

AutoAnchor 150 With Plug (Versions 1.2, 1.3, 1.31)

Installation and Operation Instructions



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READ THESE INSTRUCTIONS COMPLETELY BEFORE STARTING INSTALLATION OR USING THE AA150

- 1 The AA150 is a rope and chain or chain only rode counter. It does not control the windlass. A toggle switch, deck switch or handheld remote is required to operate the windlass.
- 2 The AA150 can be fitted to most vertical windlasses. Your horizontal windlass may require a sensor holder or a custom designed sensor which is not included in the standard pack. Check with your supplier or the AutoAnchor manufacturer.
- 3 The AA150 should only be installed by a qualified marine electrician. Do not attempt to install the AA150 unless you are suitably qualified.
- 4 The AA150 must be fitted to a windlass with a dual direction control box or solenoid pack.
- 5 Information for installation and operation of the AA150 is supplied. The documents include: Installation and Operation instructions, Preset Windlass Profile List, wiring diagrams and templates. All instructions should be left on board for the owner.
- 6 Non compliance with the instructions in the documentation could impair the windlass and the AA150 operation, and could result in personal injury and/or damage to the boat.
- 7 Non compliance with the instructions will negate the manufacturer's warranty.
- 8 The AA150 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 AA150 in a way that may cause accidents or damage or that may violate the law.
- 9 All the technical and cable specifications must be checked and adhered to.
- 10 Wiring diagrams must be followed without modification.
- 11 Installation is not complete until the AA150 has been set up to comply with the boat's windlass and rode and then tested in a safe environment.
- 12 All installations must be carried out in accordance with USCG, ABYC, NMMA and BMEA requirements.

PART 1 SPECIFICATIONS

Check that the following parts are included in the kit (# 9131):

1 x AA150 Console Unit (#9130)
1 x Motor Load Sensor Terminator Pack containing 2 terminator connectors (1 x brown and 1 x white) #9083
1 Grey Sensor with plug (# 9067)
Magnets: 10mm x 8mm (# 9061), 6mm x 4mm(#9009)
Wiring Diagrams & Templates

TECHNICAL SPECIFICATIONS AA150

Power Supply: 12V or 24V DC
Current Consumption: 30mA
Operating Temperature Range: 23°F to 140°F (-5°C to 60°C)
Maximum Voltage: 30V DC

ELECTROMAGNETIC COMPATABILITY (EMC)

The AA150 meets and exceeds the CE standard for EMC (EN60945). These standards are intended to provide reasonable protection against interference by other emission generating products on the boat. 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.

AA150 equipment must be installed to maintain the following distances away from any equipment transmitting or cables carrying radio signals eg VHF or SSB radios, cables and antennas or radar antennas:

- the console at least 1m (3 ft), except for SSB equipment where it must be 2m (6ft) away
 - the cables at least 500 mm (1.5 ft)
-

CABLE SPECIFICATIONS

Plug In Sensor Connections

The AA150 console and the sensor are prefitted with connector plugs. Connecting cable with plugs is available in the following lengths:

6.5m/21.32 ft Male/Male Plug (#9500)
15m/49.2 ft Male/Male Plug (#9502)
20m/65.62 ft Male/Male Plug (#9503)
2m/6.56 ft Female/Male Plug (#9505) extension cable
30cm/11.8 inches Female/Female Plug (#9508) connecting cable is used to join 2 cables for extended lengths

Male and female field connector plugs (Male #9507/Female #9509) are available where the plug has been damaged or chopped off. This is soldered to the wires and provides an all in one waterproof plug in connector.

If plug in cable is not used, Belden 9501 (AWG24) or equivalent, 2 core plus drain, tinned, copper, screened cable must be used. Sensor cable joins must be soldered and sealed in adhesive heat shrink tubing. Ask your supplier about the AutoAnchor solder splice connections for an easy fit.

Dual AutoAnchor Installations: A T-adaptor (#9506) and 2m/6.56 ft extension cable with plugs (#9505) is required. Refer to the wiring diagrams for detail.

Cable from AA150 console to the motor terminals (Load Sensor Wires): 1.0mm² (AWG18).

Note: Short circuit protection is required on these cables. The load sensor terminators supplied have motor terminal connectors with a 1000 Ohm resistor prefitted. If these terminators are not used a 1000 Ohm resistor must be fitted near the motor terminal.

Cable to the Up Solenoid: 1.0mm² (AWG18)

WINDLASS

The windlass must be installed according to the windlass manufacturer's instructions with the correct size rope and chain. It must also be regularly serviced and lubricated. For smooth operation, the windlass requires a good quality, bow roller and a swivel where the anchor joins the chain.

RODE

Combination Rope and Chain Rode: must have a minimum of 10 ft (3 m) of chain. Chain must be galvanised steel. Rope should be a good quality nylon anchor rope. Type 66 or equivalent.

Chain Only Rode: can be stainless or galvanised steel.

PART 2 INSTALLATION

VERTICAL WINDLASSES

The magnet and sensor must be installed correctly or the AA150 will not work. If it is not possible to comply with these instructions please check with the AutoAnchor manufacturer or your supplier for other options. Some windlasses are predrilled for sensor and magnet fitting.

Reed Switch Sensors: Some windlasses are supplied pre-fitted with a reed switch sensor. Reed switch sensors can only count the revolutions of the chainwheel. This works for a chain only windlass but it does not provide an accurate count for rope and chain rode. If you use a reed switch sensor with rope and chain, the display may read zero when there is rode still deployed.

Reed switch sensors must have a minimum size 10mm x 8mm magnet (Part #9061) and the gap between the reed switch sensor and the magnet must be a minimum of 3mm and a maximum of 5mm.

MAGNET INSTALLATION FOR VERTICAL WINDLASSES

Vertical Windlasses Using Chain Only Rode

Magnet Size: 6mm x 4mm magnet (#9009). A larger magnet may be used. Check with your supplier.

Magnet Fit: If your chainwheel is not predrilled, drill a hole 6.5mm (1/4") diameter and 5mm (3/16") deep to fit the magnet in the underside of a spoke in the bottom of the chainwheel. The magnet must be aligned with the sensor. See Fig 1.

Magnet Seal: Insert the magnet into the hole and cover it with a minimum of 1mm of epoxy to seal it from salt water. Failure to do this will impair the magnet's strength and durability.

Gap Between the Sensor and Magnet:

Grey 3 wire AA Sensor(#9067): Minimum 3mm and Maximum 30mm

Black 2 wire AutoAnchor Sensor(#9008): Minimum 3mm and Maximum 8 mm

Reed Switch Sensor: Minimum 3mm and Maximum 5mm (Must use a 10mm x 8 mm magnet)

Magnet Polarity: Not relevant when using the grey AA sensor (#9051) or a reed switch sensor. If retrofitting, using the original AA black sensor (#9008) the south pole (white side) of the magnet must face the sensor.

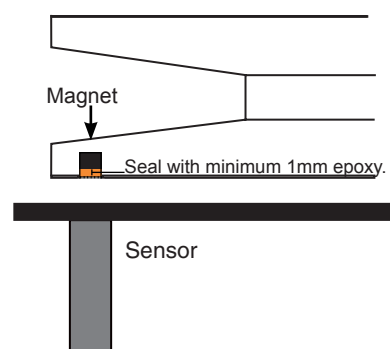


Fig 1

Vertical Windlasses Using Rope and Chain Rode

The rode must run between the sensor and magnet for an accurate rope and chain count. If your windlass is prefitted with a magnet in the bottom of the chainwheel you need to remove the prefitted magnet and fit a new magnet in the top of the chainwheel. Refer to Fig 2.

Magnet Size: 10mm x 8mm magnet (#9061). An 8mm x 6mm magnet (#9052) may be used on smaller windlasses. Check with your supplier.

Magnet Fit: If the windlass is not pre-drilled, drill a hole 10.3mm (13/32") diameter and 9.5mm (3/8") deep into a spoke in the top of the chainwheel. The magnet and sensor must be aligned so that the anchor rode passes between them. (See Figs 2 & 3). The centre of the magnet and the centre of the sensor may be up to 10mm (3/8") out of direct alignment. (See Fig 6 on PAGE 4). Templates and drilling instructions are supplied for some windlasses. Note: The Lofrans Project 1000 and 1500 windlasses are predrilled for magnet installation in the bottom of the chainwheel. Invert the chainwheel so that the magnet hole is in the top of the chainwheel.

Magnet Seal: Insert the magnet into the hole and cover with a minimum of 1mm of epoxy to seal it from salt water. Failure to do this will impair the magnet's durability.

Gap Between the Sensor and Magnet:

Grey 3 wire AutoAnchor Sensor (#9067):

10mm x 8mm (#9061) Magnet: Minimum 35mm and maximum 50mm

8mm x 6mm (#9052) Magnet: Minimum 30mm and maximum 44mm

Magnet Polarity: Not relevant.

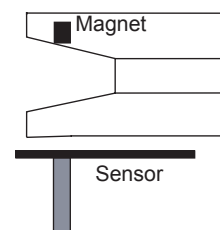


Fig 2

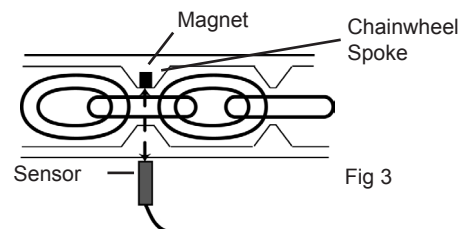


Fig 3

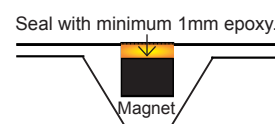


Fig 4

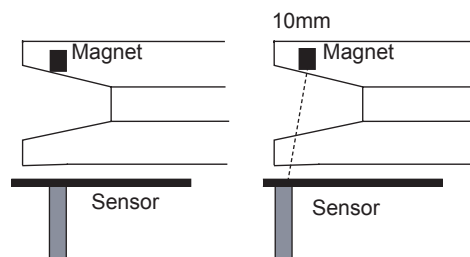
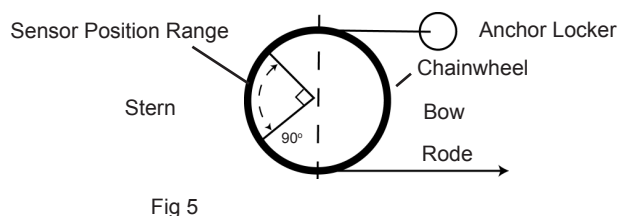
SENSOR INSTALLATION FOR VERTICAL WINDLASSES

For accurate rope and chain counting the AA150 must be fitted using the grey 3 wire AA sensor (#9067) supplied in the kit. See the note about reed switch sensors on PAGE 3.

The sensor is fitted into the windlass deckplate.

Sensor Position for Vertical Windlasses Using Chain Only Rode: The sensor hole can be drilled anywhere on the deckplate provided it is in alignment with the magnet in the chainwheel and the gap between the sensor and magnet will be correct.

Sensor Position for Vertical Windlasses Using Rope and Chain Rode: The hole must be within the sensor position range at the stern end of the windlass (See Fig 5). The sensor must also be aligned with the magnet so that the rode passes between the sensor and the magnet. The centre of the magnet and the centre of the sensor may be up to 10mm out of direct alignment. (See Fig 6)



Drilling the Deckplate: If the windlass is not factory drilled, drill a hole 10.3mm (13/32") diameter through the windlass deckplate.

Drilling the Deck: Before drilling into the deck, ensure there is nothing below the deck that could be damaged and that any hole you drill will not weaken the boat's structure. Drill a hole 10.3mm (13/32") diameter through the deck. Ensure this hole is directly in line with the sensor hole in the deckplate.

Do not force the sensor into the hole. Hammering the sensor head can damage the internal electronics. Ensure the sensor head is positioned so that it will not be hit by the chainwheel during windlass operation and that it is at least 300mm (1ft) away from the battery and motor cables, then secure the sensor into the deckplate with silicone.

Sensor Connection: Refer to the wiring diagrams to connect the sensor to the AA150 console.

The AutoAnchor plug in cable should be used to connect the sensor to the AutoAnchor console. Refer to page 2 for lengths. If your sensor does not have a plug, use a female AutoAnchor field connector (#9509).

If you are not using the plug in sensor, all sensor wires must be soldered and sealed. **See the AutoAnchor Sensor Wiring sheet at the end of the manual.**

Do not leave the cables hanging loose, they must be tied in place with cable ties.

HORIZONTAL WINDLASSES

Before starting check with the AutoAnchor manufacturer, or supplier, that you can fit a sensor to your windlass. There are several sensor options for windlasses using chain only rode but if your windlass uses rope and chain rode it may not be possible to fit the sensor for an accurate rope count.

MAGNET INSTALLATION FOR HORIZONTAL WINDLASSES

Horizontal Windlasses Using Chain Only Rode

Magnet Size: 6mm x 4mm magnet (#9009). A larger magnet may be used. Check with your supplier if you require a non standard magnet.

Magnet Fit: If your chainwheel is not predrilled, drill a hole 6.5mm (1/4") diameter and 5mm (3/16") deep in the underside of a spoke or in the edge of the chainwheel. See Fig 7a & 7b.

Magnet Seal: Insert the magnet into the hole and cover it with a minimum of 1mm of epoxy to seal it from salt water. Failure to do this will impair the magnet's strength and durability.

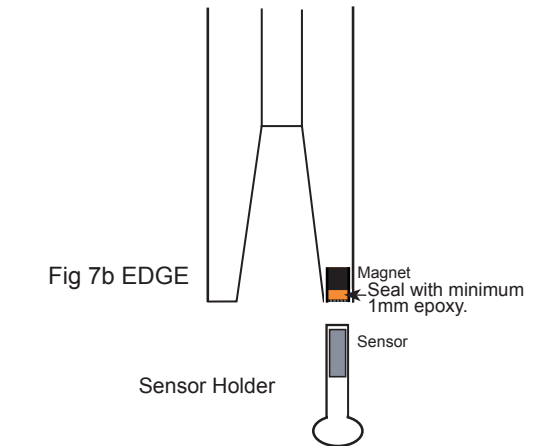
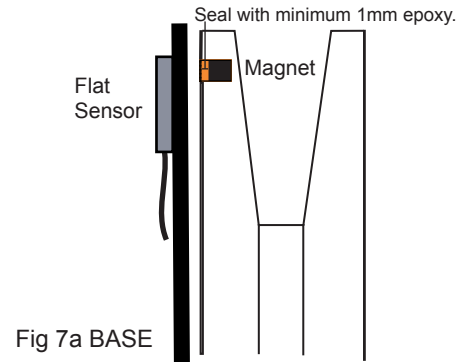
Gap Between the Sensor and Magnet:

Grey 3 wire AA Sensor(#9067): Minimum 3mm and Maximum 30mm

Black 2 wire AutoAnchor Sensor(#9008): Minimum 3mm and Maximum 8 mm

Reed Switch Sensor: Minimum 3mm and Maximum 5mm (Must use a 10mm x 8 mm magnet)

Magnet Polarity: Not relevant when using the grey AA sensor (#9051) or a reed switch sensor. If retrofitting, using the original AA black sensor (#9008) the south pole (white side) of the magnet must face the sensor.



Horizontal Windlasses Using Rope and Chain Rode

Magnet Size: 10mm x 8mm magnet (#9061). An 8mm x 6mm magnet (#9052) may be used on smaller windlasses. Check with your supplier.

Magnet Fit: If the windlass is not pre-drilled, drill a hole 10.3mm (13/32") diameter and 9.5mm (3/8") deep into a spoke in the top of the chainwheel. The magnet and sensor must be aligned so that the anchor rode passes between them. See Fig 8. The centre of the magnet and the centre of the sensor may be up to 10mm (3/8") out of direct alignment.

Magnet Seal: Insert the magnet into the hole and cover with a minimum of 1mm of epoxy to seal it from salt water. Failure to do this will impair the magnet's durability. See Fig 9

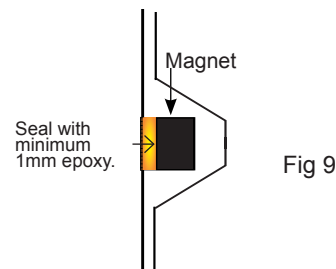
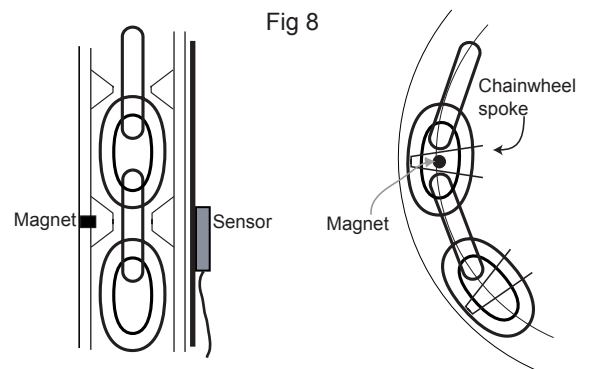
Gap Between the Sensor and Magnet:

Grey 3 wire AutoAnchor Sensor (#9067):

10mm x 8mm (#9061) Magnet :Minimum 35mm and maximum 50mm

8mm x 6mm (#9052) Magnet: Minimum 30mm and maximum 44mm

Magnet Polarity: Not relevant.

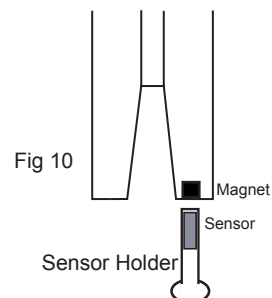


SENSOR INSTALLATION FOR HORIZONTAL WINDLASS

Horizontal Windlasses Using Chain Only Rode

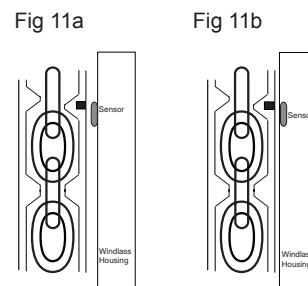
Standard Sensor

The standard sensor (#9051) is cylindrical 35mm long and 10mm in diameter. This sensor may be fitted inside the windlass or it can be fitted using a sensor holder fixed to the deck to sit under the chainwheel (See Fig 10). The AutoAnchor sensor holder (#9070) is not included in the standard kit. Check with your supplier.



Flat Sensor

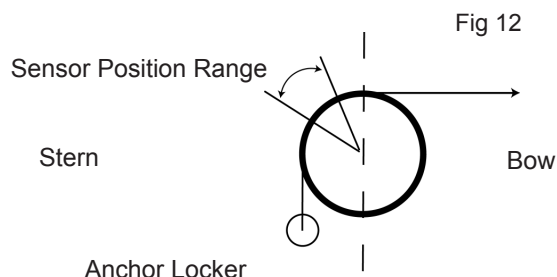
AutoAnchor also makes a flat sensor (# 9045) that can be fixed to the exterior housing of the windlass (See Fig 11a) or inside the windlass housing (See Fig 11b). Secure the sensor using a good quality neutral cure silicone or a strong adhesive eg. Sikaflex 291 or 3M 5200. The magnet is aligned with the cross on the sensor.



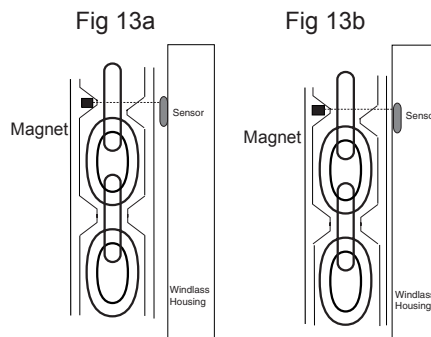
Horizontal Windlasses Using Rope and Chain Rode

It may not be possible to fit the sensor to achieve an accurate rope and chain count on your horizontal windlass. Please check with the AutoAnchor manufacturer, or supplier, to see if you can fit the AA150 to your windlass.

For an accurate rope and chain count the rode must run between the sensor and magnet. On a horizontal windlass this area is limited to the top of the stern quadrant. (See Fig 12). To count rope and chain the sensor must be fitted within this quadrant.



Some windlasses are designed with a space to fit the sensor internally. For other windlasses it may be possible to use the AutoAnchor flat sensor and fix it inside the windlass housing (See Fig 13b) or, on the exterior of the windlass housing behind the chainwheel. (See Fig 13a). The magnet must be aligned with the cross on the flat sensor.



Sealed Rope and Chain Windlasses

Some rope and chain horizontal windlasses are sealed so it is not possible to fit the sensor inside the windlass housing. If there is sufficient space between the chainwheel and the windlass housing, the sensor can be fitted externally (See Fig 13a). The only other option is to fit the sensor using a sensor holder as for an all-chain system.

CONNECTING THE SENSOR TO HORIZONTAL WINDLASSES

Ensure the cable is protected against any moving parts in the windlass.

Before drilling into the deck, ensure there is nothing below the deck that could be damaged and that any hole you drill will not weaken the boat's structure.

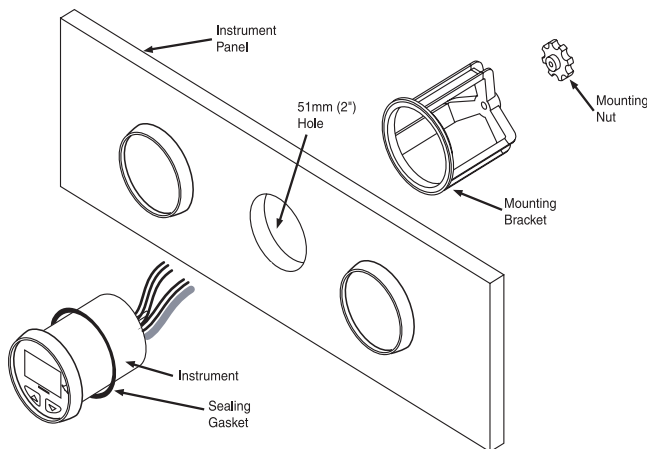
Do not force the sensor into the hole. Hammering the sensor head can damage the internal electronics. Ensure the sensor head is positioned so that it will not be hit by the chainwheel during windlass operation and that it is at least 1ft (300mm) away from the battery and motor cables.

Sensor Connection: Refer to the wiring diagrams to connect the sensor to the AA150 console. The AutoAnchor plug in cable should be used to connect the sensor to the AutoAnchor console. Refer to page 2 for lengths. If your sensor does not have a plug, use a female AutoAnchor field connector (#9509). If you are not using the plug in sensor, all sensor wires must be soldered and sealed. **See the AutoAnchor Sensor Wiring sheet at the end of the manual.** Do not leave the cables hanging loose, they must be tied in place with cable ties.

CONSOLE UNIT INSTALLATION

1. Choose a position where the operator will be able to see the anchor and windlass when using the AA150.
2. The console should be mounted on a flat surface at least 3ft (1m) away from any equipment transmitting or cables carrying radio signals eg VHF radios, cables and antennas or radar antenna and at least 6ft (2m) away from any SSB equipment.
3. The console should be mounted where it is protected from the elements. The AA150 is splash proof and should not be placed in a position where it is likely to be immersed in water.
4. The panel for mounting the instrument should be 3mm to 19mm (1/8 to 3/4 inch) thick. The space behind the instrument panel must have a depth of at least 95mm (3.7inches).
5. Drill a 50mm (2-inch) hole in the instrument panel in the selected location.
6. With the mounting bracket removed, insert the instrument into the hole until the back of the face plate is flush with the outside mounting wall.
7. Slide the bracket over the body of the instrument. Note: Orient the bracket in such a manner that it does not cover the buzzer.
8. Tighten the mounting nut until the bracket is secure.

Fig 14 Console Installation



Multiple Console Unit Installation

Two AA150 consoles can be installed to provide multiple stations or the AA150 can be installed with other AutoAnchor products. All wiring for multiple AutoAnchor stations is colour matched and run in parallel.

A T-adaptor and 2m extension cable are available for dual instalations. Refer to the wiring diagram and/or your supplier for details.

See the note overleaf re wiring for multiple console installations.

For dual console operation, the sensor must be reset before calibrating the consoles. To do this clear the counter to zero twice. Press and hold any button. The AA150 will beep and clear within 4 seconds. rE will be displayed during the second clearing indicating the reset is okay.

WIRING

All cables must be connected. Refer to the Wiring Diagrams at the end of the manual.

Multiple Console Wiring: It is important when wiring multiple console installations that potential differences do not occur along the ground connection. This can cause one or more consoles to not count correctly. Ensure consoles are star grounded, and that there are no other high current paths between consoles. Refer to wiring diagrams for further details.

All wiring for multiple installations is colour matched and run in parallel.

Interlock protection is included in the system. Do not fit diodes or interlock devices as these will prevent the system from operating correctly.

All battery and motor cables must be ring type, insulated to prevent short circuits and installed no closer than 1 ft (300mm) away from the sensor head.

All main power conductors and terminations are to be installed according to the windlass manufacturer's specifications. Seal terminals against moisture by spraying with CRC [3013] Soft Seal or CRC [2043] Plasticoat 70. Insulation must be used to protect all terminals.

To reduce the potential for interference all cables must be located at least 1.5ft (500mm) away from any equipment transmitting or cables carrying radio signals eg VHF or SSB radios, cables and antennas or radar antennas.

Do not leave cables hanging loose, they must be tied in place with cable ties.



POWER SUPPLY

THE POWER SUPPLY MUST BE DISCONNECTED DURING INSTALLATION AND WHEN MAKING ANY CHANGES TO WIRING OR ELECTRICAL CONNECTIONS

12V or 24V DC power supply is required to the AA150 console.

Check battery polarity before connecting power and ensure output terminals will not short.

The power must be disconnected when installing and connecting the wiring.

A 5 Amp resettable isolating/breaker switch to shut off power to the AA150 and the windlass must be installed in a position easily accessed by the AA150 operator.

Multiple battery bank negative terminals must be permanently connected together to become the common negative return (ground).

Power to the AA150 and all windlass controls eg. toggle switch, remote switches, deck switches must be supplied from one point or the AutoAnchor will be damaged. See the diagrams below.

Diagram1. Correct Power Supply Wiring for Windlass Control

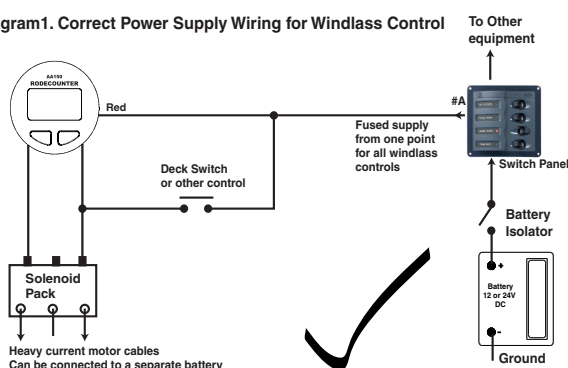


Diagram 2. Incorrect Power Supply Wiring for Windlass Control
Feeding power to the windlass from two sources can damage the AutoAnchor.

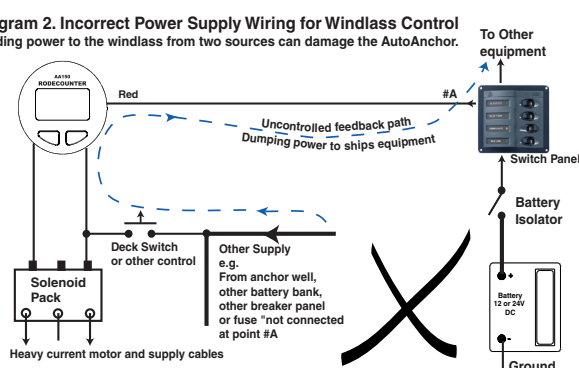


Fig 15

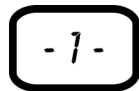
PART 3 SET UP

TO ENTER SET UP MODE:

The AA150 is automatically turned on when powered up.



Press and hold both buttons together.



The AutoAnchor version number (eg 1.31) is displayed briefly and then - 1 - appears. This takes about 8 seconds.

SELECT FEET OR METRES MEASUREMENT - Default Setting is u1.



The AA150 will flash between -1- and the current setting.
Use either button \oplus/\ominus to select Feet or Metres.

U1 = Metres

U2 = Feet



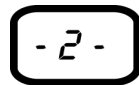
The selection is automatically saved 8 seconds after the last button press and the display changes to -2-

SELECT THE WINDLASS - Default setting is CH. (Custom Chain Only Windlass Setting)

There are 3 windlass setting options:

1. A custom chain only windlass setting.
2. A custom rope and chain windlass setting for windlasses not on the pre-set windlass profile list.
3. Pre-programmed rope and chain windlass settings for windlasses on the pre-set windlass profile list.

Follow the instructions below to select the option for your windlass.



The AA150 will flash between -2- and the current setting.

1. CUSTOM CHAIN ONLY WINDLASSES - Default Setting CH

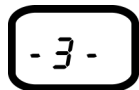
You need to know the chain per revolution for your windlass to enter these settings.

See Appendix 1 or the instructions overleaf to calculate this.



If CH is not displayed, use the \ominus button to select CH at -2-.

The display will automatically change to -3- approximately 8 seconds after the last button press.



Chain per Revolution - Default setting is **11.8 inches (300mm)**.

The AA150 will flash between -3- and the current setting.



Use the \oplus or \ominus buttons to enter the chain per revolution.

If you selected Feet (u2) at Item 1 the setting is entered in inches (in increments of 0.10). See the table overleaf.

If you selected Metres (u1) it is entered in millimetres.

The entry is automatically saved 8 seconds after the last button press. **PrG** is briefly displayed.

2. CUSTOM ROPE AND CHAIN WINDLASSES

You need to know the chain and rope per revolution for your windlass to enter these settings.

See the instructions overleaf to calculate this.



If CH is displayed, use the \oplus button to select rC at -2-.

If a number is displayed, use the \ominus button to select rC at -2-.



Chain per Revolution - Default setting is **11.8 inches (300mm)**.

The display will automatically change to -3- (Chain per Revolution).

The AA150 will flash between -3- and the current setting.



Use the \oplus or \ominus buttons to enter the chain per revolution.

If you selected Feet (u2) at Item 1 the setting is entered in inches (in increments of 0.10). See the table below.

If you selected Metres (u1) it is entered in millimetres.

The display changes to -4- (Rope per Revolution) approximately 8 seconds after the last button press.

Rope per Revolution - Default setting is 10.8 inches (275mm)

- 4 -

The AA150 will flash between -4- and the current setting.

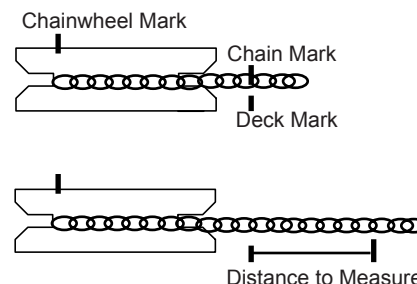
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Use the \oplus or \ominus buttons to enter the rope per revolution in feet or metres as for chain above. The entry is automatically saved 8 seconds after the last button press. **PrG** is briefly displayed.

Calculating the chain per revolution

This is the length of chain that is released during one complete revolution of the chainwheel. The chain per revolution for some windlasses is listed in Appendix 1. If your windlass is not listed follow the instructions below to calculate it.

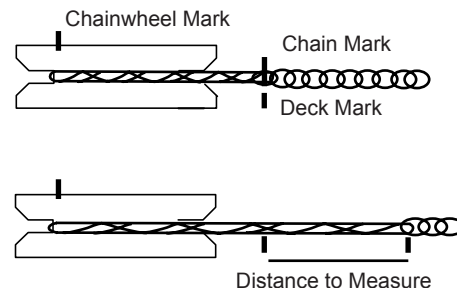
- Step 1** Use adhesive tape to place a mark on the chainwheel.
- Step 2** Use adhesive tape to place a mark on the chain coming out of the chain wheel.
- Step 3** Use adhesive tape to place a mark on the deck below the mark on the chain.
- Step 4** Carefully release the chainwheel so that it can be 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.
- Step 7** Enter this measurement.



Calculating the rope per revolution

This is the length of rope that is released during one complete revolution of the chainwheel. You need to measure the length of rope pulled through for 10 revolutions and divide the result by 10. See instructions to calculate the rope per revolution below.

- Step 1** Carefully release the chainwheel so that it can be turned by hand to feed the rope out until you have rope.
- Step 2** As you did for the chain, use adhesive tape to mark the chainwheel, the deck and the rope. (See the instructions for the chain per revolution above).
- Step 3** Using the mark on the chainwheel as a guide, pull the rope out by hand until the chainwheel has completed 10 revolutions.
- Step 4** Measure the length of rope pulled, divide it by 10.
- Step 5** Enter this measurement.



Metric Inches Conversion Table

Inches	Metric Inches	AutoAnchor Setting (to 1 decimal point)
1/8	0.125	0.1
1/4	0.25	0.3
3/8	0.375	0.4
1/2	0.5	0.5
5/8	0.625	0.6
3/4	0.75	0.8
7/8	0.875	0.9

3. PRE-PROGRAMMED ROPE AND CHAIN WINDLASSES

See Appendix 1 for the list of windlass profiles.

- 2 -

The display will flash between -2- and the current setting.

Use the \oplus button to enter the windlass profile from the list in Appendix 1.

Use the \ominus button to go back if necessary.

If you use this option there are no further settings.

Your selection is automatically saved 8 seconds after the last button press.

PrG is briefly displayed and the unit returns to the idle state.

PART 4 USING THE AA150

INSTALLATION, SET UP AND TESTING

Before the AA150 is used it is important that it is set up for the windlass and rode on the boat and tested in a calm, safe environment. Use the windlass to raise and lower the anchor. If the AA150 does not count, or any diagnostic messages appear on the screen, refer to Troubleshooting (Part 5) or your supplier or the AutoAnchor manufacturer for assistance.

OPERATION

The AA150 is automatically turned on when the windlass is powered up. When the windlass is operated the AA150 displays the length of anchor rode deployed. The unit will remember the settings entered and the count even when the power is turned off. It will also beep during retrieval to warn the skipper the anchor is within 1.5 metres (4 feet) of docking.



The AA150 helps to make anchoring less stressful but nothing can replace good seamanship and safe boating practices.

When anchoring:

- use the windlass strictly according to the windlass manufacturer's instructions;
- personally control and supervise all windlass and anchoring operations;
- maintain a clear view of the windlass, rode and/or anchor during windlass operation; and
- always ensure the anchor is fully docked and secured before moving the boat

If counting greater than 99.9 metres or feet the display will drop off the decimal place and display only whole metres or feet.

Note: If there is a sensor or a load error the AA150 will not count accurately. (Refer to Troubleshooting Part 5)

CHANGE BACKLIGHTING LEVEL (This is best done in low light).

Tap either button \oplus / \ominus to adjust the light level up and down. There are 4 light levels.

RESET DISPLAY TO ZERO

Press and hold any key \oplus / \ominus the AA150 will beep and the display will clear to 0.0 within 4 seconds.

RESET FACTORY DEFAULT SETTINGS

This will remove your individual set up.

Turn the power off.

Press and hold both keys together \oplus + \ominus while turning the power on again.

Release the keys when the display reads **FCt dEF**. This will restore the factory default settings.

Now re-enter the set up for your unit. Refer Part 3 of this document.



MAINTENANCE

The AA150 does not contain any user serviceable 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 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.

PART 5 TROUBLESHOOTING

The AutoAnchor is not faulty if these messages display.

The diagnostics help identify problems with the installation and sensor.

The messages display briefly during operation and/or power up. A beep will sound and after 3 seconds the message will be cleared.

The count will not be accurate until the cause of the error is fixed.

After the windlass is retrieved and the error is fixed reset the AA150 by holding down one of the buttons to zero the display.

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
Sn 1 Appears during operation. The AA150 does not count and does not display a sensor pulse.	No signal from the sensor to the AA150. Either there is no magnet, the gap between the magnet and sensor is too big or the sensor signal is out of tune because of testing during installation. Try resetting the AA150 by running the windlass up and down for 10-15 seconds. If the message still appears check the magnet and the gap and alignment between the magnet and sensor. Check sensor wiring and installation and check for damage to the sensor and magnet. When fixed reset the AA150 as above. For manual reset, clear the counter to zero twice. To clear to zero press and hold any key. The AA150 will beep and clear within 4 seconds. rE will be displayed during the second clearing indicating the reset is okay.
Sn 2 (Rope/Chain Only) Appears during operation. The AA150 will count and will display a sensor pulse. The count will not be accurate.	Sensor is too close to the magnet. Ensure the gap between the magnet and sensor is no less than 35 mm for a 10mm x 8 mm magnet and 30mm for an 8mm x 6 mm magnet. The count will not be accurate until the problem is fixed. Fix the installation and reset the counter to zero.
Sn 3 (Rope/Chain Only) Appears during retrieval when using a rope/chain rode. The AA150 will count and will display a sensor pulse. The count will not be accurate.	The AA150 has failed to detect the change from rope to chain or there has been excessive rope slip-page. Complete retrieval and then reset the counter to zero. This message may also display if the chain is the wrong size for the chainwheel.
Sn 4 Appears during AA150 power up. AA150 will not count but it will display a sensor pulse.	The orange wire to the Up solenoid is not connected. Fix the wire connection and reset the counter to zero.
Ld (Rope/Chain Only) Appears during AA150 power up. The AA150 will count and will display a sensor pulse. The count will not be accurate.	The load sensor wires are not connected to the motor. Fix the connection and reset the counter to zero.
AA150 counts when the windlass is not turning or counts erratically displaying a large number eg 888.	The sensor could be damaged, incorrect cable may be fitted, or the AA150 may have been subject to external interference - RF or electrical. Check that the sensor cable is not damaged and that the cable fitted is as specified in the instructions. Check for external interference on the boat eg damaged or loose RF cables or aerials or other instruments that may not be working correctly or have been damaged by electrical interference including lightning.
The count pauses during retrieval.	This is not a fault. The rode is changing from rope to chain.

To the best of our knowledge the information in these instructions was correct at the time of printing. However, the AutoAnchor products are 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 instructions. The documentation relating to the AutoAnchor products 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.

The AutoAnchor 150 is designed and manufactured by:

RMSD Limited

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Tel: +64 9 419 1219 Fax: +64 9 419 1931

Email: info@autoanchor.co.nz Web: www.autoanchor.co.nz

WIRING FOR CHAIN ONLY WINDLASSES

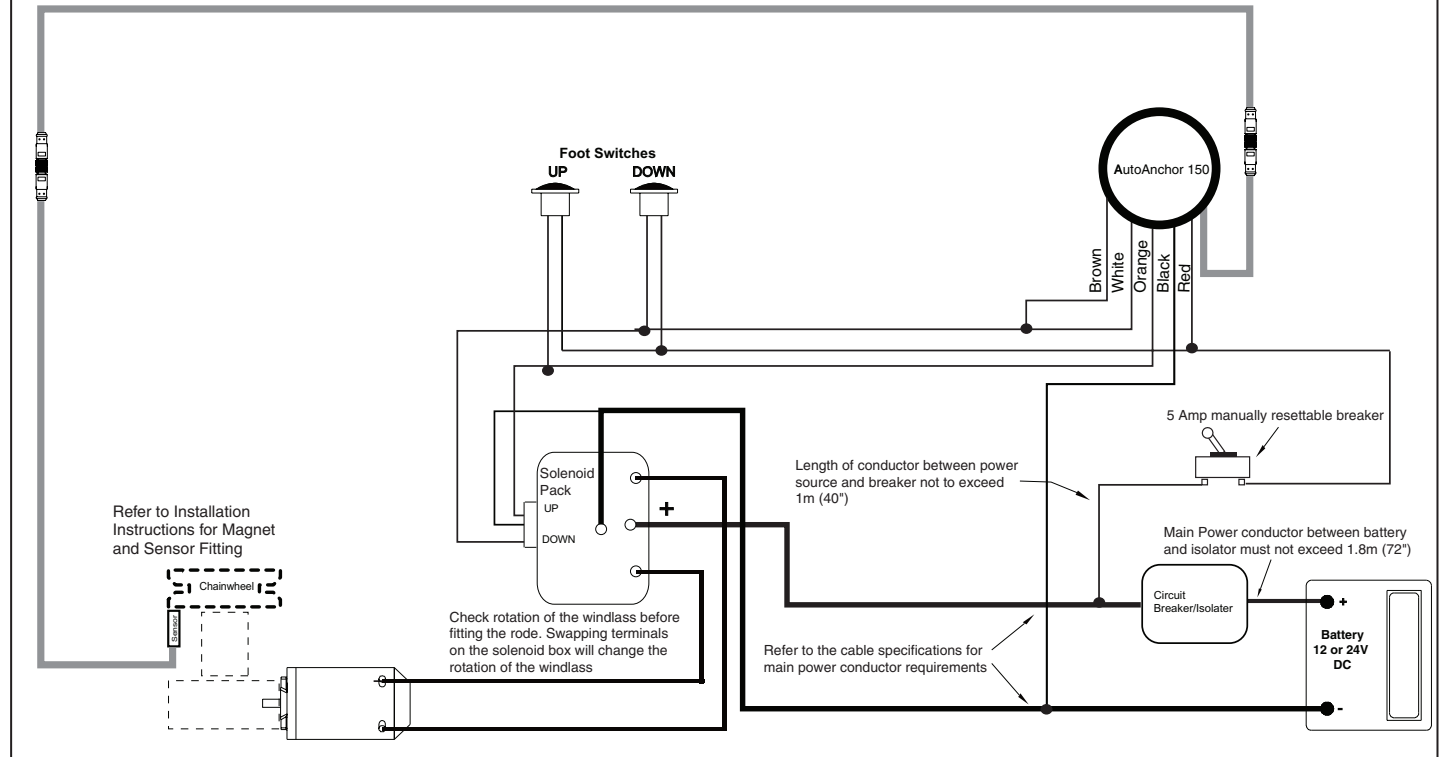
Use the GREY 3 Wire AutoAnchor sensor (#9067), the BLACK 2 Wire AutoAnchor sensor (#9008) or a reed switch sensor.

Contact your supplier for plug in sensor cable. See the Sensor Wiring Sheet for sensor connection options when not using plug-in cable. See Installation Instructions for cable specifications.

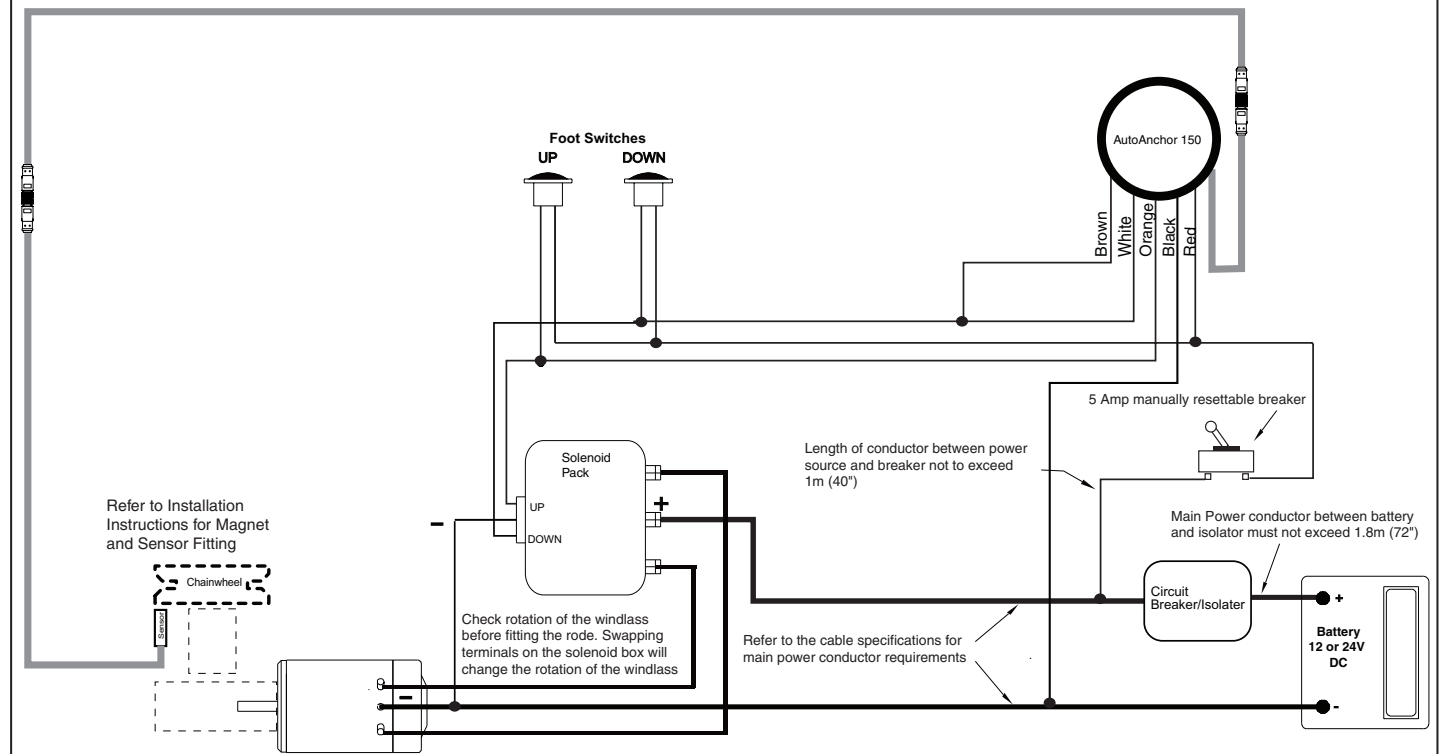
Power must be disconnected during installation and when making any changes to wiring after installation.

All installations must be carried out in accordance with USCG, ABYC, NMMA and BMEA requirements.

1. AutoAnchor Wiring Diagram AA150 2 Terminal Motors for Chain Only Windlasses



2. AutoAnchor Wiring Diagram AA150 3 Terminal Motors for Chain Only Windlasses



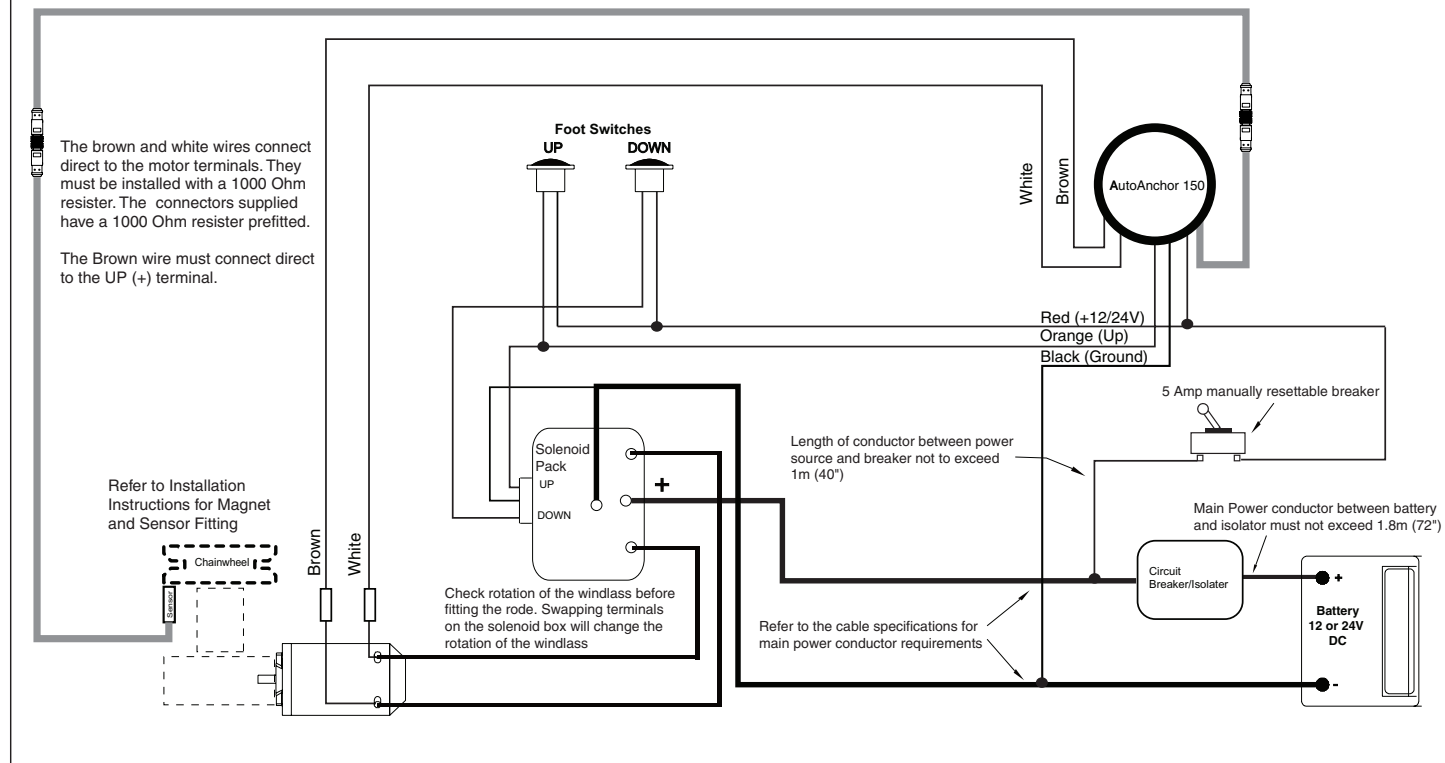
WIRING FOR ROPE & CHAIN WINDLASSES

Use the GREY 3 Wire AutoAnchor sensor (#9067)

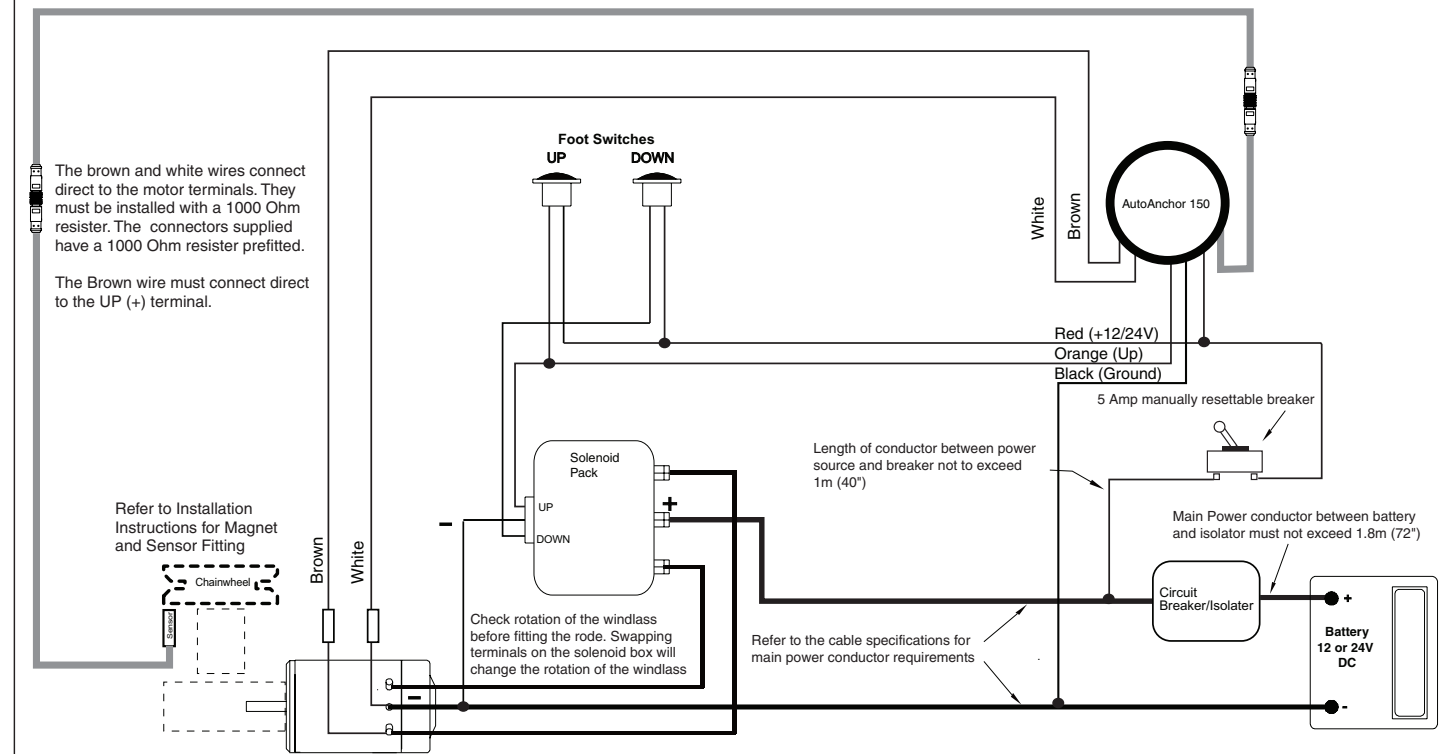
Contact your supplier for plug in sensor cable. See the Sensor Wiring Sheet for sensor connection options when not using plug-in cable. See Installation Instructions for cable specifications.

Power must be disconnected during installation and when making any changes to wiring after installation.
All installations must be carried out in accordance with USCG, ABYC, NMMA and BMEA requirements.

3. AutoAnchor Wiring Diagram AA150 2 Terminal Motor for Rope & Chain Windlasses



4. AutoAnchor Wiring Diagram AA150 3 Terminal Motors for Rope & Chain Windlasses

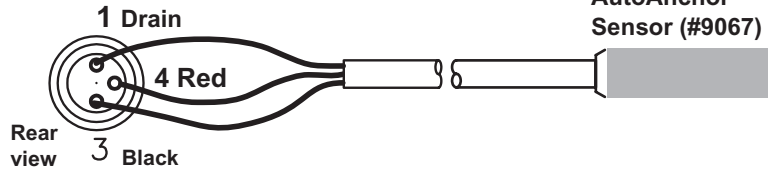
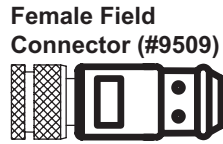


AutoAnchor Sensor Wiring - Use the Plug In Sensor Connector Cables

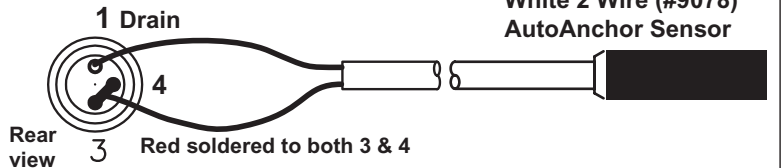
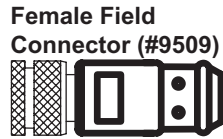
■ Field Connectors for Plug - Used if the sensor or console does not have plugs.

Grey 3 Wire AutoAnchor Sensor (#9067)

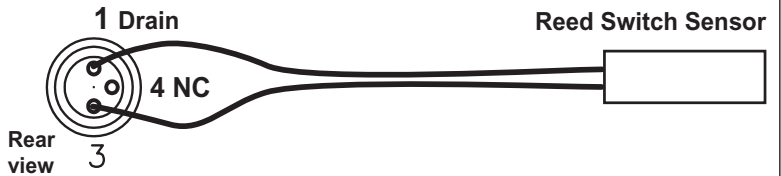
Suitable for Chain only or Combined Rope and Chain Rodes



Black 2 Wire (#9008) or White 2 Wire (#9078) AutoAnchor Sensor

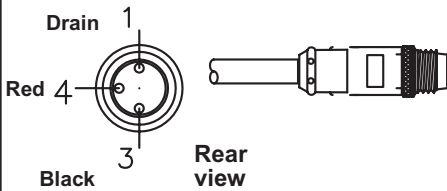


Reed Switch Sensor

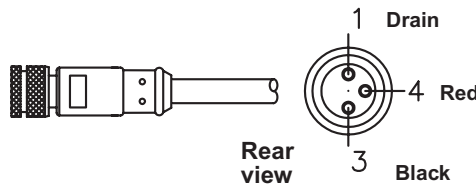


■ Sensor Cable Joins

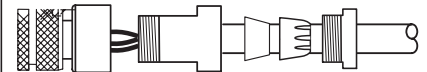
Male Field Connector #9507



Female Field Connector #9509



Exploded Field Connector Assembly Example

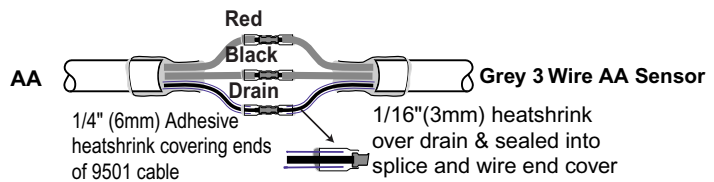


■ Cable Connections without Plugs

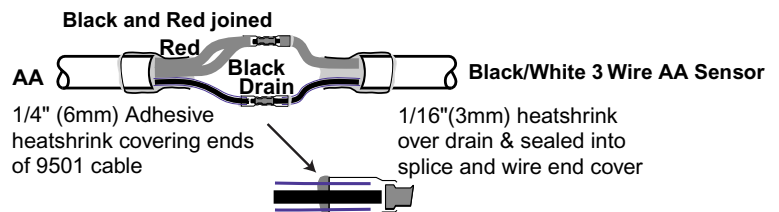
If the AutoAnchor plug in connectors are not used the cable joins must be solder spliced and sealed in heat shrink tubing. The entire splice must be water proof.

Sensor Cable Splice Using the Grey 3 Wire AutoAnchor Sensor (#9051)

Ensure all wires are matched and connected including the screen/drain wire. All connections must be made for the unit to operate.



Sensor Cable Splice Using the Black (#9008) or White (#9078) AutoAnchor Sensor



Sensor Cable Splice Using a Reed Switch Sensor

When connecting the reed switch sensor to the AA, the red wire is not connected.

