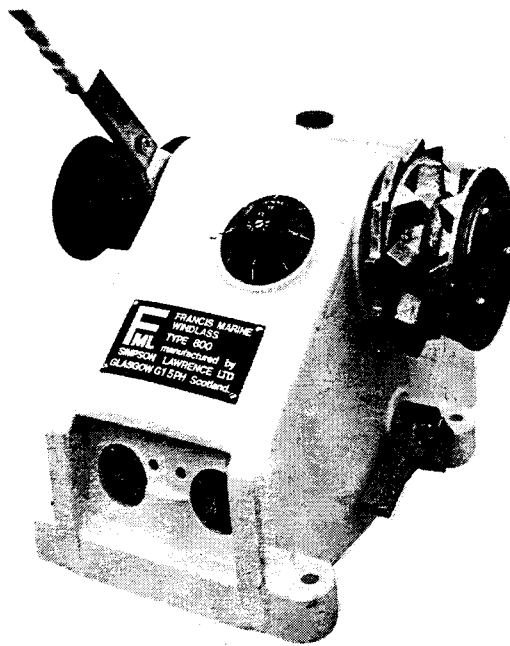




S-L FRANCIS 800 ELECTRIC ANCHOR WINDLASS



**Installation Operating
Maintenance Instructions
and Parts List**

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S-L Francis 800 Electric Anchor Windlass

The S-L Francis 800 electric anchor windlass is of a modern and compact design and is manufactured to a high specification using first class up to date materials throughout. The smartly styled main case is in light weight aluminium alloy LM6, primed and stove painted white. The warping drum is of anodised aluminium. The chain gipsy is of high quality galvanised cast iron and is suitable for chain sizes $\frac{3}{16}$ " (8 mm) and $\frac{3}{8}$ " (10 mm) short link calibrated chain.

INSTALLATION INSTRUCTIONS

To mount the windlass on deck a suitable mounting pad may be required to take up the camber of the deck. Place the windlass on the mounting pad in the desired position and check that the chain will line up correctly with the stemhead roller or hawse pipe and that the chain will feed correctly into the locker below. Mark the position of the bolt holes and remove the windlass from the deck. Four $\frac{13}{16}$ " (13 mm) diameter holes are required for the holding down bolts. A hole about $1\frac{1}{2}$ " (38 mm) diameter is also required to take the electric supply cables through the deck and this should be in a position to line up where the cables leave the windlass. Drill these holes and pass the electric cable through the mounting pad and the deck. See wiring instructions below. Replace the windlass on the base mat, part 800/39 and then bolt to the deck with $\frac{1}{2}$ " (12.7 mm) diameter bolts.

Please note that if the base mat is not properly fitted giving a complete watertight joint, corrosion may occur in the internal mechanism.

Wiring

See diagram provided.

Because of the relatively high electric currents required, ample sized cables must be fitted, so that the voltage drop between the battery and the windlass does not exceed 5% of the supply voltage. For 24 volt DC, this will be approximately 1 volt and for 12 volt DC approximately 0.5 volt. Suitable sized cable is 19/1.35 or 7/2.14 PVC covered. This size refers to the number of wires and their diameter in millimetres. The Imperial equivalent is 19/052. The cross sectional area of this cable is (25 mm².)

If the windlass has to be installed at some distance from the battery, such that the voltage drop exceeds 5%, then the next larger cable is recommended. The windlass case is completely insulated from the electrical connections, therefore, a two wire or insulated return system is necessary. Check that the existing electrical system is negative return. The supply cable should then be taken from the positive terminal, through an isolating switch (preferably an overload protection unit, see No. 0507 described on page 7), to one lead cable from the windlass, and the return cable taken from the other lead cable back to the negative side of the battery. To minimise voltage drop, both of these cables should be kept as short as possible, and so mounted that they are clear of any place where water or dampness may occur. Should the installation be positive return, the overload unit should be in the cable from the negative battery terminal.

Lubrication

With the windlass in position fill the gear box with $1\frac{1}{3}$ pints (0.75 litre) of a good detergent oil equivalent to SAE.10. The correct oil level is about $\frac{1}{8}$ " (3 mm) down from the top of the gauge glass and this level should be checked periodically. Replace filler plug after filling.

Chain Run Indicator

This should be set to zero before letting go the chain. The dial should be lifted and rotated until the mark at 50 metres is opposite the indicator mark on the windlass. For each complete turn of the indicator dial, 50 metres of

chain will move. The other position marks on the indicator dial will represent 12.5 metres opposite $\frac{1}{4}$, 25 metres opposite $\frac{1}{2}$ and 37.5 metres opposite $\frac{3}{4}$.

Note: Since the windlass is designed to cater for a wide variety of chain types, the accuracy of this indicator is + or - 4% and thus it is better to err on the safe side by allowing a little extra chain to run out when anchoring.

OPERATING INSTRUCTIONS

Run Out Cable

Disengage the gipsy pawl and release the clutch slowly by pulling the clutch lever back until the gipsy begins to turn and the cable runs out. The handle also acts as a brake and the speed at which the chain runs out can easily be controlled by pushing the lever forward to slow down and pulling back to speed up. To stop the chain run out, push the lever fully forward and re-engage the gipsy pawl.

Hauling In the Cable

Ensure that the gipsy pawl is engaged and that the clutch operating arm is pushed forward. Press the On/Off button on the aft side of the windlass and the gipsy will start to turn, pulling in the cable. The speed of hauling depends on the load on the cable and will increase after the anchor breaks out. As the anchor comes clear of the water, the windlass can be controlled by use of the "Inch" button by pressing intermittently.

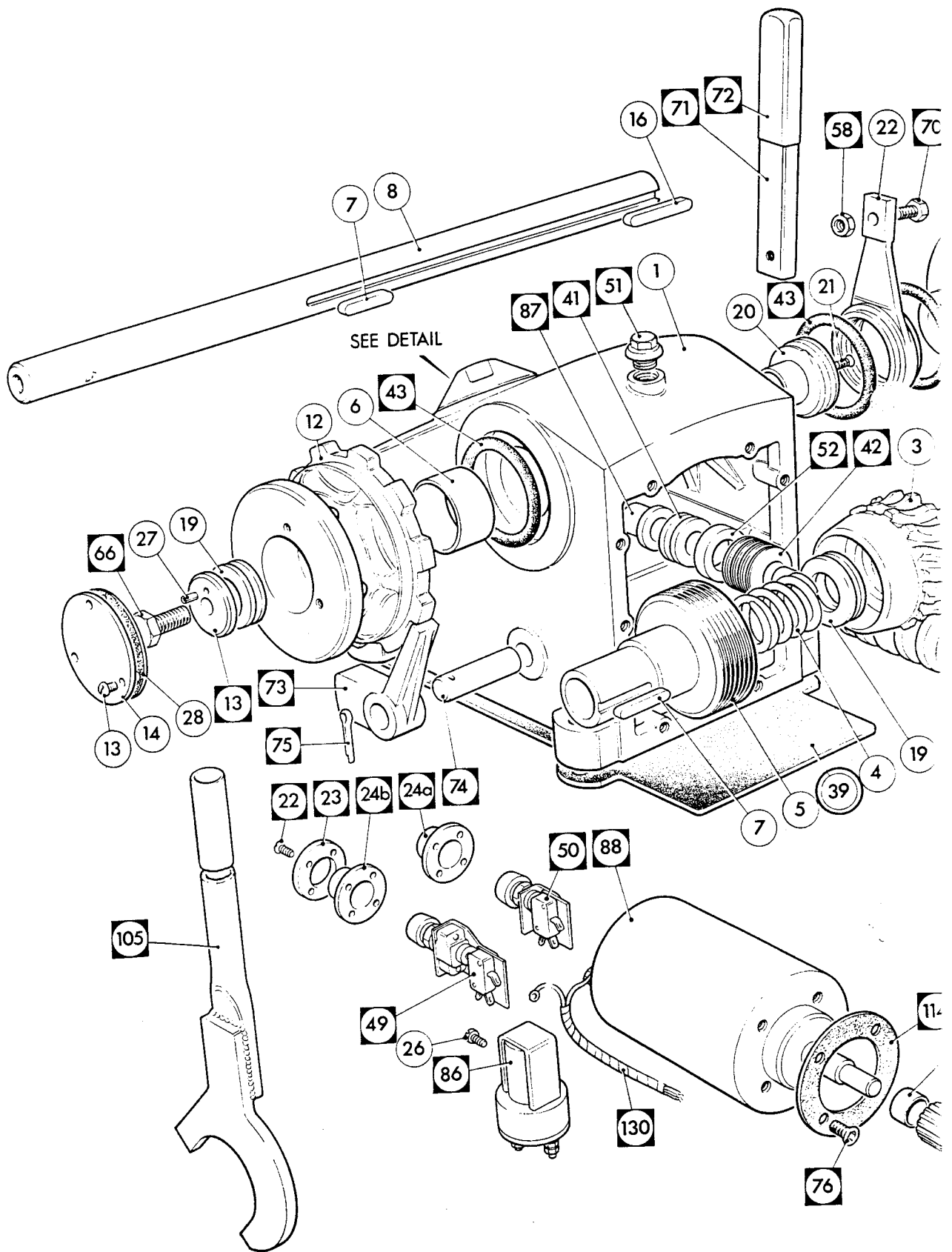
Should the windlass stall, switch off and wait a few seconds before again pressing the switch.

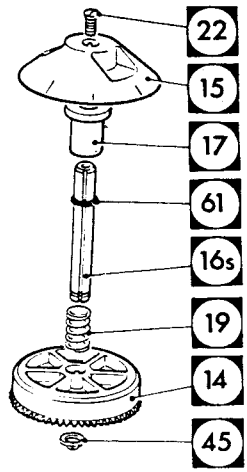
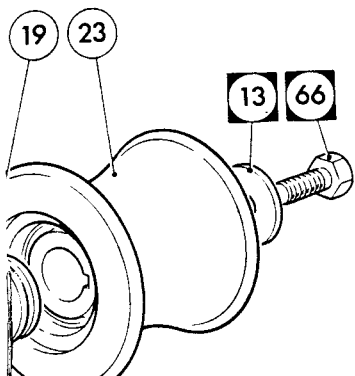
It is important that the windlass should not be allowed to stall for more than a few seconds.

If the windlass continues to stall then the anchor may be foul and any attempt to clear it should be made as indicated under Hand Operation.

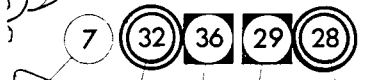
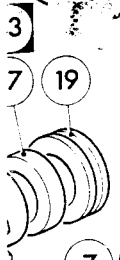
Operating Hints and Tips

1. When hauling up the anchor it is recommended that the engine is used to provide just enough power to take the tension off the chain. This will ease the load on the windlass and battery and increase the hauling in speed. It also allows the vessel to be manoeuvred if required.
2. The easiest way to clean the anchor is to haul it up clear of the water as far as possible and then drop it rapidly back into the water until it is completely submerged. This can be repeated several times by keeping the winch motor running continuously and controlling the raising and lowering by movement of the clutch lever, aft to drop, forward to raise.
3. When mooring up stern-to "Mediterranean style" drop the anchor at the required distance from the jetty and gently ease off the windlass clutch just enough to allow the chain to run out under the influence of the stern way of the vessel. Maintain sufficient chain tension so as to control the boat and prevent the bows swinging. By engaging the clutch the anchor chain can be used to act as a brake for the vessel as it approaches the jetty. Make fast with warps from the stern.
4. Should the anchor be fouled by a mooring chain or similar under water obstruction, an attempt can be made to raise the anchor together with the obstruction, either above or close to the surface of the water as possible. A slip line can then be passed around the obstruction and with both ends of the line made fast through a fairlead, the brake should be released to allow the weight of the obstruction to be taken by the line. The anchor will then drop clear and the slip line can then be released. Should the obstruction be some way below the surface, it may be possible to dive a boat hook, with a light messenger line attached to it, under the obstruction.

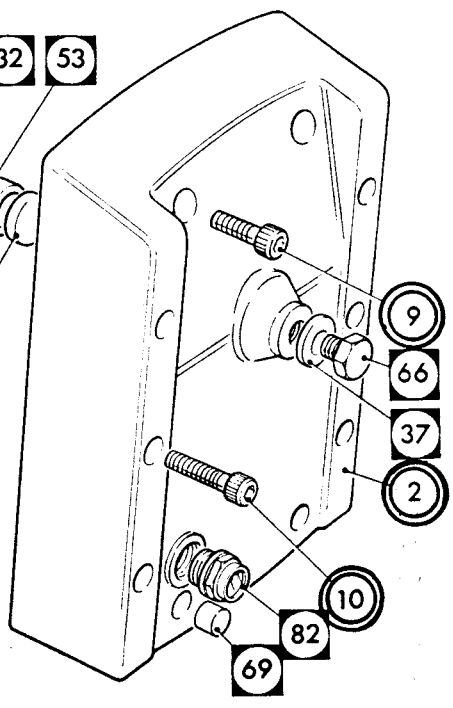
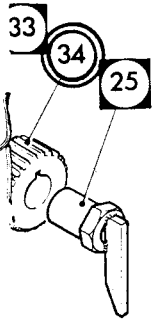
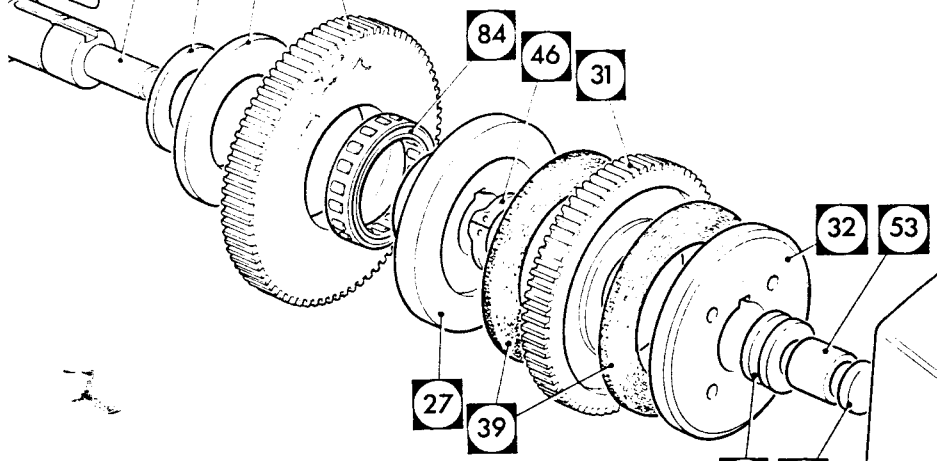




DETAIL OF FATHOMETER



BRASS GEAR
STEEL GEAR



Warping

To use the drum for warping, ensure that the gipsy pawl is engaged and release the clutch by pulling the lever right aft. Press the operating switch and the warping drum will revolve independently of the gipsy. The most convenient way to use a warping drum is to have the drum revolving continuously with about 3 turns of warp on it. Pull on the free end when hauling is required and surge the turns when no further hauling is needed.

Hand Operation

For use in the event of an electrical supply failure, or a fouled anchor, an emergency hand lever is supplied. Ensure that the gipsy pawl is in the engaged position and then release the clutch by pulling the clutch handle aft to free the gipsy. The forked end of the hand lever should be dropped in between the gipsy and the case with the angled end of the tube engaging in the gipsy ratchet. Pull the lever aft and the gipsy will turn. Push the lever forward and the hand lever will ratchet. Continue moving the handle backwards and forwards to pull in the cable. A very considerable leverage can be applied to the gipsy by this method but it is slow, so the windlass should be used under power as soon as the anchor has been broken out.

Maintenance

The windlass requires very little servicing. Check that the oil level is as under Lubrication and this can also be checked by removing the filler plug with the motor running and a fine mist of oil should be seen. A few drops of oil should be applied to the clutch operating lever where it enters the windlass case and it is recommended that during lay-up, the clutch is left in the dis-engaged position.

Clutch Adjustment 800 Model

Operation of the clutch is effected by the movement of the clutch operating arm, 1400/22, on the clutch bush, 1400/20. This causes engagement of the cone clutch, 1400/3 and 1400/5. Adjustment of the clutch should be carried out in the undernoted manner.

Tools Required

1. $\frac{11}{16}$ " AF Socket or 14 mm plug socket.
2. Screw Driver.
3. 2 off $\frac{1}{4}$ " BSW Spanners
4. Thread Retaining Compound, e.g., Loctite 221 or 241.
5. Graphite Free Grease, e.g., Shell Alvania R1

Dis-assembly to Adjust

1. Remove screws, 1400/13, cover plate, 1400/14, and gasket 1400/28.
2. Slacken screw 1000/66 within the gipsy until tension is released ; remove and examine. (See Notes on Re-assembly).
3. Remove screw 1000/66 at drum end, washer 1000/13, and examine. (See Notes on Re-assembly).
4. Remove drum, 1400/23, thrust washer, 1400/19, ' O ' Ring 1000/43 and key, 1400/16.
5. Remove nut, 1000/58 and bolt, 1000/70, from the clutch operating arm, 1400/22.
6. Remove clutch handle, 1000/71 and 1000/72.
7. Remove clutch operating arm, 1400/22 by screwing in an anti-clockwise direction.
8. Remove ' O ' ring 1000/43. This exposes bearing, 1400/20, which requires to be indexed to adjust the clutch.
9. Remove screws, 1400/21, but do not remove bearing, 1400/20.
10. Index bearing, 1400/20, by 1 hole in a clockwise direction which is sufficient to adjust for normal wear.

Re-assemble in reverse order, paying attention to the following points :

1. Re-assemble screws, 1400/21, with the thread retaining compound.
2. Liberally grease 'O' rings, bearings and threads with graphite free grease.
3. Clutch operating arm is screwed in a clockwise direction. The handle 1000/71 and 72 is set in the aft or release position.
4. Replace thrust washer grease packed, drum, washer and fully tightened screw.
5. Screw 1000/66 at the gipsy side is tightened against the clutch spring force and care is required to ensure screw is properly tightened.
6. With the clutch handle at the release position the gipsy, 1400/12, should be free to rotate. By moving the handle through no more than 45° the clutch should engage and the gipsy be unable to rotate. If excessive clutch handle movement persists examine screws, 1000/66, to make sure they are tight. Over zealous operation of clutch handle can result in stretching of these screws. If they are stretched they should be replaced with $\frac{1}{2}$ " BSW x 1" long Hexagon Head High Tensile Screws.

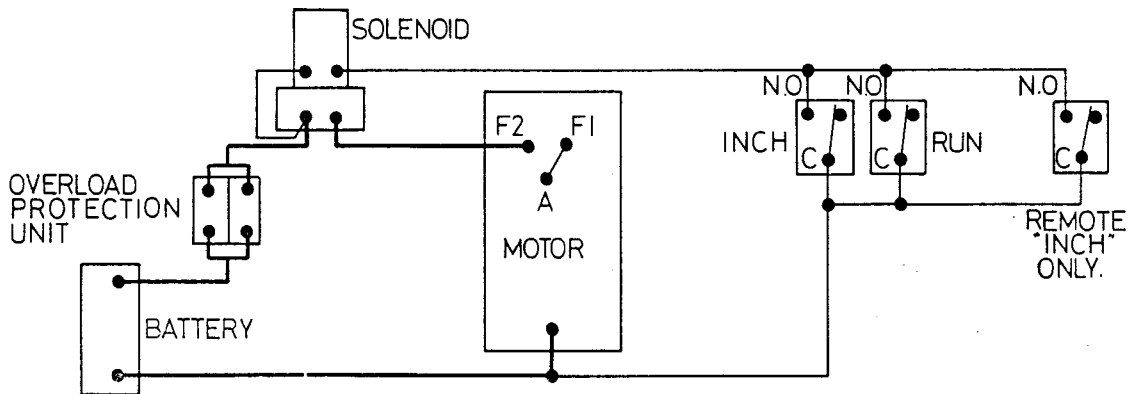
Adjustment of Automatic Gear Change Mechanism

The mechanism is set to change gear at approximately 250 lb. (115 kg) and should not require any adjustment for several years. However, should loss of transmission occur below the above figure, the following adjustment can be made using a $\frac{13}{16}$ " AF spanner.

1. Remove screw, 1000/66, from end cover, 800/2.
2. Replace screw, 1000/66, omitting washer, 1000/37.
3. Make sure screw is correctly tightened.
4. Removal of washer 1000/37 will normally give sufficient adjustment to compensate for wear of clutch discs, 1000/39, but, a further adjustment can be obtained by replacing screw, 1000/66, with a screw 1.5 mm longer.

No further adjustment should take place without examination of the clutch discs, 1000/39.

Wiring Diagram



Overload Protection Unit



for Francis 800

A recommended accessory for all installations. Contains 2 thermally operated overload circuit breakers. If windlass is overloaded, breaker trips out and by switching lever to the second breaker, power is immediately available again. Should be fitted as near the battery as possible. **List Number 0507.**

$7\frac{1}{2}$ " (190 mm) x $4\frac{3}{4}$ " (120 mm) x $2\frac{1}{4}$ " (60 mm).

PARTS LIST

Items indicated in Single Circle are Part Number 1400/—

| | | | | | |
|----|-------------|---|----|----------------------|---|
| 1 | Body | 1 | 16 | Key | 1 |
| 3 | Worm Wheel | 1 | 17 | Spacing Bush | 1 |
| 4 | Spring | 1 | 19 | Thrust Washer | 4 |
| 5 | Clutch | 1 | 20 | Bearing | 1 |
| 6 | Bearing | 1 | 21 | Screw | 3 |
| 7 | Key | 2 | 22 | Clutch Operating Arm | 1 |
| 8 | Shaft | 1 | 23 | Drum | 1 |
| 12 | Gipsy | 1 | 26 | Screw | 2 |
| 13 | Screws | 3 | 27 | Spring Pin | 1 |
| 14 | Cover Plate | 1 | 28 | Cover Plate Gasket | 1 |

Items indicated in Double Circles are Part Number 800/—

| | | | | | |
|----|------------------------|---|----|---------------|---|
| 2 | End Cover | 1 | 32 | Worm Shaft | 1 |
| 9 | Socket Head Cap Screws | 2 | 34 | Compound Gear | 1 |
| 10 | Socket Head Cap Screws | 8 | 39 | Base Gasket | 1 |
| 28 | Gear | 1 | | | |

Items indicated in Squared Circles are Part Number 1000/—

| | | | | | |
|-----|-----------------|---|-----|--|----|
| 13 | Washer | 1 | 53 | Bearing | 1 |
| 14 | Wheel | 1 | 56 | Thrust Plate | 1 |
| 15 | Indicator | 1 | 58 | Nut | 1 |
| 16S | Spindle | 1 | 61 | 'O' Ring | 1 |
| 17 | Bush | 1 | 66 | Screw | 2 |
| 19 | Spring | 1 | 69 | Plug | 10 |
| 22 | Screw | 9 | 70 | Screw | 1 |
| 23 | Shroud Ring | 2 | 71 | Clutch Handle | 1 |
| 24A | Shroud Inch | 1 | 72 | Handle Grip | 1 |
| 24B | Shroud On/Off | 1 | 73 | Pawl | 1 |
| 25 | Impeller | 1 | 74 | Pin | 1 |
| 27 | Sprag Bush | 1 | 75 | Split Pin | 1 |
| 29 | Retaining Plate | 1 | 76 | Screw | 4 |
| 31 | Gear | 1 | 82 | Oil Sight Glass | 1 |
| 32 | Clutch Bush | 1 | 84 | Sprag Clutch | 1 |
| 33 | Spacing Bush | 1 | 86 | Solenoid Switch | 1 |
| 36 | Retaining Plate | 1 | 87 | Bearing | 1 |
| 37 | Washer | 1 | 88 | Electric Motor | 1 |
| 39 | Clutch Disc | 2 | 105 | Emergency Hand Lever | 1 |
| 41 | Thrust Washer | 1 | 114 | Motor Gasket | 1 |
| 42 | Disc Spring | 8 | 119 | Liner Bearing | 1 |
| 43 | 'O' Ring | 3 | | (Not illustrated. Between Gear 800/28 and 1000/27 Sprag Bush). | |
| 45 | Circlip | 1 | | | |
| 46 | Circlip | 1 | | | |
| 49 | Switch On/Off | 1 | 120 | Filler Seal | 1 |
| 50 | Switch Inch | 1 | | (With Part 51). | |
| 51 | Filler Plug | 1 | 130 | Wiring Harness | 1 |
| 52 | Thrust Bush | 1 | | | |

Note : When ordering spare parts it is essential to give the
Windlass Serial Number and Voltage