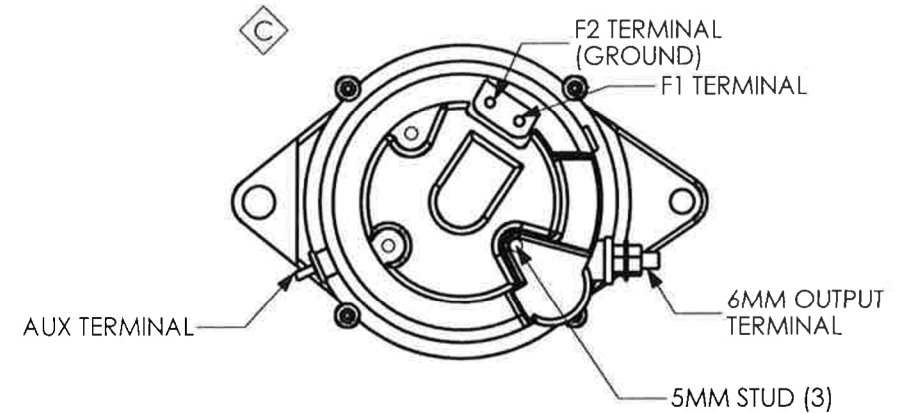


REVISIONS				
EN	REV.	DESCRIPTION	BY	DATE
1409045	B	FIRST RELEASE INTO HET DESIGN DATA	BJ	9/10/14
1409046	C	1) MOVED INSTALLATION DRAWING AND LABEL FROM PAGE 3 TO PAGE 1. 2) ADDED HET TITLEBLOCK 3) HARTZELL ENGINE TECHNOLOGIES WAS PLANE POWER, LTD. 4) ADDED 10-1031 CALLOUT TO DATA TAG. 5) MODEL NO. 10-5051 WAS TAL24-70. 6) REMOVED "PLANE POWER LDT." AND/OR REPLACED WITH "HET" WHERE APPLICABLE. 7) "PER DRAWING ON PAGE 1" WAS "PER DRAWING ON PAGE 3"	BJ	9/10/14



**Plane Power** FAA PMA  
 HARTZELL ENGINE TECHNOLOGIES, LLC  
For eligibility see www.plane-power.com/catalog

**MODEL NO. 10-5051**  
**SERIAL NO. E2-YWWSN**  
**VOLTAGE 24**

NOTES:  
 1. NOTE: FOR STANDARD 7.5" DIAMETER RING GEAR SUPPORT PULLEY USE PIPER V-BELT P/N 452-541 (GATES 9335XL). NOT SUPPLIED.

SPECIFICATION CLASSIFICATION		
CLASSIFICATION	DIMENSION CONVENTION	NOTE NO. CONVENTION
CRITICAL	<XX.XX>	<#>
MAJOR	[XX.XX]	[#]
MINOR	XX.XX	#
REFERENCE	(XX.XX)	(#)

UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN INCHES AND APPLY AFTER HEAT TREAT AND PLATING  
 .X = ±.015  
 .XX = ±.010      ANGLES ±1°  
 .XXX = ±.005  
 BREAK ALL EDGES AND MACHINE ALL INSIDE CORNER FILLETS .015 MAX.  
 SURFACE FINISH  $\sqrt{125}$   
 THIS DRAWING CONTAINS INFORMATION THAT IS CONFIDENTIAL AND PROPRIETARY TO HARTZELL ENGINE TECHNOLOGIES. THIS DRAWING IS FURNISHED ON THE UNDERSTANDING THAT THE DRAWING AND THE INFORMATION IT CONTAINS WILL NOT BE COPIED OR DISCLOSED TO OTHERS EXCEPT WITH THE WRITTEN CONSENT OF HARTZELL ENGINE TECHNOLOGIES. WILL NOT BE USED TO THE DETRIMENT OF HARTZELL ENGINE TECHNOLOGIES. AND WILL BE RETURNED UPON REQUEST BY HARTZELL ENGINE TECHNOLOGIES.

GEOMETRIC SYMBOLS PER ANSI Y14.5	
	FLATNESS
	STRAIGHTNESS
	ROUNDNESS
	CYLINDRICITY
	PROFILE
	PERPENDICULARITY
	POSITION
	CONCENTRICITY
	SYMMETRY
	ANGULARITY
	PARALLELISM
	CIRCULAR RUNOUT
	TOTAL RUNOUT

DRAWN	BJ	3/26/07
CHECKED	RFQ	9/11/14
ENG.	CMB	9/11/14
FINISH	N/A	
WEIGHT	N/A	
MATERIAL	SEE INDIVIDUAL PARTS	
SIZE	SH 1 OF 4	CODE ID 65PY1

**HARTZELL ENGINE TECHNOLOGIES** 2900 Selma Highway Montgomery, AL 36108

**TAL24-70 INSTALLATION INSTRUCTIONS**

DRAWING NO. 14-4001      REV. C

Parts List:		
Qty	Part No.	Description
2	10-5051	Alternator, 24 Volt, with 1/2" V-Belt Pulley.
2	10-8099	Mounting kit for Lycoming Engine.
2	R1224	Alternator Controller (Voltage Regulator) and data sheet 12-1001
1	ALP-1002	Placard, LEFT ALT INOP (Part of Drawing 14-1013)
1	ALP-1003	Placard, RIGHT ALT INOP (Part of Drawing 14-1013)
1	ALP-1004	Placard, LEFT ALT FIELD (Part of Drawing 14-1013)
1	ALP-1005	Placard, RIGHT ALT FIELD (Part of Drawing 14-1013)
1	14-4001	Installation Instructions (This document)
2	14-1011	Alternator Inoperative Lamp (28 Volt)

**READ AND THOROUGHLY UNDERSTAND ALL OF THE INSTALLATION INSTRUCTIONS BEFORE BEGINNING INSTALLATION OF THIS KIT.**

**NOTE: IF AIRCRAFT DOES NOT HAVE A CIRCUIT BREAKER OR CURRENT LIMITING DEVICE IN EACH GENERATOR'S OUTPUT AND REGULATOR'S INPUT CIRCUIT THEY MUST BE INSTALLED.**

**Part 1, Installation of Alternator and Regulator**

1. Disconnect aircraft battery.
2. Remove Generators and voltage regulators.
3. Install Alternators per drawing on page 1. Tension the belts and torque the AN5H-5A adjusting bolts to 200 in/lb and safety wire with 0.032" diameter safety wire. Torque the AN7-42A mounting bolts to 425 in/lb.
4. **Ensure that internal jumper #1 and internal jumper #2 of each R1224 regulator are set for 28V operation** (See regulator instructions for location of jumpers).
5. If original output circuit breakers are rated at less than 70-amperes and you wish to be able to utilize the increased capacity of the alternators, remove the breakers and replace with suitable breakers up to 70amp maximum size. **Ensure wire size from alternator output terminal to output circuit breakers and from output circuit breakers to bus is rated for more than the size of breakers installed per AC43.13-1B.**  
**Note:** If aircraft has been equipped with an Amp Meter, ensure that it is of adequate size to handle the increased output capability before increasing the output wire and breaker.

## 6. Wire the system as follows:

- a. For regulator wiring instructions view the regulator installation instructions.
- b. Connect the GRND terminal of each regulator to the common aircraft ground.
- c. Leave the ground jumper installed on the F2 terminal of the alternator.
- d. Connect the existing generator output wires to each alternator's 6mm OUTPUT TERMINAL (or install a new wire in accordance with AC43.13-1B) using a MS25171-2S terminal nipple for insulation (Not Supplied). Torque to 50 in/lb.
- e. Use the original generator field wire or install a new wire, minimum 18AWG, from each alternator F1 terminal to the FLD terminal of the corresponding regulator. Torque the alternator's F1 terminal nut to 20 in/lb.
- f. Install, in view of the pilot, placard ALP-1004 (LEFT ALT FIELD) adjacent to the field switch for the left alternator and placard ALP-1005 (RIGHT ALT FIELD) adjacent to the switch for the right alternator.
- g. Ensure that each of the FIELD breakers are connected to the aircraft positive bus.
- h. If the aircraft has "Generator Inoperative" indicator lamps, they may be used in this step. If lamps are not currently installed or are not compatible use the supplied lamps P/n 14-1011 Alternator Inoperative Lamp (28 Volt) and install them in pilots clear field of view.
- i. Install, in view of the pilot, placard ALP-1002 (LEFT ALT INOP) adjacent to the lamp for the left alternator and placard ALP-1003 (RIGHT ALT INOP) adjacent to the lamp for the right alternator. Also run a new wire, minimum 18AWG, from the AUX terminal of each alternator to the AUX terminal of the corresponding regulator.

## 7. Adjust and Test the system:

- a. Set both FIELD switches to OFF.
- b. Turn on MASTER switch and start the engines. Ensure that both ALT INOP indicators are illuminated.
- c. Turn on the LEFT FIELD switch. Check proper charging indication. Check left ALT INOP indicator is off. Check aircraft maintenance manual for proper bus voltage (typically 28.0V  $\pm$  0.3V). Adjust the left (Master) regulator to the desired bus voltage at 1200 engine RPM.
- d. Turn off the LEFT FIELD switch and turn on the RIGHT FIELD switch. Check proper charging indication. Check right ALT INOP indicator is off. At 1200 engine RPM Adjust the right (Slave) regulator to the same bus voltage as left alternator.
- e. Turn on the LEFT FIELD switch.
- f. Check proper charging indication. Check bus voltage.
- g. Recheck and inspect the entire installation. Complete FAA form 337, make log book entry, update aircraft equipment list, and weight and balance.

### Mounting Kit Parts List

10-8099 MOUNTING KIT COMPONENTS					
QTY	P/N	DESCRIPTION	QTY	P/N	DESCRIPTION
1	AN5H-5A	BOLT	1	10-1012	TENSION ARM
1	AN960-516	WASHER	1	10-1009	SPACER BUSHING
1	AN7-42A	BOLT	1	10-1002	STARTER STRAP
1	AN960-716	WASHER	1	10-8003	CASE MOUNT BRACKET
1	AN363-720	NUT	1	10-1003	BOSS MOUNT BRACKET

**Part 2, Preparation of FAA Form 337**

1. Installed Alternators in accordance with Supplemental Type Certificate No. SA10682SC. Updated Airplane Flight Manual with HET Airplane Flight Manual Supplement 002 (or later revision). Weight changed (compute weight and balance as necessary). Checked size of wire from Alternator output terminals to alternator circuit breakers and from Alternator circuit breakers to bus and size of Alternator circuit breakers with AC43.13-1B. (Note: use this statement as applicable. If wire and circuit breaker sizes are satisfactory, so state. If not satisfactory, state wire and/or circuit breaker size installed to conform with AC43.13-1B.)
2. Modified aircraft equipment list by removal of generators listed and adding Model TAL24-70 Alternator Kit.

Weight and Balance																				
Removed two generator installations:  Weight _____ Arm _____ (Refer to Aircraft Equipment List)		Installed TAL 24-70 alternator kit consisting of:																		
Removed two regulator installations:  Weight _____ Arm _____ (Refer to Aircraft Equipment List)		<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="text-align: right; width: 20%;">wgt.</th> </tr> </thead> <tbody> <tr> <td>(2) 10-5051 alternators</td> <td style="text-align: right;"><u>20.0lbs.</u></td> </tr> <tr> <td>(2) 10-8099 mounting kits.</td> <td style="text-align: right;"><u>2.0 lbs.</u></td> </tr> <tr> <td>(2) R1224 Voltage Regulators</td> <td style="text-align: right;"><u>0.6 lbs.</u></td> </tr> <tr> <td>(1) ALP-1002 Placard</td> <td style="text-align: right;"><u>Negligible</u></td> </tr> <tr> <td>(1) ALP-1003 Placard</td> <td style="text-align: right;"><u>Negligible</u></td> </tr> <tr> <td>(1) ALP-1004 Placard</td> <td style="text-align: right;"><u>Negligible</u></td> </tr> <tr> <td>(1) ALP-1005 Placard</td> <td style="text-align: right;"><u>Negligible</u></td> </tr> <tr> <td>(2) 14-1011 Lamps</td> <td style="text-align: right;"><u>Negligible</u></td> </tr> </tbody> </table>		wgt.	(2) 10-5051 alternators	<u>20.0lbs.</u>	(2) 10-8099 mounting kits.	<u>2.0 lbs.</u>	(2) R1224 Voltage Regulators	<u>0.6 lbs.</u>	(1) ALP-1002 Placard	<u>Negligible</u>	(1) ALP-1003 Placard	<u>Negligible</u>	(1) ALP-1004 Placard	<u>Negligible</u>	(1) ALP-1005 Placard	<u>Negligible</u>	(2) 14-1011 Lamps	<u>Negligible</u>
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**Part 3, Instructions for Continued Airworthiness**

**PERIODIC MAINTENANCE:**

1. It is recommended that the operation of the TAL24-70 alternator be checked every 100 hour inspection or every annual inspection which ever comes first.
2. ANNUAL/100 HOUR INSPECTION:
  - a. Remove drive belt and turn alternator rotor to check condition of bearings for abnormal noise or roughness.
  - b. Each annual/100 hour inspection, the alternator and its associated wiring should be checked for secure electrical connections and physical connection to the airframe. The belt drive tension should be re-set to the aircraft manufacturer's specification.
3. 5 YEAR OR 1000 HOUR INSPECTION
  - a. Repeat the Annual/100 hour inspection.
  - b. Remove field brush assembly and inspect brushes for excess wear. Replace brush assembly if brushes extend less than 0.250 inches from edge of holder case.

**AIRWORTHINESS LIMITATIONS**

There are no mandatory replacement limits. There are no mandatory structural inspection intervals.

THE AIRWORTHINESS LIMITATIONS SECTION IS FAA APPROVED AND SPECIFIES MAINTENANCE REQUIRED UNDER SEC. 43.16 AND 91.403 OF THE FEDERAL AVIATION REGULATIONS UNLESS AN ALTERNATIVE PROGRAM HAS BEEN FAA APPROVED.