General Nature

Problem	Probable Cause	Solution
Tapping or knocking sound coming from motor compartment. *Low pitch growling noise*	1. Motor and/or shaft sheaves not tight, or misaligned. 1. Worn cutlass bearing.	1. Tighten and/or re-align 1. Replace cutlass bearing
Vibration and reduced speed *No power to control switch, or 12 volt instruments*	1. Debris around propeller 2. Propeller blade(s) broken 1. Key is in off position	1. Have diver safely clear propeller and shaft. 2. Replace propeller. 1. Turn key on to activate entire system.
Loud rushing water type noise when boat is in full speed reverse.	1. Prop is cavitating, not enough water getting to prop. Normal condition.	1. Slow motor, allow prop to "Bite" in water. 2. As boat speeds up in reverse prop will begin to work better.
Squealing noise from motor area *Low pitch grumbling noise near back of boat when running in high speed.*	1. Belt is loose. 1. Cutlass bearing worn out – Too much room between shaft and cutlass.	1. Replace gas shock or replace belt. 1. Replace cutlass bearing.
Boat runs slower in high speed	1. Dirty bottom and prop 2. Low Battery Voltage	1. Have dive service clean bottom, or repaint. 2. See "Charger" troubleshooting section. 3. Old batteries – replace.
In full speed, floor vibrates and boat is going slow.	1. Prop fouled with seaweed, weeds, fishing line, etc.	1. Put boat in reverse to release material on prop. If no success, schedule underwater dive service or haul-out to remove debris.

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Charger

Problem	Probable Cause	Solution
Charging indicator light does not go "on" when plugged into dock power.	1. Dock power circuit breaker is off. 2. Dock power wire disconnected. 3. Insufficient AC line voltage. Minimum voltage requirement is 105 volts. 4. Charger malfunction. 5. Fuse inside charger is blown.	1. Turn on. 2. Re-connect, per electricians instructions. 3. Replace or repair wire at power source. Call experienced electrician. 4. Remove DC charge leads from battery. Place voltmeter on leads and turn charger on. If no reading than replace charger. 5. Replace. If fuse continues to blow, call dealer.
Charger hums, but Charging indicator light does not go on.	1. Dead cell in one or more batteries. 2. Not enough voltage to charger. 3. Disconnected wire somewhere on batteries. 4. Extension cord fitting corroded.	1. Replace battery. 2. Charger requires a minimum of 105 volts to operate. Consult an electrician. 3. Check connections on all batteries. 4. Replace with new extension cord.
Charger does not shut off. *Charger goes on and seems to work, yet boat seems "slower".*	1. Timer in charger has failed. 1. Batteries are older and won't accept a charge. 2. Dock power not consistent through charge cycle.	1. Replace timer board. 1. Need new batteries. 2. Suspect interruption in charge cycle. Breaker is going off or AC outlet has timer on it. Someone has unplugged to use outlet.

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Infa-Speed Control System

(Electronic Actuator & Control Board are equipped with plug fittings for easy removal and installation)

Problem	Probable Cause	Solution
Control switch is in forward or reverse, but boat won't operate when key is turned on.	1. Normal safety feature built into controller.	1. Turn key off, put control switch in “neutral”, Turn key back on and operate control switch.
No forward speed, only reverse, or visa-versa.	1. Failed contactor on control board. 2. Failed micro-switch on actuator.	1. Unplug control board and send to factory or rep. For replacement or repair. 2. Unplug actuator and send to factory or rep. For replacement or repair.
Stopped working in all speeds.	1. Battery voltage too low to run motor. 2. Loose wire or wire disconnected on battery. pack, motor or control board. 3. Failed contactors on control board. 4. Prop shaft fouled or restricted. 5. Main controller failed.	1. First, charge battery pack for one cycle. Check all cells with hydrometer for bad cell. Replace any battery with shorted cell. 2. Check to see if all motor, switch and battery wires are secure. 3. Unplug control board and send to factory or rep. For repair or replacement. 4. Infa-Speed controller has shut down motor until prop shaft is freed. 5. Unplug control board and send to factory or rep. For repair or replacement.

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Fuel Meter

Problem	Probable Cause	Solution
Fuel meter drops fast from "F" (Full) to empty while in high speed.	1. Batteries are old. 2. Prop is fouled. 3. Water in batteries is low. 4. Charger problem.	1. Possibly replace. 2. Clean debris from prop. 3. Fill with water. Tap water is OK. 4. See “Charger” Troubleshooting Guide.
Fuel meter needle never moves.	1. Malfunction. 2. Wire disconnected.	1. Replace 2. Re-connect wire

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Motor

Problem	Probable Cause	Solution
Motor does not run in reverse or forward (control switch is determined to be functioning properly).	1. Excessive moisture has frozen armature 2. Brushes have worn out.	1. Take motor to a qualified technician to be evaluated, or take to your dealer for replacement. 2. Replace brushes.

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Batteries

It is very important to obtain accurate gravity readings of the battery water with a hydrometer before completing any service. This is the "blood pressure" of our boats.

Problem	Probable Cause	Solution
Batteries are swollen and cracked.	1. No water in batteries while charging over a period of time. 2. Old age.	1. Replace batteries, check charger. 2. Replace batteries.
Batteries use a lot of water.	1. Leak in battery casing. 2. Frequent use of boat in hot, dry, air.	1. Replace battery. 2. Normal, replace water more often.
Batteries get hot when charging. *Batteries are dead (empty).*	1. Dead cell in one battery. 1. Charger not working. 2. Old age (5-8 years).	1. Locate and replace. 1. See “Charger” troubleshooting section. 2. Replace.
Batteries never get fully charged (after testing with hydrometer).	1. Unaware dock power is turned off. 2. Not enough charge time between use. 3. Water low. 4. Batteries vary in charge (likely 12 volt system is lower than the rest of the pack).	1. Turn dock power on, if problem persists, call electrician. 2. Ratio is 3 hours of charging needed for every 1 hour of operation. 3. Fill with water. 4. Individually charge low batteries with 6 volt charger at low amperage for 12-24 hours, then hydrometer.

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Troubleshooting Noises

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1. **Knocking (a tapping sound which varies with motor speed)**
   a) Forward bearing corroded. Replace.
   b) Forward bearing over-greased "seal blown". Replace.
   c) Forward bearing not perpendicular to shaft. Re-align.
   d) Fishing line around prop shaft, sinker or debris hitting bottom of boat. Inspect shaft, remove debris.
   e) Loose shaft sheave... happens usually in slow speeds only, but can appear in high also. Diagnose by removing belt, and try shaking shaft sheave with hand violently. Tighten set screw on shaft. Use Loctite on set screw and tighten with Allen socket and wrench. Small Allen wrench will not apply sufficient torque.
   f) Loose prop.
   g) Rudder strut hole too large and rudder shaft is knocking.
2. **Squealing**
   a) Loose belts- tighten tensioner or replace shock.
   b) Rust on inner surface of sheave - will disappear with use.
   c) Spring seal on motor shaft rubbing / remove it, only applies to boats before 1994.
3. **Low Pitch Rumble**
   a) Cutlass bearing not sized correctly. Replace cutlass.
   b) V-belt warped at the splice. Replace belt.
4. **High Pitch Whine**
   a) Metal prop: prop tips need de- tuning (sharpening) by a propeller shop.
   b) Motor seal on shaft dry.
   c) Belt splice out of line, causing motor to dip on each revolution. Replace belt.
   d) Vibration.
   e) Something on prop. Put in reverse immediately or remove by hand.
   f) One blade or more is broken off prop. Replace prop.
   g) Belt splice out of line. Replace belt.
5. **Low Pitch Grinding**
   a) Bearings in motor are corroded.
   b) Bearings in motor not installed properly. Only applies when motor is new.

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