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> Champion Industrial 220 Spark Plug (FI21501) Instruction Manual

Champion 220

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Model: 220 | Brand: Champion

1. INTRODUCTION AND OVERVIEW

The Champion Industrial 220 Spark Plug (FI21501) is engineered for reliable performance in demanding industrial and agricultural applications. These spark plugs are designed with advanced materials and construction to withstand high-temperature and high-load service environments, ensuring consistent ignition and efficient operation.

Champion industrial plugs incorporate precious metals, F.I.S.S resistor technology, and Hot Lock designs to provide a robust solution for modern equipment. They are compatible with alternative fuels and contribute to CO2 reduction efforts.

2. SAFETY INFORMATION

Always observe the following safety precautions when handling or installing spark plugs:

- Ensure the engine is completely off and cool before attempting any work on the ignition system.
- Disconnect the battery to prevent accidental starting or electrical shock.
- Wear appropriate personal protective equipment, including safety glasses and gloves.
- Avoid touching hot engine components.
- Keep spark plugs and tools away from children.
- Dispose of old spark plugs responsibly according to local regulations.

Proposition 65 Warning: This product may contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, visit www.P65Warnings.ca.gov.

3. PRODUCT FEATURES

The Champion Industrial 220 Spark Plug offers the following key features:

- Manufactured for superior performance and long-lasting durability.
- Designed for high compression and aggressive environments.
- Compatible with alternative fuels (gases).
- Supports CO2 reduction.

- Copper core material for efficient heat transfer.

4. SETUP AND INSTALLATION

Proper installation is crucial for optimal spark plug performance and engine longevity. Follow these general steps for replacing spark plugs:

1. **Preparation:** Gather necessary tools including a spark plug wrench, torque wrench, spark plug gapping tool, and anti-seize compound (optional). Ensure the engine is cool.
2. **Locate Spark Plugs:** Identify the spark plug wires or coil packs connected to each spark plug.
3. **Remove Old Plugs:** Carefully disconnect the spark plug wire/coil pack. Use a spark plug wrench to loosen and remove the old spark plug. Inspect the old plug for signs of wear or fouling, which can indicate engine issues.
4. **Check Gap:** Before installing the new Champion Industrial 220 spark plug, verify the electrode gap using a gapping tool. Refer to your equipment's service manual for the correct gap specification. Adjust if necessary by carefully bending the ground electrode.
5. **Install New Plugs:** Apply a small amount of anti-seize compound to the spark plug threads (if recommended by your equipment manufacturer) to prevent seizing. Hand-thread the new spark plug into the cylinder head to avoid cross-threading.
6. **Torque to Specification:** Use a torque wrench to tighten the spark plug to the manufacturer's specified torque setting. Overtightening can damage the cylinder head or spark plug; undertightening can lead to poor heat transfer and loosening.
7. **Reconnect:** Reconnect the spark plug wire or coil pack, ensuring a secure connection.
8. **Repeat:** Repeat the process for all remaining spark plugs.



Image: Champion Industrial 220 Spark Plug (FI21501) in its product packaging. This image displays the spark plug's design, including its metal body, ceramic insulator, and the distinctive Champion branding on the box.

5. OPERATING INSTRUCTIONS

Spark plugs are critical components of an internal combustion engine's ignition system. While they do not have "operating instructions" in the traditional sense, their proper function is essential for the engine to operate correctly.

- Ensure all spark plugs are correctly installed and torqued before starting the engine.
- A properly functioning spark plug will produce a strong, consistent spark, leading to efficient fuel combustion.
- Listen for smooth engine operation. Misfires, rough idling, or reduced power can indicate a spark plug issue.

6. MAINTENANCE

Regular inspection and maintenance of your Champion Industrial 220 Spark Plugs will help ensure optimal engine performance and longevity.

- **Inspection:** Periodically remove spark plugs for visual inspection. Look for signs of wear, such as a worn-down center electrode or ground electrode, or excessive deposits.
- **Deposits:**
 - **Carbon Deposits:** Black, sooty deposits can indicate an overly rich fuel mixture, weak ignition, or prolonged idling.
 - **Oil Deposits:** Oily, black deposits suggest oil is entering the combustion chamber, possibly due to worn piston rings or valve guides.
 - **Ash Deposits:** Light brown or white deposits can be from fuel or oil additives. Excessive ash can cause misfires.
- **Cleaning:** Light carbon deposits can sometimes be carefully removed with a wire brush, but heavily fouled plugs should be replaced. Avoid aggressive cleaning that could damage the electrode or insulator.
- **Replacement:** Refer to your equipment's service manual for recommended spark plug replacement intervals. Even if a plug appears functional, its performance degrades over time.
- **Gap Check:** Re-check the spark plug gap during maintenance and adjust if necessary.

7. TROUBLESHOOTING

If your engine experiences performance issues, spark plugs can often be a contributing factor. Here are common issues and potential causes:

Symptom	Possible Cause (Spark Plug Related)
Engine Misfires / Rough Idling	Fouled spark plug, incorrect gap, worn electrode, cracked insulator.
Hard Starting	Worn spark plugs, incorrect gap, carbon or oil fouling.
Reduced Fuel Economy	Inefficient combustion due to worn or fouled spark plugs.
Loss of Power / Acceleration	Weak spark from worn or damaged spark plugs.
Engine Knocking / Pinging	Incorrect heat range spark plug (too hot), pre-ignition.

If troubleshooting these issues does not resolve the problem, consult a qualified technician or your equipment's service manual.

8. SPECIFICATIONS

Key specifications for the Champion Industrial 220 Spark Plug (FI21501):

- **Brand:** Champion
- **Model Number:** 220
- **OEM Part Number:** Champion F121501
- **Core Material:** Copper
- **Top Material Type:** Metal
- **Vehicle Service Type:** Heater (also suitable for various industrial/agricultural engines)
- **Automotive Fit Type:** Vehicle Specific Fit
- **Product Dimensions:** Approximately 3.94 x 3.94 x 3.94 inches
- **Item Weight:** Approximately 0.88 ounces
- **Manufacturer:** Champion
- **GTIN/UPC:** 037551004300



Image: A banner highlighting Champion's industrial spark plug line, featuring industrial equipment in the background. This illustrates the robust nature and intended application of these spark plugs.

9. WARRANTY AND SUPPORT

For specific warranty information regarding the Champion Industrial 220 Spark Plug (FI21501), please refer to the official Champion website or contact their customer support directly. Warranty terms and conditions may vary.

For further assistance, technical support, or to locate authorized service centers, please visit the official Champion website: www.championautoparts.com.

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