

RAIDER OUTBOARDS SERVICE BULLETIN RO2019-002 (July 23, 2019) formally NR. 002

- 1. Spark Plug arcing to Cylinder Head.
 - a. Engine Model: Raider 40 HP and 50 HP
 - b. Item: After submersion and dewatering, some Operators experienced difficulties getting the motor to start/fire. During submersion performance testing it was noted that approximately 15% of the time motors were difficult to start or ran erratically. The cause was determined to be from water intrusion due to insufficient dielectric grease application inside the plug wire boots, which allowed for the ignition spark to arch directly from the plug to cylinder head. After corrective maintenance actions were implemented zero failures were noted.
 - c. Service Action. Prior to every operational cycle/mission, especially if full submersion is intended, as part of the Pre-Operations Checks, the following steps should be followed before placing the motor into service:
 - 1) Remove Engine cowling.
 - 2) Visually Inspect the ignition coil and plug wires for, corrosion, chaffing, cracked wire insulation. (see fig. 1 and 2)
 - 3) Visually inspect plug wire retainers/clamp for wear and tear, replace if required. (see fig 3)
 - 4) Visually Inspect the spark plug boots chaffing and cracks, ensure that the 2" boots are installed (see service bulletin NR. 001 dated 25 April 2019). (see fig 4 and 5)
 - 5) Starting from the upper cylinder and working down the cylinder head remove one plug wire at time and perform the following:
 - a) Visually inspect the interior of the plug boot, look for corrosion, chaffing, cracks or dry rot. (see fig 6)
 - b) With low-pressure air remove any moisture that may have collected within the interior of the plug boot.
 - c) Visually inspect the plug ceramic for cracks. (see fig 7)
 - d) Visually inspect the plug end for corrosion. (see fig 7)
 - e) Ensure the plug is fully seated in cylinder head.

- f) With a clean shop towel and low-pressure air remove any debris or moisture from around the plug base. (see fig 8)
- g) Place an ample amount of dielectric grease on the end of the plug. (see fig 9)
- h) Fill the plug boot with dielectric grease. (see fig 10)
- i) Connect the spark plug wire boot over the end of the spark plug. (see fig 11 and 12)
- j) With a clean shop towel remove any excess dielectric grease from around the boot and cylinder head. (see fig 13)
- k) Repeat this process for each remaining plug wire boot. When all wires are complete proceed to the next step.
- 6) Ensure that each plug wire is properly secured in its retainer clamp and not rubbing on any moving motor part or surface. (see fig 14)
- 7) Replace the Engine Cowling.
- 8) Place motor into service.
- d. Materials. Dielectric grease MIL-S-8660C, MILITARY SPECIFICATION: SILICONE COMPOUND, NATO CODE NUMBER S-736 (22 SEP 1983) [S/S BY SAE-AS8660]. This specification covers one type of a non-melting, heat stable silicone compound for use in high tension electrical connections, ignition systems and electronics equipment; for application to unpainted mating threaded or non-threaded surfaces, and as a lubricant for compounds fabricated from rubber. This compound is effective in the temperature range from -54°C (-65°F) to +204°C, (+400°F) for extended periods and to 260°C (500°F) for short periods. (see fig 15)
- Technical Support. Direct all technical support issues or questions or comments related to the following service bulletin please contact Raider Outboards Technical Support
 <u>TechSupport@raideroutbaords.com</u> or by phone 321-567-2306. Please include the following information is your request for support.
 - 1) Name
 - 2) Command
 - 3) Contact Information
 - 4) Engine Model (if possible, provide engine serial number)
 - 5) Brief description of issue or support action required



Fig (1) 40 HP ignition coil and spark plug wires.



Fig (3) 40 HP plug wire retainer.



Fig (5) 50 HP Ignition Coil installed with 2" Boots.



Fig (2) 40 HP ignition coil and spark plug wires.



Fig (4) 40 HP Ignition Coil with 2" Boots.



Fig (6) Interior Boot Inspection, no moisture, no debris.



Fig (7) Plug ceramic inspection.



Fig (9) Apply grease to plug head.



Fig (8) Clean any moisture or debris from around plug.



Fig (10) Fill boot with grease.



Fig (11) Reconnect plug wire to plug.



Fig (12) Plug wire fully seated.



Fig (13) Remove excess grease.



Fig (15) Meets MIL-S-8660C, SAE-AS8660



Fig (14) Route plug wires through retainer.



Fig (16) Individual 50 HP Ignition Coil, wire, with 2"Boot.

2. Thanks, from Raider Outboards for all your outstanding support defending our freedoms, we truly appreciate at that you do for our country.

Respectfully,

Chris Wood

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