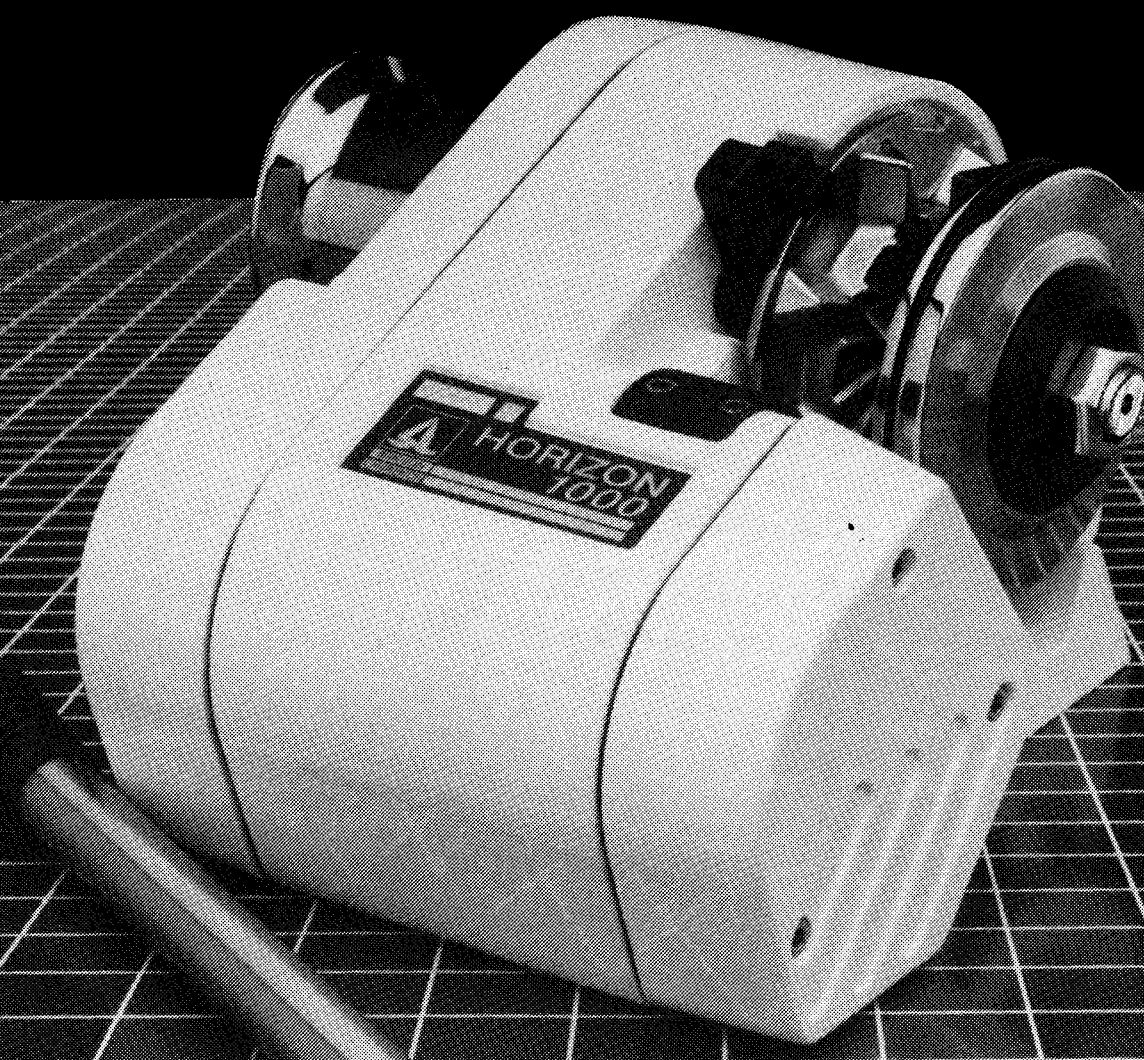


Horizon 1000 & 1500

Installation, Operation and Maintenance Instructions



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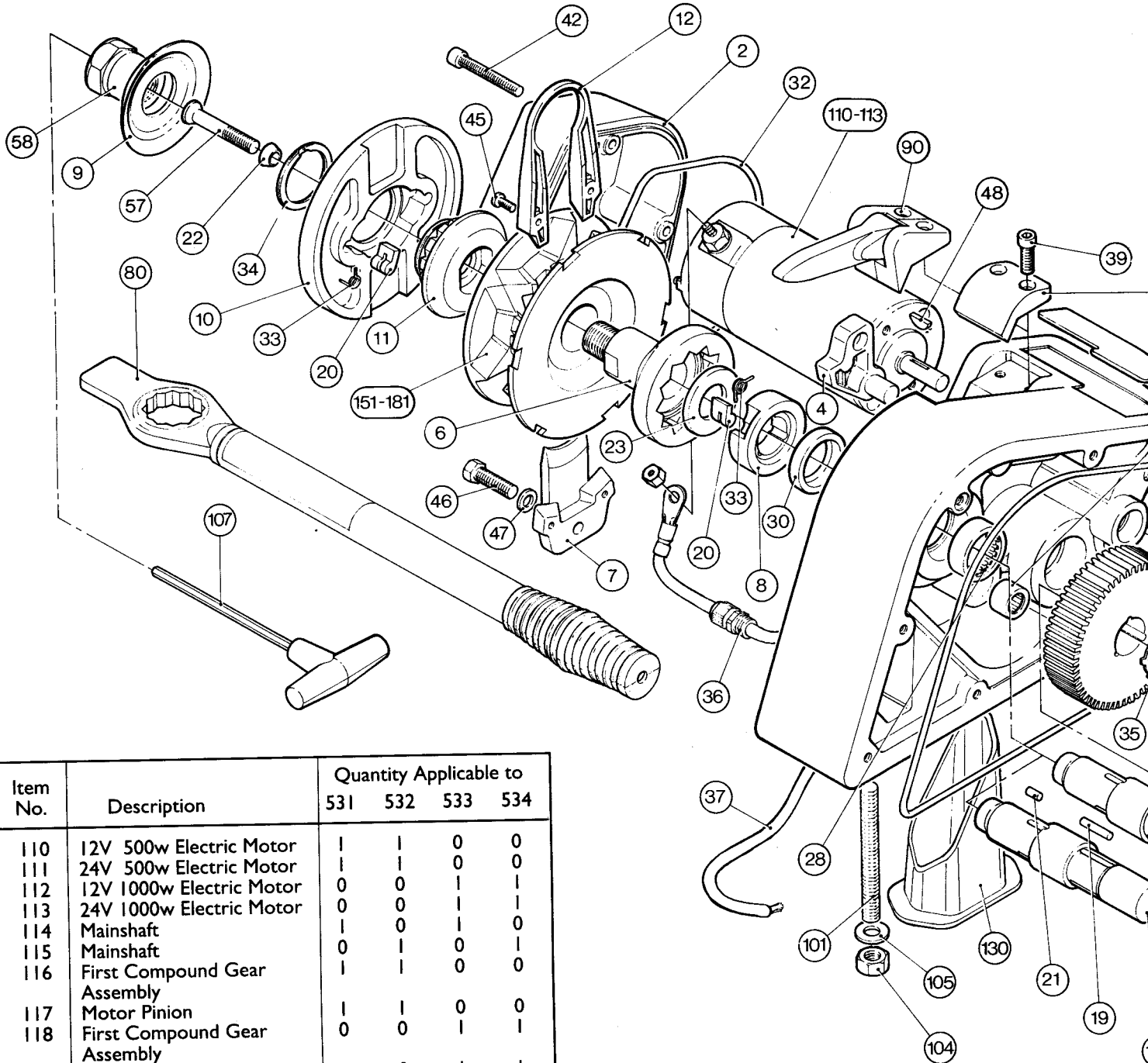
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LAWRENCE

I. PARTS

I.1 Exploded Diagram



| Item No. | Description | Quantity Applicable to | | | |
|----------|------------------------------|------------------------|-----|-----|-----|
| | | 531 | 532 | 533 | 534 |
| 110 | 12V 500w Electric Motor | 1 | 1 | 0 | 0 |
| 111 | 24V 500w Electric Motor | 1 | 1 | 0 | 0 |
| 112 | 12V 1000w Electric Motor | 0 | 0 | 1 | 1 |
| 113 | 24V 1000w Electric Motor | 0 | 0 | 1 | 1 |
| 114 | Mainshaft | 1 | 1 | 0 | 0 |
| 115 | Mainshaft | 0 | 1 | 0 | 1 |
| 116 | First Compound Gear Assembly | 1 | 1 | 0 | 0 |
| 117 | Motor Pinion | 1 | 1 | 0 | 0 |
| 118 | First Compound Gear Assembly | 0 | 0 | 1 | 1 |
| 119 | Motor Pinion | 0 | 0 | 1 | 1 |
| 120 | Nameplate | 1 | 1 | 0 | 0 |
| 121 | Nameplate | 0 | 0 | 1 | 1 |
| 122 | Drum Cap | 1 | 0 | 1 | 0 |
| 123 | Drum | 1 | 0 | 1 | 0 |
| 124 | Key | 1 | 0 | 1 | 0 |
| 125 | Washer | 1 | 0 | 1 | 0 |
| 126 | Seal | 1 | 0 | 1 | 0 |
| 127 | End Cover Seal | 0 | 1 | 0 | 1 |
| 128 | Bolt | 1 | 0 | 1 | 0 |

I.2 For Future Reference

After you have read this instruction booklet, please keep it safe on board your vessel for future reference.

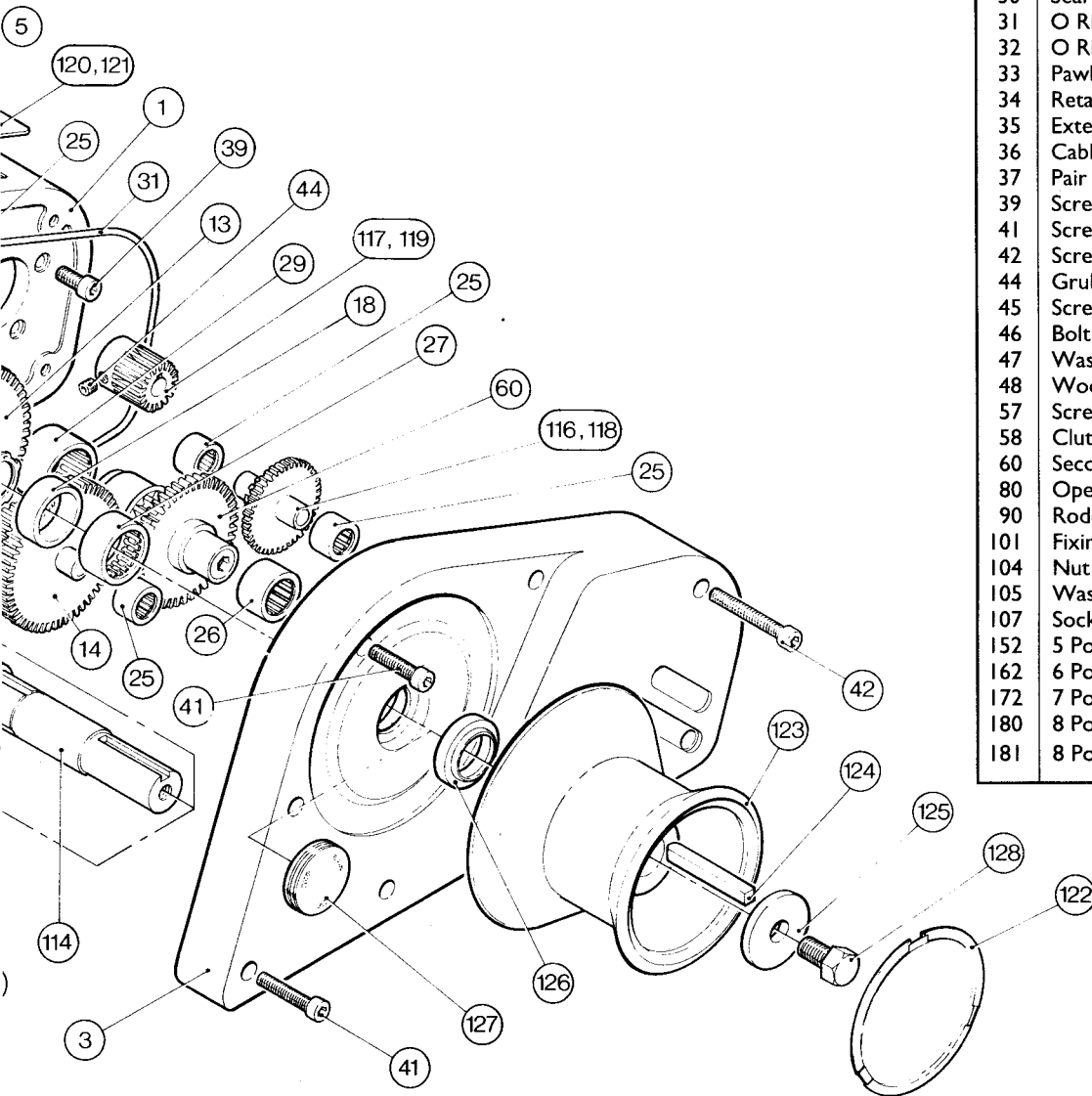
I.2.1 Identify your model, GD = Gipsy Drum, G = Gipsy Only

| TYPE | LIST No. | TICK |
|-----------------|----------|------|
| Horizon 1000 GD | 0053100 | |
| Horizon 1000 G | 0053200 | |
| Horizon 1500 GD | 0053300 | |
| Horizon 1500 G | 0053400 | |

I.2.2 Please make a note of your windlass' serial number and voltage, which are to be found on the nameplate.

| | |
|--|---|
| | V |
|--|---|

The above information is essential when ordering spares.



I.3 Parts List

| Item No. | Description | No. Off |
|----------|-------------------------------|-----------------|
| 1 | Main Case | 1 |
| 2 | Motor Cover | 1 |
| 3 | Geartrain Cover | 1 |
| 4 | Gipsy Pawl | 1 |
| 5 | Cover | 1 |
| 6 | Gipsy Carrier | 1 |
| 7 | Fleming Support | 1 |
| 8 | Drive Pawl Carrier | 1 |
| 9 | Clutch Operating Nut Trim | 1 |
| 10 | Handle Socket | 1 |
| 11 | Ratchet Drive Cone | 1 |
| 12 | Fleming | 1 |
| 13 | Mainshaft Gear | 1 |
| 14 | Third Compound Gear Assembly | 1 |
| 18 | Mainshaft Spacer | 1 |
| 19 | Drive Roller | 3 |
| 20 | Pawl | 5 |
| 21 | Drive Roller | 3 |
| 22 | Friction Cone | 1 |
| 23 | Washer | 1 |
| 25 | Bearing | 4 |
| 26 | Bearing | 1 |
| 27 | Bearing | 1 |
| 28 | Bearing | 1 |
| 29 | Clutch Bearing | 1 |
| 30 | Seal | 1 |
| 31 | O Ring Seal | 1 |
| 32 | O Ring Seal | 1 |
| 33 | Pawl Spring | 5 |
| 34 | Retaining Ring | 1 |
| 35 | External Circlip | 1 |
| 36 | Cable Gland | 2 |
| 37 | Pair of Cables with Terminals | 1 |
| 39 | Screw | 6 |
| 41 | Screw | 6 |
| 42 | Screw | 5 |
| 44 | Grub Screw | 1 |
| 45 | Screw | 2 |
| 46 | Bolt | 1 |
| 47 | Washer | 1 |
| 48 | Woodruff Key | 1 |
| 57 | Screw (Left Hand Thread) | 1 |
| 58 | Clutch Operating Nut | 1 |
| 60 | Second Compound Gear Assembly | 1 |
| 80 | Operating Handle | 1 |
| 90 | Rode Management Module | 1 |
| 101 | Fixing Stud | 4 |
| 104 | Nut | 4 |
| 105 | Washer | 4 |
| 107 | Socket Screw Key | 1 |
| 152 | 5 Pocket Gipsy | } To Suit Chain |
| 162 | 6 Pocket Gipsy | |
| 172 | 7 Pocket Gipsy | |
| 180 | 8 Pocket Gipsy | |
| 181 | 8 Pocket Gipsy | |

2. PLANNING THE INSTALLATION

2.1 Gipsy Suitability

The rope/chain gipsy enables the windlass to be used for hauling rope and chain without the need to transfer from warping drum to gipsy.

It is ideally suited to anchor rodes which consist of rope with a chain tail.

Rope used with rope/chain gipsies should be three strand nylon.

The RC172 gipsy is designed to suit 12 mm (1/2") rope, the RC162 and RC152 gipsies to suit 16 mm (5/8") rope but they all may accept diameters that are plus or minus 3 mm (1/8") depending on the particular lay of the rope. The 180 & 181 gipsies handle chain only.

Chain should be chosen to suit gipsies as follows : -

| GIPSY | CHAIN | |
|----------------------|--------------------------|-----------|
| RC152 | American NACM | 5/16" |
| RC162 | S-L 0058004 | 9.5 mm |
| | American Proof Coil | 5/16" |
| | American BBB | 3/8" |
| | American Proof Coil | 3/8" |
| | American Hi Test | 3/8" |
| | French NFE 26011 | 10 mm |
| | German DIN 766 | 9 & 10 mm |
| | Italian | 10 mm |
| | Norwegian | 1/4" |
| | Australian PWB & Beavers | 8 mm |
| Australian Grade 'L' | 10 mm | |
| RC172 | S-L 0058002 | 1/4" |
| | S-L 0058003 | 8 mm |
| | American Transport | 1/4" |
| | American BBB | 5/16" |
| | American Hi Test | 5/16" |
| | French NFE 26011 | 8 mm |
| | German DIN 766 | 8 mm |
| | Italian | 8 mm |
| | Norwegian | 1/4" |
| | Australian | 5/16" |
| | 8 mm | |
| | 8 mm | |
| 180 | Accoloy | 9/32" |
| 181 | German DIN 766(86) | 6 mm |

Depending on manufacture, other chains in the range from 6mm to 10mm and 1/4" to 3/8" may be suitable with one of the above gipsies. Should you have difficulty in matching a gipsy to your chain please consult your local agent or Simpson-Lawrence Ltd.

2.2 Package Contents (Checklist)

Windlass
 Rode Management Module
 Mounting Studs, Nuts & Washers
 Operating Handle
 Torque Key
 Mounting Template D1009-2
 Instruction Booklet D1010-3

2.3 Additional Requirements

Each windlass installation requires :

a. The following tools:

WINDLASS INSTALLATION

11mm (7/16") Diameter Drill
 18mm (45/64") Diameter Drill
 17mm A/F (11/16") Spanner

(Optional)

Jig Saw or Trepanning Tool

WIRING INSTALLATION

Flat Bladed Screwdriver
 Crimping Pliers / Wire Stripper
 13mm A/F (1/2") Spanner or Socket

Single Direction only -

7mm A/F (9/32") Socket

Reversing only -

8mm A/F (5/16") Spanner or Socket

b. Sealant

c. A Circuit Breaker for overload protection which can also be used as a main isolating switch. (We recommend the ones listed under '3. Accessories')

d. A control switch (or switches) by preference.

e. A solenoid for a single direction installation, or a boxed pair of solenoids for a reversing installation. (Unless the High Load Footswitch only is used)

f. Suitable electrical cable and crimp terminals.

2.4 Electric Cable Selection

To achieve the best performance and safeguard your electrical system it is essential that any electric windlass is fitted with sufficiently large diameter cable to cope with the current draw imposed upon it and to keep the voltage drop within acceptable limits. In any circumstance voltage drop due entirely to cable resistance should not exceed 5%, roughly 0.5V for a 12V installation and 1.0V for a 24V one.

The following tables give recommended cable sizes. The recommendations are based on the total length of cable required, from the battery to the windlass and back to the battery, following the route of the cables. (See the Wiring diagram for the definition.)

DO NOT confuse Cable Length with the length of the vessel!

METRIC OR STARTER CABLE

| VOLTAGE | Cable Length | | Size |
|---------|--------------|-----|------|
| | m | ft. | mm |
| 12 | 9.2 | 30 | 20 |
| | 12.8 | 42 | 25 |
| | 17.7 | 58 | 35 |
| | 19.7 | 64 | 40 |
| | 24.0 | 79 | 50 |
| 24 | 23.3 | 76 | 15 |
| | 25.3 | 83 | 16 |
| | 28.9 | 95 | 20 |
| | 40.1 | 131 | 25 |

AMERICAN CABLE

| VOLTAGE | Cable Length | Size |
|---------|--------------|------|
| | ft. | AWG |
| 12 | 35 | 4 |
| | 56 | 2 |
| | 71 | 1 |
| | 89 | 1/0 |
| 24 | 69 | 6 |
| | 110 | 4 |
| | 176 | 2 |

Thin wire of 2.5mm cross sectional area, 35/0.30 or 50/0.25 PVC covered (American equivalent 14 AWG) is required for the control switch circuits. This is used to connect the switch(es) to the solenoid(s) and the circuit breaker pilot light to the main circuit.

3. ACCESSORIES

| List Number | Item |
|-------------|---|
| 0053101 | Windlass Cover - - - - White |
| 0053102 | Windlass Cover - - - - Blue |
| 0053901 | Rode Management System |
| 0050711 | 70 Amp Circuit Breaker - - 12 Volt Installation |
| 0050710 | 50 Amp Circuit Breaker - - 24 Volt Installation |
| 0052505 | 12 Volt Solenoid - - - - Single direction |
| 0052506 | 24 Volt Solenoid - - - - Single direction |
| 0052509 | 12 Volt Solenoids - - - - Reversing |
| 0052510 | 24 Volt Solenoids - - - - Reversing |
| 0052512 | Push Button Switch - - - - Single direction |
| 0052514 | Foot Switch - - - - - Single direction |
| 0052516 | High Load Footswitch - - - Single direction |
| 0052511 | Joystick Control Switch - - Single or Reversing |
| 0052515 | Hand Remote Switch - - - Single or Reversing |
| 0052513 | Push Button Switch - - - - Reversing |
| 0052514 | Foot Switch X 2 - - - - - Reversing |
| 0052522 | Touch Pad Control - - - - Reversing |

4. SPECIFICATION

4.1 Performance

4.1.1 Horizon 1000

Maximum Load

| | 12V Rating | 24V Rating |
|----------------|------------------|------------------|
| Chain in Gipsy | 400 kg (880 lb) | 500 kg (1100 lb) |
| Rope on Drum | 425 kg (940 lb) | 525 kg (1150 lb) |
| Rope in Gipsy | 450 kg (1000 lb) | 550 kg (1200 lb) |

Typical Working Figures

| | Load | Speed | Current Draw |
|-----|--------|-------------|--------------|
| 12V | 100 kg | 14.0 m/min | 85 Amp |
| | 220 lb | 46 ft./min. | |
| 24V | 100 kg | 15.0 m/min | 48 Amp |
| | 220 lb | 49 ft./min. | |

4.1.2 Horizon 1500

Maximum Load

| | 12V Rating | 24V Rating |
|----------------|------------------|------------------|
| Chain in Gipsy | 575 kg (1260 lb) | 675 kg (1490 lb) |
| Rope on Drum | 630 kg (1400 lb) | 725 kg (1600 lb) |
| Rope in Gipsy | 680 kg (1500 lb) | 775 kg (1700 lb) |

Typical Working Figures

| | Load | Speed | Current Draw |
|-----|--------|-------------|--------------|
| 12V | 150 kg | 13.0 m/min | 85 Amp |
| | 330 lb | 43 ft./min. | |
| 24V | 150 kg | 13.5 m/min | 48 Amp |
| | 330 lb | 44 ft./min. | |

4.2 Materials

| | |
|-------------|--------------------------------|
| Mainshaft | Stainless Steel |
| Geartrain | Carbon Steel |
| Gipsy | Chrome Plated Bronze |
| Drum | Chrome Plated Bronze |
| Main Case | Marine Grade Aluminium |
| Side Covers | Reinforced Polyester Mouldings |
| Body Finish | Powder Coated Polyester |
| Weight GD | 21kg (46lb) |
| G | 19.5kg (43lb) |

5. INSTALLATION

5.1 Fitting Windlass to Deck

- 5.1.1 If the deck is not flat a suitable mounting pad may be required to take up camber or sheer. Decks which are thin, or of foam or balsa laminate construction, will require reinforcement in order to spread the loads which will be applied to the deck while the windlass is in use.
- 5.1.2 Place the windlass on the deck and decide upon a position for it with reference to the vessel's stemhead roller and the chain locker below. Rode lead from the roller should ideally be fed horizontally back to the top of the gipsy and along its centre line. Check also that there will be sufficient room for a person to be able to move the operating handle to and fro comfortably when using the clutch, or during manual operation of the windlass.
- 5.1.3 The standard M10 threaded mounting studs supplied suit deck and packing thicknesses of up to 70mm (2, 3/4"). These are adequate for most installations. Place the mounting template on the deck or mounting pad in the desired position for the windlass and hold it in place using adhesive tape.

Using an 11mm diameter drill, make the four holes for the mounting studs.

Using an 18mm diameter drill, make a hole to pass the motor cables through. The template suggests one position for this hole, though it may be more convenient to move it elsewhere.

It is essential however, that the hole remains within the perimeter formed by the base contact area, as illustrated by the solid black line on the template.

With a trepanning tool and/or a jigsaw cut the hole for the rode to pass through. The template shows centres which will suit an 18mm diameter drill and such holes may make a useful start. To help avoid water absorption by the deck, apply silicone sealant to the freshly cut hole edges.

When all of the holes have been made, remove the template.

- 5.1.4 Fully screw the four mounting studs into the base of the windlass. This can be done quite simply by screwing two nuts onto the opposite end. Put them close enough to one another to use the inner one of them as a lock nut. Use the outer nut to screw the stud into the case with the aid of a spanner.

Do this to each of the studs in turn and remove the nuts for use later.

- 5.1.5 Apply a suitable sealant around the base sealing face and within the black seals. Secure the windlass firmly to the deck using the nuts and washers supplied.

NB If using silicone or other rubbery type sealants it is advisable to allow curing of the sealant before the final tightening of the mounting nuts.

5.2 Wiring

5.2.1 General Recommendations

The wiring system should be of the two cable fully insulated return type, which avoids possible electrolytic corrosion problems. Most modern installations are negative return (negative earth) but polarity should be checked.

Solenoids should be mounted as close to the battery as possible.

Overload protection must be built into the windlass wiring circuit. This protects the wiring and prevents undue damage to the windlass motor, in the event of it being stalled by an excessive load in service.

It is advisable to site the Circuit Breaker in a dry, readily accessible place. Our recommended Breaker must be manually reset should an overload occur that causes it to trip to the 'OFF' position.

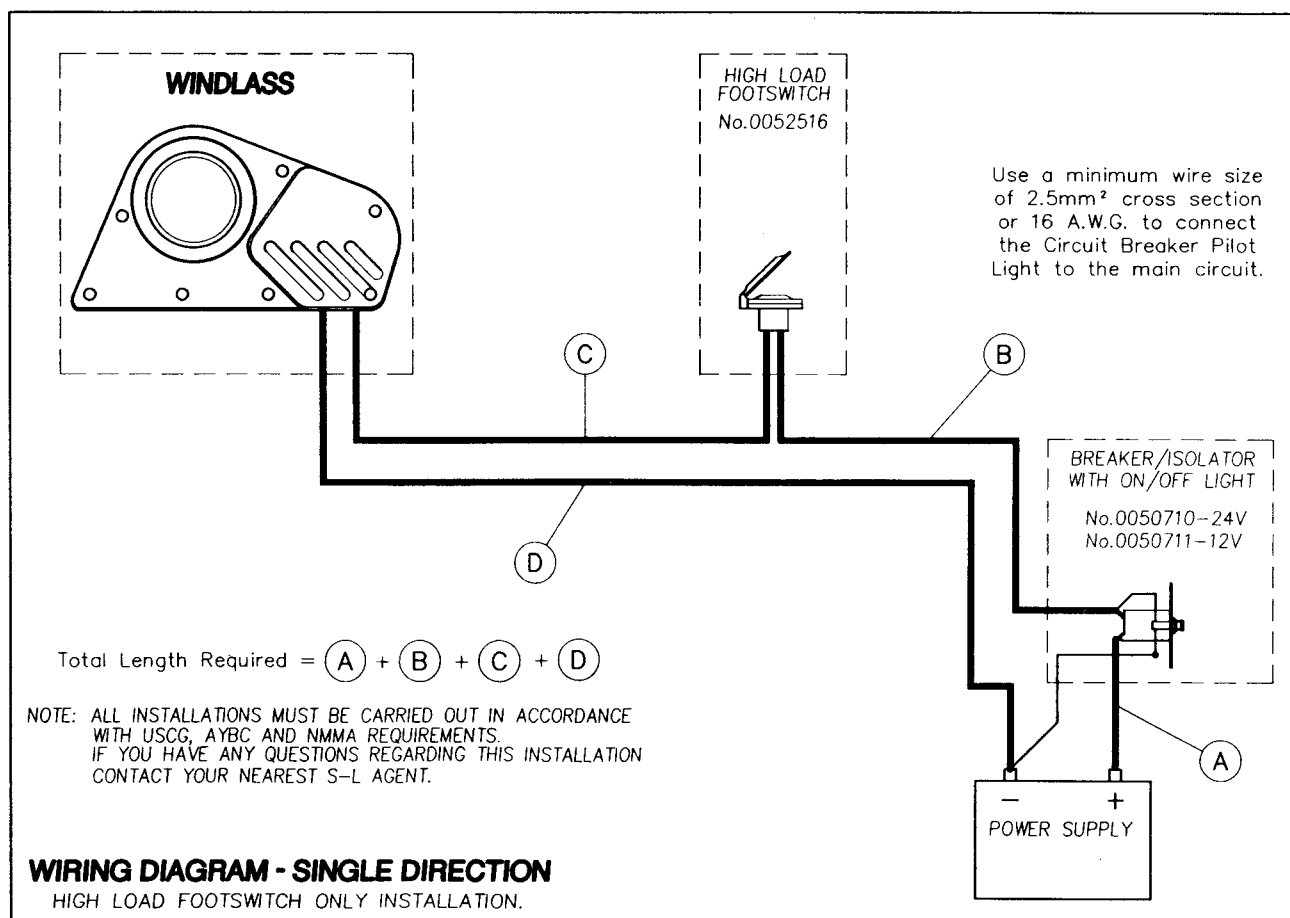
If not using the Circuit Breaker recommended, an alternative must have identical characteristics.

NB Crimp terminals should be used on all wire ends wherever possible for good electrical contacts.

5.2.2 Control Switch Installation

Follow the mounting instructions supplied with the switch. Remember, when using more than one Control Switch it is important to their correct operation that they are wired in a parallel circuit.

5.2.3 Single Direction Wiring (High Load Footswitch Only)



| WIRE | FROM | TO |
|-------------|-----------------------------|-------------------------|
| Thick cable | Positive battery terminal | High Load Footswitch |
| Thick cable | High Load Footswitch | Windlass Lead |
| Thick cable | Negative battery terminal | Windlass Lead |
| Thin wire | Circuit Breaker Pilot Light | Main circuit (positive) |
| Thin wire | Circuit Breaker Pilot Light | Main circuit (negative) |

If the Windlass turns in the wrong direction, change over the thick cable connections at each windlass lead.

