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# Service Letter

SL No. KA-01

Issue Date: February 12, 2021

**SUBJECT:** Inspection procedures and tools to inspect Kelly Aero FAA-PMA Impulse Couplings for Slick magnetos

**PURPOSE:** To provide Instructions for Continued Airworthiness for Kelly Aerospace FAA-PMA snap ring impulse couplings approved for Slick magnetos

**COMPLIANCE:** As required, any time Kelly Aero FAA-PMA Slick impulse coupling is inspected

**MODELS AFFECTED:** Kelly Aero FAA-PMA Impulse Coupling Assembly Part Numbers:

ES3007, ES3050, ES3068, ES3089, ES3100, ES3163, ES3333, ES3524, ES3529, ES3590, ES3635, ES3689, ES3994, ES5014, ES5020

**BACKGROUND:**

The Kelly Aero FAA-PMA approved snap ring style impulse coupling is a direct replacement for Slick riveted style impulse couplings. The Kelly Aero FAA-PMA snap ring style impulse couplings function the same as Slick riveted style impulse couplings, but incorporate solid pawl axles integral to the impulse cam plate and snap rings to retain the pawls to the axle.

Due to the snap ring pawl retention feature, the Kelly FAA-PMA impulse coupling components require specific inspection procedures and tools to measure the wear of the impulse pawl assembly. Slick inspection procedures, tools and dimensions must not be used to determine the continued airworthiness of Kelly Aero impulse couplings.

**DETAILED INSTRUCTIONS:**

Use only the inspection procedures, tools and dimensions detailed in the section titled “IMPULSE COUPLING INSPECTION” in this Service Letter as Instructions for Continued Airworthiness to inspect Kelly Aero PMA snap ring style impulse coupling.

The inspection procedures, tools and dimensions from the following Slick Service Manual and Service Bulletin must not be used to inspect Kelly Aero snap ring impulse couplings:

Slick L-1363G (or later revision) 4300/6300 Series Magneto Maintenance and Overhaul Manual, Section 3.3.4 “Inspect Impulse Coupling – Impulsed Coupled Magnetos”, paragraphs B “Inspect Coupling”, Steps B(1) through B(12).

Slick Service Bulletin SB1-86C, Impulse Coupling Inspection, “500 Hour Inspection”, Paragraph 4, Steps A through K.

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**WARNING: The use of the Slick T-150 Rivet Wear Gauge is not permitted to be used to inspect the Kelly Aero impulse pawl axles and a pawl assembly for wear. The feeler gauge measurements of .150" for Left Rotation Impulse Couplings and .140" do not apply to Kelly Aero PMA impulse couplings and must not be used as a gauge to determine wear.**

Use only the approved Kelly procedures, tools and tolerances detailed in the following inspection procedures specific to Kelly Aero PMA Slick impulse couplings.

## KELLY AERO PMA SLICK SNAP RING IMPULSE COUPLING INSPECTION

**CAUTION: Impulse coupling spring is under strong tension. Protect hands with gloves or thick rags to prevent injury when disassembling body from impulse cam assembly.**

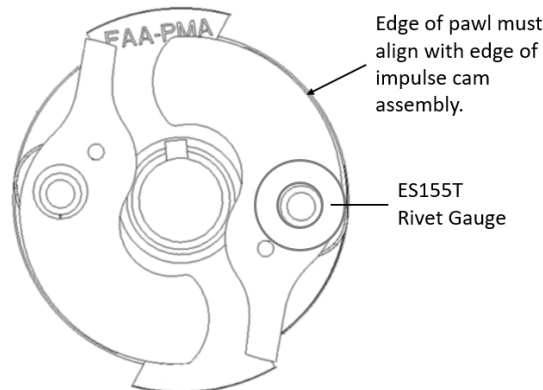
1. Separate impulse coupling body and spring from impulse cam assembly
2. Clean impulse coupling to bare metal, ensuring that all oil or other residue is removed.
3. Inspect impulse coupling body for cracks using appropriate visual, dye penetrant or magnetic particle non-destructive testing methods.
4. Impulse coupling must be free of corrosion. Light polishing to remove surface corrosion is acceptable. Corrosion that results in pits or erosion of material is unacceptable and affected parts must be replaced and discarded.
5. Inspect the impulse coupling spring for corrosion, cracks or breaks in spring. Discard the spring if any corrosion or cracks are present. It is recommended that a new impulse spring be installed at 250 and 500 hour inspection intervals regardless of condition of spring at inspection. It is mandatory that a new impulse spring be installed at overhaul.
6. Inspect the impulse coupling hub assembly for corrosion. Corrosion that inhibits impulse coupling is unacceptable.
7. Inspect the impulse coupling hub assembly for cracks using appropriate visual, dye penetrant or magnetic particle non-destructive testing methods. Cracks are unacceptable and coupling must be replaced if any cracks are detected.
8. Inspect the impulse coupling hub keyway for cracks or deformation. No repair is approved for deformation of keyway and cracks are unacceptable.

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9. Inspect the contact end of the impulse coupling pawls. If the contact end of the pawl is rounded, deformed or worn, these conditions are unacceptable and the impulse coupling must be replaced.
10. Inspect the snap rings that retain the pawl to the cam assembly axle. If the snap rings are corroded, deformed or missing, then the impulse cam assembly must be replaced.
11. Inspect impulse coupling pawls and axles for wear using the ES155T Pawl wear Go/No Go gauge.
  - a. Install the ES155T gauge to fit the outer diameter (OD) of the impulse pawl axle into the inner diameter (ID) of the ES155T gauge.
  - b. While holding the ES155T gauge in place, align the outer edge radius of the impulse pawl to align with the outer edge radius of the impulse cam assembly. Refer to Figure 10.



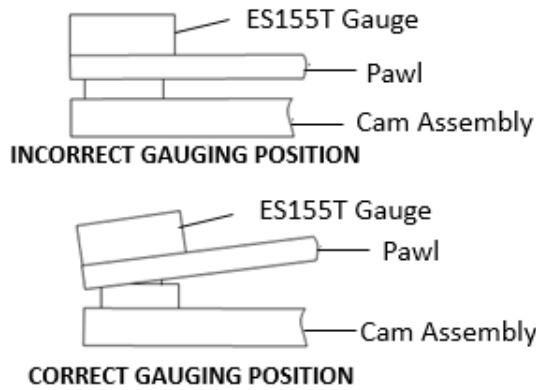
**FIGURE 10**

- c. Lift the inner edge of the pawl and apply pressure to the pawl to push outward while keeping the edges of the pawl radius and the cam assembly base plate radius in parallel alignment. The inner edge of the pawl must be lifted or the gauge observations will not be accurate. Reference Figure 11.

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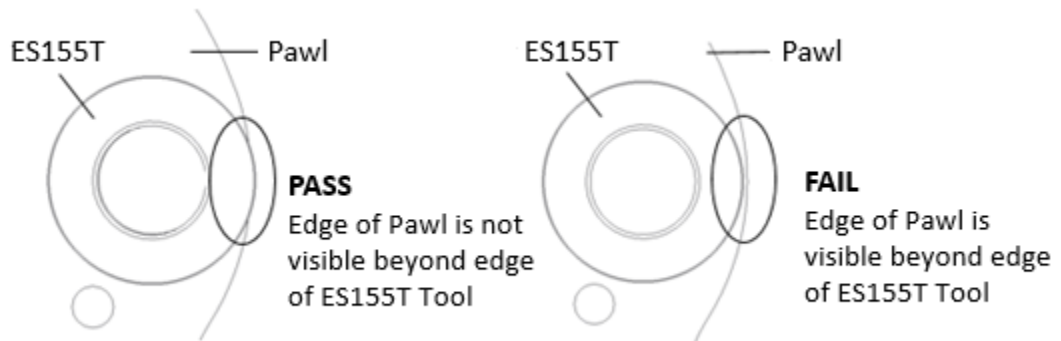


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**FIGURE 11**

- d. If the edge radius of the pawl extends beyond the edge of the ES155T gauge, then the impulse cam assembly is worn and must be replaced and discarded. Reference Figure 12.



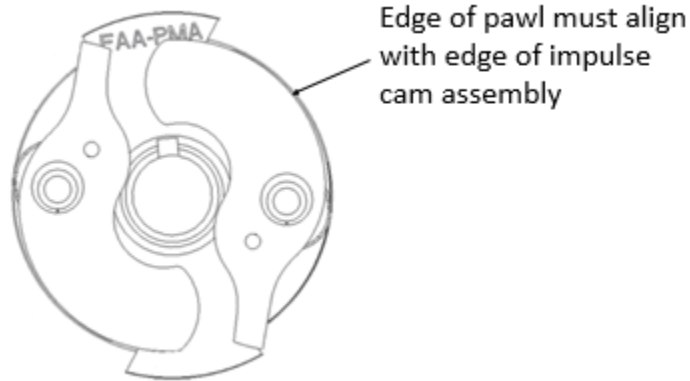
**FIGURE 12**

- 12.** Measure the clearance between the boss on the underside of each (2) impulse pawl and the impulse cam assembly using a 9/64 drill shank or .140 in. wire gauge.
- a. Align the outer edge radius of the impulse pawl to align with the outer edge radius of the impulse cam assembly. Reference Figure 13.

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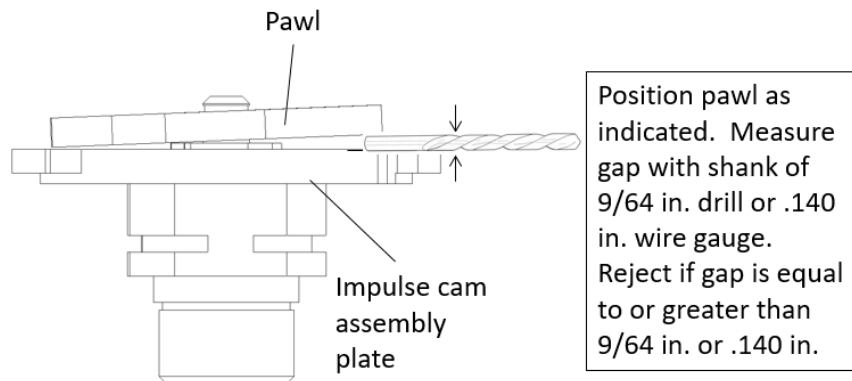


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**FIGURE 13**

- b. Position the latching end of the impulse pawl over the impulse cam assembly and measure the gap as shown in Figure 8.C. Replace and discard if gap measures equal to or greater than 9/64 in. or .140 in.



**FIGURE 14**

### DOCUMENTATION

Make all appropriate logbook entries to document the Kelly Aero FAA-PMA Impulse coupling was inspected in accordance with the scope and detail of the requirements of this Service Letter.

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