Pilots Operating Handbook and
FAA Approved Airplane Flight Manual
Supplement for

Cirrus SR22 Aircraft with Continental Motors TSIO-550-N Engine Installation

When the Continental Motors, TSIO-550-N engine is installed in the Cirrus Design SR22 in accordance with the Supplemental Type Certificate SA03962AT, this Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR22 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic SR22 Pilot's Operating Handbook.

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Note

Noted effectivity for SR22-G2 indicates aircraft serials 1602, 1821, 1840, 1863 thru 2333, 2335 thru 2419, and 2421 thru 2437.

Noted effectivity for SR22-G3 indicates aircraft serials 2334, 2420, 2438, and subsequent.

Noted effectivity "Serials with TKS Flight into Known Ice (FIKI) Anti-ice System" indicates aircraft serial equipped with approved TKS Anti-ice System and operated in accordance with Cirrus Design AFM Supplement 13772-134 Revision 1 or later.

Issued

Model - Serial Number ____________ Registration Number ____________

FAA Approved Date 05 April 2012

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Supersedure Notice

This manual is a supplement to the Cirrus Design SR22 Airplane Flight Manual, Part No. 13772-001, dated Jan 06 2010. This is the original issue of this Airplane Flight Manual Supplement.

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Foreword

This Aircraft Flight Manual Supplement (AFMS) has been prepared by Continental Motors to familiarize operators with the aircraft equipped with the TSIO-550-N engine installation. Read this handbook carefully. It provides operational procedures that will assure the operator obtains the performance published in the manual, data designed to allow the most efficient use of the airplane, and basic information for maintaining the airplane in a "like new" condition.

> NOTE: All limitations, procedures, maintenance & servicing requirements and performance data contained in this Handbook are mandatory for compliance with FAA operating rules and for continued airworthiness of the airplane.

This AFM supplement includes the material required to be furnished to the pilot, by the Federal Aviation Regulations (FARs) and constitutes a FAA approved Airplane Flight Manual Supplement for the aircraft equipped with the TSIO-550-N engine.

> NOTE: It is the responsibility of the owner to ensure that the Pilot's Operating Handbook and supplements are current at all times. Therefore, it is very important that all revisions be properly incorporated into the Handbook as soon as they are received.

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Section 1
General

CONTENTS

1-1. Engine

Number of Engines.. 1
Engine Manufacturer..Continental Motors
Engine Model TSIO-550-N
Engine Type................Turbocharged, direct drive, fuel injected, air cooled,
................................horizontally opposed 6 cylinder engine with 550 cubic
.... inch displacement
Horsepower Rating.. 315 BHP @ 2500 RPM

1-2. Propeller

1-2.1. Hartzell

Propeller Type .... Constant Speed, Three Blade
Model Number.. PHC-J3YF-1N/N7605
Diameter .... 78.0”

Propeller Type .... Constant Speed, Three Blade
Model Number..PHC-J3YF-1N/N7605(B)
Diameter .... 78.0”

1-3. Symbols, Abbreviations and Terminology

1-3.1. Engine Power Technology

TIT **Turbine Inlet Temperature** is the temperature measured in front of the first stage turbine nozzle valves.

Section 2
Limitations

CONTENTS

2-1. Airspeed Limitations

The indicated airspeeds in the following table are based upon Section 5, Airspeed Calibrations, of the basic AFM using the normal static source. When using the alternate static source, allow for the airspeed calibration variations between the normal and alternate static sources.

Serials 1602, 1821, 1840, 1863 thru 2333, 2335 thru 2419, and 2421 thru 2437:			
Speed	**KIAS**	**KCAS**	**Remarks**
Vne up to 17,500 feet MSL	201	204	**Never Exceed Speed** is the speed that may not be exceeded at any time.
Vne at 25,000 feet MSL	171	173	Vne is reduced linearly from 17,500 feet to 25,000 feet
Vno up to 17, 500 feet MSL	178	180	**Maximum Structural Cruising Speed** is the speed that should not be exceeded except in smooth air and then only with caution
Vno at 25,000 feet MSL	152	153	Vno is reduced linearly from 17,500 feet to 25,000 feet

Serials 2334, 2420, 2438, and subsequent:			
Speed	**KIAS**	**KCAS**	**Remarks**
Vne up to 17,500 feet MSL	200	204	**Never Exceed Speed** is the speed that may not be exceeded at any time.
Vne at 25,000 feet MSL	170	173	Vne is reduced linearly from 17,500 feet to 25,000 feet
Vno up to 17, 500 feet MSL	177	180	**Maximum Structural Cruising Speed** is the speed that should not be exceeded except in smooth air and then only with caution
Vno at 25,000 feet MSL	151	153	Vno is reduced linearly from 17,500 feet to 25,000 feet

2-1.1. Airspeed Indicator Markings

The airspeed indicator markings are based upon the basic AFM Section 5, Airspeed Calibrations using the normal static source. When using the alternate static source, allow for the airspeed calibration variations between the normal and alternate static sources.

Serials 1602, 1821, 1840, 1863 thru 2333, 2335 thru 2419, and 2421 thru 2437:		
Marking	**Value (KIAS)**	**Remarks**
White Arc	59-104	Full Flap Operating Range Lower limit is the most adverse stall speed in the landing configuration. Upper limit is the maximum speed permissible with the flaps extended. Do not use flaps above 17,500 feet MSL.
Green Arc up to 17,500 feet MSL 25,000 feet MSL	 70-178 70-152	Normal Operating Range Lower limit i is the maximum weight stall at most forward C.G. with flaps retracted. Upper limit is the maximum structural cruising speed (Vno). Vno and upper limit of green arc is reduced linearly from 17,500 feet to 25,000 feet.
Yellow Arc up to 17,500 feet MSL 25,000 feet MSL	 178-201 152-171	Caution Range Operations must be conducted with caution and only in smooth air. Upper and lower limits of yellow arc are reduced linearly from 17,500 feet to 25,000 feet.
Red line up to 17,500 feet MSL 25,000 feet MSL	 201 171	Never exceed speed (Vne) Maximum speed for all operations. Vne and red line is reduced linearly from 17,500 feet to 25,000 feet

Serials 2334, 2420, 2438, and subsequent:		
Marking	**Value (KIAS)**	**Remarks**
White Arc	62-104	Full Flap Operating Range Lower limit is the most adverse stall speed in the landing configuration. Upper limit is the maximum speed permissible with the flaps extended. Do not use flaps above 17,500 feet MSL.
Green Arc up to 17,500 feet MSL 25,000 feet MSL	 73-177 73-151	Normal Operating Range Lower limit i is the maximum weight stall at most forward C.G. with flaps retracted. Upper limit is the maximum structural cruising speed (Vno). Vno and upper limit of green arc is reduced linearly from 17,500 feet to 25,000 feet.
Yellow Arc up to 17,500 feet MSL 25,000 feet MSL	 177-200 151-170	Caution Range Operations must be conducted with caution and only in smooth air. Upper and lower limits of yellow arc are reduced linearly from 17,500 feet to 25,000 feet.
Red line up to 17,500 feet MSL 25,000 feet MSL	 200 170	Never exceed speed (Vne) Maximum speed for all operations. Vne and red line is reduced linearly from 17,500 feet to 25,000 feet

2-2. Power Plant Limitations

2-2.1. Engine

Number of Engines 1
Engine Manufacturer .... Continental Motors
Engine Model TSIO-550-N
Engine Type .... Turbocharged, direct drive, fuel injected, air cooled,
.... horizontally opposed 6 cylinder engine with 550 cubic
.... inch displacement
Horsepower Rating .... 315 BHP @ 2500 RPM
Oil Temperature .... 240°F (116°C) maximum
Oil Pressure:
Minimum .... 10 psi
Maximum .... 100 psi

2-2.2. Operating Limits

Do not reduce manifold pressure below 15 inches when above 18,000 feet MSL.

2-2.3. Propeller

Propeller Type .... Constant Speed, Three Blade
Model Number .... PHC-J3YF-1N/N7605 or N7605B
TCDS .... P36EA Hartzell
Diameter .... 78.0”(78.0” Minimum)
No. of Blades 3
Low Pitch .... 15.2° ± 0.5°
High Pitch .... 35.0° ± 1.0°
Limitations .... None to 2700 RPM

2-3. Instrument Markings

Instrument (Range & Units)	Red Arc/Bar	Yellow Arc/Bar	Green Arc/Bar	Yellow Arc/Bar	Red Arc/Bar
	Lower Warning Range	Minimum Caution Range	Normal Range	Maximum Caution Range	Upper Warning Range
Cylinder Head Temperature (100°F - 500°F)	---	---	240 - 420	420 - 460	> 460
Engine Speed (0 - 3000 RPM)	---	---	500 - 2550	---	> 2550
Exhaust Gas Temperature (1000°F -1850°F)	---	---	500 - 1800	---	---
Manifold Pressure (10-40 in Hg)	---	---	15.0 - 36.5	36.5 - 37.5	> 37.5
Oil Pressure (0 - 100 PSI)	0 - 10	10 - 30	30 - 60	60 - 100	>100
Oil Temperature (75°F - 250°F)	---	---	100 - 240	---	>240
Percent Power (0 - 100%)	---	---	0-100	---	---
Turbocharger Inlet Temperature (1000°F - 1800°F)	---	---	1000 - 1750	---	1750 - 1800
Fuel Flow (0 -45 U.S. Gal/Hr.)	---	---	10 - 40.5	--	> 40.5

2-4. Altitude Limits

Maximum Takeoff Altitude 10,000 feet MSL

Maximum Operating Altitude 25,000 feet MSL

The operating rules (FAR Part 91 and FAR Part 135) require the use of supplemental oxygen at specified altitudes below the maximum operating altitude.

2-5. Environmental Conditions

Do not operate the airplane below an outside air temperature of -40°F (-40°C).

2-6. System and Equipment Limits

2-6.1. Flap Limitations

Do not use flaps above 17,500 feet MSL>

2-7. Placards

Instrument Panel Upper Right:

Section 3
Emergency Procedures

CONTENTS

3-1. Engine System Emergencies

3-1.1. Engine Partial Power Loss

1. Fuel Pump..HIGH BOOST/PRIME
2. Fuel Selector ....SWITCH TANKS
3. Mixture ....CHECK appropriate for flight conditions
4. Power Lever ....SWEEP
5. Ignition Switch ....BOTH, L, then R
6. Land as soon as practical.

WARNING

If there is a strong smell of fuel in the cockpit, divert to the nearest suitable landing field. Fly a forced landing pattern and shut down the engine fuel supply once a safe landing is assured.

Indications of a partial power loss include fluctuating RPM, reduced or fluctuating manifold pressure, low oil pressure, high oil temperature, and a rough-sounding or rough-running engine. Mild engine roughness in flight may be caused by one or more spark plugs becoming fouled. A sudden engine roughness or misfiring is usually evidence of a magneto malfunction.

If for any reason the aircraft experiences an unexpected loss of normal manifold pressure perform “Unexpected Loss Of Manifold Pressure” checklist

Low oil pressure may be indicative of an imminent engine failure. See “Oil Pressure Out of Range” Warning in this section for special procedures with low oil pressure.

A damaged (out-of-balance) propeller may cause extremely rough operation. If an out-of-balance propeller is suspected, immediately shut down engine and perform “Forced Landing” checklist.

If the power loss is due to a fuel leak in the injector system, fuel sprayed over the engine may be cooled by the slipstream airflow which may prevent a fire at altitude. However, as the Power Lever is reduced during descent and approach to landing the cooling air may not be sufficient to prevent an engine fire.

Selecting HIGH BOOST/PRIME may clear the problem if vapor in the injection lines is the problem or if the engine-driven fuel pump has partially failed. The electric fuel pump will not provide sufficient fuel pressure to supply the engine if the engine-driven fuel pump completely fails.

Selecting the opposite fuel tank may resolve the problem if fuel starvation or contamination in one tank was the problem. Cycling the ignition switch momentarily from BOTH to L and then to R may help identify the problem. An obvious power loss in single ignition operation indicates magneto or spark plug trouble. Lean the mixture to the recommended cruise setting. If engine does not smooth out in several minutes, try a richer mixture setting. Return ignition switch to the BOTH position unless extreme roughness dictates the use of a single magneto.

If a partial engine failure permits level flight, land at a suitable airfield as soon as conditions permit. If conditions do not permit safe level flight, use partial power as necessary to set up a forced landing pattern over a suitable landing field. Always be prepared for a complete engine failure and consider CAPS deployment if a suitable landing site is not available. Refer to Section 10, “Safety Information”, for CAPS deployment scenarios and landing considerations.

3-1.2. Oil Pressure Out of Range

3-1.2.1. OIL PRESS Warning

1. Oil Pressure Gage .... CHECK
   If pressure high:
   a. Power.. REDUCE to minimum for sustained flight
   b. Land as soon as possible.
   c. Prepare for potential engine failure.
      1) Continually select suitable forced landing fields.

3-1.3. Oil Temperature High

3-1.3.1. OIL TEMP Warning

1. Power .... REDUCE
2. Airspeed .... INCREASE
3. Mixture .... ADJUST fuel flow to top of green arc
4. Oil Temperature Gage .... MONITOR
   If temperature remains high:
5. Land as soon as possible

3-1.4. High Cylinder Head Temperature

3-1.4.1. CHT Caution and Warning

3-1.4.2. On-Ground

1. Power Lever .... REDUCE
2. Annunciations and Engine Temperatures .... MONITOR
   If Caution or Warning annunciation is still illuminated:
3. Power Lever .... MINIMUM REQUIRED
4. Flight .... PROHIBITED

3-1.4.3. In-Flight

1. Power Lever.. REDUCE
2. Mixture .... ADJUST fuel flow to top of green arc
3. Airspeed .... INCREASE
4. Annunciations and Engine Temperatures .... MONITOR
   If Caution or Warning annunciation is still illuminated:
5. Power Lever .... MINIMUM REQUIRED
6. Engine Instruments .... MONITOR
   If Caution annunciation only remains illuminated:
   a. Land as soon as practical.

   If Warning annunciation remains illuminated:
   a. Land as soon as possible.

3-2. Turbocharger System Emergencies

3-2.1. Unexpected Loss Of Manifold Pressure

1. Power .... ADJUST to minimum required for sustained flight
2. Mixture .... ADJUST for EGTs between 1300° to 1400ºF
3. Descend to MINIMUM SAFE ALTITUDE from which a landing may be safely accomplished.
4. Divert to nearest suitable airfield
5. Radio.. Advise ATC landing is urgent or Transmit (121.5 MHz) MAYDAY giving location and intentions when workload permits.
6. Oil Pressure .... MONITOR
7. Land as soon as possible.

NOTE: If the aircraft experiences an unexpected loss of normal manifold pressure, the engine will typically revert to operation similar to a normally aspirated aircraft at approximately the same altitude. However, continued flight should only be conducted to the nearest suitable landing place in order to investigate the cause of the unexpected loss of normal manifold pressure.

The four most probable causes are:

1. A leak or rupture at an induction system coupling or a loose or failed induction coupling hose clamp.
   a. This condition does not usually present a significant hazard, other than power loss equivalent to a naturally aspirated engine.
   b. While this condition is the most probable, the following three conditions may present an immediate hazard to continued safe flight. Because it is difficult for the pilot to distinguish between a simple induction system leak and any of the more hazardous causes, all unexpected losses of manifold pressure should be assumed hazardous.
2. A significant leak in the exhaust system.
   a. An exhaust leak may present a possible fire hazard. Reducing power and adjusting the mixture as described reduces the possibility of an engine compartment fire.
3. A loss of oil pressure to the wastegate actuator due to a general loss of engine oil pressure.
   a. Potentially caused by a failed oil line, oil line fitting, or oil pump
   b. Failure to maintain normal full manifold pressure at altitude may be an early indication of an oil leak and impending further loss of oil pressure.
   c. Monitor for reduction in oil pressure; if observed continue for diversion airfield, but prepare for forced landing.
4. A failure of an internal component in the turbocharger.
   a. If the pilot experiences a sudden loss of manifold pressure and later observes declining oil pressure, it is may be due to a failure of an internal turbocharger component. If there is a loss of oil pressure due to a failure of the turbocharger, engine oil may be vented through the tail pipe overboard.
   b. Monitor for reduction in oil pressure; if observed continue for diversion airfield, but prepare for forced landing.

3-2.2. Manifold Pressure High

3-2.2.1. MAN PRESSURE Warning

1. Power Lever .... REDUCE MAP to less than 36.5 in.Hg
2. Flight .... CONTINUE
   If noticeable surging is present:
3. Complete Overboost / Pressure Relief Valve checklist

   NOTE: High Manifold Pressure may be a result of cold oil and the affect of high associated oil pressure on the wastegate controller. Maintain power at or below 36.5 in.Hg by power lever management. If High Manifold Pressure persists when oil temperatures are greater than 150°F, MAP controller requires a maintenance adjustment. If engine surges are associated, MAP may be exceeding pressure relief valve (pop-off valve) threshold. Relief valve will protect induction manifolds from excessive pressure, but it may be a sign of a failed closed wastegate; if this is observed or suspected, complete the "Overboost/Pressure Relief Valve" Checklist.

3-2.3. Overboost/Pressure Relief Valve

1. Power Lever...REDUCE to 30.5 in.Hg or less
2. Mixture ....ADJUST fuel flow to top of green arc

If continued surging is present:

3. Land as soon as practical

NOTE: Although it is an unlikely failure mode, the wastegate may be stuck in a closed position. If pressure relief valve is obviously surging (cycling high manifold pressure followed by sudden drop to lesser pressure, may be accompanied by "pop" noise), it may be evidence of MAP controller setting problem but may also be evidence of a seized wastegate. Engine will be adequately protected by the pressure relief valve, but turbo overspeed may result in turbo failure if pressure relief valve remains OPEN. Reducing manifold pressure (via power lever) will decrease the airflow through the engine, thereby reducing the energy available to drive the turbine; enriching the mixture will maintain lower turbine temperatures. It is unnecessary to descend prematurely, lower altitudes (higher density air) may aggravate the condition.

3-2.4. Turbine Inlet Temperature High

3-2.4.1. TIT Warning

1. Mixture ....ADJUST Fuel Flow to Top of Green Arc
2. Ignition Switch ....CHECK on BOTH

   If TIT remains in excess of limits:

   a. Power ....REDUCE

   b. Land as soon as practical.

NOTE: Annunciation indicates that one or both turbochargers are exceeding turbine inlet temperature limits, condition can be reduced and controlled by mixture management but may be a sign of improper combustion or magneto failure.

3-2.5. EGT, TIT or CHT Temperature Sensor Failure

1. Similar gages .... MONITOR
2. Flight .... CONTINUE using remaining gages as representative.

   NOTE: Isolated red X presentation of an EGT, TIT or CHT indicates that sensor has failed. Continued flight is permitted, using the remaining gages as representative of the failed gage; control airspeed or mixture in a normal manner to maintain the other cylinders or TIT within their normal operating ranges.

3-3. CAPS Deployment at High Altitudes

For any indicated airspeed, as altitudes increase the true air speed of the deployment increases. Higher true air speeds increase the parachute inflation loads. Therefore, it is important for the operator takes all reasonable efforts to slow to the minimum possible airspeed prior to deploying the CAPS.

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Chapter 3A.
Abnormal Procedures

CONTENTS

3A-1. Inadvertent Icing Encounter

Aircraft serial numbers not equipped with TKS Anti-Ice System (FIKI):
Flight into known icing conditions is prohibited. However if icing is inadvertently encountered:

1. Pitot Heat .... ON
2. Exit icing conditions. .... Turn back or change altitude.
3. Cabin Heat .... MAXIMUM
4. Windshield Defrost .... FULL OPEN

   NOTE: Alternate induction air door will automatically open if required.

Aircraft serial numbers equipped with TKS Anti-Ice System (FIKI):
Dependent on duration and severity of icing conditions, induction air filter icing is possible. Alternate induction air door will open automatically if required; if open alternate induction door is annunciated, exit icing condition as soon as possible.

3A-2. Alternate Air Door Open Annunciation

3A-2.1. ALT AIR OPEN Caution

1. Manifold Pressure .... CHECK
   If environment suspected as cause (icing or visible debris):
2. Flight Conditions .... CHANGE/EXIT
3. Power .... Reduce to 30.5 in.Hg when practical
4. Flight .... CONTINUE
   Alternate induction door has automatically opened, indicating an obstructed air filter. Potential environmental causes are ice contamination (icing conditions) or particles (visible debris, heavy bugs, smoke or ash).

- If ice contamination was cause, unfiltered air won't pose an operating hazard for the engine, but conditions significant enough to ice obstruct filters are not suitable conditions for long duration flight of light aircraft.
- If flying through conditions that have obvious debris contamination sources, exit those conditions as able; engine induction is unfiltered when alternate air door is open.
- Reduction to cruise power when able will reduce engine air consumption, and likely close the alternate air door (restoring filer protection to induction air).
- Filters likely require maintenance.
  When alternate induction door is open, expect 3-5% power loss due to increased manifold air temperatures and expect lower critical altitude in climb. Percent Power indication will be accurate, reflecting actual (reduced) power.

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Section 4
Normal Procedures

CONTENTS

4-1. Airspeeds for Normal Operation

Enroute Climb, Flaps Up:

1. Normal, Full Power, Full Rich Climb .... 120 KIAS

4-2. Starting Engine

1. External Power (if applicable).. CONNECT
2. Brakes .... HOLD
3. Bat Master Switches ....ON (Check Voltage)
4. Strobe Lights ....ON
5. Mixture ....FULL RICH
6. Power Lever...FULL FORWARD

   NOTE: If the engine is warm, priming is not required. On the first start of the day, especially under cool ambient conditions, holding the Fuel Pump switch to the HIGH BOOST/PRIME position for two seconds will improve starting.

7. Electric Fuel Pump .... LOW BOOST
8. Propeller Area... CLEAR
9. Power Lever... OPEN ¼ INCH
10. Ignition Switch ....START (Release after engine starts)
11. Mixture ....LEAN until RPM rises to a maximum value

Leave the mixture in this position during taxi and until run-up.

12. Power Lever.. RETARD (to maintain 1000 RPM)
13. Oil Pressure ....CHECK
14. Alt Master Switches ....ON
15. Avionics Power Switch...ON
16. Engine Parameters..MONITOR
17. External Power ....DISCONNECT
18. Amp Meter/Indication ....CHECK

4-3. Before Takeoff

1. Doors .... LATCHED
2. CAPS Handle .... ARMED (Pin Removed)
3. Set Belt and Shoulder Harness .... SECURE
4. Air Conditioner .... AS DESIRED
5. Fuel Quantity .... CONFIRM
6. Fuel Selector .... FULLEST TANK
7. Electric Fuel Pump .... LOW BOOST

   CAUTION: The mixture should be full rich for takeoff, even at high elevation airports. Leaning for takeoff and during maximum performance climb may cause excessive cylinder head temperatures.

8. Mixture .... FULL RICH
9. Flaps .... SET 50% & CHECK
10. Transponder .... SET
11. Autopilot .... CHECK
12. Navigation Radios/GPS .... SET for Takeoff
13. Cabin Heat/Defrost .... As Required
14. Brakes .... HOLD
15. Power Lever .... 1700 RPM
16. Alternator .... CHECK
    a. Pitot Heat .... ON
    b. Navigation Lights .... ON
    c. Landing Light .... ON
    d. Annunciator Lights .... CHECK
       Verify ALT 1 and ALT 2 Caution lights out and positive amps indication for each alternator
17. Voltage .... CHECK
18. Pitot Heat .... AS REQUIRED
19. Navigation Lights .... AS REQUIRED
20. Landing Lights .... AS REQUIRED

(Continued on next page)

21. Magnetos .... CHECK Left and Right
    RPM drop must not exceed 150 RPM for either magneto. RPM differential must not exceed 75 RPM between magnetos
    a. Ignition Switch ....R, note RPM, then BOTH
    b. Ignition Switch ....L, note RPM, then BOTH
22. Engine Parameters ....CHECK
23. Power Lever...1000 RPM
24. Flight Instruments, HSI, Altimeter ....CHECK & SET
25. Flight Controls..FREE & CORRECT
26. Trim ....SET Takeoff

4-4. Full Power Climb

1. Oxygen .... AS REQUIRED
2. Power Lever .... FULL FORWARD
3. Mixture .... Maintain Fuel Flow in GREEN ARC
4. Flaps .... Verify UP
5. Airspeed .... 120 KIAS
6. Fuel Pump .... LOW BOOST
7. Fuel Flow .... MONITOR
8. Engine Parameters .... MONITOR

The fuel pump should be in the LOW BOOST position during takeoff and for climb as required for vapor suppression with hot or warm fuel.

During full power, full rich climbs, fuel flow should be maintained in the green arc. If full rich fuel flow drops below the green range, this will usually be corrected by use of LOW BOOST (below 18,000 feet) or HIGH BOOST/PRIME (above 18,000 feet). If cylinder head temperatures consistently exceed 420ºF, use higher airspeeds for better cooling. To avoid excessive CHTs, verify fuel pump is in the BOOST position.

For increased engine life do not allow CHTs to continuously exceed 420ºF. If any CHT consistently exceeds 420ºF during the climb, lower the nose and increase airspeed as required to maintain the hottest CHT at or below 420ºF whenever practical. Intermittent CHTs up to 420ºF are not a concern. Maximum CHT value remains 460 ºF.

Use of High Boost / Prime Fuel Pump Setting

Under some extreme environmental conditions, the use of the fuel pump in the HIGH BOOST/PRIME position may be required in flight above 18,000 feet to adequately suppress vapor formation. This condition is most likely to occur during climbs above 18,000 feet on hot days with warm or hot fuel in the tanks. Above 18,000 feet, if there is a loss of fuel flow or vapor locking is suspected, turn the fuel pump to

HIGH BOOST /PRIME position and reset the mixture as required to maintain adequate stable fuel flow. Vapor lock is most often indicated by any or a combination of the following:

- Fluctuations in normal fuel flow possibly coupled with abnormal engine operation;
- Rising EGTs and TIT coupled with falling fuel flow
- Rising CHTs (late in the process)

After the aircraft is in cruise flight for 30 minutes or more, the fuel pump should be returned to the LOW BOOST position or OFF, as conditions permit.

4-5. Cruise

1. Oxygen .... AS REQUIRED
2. Cruise Altitude .... ESTABLISHED
3. Power Lever .... REDUCE to 30.5 in.Hg or less
4. Fuel Pump .... AS REQUIRED
5. Mixture .... ADJUST
6. Engine Parameters .... MONITOR
7. Fuel Flow and Balance ....MONITOR
   If any CHT's exceed 420°F:
8. Mixture .... LEAN 0.5 GPH and MONITOR

4-6. Cruise Leaning

1. Oxygen .... AS REQUIRED
2. Cruise Altitude .... ESTABLISHED
3. Power Lever .... REDUCE to 30.5 in.Hg or less
4. Fuel Pump .... AS REQUIRED
5. Mixture .... ADJUST
6. Engine Parameters .... MONITOR
7. Fuel Flow and Balance .... MONITOR
   If any CHT's exceed 420°F:
8. Mixture .... LEAN 0.5 GPH and MONITOR

Cruise leaning, i.e. leaning below full rich fuel flow, is only approved with manifold pressure settings of 30.5 in.Hg or less.

Maximum Cruise Power RPM .... 2500 RPM
Maximum Cruise Manifold Pressure .... 30.5 in.Hg

The mixture can be set by finding a fuel flow that provides peak TIT and then leaning until TIT is 50°-75°F less than its peak value for best economy operation and 75°F rich than its peak value for best power operation.

Cruise with the mixture lever set to a mixture setting is acceptable provided CHTs remain under 420ºF. This procedure may not be possible in hot weather, but in moderate temperature conditions, LOP cruise provide extended range and better fuel economy.

As this setting is dependant on ambient air temperatures, it may not ensure sufficient cylinder cooling. If any CHT's are greater than 420°F, lean the mixture to maintain cylinders below 420°F. As an approximation, a 0.5 GPH reduction in fuel flow will reduce CHT's by 15°F.

Running the engine at leaner mixture levels will improve cooling, but provide lower cruise power because engine power scales in proportion to fuel flow when the engine is running at lean of peak. Other than lower cruise power, the only undesirable affect of an overly lean-of-peak setting is engine misfire. Cruise mixture should be rich enough to avoid lean misfire

4-7. Descent

1. Oxygen .... AS REQUIRED
2. Altimeter .... SET
3. Cabin Heat/Defrost .... AS REQUIRED
4. Landing Light .... ON
5. Fuel System .... CHECK
6. Power Lever .... AS REQUIRED
   For Rapid Descent:
   Power Lever .... Smoothly REDUCE MAP 18-20 in.Hg
7. Mixture .... AS REQUIRED
   For Rapid Descent:
   Mixture .... Maintain CHTs above 240°F
8. Brake Pressure .... CHECK

   NOTE: Avoid prolonged idle settings. Maintain a CHT of 240°F (116°C) or greater.

4-8. Before Landing

1. Seat Belt and Shoulder Harness .... SECURE
2. Fuel Pump .... BOOST
3. Mixture .... FULL RICH
4. Flaps .... AS REQUIRED
5. Autopilot.. AS REQUIRED

4-9. After Landing

1. Power Lever .... 1000 RPM
2. Fuel Pump .... OFF or BOOST
3. Mixture .... LEAN to obtain maximum idle RPM
4. Flaps .... UP
5. Transponder .... STBY
6. Lights .... AS REQUIRED
7. Pitot Heat .... OFF

4-10. Shutdown

1. Fuel Pump (if used) .... OFF
2. Throttle .... IDLE
3. Ignition Switch .... CYCLE
4. Mixture .... CUTOFF
5. All Switches.................... OFF

   CAUTION: Note that the engine hesitates as the switch cycles through the "OFF" position. If the engine does not hesitate, one or both magnetos are not grounded. Prominently mark the propeller as being "Hot," and contact maintenance personnel immediately.

6. Magnetos .... OFF
7. ELT ....TRANSMIT LIGHT OUT

After a hard landing, the ELT may activate. If this is suspected, press the RESET button.

8. Chocks, Tie-downs, Pitot Covers .... AS REQUIRED

Section 5
Performance Data

NOTE: Flight performance data presented in Sections 5-4 through 5-10 is not FAA approved data.

CONTENTS

5-1. Takeoff Distance

Conditions:

- Winds ....Zero
- Runway .... Dry, Level & Paved
- Flaps 50%
- Air Conditioner ....OFF
- Power:
  - Throttle .... Full Open
  - Mixture .... Wide Open
    Set prior to brake release for short field takeoff

Apply the following factors to the computed takeoff distance for the noted condition:

- Headwind - Subtract 10% from computed distance for each 12 knots headwind.
- Tailwind - Add 10% for each 2 knots tailwind up to 10 knots.
- Dry Grass Runway - increase ground roll distance by 15%
- Sloped Runways - Increase distance by 22% of the ground roll value at Sea Level, 30% of the ground roll value at 5000 ft, 43 % of the ground roll value at 10000 ft for each 1% of upslope; decrease distance by 7% of the ground roll value at Seal Level, 10% of the ground roll value at 5000 ft, and 14% of the ground roll value at 10000 ft for each 1% of downslope.

  CAUTION: The above correction for runway slope are required to be included herein under FAR 23. They should be used with caution since published runway slope data is usually the net slope from one end of the runway to the other. Many runways will have portions of the length at greater or lesser slopes than the published slope, lengthening (or shortening) takeoff ground run values estimated from the published slope as described above.

- If brakes are not held while applying power, distances apply from the point where full throttle and mixture setting are complete.
- For operation in outside air temperatures colder than the Takeoff Distance table provides, use the coldest data shown.
- For operation in outside air temperatures warmer than the Takeoff Distance table provides, use extreme caution.
- Add 100 feet to ground roll distance and 150 feet to distance over 50’ obstacle if air conditioner is ON during takeoff.

Takeoff Distance: 3400 LB

Weight: 3400 LB **Approx. Speed at Liftoff:** 72 KIAS **Speed over 50 ft. Obstacle:** 78KIAS **Flaps:** 50% **Power:** Full Throttle, Full Rich **Runway:** Dry, Paved & Level	**Headwind:** Subtract 10% for each 12 knots headwind **Tailwind:** Add 10% for each 2 knots tailwind up to 10 knots **Dry Grass:** Add 15% of ground roll to distances **Runway Slope:** Reference Caution **Air Conditioner:** Add 100' to ground roll and 150' to distance over 50' obstacle if air conditioner is ON during takeoff

Pressure Alt FT	Distance FT	Temperature - °C					ISA
		0	10	20	30	40	
SL	Ground Roll	733	792	853	917	983	822
	Total	1138	1223	1312	1403	1498	1267
1000	Ground Roll	782	845	910	978	1049	864
	Total	1207	1297	1391	1488	1588	1325
2000	Ground Roll	834	902	971	1044	1119	909
	Total	1280	1376	1476	1579	1689	1386
3000	Ground Roll	891	963	1037	1115	1195	956
	Total	1359	1461	1566	1676	1789	1451
4000	Ground Roll	952	1029	1108	1191	1277	1006
	Total	1443	1551	1664	1780	1901	1519
5000	Ground Roll	1018	1099	1185	1273	1365	1059
	Total	1533	1648	1768	1892	2020	1591
6000	Ground Roll	1088	1176	1267	1362	1460	1115
	Total	1629	1752	1879	2011	2147	1667
7000	Ground Roll	1164	1258	1355	1457	1562	1175
	Total	1733	1863	1999	2139	2284	1747
8000	Ground Roll	1246	1347	1451	1559	1672	1238
	Total	1844	1983	2127	2276	2431	1832
9000	Ground Roll	1335	1442	1554	1670	1791	1305
	Total	1963	2111	2265	2424	2589	1922
10000	Ground Roll	1430	1545	1685	1789	1919	1376
	Total	2091	2249	2413	2582	2758	2017

Takeoff Distance: 2900 LB

Weight: 2900 LB **Approx. Speed at Liftoff:** 67 KIAS **Speed over 50 ft. Obstacle:** 72 KIAS **Flaps:** 50% **Power:** Full Throttle, Full Rich **Runway:** Dry, Paved & Level	**Headwind:** Subtract 10% for each 12 knots headwind **Tailwind:** Add 10% for each 2 knots tailwind up to 10 knots **Dry Grass:** Add 15% of ground roll to distances **Runway Slope:** Reference Caution **Air Conditioner:** Add 100' to ground roll and 150' to distance over 50' obstacle if air conditioner is ON during takeoff

Pressure Alt FT	Distance FT	Temperature - °C					ISA
		0	10	20	30	40	
SL	Ground Roll	485	524	564	606	650	544
	Total	766	823	882	944	1007	852
1000	Ground Roll	517	559	602	647	694	571
	Total	812	872	935	1000	1068	891
2000	Ground Roll	552	596	642	690	740	601
	Total	861	925	992	1061	1133	932
3000	Ground Roll	589	637	686	737	791	632
	Total	914	982	1053	1126	1202	975
4000	Ground Roll	630	680	733	788	845	665
	Total	970	1043	1118	1196	1277	1021
5000	Ground Roll	673	727	783	842	903	700
	Total	1030	1108	1188	1271	1357	1069
6000	Ground Roll	720	778	838	900	965	737
	Total	1095	1177	1262	1351	1442	1120
7000	Ground Roll	770	832	896	963	1033	777
	Total	1164	1252	1343	1437	1534	1174
8000	Ground Roll	824	890	959	1031	1106	819
	Total	1239	1332	1428	1529	1632	1231
9000	Ground Roll	883	954	1028	1104	1184	863
	Total	1318	1418	1521	1627	1738	1291
10000	Ground Roll	946	1022	1101	1183	1269	910
	Total	1404	1510	1620	1733	185	1354

5-2. Takeoff Climb Gradient

Conditions:

- Power .... Full Throttle
- Mixture .... Full Rich
- Flaps 50%
- Airspeed .... Best Rate of Climb

NOTE: Climb Gradient values shown are the gain in altitude for the horizontal distance traversed expressed as Feet per Nautical Mile.

For operation in air cooler than this table provides, use the coldest (left-most) data shown.

For operation in air warmer than this table provides, use extreme caution.

Weight LB	Pressure Altitude FT	Climb Speed KIAS	CLIMB GRADIENT - Feet per Nautical Mile				
			Temperature - °C				ISA
			-20	0	20	40	
3400	SL	94	1054	925	802	686	832
	2000	94	1011	882	760	645	814
	4000	93	964	836	715	602	793
	6000	93	915	788	669	558	770
	8000	92	864	739	622	512	745
	10000	92	811	688	574	466	718
2900	SL	94	1303	1148	1002	864	1038
	2000	94	1251	1097	952	815	1016
	4000	93	1196	1043	900	765	991
	6000	93	1137	986	845	713	964
	8000	92	1077	928	790	660	935
	10000	92	1015	869	733	607	904

5-3. Takeoff Rate of Climb

Conditions:

- Power .... Full Throttle
- Mixture .... Full Rich
- Flaps 50%
- Airspeed .... Best Rate of Climb

NOTE: Rate of Climb values shown are change in altitude in ft per unit time expressed in Feet per Minute.

For operation in air cooler than this table provides, use the coldest (left-most) data shown.

For operation in air warmer than this table provides, use extreme caution.

Weight	Pressure Altitude	Climb Speed	CLIMB GRADIENT - Feet per Minute				
			Temperature - °C				ISA
LB	FT	KIAS	-20	0	20	40	
3400	SL	94	1534	1402	1264	1119	1299
	2000	94	1520	1382	1237	1087	1303
	4000	93	1499	1354	1204	1049	1302
	6000	93	1472	1321	1165	1005	1298
	8000	92	1439	1282	1120	955	1290
	10000	92	1399	1236	1070	900	1277
2900	SL	94	1880	1730	1570	1404	1611
	2000	94	1867	1709	1542	1370	1618
	4000	93	1847	1681	1508	1329	1621
	6000	93	1819	1646	1466	1282	1619
	8000	92	1784	1604	1418	1228	1613
	10000	92	1742	1555	1364	1169	1602

5-4. Time, Fuel, and Distance to Climb: Full Power Climb

Conditions:

- Power .... Full Throttle
- Mixture .... Full Rich
- Weight .... 3400 LB
- Winds .... Zero
- Climb Airspeed .... 120 KIAS

NOTE: Taxi Fuel - Add 1.5 gallons for start, taxi, and takeoff. Temperature - Add 10% to computed values for each 10°C above standard.

Press Alt FT	OAT (ISA) °C	Climb Speed KIAS	TIME, FUEL, DISTANCE - From Sea Level		
			Time Minutes	Fuel U.S. Gal	Distance NM
Sea Level	15	120	0.0	0.0	0.0
1,000	13	120	0.8	0.5	1.7
2,000	11	120	1.6	1.0	3.4
3,000	9	120	2.5	1.5	5.1
4,000	7	120	3.3	2.0	6.8
5,000	5	120	4.1	2.5	8.6
6,000	3	120	4.9	2.9	10.3
7,000	1	120	5.7	3.4	12.2
8,000	-1	120	6.5	3.9	14.0
9,000	-3	120	7.4	4.4	15.9
10,000	-5	120	8.2	4.9	17.8
11,000	-7	120	9.0	5.4	19.7
12,000	-9	120	9.8	5.9	21.7
13,000	-11	120	10.7	6.4	23.8
14,000	-13	120	11.5	6.9	25.9
15,000	-15	120	12.4	7.4	28.0
16,000	-17	120	13.3	8.0	30.3
17,000	-19	120	14.2	8.5	32.7
18,000	-21	120	15.1	9.1	35.1
19,000	-23	120	16.1	9.6	37.8
20,000	-25	120	17.1	10.2	40.5
21,000	-27	120	18.2	10.8	43.5
22,000	-29	120	19.3	11.5	46.7
23,000	-31	120	20.5	12.2	50.3
24,000	-33	120	21.9	12.9	54.2
25,000	-35	120	23.4	13.7	58.7

5-5. Time, Fuel, and Distance to Climb: Cruise Climb

Conditions:

- Power .... 2500RPM 30.5 in Hg
- Mixture .... Full Rich
- Weight .... 3400 LB
- Winds .... Zero
- Climb Airspeed .... 120 KIAS

NOTE: Taxi Fuel - Add 1.5 gallons for start, taxi, and takeoff. Temperature - Add 10% to computed values for each 10°C above standard.

Press Alt FT	OAT (ISA) °C	Climb Speed KIAS	TIME, FUEL, DISTANCE - From Sea Level		
			Time Minutes	Fuel U.S. Gal	Distance NM
Sea Level	15	120	0.0	0.0	0.0
1,000	13	120	0.8	0.3	2.1
2,000	11	120	2.1	0.6	4.2
3,000	9	120	3.1	0.9	6.4
4,000	7	120	4.1	1.3	8.5
5,000	5	120	5.1	1.6	10.7
6,000	3	120	6.2	1.9	13.0
7,000	1	120	7.2	2.2	15.2
8,000	-1	120	8.2	2.5	17.5
9,000	-3	120	9.2	2.8	19.9
10,000	-5	120	10.3	3.1	22.3
11,000	-7	120	11.3	3.4	24.7
12,000	-9	120	12.3	3.8	27.2
13,000	-11	120	13.4	4.1	29.8
14,000	-13	120	14.5	4.4	32.5
15,000	-15	120	15.6	4.7	35.3
16,000	-17	120	16.7	5.1	38.2
17,000	-19	120	17.9	5.4	41.2
18,000	-21	120	19.1	5.8	44.4
19,000	-23	120	20.3	6.2	47.7
20,000	-25	120	21.5	6.6	51.1
21,000	-27	120	22.8	7.0	54.6
22,000	-29	120	24.1	7.3	58.2
23,000	-31	120	25.4	7.8	62.1
24,000	-33	120	26.8	8.2	66.3
25,000	-35	120	28.3	8.6	70.7

5-6. Enroute Climb Gradient

Conditions:

- Power .... Full Throttle
- Mixture .... Full Rich
- Flaps .... 0% (UP)
- Airspeed .... 120 KIAS

NOTE: Climb Gradient values shown are the gain in altitude for the horizontal distance traversed expressed as Feet per Nautical Mile. For operation in air cooler than this table provides, use the coldest (left-most) data shown. For operation in air warmer than this table provides, use extreme caution.

Weight	Pressure Altitude	Climb Speed	CLIMB GRADIENT - Feet per Nautical Mile					
			Temperature - °C					
LB	FT	KIAS	-40	-20	0	20	40	ISA
3400	SL	120	964	817	697	596	505	620
	2000	120	888	761	655	561	475	602
	4000	120	828	716	618	529	445	586
	6000	120	779	677	584	497	413	570
	8000	120	737	639	549	461	377	553
	10000	120	697	602	511	422	334	533
	12000	120	657	561	468	376	286	509
	14000	120	614	516	420	324	230	482
	16000	120	566	464	364	264	166	449
	18000	120	512	406	300	196	94	410
	20000	120	450	339	228	120	13	365
	22000	120	380	263	148	35		314
	24000	120	302	179	59			257
	25000	120	256	133	11			226
2900	SL	120	1173	998	856	736	629	765
	2000	120	1083	932	806	695	594	744
	4000	120	1012	878	763	657	559	725
	6000	120	120	953	931	722	619	521
	8000	120	903	787	590	578	478	685
	10000	120	856	743	636	531	428	662
	12000	120	808	695	585	478	371	634
	14000	120	757	642	528	416	305	601
	16000	120	701	581	463	346	230	562
	18000	120	637	512	388	266	146	517
	20000	120	564	433	303	176	51	465
	22000	120	482	344	209	77		405
	24000	120	389	245	105			337
	25000	120	339	192	49			300

5-7. Enroute Rate of Climb

Conditions:

- Power .... Full Throttle
- Mixture .... Full Rich
- Flaps .... 0% (UP)
- Airspeed .... 120 KIAS

NOTE: Rate of Climb values shown are change in altitude in ft per unit time expressed in Feet per Minute. For operation in air cooler than this table provides, use the coldest (left-most) data shown. For operation in air warmer than this table provides, use extreme caution.

Weight	Pressure Altitude	Climb Speed	RATE OF CLIMB - Feet per Minute					
			Temperature - °C					
LB	FT	KIAS	-40	-20	0	20	40	ISA
3400	SL	120	1691	1498	1332	1181	1037	1218
	2000	120	1619	1450	1299	1155	1012	1219
	4000	120	1569	1416	1273	1130	984	1223
	6000	120	1534	1390	1248	1102	948	1226
	8000	120	1508	1366	1219	1064	898	1226
	10000	120	1483	1337	1180	1011	829	1220
	12000	120	1454	1297	1125	939	737	1204
	14000	120	1415	1242	1050	841	617	1176
	16000	120	1360	1164	949	715	464	1132
	18000	120	1282	1060	816	553	273	1070
	20000	120	1177	923	647	352	41	987
	22000	120	1038	749	438	108		879
	24000	120	860	532	182			744
	25000	120	754	405	36			665
2900	SL	120	2045	1822	1630	1456	1289	1498
	2000	120	1964	1768	1594	1427	1262	1502
	4000	120	1908	1731	1566	1401	1233	1508
	6000	120	1869	1704	1540	1370	1193	1515
	8000	120	1841	1677	1508	1329	1137	1517
	10000	120	1815	1646	1466	1271	1060	1512
	12000	120	1784	1603	1405	1189	956	1496
	14000	120	1742	1541	1320	1079	819	1466
	16000	120	1680	1454	1205	934	643	1418
	18000	120	1593	1336	1054	749	424	1348
	20000	120	1473	1180	860	517	156	1253
	22000	120	1314	979	618	235		1130
	24000	120	1109	729	323			975
	25000	120	988	583	154			884

5-8. Cruise Performance

Conditions:

- Cruise Weight .... 3200 LB
- Winds .... Zero

NOTE: Subtract 10 Kts if nose wheel fairings removed. Lower KTAS by 10% if nose and main wheel fairing pants & fairings are removed.

Serials with TKS Anti-Ice System (FIKI): If aircraft has flown through icing conditions, contamination on unprotected surfaces may decrease cruise performance by 10% (as compared to published clean performance tables).

CRUISE PERFORMANCE			ISA -30°C		ISA		ISA +30°C	
Altitude (ft MSL)	Power (% of 315)	FF (GPH)	TAS (KTAS)	Econ (nm/gal)	TAS (KTAS)	Econ (nm/gal)	TAS (KTAS)	Econ (nm/gal)
2000	**85%**	18.3	16.3	8.9	170	9.3	176	9.6
	75%	16.4	158	9.6	163	9.9	168	10.2
	65%	14.6	149	10.2	154	10.6	159	10.9
	55%	12.7	139	11.0	144	11.3	148	11.6
4000	**85%**	18.3	167	9.1	174	9.5	180	9.8
	75%	16.4	161	9.8	166	10.1	172	10.4
	65%	14.6	152	10.4	157	10.8	162	11.1
	55%	12.7	142	11.1	146	11.5	151	11.8
6000	**85%**	18.3	171	9.3	178	9.7	184	10.0
	75%	16.4	164	9.9	169	10.3	175	10.6
	65%	14.6	155	10.6	160	11.0	165	11.3
	55%	12.7	144	11.3	149	11.7	153	12.0
8000	**85%**	18.3	174	9.5	181	9.9	187	10.2
	75%	16.4	167	10.1	173	10.5	178	10.8
	65%	14.6	157	10.8	163	11.2	168	11.5
	55%	12.7	147	11.5	152	11.9	156	12.3
10000	**85%**	18.3	178	9.7	185	10.1	191	10.4
	75%	16.4	170	10.3	176	10.7	181	11.0
	65%	14.6	160	11.0	166	11.4	171	11.7
	55%	12.7	149	11.7	154	12.1	159	12.5
12000	**85%**	18.3	181	9.9	188	10.3	195	10.6
	75%	16.4	173	10.5	179	10.9	185	11.2
	65%	14.6	163	11.2	169	11.6	174	11.9
	55%	12.7	152	11.9	157	12.3	161	12.7
14000	**85%**	18.3	185	10.1	192	10.5	198	10.8
	75%	16.4	176	10.7	183	11.1	188	11.15
	65%	14.6	166	11.4	172	11.8	177	12.2
	55%	12.7	154	12.1	160	12.5	164	12.9

CRUISE PERFORMANCE			ISA -30°C		ISA		ISA +30°C	
Altitude (ft MSL)	Power (% of 315)	FF (GPH)	TAS (KTAS)	Econ (nm/gal)	TAS (KTAS)	Econ (nm/gal)	TAS (KTAS)	Econ (nm/gal)
16000	**85%**	18.3	189	10.3	196	10.7	202	11.0
	75%	16.4	179	10.9	186	11.3	192	11.7
	65%	14.6	169	11.6	175	12.0	181	12.4
	55%	12.7	157	12.3	162	12.8	167	13.1
18000	**85%**	18.3	192	10.5	200	10.9	206	11.3
	75%	16.4	183	11.1	190	11.5	196	11.9
	65%	14.6	172	11.8	178	12.2	184	12.6
	55%	12.7	160	12.6	165	13.0	170	13.3
20000	**85%**	18.3	196	10.7	207	11.1	211	11.5
	80%	17.4	191	11.0	199	11.4	205	11.8
	75%	16.4	186	11.3	193	11.8	200	12.2
	65%	14.6	175	12.0	182	12.5	187	12.9
	55%	12.7	163	12.8	168	13.2	173	13.6
22000	**85%**	18.3	200	10.9	208	11.3	215	11.7
	80%	17.4	195	11.2	203	11.7	210	12.1
	75%	16.4	190	11.6	197	12.0	204	12.4
	65%	14.6	179	12.2	185	12.7	191	13.1
	55%	12.7	165	13.0	171	13.4	175	13.8
24000	**85%**	18.3	204	11.1	212	11.6	219	12.0
	80%	17.4	199	11.5	207	11.9	214	12.3
	75%	16.4	194	11.8	201	12.2	208	12.6
	65%	14.6	182	12.5	189	12.9	195	13.3
	55%	12.7	168	13.2	174	13.6	178	14.0
25000	**85%**	18.3	206	11.2	214	11.7	222	12.1
	80%	17.4	201	11.6	209	12.0	216	12.4
	75%	16.4	196	11.9	203	12.4	210	12.8
	65%	14.6	184	12.6	190	13.1	196	13.5
	55%	12.7	169	13.3	175	13.8	180	14.1

5-9. Range/Endurance: Full Power Climb

Conditions:

- Mixture .... Best Economy - Target Fuel Flow or Less
- Weight..3400 LB for climb, Avg 3200 LB for Cruise
- Winds..Zero
- Total Fuel ....92 Gallons

NOTE: Fuel remaining for cruise is equal to 92.0 gallons usable, less 1.5 gallons (pre-takeoff fuel consumed), 11 gallons (45 minute IFR reserve at 65% power), and listed volume for fuel consumed in Full Power Climb.

Range is decreased by 5% if nose wheel pant and fairing removed.

Range is decreased by 15% if nose wheel and main wheel pant and fairings removed.

For aircraft with optional air conditioning system, range is decreased by 1% if system in operation.

Range/Endurance: 85% Power Cruise - Full Power Climb							
Press Alt (FT)	Climb Fuel Gal	Fuel Remaining For Cruise Gal	Airspeed KTAS	Fuel Flow GPH	Endurance Hours	Range NM	Specific Range Nm/Gal
2000	**1.0**	78.6	170	18.3	4.3	734	9.3
4000	**2.0**	77.6	174	18.3	4.2	744	9.5
6000	**2.9**	76.6	178	18.3	4.2	753	9.7
8000	**3.9**	75.6	181	18.3	4.1	762	9.9
10000	**4.9**	74.6	185	18.3	4.1	77.	10.1
12000	**5.9**	73.7	188	18.3	4.0	779	10.3
14000	**6.9**	72.6	192	18.3	4.0	787	10.5
16000	**8.0**	71.6	196	18.3	3.9	796	10.7
18000	**9.1**	70.5	200	18.3	3.8	804	10.9
20000	**10.2**	69.3	204	18.3	3.8	811	11.1
22000	**11.5**	68.1	208	18.3	3.7	819	11.3
24000	**12.9**	66.6	212	18.3	3.6	826	11.6
25000	**13.7**	65.8	214	18.3	3.6	829	11.7

Range/Endurance: 75% Power Cruise - Full Power Climb							
Press Alt (FT)	Climb Fuel Gal	Fuel Remaining For Cruise Gal	Airspeed KTAS	Fuel Flow GPH	Endurance Hours	Range NM	Specific Range Nm/Gal
2000	**1.0**	78.6	163	16.4	4.8	784	9.9
4000	**2.0**	77.6	166	16.4	4.7	792	10.1
6000	**2.9**	76.6	169	16.4	4.7	800	10.3
8000	**3.9**	75.6	173	16.4	4.6	808	10.5
10000	**4.9**	74.6	176	16.4	4.5	816	10.7
12000	**5.9**	73.7	179	16.4	4.5	824	10.9
14000	**6.9**	72.6	183	16.4	4.4	834	11.1
16000	**8.0**	71.6	186	16.4	4.4	841	11.3
18000	**9.1**	70.5	190	16.4	4.3	848	11.5
20000	**10.2**	69.3	193	16.4	4.1	863	12.0
22000	**11.5**	68.1	197	16.4	4.1	893	12.0
24000	**12.9**	66.6	201	16.4	4.1	870	12.2
25000	**13.7**	65.8	203	16.4	4.0	872	12.4

Range/Endurance: 65% Power Cruise - Full Power Climb							
Press Alt (FT)	Climb Fuel Gal	Fuel Remaining For Cruise Gal	Airspeed KTAS	Fuel Flow GPH	Endurance Hours	Range NM	Specific Range Nm/Gal
2000	**1.0**	78.6	154	14.6	5.4	834	10.6
4000	**2.0**	77.6	157	14.6	5.3	842	10.8
6000	**2.9**	76.6	160	14.6	5.3	850	11.0
8000	**3.9**	75.6	163	14.6	5.2	858	11.2
10000	**4.9**	74.6	166	14.6	5.1	866	11.4
12000	**5.9**	73.7	169	14.6	5.0	874	11.6
14000	**6.9**	72.6	172	14.6	5.0	882	11.8
16000	**8.0**	71.6	175	14.6	4.9	890	12.0
18000	**9.1**	70.5	178	14.6	4.8	897	12.2
20000	**10.2**	69.3	182	14.6	4.8	904	12.5
22000	**11.5**	68.1	185	14.6	4.7	911	12.7
24000	**12.9**	66.6	189	14.6	4.6	916	12.9
25000	**13.7**	65.8	190	14.6	4.5	918	13.1

Range/Endurance: 55% Power Cruise - Full Power Climb							
Press Alt (FT)	Climb Fuel Gal	Fuel Remaining For Cruise Gal	Airspeed KTAS	Fuel Flow GPH	Endurance Hours	Range NM	Specific Range Nm/Gal
2000	**1.0**						
4000	**2.0**	76.6	149	12.7	6.0	907	11.7
6000	**2.9**	76.6	149	12.7	6.0	907	11.7
8000	**3.9**	75.6	152	12.7	5.9	915	11.9
10000	**4.9**	74.6	154	12.7	5.9	922	12.1
12000	**5.9**	73.7	157	12.7	5.8	930	12.3
14000	**6.9**	72.6	160	12.7	5.7	937	12.5
16000	**8.0**	71.6	162	12.7	5.6	944	12.8
18000	**9.1**	70.5	165	12.7	5.5	950	13.0
20000	**10.2**	69.3	168	12.7	5.4	955	13.2
22000	**11.5**	68.1	171	12.7	5.3	960	13.4
24000	**12.9**	66.6	174	12.7	5.2	963	13.6
25000	**13.7**	65.8	175	12.7	5.2	964	13.8

5-10. Range/Endurance: Cruise Climb

Conditions:

- Mixture .... Best Economy - Target Fuel Flow or Less
- Weight .... 3400 LB for climb, Avg 3200 LB for Cruise
- Winds ....Zero
- Total Fuel ....92 Gallons

NOTE: Fuel remaining for cruise in this table is based on AFM Cruise Climb: Lean of Peak Technique; if Full Power Climb: Rich of Peak Technique is performed. use Range/ Endurance: Full Power Climb tables.

Fuel Remaining for Cruise is equal to 92.0 gallons usable, less 1.5 gallons (pre-takeoff fuel consumed), 11 gallons (45 minute IFR reserve at 65% power), and listed volume for fuel consumed in Full Power Climb.

Range is decreased by 5% if nose wheel pant and fairing removed.

Range is decreased by 15% if nose wheel and main wheel pant and fairings removed.

For aircraft with optional air conditioning system, range is decreased by 1% if system in operation.

Range/Endurance: 85% Power Cruise - Cruise Climb							
Press Alt (FT)	Climb Fuel Gal	Fuel Remaining For Cruise Gal	Airspeed KTAS	Fuel Flow GPH	Endurance Hours	Range NM	Specific Range Nm/Gal
2000	**0.6**	78.9	170	18.3	4.3	738	9.3
4000	**1.3**	78.3	174	18.3	4.3	752	9.5
6000	**1.9**	77.7	178	18.3	4.2	766	9.7
8000	**2.5**	77.0	181	18.3	4.2	779	9.9
10000	**3.1**	76.4	185	18.3	4.2	793	10.1
12000	**3.8**	75.8	188	18.3	4.1	806	10.3
14000	**4.4**	75.1	192	18.3	4.1	820	10.5
16000	**5.1**	74.5	196	18.3	4.1	834	10.7
18000	**5.8**	73.7	200	18.3	4.0	848	10.9
20000	**6.6**	73.0	204	18.3	4.0	863	11.1
22000	**7.3**	72.2	208	18.3	3.9	878	11.3
24000	**8.2**	71.4	212	18.3	3.9	900	11.7
25000	**8.6**	70.9	214	18.3	3.9	900	11.7

Range/Endurance: 75% Power Cruise - Cruise Climb							
Press Alt (FT)	Climb Fuel Gal	Fuel Remaining For Cruise Gal	Airspeed KTAS	Fuel Flow GPH	Endurance Hours	Range NM	Specific Range Nm/Gal
2000	**0.6**	78.9	163	16.4	4.8	788	9.9
4000	**1.3**	78.3	166	16.4	4.8	801	10.1
6000	**1.9**	77.7	169	16.4	4.7	813	10.3
8000	**2.5**	77.0	173	16.4	4.7	826	10.5
10000	**3.1**	76.4	176	16.4	4.6	839	10.7
12000	**3.8**	75.8	179	16.4	4.6	853	10.9
14000	**4.4**	75.1	183	16.4	4.6	867	11.1
16000	**5.1**	74.5	186	16.4	4.5	881	11.3
18000	**5.8**	73.7	190	16.4	4.5	895	11.5
20000	**6.6**	73.0	193	16.4	4.4	910	11.8
22000	**7.3**	72.2	197	16.4	4.4	925	12.0
24000	**8.2**	71.4	201	16.4	4.3	940	12.2
25000	**8.6**	70.9	203	16.4	4.3	947	12.4

Range/Endurance: 65% Power Cruise - Cruise Climb							
Press Alt (FT)	Climb Fuel Gal	Fuel Remaining For Cruise Gal	Airspeed KTAS	Fuel Flow GPH	Endurance Hours	Range NM	Specific Range Nm/Gal
2000	**0.6**	78.9	154	14.6	5.4	839	10.6
4000	**1.3**	78.3	157	14.6	5.4	851	10.8
6000	**1.9**	77.7	160	14.6	5.3	864	11.0
8000	**2.5**	77.0	163	14.6	5.3	877	11.2
10000	**3.1**	76.4	166	14.6	5.2	890	11.4
12000	**3.8**	75.8	169	14.6	5.2	904	11.6
14000	**4.4**	75.1	172	14.6	5.2	918	11.8
16000	**5.1**	74.5	175	14.6	5.1	932	12.0
18000	**5.8**	73.7	178	14.6	5.1	946	12.2
20000	**6.6**	73.0	182	14.6	5.0	960	12.5
22000	**7.3**	72.2	185	14.6	4.9	975	12.7
24000	**8.2**	71.4	189	14.6	4.9	989	12.9
25000	**8.6**	70.9	190	14.6	4.9	996	13.1

Range/Endurance: 55% Power Cruise - Cruise Climb							
Press Alt (FT)	Climb Fuel Gal	Fuel Remaining For Cruise Gal	Airspeed KTAS	Fuel Flow GPH	Endurance Hours	Range NM	Specific Range Nm/Gal
2000	**0.6**	78.9	144	12.7	6.2	897	11.3
4000	**1.3**	78.3	146	12.7	6.2	909	11.5
6000	**1.9**	77.7	149	12.7	6.1	922	11.7
8000	**2.5**	77.0	152	12.7	6.1	935	11.9
10000	**3.1**	76.4	154	12.7	6.0	948	12.1
12000	**3.8**	75.8	157	12.7	6.0	962	12.3
14000	**4.4**	75.1	160	12.7	5.9	975	12.5
16000	**5.1**	74.5	162	12.7	5.9	988	12.8
18000	**5.8**	73.7	165	12.7	5.8	1001	13.0
20000	**6.6**	73.0	168	12.7	5.7	1014	13.2
22000	**7.3**	72.2	171	12.7	5.7	1027	13.4
24000	**8.2**	71.4	174	12.7	5.6	1040	13.6
25000	**8.6**	70.9	175	12.7	5.6	1046	13.8

Section 6
Weight & Balance/Equipment List

See Cirrus Design AFM, Section 6 - Weight and Balance for a list of equipment.

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Section 7
Airplane & Systems Description

CONTENTS

7-1. Introduction

This section describes the differences between the engine supplied with the Supplemental Type Certificate and the original equipment.

7-2. Environmental System

Standard cabin heating and ventilation is accomplished by supplying conditioned air from the heat exchanger for heating and windshield defrost and fresh outside air for ventilation. The environmental system consists of a fresh air inlet in the RH cowl, a heat exchanger around the exhaust system crossover tube, an air mixing chamber, air ducting for distribution, a distribution manifold, a windshield diffuser, and crew and passenger air vents.

7-3. Heating

Ram air from the rear ports of the intercoolers is ducted to a heat exchanger surrounding the exhaust system crossover tube. The heated air is then routed to the hot air valve, mounted to the forward side of the firewall, which controls entry of hot air into the cabin distribution system. When the valve is open, the air flows into the cabin mixing chamber. When the valve is closed, the heated air exits into the engine compartment and is exhausted overboard with the engine cooling airflow.

7-4. Air Induction System

Induction air enters the through a filter located in the right front baffle. The air continues through the air box where it is ducted into the compressor housing where the compressor wheel, spinning at a high RPM, increases the air pressure which provides a greater mass of air available to the engine for the combustion cycle. From the compressor housing, the air is ducted through the intercoolers where the air temperature is lowered which further increases the density of the induction air. Downstream of the intercoolers the airflow joins at the “Y” junction of intake tubes, then passes through the throttle body and into the intake manifold where it is divided by the intake pipes flowing to each cylinder.

In the case of filter blockage or induction ice, alternate air can enter the engine via the alternate air assembly located in the left side engine induction ductin. Under normal conditions, the alternate air assembly door is held closed by magnetic force. If the air induction system should become blocked, suction created by the engine will open the door and draw unfiltered air from inside the cowl. When the door opens, a switch opens which causes an annunciation on the Primary Flight Display to alert the pilot.

Use of alternate air will result in a reduction of engine power due to lower inlet air pressure and higher air temperature. Additionally loss of manifold pressure will occur when operating at high altitude and low RPM where the turbocharger wastegate is closed.

7-5. Engine

The aircraft is powered by a Continental TSIO-550-N, twin turbocharged, direct drive, fuel injected, air cooled, horizontally opposed 6 cylinder engine that uses a high pressure, wet sump style oil system for lubrication. The engine has a 550 cubic inch displacement and is rated to 315 bhp at 2500 RPM with a 2000-hour Time Between Overhaul (TBO) schedule. The engine utilizes a top air induction system, engine mounted throttle body, bottom exhaust system, and a full flow spin-on disposable oil filter. Engine front accessories include a hydraulically operated propeller governor, a gear-driven primary alternator and a belt-driven secondary alternator. Rear engine accessories include a starter, gear driven oil pump, gear driven fuel pump, and dual gear driven magnetos. The engine is attached to the firewall by a six-point steel engine mount. The firewall attach points are structurally reinforced with gusset-type attachments that transfer thrust and bending loads into the fuselage shell.

7-5.1. Engine Controls

Engine controls are easily accessible to the pilot on a center console. They consist of a single-lever power (throttle) control and a mixture control lever. A friction control wheel, labeled FRICTION, on the right side of the console is used to adjust control lever resistance to rotation for feel and control setting stability.

7-5.2. Power (Throttle) Lever

The single-lever throttle control, labeled MAX-POWER-IDLE, on the console adjusts the engine throttle setting. The lever is mechanically linked by cable to the air throttle body/fuel-metering valve. Moving the lever towards MAX opens the air throttle butterfly and meters more fuel to the fuel manifold. No propeller control is required. The governor is set to 2500 maximum RPM in climb and cruise.

7-5.3. Mixture Control

The mixture control lever, labeled RICH-MIXTURE-CUTOFF, on the console adjusts the proportion of fuel to air for combustion. The Mixture Control Lever is mechanically linked to the mixture control valve in the engine-driven fuel pump. Moving the lever forward (towards RICH) repositions the valve allowing greater proportions of fuel and moving the lever aft (towards CUTOFF) reduces (leans) the proportion of fuel. Full aft position (CUTOFF) closes the control valve.

7-5.4. Engine Indicating

Engine information is displayed as analog-style gages, bar graphs, and text on the MFD's ENGINE page.

7-5.4.1. Engine System Annunciations

NOTE: For specific pilot actions in response to Engine System Annunciations, refer to the Engine System procedures contained in Section 3, "Emergency Procedures", and Section 3A - Abnormal Procedures of the Airplane Flight Manual (AFM) and this and this document.

For additional information on Engine Instrument Markings and Annunciations, refer to Section 2 - Limitations.

7-5.4.1.1. Tachometer

Engine speed (RPM) is shown in the upper mid-left corner of the ENGINE page as both a simulated tachometer and as a digital value. The tachometer pointer sweeps a scale range from 0 to 3000 RPM in 100 RPM increments. The digital RPM value is displayed in increments of 10 RPM in white numerals below the gage. The tachometer receives a speed signal from a magnetic pickup sensor on the right hand magneto from the Engine.

7-5.4.1.2. Exhaust Gas Temperature (EGT)

Exhaust gas temperatures for all six cylinders are displayed in the Engine Temperature block of the ENGINE page as vertical bars. The EGT graph is marked from 1000°F to 1800°F in 100°F increments. The digital EGT value of the cylinder is displayed above the bar in white numerals. A sensor in the exhaust pipe of each cylinder measures exhaust gas temperature and provides a voltage signal to the Engine Airframe Unit which is processed and transmitted to the Engine Indicating System.

7-5.4.1.3. Cylinder Head Temperature (CHT)

Cylinder head temperatures for all six cylinders are displayed in the Engine Temperature block of the ENGINE page as vertical bars. The CHT graph is marked from 100°F to 500°F in 100°F increments. The digital CHT value of the cylinder is displayed above the bar in white numerals.

A sensor in each cylinder head measures cylinder head temperature and provides a voltage signal which is processed and transmitted to the Engine Indicating System.

7-5.4.1.4. Turbine Inlet Temperature (TIT)

Turbine inlet temperature for the LH and RH turbochargers is displayed in the Engine Temperature block of the ENGINE page as vertical bars. The TIT graph is marked from 1000°F to 1800°F in 100°F increments. The digital TIT value of the turbine inlet is displayed above the bar in white numerals.

A sensor in each turbocharger measures turbine inlet temperature and provides a voltage signal to the Engine Indicating System which is processed and transmitted to the Engine Indicating System. The TIT gage is used as the primary source to lean fuel mixture.

7-5.4.1.5. Oil Temperature

Oil temperature is shown in the upper right corner of the ENGINE page, opposite the oil pressure scale, as both a simulated temperature gage and as a digital value. The gage pointer sweeps a scale range from 75°F to 250°F in 50°F increments. The digital temperature value is displayed in white numerals below the gage.

The oil temperature sensor is mounted below the oil cooler and provides a signal that is processed and transmitted to the Engine Indicating System for display.

7-5.4.1.6. Oil Pressure

Oil Pressure is shown in the upper right corner of the ENGINE page, opposite the oil temperature scale, as both a simulated pressure gage and as a digital value. The gage pointer sweeps a scale range from 0 to 90 PSI in 10 PSI increments. The digital pressure value is displayed in white numerals below the gage.

The oil pressure sensor is mounted below the oil cooler and provides a signal that is processed and transmitted to the Engine Indicating System for display.

7-5.4.1.7. Manifold Pressure Gage

Manifold pressure is shown in the upper center portion of the ENGINE page as both a simulated pressure gage and as a digital value. The gage pointer sweeps a scale range from 10 to 40 inches of mercury in 1 in.Hg increments. The digital MAP value is displayed in white numerals below the gage. The manifold pressure sensor is mounted in the induction air manifold near the throttle body and provides a signal that is processed and transmitted to the Engine Indicating System for display.

7-5.4.1.8. Percent Power Gage

Percent power is shown in the upper left corner of the ENGINE page as both a simulated gage and as a digital value. The percent power gage sweeps a scale marked from 0 to 100 percent in 5 percent increments. The digital percent power value is displayed in white numerals below the gage. The display units calculate the percentage of maximum engine power produced by the engine based on an algorithm employing manifold pressure, outside air temperature, pressure altitude, engine speed, and fuel flow.

7-5.5. Engine Lubrication System

The engine is provided with a wet-sump, high-pressure oil system for engine lubrication and cooling. Oil for engine lubrication is drawn from an eight-quart capacity sump through an oil suction strainer screen and directed through the oil filter to the engine-mounted oil cooler by a positive displacement oil pump. The oil pump is equipped with a pressure relief valve at the pump output end to bypass oil back to the pump inlet should the pump exceed limits. The oil cooler is equipped with a temperature control valve set to bypass oil if the temperature is below approximately 180°F (82°C). Bypass or cooled oil is then directed through oil galleries to the engine rotating parts and piston inner domes. Oil is also directed to the propeller governor to regulate propeller pitch. The complete oil system is contained in the engine. An oil filler cap and dipstick are located at the left rear of the engine. The filler cap and dipstick are accessed through a door on the top left side of the engine cowling.

7-5.6. Ignition and Starter System

Engine-driven magnetos and two spark plugs in each cylinder provide engine fuel ignition. The right magneto fires the lower right and upper left spark plugs, and the left magneto fires the lower left an upper right spark plugs. Normal operation is conducted with both magnetos, as more complete burning of the fuel-air mixture occurs with dual ignition. A rotary-type key switch, located on the instrument panel, controls ignition and starter operation. The switch is labeled OFF-R-L- BOTH-START. In the OFF position, the starter is electrically isolated, the magnetos are grounded and will not operate. Normally, the engine is operated on both magnetos (switch in BOTH position) except for magneto checks and emergency operations. The R and L positions are used for individual magneto checks and for single magneto operation when required. When the battery master switch is ON, rotating the switch to the spring loaded START position energizes the starter and activates both magnetos. The switch automatically returns to the BOTH position when released.

28 VDC for Starter operation is supplied through the 2-amp STARTER circuit breaker on NON-ESSENTIAL BUS.

7-5.7. Air Induction System

Induction air enters the engine compartment through the cowling inlet and continues through the air filter. The filtered air is ducted into the compressor housing where the compressor wheel, spinning at a high RPM, increases the air pressure which provides a greater mass of air available to the engine for the combustion cycle. From the compressor housing, the air is ducted through the intercoolers where the air temperature is lowered which further increases the density of the induction air. Downstream of the intercoolers the airflow joins at the “Y” junction of intake tubes, then passes through the throttle body and into the intake manifold where it is divided by the intake pipes flowing to each cylinder.

In the case of filter blockage or induction ice, alternate air can enter the engine via the alternate air assembly located on the lower left side of the engine. Under normal conditions, the alternate air assembly door is held closed by magnetic force. If the air induction system should become blocked, suction created by the engine will open the door and draw unfiltered air from inside the cowl. When the door opens, a switch opens which causes an annunciation on the Primary Flight Display to alert the pilot.

Use of alternate air will result in a reduction of engine power due to lower inlet air pressure and higher air temperature. Additionally loss of manifold pressure will occur when operating at high altitude and low RPM where the turbocharger wastegate is closed.

7-5.8. Engine Exhaust System

After leaving the cylinders, exhaust gases flow through the exhaust collector to the turbocharger turbine housing inlet. The exhaust gas flow provides turbine wheel rotation then exits through the turbine housing discharge port and overboard through tailpipes exiting through the lower cowling.

7-5.9. Engine Cooling

Engine cooling is accomplished by discharging heat to the oil and then to the air passing through the oil cooler, and by discharging heat directly to the air flowing past the engine. Cooling air enters the engine compartment through the two inlets in the cowling. Aluminum baffles direct the incoming air to the engine and over the engine cylinder cooling fins where the heat transfer takes place. The heated air exits the engine compartment through louvered vents in the bottom of the cowlings. No movable cowl flaps are used.

7-5.10. Engine Fuel Injection

The multi-nozzle, continuous-flow fuel injection system supplies fuel for engine operation. An engine driven fuel pump draws fuel from the selected wing tank and passes it to the mixture control valve integral to the pump. The mixture control valve proportions fuel in response to the pilot operated mixture control lever position. From the mixture control, fuel is routed to the fuel-metering valve on the air-induction system throttle body. The fuel-metering valve adjusts fuel flow in response to the pilot controlled Power Lever position. From the metering valve, fuel is directed to the fuel manifold valve (spider) and then to the individual injector nozzles. The system meters fuel flow in proportion to engine RPM, mixture setting, and throttle angle. Manual mixture control and idle cut-off are provided. An electric fuel pump provides fuel boost for vapor suppression and for priming.

7-5.11. Turbochargers

The TSIO-550-N has twin turbochargers which use exhaust gas flow to boost induction air pressure for increased power. There is one turbocharger on each side of the engine. The turbochargers compress and raise the temperature of the incoming air before going to the intercoolers. The dual turbochargers are lubricated from external oil supply lines from a source at the bottom of the oil cooler. There is one oil pressure actuated wastegate on the left side of the engine controlling the amount of exhaust gas used by the turbochargers. Control is accomplished by a diaphragm actuated valve sensing differential pressure across the throttle plate and controlling the oil return flow rate from the wastegate. An overboost valve in the induction system provides protection from too much pressure by actuating at overly high manifold pressures.

7-6. Propeller

The airplane is equipped with a three-blade, constant speed, governor-regulated propeller.

The propeller governor automatically adjusts propeller pitch to regulate propeller and engine RPM by controlling the flow of engine oil - boosted to high pressure by the governing pump - to or from a piston in the propeller hub. Oil pressure acting on the piston twists the blades toward high pitch (low RPM). When oil pressure to the piston in the propeller hub is relieved, centrifugal force, assisted by an internal spring, twists the blades toward low pitch (high RPM). Any change in airspeed or load on the propeller results in a change in propeller pitch.

During climb and cruise, the governor automatically adjusts propeller pitch in order to maintain a 2500 RPM setting.

7-7. Fuel System

Except as noted, refer to the fuel system description in the Cirrus Airplane Flight Manual.

7-7.1. Fuel Flow

Fuel Flow is shown in the upper mid right corner of the ENGINE page as both a simulated gage and as a digital value. The gage pointer sweeps a scale range from 0 to 45 Gallons Per Hour (GPH). The fuel flow value is displayed in white numerals below the gage. Fuel flow is measured by a transducer on the right side of the engine in the fuel line between the engine driven fuel pump and distribution block. The fuel flow signal is processed, and transmitted to the Engine Indicating System for display.

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