid the removal for servicing at a later date. Failure to grease often results in salt building up in the gaps which then binds up when you try to remove gearbox from shaft and spacer tube.

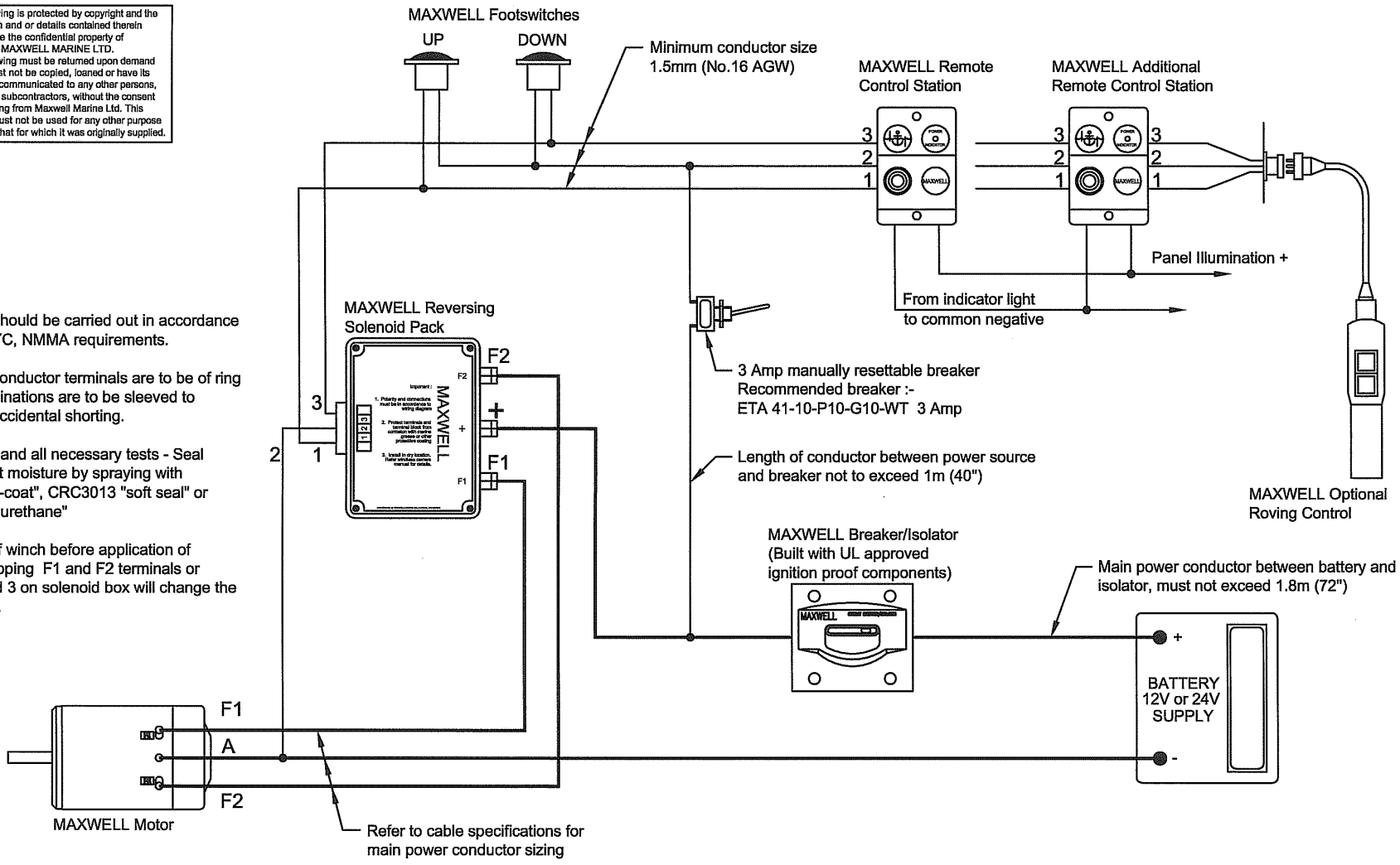
Check gearbox oil level, oil should be ½ way up sight glass. If oil level is low check for leaks particularly the input shaft seal which is most likely to fail.

If replacing the input shaft seal care must be taken to not damage the lip seal on the drive slot, also the seal faces should be lubricated prior to assembly.

The motor should be serviced yearly regardless of apparent condition, Carbon dust will build up and eventually provide a path for current to flow to the motor body and to the windlass.

All electrical connections should be checked for tightness and corrosion before applying another coat of protective e.g. CRC softseal.

	Every trip	**3 monthly**	**12 monthly**	**3 yearly**
Ensure clutch is adjusted correctly				
Strip and grease clutch				
Remove windlass components, grease with suitable lubricant				
Split gearbox from spacer tube, clean and re-grease mating faces – *RC8 and RC10 Models only.*				
Spray fresh water into drainage slot on gearbox, to breakdown and flush away any build up of salt/debris, that may have accumulated – *RC8 and RC10 Models only.*				
Service motor				
Service Gearbox				



Note:

All installations should be carried out in accordance with USCG, ABYC, NMMA requirements.

All main power conductor terminals are to be of ring type and all terminations are to be sleeved to protect against accidental shorting.

After installation and all necessary tests - Seal terminals against moisture by spraying with CRC2403 "plasti-coat", CRC3013 "soft seal" or CRC2409 "clear urethane"

Check rotation of winch before application of chain/rope. Swapping F1 and F2 terminals or connection 1 and 3 on solenoid box will change the rotation of winch.

Revision	Change	Made On	Des/Drawn	Checked	BVT/Dwg No.	Description	Assy No.
1.00	Initial Issue	21/7/2004	DI/RP		N/A	Wiring Diagram - Typical For Series Wound Motors	P101840
2.00	Terminal 3 routing from solenoid box corrected	25/05/2005	RP	GB	BVT View		
					N/A		
					Sheet Size / Scale		
					A4 / NTS		
					Sheet 1 of 1		

Note:

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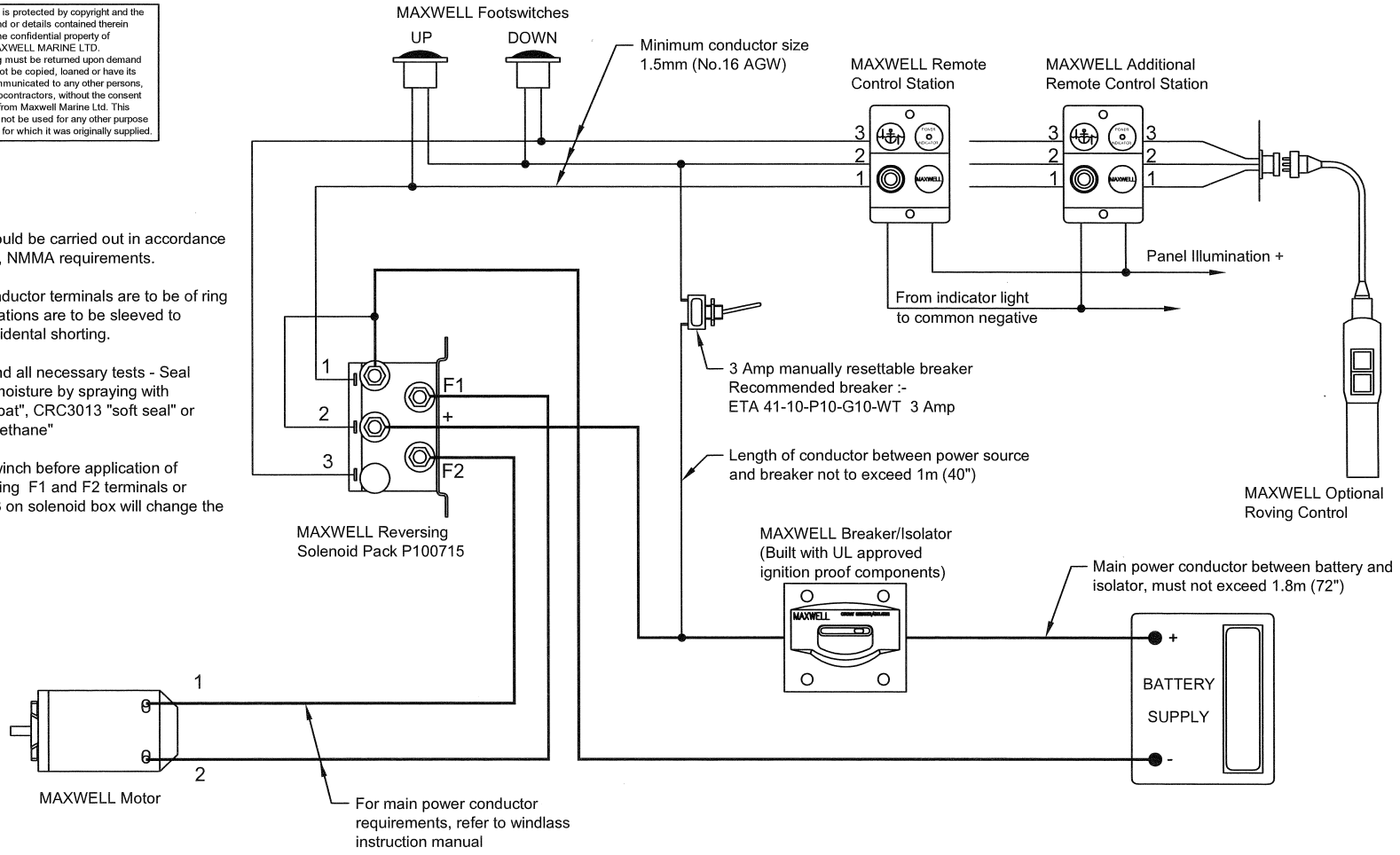


Revision	Change	Made On	Des/Drawn	Checked	BVT/Dwg No.	Description	Assy No.
1.00	Initial Issue	21/7/04	DI/RP		N/A	Wiring Diagram - For P100715 Permanent Magnet Motors	P101853
2.00	Terminal numbers on control stations corrected	28/05/2007	RP	GB	BVT View		
3.00	Labeling on solenoids has been changed	16/02/2010	DH	GB	N/A		
					Sheet Size / Scale		
					A4 / NTS		
					Sheet 1 of 1		

Working and Breaking loads of Anchor rode

Rope

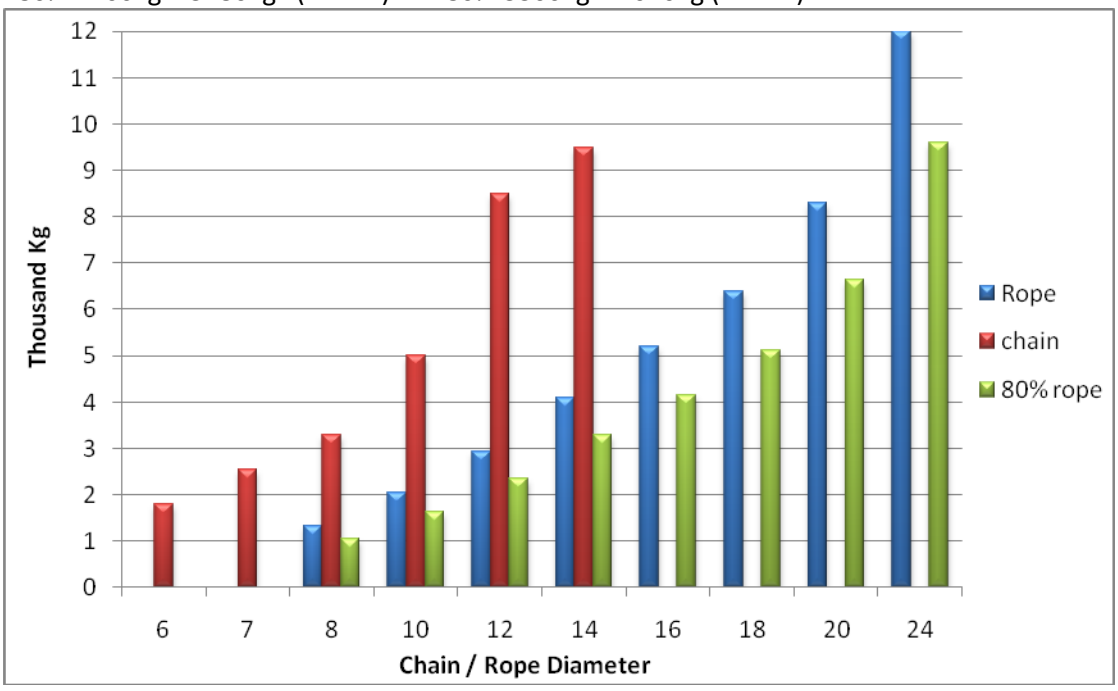
	8 Braid Nylon		8 Braid Polyester		Nylon 3 strand		Polyester 3 strand	
Size	Break	WLL	Break	WLL	Break	WLL	Break	WLL
8mm					1320kg	264kg	1050kg	210kg
10mm					2040kg	408kg	1560kg	312kg
12mm	3100kg	620kg	3100kg	620kg	2940kg	588kg	2230kg	446kg
14mm	4100kg	820kg	3800kg	760kg	4100kg	820kg	3180kg	636kg
16mm	5100kg	1020kg	5700kg	1140kg	5200kg	1040kg	4100kg	820kg
18mm	6400kg	1280kg						
20mm	7700kg	1540kg	8100kg	1620kg	8300kg	1660kg	6250kg	1250kg
24mm	11000kg	2200kg	12400kg	2480kg	12000kg	2400kg	9165kg	1833kg
28mm			16000kg	3200kg	15800kg	3160kg	12000kg	2400kg
32mm			20500kg	4100kg	19200kg	3840kg	15690kg	3138kg

Chain

	EN818		Din 766	
Size	Break	WLL	Break	WLL
6mm			1800kg	450kg
7mm	3020kg	750kg	2550kg	563kg
8mm	3940kg	1000g	3300kg	825kg
10mm	6160kg	1600kg	5000kg	1250kg
12mm			8500kg	2125kg
13mm	10400kg	2650kg	8600kg	2150kg
14mm			9500kg	2375kg
16mm	16000kg	4000kg	12700kg	3175kg

Studies by US Sailing show that the strength of a rope to chain splice will be 80-90% of the ultimate breaking load of the rope

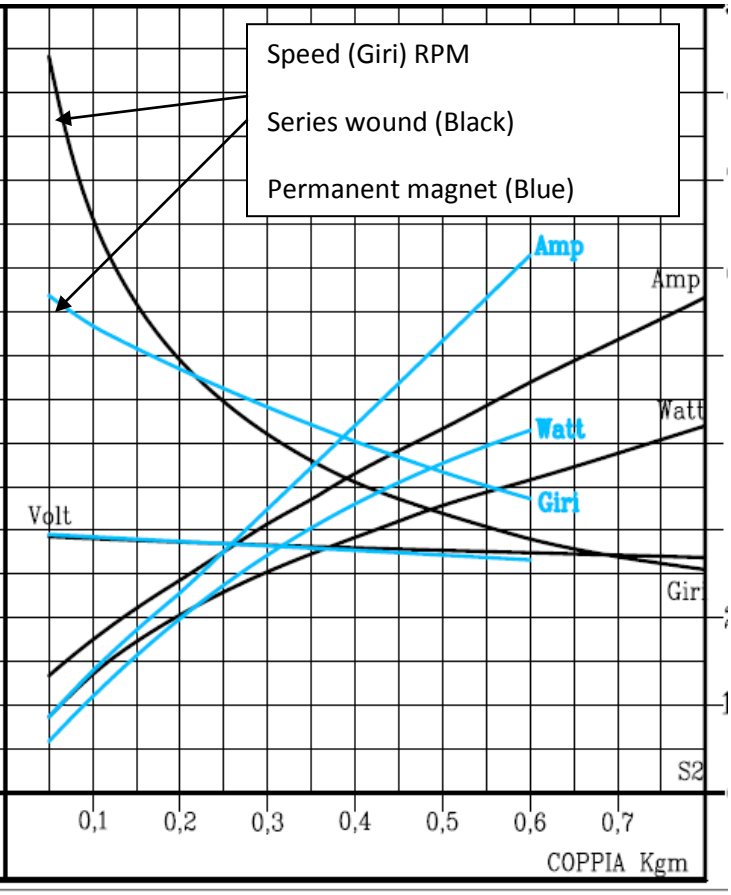
Rope should be selected to have a higher breaking load than the chain being used.
e.g. 8mm DIN766 chain breaking load = 3300kg - Splice to 14mm rope (4100kg)
80% 4100kg = 3280kg (14mm) - 80% 3300kg = 2640kg (12mm)



Permanent Magnet Vs Series Wound 1000 / 1200 W Motors

In permanent magnet (PM) motors the fields are created by magnets attached to the body of the motor creating a fixed field.
The relationship between torque and speed is roughly linear with the maximum torque achieved at zero speed.
In series wound (SW) motors the fields are created by electrical windings attached to the body of the motor creating a variable field.
The torque curve is not linear – speed rapidly increases as load on the motor decreases.
In theory series wound motors have infinite speed at zero load, mechanically the motors have a maximum speed. (ref #2)
Series wound (SW) motors generate more torque than permanent magnet (PM) motors for the same current input.

W	I	Giri	V
3000	300	6000	30
	280		
	260		
	240		
	220		
2000	200	4000	20
	180		
	160		
	140		
	120		
1000	100	2000	10
	80		
	60		
	40		
	20		
0	0	0	0



In the application of anchor winches the load varies during the different phases of anchor deployment / retrieval.

When deploying the anchor the motor is under zero to negative load (depending on drive type)
When retrieving the anchor there are three stages,
The 1st stage is to retrieve the slack rope (which was deployed to achieve correct centenary affect) here the motor is under little to no load
The 2nd stage is to pull out the anchor from seabed which requires high torque from the motor.
And the 3rd stage is to lift the anchor and chain from the seabed. Which requires moderate torque.

For Deployment PM motors have better durability as they do not overspeed although deployment rate is limited.#2

For the 1st stage of retrieval the series wound (SW) motors are better suited due to the high speeds achievable.

For the 2nd stage the series wound (SW) motors are better suited because the speed will slow as load increases allowing more control.

For the 3rd stage both series wound (SW) and permanent magnet (PM) have their advantages.

The greatest disadvantage for the series wound (SW) motors is their ability to over speed and get damaged.

The greatest dissadvantage for the permanent magnet (PM) motors is increased current draw.

#2. When a series wound motor is run under no load there is a threat of damaging the motor due to overspeed. When attached to a gearbox the friction of the gears is enough to prevent the overspeed. However, when you attach a heavy anchor and chain the friction becomes negligible greatly increasing the chance of overspeeding.

Series Wound Vs Permanent Magnet summary

Series wound – 3 Terminal motors.

- Torque speed characteristics best suited to windlass requirements.
- Faster at no load and more maximum pull at stall (per kW)
- Relatively temperature resistant.

Pernament magnet – 2 Terminal motors

- Higher current draw than series wound
- Cheaper to manufacture than series wound
- Magnets can be damaged by overheating.

Motor rating (Whats is a Watt?)

The Watt rating is a measure of power, torque multiplied by RPM.
AC electric motors (e.g vacuum cleaner) are rated for continuous operation i.e will run all day at the rated load.
DC motors generally have a limited run time (unless fan cooled) for this reason the power (W) rating is not based on continuous run.
The DC Motors Maxwell use are rated for 10min run time i.e will produce the rated power (W) for 10min before excess heat is built up.

We could say the motors our 1000W are 1500W but run time would only be a few minutes. At stall load these motors will absorb 5000W of electrical power !

In terms of data printed in the catalogues the max pull and speed of the windlass are what counts.
Two winches with identical max pull and speed but two different motors may just indicate that one motor is rated differently. One could say that the windlass with the lower motor rating is better due to more efficient use of the power.
Also bigger motor equals bigger cable equals bigger installation cost.
Without knowing runtime (which is set by manufacturer not a std) it is not possible to compare DC motors based on watts .

Anchor Swivels

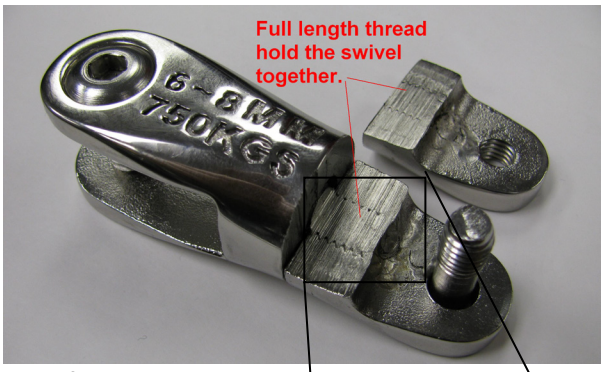
It has been noted that there are a number of failures of anchor swivels on the market. This document is to assure people that the MAXWELL anchor swivels are manufactured to high standards and the destructive testing performed shows that the common failure modes are not weak points in our design.

Failure modes

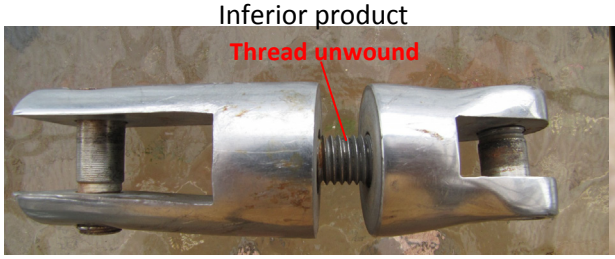
Joining pin snaps, pulls free or unwinds. Some of the swivels on the market have the pin simply welded to each end which can result in complete separation of the two swivel halves. Others have a threaded pin with tac welds to lock the thread, the tac weld on these can break and leave the thread free to rotate. MAXWELL pins are threaded & welded.

Inferior product

MAXWELL Swivel

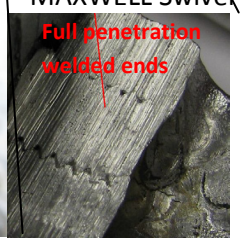


Inferior product



Inferior product

MAXWELL Swivel



Load testing

Load testing of the MAXWELL anchor swivels was performed in house to prove the load carrying capacity of the swivel was suitable for its intended use. Loads were applied both in-line and perpendicular (90° to swivel) to the swivel body. As can be seen from the pictures below the MAXWELL swivel performed well.

MAXWELL Swivel still intact attached to 8mm chain (stretched) and inferior broken swivel.

Loading a MAXWELL 6-8mm swivel by pulling 90° to normal.

MAXWELL Swivel still intact attached to 8mm chain (stretched) and inferior broken swivel