

HKS 700E Spark Plug Replacement Procedure

SAFETY FIRST...

- Read all instructions before proceeding
- Make sure all power is off to the engine
- Make sure the fuel system is shut down
- To prevent burn injury, allow sufficient time for the engine to cool
- Be careful not to drop any tool or part while working within the engine compartment
- Count all tools and parts before starting
- Account for all tools, hardware, and parts when complete
- Make sure that when replacing spark plugs that nothing falls into the engine through the hole the spark plug is threaded into
- Safety glasses must be worn during this procedure

Pre-Check

At a minimum, the following tools will be needed for this procedure:

- 16mm deep well spark plug socket
- Socket handle and socket extensions
- Torque wrench *
- Spark plug gap tester **

The following supplies are required:

- 4 DENSO Iridium IK24C11 spark plugs, HKS Part number 04Y-398
- Small amount of spark plug lubricant

Background

HKS recommends that the spark plugs be replaced every 200 hours of operation. A special DENSO Iridium spark plug is required that is available through HKS.



Step 1

Remove cowlings and shrouds as needed to access the 4 spark plugs of the HKS 700E engine. Note quantities and locations of all nuts, bolts, screws, covers, fasteners, baffles, and housings removed. If any safety wires are removed, note their locations as these will have to be replaced with new safety wire at the end of this procedure.



Step 2

Using compressed air, blow away any dirt or debris away from the plug areas on the engine. This will reduce the risk of something accidentally falling inside the engine through the plug hole while the plug is removed. If anything does fall inside the hold, make sure it is removed before continuing.

Step 3

From the first spark plug, carefully remove the spark plug cap and wire from the spark plug. Inspect the plug caps and replace if necessary. Replacement caps are available through HKS.

- 088-001 MIDDLE SPARK PLUG 1 CAP (through the valve cover)
- 088-002 LOWER SPARK PLUG 2 CAP (angle plug at the side of cylinder)

Step 4

Using the 16mm deep well socket, any necessary socket extensions and a socket handle, remove the spark plug. Be careful not to drop the plug down into the engine compartment as the plug is being removed. If the plug is dropped, a telescoping magnet pickup can be used to retrieve the plug.

Tip: Do not use a torque wrench to remove plugs. The torque wrench should only be used to tighten new plugs back into place.

Step 5

Inspect the plug that was removed for any indications of engine trouble. If a problem is

observed, determine what actions are needed to correct the problems, and take necessary corrective steps. Any abnormal observations should also be noted in the aircraft and/or engine maintenance log. An excellent guide of what to look for can be found at:

<http://www.centuryperformance.com/spark-plug-reading-spg-192.html>

Step 6

Using the spark plug gap tester, adjust the gap of the new spark plug to 0.040.

Step 7

Using a small applicator brush, very lightly coat the threads of new spark plug with an acceptable spark plug thread lubricant. Only coat the threads and be careful not to allow any of the lubricant to coat over the end of the plug past the threads or onto the plug tip. The purpose of this lubricant is only to allow for thread protection and for easy removal of the plug in the future. Acceptable spark plug thread lubricants include:

- Champion CH2612 Spark Plug Thread Lubricant
- Loctite Silver Grade Anti-Seize Lubricant



Step 8

For cylinder wall angle plugs (Plug 2), using only your fingers, install the plug and hand-tighten to hold the plug in place. For the valve cover spark plugs (Plug 1), using the 16mm deep well socket and any necessary socket extensions, CAREFULLY install the plug. In both cases **FINGER OR HAND-TIGHTEN ONLY** (the plug will be tightened into place with a torque wrench in step 9) be careful to not allow the plug to “cross thread” as it is being

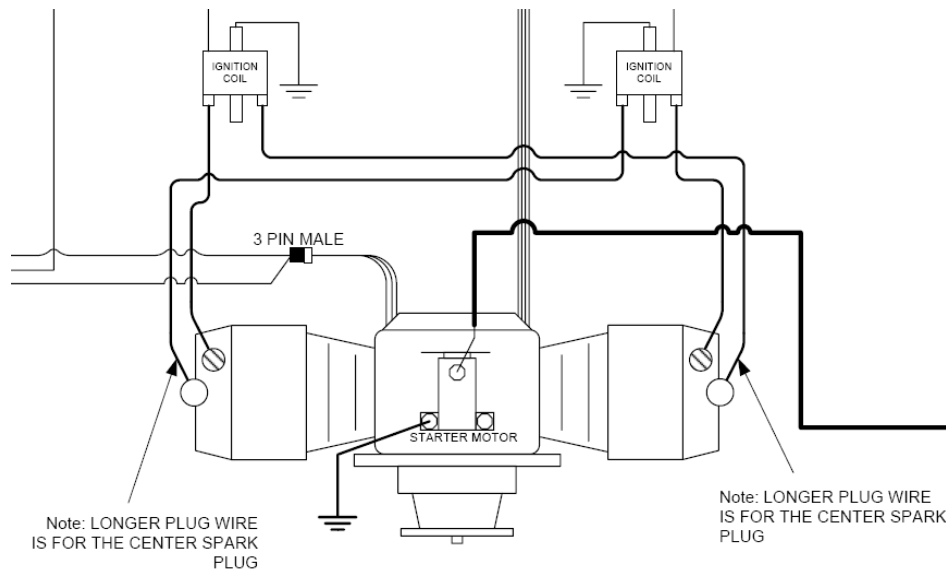
installed. If any resistance is felt, back the plug out, determine the problem, make corrections, and install again. Finger or hand-tighten only, do not use a socket handle to tighten the plug in at this step.

Step 9

Using the 16mm deep well socket, any necessary socket extensions, and the torque wrench, make the final tightening of the plug into the engine to a torque value of not less than 15.0 ft lbs and not greater than 22.0 ft lbs.

Step 10

Re-install the plug cap and wire back on to the new spark plug. Make certain that the plug cap and wire are re-installed back at the correct location.



Pictured at the left, the plug cap for the spark plug installed through the valve cover (088-001 MIDDLE SPARK PLUG 1 CAP).



Pictured at the left is the plug cap for the spark plug installed on the angle plug installed through the cylinder side wall (088-002 LOWER SPARK PLUG 2 CAP).

Step 11

Repeat steps 3 - 10 for the remaining spark plugs until all four have been replaced.

Step 12

Double check all plugs for tightness, all plug caps and plug wires to make sure they are secure and installed on the correct plug.

Step 13

Replace the cowlings and shrouds removed in step 1.

Step 14

Replace any safety wires that were removed.

Step 15

Account for all tools and hardware used. No parts should be left over and all tools and replaced components should be removed from the work area and accounted for.

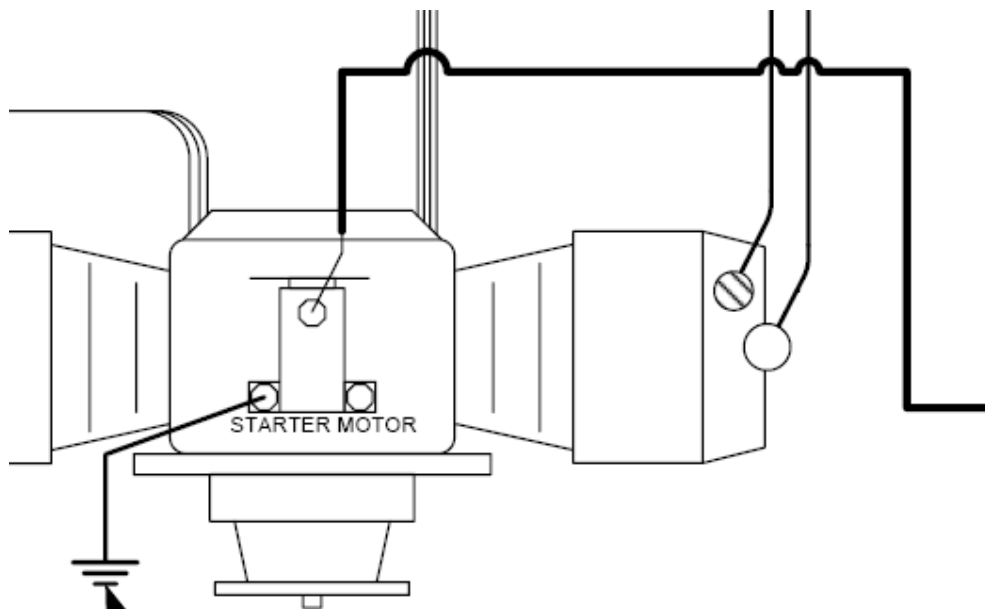
Step 16

Update the aircraft maintenance and/or engine maintenance logs to reflect the replacement of the plugs. Be sure to note the date, time, and engine hours in the log. Indicate when the next plug replacement should occur. Also note any observations made in step 5 and corrections made for reference and comparison at the next plug replacement.

Step 17 (optional)

This is also a good time to check the engine ground strap. Most engine installations use a rubber shock mount system between the engine and the airframe. The rubber shock mounts will act as an electrical ground isolator between the engine and the airframe. A ground strap is installed between airframe and engine to keep the engine and the airframe

at the same ground potential. This ground strap should be inspected and, if necessary, retightened or replaced. The rule for the size of the ground strap is; it should be at least the same size as the wire that connects to the engine starter. HKS recommends that this ground strap be attached to one of the engine starter bolts. A bad or broken ground strap can result in instrument failure, poor starting, and/or engine misfire.



Note: GROUNDING IS CRITICAL FOR PROPER OPERATION. IT IS STRONGLY RECOMMENDED THAT ALL GROUNDING BE CONNECTED TO ONE OF THE TWO STARTER MOTOR MOUNTING BOLTS.

* There are several types of torque wrenches available, we recommend the use of a "beam" type of torque wrench.

** A wire gauge capable of measuring a 0.040 gap.

Document History

Revision Date	Rev number	Change
November 29, 2008	1.01	Spark Plug Socket size to 16mm deep well socket.
December 15, 2008	1.02	Torque Conversion to Ft Lbs