MAXWELL™

Owners Service Manual

INTRODUCTION

You are now the proud owner of a fine Maxwell winch. Maxwell winches are designed and precision engineered taking into account the arduous conditions of offshore yacht racing and cruising.

Like any precision engineered product Maxwell winches require regular preventative maintenance. By carrying out the simple maintenance procedures described in this booklet, you will ensure top performance and long life from your new Maxwell winches.

Contents

INSTALLATION

1 When mounting winches use only 316 Stainless Steel fastenings. Hex heads captivate to allow mounting by one person. Access to mount is by removing drum.

2 Mount winch with the output gear that engages the drum pointing in general direction of incoming line.

3 Incoming line must lead up to winch at an angle of between 95° and 120° to vertical axis of winch.

4 Ensure prior to mounting that the deck is adequately reinforced, that the mounting area is flat and that suitable backing is provided for the mounting bolts.

5 Bed the base on a light coating of sealing compound and tighten bolts firmly.

6 Ensure drainage slots in bottom of base are clear.

7 Before replacing drum on geared winches, check that the screws fixing the pedestal to the base are tightened down hard.

8 Self-tailing winches — after mounting adjust stripper arm on spline to unload line conveniently into cockpit. Range of line diameters quoted are based on quality yachting braids.

FREQUENCY OF SERVICING

Monthly — Lift drum and generally spray interior with CRC6-66 or WD40. **Check that drainage slots in bottom of base are clear.**

Bi-monthly — Carry out the procedure described in the following pages.

End of Season — Completely strip, carrying out procedures herein **before storage.**

Externally — Clean winch with cloth damp with kerosene (paraffin). Lightly spray with CRC6-66 or WD40 and polish off with clean non-fluffy cloth. Natural luster of bronze winch drums can be restored by polishing with mild abrasive liquid polish. **Don't use on chrome or alloy drums.**

IMPORTANT

Failure to carry out the maintenance service as described herein will invalidate warranty.

WARNING

It is important, as with any ratchet mechanism to ensure that:-

On non-geared winches that the pawls, springs and ratchet teeth are kept in good condition and that they function properly.

On geared winches that the clutches and springs are kept in good condition and that they function properly.

Malfunction of the ratchet mechanism could cause the handle to be driven backwards with considerable force and may cause bodily injury.

MAXWELL 14P, 16P One-speed Direct Drive — Ratcheting

1 Insert screwdriver in slot of Quik-Loc™ mechanism and rotate ¼ turn anti-clockwise

2 Lift drive boss and drum from pedestal. Remove drive boss, pawls and springs

3 Thoroughly clean all parts with kerosene (paraffin) and dry with a clean, non-fluffy cloth. Make sure springs, pawls and ratchet are in good condition

4 (a) Lightly grease bearing areas, pawls, springs and ratchet teeth

(b) Re-assemble with pawls in stations marked "C" for clockwise rotation of drum. Unmarked stations for anti-clockwise

(c) Check action of pawls against springs

5 (a) Re-fit drum and drive boss, checking engagement of pawls

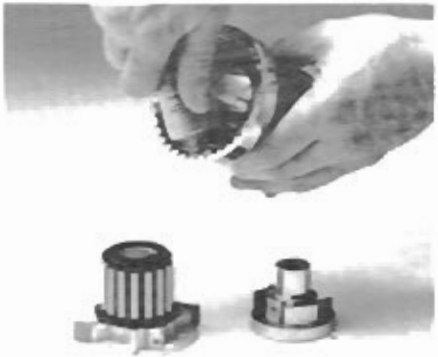
(b) Using screwdriver, turn Quik-Loc™ anti-clockwise until it snaps into lock position

(c) Test action

1 Insert screw driver in slot of Quik-Loc™ mechanism and rotate - turn anti-clockwise

2 Lift drive boss and drum from pedestal.

3 Remove and thoroughly clean all parts with kerosene (paraffin) and dry with a clean, non-fluffy cloth. Make sure all parts are in good condition.



4 (a) Lightly grease thrust washers, needle roller bearings, pawls and springs, ratchet teeth and drive boss bearing.

(b) Re-assemble with pawls in stations marked "D" for clockwise rotation of drum. Unmarked stations for anti-clockwise.

(c) Check action of pawls against springs.

(d) Refit main thrust washer, bearing and top thrust washer.

5 (a) Refit drum and drive boss, checking engagement of pawls.

(b) Using screwdriver, turn Quik-Loc™ anti-clockwise until it snaps into lock position.

(c) Test action.

MAXWELL 14BH One-speed Bottom handle — Ratcheting

1 Unscrew central retaining screw. Note washer under screw head.

2 Lift drive boss and drum from pedestal.

3 Remove and thoroughly clean all parts with kerosene (paraffin) and dry with a clean non-fluffy cloth. Make sure all parts are in good condition.

4 Spray down inside of pedestal and base with CRC6-66 or WD40.

5 (a) Lightly grease thrust washers, needle roller bearing, pawls and springs, ratchet teeth and drive boss bearing.
(b) Re-assemble with pawls in stations marked "C" for clockwise rotation of drum. Unmarked

stations for anti-clockwise rotation. Check action of pawls against springs.
(c) Refit main thrust washer, bearing and top thrust washer and drum, checking engagement of pawls.

6 Refit drive boss, aligning with spline on drive shaft and checking engagement of pawls. Refit retaining screw with lock washer under head. Tighten firmly. Test action.

MAXWELL 17 One-speed Geared — Ratcheting

1 Remove retaining cap – tap undone in anti-clockwise direction

2 Lift drum

3 Extract drive shaft and thrust washer (use lock-in handle) Remove needle roller bearing, thrust washer stainless steel bearing race and on Ultra-light models — bearing race from bore of drum

4 Undo 3 cheese head screws, removing pedestal, gears, clutch sets with springs (6 off) from base

5 Thoroughly clean all parts with kerosene (paraffin) Take care to remove any salt build up and crustation from surfaces of bearing races including mating faces of drum and of pedestal Dry parts with non-fluffy cloth Check condition of parts for wear or damage Replace if necessary

6 Spray inside drum, base and pedestal with CRC6-66 or WD40 and replace bearing race(s) making sure they are properly seated

7 Lightly grease gears — teeth and bores, clutches, drive shaft, thrust washers and needle roller bearing

8 (a) Reassemble central clutch gear stack on to base Clutches marked "C" at bottom for clockwise rotation, clutches marked "A" at bottom for anti-clockwise rotation of drum

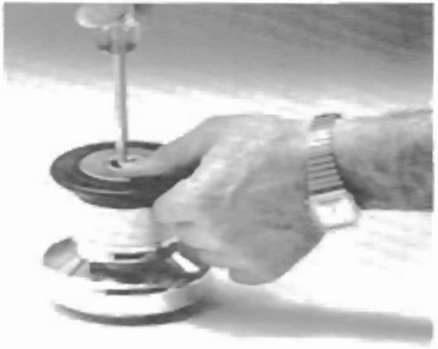
(b) Position idler gear, replace pedestal and tighten down firmly

(c) Place thrust washer in top of pedestal and fit drive shaft checking alignment to engage dogs on clutch Test action

(d) Fit thrust washer, main bearing and drum

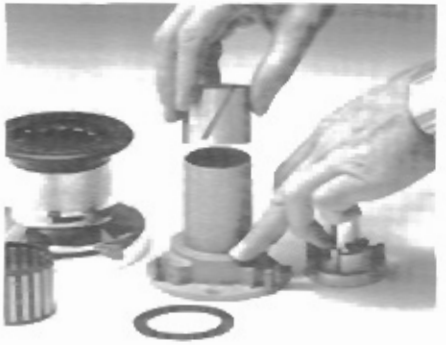
(e) Lightly grease thread and underside of retaining cap, refit, tighten firmly, and test action

MAXWELL 18 One-speed Direct drive — Ratcheting



1 Insert screwdriver in slot of Quik-Loc™ mechanism and rotate ¼ turn anti-clockwise

2 Lift drive boss and drum from pedestal



3 Remove needle roller bearing, two thrust washers, pawls and springs. 4 sets stainless steel bearing race and on Ultra-light models — bearing race from bore of drum

4 Thoroughly clean all parts with kerosene (paraffin). Take care to remove any salt build up and crustation from surfaces of bearing races and mating faces in drum and on pedestal

5 (a) Spray pedestal and inside drum with CRC6-66 or WD40 and replace bearing race(s) making sure they are properly seated

(b) Lightly grease thrust washers needle roller bearing, pawls and springs, ratchet teeth and drive boss bearing

(c) Re-assemble with pawls in stations marked "C" for clockwise rotation of drum. Unmarked stations for anti-clockwise rotation

(d) Check action of pawls against springs. Refit main thrust washer, bearing and top thrust washer

(e) Refit drum and drive boss checking engagement of pawls. Using screwdriver turn Quik-Loc™ anti-clockwise until it snaps into lock position

(f) Test action

MAXWELL 18BH One-speed Bottom handle — Ratcheting

1 Remove retaining cap — tap undone in anti-clockwise direction.

2 Lift drum from pedestal

3 Remove needle roller bearing, thrust washer, pawls and springs (2 sets — 1 set captivated in ratchet handle block — remove screw to release) stainless steel bearing race and on Ultra-light models — bearing race from bore of drum.

4 Thoroughly clean all parts with kerosene (paraffin). Take care to remove any salt build up and crustation from surfaces of bearing races and mating faces in drum and on pedestal. If necessary, remove pedestal from base by undoing three cheese head screws. When refitting check seating in register and tighten screws firmly. Dry parts with non-fluffy cloth. Check condition of parts for wear or damage and replace if necessary.

5 Spray inside base, drum and pedestal with CRC6-66 or WD40 and replace bearing race(s) making sure they are properly seated.

6 Lightly grease thrust washers, needle roller bearing, pawls and springs and ratchet teeth.

7 (a) Re-assemble with pawls in stations marked "C" for clockwise rotation of drum. Unmarked stations for anti-clockwise rotation. (Turn ratchet block over on handle for opposite rotation.

(b) Check action of pawls against springs. Refit thrust washers, bearing and drum.

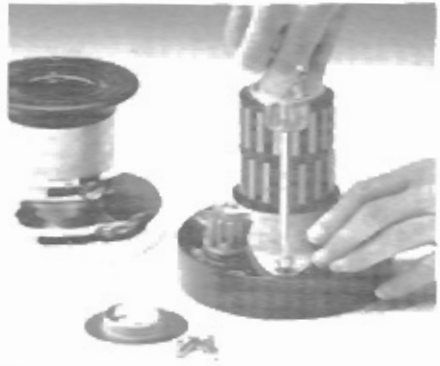
(c) Lightly grease thread and underside of retaining cap. Refit and tighten firmly.

(d) Test action.

8

1 Remove retaining cap — tap undone in anti-clockwise direction.

2 Lift drum.



3 Undo cheese head screws — 3 off on models 20 through 27, 4 off on models 28 and 29.

7 (a) Spray inside drum, base and pedestal with CRC6-66 or WD40 and replace bearing race(s) making sure they are properly seated. (b) Lightly grease gears — teeth and bores, clutches, drive shaft, thrust washers and needle roller bearings.

8 (a) Re-assemble parts into pedestal with clutches marked "C" on central shaft for clockwise rotation. For anti-clockwise rotation, assemble clutches marked "A" to central shaft.

(b) Hold gearing on pedestal, turn pedestal over and align output gear with base and lower pedestal into place.
(c) Replace screws and tighten down firmly.

9 (a) Fit thrust washer, main bearing(s) and drum.

4 Lift pedestal from base

(b) Lightly grease thread and underside of retaining cap, refit and tighten firmly

5 (a) Remove all parts by hand including drive shaft, bearings and stainless steel bearing races from inside top and bottom of pedestal. Models 22 through 29 only.

(b) Also remove stainless steel bearing race on pedestal main bearing.

(c) On Ultra-light models, also remove bearing race from bore on drum.

(d) On models 26 through 29, idler gear needle roller bearing should also be removed.

6 (a) Thoroughly clean all parts with kerosene (paraffin). Take care to remove any salt build up and crustation from surfaces of bearing races including mating faces on drum and pedestal.

(b) Dry parts with non-fluffy cloth.

(c) Check condition of parts for wear or damage and replace if necessary.

1 After removing retaining cap lift jaw assembly and stripper arm with drum. Proceed as for standard winches

2 Grease spline on top of pedestal

3 (a) Refit drum and adjust position of stripper arm on spline so as to unload rope in desired position

(b) Lightly grease thread and underside of retaining cap refit and tighten firmly

(c) Test action

To change rotation of Self-Tailing winches

All Maxwell self-tailers can be simply set for clockwise or anti-clockwise rotation. This allows for better deck layout by passing all lines to the outside of the winch port and starboard and can save turning blocks and lines cutting across combings. ***The direction of loading and rotation is clearly marked with arrows on top of the winch.***

1 Assemble pawls or clutches as explained for standard winches to achieve desired rotation

2 Arrows on self-tailing jaw show direction of rotation. If opposite rotation is required

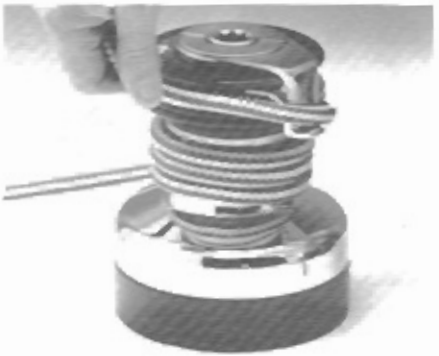
(a) Remove stripper arm from jaws

(b) Remove 4 screws fastening jaws to drum

(c) Lift jaws from drum, turn pair over, relocate on spigot ring and 4 dowel pins. Replace screws and tighten them firmly

3 Replace stripper arm and retaining cap

1 Place a minimum of 3 turns of rope round the drum. Wrap in direction of arrows.



2 Place rope over stripper arm

3 Cleat into jaws — you are now ready to tail automatically

Recommended Line Sizes

Notes:
The stripper arm should be positioned to unload the line into a safe storage position. Maxwell self-tailers automatically handle a wide variety of sheet and halyard sizes without the need for adjustment. The winch should only be used within the recommended range of line diameters. Because there is no differential and few frictional losses in the mechanism, you can through-tail by hand. This means the winch can be set up before going ashore for fast safe tailing.

MODEL		
17ST	8mm - 13mm	5/16" - 1/2"
18BHST	8mm - 14mm	5/16" - 9/16"
20ST	8mm - 13mm	5/16" - 1/2"
21ST	8mm - 13mm	5/16" - 1/2"
22ST	8mm - 14mm	5/16" - 9/16"
23ST	8mm - 14mm	5/16" - 9/16"
24ST	10mm - 16mm	3/8" - 5/8"
25ST	10mm - 16mm	3/8" - 5/8"
26ST	10mm - 16mm	3/8" - 5/8"
27ST	10mm - 16mm	3/8" - 5/8"
28ST	10mm - 16mm	3/8" - 5/8"
29ST	10mm - 16mm	3/8" - 5/8"

Converting your Standard Maxwell winch to Self-Tailing

1 Procure appropriate conversion kit and remove retaining cap — tap undone in anti-clockwise direction.

2 Lift drum and extract drive shaft. Lock-in handle can assist.

3 Remove thrust washer, bearing and stainless steel bearing race from top of pedestal.

4 Thoroughly clean thread on top of pedestal.

8 Grease and fit new drive shaft supplied with kit. Align splines on insertion. Test action.

9 Replace drum.

10 Locate spigot ring supplied in top of drum.

11 Locate jaw assembly, jaw with arrow showing correct rotation, uppermost, on to spigot ring and tap dowel pins into holes — tap home flush. ***IMPORTANT. Be sure to use dowel holes — not screw holes.***

5 Apply LOCTITE™ supplied with kit to the male thread of pedestal extension

6 Screw extension into top of pedestal and tighten firmly using stripper arm applied to spline as a spanner

7 Spray extension internally with CRC6-66 or WD40 and fit parts removed in step 3 in top of extension

12 Using 4 screws supplied screw jaw assembly down firmly

13 Grease spline, raise drum and fit stripper arm, positioning so as to unload line into safe storage position

14 Refit retaining cap and tighten firmly. Test action

Self-tailing Conversion Kits

Self-tailing conversion kits are available for the following standard MAXWELL winches:-

16 Bottom handle,
18 Bottom handle, 17, 20, 21, 22, 23, 24, 25, 26 27, 28, 29

Warranty

For one (1) year from the date of purchase, Maxwell-Nilsson Marine Limited, hereinafter referred to as Maxwell-Nilsson, will repair or replace at its option, for the first retail purchaser of this product, or a Maxwell-Nilsson product properly installed or incorporated in another vendor's products, any part or parts of its own design and manufacture found upon examination by any authorized service center, or by Maxwell-Nilsson, to be defective in materials or workmanship or both. Maxwell-Nilsson's responsibility for commercial losses and otherwise in respect to warranty claims is limited solely to repair or replacement of products found by Maxwell-Nilsson to be defective. In no case will Maxwell-Nilsson's responsibility extend to parts or equipment not of Maxwell-Nilsson's manufacture or for damage to the product or other property due to improper installation, maintenance, accident, neglect, misuse or operation of the product or equipment beyond its rated capacity, intentional or otherwise. The above warranty does not apply to a product if persons other than Maxwell-Nilsson or its authorized service centers effect replacement of parts or repairs, if spare parts other than those of Maxwell-Nilsson's manufacture are used, or if the product has been modified in any way without Maxwell-Nilsson's express written approval. Under no circumstances shall Maxwell-Nilsson be liable for loss of profits or other damages or injury whatsoever and howsoever caused.

To make a claim under this warranty, return the product believed to be defective to your authorized Maxwell-Nilsson service center along with proof of purchase. If the authorized service center feels that a warranty claim is justified, he shall contact Maxwell-Nilsson and obtain an authorization to return the product to Maxwell-Nilsson. Maxwell-Nilsson will not assume responsibilities or accept invoices for unauthorized repairs to its products, even though defective. After receipt of an authorization form, return the product together with the authorization form to the nearest Maxwell-Nilsson Office or Warehouse, freight prepaid. If found to be defective and if all return charges have been prepaid, Maxwell-Nilsson will repair or replace the product and return it freight prepaid. Maxwell-Nilsson does not pay for labor charges connected with removal or storage of a product deemed to be defective or charges or costs associated with reinstallation or replacement of the repaired product.

There are no other express warranties which extend beyond the description on the face hereof. Implied warranties, including those of merchantibility and fitness for a particular purpose, are limited to one year from the original date of purchase and Maxwell-Nilsson expressly disclaims any warranty of merchantibility or fitness for any particular purpose. Purchase and acceptance of the product shall be on the condition that Maxwell-Nilsson shall not be liable for any and all incidental and consequential damages.

Should any part of this warranty for any reason be declared or found to be invalid, such invalidity or unenforceability shall not affect the validity of the remaining portions of the warranty.

This limited warranty is and shall be in lieu of all other warranties, whether expressed or implied by Maxwell-Nilsson, its agents, employees, representatives, or otherwise with respect to any sale, service or other transaction involving Maxwell-Nilsson products and equipment.

Designed and Manufactured by

MAXWELL-NILSSON

MAXWELL-NILSSON MARINE LTD P.O. BOX 33-467 TAKAPUNA, AUCKLAND 9, NEW ZEALAND. TELEPHONE 444-7996 TELEX NZ 60936

Fold and seal

SERVICING RECORD

Date Serviced	Notes

Should you require further assistance contact

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MAXWELL-NILSSON

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TELEPHONE 444-7396 TELEX NZ 60030

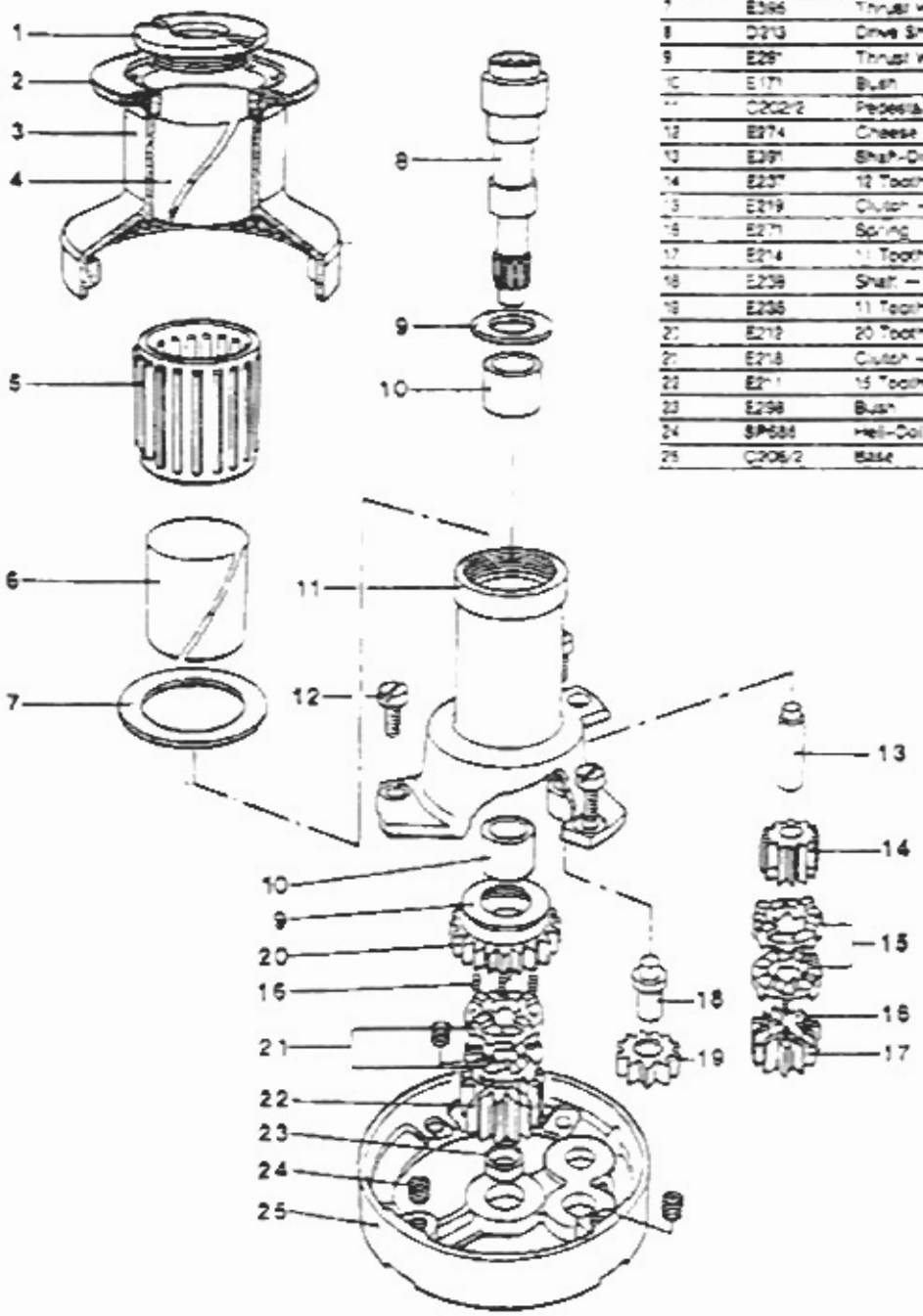
MAXWELL 20A

FILE COPY

Two-speed Geared

MODEL	FINISH	PRODUCT CODE
20A	Alloy	55204

ITEM	PART No.	DESCRIPTION	QTY
1	E423	Retaining Cap	1
2	D396	Cap	1
3	C201/2A	Drum	1
4	E183	Bearing Outer Race	1
5	187	Needle Roller Bearing	1
6	E184	Bearing Inner Race	1
7	E396	Thrust Washer	1
8	D213	Drive Shaft	1
9	E28*	Thrust Washer	2
10	E171	Bush	2
11	C202/2	Pinion/8	1
12	E274	Cheese Head Screw	3
13	E29*	Shaft-Driven Gear Cluster	1
14	E23*	12 Tooth Clutch Gear	1
15	E219	Clutch — Anti Clockwise	2
16	E271	Spring	8
17	E214	11 Tooth Clutch Gear	1
18	E238	Shaft — Idler Gear	1
19	E235	11 Tooth Idler Gear	1
20	E212	20 Tooth Clutch Gear	1
21	E218	Clutch — Clockwise	2
22	E21*	15 Tooth Clutch Gear — Splined	1
23	E236	Bush	1
24	SP586	Heli-Coil Insert	3
25	C206/2	Base	1



Drawing Number
C 100037

MAXWELL 20A 20B 20C

Two Speed/Top Handle — Series 1

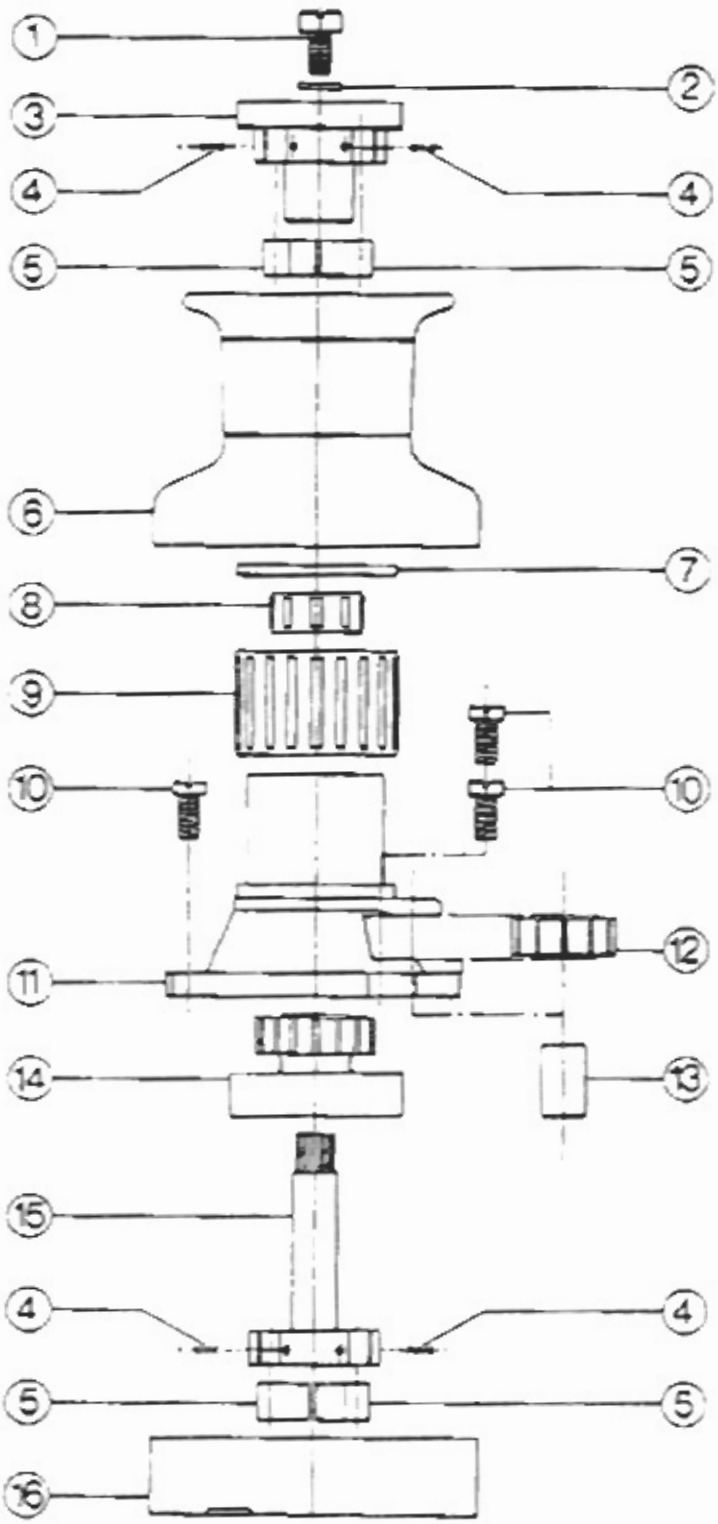
MODEL	FINISH	PRODUCT CODE
20A	Alloy	55201/A
20B	Bronze	55202/B
20C	Chrome	55203/C

ITEM	PART No	DESCRIPTION	QTY
1	E257	Retaining Screw	1
2	E270	Retaining Washer	1
3	D258	Drive Boss	1
4	E271	Spring	4
5	E272	Pawl	4
6	D201/*	Drum	1
7	E273	Thrust Washer	1
8	247	Needle Roller Bearing	1
9	207	Needle Roller Bearing	1
10	E274	Cheese Head Screw	3
11	C202/*	Pedestal	1
12	E200	Idler Gear	1
13	E275	Idler Shaft	1
14	E204	16 Tooth Ratchet Pinion	1
15	E205	Drive Shaft	1
16	D206/*	Base	1

Extra parts for Aluminium Winches

E163	Bearing Outer Race (in D201)	1
E164	Bearing Inner Race (on C202)	1
E229	Bearing Outer Race (in top C202)	1
SP606	Nylon Bush (in bottom C202)	1
SP586	Heli-Coil Insert (in D206)	3

*Designate /A for Aluminium or
/B for Bronze or
/C for Chrome



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