

S-L SEALION 526

Installation, Operation & Maintenance Instructions



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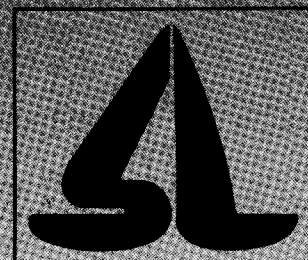
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SIMPSON
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1. PARTS

1.1 For Future Reference

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

1.1.1 Identify your model

Type	List No.	Tick
Non-Reversing	0052600	
Reversing	0052620	

1.1.2 Please note your serial number and voltage.

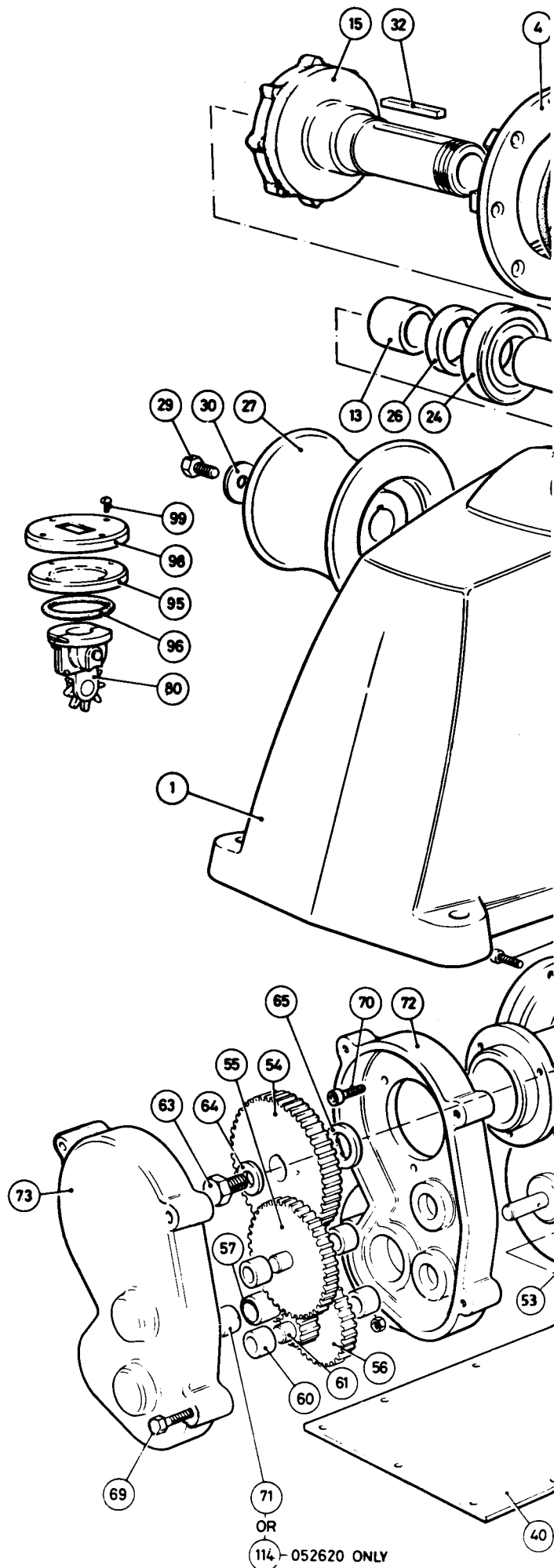
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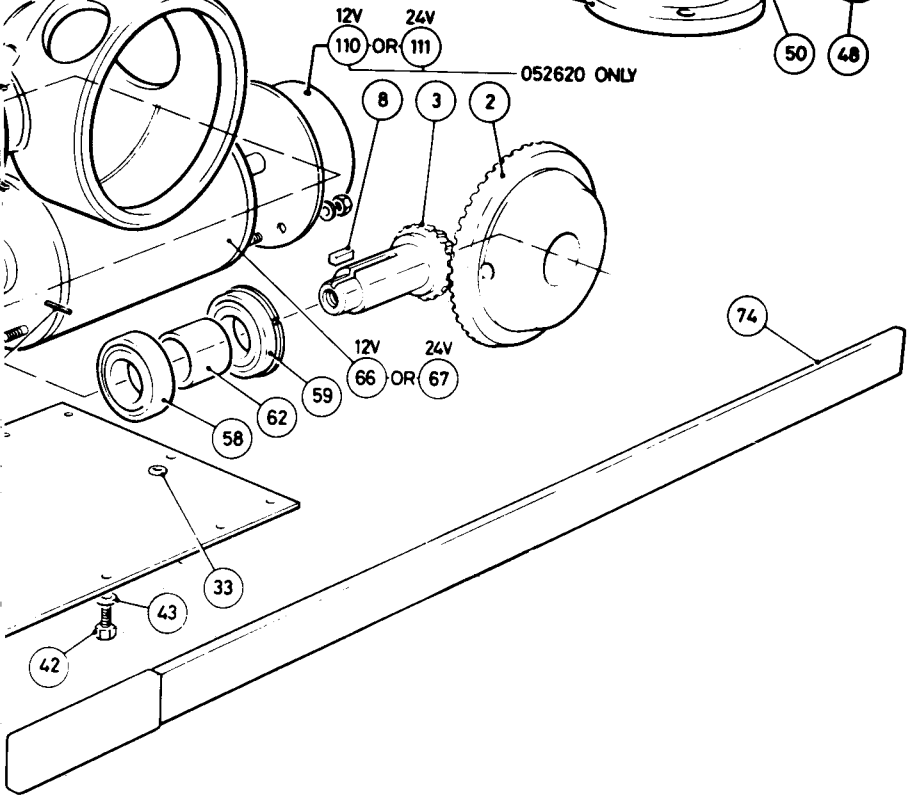
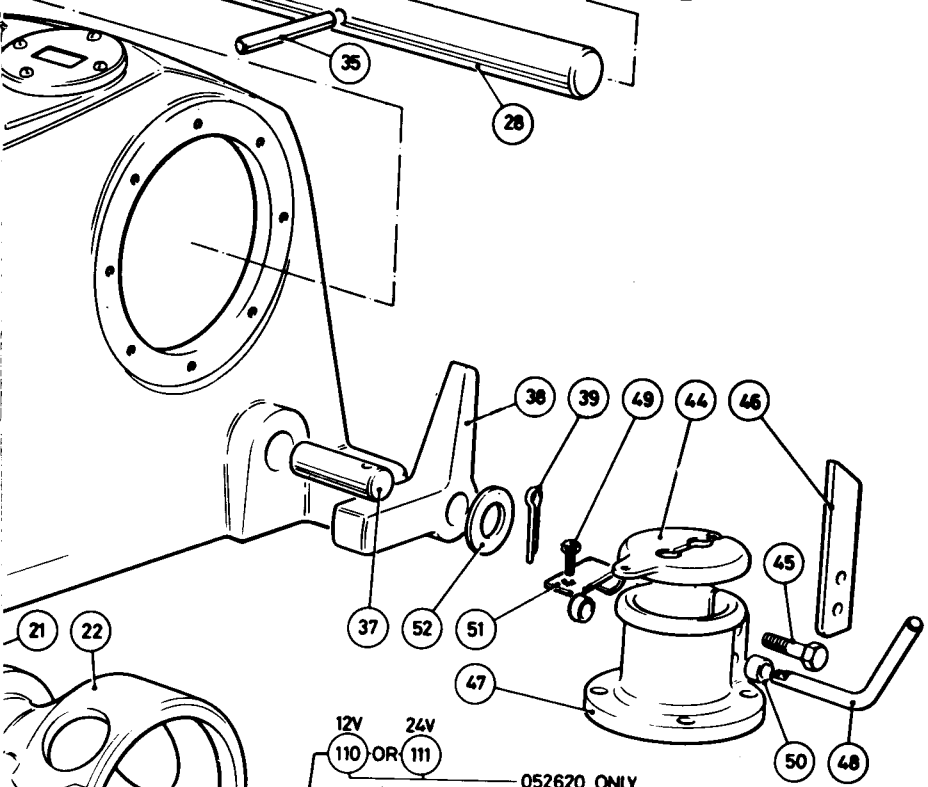
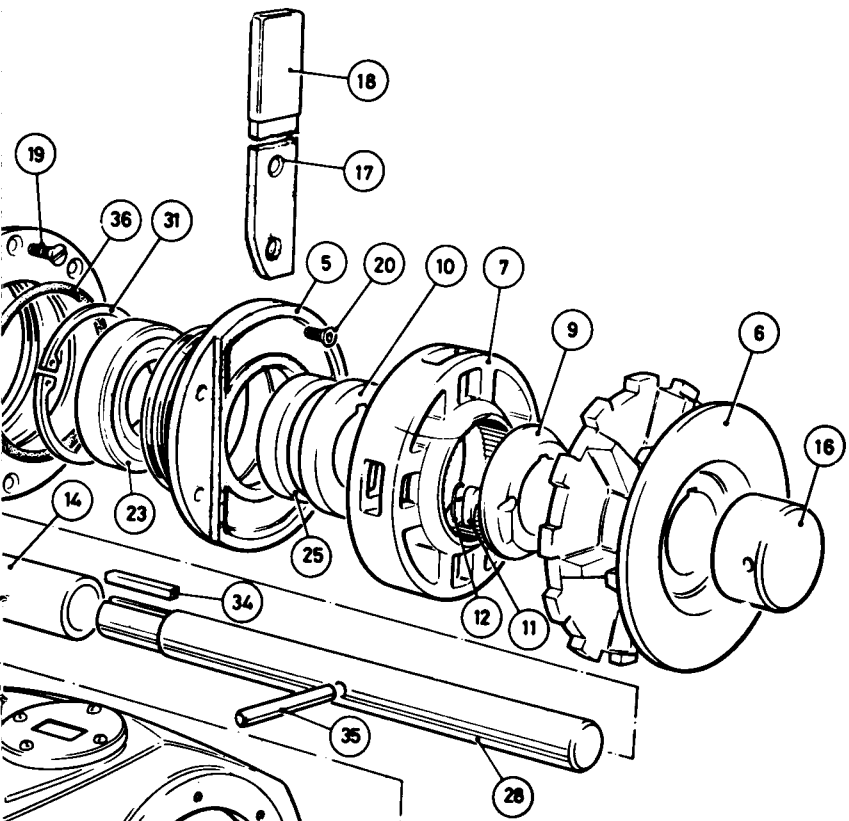
The above information is essential when ordering spares.

1.3 Parts List

No	DESCRIPTION	QTY	No.	DESCRIPTION	QTY
1	Case	1	48	Pawl Lever	1
2	Bevel Gear	1	49	Set Pin	1
3	Bevel Pinion	1	50	Bush	2
4	Side Cover	1	51	Pawl Actuator	1
5	Clutch Screw	1	52	Washer	1
6	Gipsy	1	53	Spirol Pin	1
7	Handle Socket	1	54	Gear	1
8	Key	1	55	Gear, Compound	1
9	Pawl Mounting	1	56	Gear, Compound	1
10	Double Bearing	1	57	Motor Pinion	1
11	Pawl	2	58	Ball Bearing	1
12	Pawl Spring	2	59	Ball Bearing	1
13	Spacer, Drum	1	60	Bearing	4
14	Spacer, Gear	1	61	Inner Ring	4
15	Gipsy Cone	1	62	Bearing Spacer	1
16	Retaining Nut	1	63	Washer	7
17	Clutch Handle	1	64	Washer	1
18	Handle Grip	2	65	Washer	1
19	Screw	8	66	12V Motor	1
20	Screw	2	67	24V Motor	1
21	Screw	1	68	Screw	4
22	Gear Housing	1	69	Bolt	4
23	Bearing	1	70	Screw	3
24	Bearing	1	71	Roller Clutch	1
25	Oil Seal	1	72	Gear Case Front	1
26	Oil Seal	1	73	Gear Case Back	1
27	Drum	1	74	Emergency Op. Lever	1
28	Shaft	1	75	Label	1
29	Set Pin	2	76	Label	1
30	Washer	1	77	Screw	10
31	Circlip	1	80	Chain Run Indicator	1
32	Key	1	95	Indicator Window	1
33	Grommet	1	96	O Ring	1
34	Key	1	98	Bezel	1
35	Spirol Pin	1	99	Screw	4
36	O Ring	1			
37	Pawl Pin	1	REVERSING ONLY		
38	Pawl	1	PARTS LIST		
39	Pin	1			
40	Cover Plate	1	No.	DESCRIPTION	QTY
42	Set Pin	12	110	12V Motor/Brake	1
43	Washer	12	111	24V Motor/Brake	1
44	Chain Pipe Cover	1	114	Bearing	1
45	Bolt	1	115	Nut	1
46	Chain Stripper	1	116	Washer	1
47	Chain Pipe	1			

1.2 Exploded Diagram





2. PLANNING THE INSTALLATION

2.1 Gipsy Suitability

Chain should be chosen to fit gipsies as follows:

Gipsy	Chain	
BB 82	S-L 0058003	8mm
	American BBB	5/16"
	American Hi Test	5/16"
	French NFE26011	8mm
	German DIN 766 (1954)	7&8mm
	Norway (Ofobat)	8mm
	Most European	8mm
BB 75	S-L 0058004	9.5mm
	S-L 0058005	7/16"
	American BBB	3/8"
	American Proof Coil	5/16"
	American Hi Test	3/8"
	French NFE26011	10mm
	German DIN 766 (1954)	9&10mm
	German DIN 766 (1976)	10mm
	Norway (Ofobat)	5/16"
	Sweden	5/16"
	Most European	8-10mm
BB 66	S-L 0058006	12mm
	American BBB	7/16"
	American Proof Coil	3/8"
	American Hi Test	7/16"
	French NFE26011	12mm
	German DIN 766 (1954)	11mm
	Norway (Ofobat)	3/8"
	Norway (Ofobat)	7/16"
	Sweden	3/8"
	Most European	8-10mm
BB 56	American Proof Coil	1/2"
	American Hi Test	1/2"
	Norway (Ofobat)	1/2"
	Sweden	1/2"
	Most European	12mm

Depending on manufacture, other chains in the range 7mm to 12.5mm (5/16" to 1/2") may be suitable with one of the above gipsies. Should difficulty be experienced in fitting a chain please consult your local agent or Simpson-Lawrence Limited.

2.2 Package Contents

Windlass
 Emergency Operating Lever
 Chain Pipe & Stripper
 Mounting Studs, Nuts & Washers
 Instruction Booklet D1033-1
 Safety Instructions D1000-1

2.3 Additional Requirements

Each windlass installation requires :

a. The following tools:

Flat Bladed Screwdriver
 13mm (17/32") Diameter Drill
 19mm (3/4") Diameter Drill
 Jig Saw or Trepanning Tool
 17mm Spanner

- b. Four M12 or 1/2" bolts. (Long enough to secure the windlass to the deck.)
 c. Sealant
 d. A Circuit Breaker for overload protection which can also be used as a main Isolator switch. (We recommend the one listed under '3. ACCESSORIES').
 e. A control switch (or switches) by preference.
 f. A solenoid for single direction installation, or a boxed pair of solenoids for a reversing installation. (Unless the High Load Foot Switch only is being used.)
 g. 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 table gives recommended cable sizes. The recommendations are based on the total length of cable required, between battery and 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 ²
12	6	20	25
	8	26	35
24	10	35	50
	14	48	25
	19	62	35

American Cable

Voltage	Cable Length		Size
	ft.		AWG
12	20		4
	26		2
24	35		1
	48		4
	62		2

AWG = American Wire Gauge

Finally, thin wire of 1.5mm² cross sectional area, 21/0-30 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), if any, and the circuit breaker / isolator indicator light to the main circuit.

3. ACCESSORIES

List No	Item
0050710	Breaker / Isolator - - - - 12 Volt Installation
0050709	Breaker / Isolator - - - - 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 Foot Switch - Single direction
0052511	Joystick Control Switch - Single or Reversing
0052515	Hand Remote Switch- - Single or Reversing
0052513	Push Button Switch - - - - Reversing
0052514	Foot Switch 2 - - - - - Reversing
0052522	Touch Control Pad - - - - Reversing

4. SPECIFICATION

4.1 Performance

Maximum Pull

	12V Model	24V Model
Chain in Gipsy	800kg (1755lb)	875kg (1925lb)
Rope on Drum	900kg (1985lb)	1000kg (2205lb)

Typical Working Figures

	Load	Speed	Current Draw
12V	150kg	10m/min	35 Amp
	330lb	33ft./min	
24V	150kg	12.5m/min	20 Amp
	330lb	41ft./min	

4.2 Materials

Mainshaft	Precision Ground Steel EN8
Geartrain	Carbon Steel
Gipsy	Bronze Chrome Plated
Drum	Bronze Chrome Plated
Case	Aluminium Alloy BS1490 LM6
Electric Motor	370W
Weight	41 kg (90 lb)

5. INSTALLATION

5.1 Fitting Windlass to Deck

- 5.1.1 If the deck is cambered a suitable mounting pad may be required under the windlass.
- 5.1.2 Place the windlass in the desired position and check that the chain will line up correctly with the stemhead roller and that the chain pipe will lead

back into the locker below.

- 5.1.3 Place the chain pipe and stripper assembly directly below the gipsy in a position such that it's centre is 60mm (2³/₈") aft of the centre of the mainshaft.
- 5.1.4 Check that the operation of the clutch hand lever does not cause the gipsy to bind on the chain stripper.
- 5.1.5 Mark the position of the windlass holding down bolt hole centres, the inside of the chain pipe and it's mounting hole centres. Bore four 13mm (1/2") diameter holes for the windlass mounting bolts. A hole 19mm (3/4") diameter is required under the windlass to take electric cables.
- 5.1.6 Cut the 55mm (2⁵/₃₂") diameter chain pipe internal shape into the deck and drill four 6.5mm (1/4") holes for it's mounting bolts.
- 5.1.7 Bolt the windlass and chain pipe firmly to the deck.

5.2 Fitting Windlass in an Anchor Well

- 5.2.1 Should the windlass be mounted in an anchor well, it is important to ensure that the anchor well is properly drained to avoid continuous flooding.
- 5.2.2 It is most important in installations where it is proposed that the windlass is deep set in the locker, to ensure that the forward lead of the chain will be able to make contact with at least one quarter of the circumference of the gipsy.

5.3 Wiring

5.3.1 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.

A Circuit Breaker **must** be included in 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.

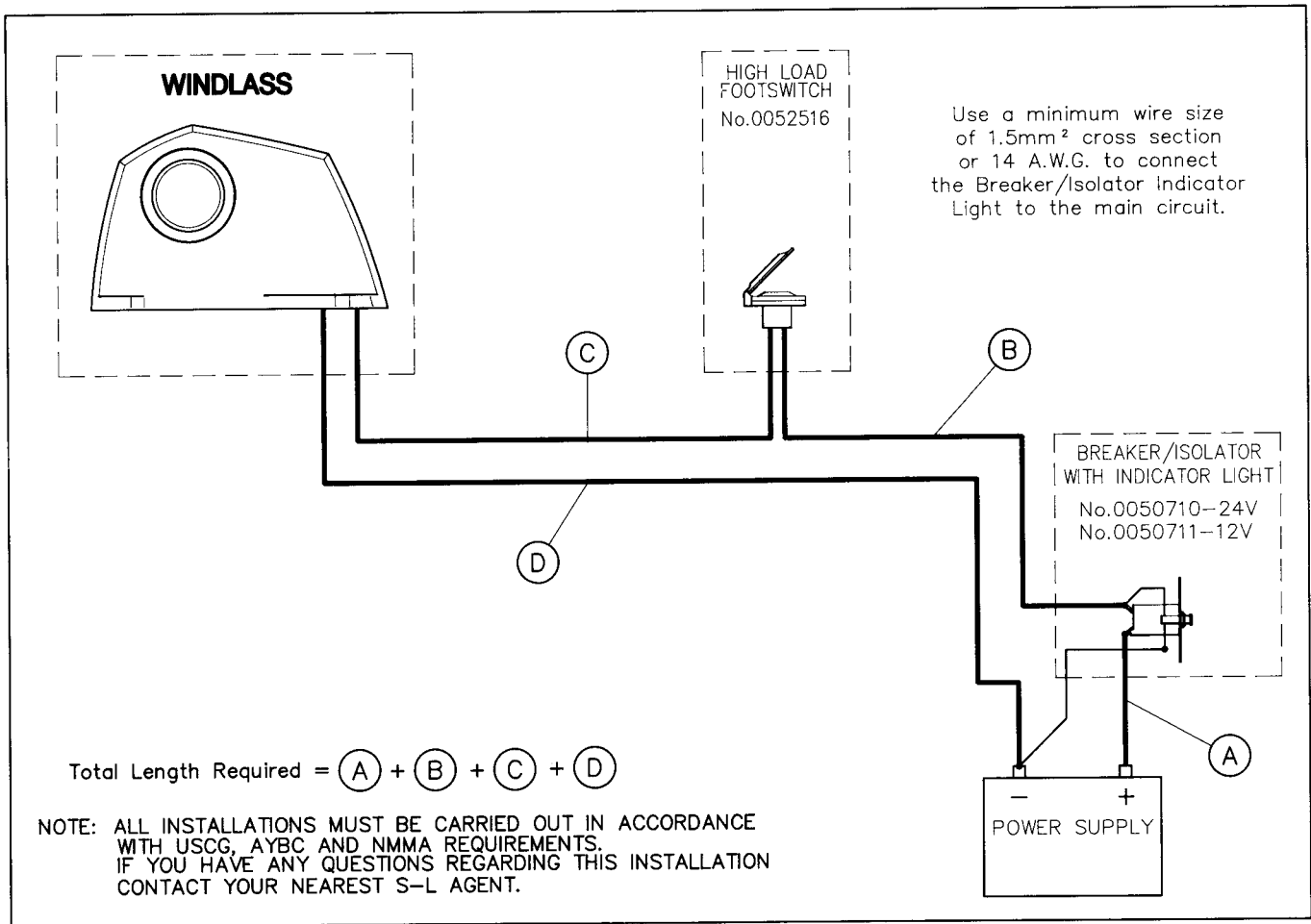
We recommended the Circuit Breaker / Isolator listed under section 3. ACCESSORIES It should be mounted in a dry readily accessible place, as it must be manually reset should an overload occur that causes it to trip to the off position. If not using the Breaker / Isolator recommended, an alternative must have identical characteristics.

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

5.3.2 Control Switch Installation

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

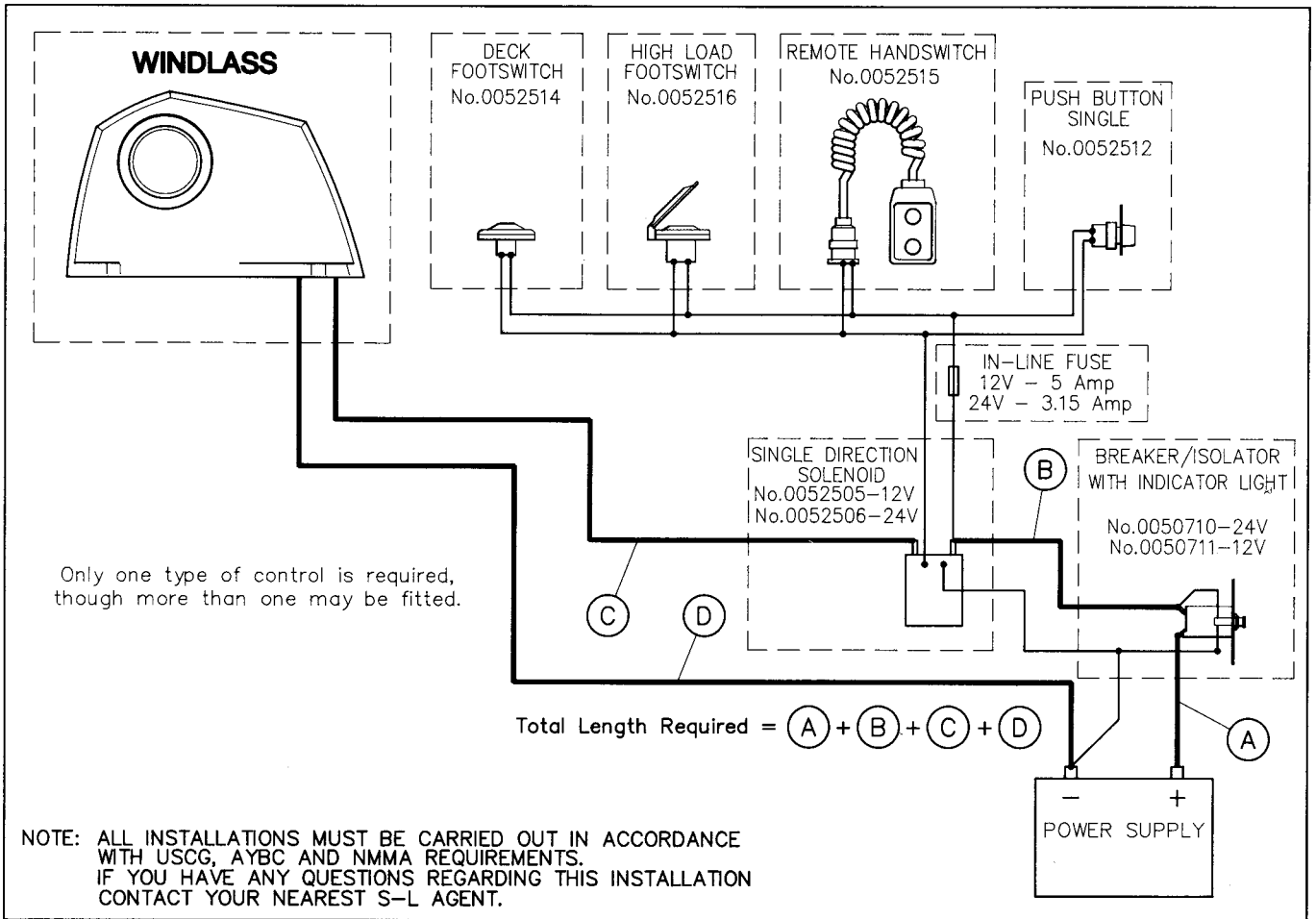
5.3.3 Single Direction Wiring (High Load Foot Switch only)



WIRE	FROM	TO
Thick cable	Positive battery terminal	High Load Foot Switch
Thick cable	High Load Foot Switch	Red Windlass Lead
Thick cable	Negative battery terminal	Black Windlass Lead
Thin wire	Circuit Breaker Indicator Light	Main circuit (positive)*
Thin wire	Circuit Breaker Indicator Light	Main circuit (negative)

If the Windlass does not turn, ensure that the correct polarity has been observed during installation.
*connect to the 'non-battery' side of the switch.

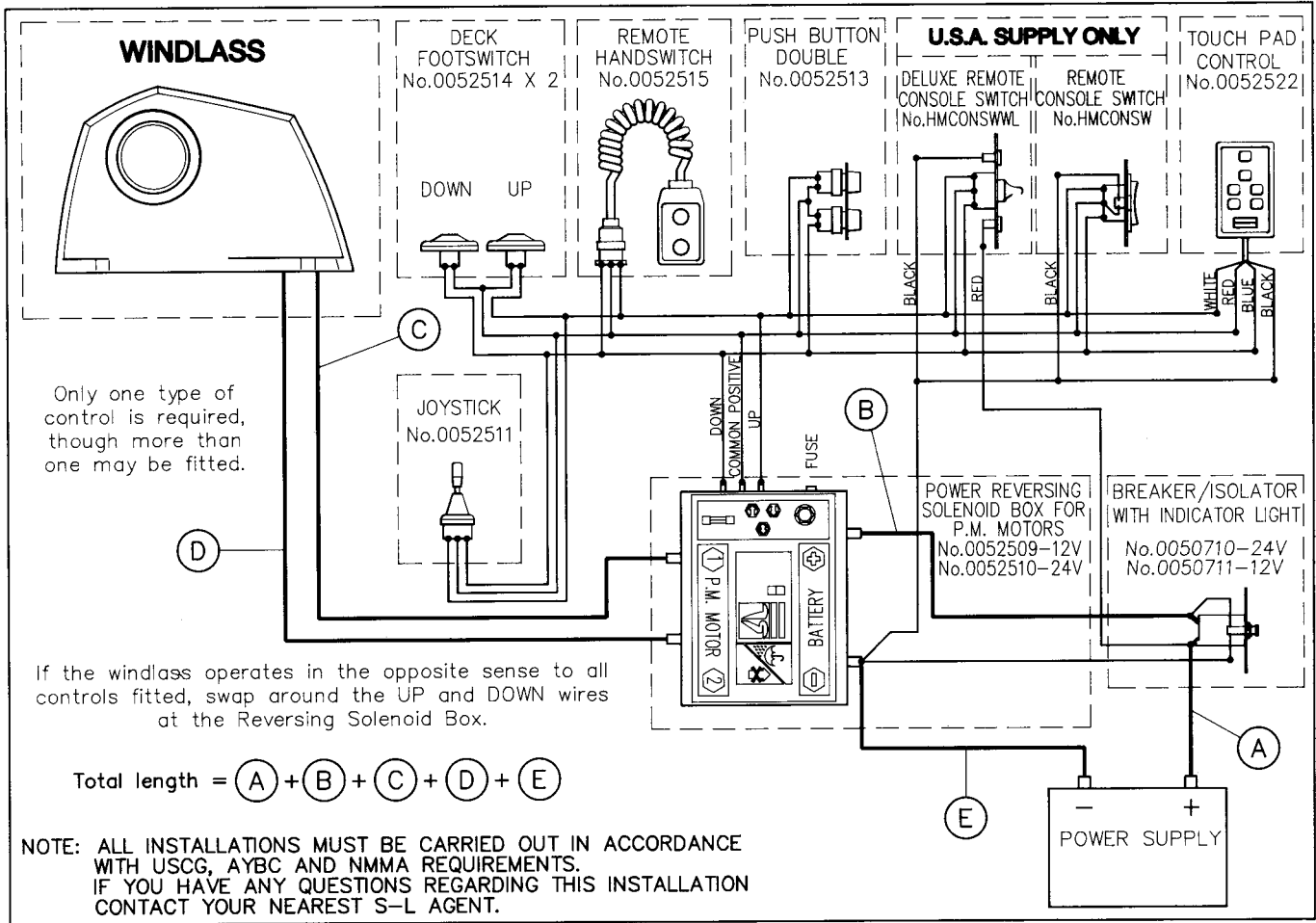
5.3.4 Single Direction Wiring



WIRE	FROM	TO
Thick cable	Positive battery terminal	Breaker / Isolator
Thick cable	Breaker / Isolator	Solenoid
Thick cable	Solenoid	Positive (Red) motor lead
Thick cable	Negative battery terminal	Negative (Black) motor lead
Thin wire	Solenoid	Control switch(es)
Thin wire	Control switch(es)	Main circuit (positive)
Thin wire	Solenoid	Main circuit (negative)
Thin wire	Circuit Breaker Indicator Light	Main circuit (positive)*
Thin wire	Circuit Breaker Indicator Light	Main circuit (negative)

If the Windlass does not turn, ensure that the correct polarity has been observed during installation.
 *connect to the 'non-battery' side of the switch.

5.3.5 Power Reversing Wiring



WIRE	FROM	TO
Thick cable	Positive battery terminal	Breaker / Isolator
Thick cable	Breaker / Isolator	Reversing Solenoid box
Thick cable	Solenoid box	Motor
Thick cable	Negative battery terminal	Reversing Solenoid box
Thick cable	Solenoid box	Motor
Thin wire	Solenoid box	Control switch(es) common terminal
Thin wire	Solenoid box	Control switch(es) up terminal
Thin wire	Solenoid box	Control switch(es) down terminal
Thin wire	Circuit Breaker Indicator Light	Main circuit (positive)*
Thin wire	Circuit Breaker Indicator Light	Main circuit (negative)

NB If you are not sure that you understand the above guidelines seek professional advice.
 *connect to the 'non-battery' side of the switch.

6. OPERATING INSTRUCTIONS

6.1 Safety First

To avoid personal injury ensure that limbs, fingers and clothing are kept clear of the anchor rode and windlass whilst they are in motion. Always ensure that there are no swimmers nearby before dropping your anchor.

6.2 Gipsy Clutch Operation

- 6.2.1 The Gipsy Clutch mechanism is engaged by pushing the clutch handle, part 17, forwards. This action effectively locks the mainshaft components to the geartrain.
- 6.2.2 To disengage the clutch mechanism, pull the clutch handle back. This will allow the gipsy to rotate independently of the geartrain.

6.3 Chain Run Indicator

- 6.3.1 The Chain Run Indicator should read zero whilst the anchor is in the fully stowed position.
- 6.3.2 To achieve this, it may be necessary to remove the chain from the gipsy in order to rotate the gipsy.
- 6.3.3 This may be done manually, if the chain run indicator is not too far out, with the clutch lever pulled fully back.
- 6.3.4 Replace the chain when the indicator reads zero.

Note: Since the indicator is designed to cater for a wide variety of chain types, it's accuracy is of the order of plus or minus 4% depending on the chain being used. If using an unmarked chain which cannot be checked relative to the indicator, it is best to err on the safe side and allow a little extra to run out.

6.4 Letting Go Under Gravity

- 6.4.1 Ensure the clutch is fully engaged by pushing the clutch handle fully forwards.
- 6.4.2 Disengage the gipsy pawl by pressing down on the pawl lever, part 48, on the side of the chain pipe.
- 6.4.3 Release the clutch slowly by pulling the chain lever back until the gipsy begins to turn and the rode 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.
- 6.4.4 Watch the indicator as the chain is being run out. The amount of chain to be let out should be calculated to suit the water depth and weather conditions.
- 6.4.5 It is more satisfactory to allow the chain to run out slowly, allowing the vessel to take up sternway before full scope is let out.
- 6.4.6 When sufficient chain has been released re-engage the clutch by pushing the handle fully forwards and re-engage the gipsy pawl by raising it's lever on the chain pipe.

6.5 Letting Go Under Power

- 6.5.1 Ensure the clutch is fully engaged by pushing the clutch handle forwards.

- 6.5.2 Disengage the gipsy pawl by pressing down on the pawl lever, part 48, on the side of the chain pipe.
- 6.5.3 The anchor and chain can be lowered at a regular rate by activating a 'down' control.
- 6.5.4 It is more satisfactory to allow the chain to run out slowly, allowing the vessel to take up sternway before full scope is let out.
- 6.5.5 When sufficient chain has been released re-engage the gipsy pawl by raising it's lever on the chain pipe.

6.6 Lying to Anchor Safely

- 6.5.1 Boats lying to their anchor in a high swell or heavy weather conditions will snub on the anchor or mooring chain and this can cause the chain to slip or apply excessive loads to the windlass.
- 6.5.2 For maximum safety and to prevent damage the windlass must not be left to take the entire force from the anchor rode and a bridle should be used to transfer the load to a mooring cleat or bollard. Alternatively, the chain can be removed from the windlass gipsy and made fast directly to a bollard or sampson post.

6.7 Hauling In

- 6.7.1 Ensure that the gipsy pawl is engaged and that the clutch is also engaged by pushing the clutch operating handle forward.
- 6.7.2 Untie the bride or replace the chain in the gipsy.
- 6.7.3 If it is safe to do so, operate an 'up' control. The speed of hauling depends on the load on the anchor and will increase after the anchor breaks out.
- 6.7.4 By watching the chain run indicator it is possible to tell when the anchor is approaching the stemhead and care should be taken to avoid bringing the anchor hard up against the stemhead fitting causing damage.
- 6.7.5 Should the windlass stall, switch off and wait a few seconds before trying again. If the recommended circuit breaker has tripped it will require to be manually reset before the windlass can operate again. For the best performance from your electric motor it is sensible to avoid stalling your windlass whenever possible.

6.8 Warping

- 6.8.1 If the gipsy is in use, ensure that the gipsy pawl is engaged.
- 6.8.2 Pull back the clutch lever to disengage the gipsy clutch.
- 6.8.3 The warping drum can now be made to revolve independently of the gipsy when the power is applied.
- 6.8.4 Rope/drum slippage can normally be overcome by increasing the number of turns of rope taken on the drum.

6.9 Emergency Hand Operation

- 6.9.1 An emergency hand lever is supplied with the windlass as standard.

- 6.9.2 Engage the emergency hand lever in one of the slots in the mainshaft ratchet, just inboard of the gipsy.
- 6.9.3 Engage the gipsy pawl and disengage the clutch.
- 6.9.4 The gipsy can now be made to haul by ratcheting the emergency hand lever back and forward.

6.10 Operating Tips

- 6.10.1 When anchoring it is best to allow the chain to run out slowly, allowing the vessel to take up sternway before full scope is let out. This helps prevent the chain from becoming tangled on top of your anchor on the sea bed.
- 6.10.2 To aid anchor recovery under conditions where wind or tide cause additional load on the anchor, we recommend that the vessel's engine be used to assist by moving the vessel towards the anchor. We do not recommend that the vessel is motored over and beyond the anchor, as this can cause the chain to damage your vessel's topsides.
- 6.10.3 When mooring stern to, drop the anchor at a suitable distance from the jetty and gently ease off the gipsy clutch just enough to allow the chain to run out under the influence of the stern way of the vessel, this will prevent the bows from swinging.
By engaging the clutch fully, the anchor can be used to restrain the vessel as it approaches the jetty. Make fast your vessel with warps from the stern.
- 6.10.4 The anchor can be cleaned by hauling it clear of the water and dropping it rapidly back underwater by use of the gipsy clutch lever. This should be repeated several times with the windlass running continuously 'UP'.

Note: Gipsy pawl must be disengaged for this operation.

7. IMPORTANT USER INFORMATION

Classification Societies require that a vessel lying to anchor should have its chain held by a cable stopper or equivalent strong point as windlasses are not designed to withstand the loads generated under storm conditions.

This rule should be applied to all craft!

At all times it is the responsibility of the boat user to ensure that the anchor and rode are properly stowed for the prevailing sea conditions. This is particularly important with high speed power boats, as an anchor accidentally falling into the water whilst under way can cause considerable damage.

An anchor windlass is mounted in the most exposed position on a vessel and is thus subject to severe atmospheric attack resulting in a possibility of corrosion in excess of that experienced with most other items of deck equipment.

As the windlass may only be used infrequently, the risk of corrosion is further increased.

When the windlass is mounted in an anchor well with a closing lid, due to lack of ventilation and consequent high saline conditions the rate of

corrosion is accelerated. It is essential that the windlass is regularly examined, operated and given any necessary maintenance. This is of even greater importance when the windlass is installed in an anchor well!

8. MAINTENANCE

8.1 General Recommendations

- 8.1.1 After the first two or three anchor recoveries, check that the windlass and chain pipe are still fastened tightly to your deck as they should now be 'bedded-in'.
- 8.1.2 Regularly wash down the exterior of your windlass with fresh water.
- 8.1.3 The gearbox and its bearings have been lubricated for you and should require no regular attention. As with all types of similar equipment it is advisable to run the windlass occasionally to circulate the lubricant.
- 8.1.4 External moving parts should have a few drops of oil applied occasionally.
- 8.1.5 For smoothest operation of the clutch ensure that the clutch mechanism and gipsy exterior is kept free from excess salt deposits.
- 8.1.6 During annual maintenance it is recommended that you dismantle the emergency ratchet to check and re-lubricate it with grease.
- 8.1.7 Examine all electrical connections for possible corrosion. Clean and lightly grease as necessary.
- 8.1.8 Isolate the windlass electrically before carrying out any maintenance work.

8.2 Clutch Maintenance

- 8.2.1 Operation of the gipsy clutch is effected by movement of the clutch screw (5) in the side cover (4). This causes engagement of the gipsy cone (15) with the conical part of the bevel gear (2).
- 8.2.2 Adjustment should not be required unless the windlass is used very frequently and even then it is unlikely to be more than once in two years.

8.3 Clutch Adjustment Procedure

- 8.3.1 Tools required:

Centre Punch
Screw Driver
Hammer
13mm AF Spanner

- 8.3.2 Remove the hex head bolt (45), from the chain pipe and swivel the chain stripper (46), aft, clear of the gipsy.
- 8.3.3 Insert the centre punch into the hole in the retaining nut (16), and tap it with the hammer to cause the retaining nut to rotate anti-clockwise.
- 8.3.4 Unscrew the retaining nut completely.
- 8.3.5 Remove the gipsy (6), followed by the pawl mounting (9).
- 8.3.6 As (9) is being removed take care that the small pawls (11), and springs (12), are not lost.
- 8.3.7 Remove the handle (17), by unscrewing the two countersunk screws (20).
- 8.3.8 Remove the clutch screw (5), by turning it anti-

clockwise. This gives access to the eight screws on the side cover (4).

- 8.3.9 Unscrew these and index the side cover 45° ANTI-clockwise to pick up the next set of holes in the case.
- 8.3.10 Replace the eight side cover screws and the clutch screw (5).
- 8.3.11 Check that the Handle will be in a near vertical position when pushed fully forward. If it still moves too far forward, index the side cover another 45° anti-clockwise.
- 8.3.12 Apply grease to each part paying particular attention to the pawls of the emergency hand gear.
- 8.3.13 Reassemble the other components in reverse order.

8.4 Emergency Hand Gear

Dismantle as under clutch adjustment procedure above, however it is not necessary to remove the handle, clutch screw etc.

8.5 Chain Run Indicator

- 8.5.1 Remove the four screws (99) and lift off the bezel (98), and indicator (95).
- 8.5.2 The assembly can now be completely withdrawn from the case.
- 8.5.3 On reassembly, ensure that the O-ring (96), is correctly located around the indicator as this renders the unit watertight.

8.6 Winter Laying Up

As with all items of marine equipment poor installation or neglect is often responsible for damage caused during the winter lay up period. Given correct installation and maintenance your windlass will require little attention prior to, or after, winter lay up.

Check between the windlass and deck for signs of water ingress. Should it occur, remove, clean and reseal the case.

9. WARRANTY

The Simpson-Lawrence warranty covers your unit for a period of one year from the date of purchase, to be free from defects in material and workmanship. This warranty is subject to proper installation and use in service as described in this booklet. Our current catalogue contains our full "Conditions of Sale". A copy of these conditions can be obtained by application to any of our branches or our agents.

The models described in this document are subject to a policy of continual improvement. Simpson-Lawrence Ltd. reserve the right to alter specifications and recommendations without notice. For the latest information regarding any aspect of your windlass please contact your local agent or (*See rear cover for details*)-

NOTES