BassCat

presents

The Next Generation Instrument Panel

"Super Dash"®

Model BP101

a

Omega Two, Inc. - Marine Products Division
quality product

OMEGA TWO
2
MARINE INSTRUMENTS

Manual 1.0A

for

Software Version 5.2 & up
Hardware Revision A & up
Release date - 09-15-95.

Serial Number _____

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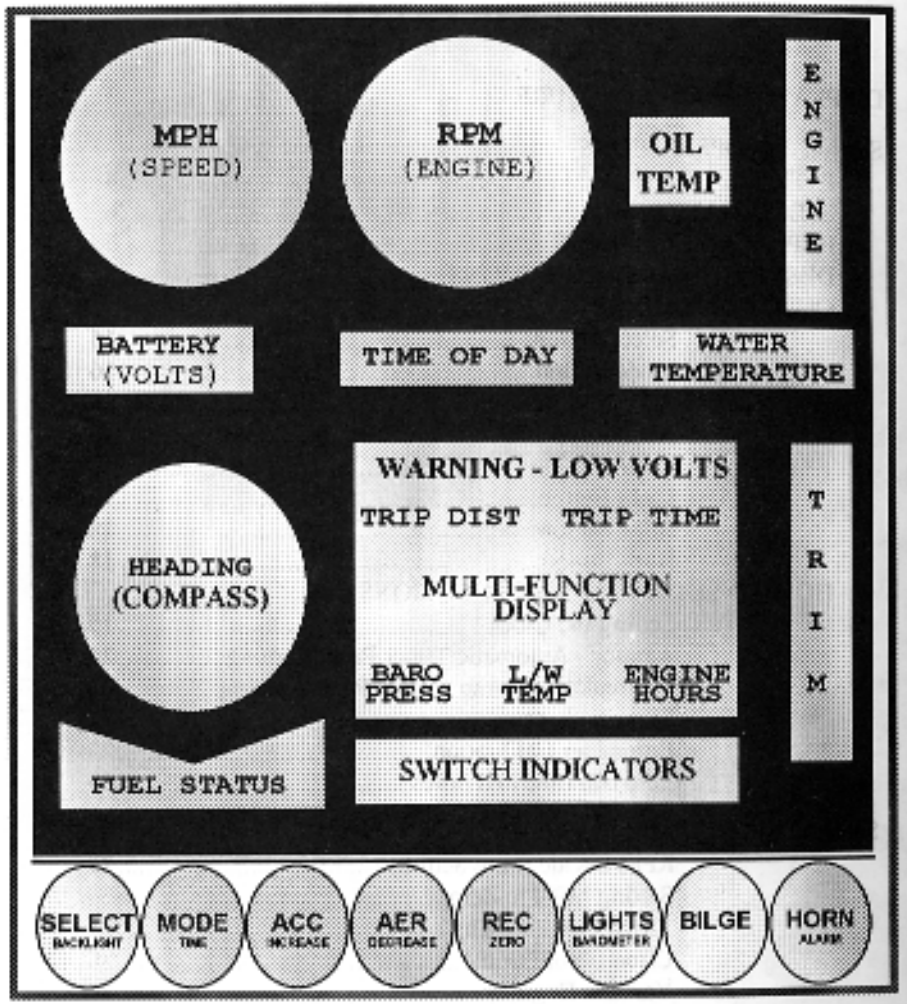


THE DISPLAY and KEYPAD

INTRODUCTION

The BP101 instrument panel is a state-of-the-art device specifically designed for the boat owner who wants the very best. The press has referred to it as the **SUPER DASH!** The large LCD display puts all functions most boat owners could ever want into one convenient instrument and a **powerful microprocessor** makes possible the following list of easy-to-use features:

Section I -- OPERATIONS

INTRODUCTION (continued)

1. a large liquid crystal display (**LCD**) that groups all instrument functions together in a neat and logical arrangement.
2. displays revolutions-per-minute (**RPM**) of the engine in both digital and graphical formats.
3. displays the speed of the boat in miles-per-hour (**MPH**) in both digital and graphical formats.
4. displays the angle of the engine to the boat (**TRIM**).
5. displays the water temperature (**SURFACE**).
6. displays the temperature of the live well (**L/W F**).
7. displays the barometric pressure (**BAR PRESS**).
8. displays the fuel available in two tanks. (**L FUEL & R FUEL**).
9. displays the condition of the battery (**VOLTS**).
10. displays the direction in which the boat is (**HEADING**) in both digital and graphical formats.
11. displays the (**TIME OF DAY**).
12. displays a warning if the (**OIL**) level is low, and (in some boats) if the oil level is too high.
13. displays the total time (**ENGINE HOURS**) the engine has been running.
14. displays (**TRIP TIME**) and (**TRIP DISTANCE**).
15. displays engine temperature (**ENGINE**).
16. controls navigation (**NAV**) and anchor (**ANCH**) lights.
17. controls aeration (**AER**) and recirculation (**REC**) pumps for live wells. ON and OFF times are programmable.
18. controls the (**HORN**).
19. includes a security system to deter theft from storage compartments.

INTRODUCTION (continued)

20. includes a battery monitor that will turn off pumps, storage compartment lights, and an accessory output in an attempt to maintain enough charge in the battery to enable the engine to start.

21. includes a light behind the LCD to allow the boat operator to see the instrument after dark.

22. internal circuit protection for pumps and lights.

23. includes a total hours meter to keep track of the use of the engine. This meter does not accumulate hours unless RPM is above 250. By doing this, the value is more indicative of the wear and tear on the engine. This value may be reset to zero in the event the engine is replaced.

NOTE: The boat must include sensors and be properly wired for most of these features to work.

All of the above are standard equipment on most Bass Cat Boats.

SPECIFICATIONS

SIZE: 7.3 (W) by 8.3 (H) by 2.75 (D) inches

WEIGHT: approximately 2.5 pounds.

OPERATING VOLTAGE: 12 VDC nominal. Display will operate from 7 to 15 volts although the pumps and lights will not operate below 11 volts.

CURRENT REQUIREMENTS: approximately .1 amp with Master Power Switch ON, but all pumps and lights turned OFF. This current drops to about .03 amp when the Master Power Switch is turned OFF (again, with all pumps & lights OFF).

OPERATION TEMPERATURE: 0 to 120 degrees Fahrenheit. The unit will operate outside these limits, but performance parameters have not been established. We recommend that the LCD display be shielded from extended periods of direct sunlight during hot summer days.

STANDARD EQUIPMENT:
one- BP101 instrument with bracket.
one- Live well temperature sensor.
one- Water temp sensor.
one- Compass sensor.
one- Owner's manual.
one- Warranty Registration.

CUSTOMER SUPPLIED ITEM: speed is measured by sensing the water pressure on an opening exposed to the water known as a PITOT tube. This is normally part of the engine. Customer supplies an acceptable pitot and tubing to connect to the instrument.

Notice: Omega Two reserves the right to make changes to this product without prior notice and without liability.

REPLACEMENT PARTS

DESCRIPTION	PART NUMBER
INSTRUMENT ASSEMBLY	**BP101-ASSY**
GASKET	**BP101-GASKET**
AIR TEMP SENSOR (specify length)	**BP101-L/W**
WATER TEMP SENSOR (specify length)	**BP101-H20**
COMPASS ASSY WITH CABLE (specify length)	**BP101-COMP**
OWNER'S MANUAL	**BP101-MAN**
NEW INSTALL PACK-INCLUDES ALL OF THE ABOVE	**BP101-ALL**
SUZIKI TRIM ADAPTER	**OTI-STA-1**
YAMAHA OIL SENDER ADAPTER	**BP101-CA-YAM**

DESCRIPTION OF OPERATIONS

The following is a description of each of the functions incorporated into the "Super Dash" and step-by-step instructions for using the keypad. While this description may look intimidating, **most functions have already been set** for you so that all you have to do is get into your new boat, go fishing, and enjoy our great outdoors. Later, as you get more comfortable with the instrument, you can change it to meet your unique needs and desires.

THE MASTER POWER SWITCH IS TURNED OFF:

1. When the Master Power Switch is turned off, the LCD display will be blank and all "relays" will be "open" so that devices they are driving are also turned off. Exceptions are the horn and the bilge pumps (if in AUTO mode).

2. The microprocessor is always active to monitor the various inputs and to take appropriate action. One of these inputs is the set of switches that turns on the lights in the storage compartments. If this input shows that a switch is open, the microprocessor checks to see if the security system has been enabled. If the security has not been enabled, the lights to the compartment are turned on. Using the microprocessor to turn ON the lights provides the ability to turn OFF the lights after 10 minutes in case the operator forgot to shut the lid. This keeps the battery from being discharged. Note: Closing the storage compartment lid and reopening it will turn on the storage compartment lights again for 10 minutes. Note: the lights flicker every 30 seconds when the microprocessor checks to see if the lid has been closed.

3. The microprocessor also continuously monitors the condition of the battery in an attempt to maintain enough of a charge to allow the engine to start. When the voltage drops to 11.0 volts for 5 minutes, all functions that draw considerable current from the battery will be turned OFF, except the lights and the bilge pumps. The VOLTS display and the message "WARNING - LOW VOLTS" will begin to flash. These functions cannot be turned back ON until the battery voltage increases to at least 11.5 volts for 2 minutes. The flashing VOLTS display means low battery protection mode and that the live well pumps, compass and some other functions will not work. The "WARNING - LOW VOLTS" will continue to flash until the master switch is turned off and then back on. This is done so that the boat operator will have time is realize a power drop has occurred, as might happen when the battery is weak.

4. If the security system is enabled, opening any storage compartment or other enclosure protected with a switch and lamp will cause the horn to sound intermittently for five minutes.

DESCRIPTION OF OPERATIONS (CONTINUED)

THE MASTER POWER SWITCH IS FIRST TURNED ON: (ENGINE IS *NOT* RUNNING)

1. The segments of the display will turn on and show the value that their respective sensor is measuring at that moment.

2. Both **MPH** and **RPM** will display "0.0" and leading digits will be blank. Only one segment of the "C" bars will be ON.

3. The measured battery voltage is displayed. A typical value for **VOLTS** is between 11.8 and 12.6 depending on the condition of the battery. A voltage less than 11.0 volts will cause this part of the display to flash.

4. The **TIME** of day is displayed. If this is the first time the instrument has been turned ON after being connected to the boats battery, the time will be "12:00", and it will be necessary to reset to the correct time.

5. The water **SURFACE** temperature is displayed. If the temperature is less than 32 degrees Fahrenheit or more than 120 degrees, all segments will be blanked since these readings are not considered valid.

6. The "**TRIM**" angle of the boat to the engine is displayed. Each of the segments in this display may be programmed to suit the desires of the boat owner, or the factory settings may be used.

7. The **FUEL** status of the two gasoline tanks is displayed. If the fuel is very low, the smallest segment will be blinking.

8. The multifunction display will show **HOURS.** This value is the total hours of operation since the panel was installed. It is saved in a memory that retains data even when power is turned off. This value can be reset to zero if the engine is changed. (Contact BassCat for procedures.)

9. The word **OIL** will be blinking if the oil level is low. Otherwise, this space will be blank. **The word OIL will blink until the engine key switch is turned ON regardless of the amount of oil in the tank.** (Engines equipped with an Oil High sensor will cause the word **OIL** to be on solid if the oil reservoir is overfilled.)

DESCRIPTION OF OPERATIONS (continued)

10. The live-well (**L/W F**) temperature is the temperature measured at the sensor located in contact with the live-well. This sensor may take some time to adjust when water is being added or drained.

11. The **BAR**ometric pressure is measured by a pressure sensor located inside the instrument. It will vary with atmospheric pressure or altitude changes. For accurate readings, the barometric pressure must be calibrated each time the boat is moved to a lake at a different altitude. See discussion of keypad usage for adjusting Barometric Pressure offset.

12. Water (Oxygen) can be added to the live well water by turning on the **AER**ator pump. When in **MAN**ual, the **AER**ator is always ON. When in **AUTO**matic, the pump turns ON and OFF at regular intervals. These intervals may be programmed or factory defaults may be used. Factory defaults are-- 1 minute ON and 12 minutes OFF. See discussion of keypad usage for adjusting **AER**ator pump On and OFF times.

13. Water can be circulated in the live well by turning on the **REC**irculation pump. This will also add oxygen to the live well water. When in **MAN**ual, the **REC**irculation pump is always ON. When in **AUTO**matic, the pump turns ON and OFF at regular intervals. These intervals may be programmed or factory defaults may be used. Factory defaults are -- 1 minute ON and 12 minutes OFF. See discussion of keypad usage for adjusting **REC**irculation pump On and OFF times.

14. Pressing the **LIGHTS** switch will turn on the **ANCH**or light or both the **ANCH**or and **NAV**igation lights. The display is also lit from the back when the **NAV**igation lights are ON. The intensity of the back light may be adjusted. See the description of the **SELECT** key. The keypad is lit any time the Master Switch is turned on. This is so you can see the keypad at night to control pumps or turn on the anchor or navigation lights.

DESCRIPTION OF OPERATIONS (continued)

15. If you feel that the **MPH** is not reading correctly, it may need to be zeroed. This is done by putting the boat into still water without the engine running. Next, hold down the **MODE** switch and turn the Master Power Switch OFF and then back ON. The microprocessor will read the **PITOT** tube for 5 seconds to calculate zero miles-per-hour. After 5 to 7 seconds, release the **MODE** switch.

16. All power circuits have current sensing and control. If the current is abnormally large, it will turn off the current to the pump, light, accessory socket or horn that is defective. It will also inform you that a problem exists by turning on a "beeper" for a few seconds and displaying the word **FAULT** above the key that controls that function. (Note: the horn and accessory do not have an visual indicator.) In most BassCat boats, there are two bilge pumps. It is possible for you to have a defect in one and have it shut down and the other operating normally. In fact this is how they are designed to operate, as totally independent systems.

You will also see and hear the fault indication when you turn on the lights and do not have the light stanchions in their sockets. The sound will cease after a few seconds, but the word **FAULT** will continue to flash until the lights are inserted.

The intention is to notify you, if possible, that a pump is about to fail or a light bulb is burned out before you are on the water. This may eliminate a livewell full of dead fish at a tournament weigh-in or a dangerous and illegal run across the lake without navigation lights.

DESCRIPTION OF OPERATIONS (continued)

AFTER THE MASTER POWER SWITCH IS TURNED ON: (ENGINE IS RUNNING)

1. The engine **RPM** is continuously sensed and displayed in both digital and graphic forms.

2. The speed of the boat in **MPH** is displayed (in both digital and graphic forms) if the **RPM** is above 250. Below this value, **MPH** is shown as "0.0".

3. Time is added to total engine **HOURS** if **RPM** is above 250.

4. **TRIP TIME** is computed whenever **RPM** is above 250. **TRIP TIME** is the time the engine is running, not the time since the boat left the dock.

5. **TRIP DISTANCE** is the distance the boat has traveled in miles. It is computed only when **RPM** is above 250 and is computed by using the **MPH** and **TRIP TIME**.

6. The **ENGINE** temperature is a vertical bar whose height is proportional to the engine temperature. Normal is approximately 5 segments turned on. This will of course vary with the temperature of the lake water used to cool the engine and whether the engine is idling or at high speed. What is normal is what is typical for *your* boat. Get familiar with this display so you will recognize an engine that is running hot.

General comment: The instrument is designed so that if an unrealistic value is received from any sensor (i.e. water temperature, compass, etc.) that portion of the display will blank. This is not a defect in the instrument, rather, it is almost always a defective sensor.

DESCRIPTION OF OPERATIONS (continued)

THE COMPASS

The direction the boat is pointed is displayed as the **COMPASS** heading. The compass display will have all of the direction arrows ON except the heading the boat is pointed, which will be blinking. The digits in the center of the compass will show the actual heading. Compass readings are averaged over several seconds in order to minimize the unstable readings that would result from waves and rocking of the boat. (Note: the compass is turned off when the battery voltage drops below 11.0 volts.)

The **COMPASS** uses a very advanced method of sensing the earth's magnetic field that uses no moving components. In fact, it is the most complex circuit in this instrument panel. It will work well for you, but you should be aware of its unique characteristics and limitations.

This **COMPASS**, like any other compass, has errors. One of these is that **it will read correctly only when the boat is near level**. Do not trust its reading when "coming out of the hole" or similar extreme attitude positions.

The **COMPASS** reads magnetic North. It is affected by local magnetic disturbances such as iron ore deposits. It is also affected by metal tools or apparatus within a two-foot radius of the sensor. The sensor is mounted under the deck to get it away from the metal of the motor and most of the wiring. Do not put metal tackle boxes or other metal items on the deck near the compass sensor.

Because of all of these factors, it is impossible to give an accuracy figure as the compass is installed in your boat. Learn and become comfortable with your system.

DESCRIPTION OF OPERATIONS (continued)

THE COMPASS (continued)

Suggestions:

1. Locate the compass sensor in the boat. (It is a small round black plastic box). Keep any metal object as far away from this location as possible.

2. When traveling long distances on large lakes where no landmarks can be seen, always carry a second compass that does not use the power of the boat battery. Like any electronic device, your compass can fail, or the battery in the boat can go dead. Always play it safe, carry a spare with its own internal battery or one that does not require power!.

3. Do not trust compass readings when accelerating or decelerating or when the boat is going up and down in large waves such as might be encountered on the Great Lakes.

4. "Swing" your compass to find out its errors. This means pointing the boat to several headings and compare the readings to some accurate standard. This standard might be some other compass, or it might be the "compass rose" at a small local airport. (Check with the control tower for permission and directions.) Write your errors here for later reference when planning a long navigation run.

_____COMPASS CORRECTION LOG_____

90 degree_____ 180 degree_____ 270 degree_____ 360 degree_____

45 degree_____ 135 degree_____ 225 degree_____ 315 degree_____

Date and location of check _____

****

A more complete description of the installation and compensation procedures is available from Omega Two at no charge. Please send a stamped self addressed business envelope.

DESCRIPTION OF OPERATIONS (continued)

QUICK REFERENCE

Functions of the keypad:

This is the Keypad Layout.

Each key will have multiple functions. For example (ACC) and (INCREASE) both use the same button. Some functions require holding a button and pressing another button at the same time to perform the function.

Select Button:

Each time the select button is pressed the **Multifunction Display** will change to display a different selection. The display selections are as follows:

- **Engine Hours** - Displays the total time the engine has been operating.
- **Trip Miles** - Displays the distance traveled since last reset of trip miles.
- **Trip Time** - Displays the time the engine has been operating since reset.
- **Barometer** - Displays barometric pressure.
- **L/W Temp** - Displays temperature of live well water (degrees Fahrenheit)

This button serves other functions as well. One is the control of backlight intensity. When the navigation lights are on, holding down the **SELECT** button for 5 seconds will cause the intensity to alternately increase and decrease. Release the button when the intensity is correct for you. This setting is then remembered

While adjusting backlight intensity, the volts and time and water temperature windows will provide manufacturing information. I.E. VOLTS window gives the production year, while the TIME window gives the serial number and the WATER TEMPerature window gives the revision level.

DESCRIPTION OF OPERATIONS (continued)

Mode Button:

The **MODE** button is used mainly for multiple button commands in conjunction with the **SELECT** Button. Each use of the **MODE** button will be discussed later in this manual. Some of the **MODE** button functions are:

- **Setting the clock**
- **Setting the barometer**
- **Resetting trip time and distance**
- **Setting values during installation**

Accessory Button:

The accessory button is used to turn accessory equipment ON and OFF. To turn ON , push once. To turn OFF, push again. The accessory function will only operate when the instrument panel is turned on and will automatically turn off when the Master Power Switch is turned off. Note: The accessory function is electronically short circuit protected inside the BP101 instrument. However, you should provide external protection that is appropriate to the device you are using. In no case should a device that uses in excess of 7.5 amps be powered with the BP101's accessory function.

AERator Button:

To turn ON the **AER**ator (MANual mode), push once. To turn on the timer function (AUTO mode) push again. To turn the pump OFF, press the **AER** button one more time. Each time this button is pressed, the function of the pump will rotate to the next mode as just described and as shown below: The aerator pump will automatically turn OFF if the battery voltage drops below 11.0 volts for 5 minutes. You *may* turn the AERator back ON after the voltage rises above 11.5 volts for at least 2 minutes.

- **Pump ON - MANual Mode** Pump will turn ON and remain ON until the aerator button is pressed again.
- **Pump ON - AUTO Mode** Pump will turn ON and OFF based on a programmable timer.
- **Pump OFF Mode** Pump will turn off and remain off until the aerator button is pressed again.

NOTE: If the Master Power Switch is OFF, the aerator is OFF.

DESCRIPTION OF OPERATIONS (continued)

Recirculating Pump

The **REC**irculator button is used to turn the recirculating pump ON and OFF. To turn ON (MANual mode) push once. To turn on the timer function (AUTO mode) push again. To turn pump OFF, press button one more time. Each time the button is pressed the function of the pump will rotate to the next mode as just described and as shown below: The recirculating pump will automatically turn OFF if the battery voltage drops below 11.0 volts for 5 minutes. You *may* turn the AERator back on after the voltage rises above 11.5 volts for at least 2 minutes.

- **Pump ON - MANual Mode** Pump will turn ON and remain ON until the recirculator button is pressed .
- **Pump ON - AUTO Mode** Pump will turn ON and OFF based on a programmable timer.
- **Pump OFF Mode** Pump will turn OFF and remain OFF until the recirculator button is pressed again.

NOTE: If the Master Power Switch is OFF, The Recirculating pump is OFF.

Light Button:

The **LIGHT** button is used to turn the anchor and navigation lights ON and OFF. To turn ON the anchor lights, push once. To turn ON both the anchor and navigation lights, push again. To turn all lights OFF, press the button one more time. Each time the button is pressed the function of the lights will rotate to the next mode as just described and as shown below:

- **Anchor Lights ON** Anchor lights will turn ON and remain ON until the **LIGHT** button is pressed again.
- **Anchor and Nav Lights ON** Both lights will turn ON and remain ON until the **LIGHT** button is pressed again..
- **Lights OFF Mode** Both lights will turn OFF and remain OFF until the **LIGHT** button is pressed again.

NOTE: If the Master Power Switch is OFF, all lights are OFF.

DESCRIPTION OF OPERATIONS (continued)

Bilge Button:

The **BILGE** button is used to turn the bilge pump ON and OFF. To turn ON the bilge pump (manual mode) push once. To turn the bilge pump OFF (ignoring the float switch) press again. To set the bilge pump to automatic (float switch) mode, press the **BILGE** button one more time. Each time the button is pressed the function of the bilge pump will rotate to the next mode as just described and as shown below:

- **Bilge Pump ON** Bilge pump will turn ON and remain ON until the bilge button is pressed again.
- **Bilge Pump OFF** Bilge pump will turn OFF and remain OFF until the bilge button is pressed again.
- **Bilge Pump AUTO** Regardless of the position of the Master Power Switch, the bilge pump will turn OFF until the float switch requests the bilge pump to turn ON. It will remain in auto mode until the bilge button is pressed again.

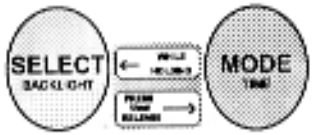
NOTE: If the Master Power Switch is OFF, you may turn the bilge pump OFF with the keypad, but not ON.

Horn Button:

The **HORN** button is used to turn the horn ON. The horn will sound while pressing the **HORN** button. The horn will also sound if the security system is triggered (see **Security System** section).

DESCRIPTION OF OPERATIONS (continued)

HOW TO SET AND CLEAR FUNCTIONS



SETTING THE CLOCK:

This command allows the user to set the **hours** and **minutes** in 12 hour format. Pressing the **MODE** button toggles between hours and minutes. The number flashing is the value you are currently editing. The time will start counting with seconds at :00 when you exit this editor .

(TIME) window shows: **HOURS : MINUTES**

Change editing between hours and minutes.

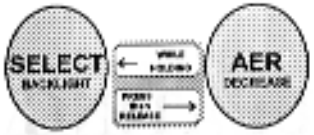
Increase time value by 1 (one).

Decrease time value by 1 (one).

Exit, save changes & return to normal operation.

(Note: pressing the HORN button while in the clock setting mode will display the software version in the Multifuction Window.)

DESCRIPTION OF OPERATIONS (continued)



AERATOR PUMP

Automatic Timer Programming:

This mode allows the user to select an **OFF time** and an **ON time** (in minutes) for the timer mode of the aerator pump. The time that is blinking is the value that you are currently editing. OFF time is blinking when you first enter this mode.

(TIME) window shows time pump is: **OFF : ON**

Example: **12:01** indicates 12 **minutes OFF** time and 1 **minute ON** time. The two digits to the **LEFT** of the colon show time **OFF**, while the two digits to the **RIGHT** show time **ON**.

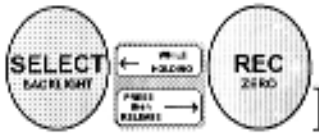
Change editing from OFF time to ON time and back.

Increase timer value (maximum 15 minutes).

Decrease timer value (minimum 1 minute).

Exit, save changes and return to normal operation.

DESCRIPTION OF OPERATIONS (continued)



RECIRCULATING PUMP

Automatic Timer Programming:

This mode allows the user to select an **OFF time** and an **ON time** in minutes for the timer mode of the Recirculating pump. The time that is blinking is the value that you are currently editing. OFF time is blinking when you first enter this mode.

(TIME) window shows time pump is: **OFF : ON**

Example: **12:01** indicates **12 minutes** OFF time and 1 **minute** ON time. The two digits to the **LEFT** of the colon show time **OFF**, while the two digits to the **RIGHT** show time **ON**.

Change editing from OFF time to ON time and back.

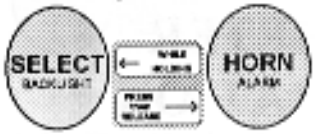
Increase timer value (maximum 15 minutes).

Decrease timer value (minimum 1 minute).

Exit, save changes & return to normal operation.

DESCRIPTION OF OPERATIONS (continued)

Enabling and Disabling the Security System:



Press and Release

If the Master Power Switch is ON:

The above commands will toggle the security system OFF and ON each time the command is executed.

NOTE: If the security system is enabled, the word **"ALARM"** appears to the left in the **VOLTS** window. This is to let you know that the security system is enabled. Since the Master Power Switch is ON, the storage compartments can be opened without the horn sounding. When the security system is enabled, it is immediately armed when the Master Power Switch is turned OFF.

If the Master Power Switch is OFF:

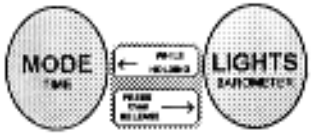
Warning! There is no indication if the security system is enabled when the Master Power Switch is OFF. This is done so that a would-be thief cannot tell until he opens a storage compartment lid. By that time it is too late--the horn will sound. No rod box lights are provided with the security system enabled and the master switch turned OFF. When trailering your boat, make sure all storage compartment lids are secure, or a bouncing lid will set off the alarm. Or better yet, disable the security system while you are on the road.

NOTE: With the security system disabled, and the Master Power Switch is OFF, opening a rod box a door will turn ON the light in that box. It then monitors the rod box switches every 30 seconds to see if they have been closed. Because of this technique you will notice a 1-second blink of storage compartment lights every 30 seconds while the Master Power Switch is OFF. (The lights do not blink when the Master Power Switch is ON.)

Security system will be Triggered ON and the horn will sound whenever the system is enabled and a storage compartment door is sensed open for two continuous seconds. This will cause the Horn to sound ON and OFF each second for five minutes. The horn can be silenced by disabling the security system as discussed above.

The security system can be turned On as well as OFF as described above without the Master Power Switch being turned ON.

DESCRIPTION OF OPERATIONS (continued)



BAROMETER CALIBRATION

When the boat is moved to a location with a different altitude, this calibration should be accomplished for the barometer to read correctly. First call a local weather service office or watch the Weather Channel on TV for the current barometric pressure. Then, complete the following calibration. Values to be changed appear in the Multifunction display.

To increase reading by .01 inches of mercury.

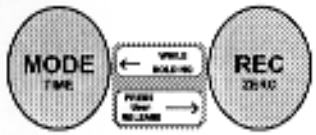
To decrease reading by .01 inches of mercury.

To reset barometer *offset* to zero).

Pressing MODE while pressing increase or decrease will change reading by .10.

To exit, save changes and return to normal operation.

DESCRIPTION OF OPERATIONS (continued)



ZERO TRIP TIME and DISTANCE.

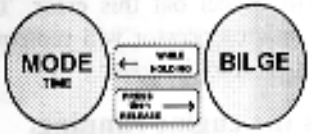
Doing this each time the boat leaves the dock will provide a record of how far you went and the time you spent going to and from that favorite fishing spot.

NOTE: While it is not recommended, an additional feature of this function is that the boat owner may zero the total engine hours displayed in the multifunction window by holding this command for 5 seconds.

Nope ... we didn't miss anything. The folks that put this manual together for the Omega BP101 dash manual did ... and this isn't the only one. Sorry of the blank thought!

Section II -- INSTALLATION

THE FOLLOWING ACTIONS NEED TO BE DONE ONLY ON NEW INSTALLATIONS OR WHEN AN INSTRUMENT PANEL OR ENGINE HAS BEEN REPLACED.



RPM Divide Ratio

This routine must be done so that the instrument knows how many pulses it will receive from the engine during one revolution. The choices are 4, 6, 8 and 12. Most outboard engines in use today use 12. Failure to do this routine will cause RPM readings to be incorrect.

Values are read in the Multifunction window.

To increase reading to next selection.

To decrease reading to next selection.

When the desired reading is displayed,

To exit, save changes and return to normal operation.

INSTALLATION (continued)

SETTING MPH TO ZERO

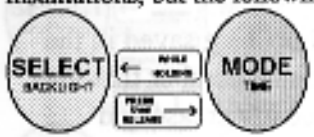
When the boat is first put into the water, the pressure of the water into the PITOT tube will cause the instrument to read 5 to 10 MPH, even when the boat is in still water. The following procedure will cancel out this error. **This should only need to be done one time.** The microprocessor will remember this value and use it as zero each time the boat is put into the water.

1. **Put the boat into still water without the engine running.**
2. **Press and Hold the MODE switch while turning the Master Power Switch OFF and back ON.**
3. **Hold down the MODE switch for at least 5 seconds.**
   The microprocessor will now assume that value sensed on the **PITOT** tube is zero.

WARNING! <u>Never disconnect the pitot tubing from the instrument while the boat is in the water.</u> This will allow water to enter the tubing. This water can damage the instrument as well as cause improper speed readings.

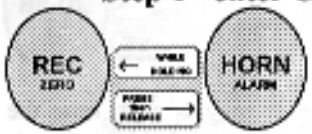
INSTALLATION (continued)

The vertical bar graph labeled **TRIM** can be set to the exact positions of the engine trim where each of the segments turn on. This would normally be done only when the instrument is installed in the boat. The instrument is shipped from the factory with default values that will work in the majority of installations, but the following steps will set the trim for any situation.



TRIM Programming

Step 1 - enter Clock Editor



Step 2 - enter special TRIM programming mode.
Step 3 - select bar segment with up or down button.
Step 4 - position engine with electric trim switch.
Step 5 - press MODE button to save this value.
Step 6 - repeat steps 3 to 5 until all segments are programmed.
Step 7 - press SELECT to exit TRIM programming mode.

NOTE: TRIM bar graph and number in **TIME** window will flash the position number to program.

NOTE: As long as you don't press (MODE) when in this mode, no data will be changed.

continued on next page

INSTALLATION (continued)

TRIM PROGRAMMING: (Continued)

TIME window...displays number from 2 to 10 indicating the number of the bar being programmed.

MULTIFUNCTION window...displays value being saved in the microprocessor's memory. This is a hexadecimal number that may be meaningless to you except that you can see it increase and decrease as the trim angle is changed.

The **INVERT** flag for the trim sensor toggles each time the HORN button is pressed. Some engines have a trim potentiometer that is reversed from the normal. Setting the INVERT flag tells the microprocessor to compensate for this. Inverted readings are indicated by decimal point in the multifunction display.

Increase bar segment number by 1.

Decrease bar segment number by 1.

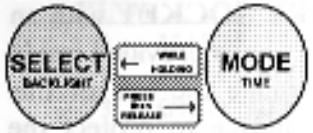
Store this bar segment into memory.

EXIT, when all segments have been programmed.

INSTALLATION (continued)

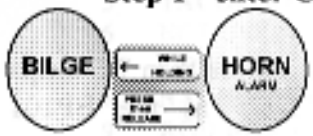
TRIM PROGRAMMING: (Continued)

ALTERNATE METHOD: (SIMPLIFIED)



TRIM Programming

Step 1 - enter Clock Editor.



Step 2 - enter automatic TRIM programming mode.
Step 4 - trim engine full down with trim switch.
Step 5 - press MODE button.
Step 6 - trim engine full up with trim switch.
Step 7 - press MODE button.

Wait 5 seconds for the microprocessor to calculate and store new values. Test.

Note: Special adapters are required for Suzuki engines to enable trim to function properly.

INSTALLATION (continued)

Circuit Protection

The customer must protect the **ACCESSORY SOCKET** with an external circuit breaker or fuse. Some protection is provided inside the instrument, but since we can not determine the use of this socket, the customer must provide proper device to protect the instrument and the boat wiring.

Do not connect any equipment which requires more than **7.5 amps** to operate to the **ACCESSORY SOCKET** as the BP101 instrument may be damaged.

Yamaha Engines

Yamaha engines require some special considerations during installation. If not included in this manual, ask for a wiring diagram for Yamaha. Also, a special adapter is available for a nominal fee that matches the Yamaha connectors. The adapter (part number BP101-CA-YAM) allows the oil senders to work with the BP101.

SUZUKI Engines

Most Suzuki engines require a special adapter. Without this adapter, the trim indication will not function properly. You may order this adapter with instructions by calling BassCat or Omega Two and asking for part number OTI-STA-1. There is a nominal fee for this adapter.

INSTALLATION (continued)

Wiring Information

J1 (Main Connector) PIN ASSIGNMENTS:

PIN#	Function	Color
1	**MASTER SWITCH** (switched +12V)	RED
2	**FLOAT SWITCH**	BRN/WHT
3	**GROUND** #1 (Battery Negative)	BLK
4	+12V #1 (Battery Positive)	RED
5	**TACHOMETER**	GRAY
6	NOT USED	
7	**GROUND** #2 (Battery Negative)	BLK
8	**NAVIGATION LIGHTS**	WHT
9	**ROD BOX LIGHTS**	WHT w/RED
10	**FUEL (LEFT)**	YEL w/RED
11	**WATER TEMP SENSOR INPUT**	GRN or WHT
12	**WATER TEMP SENSOR +5**	RED
13	**WATER TEMP SENSOR GROUND**	BLK
14	**HORN**	BLU
15	**ANCHOR LIGHTS**	WHT w/BLK
16	**FUEL (RIGHT)**	YEL
17	**LIVEWELL TEMP SENS INPUT**	GRN or WHT
18	**LIVEWELL TEMP SENS +5V**	RED
19	**LIVEWELL TEMP SENS GROUND**	BLK
20	**GROUND** (SPARE)	
21	NOT USED	
22	**RECIRCULATING PUMP**	GRN w/RED
23	**TRIM** INPUT	PINK
24	**ENGINE TEMPERATURE SENS**	ORG w/BLK
25	**ENGINE OVERHEAT SENSOR**	GRAY w/BLK
26	**GROUND** (SPARE)	
27	**AERATOR**	GRN
28	NOT USED	
29	**OIL LOW**	BRN w/BLU
30	**OIL HIGH**	ORG
31	**GROUND** (SPARE)	
32	**BILGE PUMP #1**	BRN
33	**BILGE PUMP #2**	BRN
34	+12V (SPARE)	
35	+12V #2 (Battery Positive)	RED
36	NOT USED	
37	**ACCESSORY** OUTPUT	PINK

INSTALLATION (continued)

J2 (COMPASS) PIN ASSIGNMENTS:

PIN#	Function	Color
1	**GROUND**	BLK w/SHIELD
2	NOT USED	
3	**+12V DC**	RED
4	**(- X PLUS)**	WHT
5	NOT USED	
6	**(- Y PLUS)**	WHT w/RED
7	**(- X MINUS)**	BLK w/WHT
8	NOT USED	
9	**(- Y MINUS)**	WHT w/BLK

Comments on wiring:

The pins marked +12V (4 and 35) **MUST** both be used. These pins source current for the horn, bilge pumps, live well pumps, storage box lights, and navigation lights. This is more current than should be trusted to only one connector pin.

The pins marked "ground" (3 and 7) should both be used with wires that go directly to the negative terminal of the cranking battery. This technique will provide a stable reference for the instrument.

The "FLOAT SWITCH" must have one lead connected to the battery negative. The other lead connects to pin 2.

See they didn't learn from their first mistake before page 25, or, they elected to play like it was intended this way?

SERVICE (continued)

Things your DEALER can do to correct a problem:

ALL SERVICE WORK MUST BE DONE EXTERNAL TO THE INSTRUMENT.

WARRANTY IS VOID IF THE UNIT HAS BEEN OPENED.

Symptom: Unit appears dead.

1. Make sure the battery is OK. The unit will shut itself OFF if the battery voltage is less than about 7 volts.

2. A quick check is to press the **HORN** button. The horn should sound even with a blank display, provided the instrument has power of at least 11 volts and the microprocessor is working.

3. Make sure the unit has power by momentarily removing the positive battery cable. When it is reconnected, the instrument will go through a self test where all segments of the display are scanned. If the unit does this test correctly, the unit is probably not getting the +12 volts from the Master Power Switch to tell the microprocessor that it is time to turn on the display. If this self test did not produce a display, the unit may not be getting +12v, or a ground.

Symptom: Security is set but horn will not sound.

For the security system to work, a path to ground (negative of battery) must be provided through the switch and light bulbs in a compartment

1. Check the battery voltage. The HORN will not sound if the battery voltage is less than 11.0 volts.

2. Check other compartments to see if the switch is defective or the light bulbs are "burned out". The security function uses the light bulbs to provide a path to the negative terminal of the battery.

Symptom: The security system is not triggered when one door is opened, but it is when other doors are opened.

If only one door does not set off the alarm, the problem is probably burned-out light bulbs in that compartment.

1. Replace the lamp.
2. Replace the switch.
3. Check the wiring to that compartment.

SERVICE (continued)

Symptom: Water is dripping from under the dash. This is probably an indication of a leaky pitot tube. Connect a garden hose (keep pressure very low) to the pitot input on the engine and watch where the water is coming from. If it is at the splice where the tubing that comes with the instrument mates to the tubing that is part of the boat, make repairs as appropriate (secure with a wire tie). If the water is coming from within the BP101 instrument, do not attempt to make repairs. Send the unit back to the factory for repairs.

IMPORTANT! The hose clamp where the tubing enters the instrument is there to prevent the tubing from turning or pulling on a sensitive pressure sensor in the instrument. DO NOT LOOSEN THIS CLAMP. The best way to remove the tubing from the instrument is to cut the tubing as close as possible to the union to the hose coming from the engine. Leave the union with the tubing in the boat. Sufficient length of tubing is provided with the instrument for several removals.

Symptom: A pump (aerator/recirculation/bilge) will not run or will run for a minute or so and then shut off.

Each pump is driven by a circuit that incorporates over current protection. If a pump is not running, look at the BP101 to see if the word FAULT is visual above the switch for that pump. IF it is, it is telling you that the current is excessive and the pump is shorted. Replacing the pump will clear the problem. Note: no current will cause the same indication. This may indicate a loose or broken wire. Also try:

1. Make sure that battery voltage is 11.5 volts or more.
2. Free the pump from what might be causing it to stall.
3. Allow several minutes for the current-limiting device to cool. As soon as it is cool, the circuit will return to normal operation.
4. Turn on the pump.

Symptom: No MPH or RPM.

The RPM display will only work when a pulsing signal is received from the engine. A broken wire or a defective engine voltage regulator module can cause this problem. With no RPM, there will be no MPH.

SERVICE (continued)

Symptom: Some sensor does not work, but all other functions appear OK. This includes the livewell temperature, water temperature, compass, fuel, oil level, trim and RPM.

1. Check the wiring to that sensor.
2. Replace that sensor or make repairs to engine wiring..

Symptom: The battery seems to discharge when the boat is not being used. The BP101 instrument uses very little current from the battery when every light and pump is turned off. Like the electric clock in your car, the BP101 instrument can discharge the battery after several weeks of not recharging the battery. The length of time before the battery discharges to the point where the engine cannot be started depends on many things, including 1) condition of the battery, 2) whether the bilge pump has been used, 3) the amount of current that the engine (it also draws current continuously from the battery) and other items in the boat have used, and 4) amount of time you have had a rod box light ON. **For extended periods of no usage, keep a trickle charger on the battery, or disconnect the positive lead from the battery**. Also:

1. Make sure that a storage compartment switch is not staying ON even though the door is closed. This will cause the light in that box to reduce the charge in the battery. (The microprocessor will turn off this light even with a defective switch after 10 minutes.)
2. Make sure the bilge pump is not left in the ON or AUTO position.
3. Make sure that the navigation lights are not in the ON position as might be the case if you left the ***bow*** light switch ON.
4. Make sure the Master Switch is turned OFF. (BP101 display will go blank.)
5. Make sure the battery is not defective.

Symptom: The compass does not work but everything else is OK. A defective compass or cable may blow a fuse inside the BP101. Do not attempt to replace this fuse! Return the instrument along with the defective compass for repair by the factory.

SERVICE (continued)

Symptom: There is a difference in readings between live well and water (surface) temperatures even when the boat is out of the water. This is not unusual since the two sensors are separated by several feet and have different air currents over them. These sensors are laser calibrated by their manufacturer and no field adjustments are provided. We find that if they are subjected to the same medium (say immersion a glass of water) and allowed to stabilized for 5 minutes, they will read within 2 degrees of each other.

Symptom: One temperature sensor works but not the other one. The water temperature sensor and the livewell sensor are identical. They may be swapped at the two white connectors under the dash. If the problem shifts to the other readout, the probe is faulty.

Symptom: Unable to program the trim function. The BP101 instrument determines the position of the engine by measuring the resistance of a potentiometer (called a "trim sensor") mounted on the engine. Different engine manufacturers use different resistances and connect them in various ways. For example, Yamaha uses three wires while others use only two wires. The BP101 does not care what the resistance is as long as only two wires are used. If your boat uses three wires, it is necessary to leave one of them disconnected. On the Yamaha, this is the orange wire.

If you are having problems programming the trim as described in this manual, check the trim sensor with an ohmmeter to verify that the sensor is functioning correctly. Compare your reading to the typical values given below. If your readings do not change, or are significantly different, replace the trim sensor and then repeat the calibration procedure.

Engine Position	Mariner	OMC	Yamaha	Your readings
full down	100 ohms	_____	_____	_____
midway	increasing	decreasing	increasing	_____
full up (travel)	550 ohms	_____	_____	_____

When you are in the trim programming mode, the strange letters and numbers that appear in the Multifunction Display are the hexadecimal values of the resistance on the trim sensor. While you may not understand what this value is, you can recognize the fact that this value is increasing or decreasing. If they do not change, or change very little, there is something wrong with the sensor or the wiring between the sensor and the BP101.

SERVICE (continued)

Service Policy:

It is intended that all instrument repairs are to be done by the factory. Service parts and repair information will **not** be furnished to dealers or service establishments unless they are provided through Bass Cat warranty procedures. Exceptions are replacing sensors and adapters.

Please call 1-417-831-5155 for a return material authorization (RMA) number before returning a unit for repair.

Returning an instrument to the factory for service:

If the unit is considered in warranty:

1. Call the factory and discuss the problem with a service technician to make sure that the problem is actually in the instrument. Sending in the instrument and leaving the problem in the boat will not cure the problem.

2. Ask the service technician for an "RMA" number.

3. Package the unit securely **The warranty does not include glass breakage, so it is best to do it right.**

4. Include a note taped to the instrument that tells us about the problem. Comments like "doesn't work" are of no value in helping us find the problem. Comments like "RPM is intermittent above 1000 RPM" are ***very*** helpful.

5. Make sure your name, phone number, and RMA number are on BOTH the inside and the outside of the shipping carton. An envelope taped to the outside is acceptable for including this information.

6. Insure the package for at least $500.

7. We prefer you ship UPS or Federal Express.

8. You pay the shipping charges to us. We pay them when we ship the unit back to you (UPS ground). **We will refuse packages shipped to us C.O.D.**

SERVICE (continued)

Returning an instrument to the factory for service:

If the unit is out of warranty:

The procedure is almost the same to send an out-of-warranty instrument back for repair as that described above for a warranty return.

The difference is you will be charged for the repairs. We will call you once we know what the repair charges will be. We will return the unit to you C.O.D. Dealers who have previously completed a credit application and have been approved may have their units returned on account.

Omega Two, Inc.
Marine Products Division
2245 E. Kearney Street
Springfield, Missouri 65803

You don't need page 40.