OPERATING GUIDE

Subject: PREHEAT OPERATION

Document No: TPG1000

Revision: E

Date: OCT-29-2020

Record as Indicated

Aircraft Model:_____ **Registration No:** _____

Installed Preheat/Preconditioning Kit Part No:_____

Voltage:_____ Wattage:_____ Amperage:_____

Plug location: _____

AV/Cabin Heater installed: ☐ Yes ☐ No

Battery heat kit installed: ☐ Yes ☐ No

RECORD OF REVISIONS

When revised document changed in its entirety.

REV	DATE	DESCRIPTION	BY	CKD
E	OCT-29-2020	§ 5 Typo, correct rise over ambient 33°C.	DNE	GDO
D	JAN-15-2020	Rev corrects date discrepancy adds statement § 1.	DNE	GDO
C	FEB-06-2019	Move malfunction to pg 2 add best practices.	DNE	GDO

Current revision approval: Dirk Ellis

Digitally signed by Dirk Ellis
DN: cn=Dirk Ellis, o=Tanis, ou=Eng, e-mail=dirk@tanisaircraft.com, c=US
Date: 2020.10.29 10:34:35 -05'00'

CONTENTS

1. PURPOSE

This guide provides information to aid the operator in creating an acceptable operating guide for the preheat kit recorded on cover page. One that complies with airframe/engine manufacturer's recommendations and operational requirements specific to regional area of flight.

This Operating Guide may be used to supersede and/or replace existing Tanis preheat system operating instructions when completed as indicated on page 1 of this document.

2. MALFUNCTION PROCEDURES

⚠ Caution: Should malfunction be detected, such as tripped circuit protection (blown fuse), smoke, or lack of heat, disconnect system from power. Placard (flag) as inoperative in accordance with (IAW) applicable regulations if eligible, and/or defer IAW approved Minimum Equipment List and/or Non-Essential Equipment and Furnishings MEL/NEF as applicable.

Before replacing fuses or resetting breakers disconnect from power, refer to TCA1000 and TNG1000. Common system fuse p/n: TU02848, 12-Amp 1.25 x. 25 ceramic tube fuse. Acceptable alternates: Bussmann ABC-12 ceramic tube fuse or AGC-12 glass tube fuse.

3. DOCUMENT

When updating or replacing guide, transfer recorded information from page one to new guide.

To access current revision and related documents go to Technical Data library at http://www.tanisaircraft.com/ or contact Tanis Aircraft Products, 952-224-4425.

4. AIRWORTHINESS LIMITATIONS

This system does not change existing environmental flight restrictions.

a. For specific instructions relating to engine starting and cold weather operations refer to applicable Pilots Operating Handbook (POH) and/or Airplane Flight Manual (AFM), and FAA Advisory Circular - Cold Weather Operation of Aircraft AC No: 91-13C.
b. Instructional reference to other cold weather modifications such as covers, and cowl plugs are not included in this Operating Guide.
c. Weather planning and aircraft preparation is the responsibility of the operator.

5. GENERAL INFORMATION AND DESCRIPTION

Preconditioning commonly referred to as preheating is performed while on ground connected to external/shore power. As a rule, preheated components reach thermal saturation at 6-hours, with an approximate temperature rise over ambient of 33°C (±5°C) / 60°F (±10°F). Avionics, crew and passenger cabins, temperature rise over ambient varies. Should additional heat be required insulated engine cowl and/or aircraft covers are used. Results vary depending on environmental conditions and cover design, expect typical increase upwards to 60%. For Best Practice Guidelines refer to § 5.1.

a. Operation and regular use increases, engine and battery life, reliability and safety of operations. Reduces torque oscillations, thermal stress, warm up and launch times.
b. Primary systems Do Not use controllers or thermostats; however, avionics, battery, and cabin heaters may incorporate controllers and/or thermostats.
c. AV/Cabin Heaters preconditions avionics and helps clear windows of frost, snow, and ice.
d. Battery Heaters reduces freeze point depression and allow for higher amperage output.

5.1 Best Practices

Connect system to power immediately after engine shutdown or 6-hours or more prior to departure, system may be operated continually between flights.

Industry Best Practice Guidelines for use of preconditioning/preheat:

- +4.5°C / +40°F OAT and below, recommended.
- -6.5°C / +20°F OAT and below/windchill, industry established requirement.
- -12°C / +10°F OAT and below, in addition use insulated cowl cover(s) and/or cowl plugs.

5.2 Plug and Placard

Plug (power inlet), placarded with voltage requirement. Location and type of placard vary by aircraft and kit configuration. Refer to cover page and Figure 5.1. below.

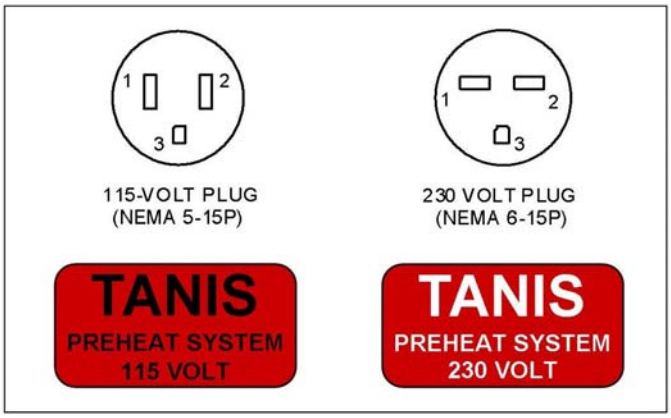

Figure 5.1 - Plug and placard configurations. Alternate placard may be field fabricated stating: *Tanis Preheat* and system voltage requirement (*115 Volt* or *230 Volt)*.

General plug locations:

a. Fixed-wing: Left side near pilot door or on engine, accessed through engine oil door or cowl opening.

b. Rotor-wing: Plug is normally accessed through dedicated preheat system plug door, located near pilot door or on right aft tail section or right upper deck cowling.

6. REQUIREMENTS

6.1 Power

External/shore power capable of supplying rated voltage and load for duration of operation.

6.2 Extension Cord:

Only use extension cord rated for required amperage loads and environmental conditions.

Proper use of extension cord is critical to your safety. Always refer to electrical coding requirements for country and/or region of operation.

- 230-volt kits supplied with adapter receptacle (outlet) for installation on cord by operator.

Only use hard-service rated extension cord in good condition and adequate gauge. When in doubt, use the next heavier gauge, smaller the gauge number heavier the cord.

Undersized cord causes drop-in line voltage, loss of power, and possible overheating of cord.

Voltage requirement at end of cord, +/- 10% of placarded system voltage. Stringing cords together is not recommended.

12-gauge extension cord recommended for system loads up to 12-Amps.

Minimum requirements by cord length and gauge:

a. 50 ft. / 15 m or less, minimum 16-gauge.
b. 50 to 100 feet ft. / 15 to 30 m, minimum 14-gauge.
c. 100 to 200 ft. / 30 to 60 m, minimum 12-gauge.
d. 200 ft. / 60 m and over, refer to reginal coding requirement or contact Tanis engineering.

7. OPERATION

⚠ Caution: Do Not fuel aircraft or operate engine(s) with system connected to power.

Do Not operate when outside air temperature (OAT) is above +38°C / +100°F.

Do Not operate with insulated covers when OAT is above +21°C / +70°F.

7.1 Plug It In - Post Flight/Standby

Only use properly rated extension cord, refer to § 6.2.

System may be operated immediately after engine shutdown and continuously between flights.

Use of insulated cowl cover(s) and/or plugs recommended when operating in windy environment and/or in temperatures of -12°C / +10°F and below.

a. Plug in power, connect external power to aircraft preheat power plug (inlet).
b. Verify preheat system power indicator light is on, illuminated (when installed).
c. Only operate preheat system with aircraft fluids at operational levels. Use fluids and oils as recommended by the manufacturer for conditions of flight.

7.2 Unplug It - Preflight

Follow applicable aircraft preflight check lists and add the following:

a. Verify power indicator light is on (when installed) and heated components are warm.
b. Unplug power, disconnect extension cord from aircraft preheat plug.
c. Latch any access doors that were open.
d. Stow extension cord in appropriate location.
e. Start aircraft following normal procedures.

8. WEIGHT AND BALANCE

Equipment List and Weight & Balance figures recalculated at time of system installation.

9. HANDLING, SERVICING, AND MAINTENANCE

For detailed information regarding maintenance and installation refer to applicable installation instructions and Instructions for Continued Airworthiness, TCA1000 or ICA supplied with kit.

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