

AutoAnchor 500C
Chaincounter and Windlass
Control

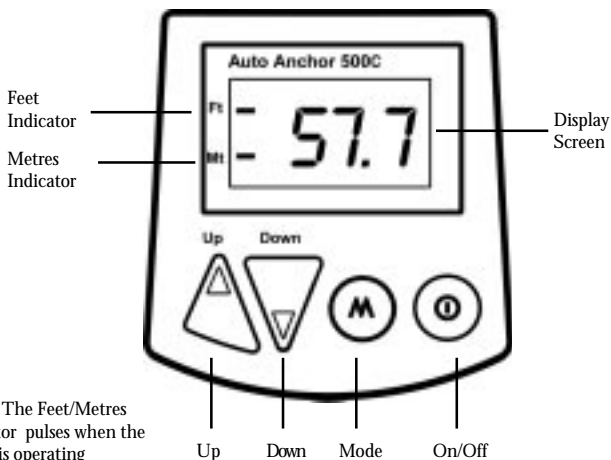
Operation Manual



CONTENTS

Important Information	i-ii
Part 1 Features	2
Part 2 Calibration	3
Part 3 Operation	7
Safety Lock	8
Manual Operation	8
Automatic Operation	9
Change Backlighting Level	12
Other Settings	12
Part 4 Troubleshooting & Maintenance	13
Index	17

AutoAnchor 500C Diagram



IMPORTANT INFORMATION

AutoAnchor 500C Documentation

The documentation supplied with the AutoAnchor 500C includes:

Installation Instructions

Wiring Diagrams

Operation Manual - Includes calibration and testing instructions, plus operation and troubleshooting information.

AutoAnchor 500C Installation

The AutoAnchor 500C should only be installed by a qualified marine electrician. Do not attempt to install the AutoAnchor 500C unless you are suitably qualified. Technical specifications, installation instructions and wiring diagrams are supplied with the AutoAnchor 500C. Non compliance with these instructions could impair windlass and AutoAnchor 500C operation, and could result in personal injury and/or damage to your boat. Non compliance with the instructions will negate the manufacturer's warranty.

Calibration and Testing

Before using the AutoAnchor 500C it must be calibrated to the windlass and rode on the boat and tested in a safe environment.

Electromagnetic Compatibility (EMC)

The AutoAnchor 500C meets and exceeds the relevant CE standards for EMC. These standards are intended to provide reasonable protection against interference by other emission generating products on the boat. However, compliance with these standards is no guarantee that interference will not occur in a particular installation. The installation instructions must be followed to minimise the potential for interference.

AutoAnchor 500C Use

It is the owner's sole responsibility to ensure the AutoAnchor 500C is installed, used and maintained in a manner that will not cause accidents, personal injury or property damage. When using the AutoAnchor 500C the operator must use safe boating practices and safe windlass and anchoring operation.

Before using the AutoAnchor 500C the operating instructions must be read and understood and the AutoAnchor 500C must be calibrated and tested.

The AutoAnchor 500C makes anchoring less stressful but nothing can replace good seamanship and safe boating practices.

The user of the AutoAnchor 500C must:

- **use the windlass strictly according to the windlass manufacturer's instructions;**
- **personally control and supervise all windlass and anchoring operations; and**
- **always ensure the anchor is fully docked and secured before moving the boat**

The AutoAnchor 500C manufacturer and supplier accept no liability for personal injury or property damage resulting from failure to follow the installation instructions or the use of the AutoAnchor 500C in a way that may cause accidents or damage or that may violate the law.

To the best of our knowledge the information in this manual was correct at the time of printing. However, the AutoAnchor 500C is continuously being reviewed and improved and product specifications may be changed without notice. The latest product specifications may not be reflected in this version of the manual.

Documentation relating to the AutoAnchor 500C is created in the English language and can be translated from English to another language. In the event of any conflict between translated documents, the English language version will be the official version.

PART 1 - FEATURES

The AutoAnchor 500C provides easier windlass control and security in knowing how much anchor chain has been released.

SAFETY FEATURES

- The safety lock reduces the chance of accidental windlass operation from the console
- The safety cutout allows you to press any button on the console unit to stop windlass operation during automatic operation
- The anchor retrieval stopping point (when using the automatic function) stops the windlass motor before the anchor reaches the boat and beeps to warn the operator to change to manual operation of the AutoAnchor 500C for final docking of the anchor.

DIAGNOSTICS

Electronic fault diagnostics help to identify problems with:

- The battery
- The solenoid
- The sensor
- Windlass rotation

MEASUREMENT

- Chain measurement is in feet or metres
- The AutoAnchor 500C checks to see if chain is already out before releasing additional chain
- Settings and measurements are retained if the unit is turned off or the battery fails
- The counting operation continues if the windlass is operated by another switching mechanism on the boat (eg deckswitches)

TECHNICAL SPECIFICATIONS - AutoAnchor 500C

Power Supply: 12V or 24V DC

Current Consumption: 30mA

Temperature Range: 23°F to 140°F (-5°C to 60°C)

Solenoids: Max 2.6 Amp draw

Maximum Voltage: 30V DC

PART 2 - CALIBRATION



The AutoAnchor 500C must be installed and operated in accordance with the instructions supplied. Non compliance with any of these instructions could impair windlass and AutoAnchor 500C operation and will negate the manufacturer's warranty.



The Auto Anchor 500C is designed for use with an all chain rode. Before operation it must be calibrated to comply with the boat's windlass and chain and then tested in a safe environment.

It is useful to record the calibration settings in the spaces provided so that they are available for future reference.

You will need to clear the safety lock before any calibrations can be entered. To do this turn the AutoAnchor 500C on, hold down the MODE button until C clears, then release the MODE button. (Refer to the diagram on page 1 to see the buttons). For further information about the safety lock refer to page 8.

Select Feet or Metres

The AutoAnchor 500C displays measurements in feet or metres. The unit indicator shows the unit of measurement selected.

Unit Indicator

Feet

Metres



To select feet or metres:

Step 1 Turn the AutoAnchor 500C on.

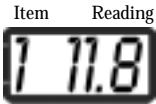
Step 2 Clear the safety lock. When the safety lock is on the display shows C. To clear it hold down the MODE button until C clears, then release the MODE button. The unit indicator will show the current setting.

Step 3 Hold down the MODE button until the indicator has changed position (approximately 5 seconds). Note: The C will appear and disappear as the indicator changes position.

After selecting feet or metres, enter calibration mode as follows:

Step 1 Turn the AutoAnchor 500C off.

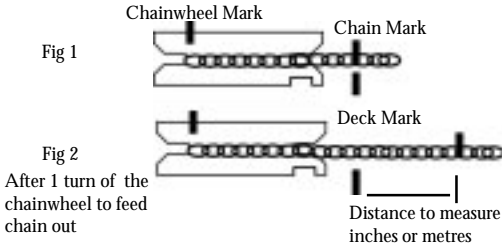
Step 2 Hold down the MODE button and press and release the ON/OFF button. Release the MODE button. The AutoAnchor 500C will flash between Item 1 and the current setting. (Refer below).



Item 1: Chainwheel Circumference

Default Setting 11.8 inches or 300mm

Follow the steps 1 - 7 to calculate the chainwheel circumference.



Step 1 Use adhesive tape to place a mark on the chainwheel (See Fig 1)

Step 2 Use adhesive tape to place a mark on the chain coming out of the chainwheel (See Fig 1)

Step 3 Use adhesive tape to place a mark on the deck below the mark on the chain (See Fig 1).

Step 4 Release the chainwheel so that it can be turned by hand to feed the chain out.

Step 5 Using the mark on the chainwheel as a guide, turn the chainwheel one revolution, causing the chain to be released on to the deck.

Step 6 Measure the length of chain from the mark on the deck to the mark on the chain. (See Fig 2). This measurement is the setting you need to enter.

Step 7 Use the UP/DOWN buttons to enter the setting. The setting is entered in inches to 0.10 or millimetres.

Record Calibration Entered: _____

Press the MODE button to advance to the next item. The AutoAnchor 500C will flash between Item 2 and the current setting for Item 2.

Item Reading

A digital display showing the number 23.0. The digits are black on a light background, with a thin black border around the display area.

Item 2: Anchor Retrieval Stopping Point

Default Setting 3 ft or 1 m

This sets the length of chain to be retrieved by manual operation of the unit after the automatic upward control has stopped. For more information about automatic operation refer to page 9.

For safety the minimum anchor retrieval stopping point is 1.5 ft (0.5m).

Use the UP or DOWN buttons to enter the value in feet or metres. The setting is accurate to +1 chainwheel revolution.

Record Calibration Entered: _____

Press the MODE button to advance to the next item. The AutoAnchor 500C will flash between Item 3 and the current setting for Item 3.

Item Reading

A digital display showing the number 3196. The digits are black on a light background, with a thin black border around the display area.

Item 3: Maximum Amount of Chain on Board

Default Setting 196 ft or 60 m

Use the UP or DOWN buttons to enter the value for the boat.

Note: If this is set to '0' the AutoAnchor 500C will not operate the windlass. It will only operate as a counter.

Record Calibration Entered: _____

Press the MODE button to advance to the next item.

Item 4: Safety Lock

Default Setting is ON

The safety lock should be left on at all times. It should only be disabled, if necessary, for installation or testing. To disable the safety lock, press the DOWN button to change the readout to OFF. To enable press the UP button to reset to ON.

Record Calibration Entered: _____

Item 4 is the last calibration setting. Now save the settings.

Save

To save the settings, hold down the MODE button until **Prog** is displayed, then release the MODE button. The unit will then return to normal operation.

Abort

To abort and re-start calibration

Press and hold the ON/OFF button until **Abrt** is displayed. Then release the ON/OFF button. The AutoAnchor 500C is now off. Hold down the MODE button, and press and release the ON/OFF button. Then release the MODE button to restart calibration at Item 1.

TESTING

Before the AutoAnchor 500C is used for anchoring, it is important to test it in a calm, safe environment as follows:

After the calibrations are saved, follow the instructions to raise and lower the anchor using both manual and automatic operation. See Part 3 of this Manual.

If the AutoAnchor does not count, stop, start or operate exactly as specified in the instructions or any diagnostic messages appear on the LCD, refer immediately to Troubleshooting (Part 4 in this Manual) or to your supplier for assistance.

PART 3 - OPERATION

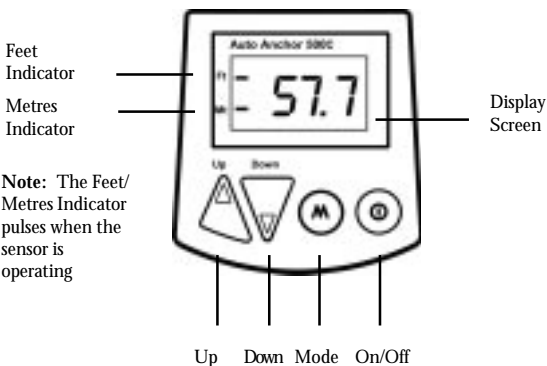


WARNING

Before using the AutoAnchor 500C the operating instructions must be read and understood, the AutoAnchor 500C must be calibrated to the windlass and rode on the boat and it must be tested in a calm, safe environment.

When using the AutoAnchor 500C you must:

- use the windlass strictly according to the windlass manufacturer's instructions;
- personally control and supervise all windlass and anchoring operations; and
- always ensure the anchor is fully docked and secured before moving the boat



HOW TO OPERATE YOUR AUTOANCHOR 500C

SAFETY LOCK (C)

The AutoAnchor 500C is fitted with a safety lock to help protect against unintentional windlass operation. Before operating the windlass the safety lock must be released. When the safety lock is on, the screen shows **C** and the UP and DOWN buttons will not operate.

To Release the Safety Lock: Turn the AutoAnchor 500C on, hold down the MODE button until **C** clears from the screen, then release the MODE button.

Note: The safety lock automatically reactivates 5 minutes after the AutoAnchor 500C was last operated. It can also be reactivated manually at any time. To do this hold down the MODE button until **C** is displayed on the screen. Release the MODE button and the safety lock is set. The safety lock reactivates automatically when the console unit is turned off.

The AutoAnchor 500C can be operated manually or by using the unique automatic function.

MANUAL OPERATION

To Release the Anchor and Chain - Using Manual Operation

Step 1 Turn the AutoAnchor 500C on.

Step 2 Clear the safety lock if necessary. (See above).

Step 3 Press and hold the DOWN button to start the windlass and release the anchor and chain

Step 4 Release the DOWN button to stop the windlass operation.

To Retrieve the Anchor and Chain - Using Manual Operation

Step 1 Turn the AutoAnchor 500C on.

Step 2 Clear the safety lock (Refer to page 8)

Step 3 Press and hold the UP button to start the windlass and retrieve the anchor and chain

Step 4 Release the UP button to stop the windlass operation when the anchor is fully retrieved and docked.

Step 5 Ensure the anchor is fully docked and secured before moving the boat

Note: During retrieval the AutoAnchor 500C will beep 4 times to warn the operator the anchor has passed the preset anchor retrieval stopping point. (Refer Item 2, page 5). **Extra care must be taken at this stage of retrieval.**

AUTOMATIC OPERATION

The AutoAnchor 500C has a unique automatic function. Using this function the operator can:

- Preset the length of chain to be released
- Control the operation of the windlass with a single touch of the button
- Retrieve the anchor automatically to a preset stopping point



WARNING

There is an inherent risk when using any automatic function on a boat. If you choose to use the AutoAnchor 500C automatic functions, you must still control and supervise all windlass and anchoring operations.

To Enable Automatic Operation

The AutoAnchor 500C is supplied with the automatic function disabled. Should you wish to utilise this unique feature please follow the instructions below to set the length of chain to be released.



Setting a “chain to be released” value means the AutoAnchor 500C remains enabled for automatic operation. This setting is retained by the AutoAnchor 500C even if the battery fails.

Set Chain to be Automatically Released

This setting can be changed at any time.

Step 1 Turn the AutoAnchor 500C on.

Step 2 Clear the safety lock. (Refer to page 8)

Step 3 Press and release the MODE button twice. The screen flashes between SET and the current value. (Default is OFF)

Step 4 Use the UP or DOWN buttons to change the flashing value to set the length of chain to be released.

Step 5 When you reach the desired setting press the MODE button once to save. This will return the AutoAnchor 500C to normal operation.

Note: To enter Auto mode ready to release the anchor (see page 11) press the MODE button again.

To Disable Automatic Operation

Turn the AutoAnchor 500C on. Clear the safety lock if necessary. Press the MODE button twice. The flashing value will show SET. Press and hold the DOWN button until the flashing value shows OFF. Press the MODE button again to save and return to normal operation.



AUTOMATIC ANCHORING

To Release the Anchor and Chain

Step 1 Turn the AutoAnchor 500C on.

Step 2 Clear the safety lock if necessary. (Refer to page 8)

Step 3 Press the MODE button once. The value flashing shows AUTO and the preset length of chain to be released. (To change this value press MODE again and use the UP or DOWN buttons to change the setting then press the MODE button twice to return to AUTO).

Step 4 Press and release the DOWN button. The windlass will deploy the anchor and chain. The windlass will stop and the AutoAnchor 500C will beep 4 times when the preset length of chain and the anchor has been fully released.

SAFETY OVERRIDE FEATURE - Press any button to stop the windlass during automatic release or retrieval. To restart press the MODE button once to enter automatic operation again and resume chain and anchor release or retrieval.

To Retrieve the Anchor and Chain

Step 1 Turn the AutoAnchor 500C on.

Step 2 Clear the safety lock if necessary. (Refer to page 8)

Step 3 Press the MODE button once. The value flashing shows AUTO and the length of chain out.

Step 4 Press and release the UP button. The windlass will retrieve the chain and anchor. The windlass will stop and the AutoAnchor 500C will beep 4 times when the chain and anchor has been retrieved to the anchor retrieval stopping point. (Refer to page 5 for details about the anchor retrieval stopping point).

Step 5 Now manually operate the UP button to fully complete retrieval of the chain and anchor.

Step 6 Ensure the anchor is fully docked and secured before moving the boat.

OTHER SETTINGS

Change Backlighting Level (This is best done in low light).

Turn the AutoAnchor 500C on. Clear the safety lock if necessary. Press and hold the ON/OFF button down. The AutoAnchor 500C will start to beep. Press and hold the UP or DOWN buttons to adjust the light level. When you reach the desired level release the UP or DOWN buttons before you release the ON/OFF button. **Note:** If the ON/OFF button is held down for longer than 2 seconds without starting the adjustment this will reset the AutoAnchor 500C display to zero.


Set AutoAnchor 500C to Operate as a Chaincounter Only

The AutoAnchor 500C is designed to control the windlass and provide a readout of chain deployed. However, it can be set to operate only as a chaincounter, with no control over the windlass operation. Using this setting the windlass is controlled by another control mechanism eg a plug-in remote or deck switch. To do this: Set Calibration Item 3 (Maximum Amount of Chain on Board) to zero. (Refer to Part 2- Calibration). **Note:** Even though the AutoAnchor 500C is not controlling the windlass it must be installed as per the wiring diagram and connected to the solenoids in order to count the chain released.

Reset Display to Zero

Turn the AutoAnchor 500C on. Press and hold the ON/OFF button. A rapid beeping will be heard. Release the ON/OFF button when the display shows 0.0.

Reset Factory Default Settings

 **This setting should only be used if the AutoAnchor 500C settings have been corrupted. Using this setting will remove all your calibration settings.**

To apply the factory reset: Turn the AutoAnchor 500C off. Hold down the MODE and UP buttons together. While holding these buttons press and release the ON/OFF button. When the LCD display reads LOAD release the MODE and UP buttons. The unit will turn itself off and the factory default settings will be reset.

Now re-enter the calibration settings for your unit. Refer Part 2.

PART 4 - TROUBLESHOOTING

POWER SUPPLY



The power supply must be disconnected before you make any changes to wiring or electrical connections.

Ground: The AutoAnchor 500C must be connected to the same bank of batteries as the solenoid pack and windlass motor. Multiple battery bank negative terminals must be permanently connected together to become the common negative return (ground).

Voltage: Neither the windlass nor the AutoAnchor 500C will operate with insufficient power. (See below). Batteries must be properly maintained and charged and all connections and wires must be of good quality and the correct gauge to prevent voltage drop.

AutoAnchor Response to Different Voltage Levels:

Below 6V	Power too low to operate the windlass and/or the AutoAnchor 500C.
6V - 8V	Power too low to operate the windlass. (AutoAnchor 500C shows BATT)
8V - 10V (12V system) 8V - 19V (24V system)	Power too low to start windlass operation* but the AutoAnchor 500C will turn on and can be calibrated and show current settings.
Above 10V (12V system) Above 19V (24V system)	The winch will start and the AutoAnchor 500C will operate.

***Note:** An operating windlass will stop if the battery voltage drops below 8 volts. The Auto Anchor shows **BATT** if this occurs.

ELECTROMAGNETIC COMPATIBILITY (EMC)

The AutoAnchor 500C meets and exceeds the relevant CE standards for EMC. These standards are intended to provide reasonable protection against interference by other emission generating products on the boat. However, compliance with these standards is no guarantee that interference will not occur in a particular installation. The installation instructions must be followed to minimise the potential for interference. AutoAnchor 500C equipment must be installed to maintain the following distances away from any equipment transmitting or cables carrying radio signals eg VHF radios, cables and antennas or radar antennas: The console at least 1m (3ft), except for SSB radios and radar antennas where it must be 2m (6ft) away; and the cables at least 500mm (1.5ft) away.

ELECTRONIC DIAGNOSTICS

Definitions SOL = Solenoid, SENS = Sensor, BATT = Battery

The AutoAnchor 500C has built in diagnostics to help with troubleshooting. The diagnostics help identify problems with the battery, the solenoid, the sensor and windlass rotation. The diagnostics appear briefly when the AutoAnchor 500C is first switched on. If you have a problem, check for the diagnostic messages by switching the AutoAnchor 500C off and then on again.

TROUBLESHOOTING GUIDE

Use the table below to help identify a problem and provide a possible solution. If you cannot resolve the problem, contact your supplier for further information.

Problem	Possible Solution
1. AutoAnchor 500C will not turn on.	Check battery is connected and has correct polarity. Check battery has sufficient voltage. See page 13 and note 3 below. Check fuses are working.
2. AutoAnchor 500C does not operate the windlass either up or down.	Check Calibration Item 3 is not set to zero. Check the "Chain to be Released" is not set to zero (Refer to page 10). Check if the safety lock is on. Check battery has sufficient voltage. See page 13 and also note 3 below.
3. AutoAnchor 500C will not operate the windlass and the LCD shows BATT when the UP or DOWN buttons are pressed.	Battery low - check the voltage output. (See the notes on page 13). If the battery is fully charged check the wiring - for loose connections and check the cable size. The cable from the battery to the console unit and/or the solenoids may not be heavy enough. See the Cable Specifications on page 15.
4. AutoAnchor 500C turns itself off.	Battery has dropped below 6 volts. Check battery connections and charge. See also note 3 above.
5. The windlass operates for a short period and then stops. The AutoAnchor 500C may turn off.	The solenoids could be exceeding the maximum 2.6 Amps. The AutoAnchor 500C is designed to turn off if this occurs. Contact your supplier for further information. Also see note 3 above.
6. Solenoids click on and off when the UP or DOWN buttons are pressed but the windlass does not operate.	Either the yellow (down) and orange (up) solenoid wires are shorted together or the AutoAnchor 500C has a poor ground connection. Check the wiring and ensure the solenoid wires are separated.
7. Screen shows SOL.	Solenoids are not connected. Check wiring to solenoids or control box.

8. AutoAnchor 500C will not count or shows SENS and the windlass stops during automatic operation.	The sensor is not working properly. Check the calibration settings are correct. Check if the sensor is disconnected or damaged. Check wiring from console to sensor for loose connections and check that it is the correct specified cable. (See below). Check the magnet and sensor are aligned and the gap between them is correct. (See Installation Instructions). Check the magnet is not corroded. Check the magnet is installed with the white(south) end facing the sensor.
Note: When the sensor is operating correctly the sensor (feet/metres) indicator flashes every time the magnet passes the sensor.	
9. AutoAnchor 500C counts when the windlass is not turning or counts too much per revolution or displays an unusually large number.	The sensor may be damaged or the sensor cable is not the specified type. See the Cable Specifications below.
10. AutoAnchor 500C does not stop exactly at the preset point.	This is not a fault - Stopping is accurate to +1 chainwheel revolution. The chainwheel may run on slightly with momentum.
11. The windlass stops before the length of chain specified is deployed.	This will occur during automatic operation if you try to release more chain than is on board. Check the setting for chain on board. (Calibration Item 3).
12. AutoAnchor 500C display shows "Error"	The Up or Down button has pressure on it at the time the the unit is turned on. Clear the pressure from the button. Then turn the unit off. Turn it on again to operate normally.

CABLE SPECIFICATIONS

Cable from AutoAnchor 500C Console to the Sensor: Must be Belden 9965 (AWG22) or Tycab PCT 1702 (0.22mm²) or equivalent, tinned, single core, shielded. Note: Aluminium foil covered data cable is not suitable.

Cable from AutoAnchor 500C Console to batteries and solenoids:

This specification is based on the total cable length measured from the battery to the console plus from the console to the solenoids.

Where the total length is less than 33 ft (10m) - 1.5mm² AWG16

Where the total length is between 33 ft (10m) and 66 ft (20m) - 2.0mm² AWG14

Where the total length is between 66 ft (20m) and 132 ft (40m) - 3.0mm² AWG12

For lengths greater than this refer to your supplier.

MAINTENANCE

The AutoAnchor does not contain any user servicable parts. User maintenance is limited to :

- Checking all cables and connections for signs of wear or damage and replacing them as necessary
- Checking the sensor head is not worn and has not moved out of alignment with the magnet and replacing the sensor if necessary
- Checking the magnet is not worn or corroded and replacing the magnet if necessary

Note: Do not use chemical or abrasive materials to clean the console unit. If it is dirty wipe it with a clean damp cloth. Avoid wiping the display screen with a dry cloth as this could scratch the screen.

INDEX

Anchor Retrieval Stopping Point	5	Maintenance	16
AutoAnchor 500C Diagram	1	Manual Operation	8
Automatic Operation	9	Maximum Amount of Chain	
Backlighting	12	on Board	5
Battery Voltages	13	Measurement	2
Calibration	3	Operation	7
Chainwheel Circumference	4	Other Settings	12
Chain on Board	5	Power Supply	13
Chain to be Released	10	Release the Anchor in Auto	11
Change Backlighting Level	12	Retrieve the Anchor in Auto	11
Count Chain Only	12	Reset Factory Default Settings	12
Diagnostics/Troubleshooting		Reset Counter to Zero	12
Guide	14	Safety Features	2
Disable Automatic Operation	10	Safety Lock	8
Disable Safety Lock	6	Select Feet or Metres	3
Electronic Diagnostics	14	Set Chain to be Released	10
Electromagnetic Compatibility	13	Set to Operate as a	
Enable Automatic Operation	10	Chaincounter	12
Factory Default Settings Reset	12	Technical Specifications	2
Features	2	Testing	6
Feet/Metre Selection	3	Troubleshooting	13

AutoAnchor is manufactured by:

RMSD Limited

P O Box 36 489

46 Lake Road

Northcote, Auckland

New Zealand

Tel: +64 9 419 1219

Fax: +64 9 419 1931

Email: info@rmsd.co.nz

Web: www.rmsd.co.nz

