



INSTRUCTION – PREHEAT KIT INSTALLATION

Subject: P/N: TSAPU-3090-230, APU Preheat Kit – 230 Volt
TSAPU-3090-115, APU Preheat Kit – 115 Volt
Garrett Auxiliary Power Unit (APU) GTCP 85-129/E/H

Document No: TNA3090
Revision: C
Date: AUG-30-2019

RECORD OF REVISIONS

When updated, this document is changed in its entirety.

REV	DATE	DESCRIPTION	BY	CKD
C	AUG-30-2019	1000 series document update, 3081, 3286, TNDC730	DNE	GDO
B	JUN-26-2015	Replace 2928 with 3056 element	GDO	DNE
A	MAY-12-2015	Installation Qualification	DNE	GDO

Current revision approval: _____

1. PURPOSE

This instruction provides guidance for installation of preheat kits listed above.

Note: 230-volt kit preferred for operations with access to high voltage external ground power.

2. REQUIREMENTS

Subject kit top-level drawing, 03090-230 or 03090-115, parts and documents as listed.

- Tools, hardware, and consumables, power supply and extension cords, not supplied.
- Pad element bonding sealant supplied separately, refer to TNDC730.
- Required component of aircraft preheat kit TSFB737-3277-230, TSFB737-3277-115

3. INSTALLATION

⚠ Caution: Energized elements can cause 2nd and 3rd degree burns. **Do Not** connect power to elements or system before completing Functional System Check, TNG1000.

Abbreviations: Alternating current (AC), Accessory gearbox (AGB), Auxiliary power unit (APU), Center of gravity (CG), Circuit protection device (CPD), Gas turbine compressor power unit (GTCP), Maintenance Manual (MM), Original equipment manufacturer (OEM), Removal and replacement (R&R), Section (§), To be determined (TBD), Top-level drawings (TLD).

- Technicians and users of this instruction should be familiar with Installation Guide TNG1000 and related document listed in TLD.

3.1 Inventory

Start with parts and document inventory, refer to subject kit TLD for item list.

3.2 Weight and Balance

Weigh kit and intended installation hardware before installation. Approximate installed weight: 01.0 lb / 0.46 kg. When required use APU arm for calculations. Refer to TNG1000 for change requirements.

PROPRIETARY DATA

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3.3 Elements

 Pad element: *Only use* approved bonding sealant. Refer to instruction TNDC730 or TN02788 for approved sealants and bonding procedures.

Element located with reference to Figures § 4.

- a) Secure element leads 3-inches / 8-centimeters or less from element.
- b) Should operational procedures or environment conditions require alternate or additional elements, contact Tanis engineering.
- c) Measure resistance of each element with ohmmeter before installing, Table 4.1. or 4.2 as applicable.

3.4 Electrical

 **Only Connect Power** after completing Functional System Check with ohmmeter § 3.5.

Electrical located with reference to Figures § 4.

- a) Electrical routing suggested finial routing TBD by installing authority.
- b) Refer to cable kit wire diagram drawing 03091 and installation guide TNG1000.
- c) Wire termination and tooling refer to instructions TN02793 and TN03012.
- d) Electrical values and circuit limitations refer to Tables § 4. and cable kit drawing 03091.

Shore power plug (inlet) and indicator light: TP02839-S-230 or TP02070-M-115 and light TLP3039-06-230 or TLP3039-06-115 refer to individual component installation instructions TN02070 and TN03039.

Suggested locations:

- (a) In APU access door refer to Figures 4.1 and 4.4.
- (b) Collocated with approved alternate shore power connection/plug(s).
- (c) Other TBD by installing authority refer to TNG1000 for examples.

Shroud passthrough: Route junction lead 01 with existing wiring and passthrough when available. Alternate passthrough sourced separately, TU03125 firewall connector kit, TG01056 fireproof grommet kit or NAS557-3A grommet, sealed with PS 700 or DAPCO 2100 sealant and wire support hardware, additional options TNG1000, or other TBD by installing authority.

Cable Kit: TCT3091, secure with cable-ties and/or cushioned clamps.

Terminate power lead in plug, locate CPD in serviceable area near plug.

Locate junction J-A in serviceable area on engine inside of APU shroud in area that allow leads to reach corresponding elements and shroud passthrough.

Route lead 01 from junction J-A through shroud passthrough to CPD and plug, spare socket contacts supplied for re-terminating in junction J-A when required, for termination and junction assembly refer to junction instruction TN03012.

Route engine element cable leads, 03 through 07, to corresponding elements, terminate and connect.

Ground wire: 22759-181 green ground wire, verify engine/airframe bonding strap is installed. Attach ring crimp end of ground wire on existing ground lug or other applicable ground location on airframe or engine and terminate in shore plug. Connection not to exceed .003 ohms, refer to TNG1000.

Placard: Affix supplied placard, TU02615-230 or TU02615-115, or placard with equivalent stating at a minimum "Tanis", and the system voltage near shore plug.

3.5 Completion

1. Inspect: Visually inspect and verify components are connected and secure.
2. Check: Perform Functional System Check, refer to Installation Guide TNG1000.
3. Record: Retain data and record as indicated in Instructions for Continued Airworthiness TCA1000 and Operating Guide TPG1000.

4. TABLES AND FIGURES

This section contains technical information and examples of typical installations, actual installation may vary due to existing equipment or operating requirements.

System and individual element value tolerances, +/- 10%.

Table 4.1. 230 Volt Electrical Values.

230-volt system total			Total:	1.7 Amps	395 Watts	133.9 Ohms
Qty	Element Part Number	Element Type and Location			Watts	Ohms
2	TEP2722-230/55	Pad – Aft Sump (case)		each:	55	961.8
1	TEP3056-230/75	Pad – AGB		each:	75	705.3
1	TEP3181-230/120	Pad – AGB		each:	120	440.8
1	TEP3286-230/90	Pad – Oil tank		each:	90	587.8

Table 4.2. 115 Volt Electrical Values.

115-volt system total			Total:	3.4 Amps	395 Watts	33.5 Ohms
Qty	Element Part Number	Element Type and Location			Watts	Ohms
2	TEP2722-115/55	Pad – Aft Sump (case)		each:	55	240.5
1	TEP3056-115/75	Pad – AGB		each:	75	176.3
1	TEP3181-115/120	Pad – AGB		each:	120	110.2
1	TEP3286-115/90	Pad – Oil tank		each:	90	146.9

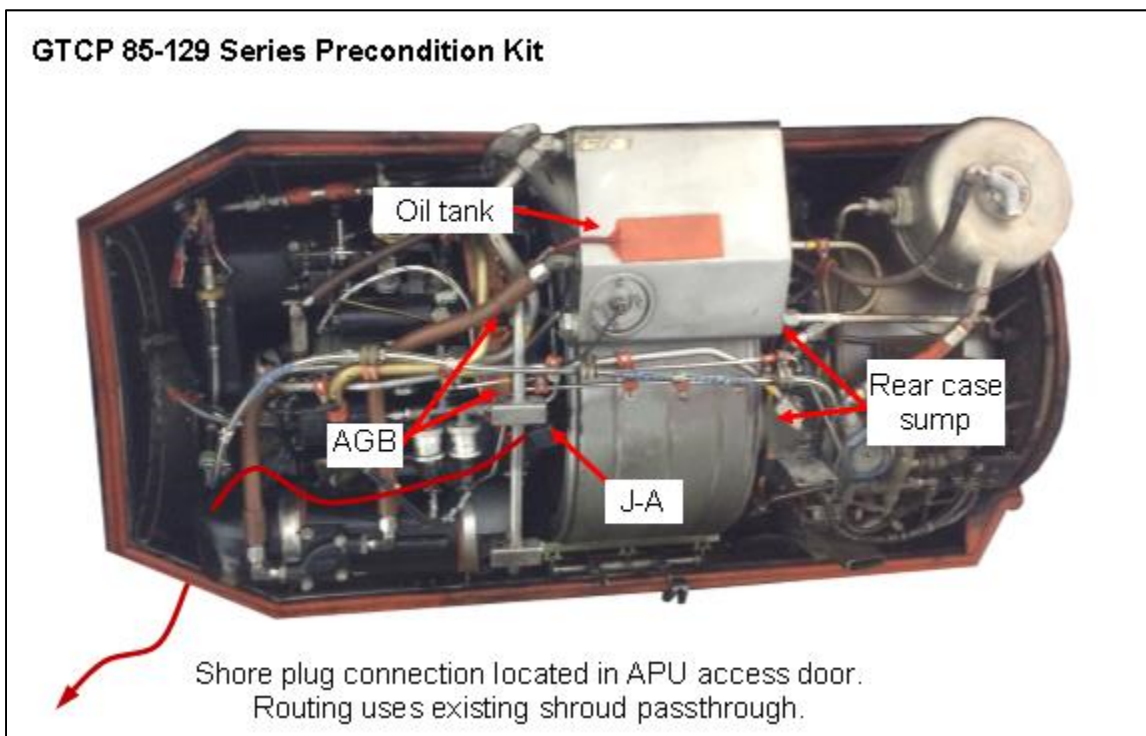


Figure 4.1. APU preconditioning kit layout (bottom view).

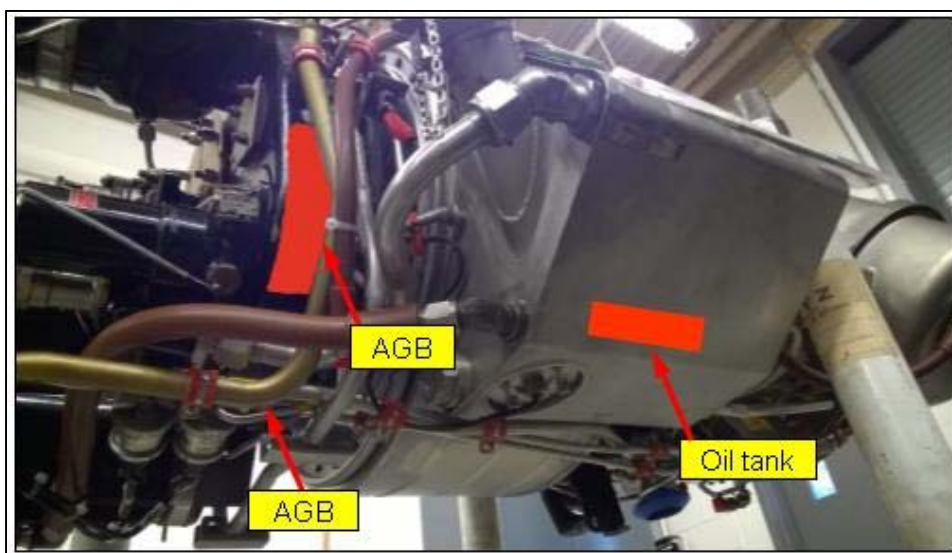


Figure 4.2. AGB elements TEP3056- and TEP3181- locate for best fit on outer surface of AGB case leads down. Oil tank element TEP3286- locate below nominal oil level position for lead routing.

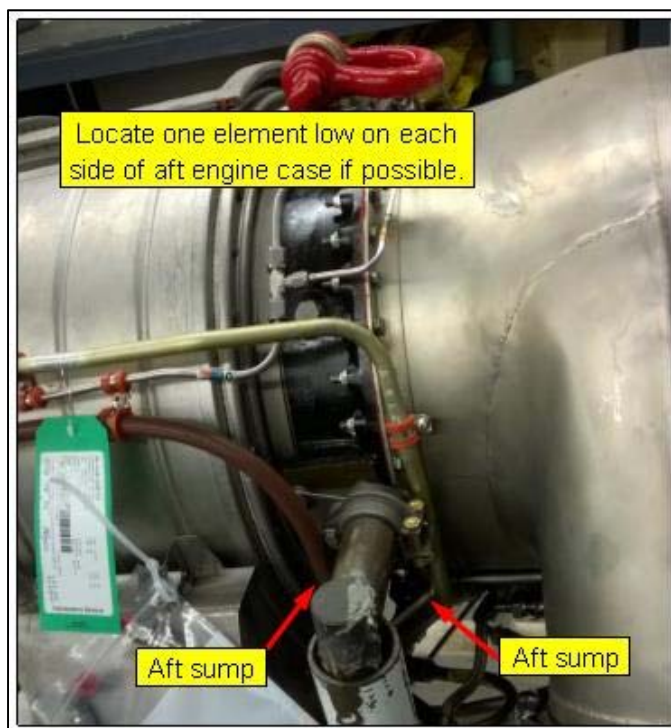


Figure 4.3. Aft case sump elements TEP2722- locate elements low on left and right side of on case in sump area, below engine mounting pad when possible, position leads for routing.

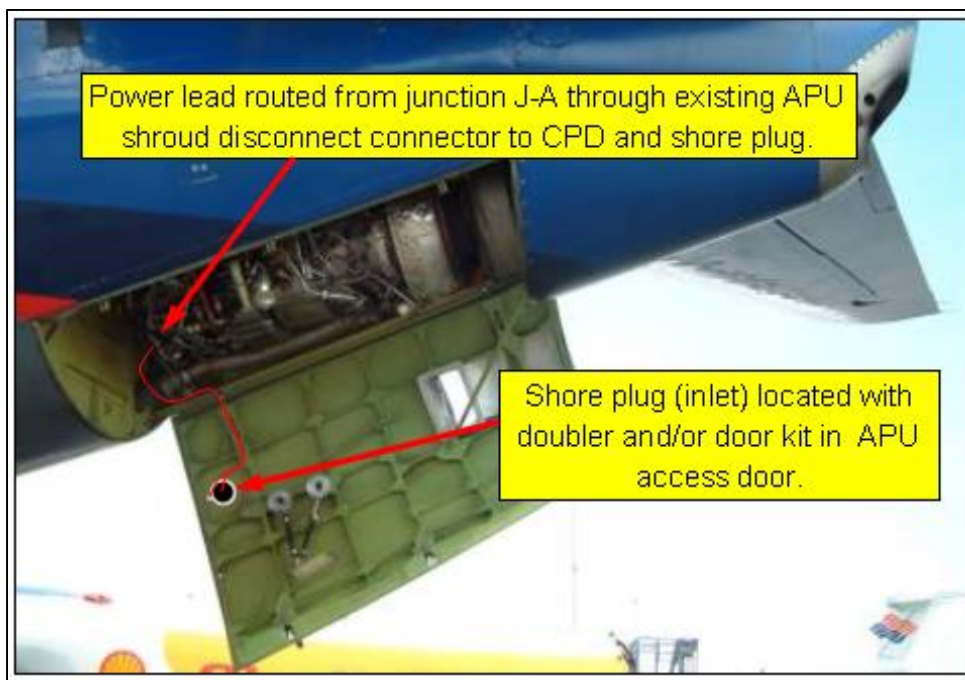


Figure 4.4. Door kit TD02840 supplied refer to instruction TN02840 and drawing 02840. Door kit may be located with or without door and latching hardware using supplied door kit doubler TD02838. Use existing shroud passthrough when available, alternates source separately refer to § 3.4 and instruction guide TNG1000 for available alternates.

******* NOTHING FOLLOWS *******