CHAMPION TECHNICAL BULLETIN

AVIATION DEPARTMENT
CHAMPION SPARK PLUG COMPANY
TOLEDO 1, OHIO

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FILE DUPLICATE

TEST AND INSPECTION — AA15S, AA16S AND AA37S IGNITERS

This bulletin has been prepared as a result of numerous requests for test and inspection procedures for the AA15S - AA16S and AA37S igniters.

CHAMPION AA15S & AA16S

1. CRACKED CERAMICS

(a) Firing end

The ceramic firing end should be checked for cracks by visual inspection. If any cracks are found, the igniter should be discarded.

(b) Connector well area

The connector well area should be checked for cracks by visual inspection. If any cracks are found, the igniter should be discarded.

(c) Internal cracks

(1) Shake lightly to detect obvious major internal breakage. Any rattles are cause for rejection.

(2) To check for internal cracks, immerse the firing end of the igniter in transformer oil, thereby quenching the gap. Caution: Transformer oil must be free of foreign material at all times. Using a voltage source of approximately 7500 V, apply voltage at the terminal contact in parallel with an external auxiliary gap preset at 3/8". If the ceramic insulator is free of cracks, the voltage will spark across the external auxiliary gap indicating the igniter to be electrically sound. Sparking should be continuous at the test gap for a period of five (5) seconds. If no spark occurs across the auxiliary gap, the igniter should be discarded.

2. ELECTRODE EROSION

At present there is no established criteria for determining the serviceability of gap electrode and/or condition by the bomb pressure test method. We are currently working with P&W to determine if such a method of testing has any merit.

(a) Center electrode

The erosion of the center electrode shall not exceed .225 as described in P&W JT3C and JT4A Overhaul Manuals. If the center electrode is eroded beyond the above limits, the igniter should be discarded. See Figure I.

(b) Ground electrode or shell end

Any igniter evidencing severely burned or eroded ground electrode should be discarded.

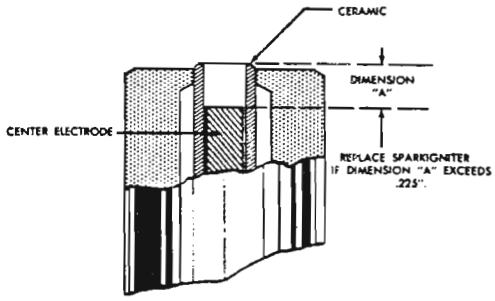

Figure I

3. GENERAL MECHANICAL CONDITION

(a) Visually inspect the igniter for damaged threads or mutilated shell hex. If necessary, chase barrel thread using a 1.000 inch - 20 NS die with pitch diameter $\frac{.9645}{.9611}$. For shell threads, a 15/16 inch - 16 NS die with pitch diameter $\frac{.8939}{.8903}$ should be used.

CHAMPION AA37S

1. CRACKED CERAMICS

(a) Firing end

The ceramic firing end should be checked for cracks by visual inspection. If any cracks are found, the igniter should be discarded.

(b) Connector well area

The connector well area should be checked for cracks by visual inspection. If any cracks are found, the igniter should be discarded.

(c) Internal cracks

(1) Shake lightly to detect obvious major internal breakage. Any rattles are cause for rejection.

(2) The AA37S has a semi-conductive material applied to the firing end ceramic. This material makes it impossible to oil or pressure quench the spark and obtain consistent test results. The problem of developing a satisfactory test method is under continued study.

2. ELECTRODE EROSION

(a) The erosion of the center electrode shall not exceed .350 as described in P&W JT3D Overhaul Manual. See Figure II.

(b) Ground electrode or shell end

Regarding the limits of circumferential erosion of the ground electrode or shell end, Champion is currently working with P&W and we are confident, in due course, limits will be established and released.

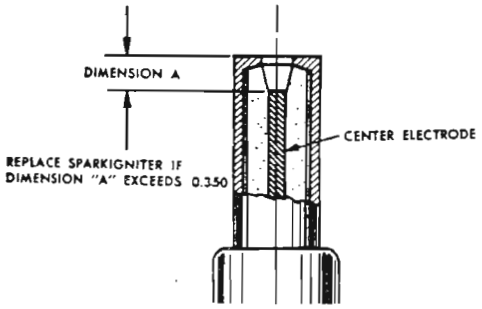

Figure II

3. GENERAL MECHANICAL CONDITION

(a) Visually inspect the igniter for damaged threads or mutilated shell hex. If necessary, chase barrel thread using a 1.000 inch - 20 NS die with pitch diameter $\frac{.9645}{.9611}$. For shell threads, a 15/16 inch - 16 NS die with pitch diameter $\frac{.8939}{.8903}$ should be used.

CHAMPION SPARK PLUG COMPANY

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