

Freedom Windlass

Installation and Operation Manual

Ó Copyright Maxwell Marine International, 2008.

All rights reserved.

Maxwell Marine International reserves the right to make engineering refinements on all products without notice. Illustrations and specifications are not binding as to detail.

Part No: P103102

160210

Table of Contents

Preliminary Information	2
Introduction.....	2
Components	2
General Layout.....	3
Important Safety Information.....	4
Identifying your Windlass	5
Parts of the Windlass	7
Parts of the Gearbox and Capstan.....	8
Parts List	9
Ordering Spare Parts	11
Rope and Chain Selection Guide	12
Installation	13
General Requirements	13
Installation Instructions.....	16
Rope Splicing Notes.....	19
Wiring Instructions.....	20
Operation	25
Loading the Rope/Chain.....	25
Anchoring Tips	25
Lowering the Anchor.....	26
Raising the Anchor	26
Free falling the Anchor	26
Raising the Anchor Manually.....	26
Using the Capstan Drum for Rope Warping	27
Maintenance	28
Trouble Shooting Guide	31
Reference Information	32
Specifications	32
Dimensions.....	33
Typical Greasing Instructions	34

Additional Resources

The following resources are included at the back of this manual:

Deck Drilling Template

Deck Drilling Template - Performance Plate

Warranty Form

Contact Details (on back cover)

Preliminary Information

Introduction

Congratulations on your purchase of a Maxwell Freedom windlass. Please read these instructions carefully to enable you to correctly install and maintain the windlass for years of trouble-free operation.

Note

Failure to follow the correct installation, operation or maintenance instructions will jeopardise your safety and also invalidate the warranty.

Components

In addition to this instruction manual, the following components are included with the Freedom windlass:

- Windlass in two components:
 - Topworks assembly
 - Motor and gearbox
- Remote up/down control panel
- Circuit breaker/isolator panel
- 12V or 24V reversing solenoid
- Manual crank handle
- Performance plate
- Deckplate gasket
- Small parts:
 - Nuts
 - Flat washer
 - Spring washer
 - Key
 - Quick release clip
- Spare pressure arm kit

These components are illustrated in “Figure 1 - Freedom windlass components” on page 3.



Figure 1 - Freedom windlass components

(Optional extras include: footswitches, warping capstan and rope/chain counter).

General Layout

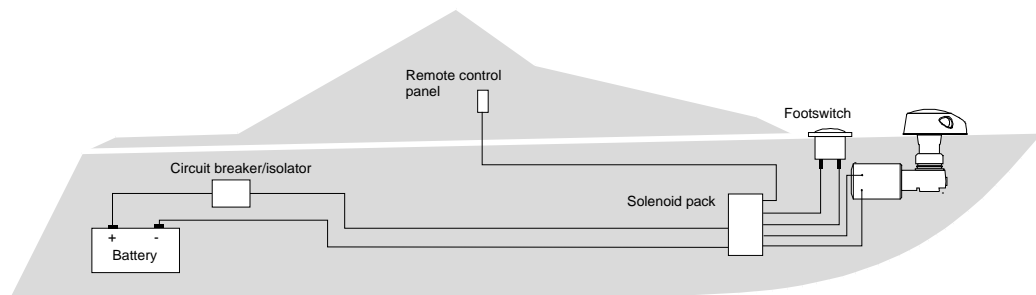


Figure 2 - General layout

Important Safety Information

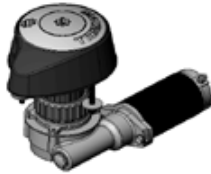
- Make sure your windlass has been correctly specified before installation. Personal safety may depend on it. The windlass must have a maximum pull capacity of at least three times the combined weight of the anchor and chain.
- Correct fit of the chain to the chainwheel is essential. See "Rope and Chain Selection Guide" on page 12.
- Keep hands, feet, loose clothing and hair well clear of the windlass and rope/chain during operation.
- While raising the anchor, run the boat's engine above idle. This will minimise the power drain on the batteries.
- Never operate the windlass from a remote station without having a clear view of the windlass.
- Do NOT use the windlass as a bollard. 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.
- Keep the anchor rope/chain in good condition, free from knots and twists. Inspect the rope regularly for chafe. Where this has occurred, repair by cutting away the affected portion and re-splice.
Tip: The rope can be swapped end-for-end to extend its life.
- Tie the end of the anchor rope/chain rode to a secure fixture in the chain locker.
- Do NOT use the windlass to haul a person up a mast.

Identifying your Windlass

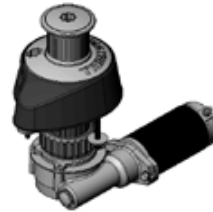
Before ordering spare parts, use the steps below to identify the model of your windlass.

1. Standard or Capstan

There are two different styles of Freedom windlass – standard (low profile) and capstan.



Standard



Capstan

Figure 3 - Standard and capstan versions

2. Chainwheel identification

To determine which model of chainwheel you have look at the number in the bi-square on the top of the windlass as shown below. There are 4 models of chainwheel: Freedom 500, 500M, 800 and 800M.



Freedom 500

Figure 4 - Chainwheel identification

3. Motor size – 500 and 800 and Voltage – 12V and 24V

To determine whether you have a 12 Volt or 24 Volt motor, check the badge on the motor.



Freedom 500 - 600W 12V and 24V



Freedom 800 – 1000W 12V and 24V

Figure 5 - Motor variants

4. Deck clearance

To determine the deck clearance of your windlass, measure from the bottom of the deckplate to the centreline of the motor (DMC = Deck to Motor Centreline).



154mm DMC
For decks up to 65 mm thick



254mm DMC
For decks up to 165 mm thick

Figure 6 - Deck clearance variants

Parts of the Windlass

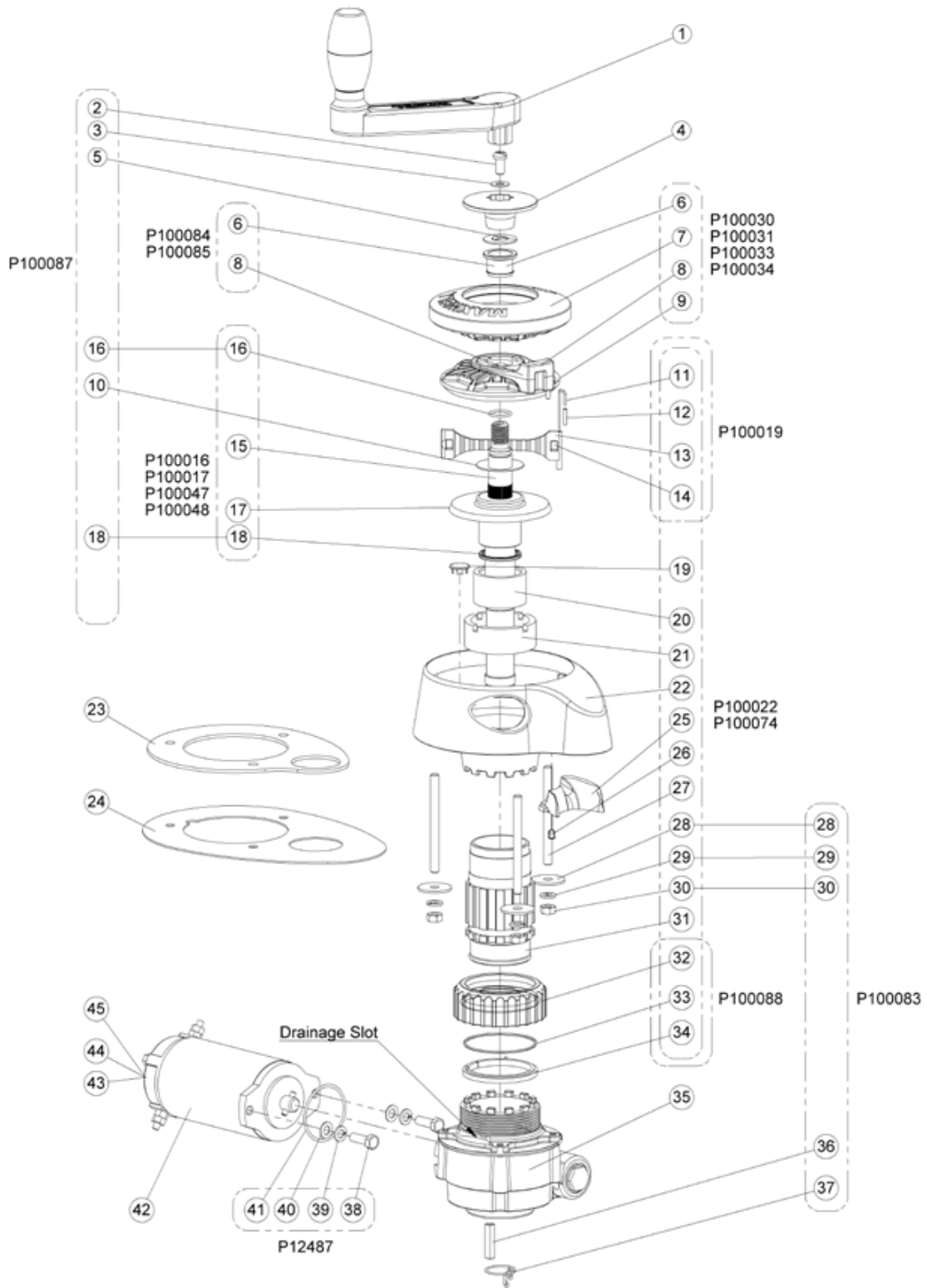


Figure 7 - Parts of the windlass

Parts of the Gearbox and Capstan

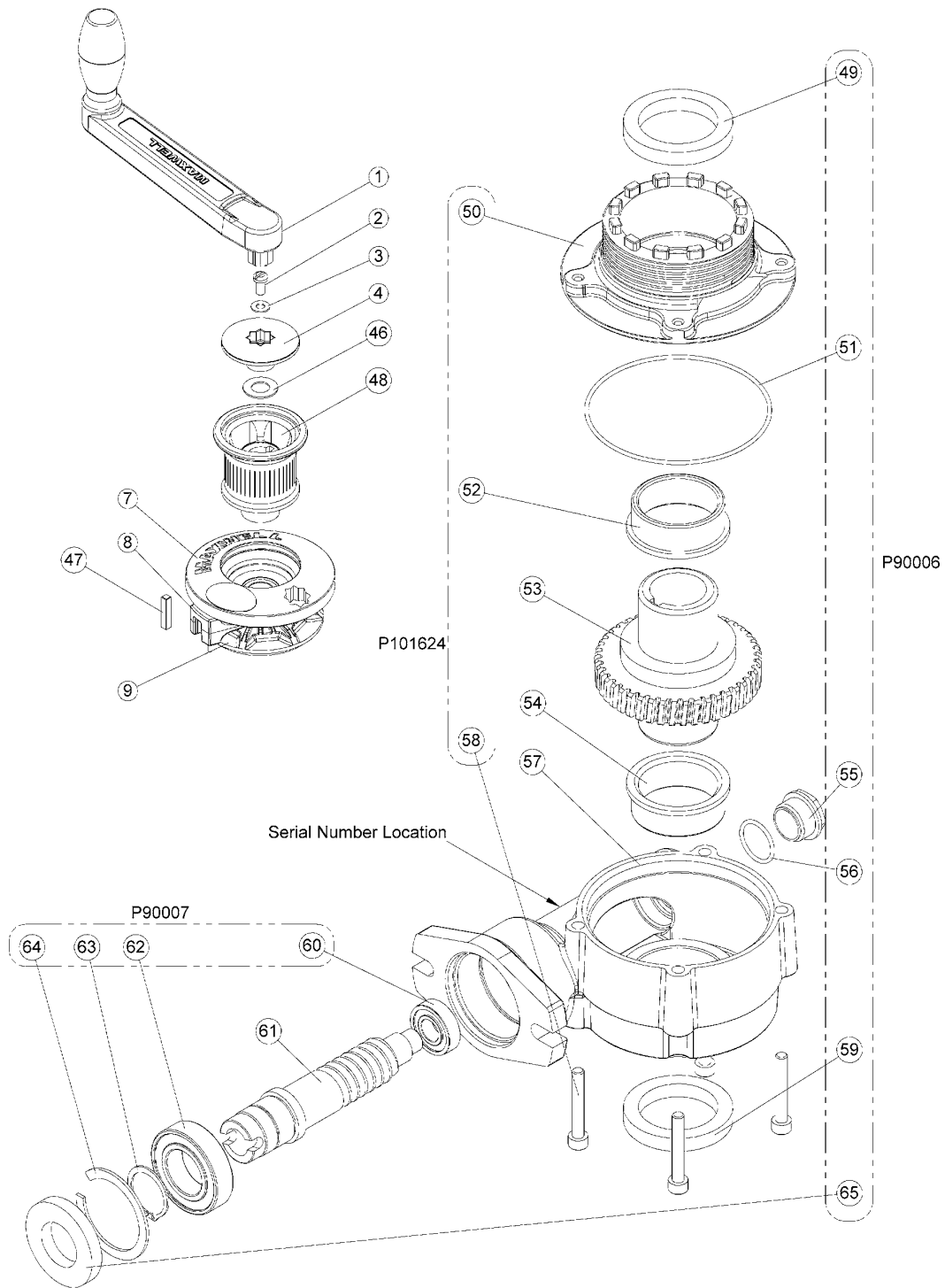


Figure 8 - Parts of the gearbox and capstan

Parts List

Before ordering parts, please refer to "Identifying your Windlass" on page 5.

Item	Description	Qty	Part to order	Includes items
1	Handle	1	131/AI	1
2	M8 x 16 cheese head screw	1	P100087	2, 3, 5, 10, 16, and 18
3	M8 x 17 flat washer	1	P100087	2, 3, 5, 10, 16, and 18
4	Clutch nut	1	4376	4
5	Tab washer	1	P100087	2, 3, 5, 10, 16, and 18
6	Snap bush	1	See item 8	6 and 8
7	Chain wheel upper 500	1	P100030	6, 7, 8 and 9 see page 12 for rode selection guide
7	Chain wheel upper 500M	1	P100031	6, 7, 8 and 9 see page 12 for rode selection guide
7	Chain wheel upper 500MA	1	P100032	6, 7, 8 and 9 see page 12 for rode selection guide
7	Chain wheel upper 800	1	P100033	6, 7, 8 and 9 see page 12 for rode selection guide
7	Chain wheel upper 800M	1	P100034	6, 7, 8 and 9 see page 12 for rode selection guide
8	500 stripper	1	P100084	6 and 8
8	800 stripper	1	P100085	6 and 8
9	Chain wheel lower 500	1	P100030	6, 7, 8 and 9 see page 12 for rode selection guide
9	Chain wheel lower 500M	1	P100031	6, 7, 8 and 9 see page 12 for rode selection guide
9	Chain wheel lower 800	1	P100033	6, 7, 8 and 9 see page 12 for rode selection guide
9	Chain wheel lower 800M	1	P100034	6, 7, 8 and 9 see page 12 for rode selection guide
10	Belleville washer	1	P100087	2, 3, 5, 10, 16, and 18
11	Pressure arm clip	1	P100019	11, 12, 13, and 14
12	Clip insulator	1	P100019	11, 12, 13, and 14
13	Pressure arm blade	2	P100019	11, 12, 13, and 14
14	Pressure arm spine	1	P100019	11, 12, 13, and 14
15	Shaft 154mm DMC	1	P100016	15, 16, 17 and 18
15	Shaft 254mm DMC	1	P100047	15, 16, 17 and 18
15	Shaft 154mm DMC - capstan	1	P100017	15, 16, 17 and 18
15	Shaft 254mm DMC - capstan	1	P100048	15, 16, 17 and 18
16	O-ring 18 x 2mm	1	P100087	2, 3, 5, 10, 16, and 18
17	Clutch cone	1	See item 15	15, 16, 17 and 18
18	Quad ring	1	P100087	2, 3, 5, 10, 16, and 18
19	Plug	1	*P100022 or P100049	11, 12, 13, 14, 19, 20, 21, 22, 25, 26, 27(x3), 28(x3), 29(x3), 30(x3), 31, 32, 33, and 34
20	Deckplate bearing	1	*P100022 or P100049	11, 12, 13, 14, 19, 20, 21, 22, 25, 26, 27(x3), 28(x3), 29(x3), 30(x3), 31, 32, 33, and 34
21	Spacer tube retaining collar	1	*P100022 or P100049	11, 12, 13, 14, 19, 20, 21, 22, 25, 26, 27(x3), 28(x3), 29(x3), 30(x3), 31, 32, 33, and 34
22	Deckplate	1	*P100022 or P100049	11, 12, 13, 14, 19, 20, 21, 22, 25, 26, 27(x3), 28(x3), 29(x3), 30(x3), 31, 32, 33, and 34
23	Gasket	1	4169	23
24	Performance plate	1	4517	24

*P100022 = 154mm DMC, P100049 = 254mm DMC. See "Figure 6 - Deck clearance variants" on page 6.

(Parts list continued on next page)

Parts List (continued)

Item	Description	Qty	Part to order	Includes items
25	Deckplate insert	1	*P100022 or P100049	11, 12, 13, 14, 19, 20, 21, 22, 25, 26, 27(x3), 28(x3), 29(x3), 30(x3), 31, 32, 33, and 34
26	Nylon rivet 5mm	1	*P100022 or P100049	11, 12, 13, 14, 19, 20, 21, 22, 25, 26, 27(x3), 28(x3), 29(x3), 30(x3), 31, 32, 33, and 34
27	M8 stud 154mm DMC	3	P100022	11, 12, 13, 14, 19, 20, 21, 22, 25, 26, 27(x3), 28(x3), 29(x3), 30(x3), 31, 32, 33, and 34
27	M8 stud 254mm DMC	3	P100049	11, 12, 13, 14, 19, 20, 21, 22, 25, 26, 27(x3), 28(x3), 29(x3), 30(x3), 31, 32, 33, and 34
28	M8 x 32 x 2 flat washer	3	P100083	28, 29, 30, 36 and 37
29	M8 spring washer	3	P100083	28, 29, 30, 36 and 37
30	M8 hex nut	3	P100083	28, 29, 30, 36 and 37
31	Spacer tube 154mm DMC	1	P100022	11, 12, 13, 14, 19, 20, 21, 22, 25, 26, 27(x3), 28(x3), 29(x3), 30(x3), 31, 32, 33, and 34
31	Spacer tube 254mm DMC	1	P100049	11, 12, 13, 14, 19, 20, 21, 22, 25, 26, 27(x3), 28(x3), 29(x3), 30(x3), 31, 32, 33, and 34
32	Locknut	1	P100088	32, 33 and 34
33	O-ring 66 x 2mm	1	P100088	32, 33 and 34
34	Collar	1	P100088	32, 33 and 34
35	Gearbox 44:1	1	P100900 (See page 8 for exploded view)	35
36	1-4 in key	1	P100083	28, 29, 30, 36 and 37
37	Quick change clip	1	P100083	28, 29, 30, 36 and 37
38	M8 x 25 ss bolt	2	P12487	38(x2), 39(x2), 40(x2) and 41
39	M8 spring washer	2	P12487	38(x2), 39(x2), 40(x2) and 41
40	Ø5-8 x 5-16 washer	2	P12487	38(x2), 39(x2), 40(x2) and 41
41	O-Ring	1	P12487	38(x2), 39(x2), 40(x2) and 41
42	Motor 500 12V 600W	1	P10068	42
42	Motor 500 24V 600W	1	P10069	42
42	Motor 800 12V 1000W	1	P11112	42
42	Motor 800 24V 1000W	1	P11114	42
43	Unipoint 12V and 24V end cap and brush kit	1	P10066	43
44	Cima 12V brush kit	1	P100807	44
45	Cima 24V brush kit	1	P100808	45
46	Ø5-8" x 1-1/4" washer	1	SP0421	46
47	1-4in key	1	3462	47
48	Capstan	1	4170	48
49	Oil seal 40 x 55 x 8mm	1	P90006	49, 51, 55, 56, 59 and 65
50	Gearbox top	1	P101624	50, 52 and 58(x4)
51	O-ring 90 x 2mm	1	P90006	49, 51, 55, 56, 59 and 65
52	Bush	1	P101624	52
53	Worm wheel	1	3403	53
54	Bush	1	3145	54

*P100022 = 154mm DMC, P100049 = 254mm DMC. See "Figure 6 - Deck clearance variants" on page 6.

(Parts list continued on next page)

Parts List (continued)

Item	Description	Qty	Part to order	Includes items
55	Sight glass	1	P90006	49, 51, 55, 56, 59 and 65
56	O-ring 20 x 2 mm	1	P90006	49, 51, 55, 56, 59 and 65
57	Worm box	1	3133	57
58	M6 x 40mm capscrew	4	SP0159	58(x4)
59	Oil seal 40 x 55 x 8mm	1	P90006	49, 51, 55, 56, 59 and 65
60	Bearing 12 x 28 x 8mm	1	P90007	60, 62, 63 and 64
61	Worm	1	5950	61
62	Bearing 25 x 47 x 12mm	1	P90007	60, 62, 63 and 64
63	External circlip 1in	1	P90007	60, 62, 63 and 64
64	Internal circlip 47 x 1.85mm	1	P90007	60, 62, 63 and 64
65	Oil seal 25 x 47 x 7mm	1	P90006	49, 51, 55, 56, 59 and 65
66	Capstan Conversion Kit – 154mm DMC	1	P100018	10, 15, 16, 17, 18, 46, 47 and 48

Ordering Spare Parts

When ordering spare parts, please refer to the parts list above and quote the following details.

Freedom Model (marked in chainwheel bi-square, see "Identifying your Windlass" on page 5)

500 500M

800 800M

Serial number (located on gearbox housing)

Power supply

12V 24V

Part details

Part number	Description	Quantity
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

Rope and Chain Selection Guide

Use the following table to select the correct rope and chain to suit your Freedom windlass.

Rope Type Chain Type	12mm 3 strand or 8 plait	1/2" 3 strand or 8 plait	14mm 3 strand or 8 plait	9/16" 3 strand	5/8" 3 strand or 8 plait
1/4" Acco G40 SL7 7mm DIN 766	-	Freedom 500 (P100030)	-	-	-
6mm PWB Grade L 6mm Bradlink SGC 6mm DIN766	Freedom 500M (P100031)	-	-	-	-
5/16" Acco G40 SL 5/16" Weissenfels	-	Freedom 800 * (P100033)	-	Freedom 800 * (P100033)	Freedom 800 (P100033)
8mm PWB Grade L 8mm Bradlink 8mm DIN766 8mm Beaver	-	Freedom 800M * (P100034)	Freedom 800M (P100034)	-	-

* Not a recommended Rope/Chain combination

Installation

General Requirements

Foredeck layout

- To prevent possible snags, make sure that the area of deck between the windlass and the bow roller is clear of obstructions.
- The bow roller should have a central groove suitable for the chain size, as shown in “Figure 13 - Aligning the windlass with the bow roller” on page 15.
- Provide a chain stopper, snubber or cleat to secure the anchor line when under way. Tie the anchor line to a bollard or cleat when at anchor.
- Use a chain guide if necessary to prevent the chain from running against the deckplate and potentially causing damage to the windlass.

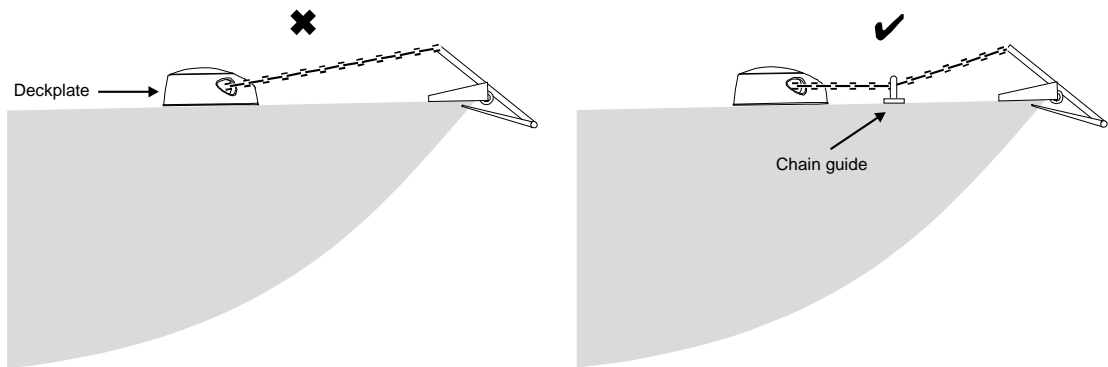


Figure 9 - Chain guide

Anchor and chain considerations

- When purchasing an anchor, make sure it fits into the bow roller and is self-launching.
- Use a swivel between the anchor and the chain to prevent the line from twisting as the anchor is raised or lowered.
- To prevent build up of chain on deck causing possible damage, the bow roller must allow the anchor to free fall immediately when the anchor is deployed.
- Make sure that at least three links of chain are exposed when the anchor is docked (see “Figure 10 - Clearances in chain locker” on page 14).

Required clearances

Position the windlass so that the anchor rope/chain rode falls into the deepest and widest section of the chain locker and with the clearances shown below.

At least 150 mm (6") clearance under the motor when all the rope/chain is in the locker.

At least 150 mm (6") from the centreline of the windlass to the rear bulkhead of the chain locker.

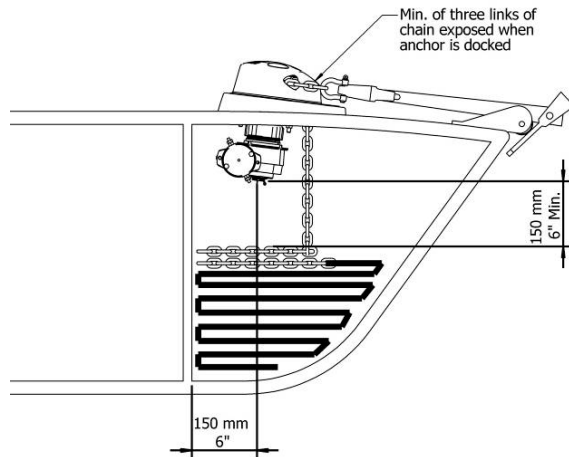


Figure 10 - Clearances in chain locker

Position the windlass clear of pulpit, lifelines and bulwark so that there is room to swing the manual crank handle.

Template

If fitting the windlass to a deck 12 mm ($\frac{1}{2}$ ") or LESS in thickness, use the template shown in Figure 11 below. The template is supplied at the back of this manual.

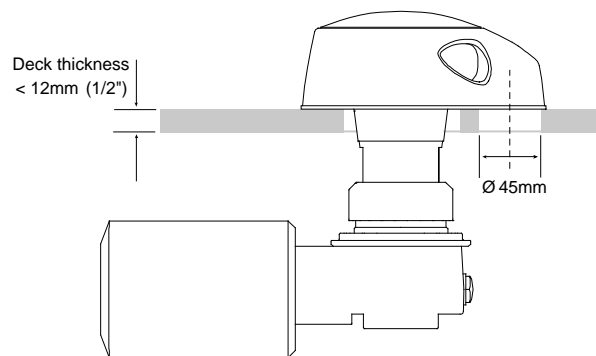
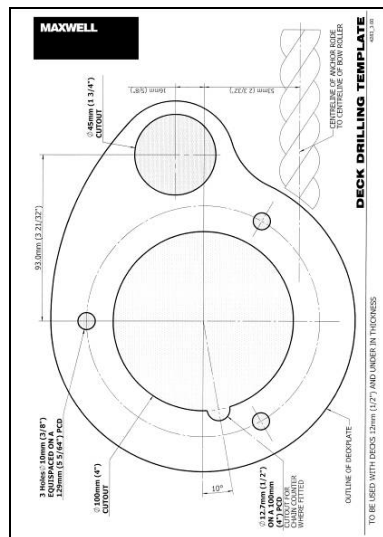


Figure 11 - Template for decks less than 12 mm ($\frac{1}{2}$ ") thick

If fitting the windlass to a deck 12 mm (½ ") or MORE in thickness, use the template shown in Figure 12 in conjunction with the performance plate supplied. The template is supplied at the back of this manual.

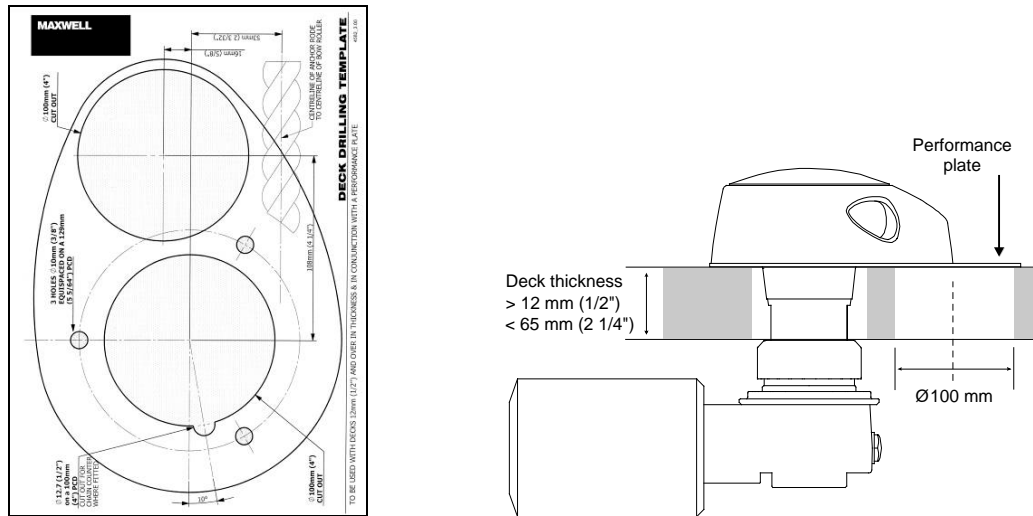


Figure 12 - Template for decks more than 12 mm (½ ") thick

Aligning the windlass with the bow roller

- The windlass must be positioned to allow the rope/chain rode to have a clear run from the bow roller to the chainwheel.
- The bow roller should have a vertical groove to suit the profile of the chain. This will align the chain so that it enters the chainwheel without twisting.
- The windlass should be aligned with the bow roller within the tolerances shown in Figure 13 below.
- The windlass must be installed in accordance with the template supplied.

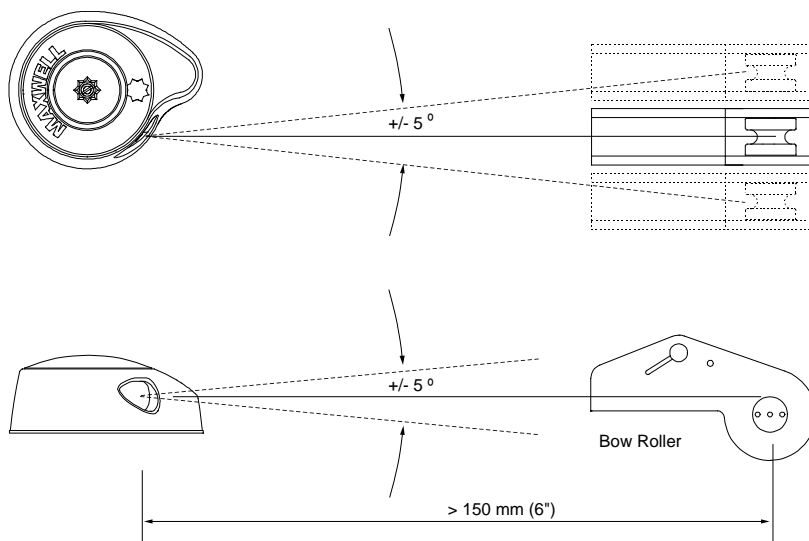


Figure 13 - Aligning the windlass with the bow roller

Installation Instructions

Before you start

Before installing the windlass, identify any bulkheads, wiring or piping under the deck. This may determine where the windlass can be positioned.

Deck thickness

It is imperative that the deck and under-deck pad (not supplied) are of sufficient thickness and structural strength to support the loads imposed on or by the windlass.

An under-deck pad should spread the load as widely as possible.

Preventing electrolysis

For aluminium boats, it is essential that the deckplate be insulated from the deck with a non-conductive gasket (not supplied), that the mounting studs pass through insulators (not supplied), and that the under-deck fastenings are insulated from the deck with fibre washers (not supplied).

It is also important that the anchor and chain are insulated from the hull, including rubber lining the chain locker and insulating the fixing for the end of the rode to the hull.

Without these precautions, severe electrolysis can occur.

Because the motor is of the isolated earth type, it is not necessary to separately earth the windlass.

Installation procedure

**** ATTENTION ****

Please note, when installing winch and in particular the chain wheel. The shaft and bronze clutch cones **MUST** be coated in Shell Nautilus NLG12 Marine Grease, Castrol Boating Grease, Valvoline Val Plex EP or equivalent grease. See "Typical Greasing Instructions" on Pg 34.

1. Position the template on the deck using the alignment guidelines on the template. (See also "Figure 13 - Aligning the windlass with the bow roller" on page 15).
2. Use the template to mark the position of the holes. Drill the holes for the retaining bolts.
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 chain pipe.
3. On GRP or wooden decks, seal the edges of the holes with epoxy to avoid ingress of moisture.
4. For decks thicker than 12 mm (½ ") use the performance plate as shown in Figure 12 on page 15.

5. Use the gasket supplied to seal the windlass to the deck.

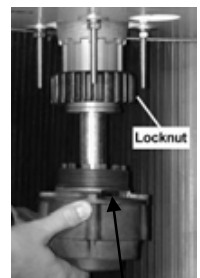
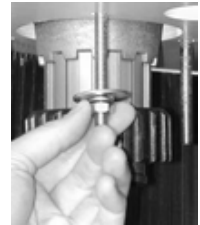
For aluminium boats fit a non-conductive gasket to insulate the deckplate from the deck to prevent electrolysis.

6. Fasten the windlass to the deck using the nuts and washers supplied.
Tighten the nuts progressively and evenly. Do NOT use power tools.
Make sure the installation is firm, but do not over tighten the nuts.

7. Smear a coating of grease on the shaft and fit the gearbox/motor assembly to the bottom of the spacer tube.

Orientate the motor away from the incoming rope and chain (see "Figure 14" below) and then hand tighten the plastic locknut.

NOTE: If the unit is going to be mounted in such a way, that it may be tilted, ensure the drainage slot on the gearbox is at the lowest point to prevent excess water etc. sitting around the seals.



Drainage Slot

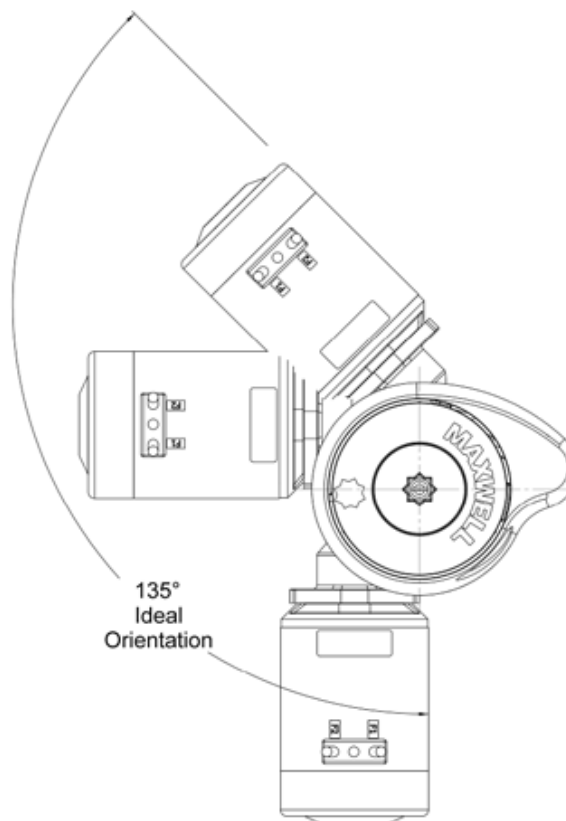


Figure 14 - Motor orientation

8. Rotate the shaft by hand (or by using the manual crank handle) to align the keyway in the shaft with the keyway in the gearbox.

Insert the key into the keyway.

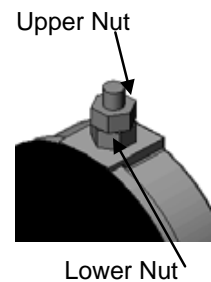


9. Fit the quick-release clip into the groove in the bottom of the shaft to secure the key.

Make sure the eyelets are facing down and away from the keyway.



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



Installing on a sloping or curved deck

Ensure that the windlass has the correct vertical alignment with the bow roller as shown in "Figure 13 - Aligning the windlass with the bow roller" on page 15.

If necessary, use a mounting pad as shown below.

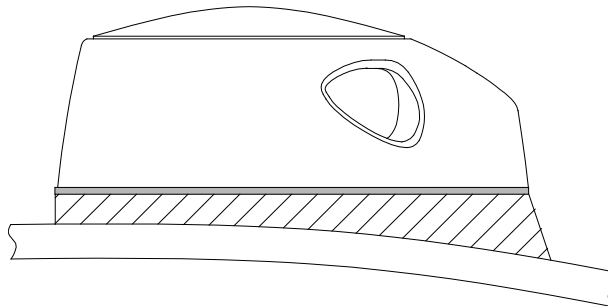


Figure 15 - Using a mounting pad on a curved deck

Important note to Boat Builders

Experience has shown that on long ocean deliveries as deck cargo, sulphur from the ships exhaust settles and severely damages the chrome plating and stainless steel of the windlass by breaking down the protective chrome oxide film.

We suggest that 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.

Rope Splicing Notes

WARNING

It is vitally important that the splicing of rope to chain be performed properly to ensure the service longevity of the windlass and to maintain the safety of the vessel and crew.

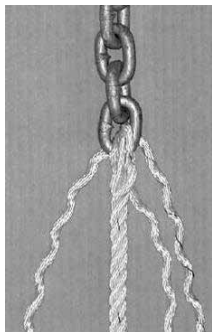
The following instructions are for illustration only and are for people who are experienced with splicing. If you are not experienced with the use of a marlinspike or fid, obtain help from an experienced person, or contact your local yacht rigger to make sure the splicing is carried out correctly.

3-strand rope

1. Lay out the rope strands as shown and tape the ends.



2. Pass the outer strands down through the link.
Pass the inner strand up through the link and tuck back under itself.



3. Once finished splicing, cut and seal the ends of the strands with a hot knife.

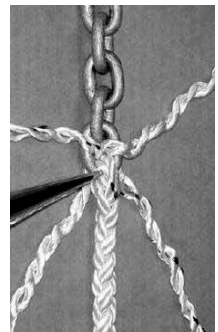


8-plait rope

1. Lay out the rope strands as shown and tape the ends.



2. Pass the top 2 pairs of strands down through the link.
Pass the bottom 2 pairs of strands up through the link.



3. Once finished splicing, cut and seal the ends of the strands with a hot knife.



Wiring Instructions

Electrical component layout

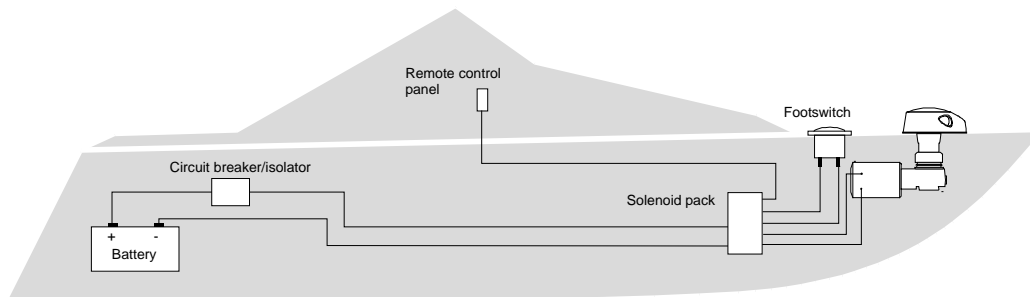


Figure 16 - Electrical component layout

Solenoid pack

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

Circuit breaker/isolator panel

This unit provides limited protection for the motor and full protection for the power supply cables. It also provides the means to isolate the system from the battery.

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

Remote control panel

The remote control panel should be mounted in a convenient location (such as the bridge, helm or cockpit) so that the operator can see the windlass. Mount and seal the panel so that the terminals project into a dry area.

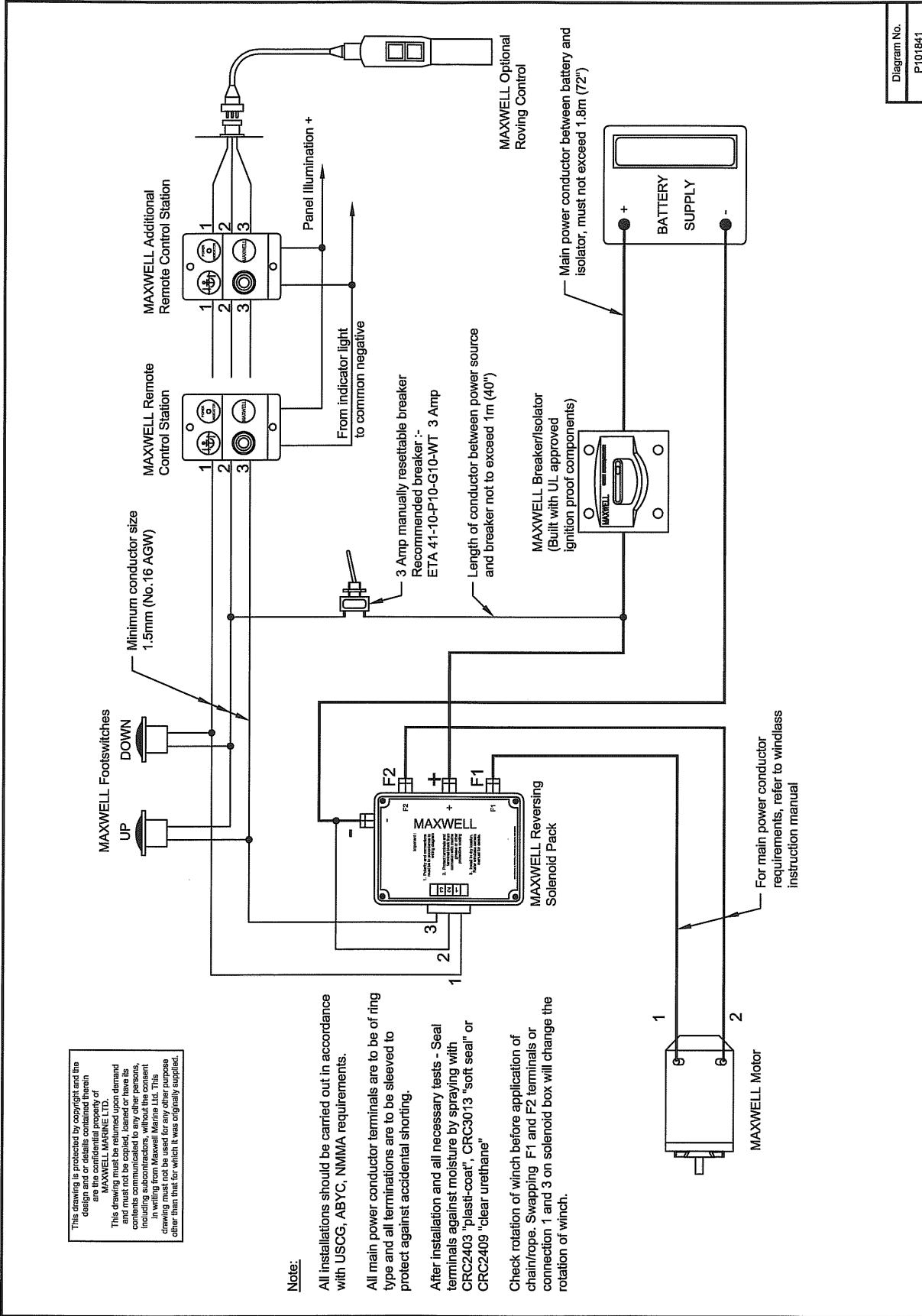
Optional footswitches

For safe operation, the footswitches must be at least 500 mm (20") from the windlass.

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 footswitches should be arranged to indicate the direction of operation.

Freedom 500 wiring schematic (permanent magnet motor – P100711 Solenoid Pack)



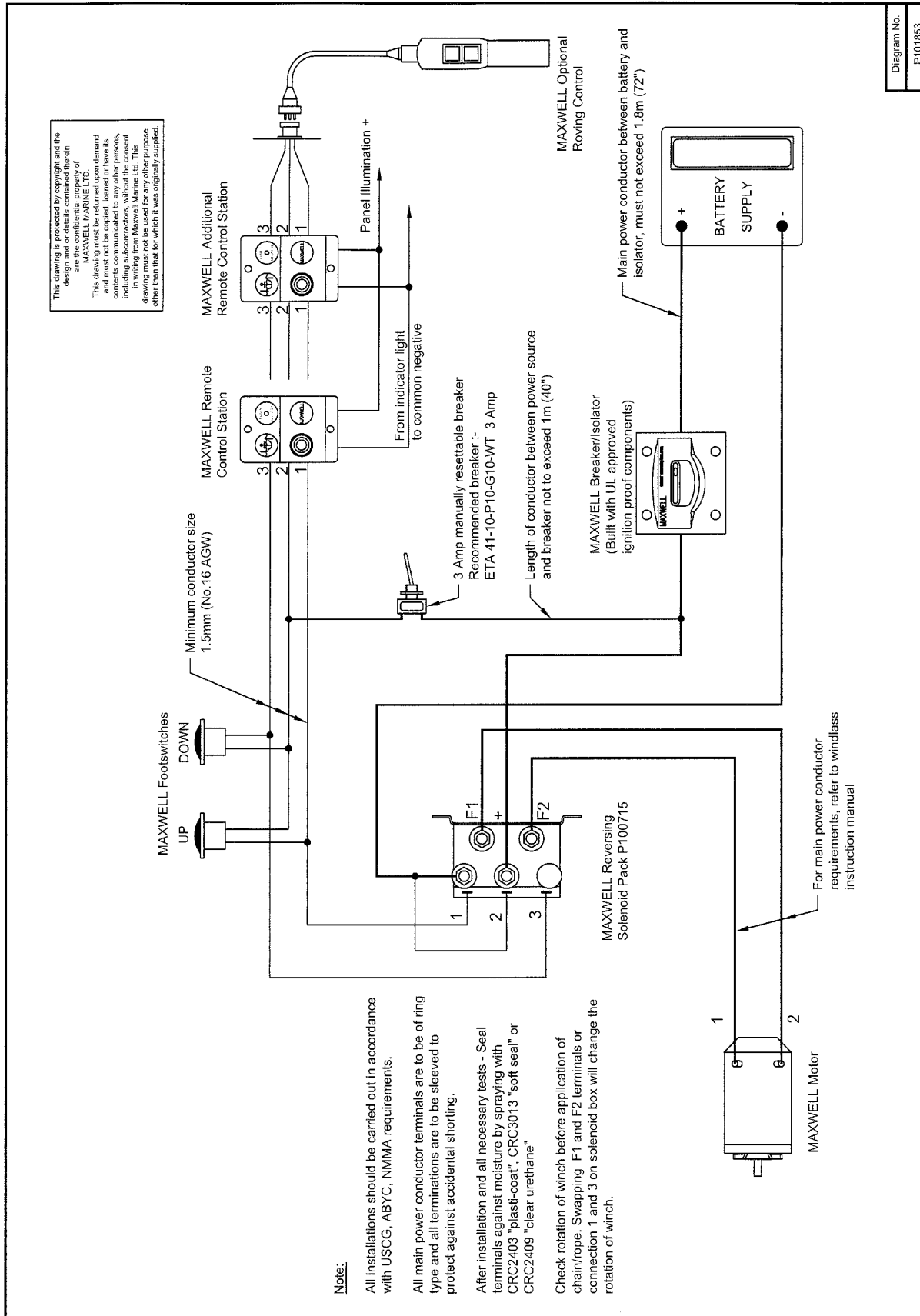
This drawing is protected by copyright and the design and/or details contained therein are the confidential property of MAXWELL MARINE LTD. This drawing must be returned upon demand to the person to whom it was issued. It is not to be reproduced, copied, or disseminated to any other persons, including subcontractors, without the consent in writing from Maxwell Marine Ltd. This drawing must not be used for any other purpose other than that for which it was originally supplied.

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 "plast-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.

Diagram No.
P101841

Freedom 500 wiring schematic (permanent magnet motor – P100715 / P11121 Solenoid Pack)



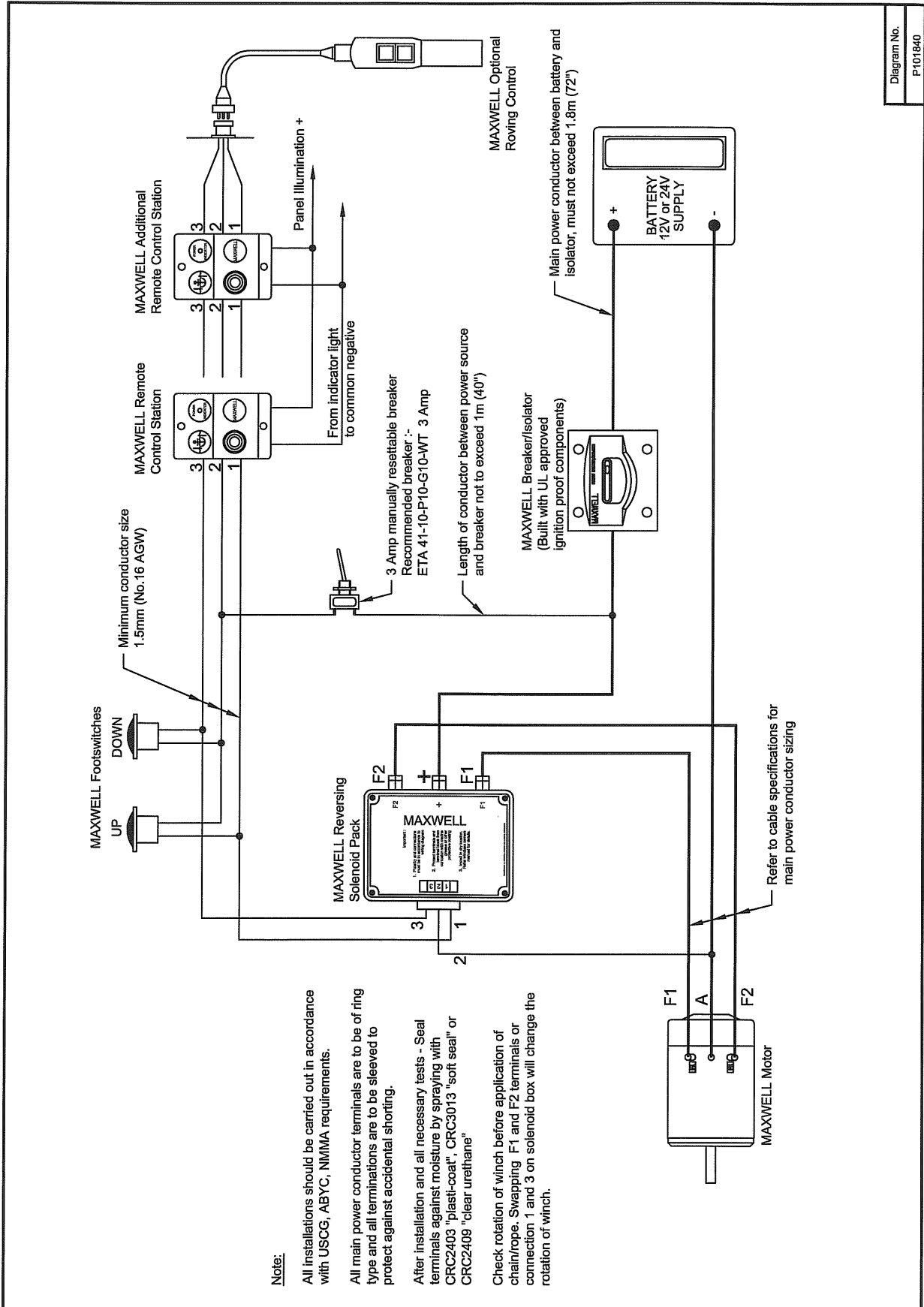
This drawing is protected by copyright and the design and or details contained therein are the property of MAXWELL. Any reproduction of this drawing must be returned upon demand and must not be copied, loaned or have its contents communicated to any other persons, including subcontractors. Without the consent of MAXWELL, this drawing must not be used for any other purpose other than that for which it was originally supplied.

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.

For main power conductor requirements, refer to windlass instruction manual

Diagram No. P101853

Freedom 800 wiring schematic (series wound motor - P19045/6 Solenoid Pack)



Cable specifications

Cable lengths given are from the battery terminal to the terminal on the windlass motor via the solenoid box.

Freedom 500 12V systems

Cable Length	Cable Size	
	(mm ²)	(AWG)
Up to 5 m (15')	15	6
5m - 10 m (15' - 35')	25	3
Over 10 m (35')	35	2

Freedom 500 24V systems

Cable Length	Cable Size	
	(mm ²)	(AWG)
Up to 10 m (35')	8	8
Over 10 m (35')	8	8

Freedom 800 12V systems

Cable Length	Cable Size	
	(mm ²)	(AWG)
Up to 6 m (20')	25	3
6 m - 10 m (20' - 35')	35	2
10 m - 15 m (35' - 50')	50	0
Over 15 m (50')	70	00

Freedom 800 24V systems

Cable Length	Cable Size	
	(mm ²)	(AWG)
Up to 10 m (35')	15	6
Over 10 m (35')	20	4

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

Operation

Warnings

- When using the windlass, 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.
- When the isolator switch is on, the windlass can be started from either the remote control panel or the optional footswitch. Always make sure the isolator switch is turned off when the system is not being used.
- The system provides protection for the motor from excessive current or short circuit. It does not provide protection against heat build up due to prolonged operation or excessive loads. Make sure you give the motor time to cool off, otherwise the warranty may be invalidated.

Loading the Rope/Chain

1. Use the crank handle to loosen the clutch nut.
2. Double over about 150 mm (6") of the end of the rope and feed it into the windlass, through the rope/chain hole.
3. Insert the handle into the outer bi-square and manually turn the windlass to feed the rope into the chain locker.
4. Tighten, but do not over tighten the clutch nut using the crank handle.
5. Fasten the end of the rope securely to an eyebolt in the chain locker.
6. Check that there is more than 150 mm (6") clearance between the top of the rode in the locker and the bottom of the windlass motor, when the rode is fully stowed in the locker.

Anchoring Tips

- Use a chart to ensure that there is sufficient depth of water and shelter in the location where you want to anchor.
- Slowly cruise around the anchorage and check the boats already at anchor.
- Allow adequate room. Remember that power vessels swing differently from yachts. Boats on rope lines swing around more than those on chains.
- Always anchor the boat from the bow.
- Slow down and keep the bow into the wind or current, whichever is stronger. When the boat comes to a complete stop, start to lower the anchor.
- After lowering the anchor, either drift back or slowly reverse while paying out the anchor line.
- The length of line you pay out should be at least three times the depth of water.
- Do not switch off the engine until you are sure the anchor is holding.
- Once anchored, secure the anchor line to a deck cleat or bollard with a half-hitch that is easy to let go. Do not anchor off the windlass.
- Use reference points, such as prominent landmarks, to check that the anchor is holding.
- Check the boat's position regularly in case the anchor drags.

Lowering the Anchor

1. Run the boat's motor(s) at sufficient rpm to activate the charging system.
2. With the circuit breaker/isolator switch "On," press the toggle switch down on the remote up/down control panel to pay out the rope/chain (or press the "Down" footswitch if fitted).
3. Pay out sufficient rope/chain to set the anchor.
4. Watch as the rope/chain is being fed out. Any jam might cause damage to the windlass.

Raising the Anchor

1. Run the boat's motor(s) at sufficient rpm to activate the charging system.
2. With the circuit breaker/isolator switch "On," operate the windlass by pressing the toggle switch up on the remote up/down control panel (or press the "Up" footswitch if fitted).
3. Motor up to the anchor while retrieving it. Do not use the windlass to pull the boat to the anchor.
4. To avoid damaging the bow fitting, retrieve the last metre (36") of rode very slowly and take care when docking the anchor.

Tip: Mark the chain at suitable intervals with coloured line, or purchase and install a Maxwell AutoAnchor 500 series rope/chain counter.

Note

To avoid applying the full force of the windlass to the bow fitting when docking the anchor, adjust the clutch nut (see Item 4, Figure 7, on page 7) so that there is some slippage when docking the anchor.

Free falling the Anchor

1. Check that the rope/chain has unrestricted travel over the bow roller.
2. Standing well clear of the rope/chain, insert the crank 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.

Raising the Anchor Manually

1. Tie off the rope/chain so that it does not pay out when the clutch is released.
2. Insert the crank handle into the clutch nut and turn anticlockwise to loosen the clutch.
3. Insert the handle into the outer bi-square on the chainwheel, cleat the rope/chain as necessary and rotate clockwise to pull in the line.

WARNING

There is no self-locking mechanism to prevent the windlass from turning freely during manual operation. The rope/chain must be cleated off before the crank handle is removed from the outer bi-square, and the clutch nut must be re-tightened.

Using the Capstan Drum for Rope Warping

(Capstan models only)

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 warping drum:

1. Make sure the anchor is secured.
2. Insert the crank 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.
3. Take three turns of rope around the drum in a clockwise direction.
4. While holding the tail of the rope, press the "Up" footswitch. The capstan will rotate clockwise.

Notes

- To increase rate at which the rope is hauled in, increase the load on the tail.
- To decrease rate at which the rope is hauled in, decrease the load on the tail.
- Extra turns around the drum will increase the grip and require less load on the tail.

CAUTIONS

- Make sure that you do not operate the footswitch accidentally while putting extra turns on the capstan.
- Keep your fingers clear of the capstan.
- Do not put so many turns on the drum that easing the load on the tail will not allow the rope to slip on the drum.

Maintenance

Carrying out the following simple maintenance procedures will provide years of trouble-free service from the windlass and will ensure that the warranty remains valid.

Service Intervals

	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				
Spray fresh water into drainage slot on gearbox, to breakdown and flush away any build up of salt/debris, that may have accumulated				
Service motor				
Remove gearbox, replace oil and seals				

Recommended lubricants

Gearbox oil

Capacity: 70 ml (2.4 fl oz)

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 (e.g. Duckhams Keenol or Castrol LMX).

Do not use soap or mineral based greases.

Topworks

The above-deck parts of the windlass should be washed down with fresh water regularly.

Every three months, remove the chainwheel set and lubricate the clutch faces and shaft bore inside the deckplate with marine grease.

For removal instructions, see "Replacing the pressure arm" on page 29.

Gearbox

The gearbox is a self-contained sealed unit.

We recommend that the gearbox be removed and serviced by an authorised Maxwell service technician every three years. Visit our website (www.maxwellmarine.com) for a list of service centres and agents.

Check the gearbox oil level every six months using the sight glass.

Motor

For maximum protection, we recommend that the motor and electrical connections be sprayed periodically with CRC Soft Seal.

The motor should be serviced by a qualified electrician annually (or more frequently in commercial applications).

Rope

To reduce stiffening caused by salt build up, wash the rope regularly with fresh water. We recommend that the rope be soaked for a day in cool water and fabric conditioner once a year and rinsed thoroughly afterwards.

Regularly check the rope for wear. Swap end-for-end and re-splice if necessary.

Over time, 3-strand rope can develop twists that may impair the performance of the windlass. Remove the twists by laying out the rope in a straight run. A good quality swivel between the anchor and chain will minimise this problem.

Replacing the pressure arm

The Freedom pressure arm is subject to wear during normal operation and should be checked periodically (approximately every season of normal use).

A spare pressure arm is supplied with the windlass. If a further pressure arm is required, order the P100019 Freedom Pressure Arm Replacement Kit.

1. Disconnect the anchor and remove the chain from the windlass. Tie a tail of smaller rope to the end of the chain for re-threading back into the windlass when replacement is complete.
Remove the screw and washer from the clutch nut bi-square.



2. Use the crank handle to unwind and remove the clutch nut.



3. Remove the tab washer.



4. Insert a thin metal strip, such as a spoon handle, knife blade or screwdriver next to the pressure arm (see the illustration in step 9 below) and rotate anticlockwise along with the chainwheel.

Remove the chainwheel assembly by rotating the chainwheel anticlockwise while lifting.



5. Remove the pressure arm and clip.

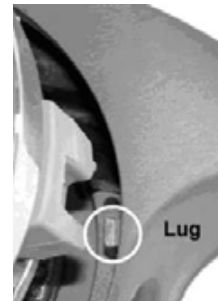
6. Use a 2.5 mm (1/8") drill bit to remove the plastic sleeve for the retaining clip as well as any other debris from the pressure arm pivot hole.



7. Place the new pressure arm in position and make sure the lug on the arm locates in the recess in the bottom of the deckplate.

Insert a new insulator tube and pressure arm clip.

8. When replacing the chainwheel, make sure the recess in the stripper is aligned with the lug on the deckplate.



9. Hold back the pressure arm with a thin metal strip, such as a spoon handle, knife blade or screwdriver, and press down the chainwheel assembly.



10. Finally, replace the tab washer (tab facing down), clutch nut, washer and screw.

Use the crank handle to re-tighten the clutch nut.



Note

The capstan model does not have a tab washer.

Trouble Shooting Guide

Windlass does not operate when activated

- Check that the breaker/isolator panel is "On."
- Check the connections to the following:
 - Remote up/down control panel and footswitches (if fitted)
 - Circuit breaker/isolator panel
 - Reversing solenoid
 - Windlass motor
- Check the battery condition by operating other electrical equipment.
- Check that the solenoid is working. You should hear the solenoid click when activated.

Motor is working but the chainwheel does not rotate

- Check that the clutch nut is not too loose, causing slippage.
- Check that the chainwheel is not jammed with rope or chain. If necessary, reverse the windlass to free the jam.
- Check that the key between the shaft and the gearbox is installed.
- If the windlass does not rotate smoothly or there is excessive noise, the gearbox may be damaged.
- Check the motor drive pin by unbolting the motor from the gearbox.

Motor is working and chainwheel rotating, but the rope does not retrieve or pay out

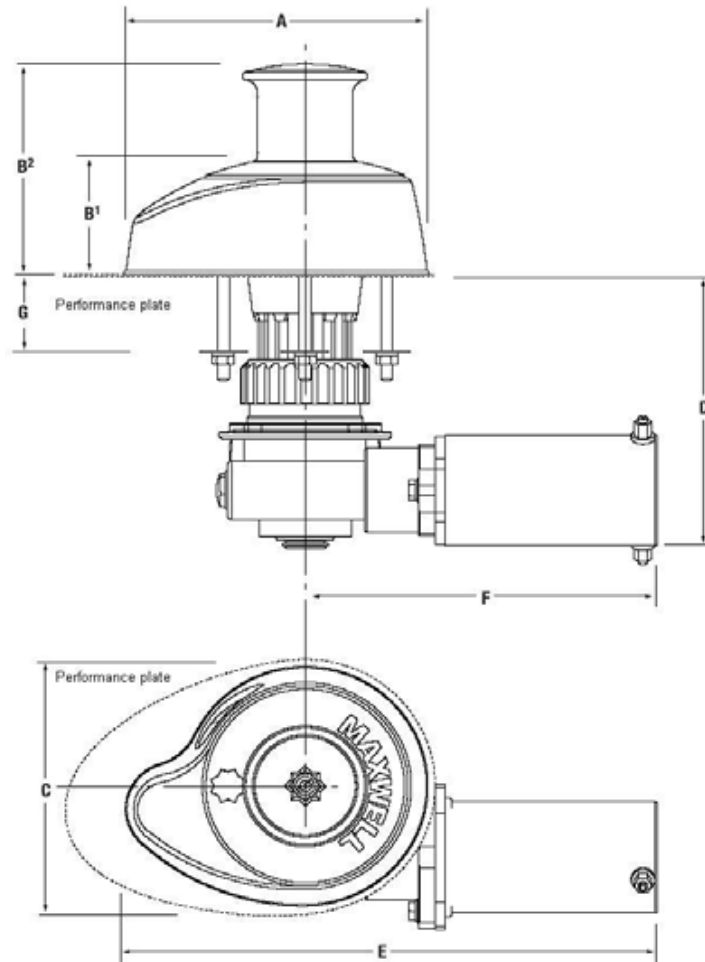
- Check that the size and type of rope is correct for the windlass model. See "Rope and Chain Selection Guide" on page 12.
- Check that the rope and anchor are not fouled.
- The rope may be slipping due to twists or knots jammed in the chain pipe. Reverse the windlass to clear the jam and try again.
- The rope may be slipping on a worn section. Cut out the worn section and rejoin the rope with a splice.
- Check the condition of the pressure arm. Replace if worn or missing. See "Replacing the pressure arm" on page 29.
- The rope may be stiff due to salt and sun exposure. Wash with fresh cool water and fabric softener.
- There may be too much rope in the chain locker. See "Required clearances" on page 14.
- The splice may be worn or frayed. Re-splice the rope to the chain. See "Rope Splicing Notes" on page 19.
- The rope or splice may be catching on the hole through the deck. Make sure the hole is free from rough edges.
- The chain may be twisting. Install a swivel between the chain and anchor.

Reference Information

Specifications

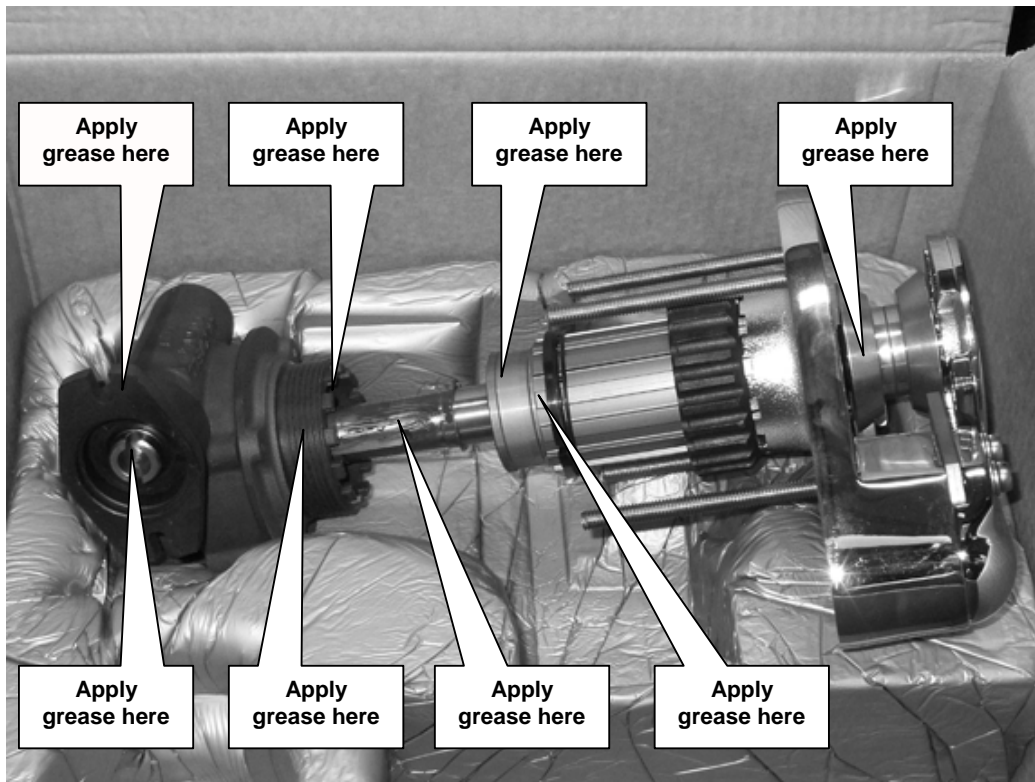
	Freedom 500	Freedom 500M	Freedom 800	Freedom 800M
Maximum pull	227 kg (500 lb)	227 kg (500 lb)	364 kg (800 lb)	364 kg (800 lb)
Chain speed (normal work)	19 m/min (62 ft/min)	19 m/min (62 ft/min)	33 m/min (108 ft/min)	33 m/min (108 ft/min)
Rope speed (normal work)	14 m/min (45 ft/min)	14 m/min (45 ft/min)	21 m/min (69 ft/min)	21 m/min (69 ft/min)
Power supply	DC 12V/24V	DC 12V/24V	DC 12V/24V	DC 12V/24V
Motor rating	600 W	600 W	1000 W	1000 W
Chain size/type (short link chain only)	¼" Acco G40 SL 7 mm DIN 766	6 mm PWB Grade L 6 mm Bradlink SGC 6 mm DIN 766	5/16" Acco G40 SL 5/16" Weissenfels	8 mm PWB Grade L 8 mm Beaver 8 mm Bradlink 8 mm DIN 766
Rope size	½" 3-strand or 8-plait nylon	12 mm 3-strand or 8-plait nylon	5/8" 3-strand or 8-plait nylon	14 mm 3-strand or 8-plait nylon
Net weight	12.5 kg (27.5 lb)	12.5 kg (27.5 lb)	16.5 kg (36.3 lb)	16.5 kg (36.3 lb)
Standard model number	P100000 12V P100050 24V	P100010 12V P100054 24V	P100001 12V P100051 24V	P100011 12V P100055 24V
Capstan model number	P100002 12V P100052 24V	P100014 12V P100056 24V	P100003 12V P100053 24V	P100015 12V P100057 24V
Chainwheel assembly number	P100030	P100031	P100033	P100034

Dimensions

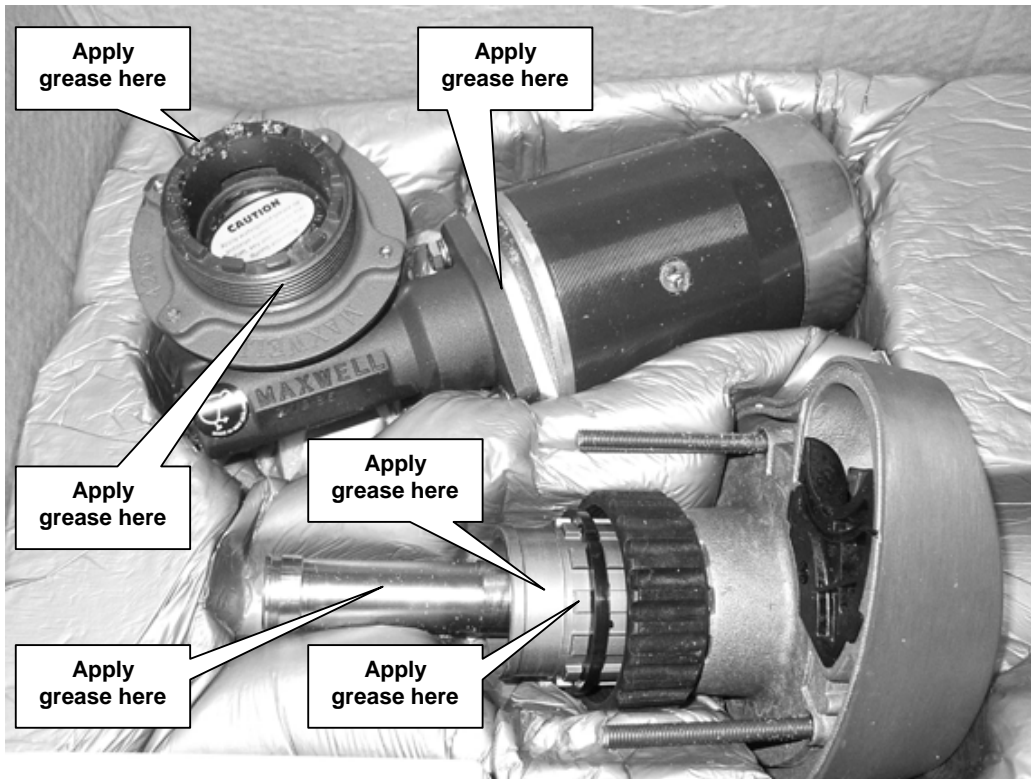


	RC500		RC800	
	mm	in	Mm	in
A	207	8 ³ / ₁₆	207	8 ³ / ₁₆
B¹	79	3 ¹ / ₈	79	3 ¹ / ₈
B² (with capstan)	145	5 ³ / ₄	145	5 ³ / ₄
C	168	6 ¹¹ / ₁₆	168	6 ¹¹ / ₁₆
D (standard deck clearance - 154mm DMC)	193	7 ⁹ / ₁₆	215	8 ⁷ / ₁₆
D (extra deck clearance - 254MM DMC)	293	11 ¹⁷ / ₃₂	315	12 ⁷ / ₁₆
E	364	14 ³ / ₈	396	15 ⁵ / ₈
F	240	9 ⁷ / ₁₆	272	10 ³ / ₄
G (standard deck clearance - 154mm DMC)	65	2 ¹ / ₂	65	2 ¹ / ₂
G (extra deck clearance - 254MM DMC)	165	6 ¹ / ₂	165	6 ¹ / ₂

Typical Greasing Instructions



Grease must be applied to motor face, gearbox locating lugs, spacer tube, gearbox thread, shaft and clutch cone faces where applicable. Use CRC 3097 (or equivalent) spray provided to coat all under deck components to help guard against



**IF USED AS A TEMPLATE
PLEASE CHECK ACCURACY OF
DIMENSIONS ON DRAWING
BEFORE CUTTING-OUT
(SEE NOTE 3)**

**3 Holes ϕ 10mm (3/8")
EQUISPACED ON A
129mm (5 5/64") PCD**

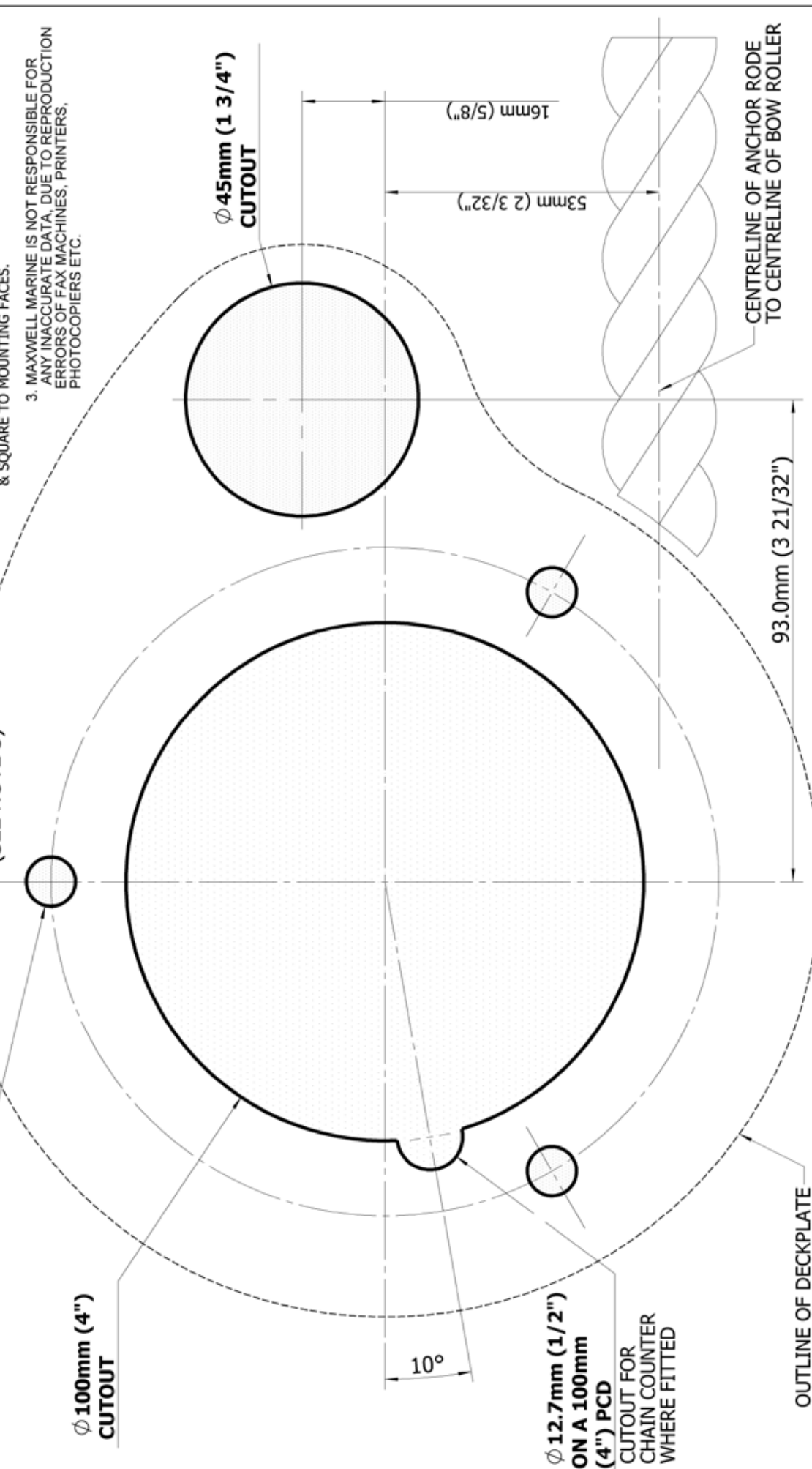
**ϕ 100mm (4")
CUTOUT**

**ϕ 12.7mm (1/2")
ON A 100mm
(4") PCD
CUTOUT FOR
CHAIN COUNTER
WHERE FITTED**

**ϕ 45mm (1 3/4")
CUTOUT**

NOTES:

1. BEFORE CUTTING DECK, CHECK ALL UNDERDECK CLEARANCES. READ & UNDERSTAND INSTALLATION INSTRUCTIONS CONTAINED WITHIN THE MANUAL.
2. CHECK YOUR MARKED OUT DIMENSIONS CAREFULLY, BEFORE CUTTING & DRILLING. DECK BOLT HOLES MUST BE DRILLED PARALLEL & SQUARE TO MOUNTING FACES.
3. MAXWELL MARINE IS NOT RESPONSIBLE FOR ANY INACCURATE DATA, DUE TO REPRODUCTION ERRORS OF FAX MACHINES, PRINTERS, PHOTOCOPIERS ETC.



OUTLINE OF DECKPLATE

93.0mm (3 21/32")

53mm (2 3/32")

16mm (5/8")

CENTRELINE OF ANCHOR ROPE
TO CENTRELINE OF BOW ROLLER

Description:	Deck Drilling Template	Drawing No.:	4283	Revision No.:	4.00
File Location: \apollon1\Engineering\Product Data\components\4200-4296\4283_4.00.dft: Freedom Deck Drilling template					

TO BE USED WITH DECKS 12mm (1/2") AND UNDER IN THICKNESS

**IF USED AS A TEMPLATE
PLEASE CHECK ACCURACY OF
DIMENSIONS ON DRAWING
BEFORE CUTTING OUT
(SEE NOTE 3)**

**3 HOLES ϕ 10mm (3/8")
EQUISPACED ON A 129mm
(5 5/64") PCD**

**ϕ 12.7 (1/2")
on a 100mm
(4") PCD**
Cutout for
chain counter

**ϕ 100mm (4")
CUT OUT**

**ϕ 100mm (4")
CUT OUT**

NOTES:

1. BEFORE CUTTING DECK, CHECK ALL UNDERDECK CLEARANCES. READ & UNDERSTAND INSTALLATION INSTRUCTIONS CONTAINED WITHIN THE MANUAL.
2. CHECK YOUR MARKED OUT DIMENSIONS CAREFULLY, BEFORE CUTTING & DRILLING. DECK BOLT HOLES MUST BE DRILLED PARALLEL & SQUARE TO MOUNTING FACES.
3. MAXWELL MARINE IS NOT RESPONSIBLE FOR ANY INACCURATE DATA, DUE TO REPRODUCTION ERRORS OF FAX MACHINES, PRINTERS, PHOTOCOPIERS ETC.

Outline of
Performance Plate

10°

16mm (5/8")

53mm (2 3/32")

108mm (4 1/4")

CENTRELINE OF ANCHOR ROD
TO CENTRELINE OF BOW ROLLER

To be used with decks 12mm (1/2") and over in thickness & in conjunction with a performance plate

Description:	Deck Drilling template	Drawing No:	4582	Revision No:	4.00
File Location: \apollon11\Engineering\Product Data\components\4500-4599\4582_4.00_dft_Freedom Deck Drilling Template - Performance Plate					

LIMITED WARRANTY

Warranty: Maxwell Marine International provides a three year limited warranty on all 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 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 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 Maxwell or the purchaser.
2. Maxwell's liability shall be limited to repair or replacement (as determined by 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 Maxwell shall have no responsibility in connection with such suitability.
4. 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. 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. Maxwell shall not be liable for consequential damages to any vessel, equipment, or other property or persons due to use or installation of Maxwell equipment.
9. This Warranty sets out your specific legal rights allowed by 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 Maxwell Marine office or distributor. Proof of purchase and authorisation from Maxwell will be required prior to any repairs being attempted.



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

Purchaser

Name:

Address:

Telephone:

Facsimile

Supplier / Dealer

Name:

Address:

Telephone:

Facsimile

Windlass Model

Serial Number

Date of Purchase

Boat Type

Windlasses Supplied

With boat

Fitted by boat yard/dealer

Purchased from dealer/chandler

Name

L.O.A.

Built by





