GENERAL

70 hp johnson outboard ignition switch wiring

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Introduction

For boat owners and marine mechanics, the reliability of a 70 horsepower Johnson outboard engine hinges on a solid ignition system. The ignition switch is the heart of that system, translating a simple push of a button into a powerful spark that ignites the fuel air mixture in each cylinder. Wiring the ignition switch correctly is essential for performance, safety, and longevity. This guide delivers a step by step walkthrough of the ignition switch wiring process for a 70 hp Johnson outboard, enriched with troubleshooting tips, safety reminders, and maintenance best practices. Whether you're a seasoned technician or a DIY enthusiast, you'll find everything you need to ensure your outboard runs smoothly and reliably.

Understanding the 70 /hp Johnson Outboard Ignition System

Key Components

- Ignition Switch – The control device that initiates the spark sequence.
- Ignition Coil – Converts low voltage to a high voltage spark.
- Distributor (if applicable) – Routes the high voltage spark to each cylinder.
- Spark Plugs – Emit the spark that ignites the fuel mixture.
- Control Circuitry – Includes relays, fuses, and wiring harnesses.

Electrical Architecture

The 70 hp Johnson outboard uses a 12 volt marine electrical system. The ignition switch receives power from the battery or shore power, passes it through a control relay, and then forwards it to the ignition coil. The coil's secondary side delivers a high voltage pulse to the spark plugs via the distributor. Proper grounding and shielding are critical to avoid interference and ensure consistent spark timing.

Pre Wiring Checklist

Gather the Necessary Tools

- 12 volt marine battery or shore power connection
- 12 volt power supply (battery or shore power)
- 12 volt fuse (typically 30 /A for the ignition system)
- Ignition switch (compatible with 70 /hp Johnson model)
- Ignition coil and distributor (if separate)
- Wiring harness or individual wires (14 AWG or 12 AWG marine grade)
- Crimp connectors, heat shrink tubing, and cable ties
- Multimeter (12 V DC measurement)
- Wire strippers, crimping tool, and soldering iron (optional)
- Safety gear: gloves, safety glasses, and insulated tools

Verify the Engine and Electrical System

Before opening the engine compartment, ensure that the battery is fully charged and all circuit breakers are reset. Check for any existing wiring damage, corrosion, or loose connections that could affect the ignition switch wiring.

Clean the contacts with a contact cleaner and a soft brush to remove oxidation.

Step by Step Wiring Instructions

1. Identify the Power Source

The ignition switch must receive a clean 12 volt input from the battery. Locate the battery's positive terminal and connect a 12 V fuse within 12 inches of the switch. The fuse should be rated for the total current draw of the ignition system (usually 30 /A). Use a marine grade fuse holder to maintain a secure connection.

2. Install the Ignition Switch

Mount the ignition switch on the engine control panel or the steering wheel hub, depending on your configuration. Ensure it is firmly secured and positioned for easy access. Route the power wire from the battery through the fuse holder to the switch's input terminal. Use a 14 AWG wire for the main power line, and protect it with heat shrink tubing to prevent abrasion.

3. Connect the Switch to the Ignition Relay

The ignition switch typically drives a control relay that isolates the high current ignition coil from the low current switch. Connect the switch's output terminal to the coil side of the relay (usually the "coil" or "control" side). Use a 14 AWG wire, and add a 30 A fuse between the switch and the relay to safeguard against short circuits.

4. Wire the Ignition Coil

From the relay's output terminal, run a 12 volt supply wire to the ignition coil's primary side. This wire should also be 14 AWG or 12 AWG, depending on the coil's current rating. Ground the coil's negative terminal to the engine block or a dedicated grounding point using a clean, tight connection. The coil's secondary side is connected to the distributor or directly to the spark plugs, depending on the engine design.

5. Distribute the High Voltage Spark

If your 70 hp Johnson outboard uses a distributor, connect the coil's secondary side to the distributor's input terminal. From the distributor, run 18 AWG or 20 AWG wires to each spark plug, ensuring each plug receives the correct high voltage pulse. If the engine is a direct spark design, connect the coil's secondary directly to each spark plug using the appropriate high voltage wires.

6. Secure All Connections

After all wires are routed, double check each connection for tightness. Use crimp connectors with heat shrink tubing to seal the connections against moisture. Bundle excess wire with cable ties and secure it to prevent movement that could loosen contacts during operation.

7. Test the Wiring Setup

With the engine compartment closed, power the system using the battery or shore power. Use a multimeter to confirm a steady 12 volt output at the ignition switch and at the coil's primary side. Verify that the spark plugs are firing by checking for a visible spark or by using a spark tester. If the engine does not start, double check all connections, the fuse, and the relay operation.

Common Wiring Mistakes and How to Avoid Them

Overlooking Ground Connections

A poor ground can cause intermittent ignition. Always use a dedicated grounding strap from the coil's negative

terminal to a clean, unpainted metal surface on the engine block.

Using Inadequate Wire Gauge

Using wires that are too thin for the current can lead to voltage drops and overheating. Stick to the wire gauge recommendations in the engine's wiring diagram.

Neglecting Weatherproofing

Marine environments are harsh. Ensure all connectors are sealed with heat shrink tubing or marine grade sealant to prevent water ingress.

Misidentifying Terminal Polarity

Cross connecting positive and negative leads can damage the ignition coil. Verify polarity before soldering or crimping.

Failing to Install a Fuse

A missing fuse allows excessive current to flow, potentially destroying the ignition coil and other components. Always include a fuse as specified by the manufacturer.

Troubleshooting Guide

Engine Won't Start

1. Check the battery voltage—must be "e12.6 /V.
2. Verify fuse integrity; replace if blown.
3. Use a multimeter to confirm 12 /V at the ignition switch's output.
4. Test the relay coil—ensure it energizes when the switch is on.
5. Inspect the coil's primary and secondary connections for continuity.
6. Check spark plug wires for damage and proper grounding.

No Spark Detected

1. Confirm spark plug wires are correctly connected to the distributor or coil.
2. Check spark plug gap and replace if out of spec.
3. Test the ignition coil with a coil tester or by measuring the secondary voltage.
4. Ensure the distributor's rotor is rotating and the cap is intact.

Intermittent Ignition

1. Inspect all connectors for corrosion or loose contacts.
2. Verify that the wiring harness is not moving or rubbing against hot surfaces.
3. Check the relay for proper operation under load.
4. Ensure the engine's crankshaft position sensor (if present) is functioning.

Safety Precautions

- Always disconnect the battery before working on the ignition system.
- Wear insulated gloves and safety glasses to protect against accidental short circuits.
- Use only marine grade electrical components to withstand saltwater corrosion.
- Keep the engine compartment dry and well ventilated during work.
- Follow the manufacturer's wiring diagram closely; do not deviate from the recommended routing.

Maintenance Tips for Longevity

Regular Inspection

Perform a visual check of all ignition wiring every six months, especially after exposure to saltwater or extreme temperatures. Look for frayed insulation, loose connectors, and corrosion.

Clean Spark Plugs

Remove and clean spark plugs annually or as recommended in the service manual. Clean plugs reduce the risk of misfires and improve fuel efficiency.

Check Ground Integrity

Use a multimeter to measure resistance between the ground strap and the engine block. A reading above 0.1 :• indicates a poor ground that should be repaired.

Replace Worn Components

Replace any damaged wires, connectors, or the ignition switch after a single instance of failure. Ignition components are critical to engine performance and safety.

Use Quality Replacement Parts

When replacing the ignition switch or coil, always use OEM or equivalent high quality parts. Cheap substitutes may not meet the required voltage or current specifications.

Understanding the Wiring Diagram

While the specific wiring diagram may vary slightly between Johnson 70 hp models, the fundamental layout remains consistent. Below is a textual representation of a typical diagram:

1. Battery positive !’ Fuse (30 /A) !’ Ignition switch input
2. Ignition switch output !’ Relay coil side
3. Relay contact side !’ Ignition coil primary side
4. Ignition coil secondary !’ Distributor input (or direct spark plug wires)
5. Distributor !’ Spark plug wires (to each cylinder)
6. All negative terminals !’ Engine block ground

Refer to the official service manual for exact terminal numbers and wire colors to avoid miswiring.

Alternative Wiring Options

Direct Spark vs. Distributor

Some modern 70 hp Johnson outboards use a direct spark design, eliminating the distributor. In that case, the coil’s secondary connects directly to each spark plug wire, simplifying the wiring process and reducing potential failure points.

Integrated Ignition Modules

Certain high end models may include an integrated ignition module that consolidates the coil, relay, and switch into a single unit. Wiring such a module follows the same power to ground principle but requires fewer individual components.

Frequently Asked Questions

Can I use a standard automotive ignition switch?

No. Marine ignition switches must handle higher humidity, salt spray, and temperature extremes. Always use a marine grade switch rated for 12 /V DC.

What is the recommended wire gauge for the ignition coil primary?

Typically 14

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