Computron Operation Guide

The optional Computron ATD, (an onboard software based computer system) is the only one of its kind installed on tournament towboats. The Computron's user friendly system allows the driver complete control of twelve (12) separate functions that are displayed in digital alpha-numeric format on the dash and actuated by either the steering wheel buttons (option) or switches on the accessory switch panel located on the dash. The Computron ATD system will also engage an automatic blower when the key switch is on and engine Rpm's are less than 1500. The Computron was available to Malibu's built prior to 1999.

The optional steering wheel control is equipped with remote function select buttons and a stop watch (not available on woodgrain steering wheel). The select buttons are infrared coupled to eliminate any wires or mechanical connections through the steering hub. While it might seem you are sitting in a high-tech aircraft cockpit, this unique software based computer allows the integration of a highly reliable and innovative system.

Computron ATD Control Panel (Figure 1)

This panel is located on the lower left side of your dash console next to the steering wheel, several function switches and controls have been added for its use with the Computron ATD.

Horn	This switch is used to sound the horn.
Function Up	This switch is used to change the current function of the Computron ATD system. This switch corresponds to the Function Up switch located on the steering wheel. Refer to the following sections on the use of this switch.
Function Down	This switch is also used to change the current function of the Computron ATD system and also corresponds to the same switch located on the steering wheel. Refer to the following sections on the use of this switch.
Alarm	This switch is used to turn off the Computron's audible alarm system. The Computron system has a depth gauge that, when set, will sound an audible alarm to signal that you are in waters that are at or below the minimum depth setting. If you will be operating your boat in shallow waters, you can use this switch to temporarily turn off the alarm.
Blower	This switch activates the blower for the engine compartment. The primary function of the blower is to eliminate any fumes in the motor compartment when starting the engine or during operation at cruising speeds.

Bilge Pump	The bilge pump switch is used to activate the bilge pump so that any excess water in the bilge area may be drained out. You should know that the bilge pump has a sensor in the bilge area and will turn on automatically whenever two inches or more of water is detected.
Stereo	This switch must be on for your stereo to have power. Please see the stereo's owner's manual for operating instructions.
Accessory	This switch is used to supply power to 12-volt accessory receptacle.
Navigational Lights	This switch activates all of your navigational lighting.
Anchor Light	This switch is used to activate the stern light. Keep this light on after dusk whenever your boat is at rest in the open waterway.
Interior Lights	This switch is used to activate the interior lights. The interior lights include lights in the gunnels, storage compartments, and dashboard.

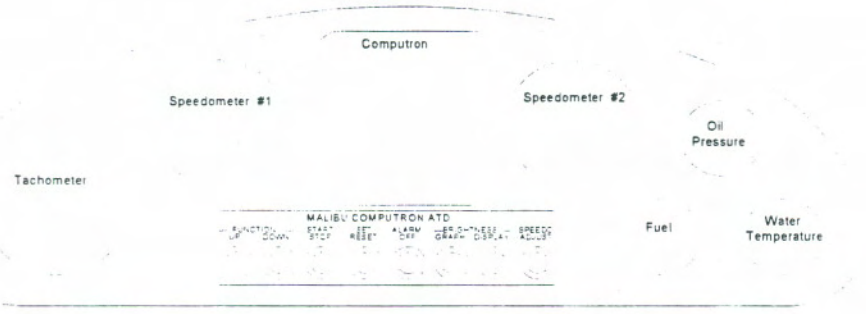


Figure 1 - Dashboard

Set/Reset Switch	This switch is used to set and reset certain functions with the Computron ATD system. This switch corresponds with the (SR) button located on the steering wheel.
Start/Stop Switch	This switch is used to start and stop certain functions of the Computron system. This switch corresponds with the (SS) button located on the steering wheel.
Graph Brightness Knob	This knob allows the driver to change the brightness of the digital speed analyzer graph display.
Display Brightness Knob	This knob allows the driver to change the brightness of the digital function display located below the graphic speed analyzer graph. In the Computron ATD's "Demo" mode, this knob is used to vary the readings for the digital tachometer and speedometer.
Speedometer Adjustment	This knob allows for the adjustment of the Computron's digital speedometer.
12-Volt Receptacle	This receptacle uses a standard cigarette lighter type adapter and can be used to plug-in cellular phones, video cameras, etc.

Computron Display Module (Figure 1)

This module is located at the top center of the Echelon dash board and is the main display for the Computron ATD system. The display module is broken into two separate sections.

Speed Control Graph	This portion of the Computron display module is used to assist the driver in maintaining desired skiing speeds. This display consists of three green lights in the center surrounded by several red lights. Using the Computron's "Set Speed" function, the driver is able to set a desired speed. If the speed of the boat is the same as the set speed, the green lights will be illuminated. If the speed of the boat is slower than the set speed, the red lights to the left of the green ones will begin to light up. If the speed is faster than set speed the red lights to the right of the green ones will be illuminated.
Function Display	The middle and bottom portions of the Computron display module is used to assist the driver in displaying and setting the Computron's different functions. The following sections will discuss the setting and use of the different functions of the Computron ATD system.

Computron ATD Operation

The Computron ATD system provides several valuable functions that provide additional benefits for enjoyment of your new Malibu Boat. Complete control of the Computron ATD system is performed with the use of only four buttons located on the center panel of the optional steering wheel control.

Function Up — This button is used to scroll forward through the available functions of the Computron ATD system. During the setting of certain functions, it is used to increase the value of a setting.

Function Down — This button is used to scroll backward through the available functions. During the setting of certain functions, this button is used to decrease the value of a setting.

Set/Reset — This button is used during certain operations to set or reset a setting for a particular function.

Start/Stop — This button is only used to start and stop the digital stopwatch function.

Note: *These four buttons have corresponding switches located on the control panel. These separate switches are provided in the event that the 9-volt battery located behind the steering panel should lose power during a competition.*

Available Functions

The Computron ATD system provides the driver with complete control over 12 separate functions. The Computron ATD's functions include the following in order of display mode:

Banner — This function causes the Computron system to display the text "CUSTOM BUILT FOR YOUR NAME" when power to the boat is provided. You can change the display of "YOUR NAME" to any 12 digit alpha-numeric characters. To do so, press and HOLD the **(SS)** button while the banner is displayed. The Computron system will acknowledge that you wish to change the display by displaying "LET GO". At this time simply release the **(SS)** button. This will place the Computron system in "Edit" mode. Once in the "Edit" mode, press the **(F⇑)** to scroll the display forward from A to Z, 0 to 9, and then a blank space. Press the **(F⇓)** button to scroll the display backward from a blank space, 9 to 0, and then A to Z. Pressing the **(SR)** button will move to the next character in the display to allow editing. Pressing the **(SS)** button will save your changes and exit the "Edit" mode. Pressing the **Alarm Off** switch will discard your changes and exit "Edit" mode. To reset the display to "YOUR NAME" simply press and hold both the **(SR)** and **(F⇑)** buttons while turning the ignition switch from the "Off" position to the "Accessory" position. The Computron system

will acknowledge that you wish to change the display to "YOUR NAME" by displaying "LET GO".

Depth Meter This function provides a digital readout of the water's current depth.

Sea Temperature This function provides a digital display of the temperature of the water surrounding your boat.

Air Temperature This function provides a display of the temperature of the air.

Digital Clock This function provides a display of the current time. To set the clock, press the **(SR)** button. The display will begin to blink. Once it is blinking, use the **(F⇑)** button to change the hours and press the **(F⇓)** button to change the minutes. Once time is set correctly, press the **(SR)** button to save your changes. The display will then stop blinking and the clock has been set.

Voltmeter This function displays a digital readout of the battery's voltage. The voltmeter indicates whether the battery is charging or discharging. The display should read approximately fourteen volts while the engine is running.

Engine Hours The engine hours display acts as an odometer for the engine. Engine hours should always be noted so maintenance an lubricant changes may be performed at proper intervals.

Trip Log This function displays and allows the reset of the Computron's mileage trip log. To reset the trip log, press the **(SR)** button.

Set Depth Alarm This function allows for the setting of the Computron ATD's depth alarm. This function is used to enable an audible alarm that will sound if your boat has ventured into waters that are at or below the depth that has been set. To change the depth alarm, press the **(SR)** button to enter edit mode. The display will begin to blink. Use the **(F⇑)** and **(F⇓)** buttons to change the desired depth. You may enter a range between 3' and 20'. A setting of "- - - -" will disable the alarm altogether. When finished, press the **(SR)** button to save your changes.

Note: *An "Alarm" on/off switch is located on the Echelon's control panel. This switch provides you with the ability to temporarily disable the audible alarm for the depth meter if you will be operating your boat in shallow waters for a short period of time.*

Tachometer
R.P.M.'s.

This function will display a digital readout of the engines current

Set Speed

This function provides the driver with the ability to set a desired speed for the boat. This function works in conjunction with the graphic speed analyzer display discussed earlier. To change the desired speed setting, press the **(SR)** button. The display will begin to blink. Use the **(F⇑)** and **(F⇓)** buttons to change the desired speed setting. When finished, press the **(SR)** button to save your changes.

Speedometer

This function will present a digital readout of the boat's current speed. Adjustment of the speed can be performed using the adjustment knob located on the control panel.

Stop Watch

This function provides competition level skiers with a ten segment digital stopwatch. To use the stopwatch function, press the **(SR)** button to reset the stopwatch to zero. When ready, press the **(SS)** button to begin the timer on the first segment. Press the **(SS)** again to start timing the second segment. You can time up to ten segments by pressing the **(SS)** button for each segment. Pressing the **(SR)** button will stop timing the tenth segment and will place the stop watch in "Review" mode. While in "Review" mode, pressing the **(F⇑)** and **(F⇓)** buttons will allow you to scroll through each of the ten segments. Note that the stop watch will continue to operate at all times while viewing or changing other functions and can be stopped at any time by pressing the **(SS)** button. However, the stopwatch can only be reset to zero when in the stopwatch function.

Demo Mode

This function is provided to allow dealers and owners to demonstrate the functions of the Computron ATD system while the boat is out of the water. To start the "Demo" mode, simply press and hold the **(F⇑)** and **(F⇓)** switches on the Ignition Control Panel while turning the ignition switch from the "Off" position to the "Accessory" position. Please note that the **(F⇑)** and **(F⇓)** buttons on the steering wheel panel cannot be used to place the Computron system into the "Demo" mode. The Computron display will acknowledge that you want to enter the demo mode by displaying "LET GO". At this time simply release the **(F⇑)** and **(F⇓)** buttons. All functions on the Computron ATD system are available with the following exceptions:

1. The depth meter is fixed at 15 Feet.

Computron Software

- 93. . 2 Used in 93 - 94 model years. 93. . 2 was the final software upgrade for the standard computer system. 93. . 2 is used on carburetor engines only. 93. . 2 will only work in the standard computer, the latest revision was the (Rev-J) computer.

- 94-Pres B Used in 94 model year on EFI engines only. 94 Pres. B gave us the capability to get the Tac. Signal and fuel flow information from the ECM on the engine. 94Pres B will only work in the EFI computer (93 ½ EFI and 95 EFI) 94 Pres. B did not have the capability to display EFI Fault Codes.

- 95 EFI Used in 94 - 95 model years on EFI engines only. 95 EFI will work in all EFI computers using the Uniforce Depth system. 95 EFI was installed primarily in 95 EFI computers. 95 EFI gave us the capability to display the ECM Fault codes as well as the fuel flow information.

- ML96EFI Used in 96 - 97 model years with the new Computron 2 computer. ML96EFI is the same basic software as the 95 EFI, except for the depth part of the system. The ML stands for Merc/Lowrance. This software only works with the Computron 2 and the Computron 2 + computers with the Lowrance depth system.

- ML96Carb Used in 96 - 97 model years on carburetor engines with the new Computron 2+ computer. Works only with the Lowrance depth system.

- IL96EFI This is a new program that's the same as ML96EFI except for the fuel flow information. This software allows us to display the correct fuel flow data for the Monsoon engine.

Computers

- Standard Computer (Rev-J) Used on Carburetor engines with 93. .2 software.

- 93 ½ EFI Computer Used on early EFI systems. Will except 94 Pres. B and 95 EFI software. Will only work with the Uniforce depth system.

- 95 EFI Computer Will only accept 95 EFI software and used only with Uniforce Depth system.

- Computron 2 will accept all EFI software cards (95 EFI, ML96EFI and IL96EFI) Works with both depth systems.

- Computron 2+ will accept all EFI software as well as the ML96Carb software. Works with both depth systems.

Fault Diagnosis Guide

This guide is an easy reference guide to the more common faults which may occur during the operation of the Echelon's Computron ATD system. Included in this guide are detailed instructions on how to diagnose and correct these faults, diagrams of the components that make up the Computron ATD system, and detailed instructions on how to replace the components of the system.

Because of the Computron's modular design, the easiest method to diagnose problems is to replace suspect components with known good components until the problem is resolved. The faulty component can then be returned to Malibu for replacement.

Problem	Solution
DISPLAY SHOWS "----" WHEN USING DEPTH METER	1. This is normal if the boat is operating in water deeper than 100' or if the boat is out of the water altogether. The depth meter will not read over 100'. (well..150' on a good day) 2. If the display still shows "- - - -" then you could have a blown in-line fuse (10 Amp) at the battery. Check the fuse first!!! 3. Refer to the "Depth meter circuit diagnosis flow chart".
DEPTH ALARM SOUNDS WHEN IN WATER OVER 100' DEEP.	1. This is normal when the boat is in water deeper than 100'. The Computron ATD's depth meter is accurate up to a depth of 100'. Any deeper than this and the transducer cannot receive the signal. This will cause the computer to reset and look for something else, such as, fish, trash, and thermoclines possibly causing the depth alarm to trigger. To prevent this, Turn the depth alarm off.
DISPLAY SHOWS "CUSTOM BUILT FOR" MESSAGE WHILE THE ENGINE IS RUNNING.	1. This problem is usually caused by a drop in voltage in the electrical system of the boat. The computer is designed to sense a drop of voltage which, of course, occurs when the ignition is being turned off. When the computer senses this drop in voltage, it initiates a routine that allows it to permanently store certain crucial information (i.e. engine hours). When the voltage level is restored, the computer begins its normal start-up routine which begins with displaying the message above. a) The most common occurrence of this can be found on boats equipped with heaters. Turning on the heater sometimes causes such a voltage drop and will trigger the computer's shutdown and subsequently its start-up routine. This can be corrected by connecting the power and ground wires from the heater switch directly to the battery. b) For the same reasons as above, this fault has also been known to occur in some boats equipped with defective coils that have a high voltage spike problem. Check for this situation by unplugging the Tachometer Wire (Gray) from the 12-Pin

Problem	Solution
	plug located on the computer (See Figure 2 & 3). If this corrects the problem, you can either replace the coil or install a new computer (Rev. I or later). The newer computers incorporate a "low pass" filter to keep the spikes from causing a problem.
COMPUTER RANDOMLY CHANGES FUNCTIONS ON ITS OWN	1. Check to see if any of the function buttons on the steering wheel or on the dashboard panel are stuck or hung up. 2. Check the wires that run from the I/R receiver to the harness under the dash. Make sure that these wires have secure connections and that they are in their proper position (See Wiring Schematic #34038SH2). 3. If the problem is not stuck buttons, then it is probably the I/R receiver located under the steering wheel. See the attached instructions on how to replace this unit.
CANNOT CHANGE FUNCTIONS FROM THE STEERING WHEEL.	1. Check and replace the 9-Volt battery located behind the steering wheel panel. 2. Check the wires for proper connection under the dash and at the receiver. 3. Replace the transmitter with one you know works. 4. Replace the receiver and/or the wires from the harness to the receiver. 5. Try the test receiver you should have. Plug in to the harness under the dash, then point the transmitter at the receiver under the dash and see if it works. If you change the receiver and it still won't work, try this test. Unplug the receiver at the helm. With the red plug for the receiver and the, test the red wire for power (key on) and test the black for ground with a small jumper wire jump across from ground to: Gray/blue...start/stop. Gray/red....set/reset. Blue.....function up. Green.....function down. 6. If jumping across makes the functions work, it indicates that the rest of the system is working and you need a receiver or a transmitter.
COMPUTER WILL NOT CHANGE FUNCTIONS AT ALL	1. If neither set of function buttons work, then check the wires located on the 15-Pin plug on the computer (See Figure 2 & 3). Make sure that all wires are securely in place and that they are in the correct positions. 2. You could have a faulty I/R receiver or faulty I/R receiver wiring. Disconnect the I/R receiver wires located under the dash. If you can then change functions, you need to replace the I/R receiver (See Instructions). 3. Check switch connections and grounds.

Problem	Solution
COMPUTER COMES ON AND DISPLAYS "LET GO"	1. The most common cause of this problem is simply a stuck function button. Check that all function buttons are not stuck or getting hung up. 2. You could have a faulty I/R receiver. To check, disconnect the I/R receiver wires under the dash. If the display is O.K. after turning on the power, you need to replace the I/R receiver (See Instructions). 3. Unplug the remote stopwatch from the circuit breaker panel, it is a 1/4 inch stereo jack plug and the wires run around the back of the boat to the stopwatch switch on the passenger side. The plug, switch or wires could be shorted.
DISPLAY SHOWS "0" WHEN TURNED ON	1. This typically indicates a dirty or damaged software card. To clean the contacts on the software card, do the following: a) Remove the software card from the computer. b) Use a #2 pencil's eraser to clean the edge connector contacts on both sides of the card. Also, blow any dust off of both the card and the card's slot inside the computer. If after doing the above, the display still reads "0", you will need to replace the software card. If replacing the software card does not take care of the problem, you will need to replace the Computron's display and/or computer. 2. You should have a test display in stock, hook up the display to the computer under the dash, if the display works, put that one in and call for a new one.
DIGITAL SPEED GRAPH DOES NOT WORK	1. Check to see if the speedo is working. 2. The most common reason for this is that the user has turned the "Brightness Display" knob all the way to the left (Off). If this is not the case, replace the computer. If replacing the computer does not solve the problem, replace the display module.
COMPUTER IS NOT LOGGING ENGINE HOURS	1. Check EFI data line wire. 2. Check to see that all of the "Dip Switches" on the computer are pointing down toward the numbers. 3. Check the operation of the digital tachometer. If the digital tachometer is not working, check the Tachometer wire (Gray) located on the 15-Pin plug on the computer (See Figure 2 & 3). Make sure this wire is properly connected and in the correct position. Also, check the white plug located at the gauge panel. Make sure the gray wire is plugged in. 4. If the dip switches are correct and the digital tachometer is working correctly then replace the computer. 5. If you have an EFI system, check data link wire from the E.C.M.
ENGINE HOURS JUMPS	1. Replace the computer. Tell us how many hours the boat should have.

Problem	Solution
UP ON STANDARD SYSTEM	
CLOCK RESETS TO 12:00 WHEN KEY TURNED OFF - DEAD BATTERY	1. The computer contains a small nickel cadmium battery that keeps power to the clock functions when the power to the computer is turned off. To correct this situation, replace the computer. Tell us how many hours the new computer should have.
DISPLAY SHOWS "LINE SHORTED" ON THE AIR/SEA TEMP DISPLAY	1. Replace the Air/Sea Temperature Probe. See the attached instructions on how to do this.
DISPLAY SHOWS "LINE OPEN" ON THE AIR/SEA TEMP DISPLAY	1. The most common cause of this problem is a loose wire at the one of the plugs located on the computer or on the Bilge Harness plug (See Figure 2, 3 and Wiring Schematic #34038SH2).
BLOWER NOT COMING ON WHEN KEY IS IN IGNITION POSITION BUT WORKS FROM SWITCH.	1. Check for power at the 12-Pin plug, yellow wire at the computer. If no power with key on replace computer. 2. If you have power from the computer, check for continuity from the computer to the yellow wire on the Bilge Harness Plug. 3. Check connections and continuity at the diode.

I/R RECEIVER REPLACEMENT

1. Pull off the I/R transmitter from the front of the steering wheel.
2. You will then see a 15/16 nut in the center of the wheel. loosen the nut and back it off to the end of the shaft. You need to hit the nut (not the shaft) with a hammer. Pull out on the wheel with one hand and use your knees to pull on the bottom part of the wheel at the same time you hit the nut with a hammer. You may have to hit it a few times to get the wheel to come loose. Once you get the wheel off you can see the hole receiver.
3. Remove the two Phillips screws from the outside part of the receiver housing. (There are spacer washers on the in side of the housing that will fall out when you remove the screws. Save them, you will need to put them back in with the new receiver.)
   4. Pull the receiver off toward you and unplug the red plug from the bottom of the receiver. Plug in your new receiver and set it back on the helm.
4. At this point, test the receiver. Turn the key to Acc. and point the back of the transmitter at the receiver and try all functions. If the same function still will not work, replace the wires that run down from the receiver to the main harness under the dash. If all functions work line the holes up on the helm and receiver. Put the spacers in and replace screws.

DISPLAY MODULE REPLACEMENT

1. To replace the display module, you must first go under the dash and unplug the 7-Pin white plug that comes down from the instrument panel and goes to the control panel. You might also need to cut some wire ties to get slack in the speedo tubes.
2. Next, cover the lower part of the dash with masking tape or duct tape to protect the vinyl from sharp edges or getting poked during removal.
3. Remove all of the hex-head screws from the right side of the panel. Stick a small screwdriver in the hole and pull the panel out so you can get your fingers behind the panel with your right hand. With your left hand, grasp the display and slide the whole panel to the right about one inch, then the panel should come out toward you. Reach in and unplug the display cord.
4. Now, you should be able to get to the four 11/32" nuts that secure the display to the dash panel. Remove the nuts and washers then remove the old display. Gently insert the new display into the panel, it is a very tight fit. Once you get the display in place, secure with the washers and nuts. Caution: Don't over tighten the nuts or you will break the studs off of the panel.
5. Now hook up the display cord and panel plug under the dash then check to see if the display works right. If not, replace the cord that runs from the display down to the computer. Check again, if all works well then put the panel back in place and secure with the hex-head screws. Replace all wire ties under the dash that were cut.

SEA TEMP PROBE REPLACEMENT

1. To remove the old probe, chip off the epoxy around the probe with a chisel or screwdriver. Then go under the boat with a small screwdriver or punch and a hammer and push the probe up.
2. The new probes we are using now have long wires so we can make the connection up under the dash and not in the bilge. Run the wires under the floor and up to the bilge harness plug. You will need to unplug

both plugs the big black molded plug and the white bilge harness plug, remove the wire ties and pull back the plastic loom so you can see and have room to work on the wires running into the bilge harness plug. On the later harness there is a crimped connector for the common wire, splice your new common in there. Remove the pin from the plug that runs down to the sea temp (on the older boats common is silver speaker wire and copper is the one that runs air or sea temp). On the later harness the common is black and sea temp is white with a green stripe. Plug it all back in an make sure it works.

3. Now you can mix up some marine epoxy and apply it to the probe all the way around the bottom part of the probe. Don't get epoxy on the tip of the probe that is going to stick out. Make sure to get enough epoxy on so it cannot leak.

R/T DEPTH MODULE INSTALLATION

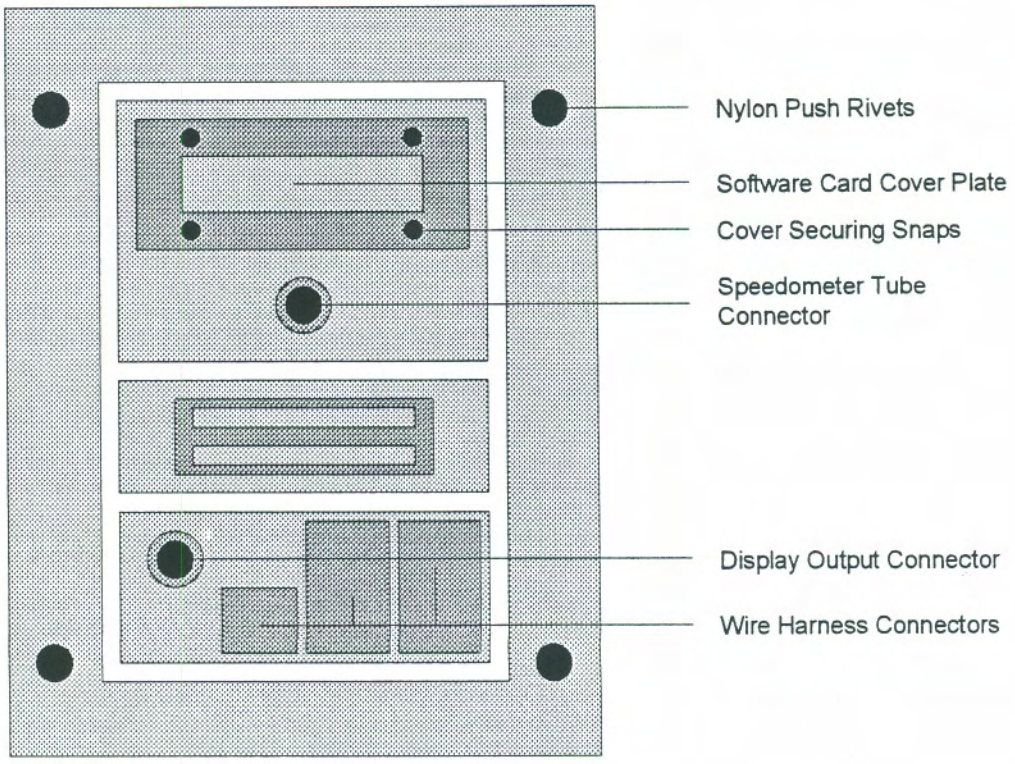
1. Locate the "R/T Depth Module" (See Figure 4) which is located just to the left of the "Computer Module" on the Echelon LX and in the center of the bow at the top of the bulkhead which routes the cables from the dash to the bilge on the Echelon "Closed Bow" models.
2. After locating the depth module, you will need to remove the two cables that are connected. Remove the smaller "Barrel Connector" cable by turning the outside ring of the connector a 1/4 turn while pushing in slightly. Next, remove the "Canon Plug Connector" by turning the outer ring a 1/2 turn to the left and slide off the cable.
3. Using your #2 phillips screwdriver, remove the four mounting screws.
4. Place the new "R/T Depth Module" in the same location as the one just removed and secure it with the same four mounting screws.
5. Replace the cables. Note that there are grooves both on the cable's connector and on the receptacle on the R/T module. You must line up the grooves to make the cable go in.

SOFTWARE CARD INSTALLATION, RESET AND REBOOT

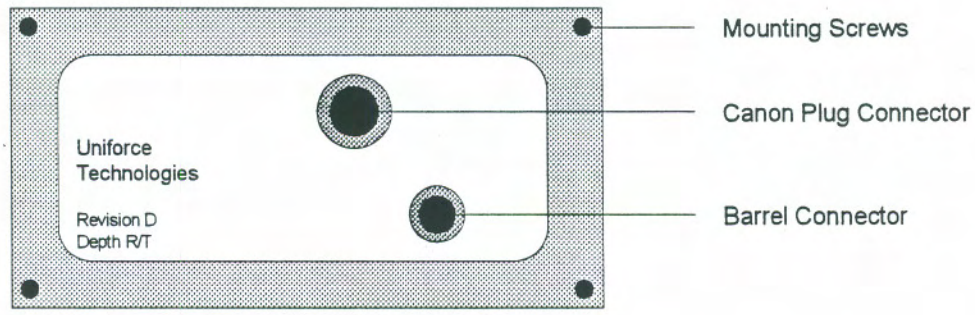
1. Disconnect the battery.
2. Tilt the steering wheel as far up as possible.
3. Slide the driver's seat as far back as possible.
4. Locate the "Computer Module" (Figure 4) which is located under the dash on the left side of the driver's foot well.
5. Remove the "software card cover plate" by pulling on the four "cover securing snaps"
6. After removing the cover, you will see a small circuit board with a small plastic colored tab attached at the top. Grasp this handle with your fingers and pull firmly outward. While removing, notice the small plastic guides that are used to support the software card and to guide it securely into its position.
7. Firmly insert the new software card into the slot where the old card was located. Be sure to place the card between the plastic guides. Also, the microchip on the card should be facing toward the "speedometer tube connector." You should feel a light snap as the card is seated in the connector.
8. Replace the cover. Push the "cover securing snaps" until you feel a light snap and the cover is secure.

Now that the new software card is in place, the new software program will need to be loaded into the computer's memory. To do this, begin with the ignition switch in the "Off" position. Press and hold the "Set/Reset" and "Function Up" buttons on the ignition control panel while turning the ignition switch to the

"Accessory" position. Upon doing so, the display on the Computron ATD system will display "LET GO." At this point, simply release the "Set/Reset" and "Function Up" buttons. The new program has been loaded and you can now proceed to enter your name into the Computron ATD system. Instructions for doing this can be found in the "Computron ATD Operations Guide" found on previous pages of this guide.



Computer Module



R/T Depth Module

Figure 4 - Computer and R/T Depth Module

Tools Required:
*R/T box
*Depth Simulator
*Transducer
*Test light
* Ohm meter

DEPTH METER CIRCUIT DIAGNOSIS

Check fuse in battery box

Fuse Blown

Possible cause:
Short in transducer cable or at BNC connector at R/T box.If the transducer coax has shorted, the R/T box is fried.
Solution: Do test A
*Replace BNC connector
*Replace R/T box
*Replace fuse

TEST A

Check for short with ohm meter set at lowest setting,touch one test lead to the center copper conductor in the BNC connector. touch the other test lead to the outer metal part of the connector.
Should be open/no continuity
note: If short is intermittent you might have to wiggle the connector to simulate short.

- Short
  - Replace BNC connector. Call Malibu for a kit.
  - Retest
    - Short
      - Bad BNC installation or bad transducer
    - No short
      - Replace R/T box
        Replace fuse
        Do test B or C
- No Short
  - Find open in red wire from battery to R/T box.
    Note: On the open bow it is possible that a connector in the harness under the floor came apart If so, you will have to run a new wire from the fuse to the R/T box.

Fuse OK

Turn key on Acc. "to the left" for rest of test

If you have a depth simulator,skip test B and do test C.

Test B with test light

Test for power at the R/T canon plug. Probe pins #1 & #6. (see figure C)

- No power pin #1 Red
  - Recheck fuse at battery box. Probe both sides of fuse with test light.
- No power pin #6 purple
  - Is key on? Power comes from the Acc. side of the ignition switch. Find open. Check bilge harness connector.(figure C)
- OK Power on pins #1 & #6. Do test D. Continuity to computer

DEPTH METER CIRCUIT DIAGNOSIS CONT.

Fuse OK

Key on Acc.

TEST C
WITH DEPTH SIMULATOR

Unhook canon plug from R/T box & plug into depth simulator

Dash display should show approx. 30' if **all** wiring & computer components are OK. The only thing left to suspect would be the R/T box, the transducer or the blower causing problems

- No depth
  - No lights on the simulator
    - Do test B
  - Both lights on the simulator OK and still no depth. Do test D.
- Simulated depth OK and have found no problems yet. Do test E & water test.

TEST D
R/T continuity to computer

With ohm meter check for continuity between R/T canon plug & the 12 pin plug on the computer. Check blue & white wires (see figures A & C).

- No continuity on blue or white
  - Find open on blue & white wires from computer to R/T box. Check at bilge harness connector. (see figure C)
- OK. Reconnect simulator.. Both lights on
  - With simulator still no depth/ replace computer
  - Depth OK, shows 30'. Do water test.

DEPTH METER CIRCUIT DIAGNOSIS CONT.

ON WATER TEST

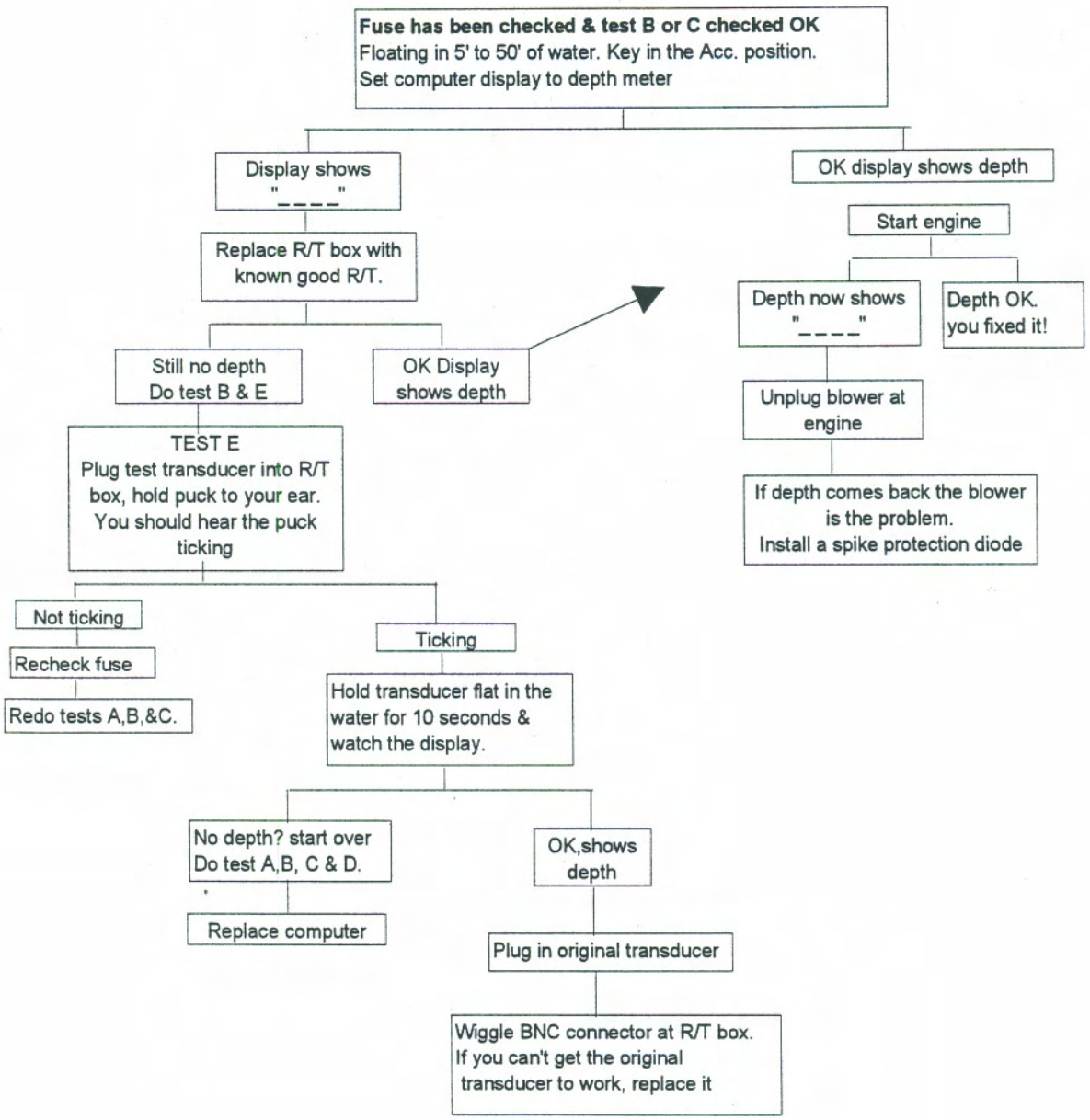
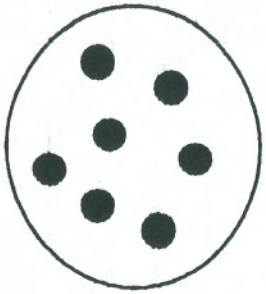
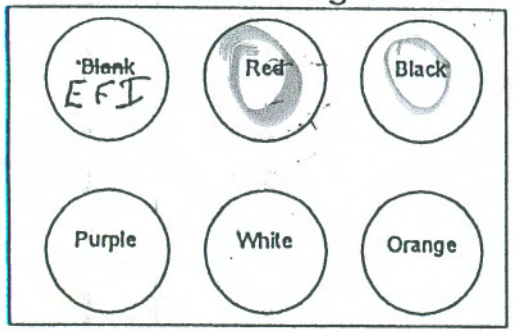


FIGURE A - COMPUTER WIRE HARNESS CONNECTIONS

Display Output



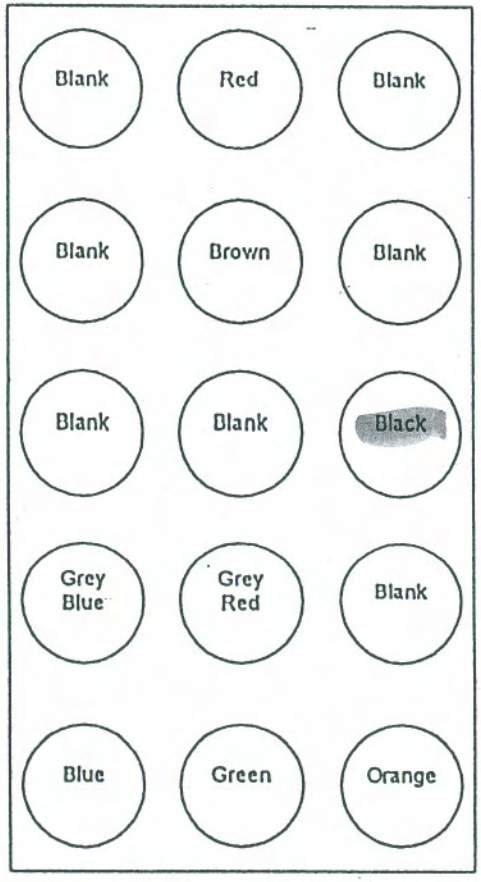
EFI Data Link
orange/Black
↓
6 Pin Plug



RED - Power for Display
BLACK - Ground for Display
PURPLE - Display Dim
WHITE - Speed Adjust
ORANGE - Graph

RED - Alarm Power
BROWN - Alarm Off
BLACK - Ground
GRAY/BLUE - Start/Stop
GRAY/RED - Set/Reset

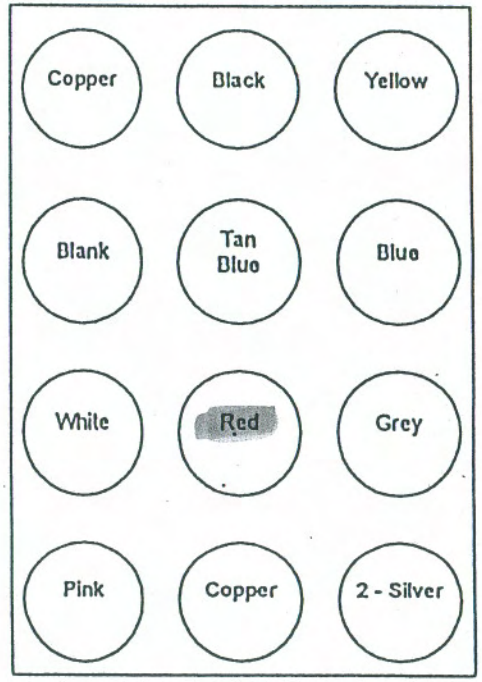
15 Pin Plug



BLUE - Function Up
GREEN - Function Down
ORANGE - Blower In

2 COPPER WIRES - Air & Sea Temp white/Green
2 SILVER WIRES - Ground for Air/Sea Temp. Black
BLACK - Blower ground
YELLOW - Blower power from computer
TAN/BLUE - Merc alarm/Check engine display

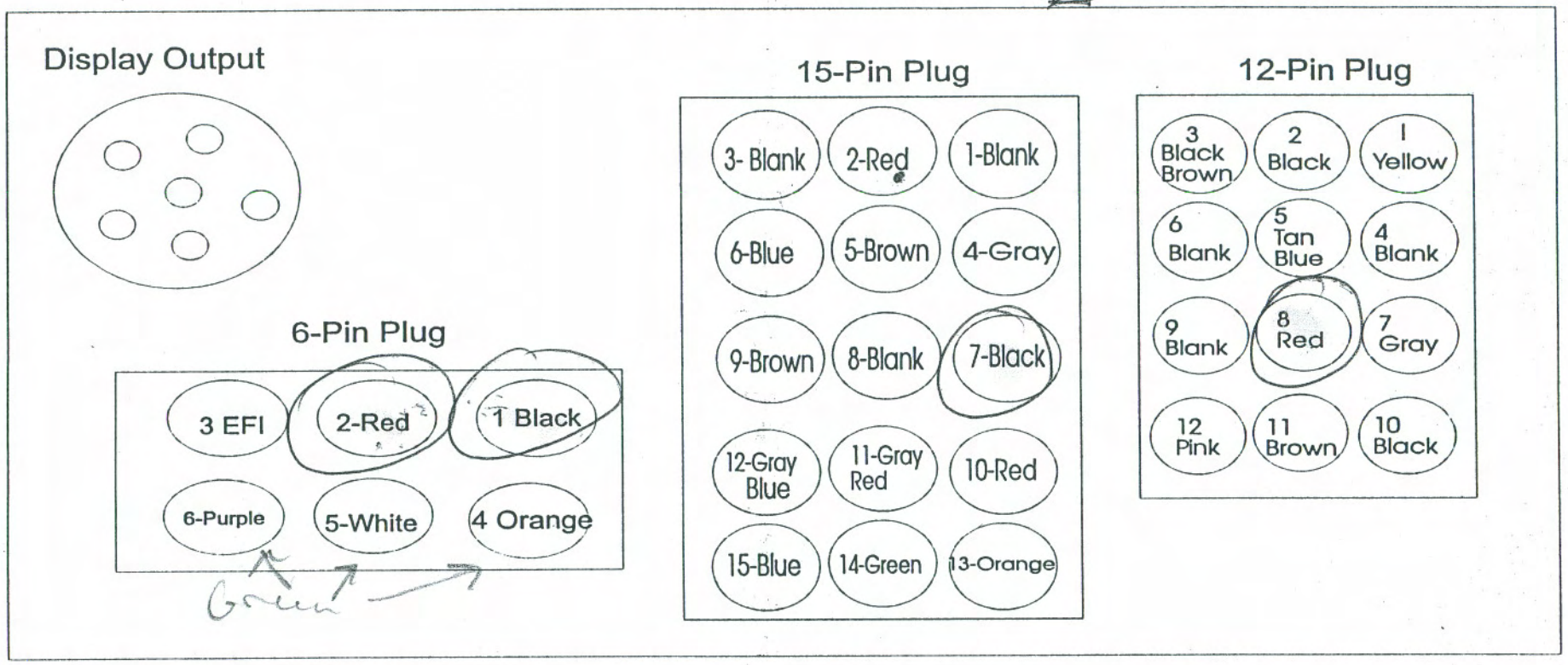
12 Pin Plug



BLUE - Depth Receive
WHITE - Depth Transmit
RED - Computer power from ignition
GRAY - Tach Sender
PINK - Fuel Sender

Figure A-2

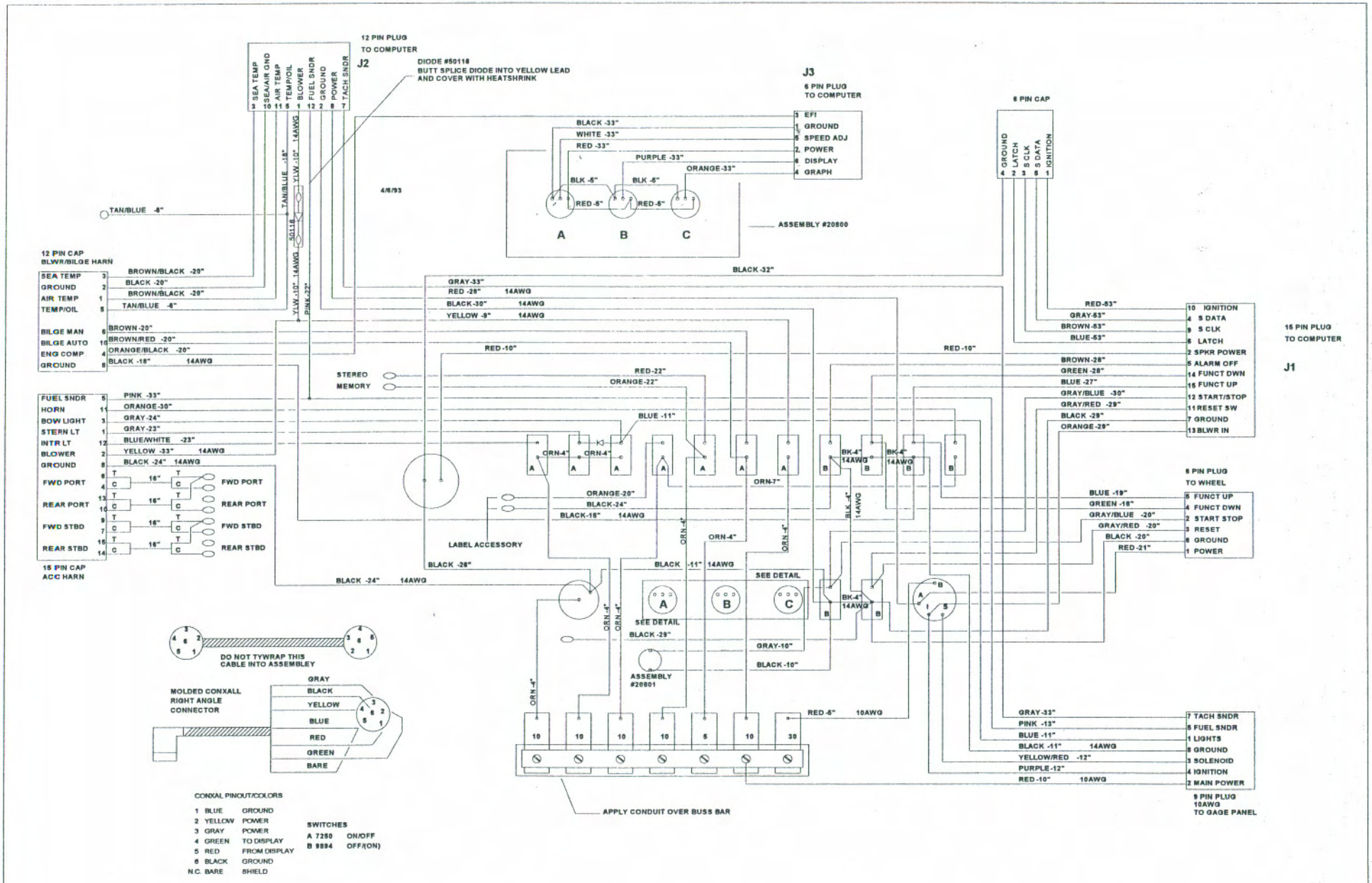
Computer Conectoins
'96 EFI/Lowrance



Pin	Color	Discription
1-	Black	Display Ground
2-	Red	Display Power
3-	Orange/Black	EFI Data (ECM)
4-	Purple	Display Dino
5-	White	Speedo Adjustment
6-	Orange	Speed Graph

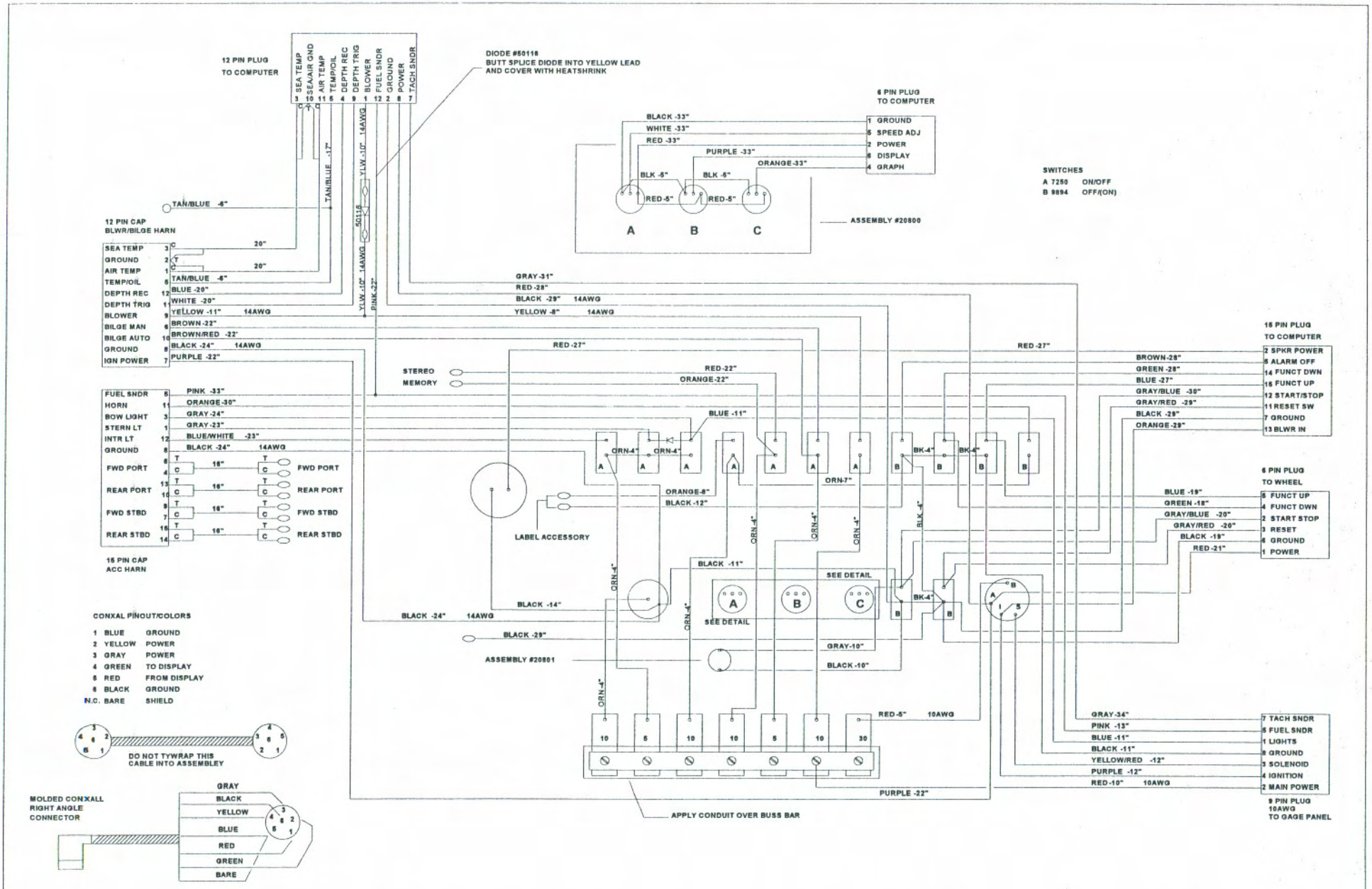
Pin	Color	Discription
2-	Red	Alarm Power
4-	Gray	Sonar Data
5-	Brown	Alarm Off
6-	Blue	Sonar Lock
7-	Black	Ground
9-	Brown	Sonar Clock
10-	Red	Sonar Power
11-	Gray/Red	Set-Reset
12	Gray/Blue	Start-Stop
13-	Orange	Blower Power In
14-	Green	Funtion Down
15-	Blue	Funtion Up

Pin	Color	Discription
1-	Yellow	Blower Power From Computer
2-	Black	Blower Ground
3-	Brown/Black	Sea Temp.
5-	Tan/Blue	Merc. Alarm From ECM.
7-	Gray	Tack Sender
8-	Red	Computer Power From
10-	Black	Air/Sea Temp Ground
11-	Brown/Black	Air Temp
12-	Pink	Not Used

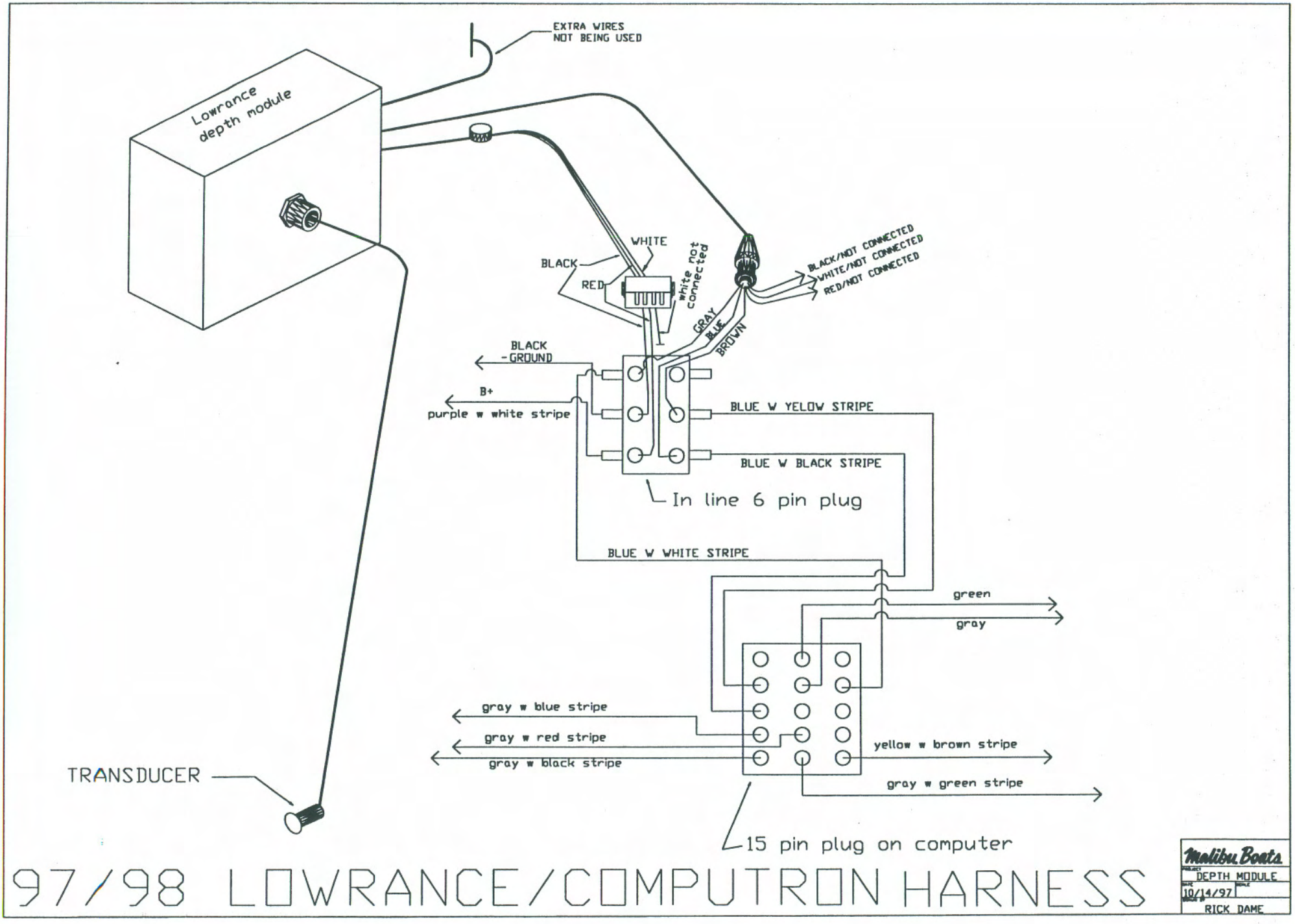


#33742SH2 - Echelon Ignition Control Panel 96/Lowrance

97 EFI DL

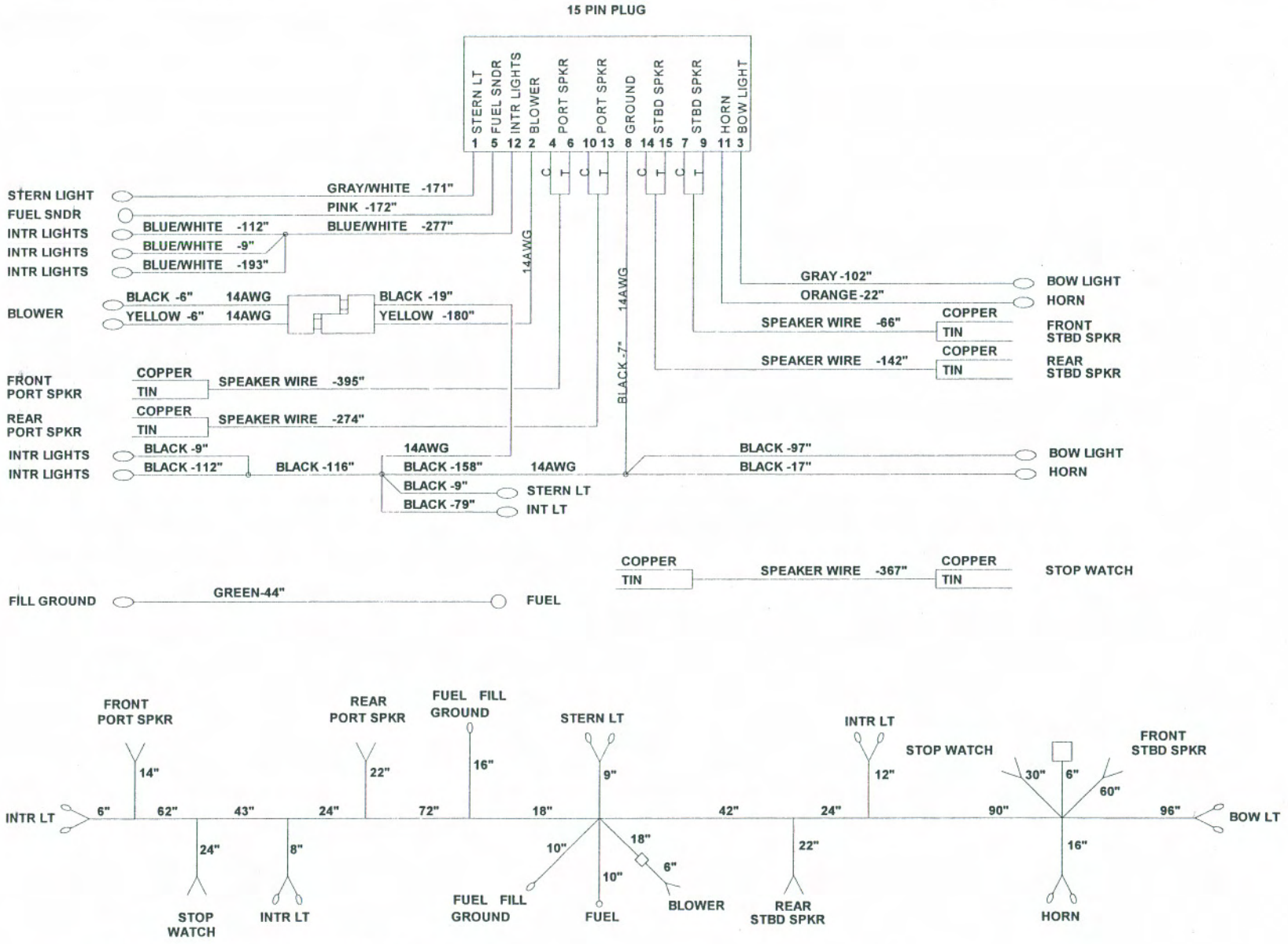


#34038SH2 - Echelon Ignition Control Panel/Circuit Breakers & Switches



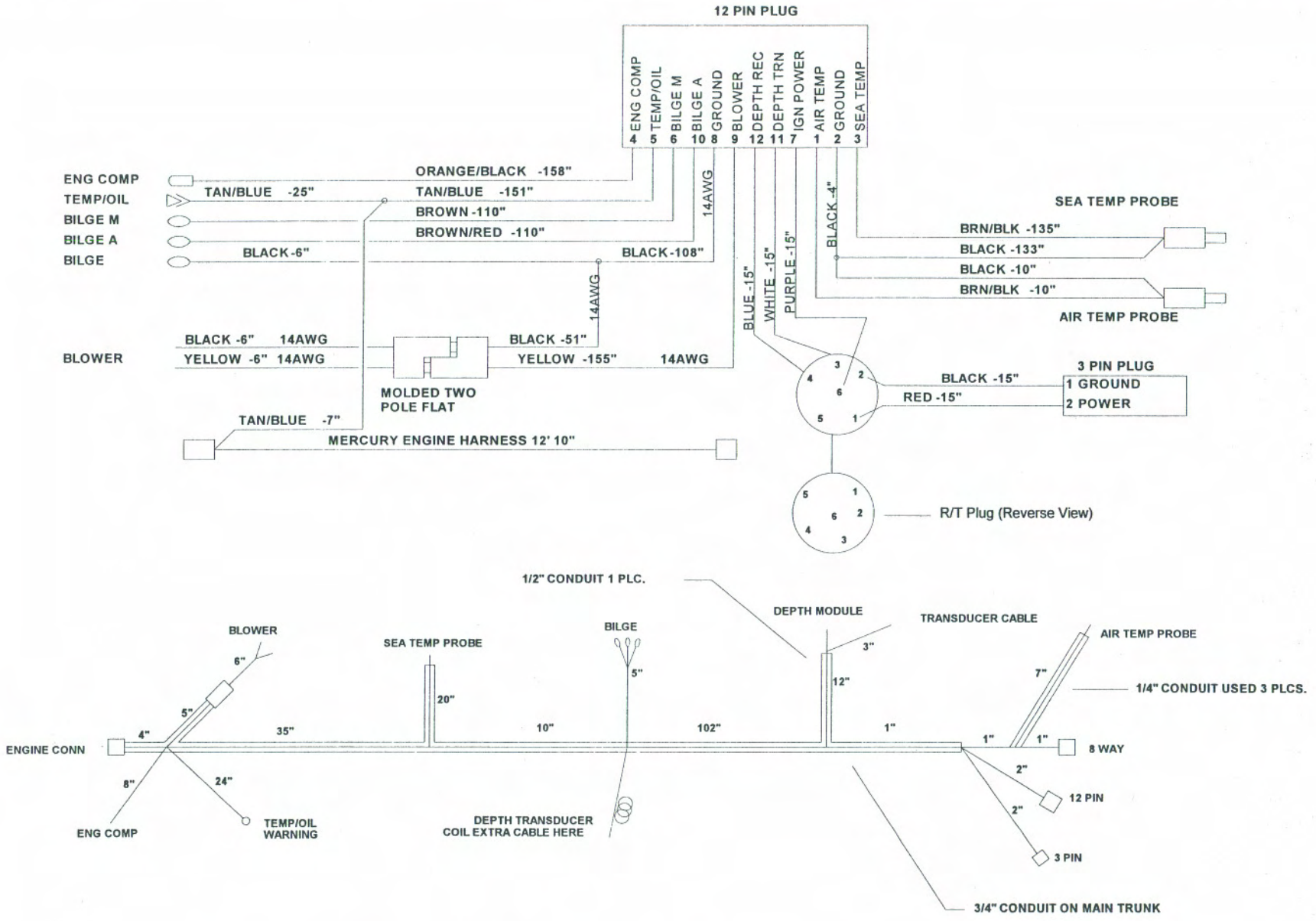
97/98 LOWRANCE/COMPUTRON HARNESS

Malibu Boats
DEPTH MODULE
10/14/97
RICK DAME

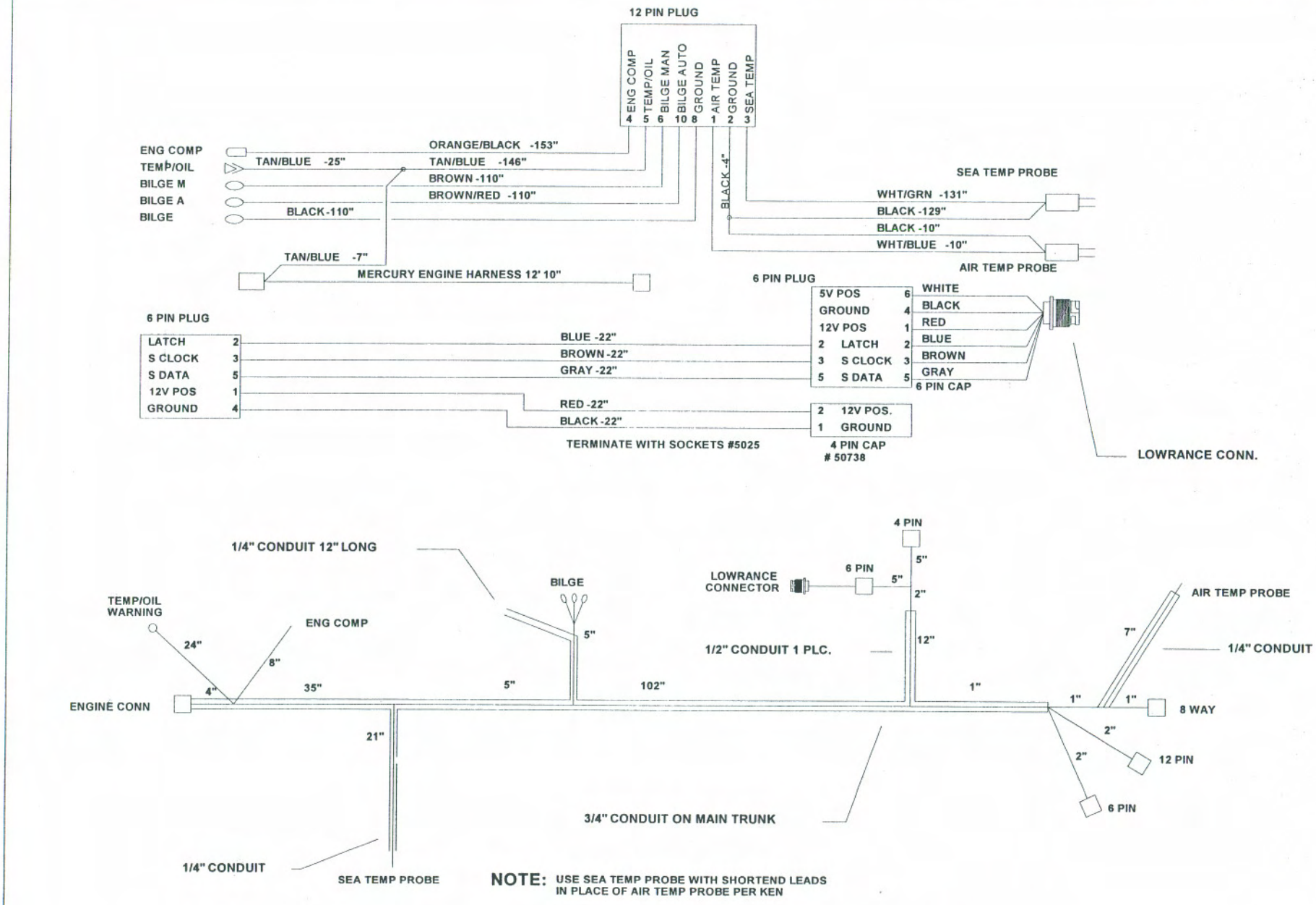


NOTE: MALIBU WILL SUPPLY & RUN A SEPERATE WIRE BETWEEN THE FUEL SENDER GROUND AND THE ENGINE BLOCK GROUND STUD. (NOT INCLUDED IN THIS HARNESS.)

#33741SH1 - Echelon Accessory Harness



#33740SH2 - R/T Box Plug/Harness Engine/Blower/Bilge



#33740SH1 - Main Engine/Lowrance Depth harness