

# ELECTRICAL SYSTEM

# 4

This section of the manual includes information about your boat's electrical system. Your boat is designed with a safe electrical system to protect you from hazardous shocks and was checked carefully before it was shipped to your dealer. To protect yourself from electric shock, always have a qualified technician make any modifications to the system. If you have questions, see your dealer for more information.

## 12-VOLT DC BOAT SYSTEM

The 12-Volt D.C. electrical system is a 12-Volt, 2-wire, negative ground type. The hot wire is positive, feeding the lights and appliances for instance, and the negative return is by an insulated wire to the negative terminal of the battery.

## 12-VOLT TROLLING MOTOR SYSTEM

The 12-Volt D.C. electrical system is a 12-Volt, 2-wire, negative ground type. The hot wire is positive, feeding trolling motor and light (if so equipped), and the negative return is by insulated wire to the negative terminal of the battery. (See Bow Panel Installation Sheet in your owner's package for wiring diagram.)

The 12-Volt plug is located on the bow of your boat (Figures 4-1 and 4-2).



**FIGURE 4-1**  
**12-VOLT "MARLAN"**  
**STYLE PLUG**

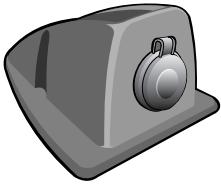


**FIGURE 4-2**  
**12-VOLT "ECONO" BOW TROLLING PANEL**

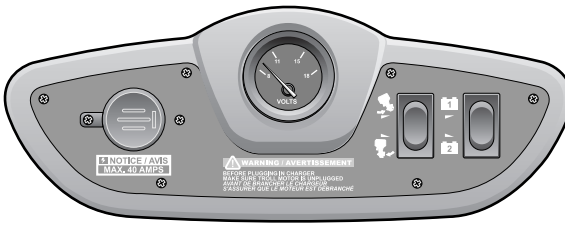
## 12/24-VOLT TROLLING MOTOR SYSTEM

The 12 or 24-Volt electrical system is a 12 or 24-Volt, depending on selection, negative ground type. Each hot wire is 12-Volt, feeding the trolling motor, and the negative return is by two insulated wires to the negative terminal of the batteries. (See Bow Panel Installation Sheet in your owner's package for wiring diagram.)

The 12/24-Volt plug is located on the bow of your boat (Figures 4-3 and 4-4).



**FIGURE 4-3**  
**24 VOLT RECEPTACLE**



**FIGURE 4-4**  
**12-24 VOLT BOW TROLLING PANEL**

## **12/24-VOLT BOAT BOW TROLLING MOTOR PANEL UTILIZATION**

The 12/24-Volt boat bow trolling motor panel comes equipped with a Marincos type receptacle, a Voltmeter, a Tilt switch, and a Battery Check switch.

The Marincos™ receptacle allows you to quickly plug and unplug your trolling motor. (See Bow Panel Installation Sheet in your Owner's Package for wiring diagram)

The Tilt switch is a two position switch. The upper position enables you to drive the back motor or stern drive out of the water for better trolling performance of your electric trolling motor. The lower position enables you to drive down the back motor or stern drive into the water for driving your boat.

The Voltmeter indicates you the remaining voltage in either battery. The Voltmeter is activated by a two position switch. The upper position gives you the remaining voltage of the first battery, and the lower position provides you with the remaining voltage of the second battery.

## **12/24/36-VOLT TROLLING MOTOR SYSTEM**

The 12, 24 or 36-Volt electrical system is a 12, 24 or 36-Volt, depending on selection, negative ground type. Each hot wire is 12-Volt, feeding the trolling motor, and the negative return is by three insulated wires to the terminal of the batteries. (See Bow Panel Installation Sheet in your Owner's Package for wiring diagram)

## **12/24/36-VOLT BOAT BOW TROLLING MOTOR PANEL UTILIZATION**

The 12/24/36-Volt boat bow trolling motor panel comes equipped with a Tilt switch, a Marincos type receptacle, a Battery Power Level gauge, a Battery Power Level Check switch, and a Battery Selector switch.



**FIGURE 4-5 12-24-36 VOLT BOW TROLLING PANEL**

The Marincor receptacle allows you to quickly plug and unplug your trolling motor. (See Bow Panel Installation Sheet in your Owner's Package for wiring diagram)

The Tilt switch is a two position switch. The upper position enables you to drive the back motor or stern drive out of the water for better trolling performance of your electric trolling motor. The lower position enables you to drive down the back motor or stern drive into the water for driving your boat.

The Battery Power Level gauge enables you with the remaining voltage, in percent, of the selected battery. It is activated by the Test switch and the Battery Selector switch. In order to know the remaining voltage of a battery, set the Battery Selector switch to the desired battery and press and hold the Test switch, the remaining voltage will be indicated in the Battery Power Level gauge.

**IMPORTANT:** Turning the ignition switch off does not cut off power to all components. Powered components, can draw down the battery if they are left on for an extended period without running the engine. It is recommended that you unplug any components, such as the trolling motor, to avoid battery drainage.

**IMPORTANT:** The electrical system is wired at the factory to handle factory-installed electrical equipment. It is recommended that you have your dealer install any additional equipment. An error in wiring the electrical circuits can cause a fire or damage electrical system components. Have your dealer repair the electrical system and install additional equipment.

## **⚠ WARNING**

**Fire or Explosion Hazard!** Electrical system parts are designed and manufactured to minimize risks of fire or explosion. **Never substitute automotive parts for marine parts.** Automotive parts do not provide the necessary ignition spark protection.

## BATTERY

### **WARNING**

**Poison!** Sulfuric acid in batteries can cause severe burns. Avoid contact with skin, eyes, or clothing. Wear goggles, rubber gloves, and protective apron when working with batteries. In case of skin contact, flush with water at least 15 minutes. If swallowed, drink large quantities of water or milk. Follow with Milk of Magnesia, beaten egg, or vegetable oil. Get medical attention immediately.

### **WARNING**

**Fire or Explosion Hazard!** Only qualified personnel should install batteries and perform electrical system maintenance. Do not expose batteries to open flame or sparks. Do not smoke near batteries.

Your dealer has installed a battery or batteries which supply power to the DC electrical system. Marine batteries provide high reserve capacity plus cold cranking performance. When the engine is running, the battery is charged automatically.

Batteries produce hydrogen and oxygen gases when being charged. These explosive gases escape through the vent/fill caps and may form an explosive atmosphere around the battery if ventilation is poor. This gas may remain around the battery for several hours after charging. Sparks or flames can ignite the gas and cause an explosion.

**Note:** Never disconnect the battery cables while the engine is running. Doing so can damage the electrical system.

## AC/DC BATTERY CHARGER

Your boat may have a battery charging system which operates off 120-volt AC power from shore. This battery charger, if so installed on your boat, is designed only to charge the deep cycle battery that is used for your electric trolling motor. Turn the charger on whenever your boat is connected to shore power to keep batteries fully charged. The charging system is fully automatic and permanently wired into the 12-volt DC system. If the monitored battery level drops under the full charge range, the charger automatically turns ON and restores the battery to FULL charge status.

**IMPORTANT:** Before plugging in battery charger, make sure all trolling motors are unplugged. Failure to do so could damage trolling motor.

## BATTERY CHARGING

The engine alternator will recharge the engine battery when the engine is running. On some models a voltage regulator controls the rate of charge by sensing battery voltage and increases or decreases alternator output accordingly.

### **WARNING**

To prevent personal injury, do not attempt to start your engine with jumper cables. The use of jumper cables could create dangerous sparks, which could cause the battery's hydrogen vapors or gasoline fumes to explode. To avoid any risk of explosion due to hydrogen vapors when charging a battery, always leave the cover of the battery compartment open.

## OVERLOAD PROTECTION

The engine is equipped with a fuse or circuit breaker to protect the engine wiring harness and instrumentation power leads. If an electrical overload occurs, a circuit will "open" and interrupt current flow when the current draw exceeds the rated amperage. Refer to your engine manual for breaker location, resetting procedure, or for fuse rating and replacement procedure.

## TROLLING MOTOR

Some Princecraft boats have a heavy-duty trolling motor receptacle located at the bow of the boat. This receptacle is to be used only when the trolling motor is in use. Running from the receptacle is a heavy-duty copper wire harness that extends back to your batteries. This heavy-duty wire assures you of maximum thrust and longer battery life. All of our boats feature an electrical device that protects this harness, which is located near the trolling motor batteries.

**Note:** To prevent equipment damage and possible injury, always connect the trolling motor and batteries by using the factory supplied wiring.

### **Mounting Trolling Motor**

The front deck of your boat has been reinforced to withstand the maximum thrust put out by today's heavy-duty trolling motors. Follow manufacturer's directions when mounting trolling motor bracket. Always use washers on the underside of the deck when bolting on a trolling motor, and use all available bolt holes for maximum strength.

## **Detachable Trolling Motor Mount**

Some models are equipped with a device that allows removal of the trolling motor. Please refer to the Owner's Manual for proper mounting and securing instructions.

## **ENGINE ALARM SYSTEM**

Some engines are equipped with an audible warning alarm. An alarm will sound if any one of the following occur in either engine: 1) cooling system water temperature too high, 2) tank oil supply low. If alarm sounds, quickly observe gauges for an abnormal reading, then stop engine immediately. You can also refer to your digital message center if your boat is so equipped. If all gauges read normal, then refer to your engine manual to aid in finding and correcting the problem.

If the cause for the alarm cannot be found, consult your dealer. To prevent possible damage to an engine, do not restart engine until the cause for the warning has been found and corrected. In an emergency situation, continue at low speed.

**Note:** Refer to engine owner's manual for additional information.

## **CORROSION**

Corrosion of metal parts, especially those exposed to brackish water, is common for boats. Corrosion can be caused by stray electric currents from shorepower installations, improperly grounded A.C. lines and circuits, and poorly insulated D.C. powered equipment from boats moored nearby.

Corrosion is accelerated when electric current is present. For example, in the following list (next page), aluminum is less noble than copper. This means the aluminum will corrode faster than copper if the two are submerged in seawater.

### **Sacrificial Zinc Anode System**

This system, used to reduce corrosion on underwater metal parts, is the attachment of zinc castings to the parts in need of protection. Zinc, which is an active metal in the galvanic series, is attacked by corrosion while a nobler metal, such as a bronze fitting, is protected.

Periodic replacement of zinc anode components is considered normal maintenance.

## **NOTICE DO NOT PAINT ZINC ANODES**

### **Galvanic Series of Metals**

The metals in the chart range from the Least Noble (Anode Active) to the Most Noble (Cathode Passive). Combinations of any of them will show you what to expect relative to Active and Passive Corrosion.

This information is important to know when adding or replacing hull fittings: use metals that are close to each other in the galvanic series. The best way to avoid corrosion is to use genuine replacement parts. When adding accessories not supplied by us, consult your dealer regarding selection and proper installation.

#### Least Noble (Anode-Active)

1. Zinc
2. Galvanized steel or galvanized iron
3. Aluminum
4. Cadmium
5. Mild steel
6. Wrought iron
7. Cast Iron
8. Ni-Resist
9. Lead
10. Tin
11. Manganese bronze
12. Naval brass (60% copper-39% zinc)
13. Nickel (active)
14. Yellow brass (65% copper-15% zinc)
15. Admiralty brass
16. Aluminum bronze
17. Red brass (85% copper-35% zinc)
18. Copper
19. Silicon bronze
20. Nickel (passive)
21. Hastelloy C

#### Most Noble (Cathode-Passive)

### **RADIO CASSETTE/CD PLAYER**

We recommend the radio switch be turned off while the boat is not being used to avoid battery drainage. (See section 6 for switches)

## TROUBLESHOOTING

### **⚠ CAUTION**

**Electric Shock! Equipment Damage!** Disconnect battery cables before performing all inspections, checks, and repairs to avoid possible personal injury and damage to equipment.

### DC Electrical System

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
No power to 12-V equipment	Weak or dead battery	Recharge battery
Battery not charging (engine running)	Engine alternator malfunction	See dealer
Battery not holding a charge	Bad battery	Replace battery
12-V device not working	Circuit breaker for device is OFF	Reset breaker to ON
	Weak or dead battery	Charge battery
	Faulty electrical connection	Check 12-V connections. Tighten or repair as needed
	Device is not connected	Verify all wires are connected