

Name: VITATOE AVIATION LLC.
Address: 100 Chamber Drive, Chillicothe, OH 45601
Supplement No.: Airplane Flight Manual Supplement for: Cessna T210L, T210M, T210N, & P210,
V0701-8 Rev B

SUPPLEMENTAL TYPE CERTIFICATE SA02918CH

AIRPLANE FLIGHT MANUAL SUPPLEMENT FOR CESSNA T210L, T210M, T210N & P210N

Registration No. _____

Serial No. _____

This supplement must be attached to the FAA approved Airplane Flight Manual dated _____ when the Vitatoe Aviation LLC TN550 Engine Conversion is installed in accordance with SA02918CH STC. The information contained in this document supersedes the basic manual only in those areas specifically listed. For limitations, procedures, performance, and loading information not contained in this supplement, consult the basic Airplane Flight Manual.

FAA APPROVED BY: _____

for Steven L. Lardinois, Manager
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Chicago Aircraft Certification Office
2300 East Devon Avenue, Des Plaines, IL 60018
FAA Central Region

DATE: JUN 24 2014

MOS & MUI

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LOG OF REVISIONS

Revision Number	Revision Date	Review	Affected Pages	Description of Revision	FAA Approved
IR	8/4/2010		All	Initial Issue.	
A	7/22/2013		All	Operating parameter clarification and dual alternator operation.	
B	12/19/2013		All	Hartzell propeller addition	

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AIRPLANE FLIGHT MANUAL SUPPLEMENT

SECTION 1 GENERAL

The Vitatoe Aviation Turbonormalizing System replaces the original TSIO520 engine with a Continental Motors IO550P engine but retains the original turbocharger. Manifold pressure is limited to a nominal 31.0 inches Hg to simulate sea level conditions for all approved altitudes.

ENGINE

Engine Manufacturer:	Continental Motors
Engine Model Number:	IO550P
Horsepower Rating and Engine Speed:	310 rated BHP at 2700 RPM
Maximum Continuous Power:	310 rated BHP at 2700 RPM

PROPELLER

Propeller Manufacturer:	Hartzell
Propeller Model Number:	(P)HC-J3YF-1RF/F7691()
Propeller Diameter:	78 inches

Or

Propeller Manufacturer:	Hartzell
Propeller Model Number:	(P)HC-J3YF-1RF/F7693DF(B,K)+2
Propeller Diameter, Maximum:	80 inches
Minimum:	78 inches

Or

Propeller Manufacturer:	Hartzell
Propeller Model Number:	(P)HC-J3YF-1RF/F8068(B,K)
Propeller Diameter, Maximum:	82 inches
Minimum:	78 inches

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SECTION 2 LIMITATIONS

POWER PLANT LIMITATION

Engine Manufacturer: Continental Motors

Engine Model Number: IO550P

Horsepower Rating and Engine Speed

Maximum Continuous Power: 310 BHP / 2700 RPM

Engine Operating Limits:

Maximum Engine Speed:

2700 RPM

Maximum Manifold Pressure:

33.0" Hg (31.0" Hg nominal)

Maximum Cylinder Head Temperature:

430° F

Maximum Oil Temperature:

240° F

Maximum Turbine Inlet Temperature:

1650° F

Oil Pressure, Minimum:

10 psi

Maximum:

100 psi

Fuel Pressure, Minimum:

(2.0 psi reference only)

Maximum:

(14.6 psi metered differential pressure) (229 PPH) (39 GPH)(warm engine)

Propeller Manufacturer:

Hartzell

Propeller Model Number:

(P)HC-J3YF-1RF/F7691()

Propeller Diameter:

78 inches

Propeller Manufacturer:

Hartzell

Propeller Model Number:

(P)HC-J3YF-1RF/F7693DF(B,K)+2

Propeller Diameter, Maximum:

80 inches

Minimum:

78 inches

Propeller Manufacturer:

Hartzell

Propeller Model Number:

(P)HC-J3YF-1RF/F8068(B,K)

Propeller Diameter, Maximum:

82 inches

Minimum:

78 inches

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POWER PLANT INSTRUMENT MARKINGS

Instrument	Red Line	Green Arc	Yellow Arc	White Arc	Red Line
	Minimum Limit	Normal Operating	Caution Range	Normal Climb Range	Maximum Limit
Tachometer	---	2300-2550 RPM	---	2700 RPM	2700 RPM
Manifold Pressure	---	15 – 31 in. Hg	31.1 – 32.9 in. Hg	---	33.0 in. Hg
Oil Temperature	---	100° - 240°F ¹	---	---	240°F
Cylinder Head Temperature	---	300° - 400°F ¹	400° - 430°F	---	430°F
Fuel Flow (Pressure)	---	2 – 18 GPH	18 – 30 ² GPH	35 – 37 GPH	39 GPH (14.6 psi)
Oil Pressure	10 psi	30 - 60 psi	---	---	100 psi
Suction	---	4.6 -5.4 in. Hg	---	---	---

- ¹ Take off may be initiated if Cylinder Head Temperature is at least 200° F and Oil Temperature is at least 100° F.
- ² Fuel Flow must be less than 18 GPH or greater than 30GPH if Manifold Pressure is over 26" Hg.

PLACARDS

The following information must be displayed by composite or individual placards.

Near manifold pressure/fuel flow indicator:

MINIMUM FUEL FLOWS

Take Off: 2700 RPM 31.0 IN MP, 205 LBS/HR, 35 GPH

Cruise Configuration: 2500-2550 RPM

When above 26 In Hg MP, maintain ABOVE 30 GPH or LESS THAN 18 GPH

Maintain at least 22 In Hg MP above 17,000 MSL

Full rated horsepower is achieved at 31"Hg. MP. Cold oil may cause momentary overboost to 33"Hg. MP. Do not exceed 33"Hg. MP. Do not exceed 31"Hg. MP for prolonged periods.

For aircraft equipped with Hartzell Propeller (P)HC-J3YF-1RF/F7691()

"Do not exceed 20 Hg. MP below 2200 RPM"

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Surrounding auxiliary fuel pump switch:

Left of red switch	HIGH
Top of red switch	ON
Right of yellow switch	LOW
Top of yellow switch	ON

SECTION 3 EMERGENCY OPERATING PROCEDURES

FUEL RELATED ENGINE STOPPAGE IN FLIGHT

- Turn on Left Auxiliary Boost Pump Switch
- Switch Fuel Selector to Tank with Adequate Fuel
- Adjust Fuel Mixture Control as needed
- Land as soon as practical

WARNING

If normal fuel flow and engine operation are not established within 3-5 seconds after activating the left half HIGH side of the Auxiliary Fuel Pump Switch, turn both Auxiliary Fuel Pump switches OFF. Lack of indicated fuel flow with the left side HIGH switch activated may indicate a broken fuel line that can lead to a fire hazard.

AMPLIFIED PROCEDURES

FUEL RELATED ENGINE STOPPAGE IN FLIGHT

Failure of the engine driven fuel pump will be evidenced by a sudden reduction in the fuel flow / pressure indication prior to the loss of power while operating from a fuel tank containing adequate fuel.

In the event of an engine-driven fuel pump failure, immediately move the left half **HIGH** side of the Auxiliary Fuel Pump switch to the **ON** position. Manual leaning may be required for engine smoothness depending on throttle position. **LAND AS SOON AS PRACTICAL**

If engine combustion stops in flight due to excessive fuel leaning or other non-mechanical failure reasons, a restart may be initiated. If fuel is available to the engine

driven fuel pump and the propeller is still turning, fuel is being pumped into the engine induction system. Engine flooding or an excessively rich air / fuel ratio may make engine restart difficult. If the propeller is still turning, there are two ways to initiate restart. One approach is to move the throttle and propeller controls full forward and pull the mixture control back to idle cutoff. Then gradually move the mixture control forward. When the appropriate air / fuel mixture is attained, restart will occur.

The other approach is to move the propeller and mixture controls fully forward and retard the throttle to idle position. Then gradually move the throttle forward. When the appropriate air / fuel mixture is attained, restart will occur. After restarting, adjust throttle, propeller, and mixture settings as desired.

If the engine cannot be restarted after an engine stoppage in flight, propeller drag can be minimized by placing the propeller RPM control to the LOW RPM position.

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SECTION 4 NORMAL PROCEDURES

TAKEOFF

NORMAL TAKEOFF

NOTE

Always initiate Takeoff with the fuel selector set to the Fullest tank or "Both On". When the fuel tanks are $\frac{1}{4}$ full or less, prolonged uncoordinated flight such as slips or skids can uncover the fuel tank outlets, possibly causing fuel starvation and engine stoppage. Therefore, with low fuel reserves, do not allow the airplane to remain in uncoordinated flight for periods in excess of 30 seconds with the fuel selector on left or right tanks or one minute with the selector in the "Both On" position.

1. Wing Flaps – 0° to 10° (10° preferred).
2. Power – 31.0 INCHES Hg and 2700 RPM.
3. Mixture – Full Rich (**MINIMUM** of 35 GPH)
(36-37 GPH preferred).
4. Elevator Control – LIFT NOSE WHEEL at 65 to 70 KIAS.

NOTE

When the nose wheel is lifted, the gear motor may run 2-3 seconds to restore hydraulic pressure.

5. Climb Speed – 80-90 KIAS.
6. Brakes – APPLY momentarily when airborne.
7. Landing Gear – RETRACT in climb out.
8. Wing Flaps – RETRACT after reaching 85 KIAS.

SHORT FIELD TAKEOFF

1. Wing Flaps – 10° .
2. Brakes – APPLY.
3. Power – 31.0 INCHES Hg and 2700 RPM.
4. Mixture – Full Rich (**MINIMUM** of 35 GPH)(36-37 GPH preferred).
5. Brakes – RELEASE.
6. Elevator Control – LIFT NOSE WHEEL AT 65 KIAS.
7. Climb Speed – 78 KIAS until all obstacles are cleared.
8. Landing Gear – RETRACT after obstacles are cleared.
9. Wing Flaps – RETRACT after reaching 85 KIAS.

NOTE

Do not reduce power until wing flaps and landing gear have been retracted.

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ENROUTE CLIMB

NORMAL CLIMB

1. Airspeed – 110-130 KIAS.
2. Power – 31 INCHES Hg and 2700 RPM.
3. Mixture – Full Rich (**MINIMUM** of 35 GPH)
(36-37 GPH preferred).

NOTE

On hot days at higher altitudes, be alert for fuel vapor indications. If fuel flow fluctuations are observed or if desired fuel flows cannot be maintained, turn the right side auxiliary fuel pump (LOW) to ON and reset the mixture as required. If symptoms persist, select a single fuel tank having adequate fuel.

Turn the auxiliary right half fuel pump switch (LOW) to ON momentarily if switching tanks in a climb.

MAXIMUM PERFORMANCE CLIMB

1. Airspeed – 100 KIAS.
2. Power – 31.0 INCHES Hg and 2700 RPM.
3. Mixture – Full Rich (**MINIMUM** of 35 GPH)
(36-37 GPH preferred).

NOTE

On hot days at higher altitudes, be alert for fuel vapor indications. If fuel flow fluctuations are observed or if desired fuel flows cannot be maintained, turn the right side auxiliary fuel pump (LOW) to ON and reset the mixture as required. If symptoms persist, select a single fuel tank having adequate fuel.

Turn the auxiliary right half fuel pump switch (LOW) to ON momentarily if switching tanks in a climb.

4. Cowl Flaps – FULL OPEN.

CRUISE

1. Power – 15-30 INCHES Hg, 2300-2550 RPM
2. Elevator and Rudder Trim – ADJUST
3. Mixture – LEAN for cruise fuel flow 50-80 degrees F Lean of Peak. Maintain cylinder head temperatures below 380° F (below 360° F preferred). When operating in Lean of Peak mode, reduce fuel flow to decrease cylinder temperatures.

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NOTE

On hot days at high altitude, be alert for fuel vapor indications. If fuel flow fluctuations or an unexplained drop in fuel flow is observed, place the right half auxiliary fuel pump switch (LOW) in the ON position and reset the mixture control as desired. If vapor symptoms persist, place the fuel selector valve in either of the other two tank selection positions if Left/Right/Both is available or select the other fuel tank if only Left/Right is available. When fuel flow remains steady, the auxiliary pump may be turned off and the mixture reset as desired

4. Cowl Flaps – CLOSED (open as required on hot days or a high altitude).

NOTE

On hot days, turn the right half auxiliary pump switch (LOW) to ON momentarily if switching tanks within the first 30 minutes of cruise.

DESCENT

1. Auxiliary Fuel Pump – OFF.

CAUTION

Failure to turn off the auxiliary fuel pump switch may result in a complete power loss at reduced throttle settings due to an excessively rich mixture.

2. Power – AS DESIRED.
3. Mixture – ADJUST for smooth operation (full rich for idle power).
4. Cowl Flaps – CLOSED.

BEFORE LANDING

1. Seats, Seat Belts, and Shoulder Harnesses – SECURE.
2. Auxiliary Fuel Pump – OFF.

CAUTION

Failure to turn off the auxiliary fuel pump switch may result in a complete power loss at reduced throttle settings due to an excessively rich mixture.

3. Fuel Selector Valve – BOTH ON (if available) or FULLEST TANK.
4. Landing Gear – EXTEND (below 165 KIAS).
5. Landing Gear – CHECK (observe main gear down and green indicator light on).
6. Mixture – RICH.
7. Propeller – HIGH RPM.
8. Radar (if installed) – OFF (after landing assured).
9. Autopilot (if installed) – OFF.
10. Wing Flaps – AS DESIRED (0° to 10° below 160 KIAS, 10° to 20° below 130 KIAS, and 20° to 30° below 115 KIAS).
11. Air Conditioner (if installed) – OFF.

BALKED LANDING

1. Mixture – CONFIRM FULL RICH.
2. Power – 31.0 INCHES Hg and 2700 RPM.
3. Wing Flaps – RETRACT to 20° (immediately).
4. Climb Speed – 70 KIAS (until obstacles are cleared).
5. Wing Flaps – RETRACT SLOWLY (after reaching safe altitude and 75 KIAS).
6. Cowl Flaps – OPEN.

AMPLIFIED PROCEDURES

TAKEOFF

POWER CHECK

It is important to check takeoff power early in the takeoff roll. Any sign of rough engine operation or sluggish engine acceleration is good cause for discontinuing the takeoff.

Full power run-ups over loose gravel are especially harmful to propeller tips. When takeoffs must be made over a gravel surface, it is very important that the throttle be advanced slowly. This allows the airplane to start rolling before high RPM is developed, and the gravel will be blown back of the propeller rather than pulled into it.

On the first flight of the day, when the throttle is advanced for takeoff, manifold pressure will normally exceed 31.0 inches Hg and fuel flows will exceed 37 GPH if the throttle is opened fully. Momentary manifold pressures up to 33.0 inches Hg are acceptable. If manifold pressure consistently exceeds 31.0 inches of Hg, mechanical adjustment may be necessary. On any takeoff, the manifold pressure should be monitored and the throttle set to provide 31.0 inches Hg; then, for maximum engine power, a full rich mixture should provide at least 35 GPH (36-37 GPH preferred). With a heat-soaked engine on a hot day, it may be necessary to use the right half auxiliary fuel pump switch on LOW BOOST to obtain the recommended takeoff fuel flow of 35-37 GPH preferred.

After the throttle is advanced full forward, adjust the throttle friction lock clockwise to prevent the throttle from creeping from a maximum power position. Similar friction lock adjustments should be made as required in other flight conditions to maintain a fixed throttle setting.

Typical climb to cruise altitude is accomplished using 31.0 inches Hg. Manifold Pressure, 2700 RPM, full rich mixture (35 GPH minimum), cowl flaps open, 110 to 130 KIAS. Monitor Cylinder Head Temperatures normally not to exceed 380° F (430° F maximum) and TIT normally 1220° F to 1280° F (1650° F maximum). If CHT approaches 380° F, lower the nose of the aircraft to increase KIAS.

ENROUTE CLIMB

Typical enroute climbs are accomplished using 31.0 inches Hg. Manifold Pressure, 2700 RPM, full rich mixture (35 GPH minimum), cowl flaps open, 110 to 130 KIAS. Monitor Cylinder Head Temperatures normally not to exceed 380° F (430° F maximum) and TIT normally 1220° F to 1280° F (1650° F maximum). If CHT approaches 380° F, lower the nose of the aircraft to increase KIAS.

CRUISE

The normal transition from climb to cruise is accomplished by reducing aircraft Angle of Attack to a level attitude while in climb configuration. Allow the aircraft to stabilize in level attitude and reduce Manifold Pressure to 30.0" Hg and Propeller speed to 2500 RPM. With a smooth, fairly rapid fluid motion, reduce Mixture fuel flow to 17.6 GPH. Close Cowl Flaps. Monitor Cylinder Head Temperatures. CHTs should not exceed 380°F in normal operation. If any CHTs approach 380°F, gradually reduce fuel flow until CHTs stabilize below 380°F. Open cowl flaps as necessary. Turbine Inlet Temperature should not exceed 1650°F and is normally 1520°F TO 1560°F. If TIT approaches the maximum limit, reduce Throttle to reduce Manifold Pressure. It may be necessary to turn on the right half auxiliary fuel pump switch (LOW) to prevent fuel vapor problems at high altitude and/or hot weather conditions.

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Normal cruising is performed between 60% (186 BHP) and 85% (262 BHP) of the maximum continuous power rating 50-80°F Lean of Peak.

When Manifold Pressure is greater than 26 " Hg, you must maintain fuel flow of at least 30 gallons per hour (Rich of Peak) or less than 18 gallons per hour (Lean of Peak). When proper Flight Attitude, Throttle, RPM, and Mixture settings are maintained, Cylinder Head Temperatures should not exceed 380° F in climb or cruise.

NOTE

When Manifold Pressure is greater than 26" Hg, operation between 50° Lean of Peak and 250° Rich of Peak is not approved.

NOTE

Turbine Inlet Temperature is restricted to a maximum of 1650° F. Reduce Manifold Pressure and adjust mixture to maintain less than 1650° F.

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SECTION 5 PERFORMANCE

INTRODUCTION

Performance of a Vitatoe Aviation STC modified aircraft is equal to and no less than the original performance.

MAXIMUM RATE OF CLIMB

Maximum rate of climb is obtained at 31" Hg Manifold Pressure, 2700 RPM, 35 GPH minimum (36-37 GPH preferred), flaps up, gear up, and cowl flaps open. Maintain 100 KIAS up to 17,000', decreasing to 97 KIAS at 23,000'.

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SECTION 6 WEIGHT & BALANCE EQUIPMENT LIST

Airplane Weighing Procedures - No Change

Weight and Balance – New weight and balance required with this STC

Equipment List – Updated according to engine specification, propeller and any other equipment change with this STC.

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SECTION 7

AIRPLANE & SYSTEMS DESCRIPTIONS

ENGINE

The airplane is powered by a horizontally-opposed, six-cylinder, overhead-valve, turbocharged, air-cooled, fuel injected engine with a wet sump oil system. The engine is a Continental Model IO550P and is rated at 310 BHP at 2700 RPM continuous operation. Major accessories include a propeller governor on the left front of the engine, a gear driven alternator on the right front of the engine, and dual magnetos, starter, and full flow oil filter on the rear of the engine. Other major accessories include a turbocharger, connected to the induction air and exhaust systems, and associated components. Provisions are also made for a second belt-driven alternator on the left front of the engine and an air conditioning compressor on the right rear of the engine and either one or two vacuum pumps on the rear of the engine.

ENGINE INSTRUMENTS

Engine operation is monitored by a required Engine Data Analyzer with data recording capabilities. The Engine Data Analyzer should display and record oil pressure, oil temperature, cylinder head temperatures, RPM, manifold pressure, fuel flow, exhaust gas temperatures, and turbine inlet temperature.

AUXILIARY FUEL PUMP

The auxiliary fuel pump switch is located on the left side of the instrument panel and is a yellow and red split-rocker type switch. The yellow right half of the switch is labeled LOW, and its upper ON position is used for normal starting, minor vapor purging, and continued engine operation in the event of an engine-driven pump failure. With the right half of the switch in the ON position, the pump operates in the LOW BOOST mode.

NOTE

If the engine-driven fuel pump is functioning and either auxiliary fuel pump switch is placed in the ON position, an excessively rich fuel/air ratio may be produced unless the mixture is leaned. Therefore, this switch should be turned off during takeoff and landing.

NOTE

If the auxiliary fuel pump switch is accidentally placed in the ON position with the master switch on and the engine stopped, fuel may be pumped into engine cylinders causing a hydraulic lock situation. Damage to engine components may result if an attempt to start the engine is made with excessive liquid fuel in one or more cylinders.

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The red left half of the switch is labeled HIGH, and its upper ON position is used in the event of an engine-driven fuel pump failure during takeoff or high power operation. The HIGH position may also be used for extreme vapor purging. Maximum fuel flow is produced when the left half of the switch is placed in the HIGH position. The spring-loaded mechanism in the left half of the switch has been removed as part of the STC modification. When the left half of the switch (HIGH) is placed in the ON position an interlock within the switch automatically trips the right half of the switch (LOW) to the ON position. With the spring-loaded mechanism removed, the switch will remain in the ON position until manually moved to the OFF position. The right half of the switch will remain in the ON position until manually moved to the OFF position.

Under hot day-high altitude conditions, or conditions during a climb that are conducive to fuel vapor formation, it may be necessary to utilize the auxiliary fuel pump to attain or stabilize the fuel flow required for the type of climb being performed. In this case, turn the right half (LOW) auxiliary fuel pump ON and adjust the mixture to the desired fuel flow. If fluctuating fuel flow (greater than .9 GPH) is observed during climb or cruise at high altitudes, place the right half (LOW) auxiliary fuel pump switch in the ON position to clear the fuel system of vapor. The auxiliary fuel pump may be operated continuously in cruise, if necessary, but should be turned off prior to descent. Each time the auxiliary fuel pump switch is turned on or off, the mixture should be readjusted.

It is not recommended to run a tank dry. Damage to the engine driven fuel pump can occur and failure to restart the engine may occur. If it is necessary to completely exhaust a fuel tank quantity in flight, the auxiliary fuel pump will be needed to assist in restarting the engine when fuel exhaustion occurs. Therefore, it is recommended that proper operation of the auxiliary fuel pump be verified prior to running a fuel tank dry by turning the auxiliary fuel pump ON momentarily and checking for a slight rise in fuel flow indication.

To ensure a prompt engine restart in flight after running a fuel tank dry, immediately switch to a tank containing fuel or to BOTH ON, if available, at the first indication of fuel pressure fluctuation and/or power loss. Position the throttle at least $\frac{1}{2}$ open. Then place the left half of the auxiliary fuel pump switch (HIGH) in the ON position momentarily (3 to 5 seconds). Excessive use of the HIGH in ON position at high altitude and full rich mixture can cause flooding of the engine as indicated by a short (1 to 2 seconds) period of power followed by a loss of power. This can later be detected by a fuel flow indication accompanied by a lack of power. If flooding does occur, turn off the auxiliary fuel pump switch, and normal propeller windmilling should start the engine in 1 to 2 seconds.

If the propeller should stop (possible at very low airspeeds) before the tank containing fuel is selected, place the left half of the auxiliary fuel pump switch (HIGH) in the ON position and advance the throttle to the half way position until the fuel flow indicator registers approximately 13 GPH for 1 to 2 seconds. Then retard the throttle, turn off the auxiliary fuel pump, and use the starter to turn the engine over while advancing the throttle until a start is obtained. When restart is achieved, adjust throttle, propeller and mixture controls as desired.

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SECTION 9 SUPPLEMENT DUAL ALTERNATOR SYSTEM

SECTION 9.1 GENERAL

The optional Cessna 60-amp dual alternator system modifies the existing system to provide a second 60-amp alternator. For details of the existing system, refer to Section 7 Electrical System paragraphs in the basic handbook. The dual alternator system features a second 60-amp alternator, located on the left front side of the engine, belt driven by the propeller shaft pulley. Each alternator is controlled by a special Cessna ACU (alternator control unit) or Plane Power Voltage Regulator which includes circuits to provide alternator load sharing (within 15 amps under low-load conditions). A field switch for the second alternator is provided by installing a Cessna triple-rocker master switch or equivalent in place of the double-rocker master switch. The switch is labeled MASTER ON, ALT 1, ALT 2, BATT. Additional field and output circuit breakers are located on the left sidewall circuit breaker panel. Additional system monitoring capability is provided by two warning lights, labeled ALT 1 OFF and ALT 2 OFF, located on the upper left side of the instrument panel.

SECTION 9.2 LIMITATIONS

There are no changes to the airplane limitations when the dual alternator system is installed.

SECTION 9.3 EMERGENCY PROCEDURES

ONE ALT OFF LIGHT ILLUMINATED

1. Cycle affected alternator section of the master switch off and ON.
2. If ALT OFF light is still illuminated, turn off affected alternator section and reduce electrical load (probable alternator/ACU system failure).
3. If affected alternator ALT REG circuit breaker is tripped, reset and repeat steps 1 and 2.

If affected alternator ALT circuit breaker is tripped (suspect fault on alternator output):

4. Turn on affected alternator section while monitoring output.

5. If significant output is indicated, turn off alternator and continue or terminate flight with electrical load reduced to capacity of single alternator.
6. If no output is indicated, turn off alternator, reset ALT circuit breaker, and turn alternator on again.
7. If ALT circuit breaker trips again or output is excessive relative to equipment load, turn off the affected alternator section of the master switch and continue or terminate flight with electrical load reduced to capacity of single alternator.
8. If output is not excessive relative to equipment load, disregard ALT OFF light and have system checked prior to next flight.

BOTH ALT OFF LIGHTS ILLUMINATED

Follow the ONE ALT OFF LIGHT ILLUMINATED procedure for each alternator.

SECTION 9.4 NORMAL PROCEDURES

BEFORE TAKEOFF

The following functional check of the dual alternator system should be accomplished periodically and must be completed prior to any icing flight:

1. Run the engine at a minimum speed of 1000 RPM with some electrical equipment turned on and all avionics power switches turned OFF.
2. Turn ALT 1 and ALT 2 sections of the master switch off.
3. Verify both ALT OFF warning lights are illuminated.
4. Turn ALT 1 section ON and verify ALT 1 lights extinguished.
5. Turn ALT 1 switch off.
6. Turn ALT 2 switch of the master switch ON and verify ALT 2 lights extinguished.
7. Turn ALT 1 and ALT 2 sections of the master switch ON for normal operations.
8. Verify that voltage indication is normal (28.0 +/- 1 volt).

MAXIMUM PERFORMANCE CLIMB

In order to provide adequate cooling on hot days, airplanes equipped with a dual alternator system must use climb speeds 10 KIAS faster than Maximum Rate of Climb speeds listed in Section 5 of the basic handbook.

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OPERATION IN FLIGHT

During flight, occasionally monitor the system by utilizing the volt/amp selector switch to check ALT 1, ALT 2, BAT, and VOLT functions. Excessively uneven output (greater than 20 amps) between the alternators indicates the system should be checked and adjusted prior to the next flight.

Due to the component tolerance and low signal levels, it may be normal for one ALT OFF light to be illuminated when the total load on both alternators is less than 15 amps. Increasing the total load above 15 amps should normally extinguish the ALT OFF light. However, if the ALT OFF light is illuminated with a total load greater than 15 amps, the ONE ALT OFF LIGHT ILLUMINATED system check in section 3 of this supplement should be made.

SECTION 9.5 PERFORMANCE

The increased climb speed required on hot days when using maximum climb power will result in a 25 FPM loss of climb performance.

END OF DOCUMENT

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