Cessna T182T Groundschool

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Cessna T182T Groundschool

Aim:

- To familiarize you with the Club's Cessna T182T, in particular, equipment, systems, speeds and procedures that are different from those of CFC's Cessna 172s.

Expected Duration:

- About 5 hours total

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CFC's Cessna T182T

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CFC's Cessna T182T

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CFC's Cessna T182T Specs

- Built 2002, total time about 2300 hours
- Lycoming TIO-540-AK1A
- 235 hp @ 2400rpm, turbocharged
- Constant speed propeller
- 87 US Gal usable fuel
- Useful load 1050 lb
- Cruise speed 145 KTAS @ 75% power @ 10,000 ft
- 5 hours plus reserves @ 75% power with full fuel

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How is the T182T different from the Club's 172s?

- Faster, heavier, with higher wing loading
- Higher horsepower and higher fuel consumption
- Different speeds and procedures to know
- Things will happen faster
- Need to plan descents much farther in advance
- Maximum ramp weight as well as maximum takeoff weight
- Maximum landing weight 150lb less than max. takeoff weight

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How is the T182T different from the Club's 172s?

	Cessna 172N	Cessna T182T
Basic Empty Weight	1475 lb (typ.)	2034 lb
Maximum Useful Load	825 lb	1066 lb
Maximum Baggage	120 lb	200 lb
Max. Ramp Weight	2300 lb	3112 lb
Max. Takeoff Gross Weight	2300 lb	3100 lb
Max. Landing Weight	2300 lb	2950 lb
Wing Loading	13.2 lb/ft^2	17.8 lb/ft^2

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How is the T182T different from the Club's 172s?

	Cessna 172N	Cessna T182T
Cruise Speed, 75% power	122 Kt @ 8000'	143 Kt @ 10,000' 152 Kts @ 18,000'
Range, 75% power, full fuel	485 nm/630 nm	720 nm @ 10,000' 750 nm @ 18,000'
Rate of Climb, CYBW, 20°C	545 fpm	930 fpm
Service Ceiling	14,200 ft	20,000 ft
Fuel Capacity, usable	40/50 US gal	87 US gal
Power	160 hp @ 2700 rpm	235 hp @ 2400 rpm
Power Loading	14.4 lb/hp	13.2 lb/hp

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How is the T182T different from the Club's 172s?

	Cessna 172N	Cessna T182T
Fuel Consumption, 75% power	8.4 USGPH	14.6 USGPH
Full Flap Power Off Stall Speed	44 KCAS	49 KCAS
Takeoff to 50', CYBW 20°C	2175'	1760'
Landing from 50', CYBW 20°C	1410'	1525'
V_x CYBW	60 KIAS	66 KIAS
V_y CYBW	71 KIAS	82 KIAS
V_{glide}	65 KIAS	75 KIAS

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Calgary Flying Club Operating Rules and Limits– T182T

Minimum Requirements for Rental

Day VFR Below 10,000ft:

- PPL
- 100 Hours Total Time
- 25 hours PIC X-Country Post PPL – Destinations outside of 100nm Radius

Day VFR Above 10,000ft:

- PPL
- 150 Hours Total Time
- VFR OTT Rating
- Mountain Checkout
- 35 hours PIC X-Country Post PPL – Destinations outside of 150nm Radius

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Calgary Flying Club Operating Rules and Limits– T182T

Minimum Requirements for Rental

- **Night VFR:**
- PPL
- Night Rating
- 100 Hours Total Time
- 25 hours PIC X-Country Post PPL – Destinations outside of 100nm Radius
- 10 Night PIC X-Country – May count towards 25 PIC X-Country requirement

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Calgary Flying Club Operating Rules and Limits– T182T

Minimum Requirements for Rental

- **IFR**
- PPL
- Night Rating
- IFR Rating – Group 1 or 3
- Mountain Checkout
- 150 Hours Total Time
- 20 Hours PIC IFR X-Country – Under IFR Flight Plan, actual or simulated IMC

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How is the T182T different from the Club's 172s?

- Constant speed propeller
- Turbocharged
- Fuel-injected
- Cowl Flaps
- Rudder trim
- Prop de-ice

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How is the T182T different from the Club's 172s?

- Garmin GTN750Xi GPS/Com/Nav
- King electric HSI with slaved Heading Indicator (same as GYVJ)
- 2-axis autopilot with altitude pre-select
- Oxygen system (this plus turbocharging allows flights above 13,000 feet)
- Stormscope integrated into GTN750Xi display
- ADS-B traffic

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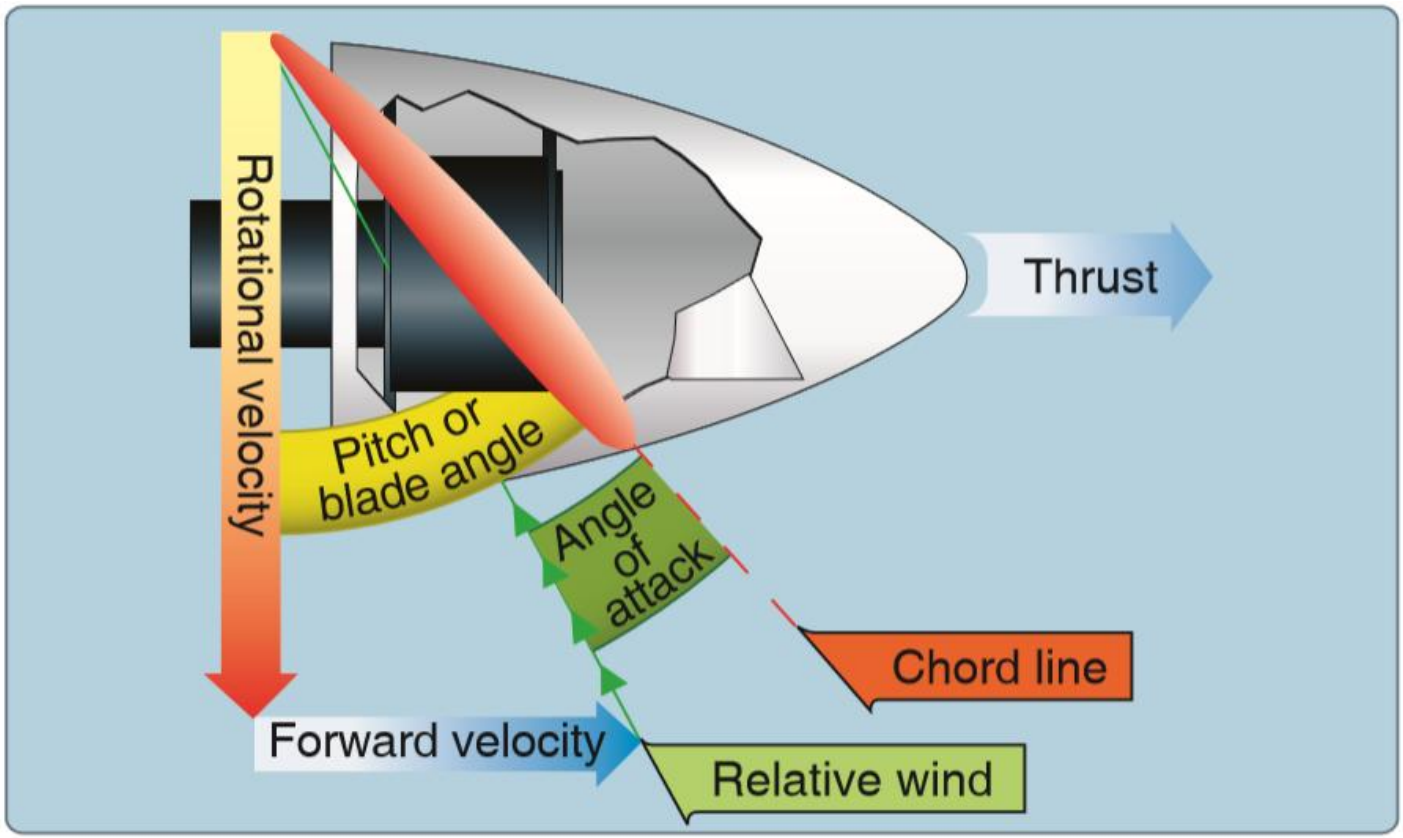
Constant Speed Propellers - Basics



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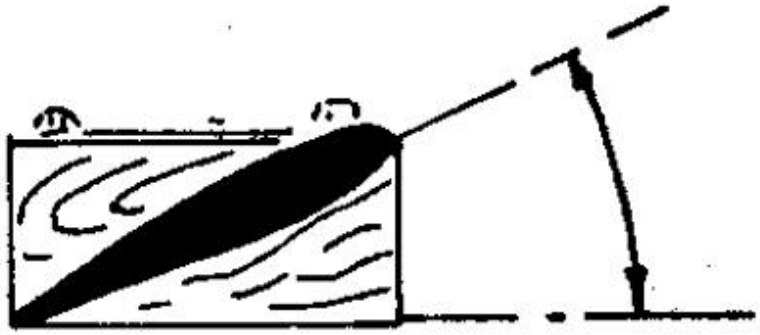
Constant Speed Propellers – Basics

Climb prop



Cruise prop

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Constant Speed Propellers – Basics

With fixed pitch

Climb:

- Fine pitch (low blade angle)
- High RPM

Cruise:

- Coarse pitch (high blade angle)
- Low RPM

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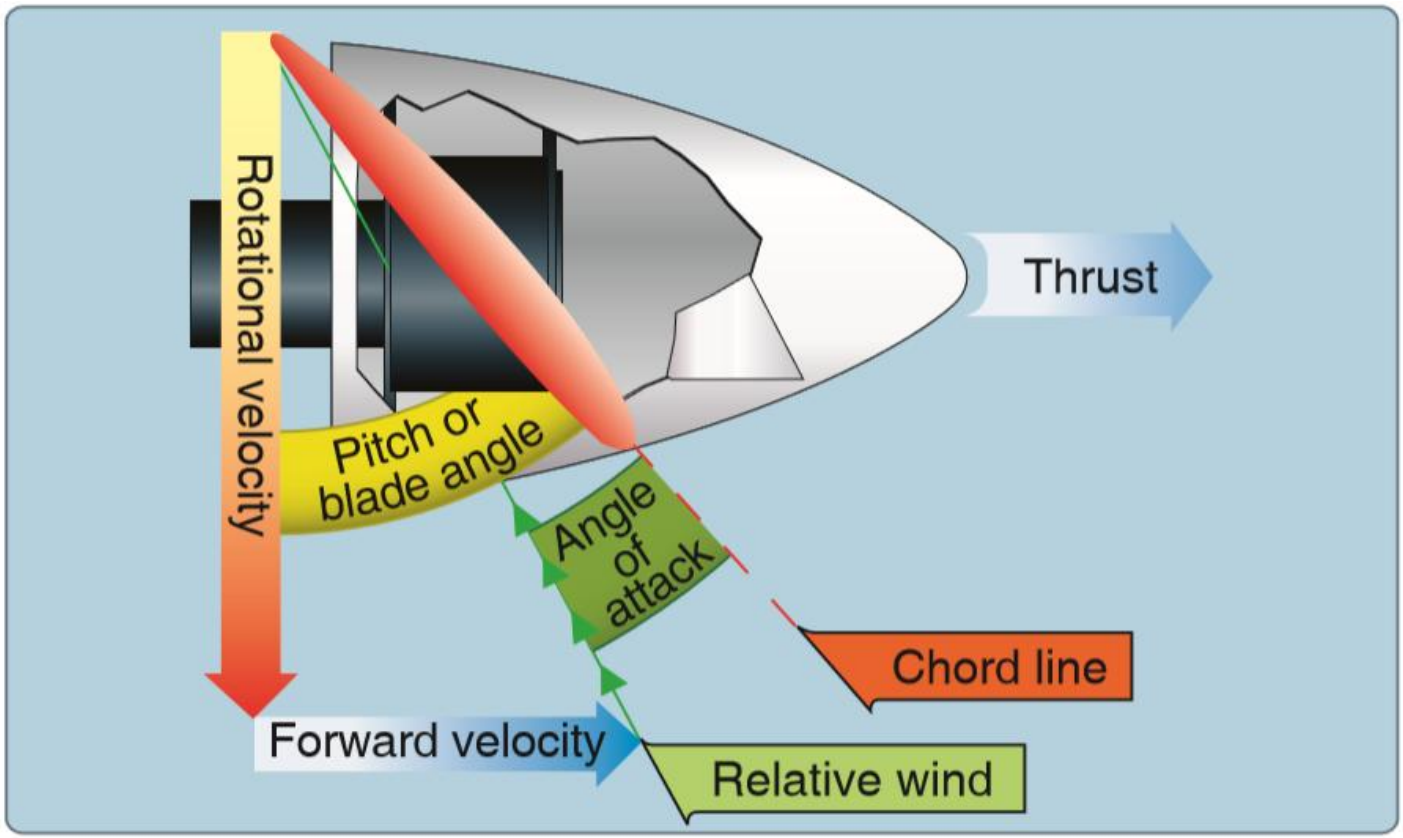
Constant Speed Propellers - Basics



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Constant Speed Propellers - Basics

- Variable pitch allows propeller performance to be optimized through a range of flight modes, because prop blade angle of attack can be kept close to best L/D ratio.
- Almost all variable pitch propellers encountered today are of the “constant speed” type.
- A governor varies the propeller pitch so that engine speed will remain constant despite changes in throttle or air loads.
  - Only works while in the governing range (blade pitch between the high and low pitch stops)

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Constant Speed Propellers - Basics

- With a constant speed propeller, there is a propeller control lever or knob, in addition to the normal throttle and mixture engine controls.
- The propeller control is used to set the engine speed (using the tachometer) when the prop is in the governing range.
- The governor senses engine speed, compares it to the speed requested by the pilot using the prop control, and changes the oil pressure to the prop hub to change the blade pitch.

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Constant Speed Propellers - Basics

- On the T182T, the governor increases oil pressure to the hub to increase pitch (which increases the load on the engine and slows it down), and decreases oil pressure to the hub to decrease pitch (which decreases the load on the engine and speeds it up).
- So if you are in cruise and increase your power by opening the throttle further, the governor will sense the tendency for the engine to speed up, and will increase the propeller pitch instead. This increases the load on the propeller so that the engine works harder, but doesn't speed up.

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Constant Speed Propellers - Basics

- The opposite happens when throttle is reduced, and propeller pitch will decrease to reduce the load on the engine.
- Of course, this only works with the prop blade angle in the governing range. If you dive at full throttle, the engine will speed up once the governor increases the blade pitch to the high pitch stop.
- Similarly, when the throttle is reduced to idle, the governor will reduce the blade pitch until the pitch reaches the low pitch stop, after which the engine speed will decrease.

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Constant Speed Propellers - Basics

- Because engine speed can be set somewhat independently of throttle position, we cannot use just the tachometer to determine engine power. Aircraft with constant speed propellers will also have a manifold pressure gauge.
- Manifold pressure is the absolute pressure, measured in inches of mercury (Hg), measured in the engine intake manifold, after the throttle butterfly valve, and ahead of the cylinders.
- Power is set using a combination of engine rpm and manifold pressure.
- In flight, with the throttle position unchanged, reducing rpm with the prop control will cause manifold pressure to increase, and vice versa.

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Constant Speed Propellers - Basics

- One of the basic rules for engine handling and protection when using a constant speed prop is that when decreasing power, throttle back first, then reduce rpm.
- When increasing power, move prop control forward first, then increase the throttle.
- Keep the prop ahead of the throttle!

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Constant Speed Propellers - Basics

- In use, we do the following things differently when using a constant speed propeller:
  - On the runup, the prop is exercised to make sure oil is properly flowing through the governor and the prop hub.
  - For takeoff, the propeller control is set full forward, and rpm checked for 2400 rpm
  - In cruise, when power is reduced from climb to cruise, throttle (and therefore manifold pressure) should be reduced first, then rpm reduced to the desired cruise rpm. Throttle will likely require another small adjustment once this is done.

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Constant Speed Propellers - Basics

- In use, we do the following things differently when using a constant speed propeller:
  - On final, to be ready for a go-around, the prop control should be pushed full forward (high rpm), and can stay there through taxi and shutdown.
  - When going from a fixed pitch to a constant speed propeller, you must cultivate the mindset that for all power changes, you must think about what has to happen with the prop, as well as what has to happen with the throttle.

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Turbocharging - Basics

- All of our Cessna 172 engines are normally aspirated.
- All normally aspirated engines lose power as they gain altitude. At around 7500, they can only develop 75% of rated power at full throttle.
- This limits all facets of aircraft performance as density altitude increases.
- Turbocharging, within limits, regains much of that lost performance at higher altitudes.

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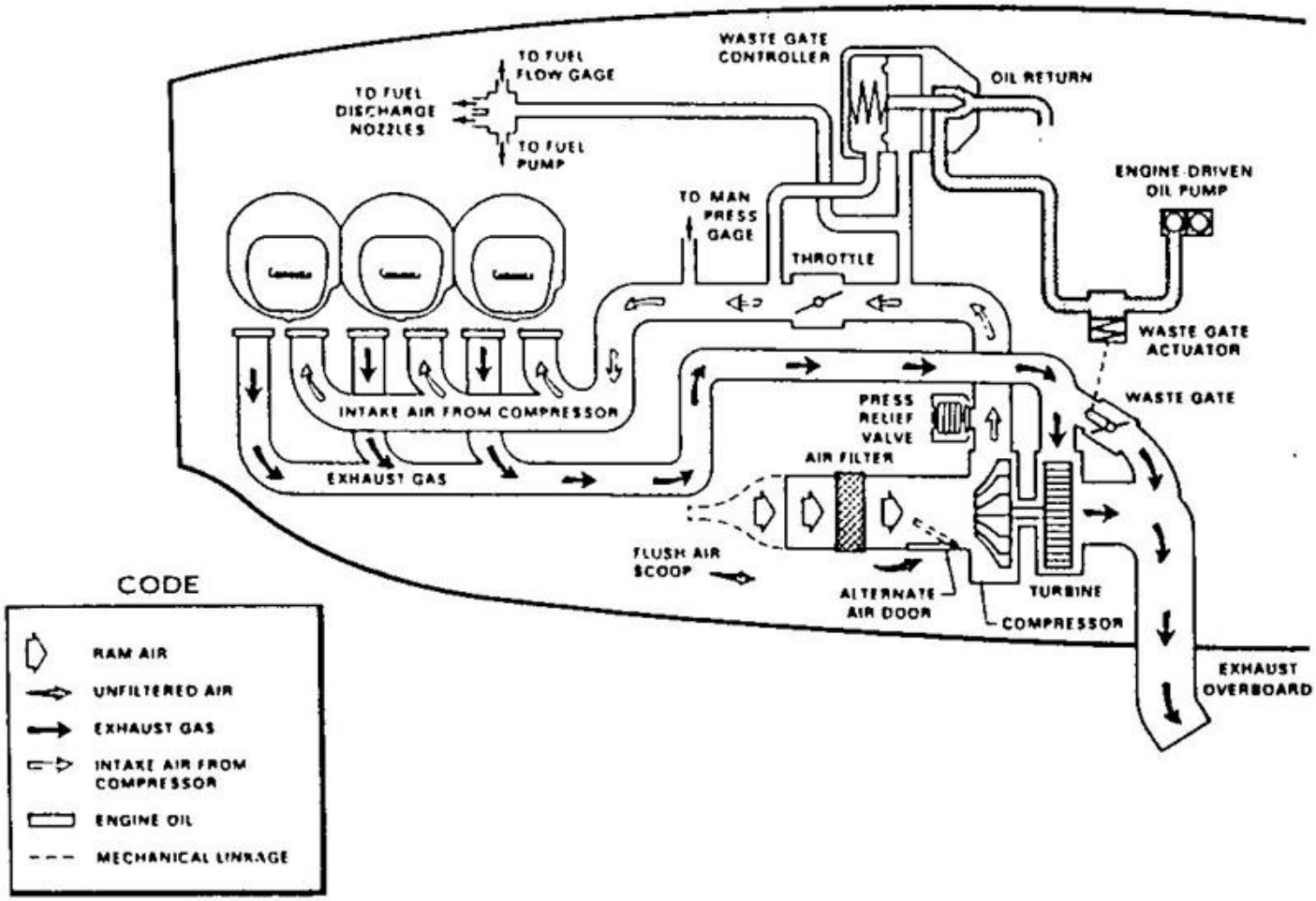

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Turbocharging - Basics

- In a turbocharger installation, hot exhaust gases are used to spin a turbine, which is connected to a compressor mounted in the engine air intake duct. This compresses the induction air so that the engine is supplied with combustion air at a pressure at or above normal sea level atmospheric pressure.
- This higher pressure intake air allows the engine to deliver its rated power to much higher altitudes than if it was not turbocharged.

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Turbocharging - Basics

- The turbocharger is controlled by a wastegate, which opens as required to bypass exhaust gases around rather than through the turbocharger turbine, to limit the amount of turbocharging to that requested through setting the throttle.
- As the throttle is opened more, the wastegate will close further, sending more exhaust gases through the turbine and increasing the amount of intake air compression.

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Turbocharging – T182T

- In the standard atmosphere, sea level pressure is 29.92 in. Hg.
- At Springbank, normal atmospheric pressure is around 25.9 in. Hg, plus or minus depending on what weather system is affecting our atmospheric pressure.
- The Cessna T182T is limited to a maximum manifold pressure of 32 in. Hg. The wastegate will open to prevent 32 in. Hg from being exceeded.

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Turbocharging – T182T

- In normal operation, turbocharger operation is automatic, with desired manifold pressure being set using the throttle and manifold pressure gauge, and the wastegate modulating to control the turbocharger.
- This will be the case with most normal operations, especially at lower altitudes.

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Turbocharging – T182T

- When the wastegate is partially open and controlling compressor discharge pressure:
  - The engine will react the same as a normally-aspirated engine when rpm is varied with the prop control. When rpm is increased, manifold pressure will decrease slightly, and when rpm is decreased, manifold pressure will increase slightly.
  - Fuel flow will vary directly with manifold pressure, engine speed, mixture, or throttle position. In this case, manifold pressure is controlled by throttle position and the waste gate controller, while fuel flow varies with throttle movement and manifold pressure.
  - Movement of the mixture control has little or no effect on the manifold pressure.

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Turbocharging – T182T

- However, at high altitude, part throttle or low rpm, the exhaust flow is not capable of turning the turbine and compressor fast enough to maintain maximum compressor discharge pressure. The wastegate will therefore close to force all of the exhaust gases through the turbine.

- Once the wastegate is closed, the wastegate will no longer be able to control, and any change in turbocharger speed will affect engine operation.

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Turbocharging – T182T

- With the wastegate closed and unable to control compressor discharge pressure:
  - if the turbocharger speed increases, the manifold pressure and fuel flow will increase, and if the turbocharger speed decreases, the manifold pressure and fuel flow will decrease.
  - Increasing fuel flow will increase the manifold pressure, and decreasing the fuel flow will decrease the manifold pressure.
  - an increase in engine rpm will result in an increase in manifold pressure. A decrease in engine rpm will result in a decrease in manifold pressure.
  - manifold pressure will vary with changes in airspeed due to the effects of ram air being amplified through the compressor section.

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Turbocharging – T182T

- With the wastegate closed, and manifold pressure changes are due to turbocharger output, fuel flow will follow manifold pressure, even though the throttle position is unchanged.
- This means that fuel flow adjustments required of the pilot are minimized to:
  - Small adjustments on takeoff or climbout for the proper rich climb setting,
  - Lean-out at cruise, and
  - Return to full rich position for approach and landing.

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Turbocharging – T182T

- Under some circumstances, such as rapid throttle movement, especially with cold oil, it is possible that the engine can be overboosted slightly above the maximum takeoff manifold pressure of 32 in. Hg. The induction air pressure relief valve will normally limit the overboost to 2 to 3 inches.
- A slight overboost of 2 to 3 inches of manifold pressure is not considered detrimental as long as it is momentary. No corrective action is required when momentary overboost corrects itself and is followed by normal engine operation.
- If overboosting persists with normal engine temperature, or if the overboost tends to exceed 3 inches, the throttle should be retarded to eliminate the overboost and the controller system, including the wastegate and relief valve, should be checked.

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Turbocharging – T182T

- Because a turbocharged airplane will climb faster and higher than a normally-aspirated one, fuel vapourization may occur. When fuel flow variations of ± 1 GPH or more are observed on the fuel flow indicator, or if a full rich mixture setting does not provide the desired fuel flow, placing the auxiliary fuel pump switch in the ON position will control vapour. However, this will also increase fuel flow, making it necessary to readjust the mixture for the desired fuel flow.
- The auxiliary fuel pump should be left on for the remainder of the climb. It can be turned off when the fuel flow will remain steady with it off, and the mixture can then be adjusted accordingly.
- The auxiliary fuel pump should be turned off and the mixture reset prior to descent.

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Engine Operation – T182T

- The T182T's Lycoming TIO-540 engine is fuel injected.
  - No carb icing, so no carb heat
  - Better fuel distribution gives better power and fuel economy
  - Higher fuel delivery pressure requirement means a fuel pump is necessary
  - Engine-driven fuel pump, plus an electric pump for priming and backup
  - Startup is different from carbureted engines; follow the checklist procedure
  - FMTF is a 172S and is fuel injected, T182T procedures similar

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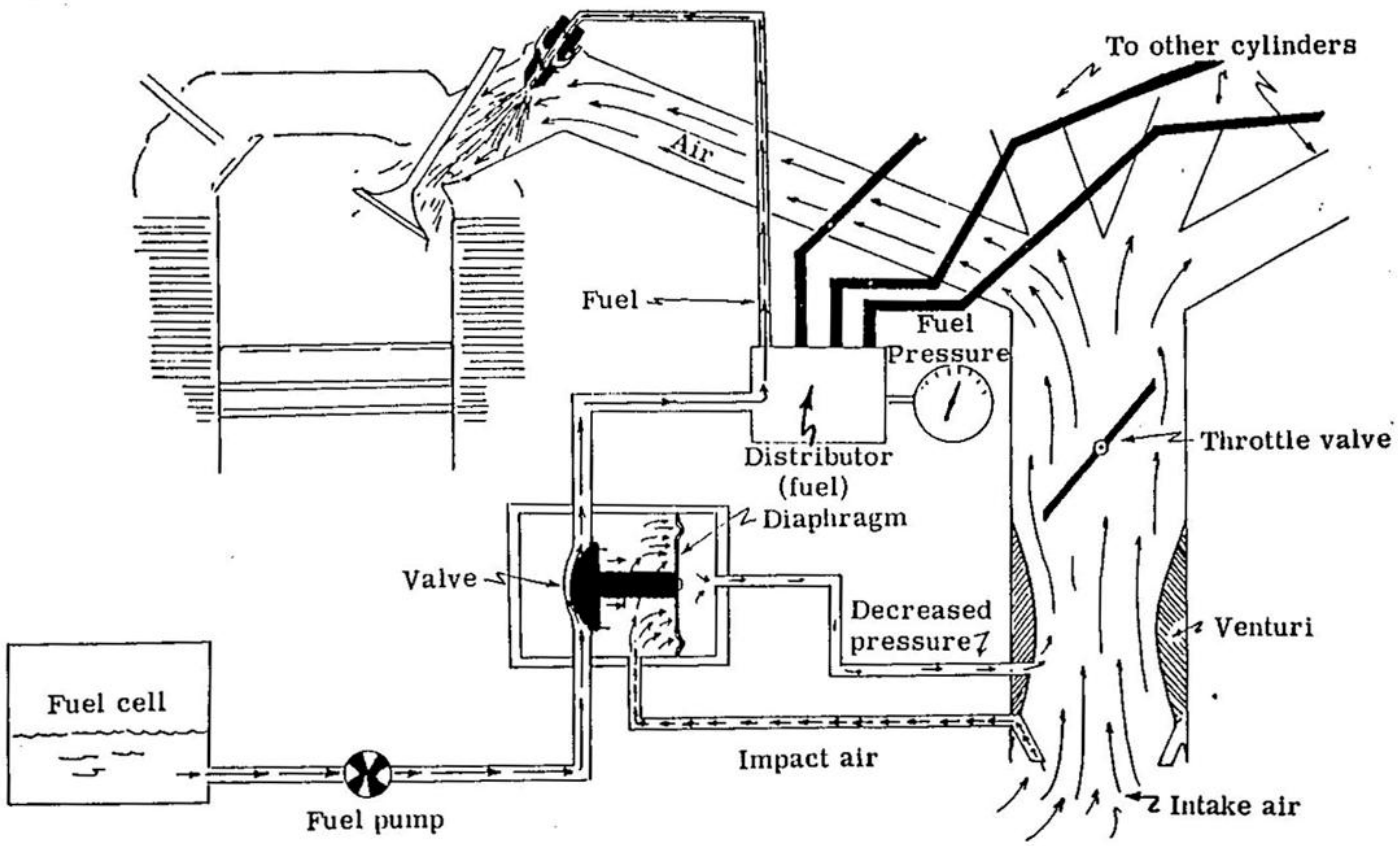
Fuel Injection



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Engine Operation – T182T

- Cessna allows cruise at engine rpms between 2000 and 2400, but recommends using the lowest rpm for a given % power that will give smooth operation.
- CFC policy will be cruise at 24” Hg and 2300 or 2250rpm. This gives very close to 75% power at all altitudes and temperatures, and is selected to help ensure the longevity of the engine.

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Engine Operation – T182T

- Cruise performance is given in a series of 11 tables in the POH, with a table for each even pressure altitude between sea level and 20,000 feet.
- Each table gives percent power, TAS and fuel consumption for different rpm settings, manifold pressure settings and OATs.
- With the standard cruise setting of 24”/2300 rpm, using the tables is simple. Select the table closest to your pressure altitude. Find the line for 24” of manifold pressure at 2300 rpm. Use the % power, KTAS and fuel consumption figures for the temperature closest to your expected or actual OAT at cruising altitude.

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Engine Operation – T182T

- Leaning:
  - Leaning is done with the mixture control, and is guided by using the Turbine Inlet Temperature (T.I.T) Indicator. (This gauge would be called an Exhaust Gas Temperature (E.G.T. Indicator) on a non-turbo'ed engine.
  - Leaning using the T.I.T. Indicator should only be done when the engine RPM and Manifold pressure are within the green arcs, as previously described for cruising.
  - To lean, use the mixture control to slowly lean the mixture until either the T.I.T. peaks and begins to drop, or the T.I.T. indication reaches the 1685 °F red line limit. At high cruise power settings, T.I.T. redline may be reached before the T.I.T. peaks.

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Engine Operation – T182T

- Leaning:
  - Richen the mixture until T.I.T. reads 50°F rich of peak or 50°F below T.I.T. redline, as the case may be.
  - This procedure will give the recommended lean setting on which the performance tables in the POH are based.
  - Never operate on the lean side of peak T.I.T.
  - Any change in altitude or power setting would require re-leaning according to the above procedure.
  - Mixture should be richened during descent.

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Engine Operation – T182T

- Cowl Flaps:
  - To help maintain proper engine cooling, while reducing cooling drag, the T182T is provided with cowl flaps.
  - The cowl flap control is located on the right side of the pedestal below the throttle quadrant, opposite the elevator trim wheel.
  - The cowl flap control is set down for closed and up for open, and can be set at a number of intermediate positions if required. To adjust the cowl flap position, move the lever to the right to clear the detent, move it to the desired setting, and then back to the left into the nearest detent.

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Engine Operation – T182T

- Cowl Flaps:
  - Cowl flaps are normally open for taxi, takeoff and climb, and closed for cruise and descent.
  - As Cessna 172s do not have cowl flaps, setting cowl flaps will have to be incorporated into pre-start, cruise, descent and post-landing checks, as well as overshoot checks. Use the checklist.
  - Cowl flaps are normally closed in cruise. However, in hot day conditions, cowl flaps should be set to maintain cylinder head temperature at about two-thirds of the green arc, and oil temperature within the green arc.

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Engine Operation – T182T

- Alternate Air:
  - Although fuel injected engines do not required carb heat, and therefore do not have a carb heat control, the possibility of induction air intake obstruction due to snow or impact icing still exists.
  - Fuel-injected engines are therefore usually provide with an alternate air source, sometimes with a control accessible to the pilot.
  - The T182T has an alternate air system that consists of a spring-loaded alternate air door in the air intake box. If the intake filter becomes blocked, suction from the engine will cause the alternate air door to open. This requires no input from the pilot, so there is no cockpit control.
  - This will result in a manifold pressure loss of up to 15 in. Hg at full throttle at 8000’.

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Aircraft Systems– T182T

- Flight Controls:
  - Same as 172, except elevator control has downsprings for improved stability.
  - The elevator control will feel heavier than for a 172.
  - Elevator trim is electric on left control wheel, as well as the usual trim wheel below the throttle quadrant
  - Rudder trim is a horizontal wheel, next to the elevator trim wheel.

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Aircraft Systems– T182T

- Flaps:
  - Same as 172, except flap positions are pre-selectable to 10°, 20°, and full.
  - Takeoffs can be made with a maximum of 20° of flap.
  - When lowering flaps, make sure to move the flap lever to the right before positioning it lower.

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Aircraft Systems– T182T

- Doors:
  - Outside door handles must be extended out whenever the doors are open. Do not attempt to close the door with the outside handle not extended.
  - The inside door handle has three positions: OPEN, CLOSE, and LOCK. The handle is spring-loaded to the CLOSE (up) position.
  - Do not slam the doors. To close the doors from the inside, open the window and pull the door closed.
  - After gently closing the door, push the handle forward and down to lock the door. Then close and lock the window
  - Windows can be opened in flight up to 175 KIAS. Be aware that Bernoulli will reach in and remove anything light and loose.

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Aircraft Systems– T182T

- Doors:
  - Cabin doors should be locked prior to flight.
  - Door opening in flight is not an emergency, and the plane will continue to fly normally. Should a door open in flight, slow the aircraft to 80 KIAS and trim to maintain that speed. Momentarily shove the door outward slightly, and then forcefully close and lock the door.

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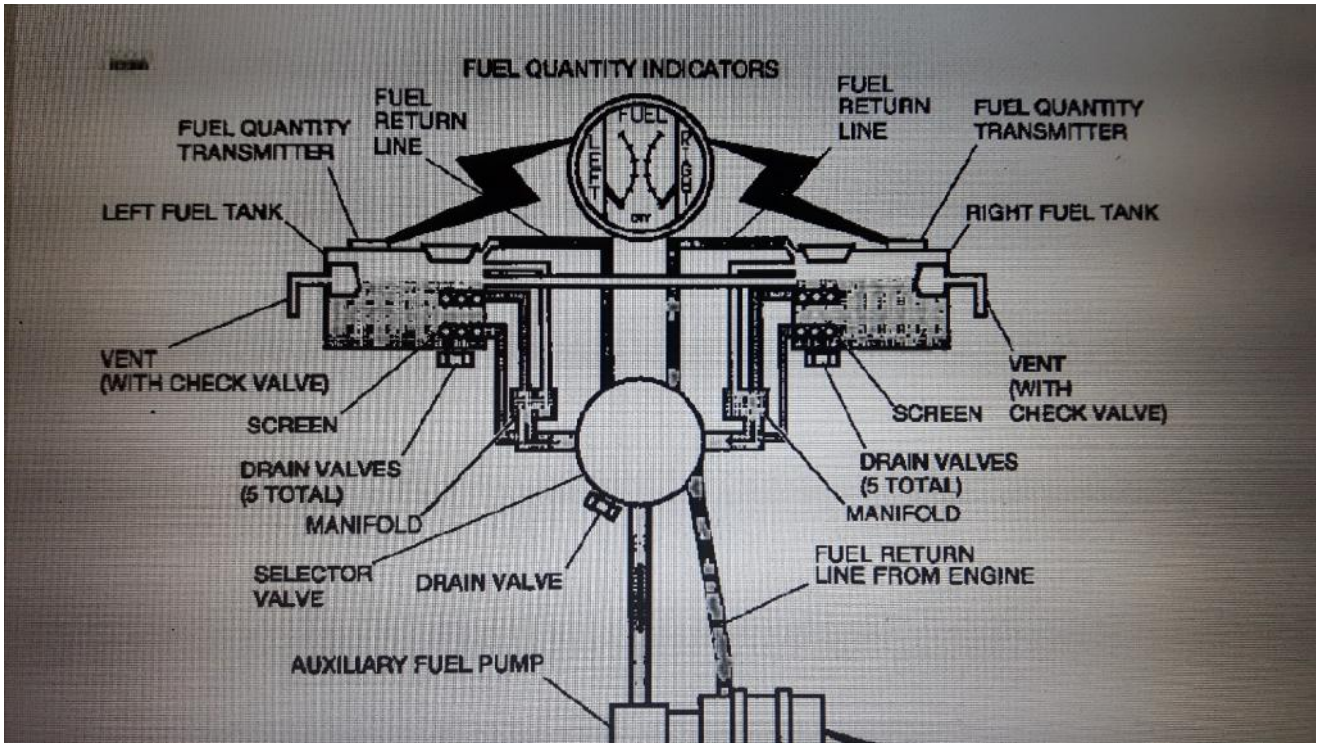
Aircraft Systems– T182T

- Fuel System:
  - Same as FMTF: two tanks, each with five fuel drain valves, vent on each side
  - Three under-fuselage fuel drains: one under the fuel selector



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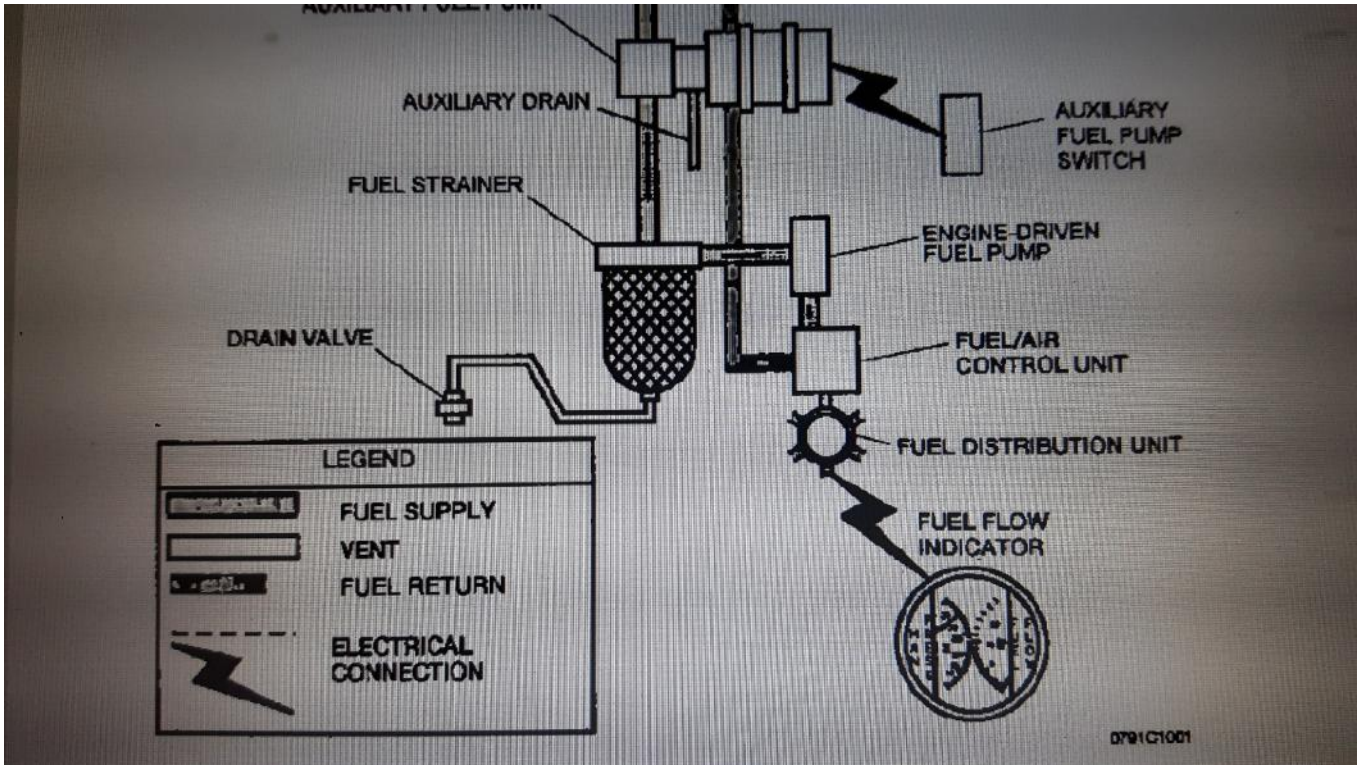
Aircraft Systems– T182T

- Fuel System:
  - One under the electric fuel pump, and one under the fuel strainer. Check all thirteen.



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Aircraft Systems– T182T

- Fuel System:
  - To keep the fuel moving and not overheating, fuel-injected engines have a return line to each tank; it moves with fuel selector to make sure fuel goes back to the same tank it is feeding from.
  - There is a Low Fuel Annunciator for each tank, and a Fuel Flow Meter.
  - A fuel-injected engine has an engine-driven fuel pump, plus an electric Auxiliary fuel pump for priming, vapour suppression and backup for the engine driven fuel pump.
  - It is not necessary to turn the electric auxiliary fuel pump on during landing and takeoff.
  - Fuel Selector Valve is four position: Left, Both, Right, Off.
  - The Fuel Selector Valve must be pushed down to turn off, and to turn back to L or R; this is different from the 172s.

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Aircraft Systems– T182T

- Brakes:
  - Same as for 172s

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Aircraft Systems– T182T

- Electrical System:
  - 28 VDC
  - 95 Amp alternator
  - 24 V battery, located in the tail
  - Split bus system, with two electrical buses and an essential bus between them, supplying power to the Master Switch, various annunciators, and the interior lighting
  - Each electrical bus has an avionic bus; electrical and avionics loads are split between the two set of buses.

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Aircraft Systems– T182T

- Annunciator Panel:
  - An Annunciator Panel is located in the front of the glareshield above the avionics stack.
  - It gives Caution (amber) and Warning (red) messages for selected portions of the aircraft systems.
  - The Annunciator will flash for 10 seconds to get the pilot's attention, and then change to a steady ON. The Annunciator cannot be turned off by the pilot.
  - Inputs to the Annunciator come from the Fuel Level Transmitters, the Low Oil Pressure Switch, the Vacuum Transducers and the Alternator Control Unit.
  - Illumination intensity can be controlled with the Test/Day/Night Switch; the LED bulbs can be tested by holding the switch in the Test position.

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Aircraft Systems– T182T

- Ground Service Plug:
  - There is a ground service receptacle on the aircraft to allow starting using an auxiliary battery, or to power the aircraft while not running without draining the aircraft battery.
  - If there is a need to use the Ground Service Plug, always read and follow the instructions in the POH to ensure you get it right.
- Exterior Lighting:
  - Same as for 172s, except outside courtesy lights are operated from a switch on the pilot's overhead console.

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Aircraft Systems– T182T

- Interior Lighting:
  - Combination of flood lighting, glareshield lighting, pedestal lighting, panel lighting, radio lighting and pilot control wheel map lighting.
  - Flood lighting is in the overhead console, with a switch by each light
  - Glareshield lighting is LED, and is dimmable using the Glareshield LT dimmer, located below the Pilot's panel.
  - Pedestal lighting consists of three hooded lights located at various locations on the pedestal. These lights are controlled by the PEDESTAL LT dimmer, located below the nav indicators. The compass and ID placard lights are also controlled by this dimmer.

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Aircraft Systems– T182T

- Interior Lighting:
  - Panel lighting uses individual lights in each instrument and gauge. These lights are controlled by the PANEL LT dimmer, located below the nav indicators.
  - Radio Lighting is controlled by the RADIO LT dimmer, located below the nav indicators. The Annunciator Switch must be in the NIGHT position for the radio lights to work.
  - The Pilot's Control Wheel Map Light is controlled by a Rheostat on the bottom of the control wheel. The NAV LIGHT switch must be on for this light to work.

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Aircraft Systems– T182T

- Cabin Heating, Ventilating and Defroster System:
  - This is similar to the same system the 172, except that there is a separate defroster control knob.

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Aircraft Systems– T182T

- Oxygen System:
  - A four-place oxygen system has been installed for flight above 10,000 feet.
  - This consists of a 50 cubic foot oxygen cylinder mounted in the tail, complete with a filler valve and overboard discharge, a combination regulator and shutoff valve, and a cylinder pressure indicator in the overhead console.
  - Four oxygen outlets are provided, two in the overhead console, and two above the rear side windows for the rear seat occupants.
  - Oxygen is delivered to each person through a cannula, each equipped with a vinyl plastic hose and a flow indicator. Flow indicators have adjustment knobs that can be set for different altitudes. Cannulas are only approved for use up to 18,000 feet.

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Aircraft Systems– T182T

- Oxygen System:
  - The cylinder pressure should be checked prior to flight to ensure there is sufficient oxygen on board when planning a flight above 10,000 feet. A chart in the POH is used for calculation of required Oxygen pressure for the planned flight.

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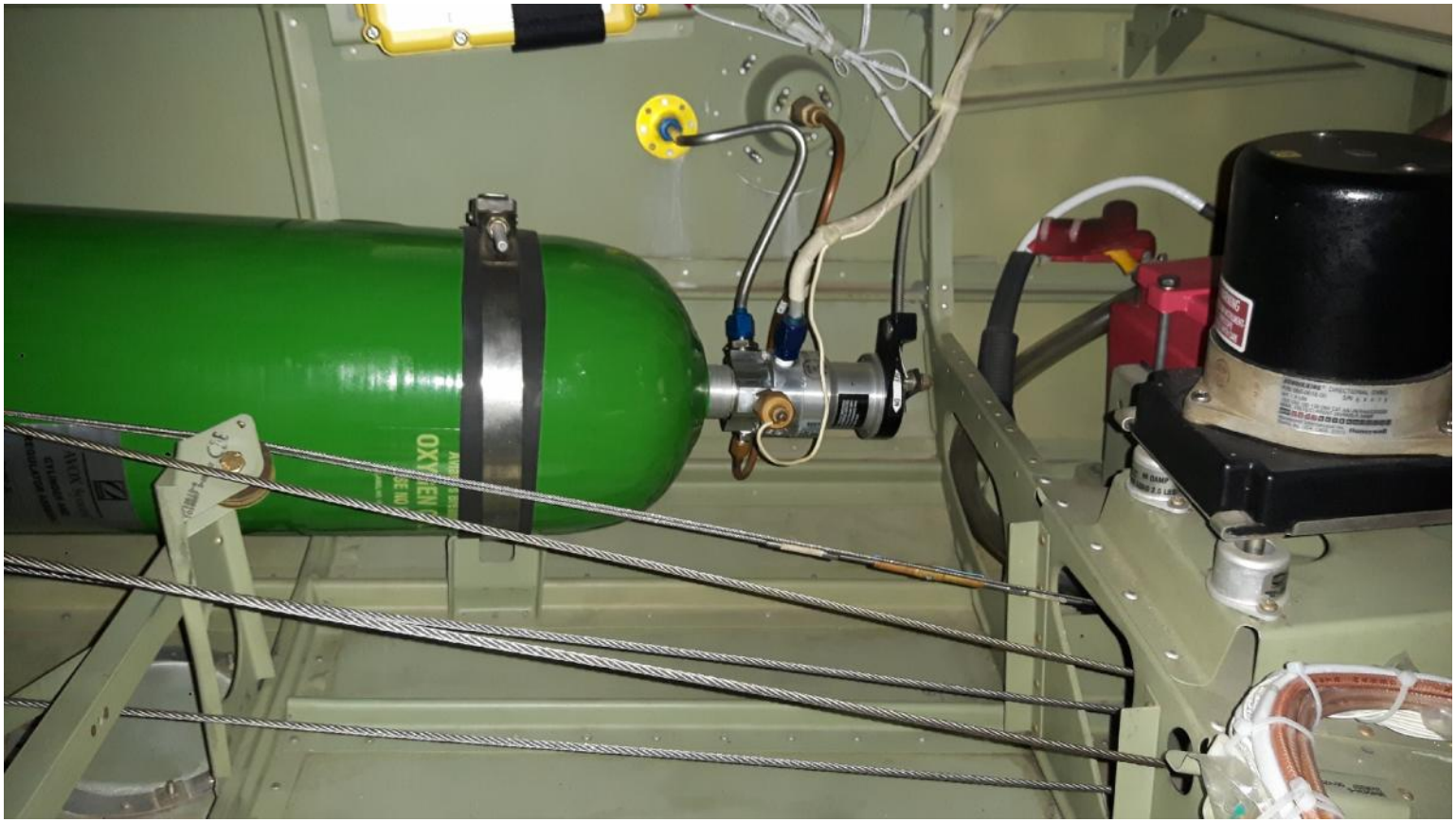
Oxygen Tank– T182T



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Aircraft Systems– T182T

- Oxygen System:
  - No smoking when oxygen is in use
  - Oils on skin, lipstick or lip balm may constitute a fire hazard when using oxygen and should be avoided.
  - Oil or grease or other flammable substances must not come in contact with oxygen equipment.
  - See Procedures section for how to use the oxygen system.

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Aircraft Systems– T182T

- Vacuum System:
  - The vacuum system consists of two engine-driven vacuum pumps, each having its own vacuum pressure switch, vacuum relief valve, air filter, vacuum gauge and low vacuum warning on the annunciator.
  - A manifold with check valves allows normal vacuum system operation if either vacuum pump system should fail.
  - The vacuum system powers the attitude indicator. The King HSI is all electric and does not require vacuum for operation.

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Aircraft Systems– T182T

- Stall Warning:
  - Vane type
  - Should be checked during pre-flight
  - It is heated, controlled by the Pitot Heat Switch

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Aircraft Limitations– T182T

Airspeed Limitations

SYMBOL	SPEED	KCAS	KIAS	REMARKS
V_{NE}	Never Exceed Speed	170	175	Do not exceed this speed in any operation.
V_{NO}	Maximum Structural Cruising Speed	137	140	Do not exceed this speed except in smooth air, and then only with caution.
V_A	Maneuvering Speed: 3100 Pounds 2600 Pounds 2100 Pounds	 110 101 92	 110 101 91	Do not make full or abrupt control movements above this speed.
V_{FE}	Maximum Flap Extended Speed: 0° to 10° Flaps 10° to 20° Flaps 20° to FULL Flaps	 137 119 100	 140 120 100	Do not exceed this speed with flaps down.
—	Maximum Window Open Speed	170	175	Do not exceed this speed with windows open.

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Aircraft Limitations– T182T

Powerplant Limitations

Engine

Textron Lycoming TIO-540-AK1A

235 rated BHP at 32 in Hg and 2400 RPM

Engine Operating Limits:

Take off and Max continuous Climb Power: 32 in and 2400 RPM

Recommended Climb Power: 25 in and 2400 RPM (Set at 400 feet)

Recommended Cruise Power: 24 in and 2300 RPM

Maximum Cylinder Head Temperature (CHT): 500°F (260°C)

Maximum Oil Temperature: 245°F (118°C)

Oil Pressure :

- Minimum 20 PSI
- Maximum 115 PSI

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Aircraft Limitations– T182T

Powerplant Limitations

Fuel Grade

Aviation Grade 100LL (Blue)

Minimum Fuel Quantity: Minimum fuel required for the flight + 45 mins OR 46 U.S. Gallons – ***Whichever is greater.***

Oil Grade

All CFC T182T aircraft must use SAE 15W50 oil.

Minimum Oil Quantity is 5 QT.

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Aircraft Limitations– T182T

Weight Limits

Maximum Ramp Weight: 3112 lbs.
Maximum Takeoff Weight: 3100 lbs.
Maximum Landing Weight: 2950 lbs.
Maximum Weight in Baggage Compartment:

Baggage Area A - Station 82 to 109:	120 lbs. See note below.
Baggage Area B - Station 109 to 124:	80 lbs. See note below.
Baggage Area C - Station 124 to 134:	80 lbs. See note below.

NOTE

The maximum allowable combined weight capacity for baggage in areas A, B and C is 200 pounds. The maximum combined allowable weight capacity for baggage in areas B and C is 80 pounds.

Area A is front 27” of floor of baggage compartment

Area B is back 15” of floor of baggage compartment

Area C is hat shelf area of baggage compartment

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Aircraft Limitations– T182T

Centre of Gravity Limits

Center of Gravity Range:

Forward:	33.0 inches aft of datum at 2250 lbs. or less, with straight line variation to 35.5 inches aft of datum at 2700 lbs. or less, with straight line variation to 40.9 inches aft of datum at 3100 lbs., continuing to aft limit at 3100 lbs.
Aft:	46.0 inches aft of datum at all weights.

Reference Datum: Front face of firewall.

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Aircraft Limitations– T182T

Maneuver Limits

This airplane is certificated in the normal category. The normal category is applicable to aircraft intended for non-aerobatic operations. These include any maneuvers incidental to normal flying, stalls (except whip stalls), lazy eights, chandelles, and turns in which the angle of bank is not more than 60°.

Aerobatic maneuvers, including spins, are not approved.

Flight Load Factor Limits

Flight Load Factors:

*Flaps Up	+3.8g, -1.52g
*Flaps Down	+2.0g

* The design load factors are 150% of the above, and in all cases, the structure meets or exceeds design loads.

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Aircraft Limitations– T182T

Fuel Limitations

Minimum Fuel Quantity: 46 U.S. Gal OR Fuel required for flight + 45 min, ***whichever is greater***

Total Fuel:	**92.0 U.S. Gallons (46.0 gallons per tank.)**
Usable Fuel:	**87.0 U.S. Gallons**
Unusable Fuel:	**5.0 U.S. Gallons (2.5 Gallons each tank.)**

Takeoff and land with the fuel selector valve handle in the BOTH position.

Operation on either LEFT or RIGHT tank limited to level flight only.

With 1/4 tank or less, prolonged uncoordinated flight is prohibited when operating on either left or right tank.

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Aircraft Limitations– T182T

Maximum Operating Altitude

Certified Maximum Operating Altitude: 20,000 ft

However, cannulas for oxygen only good to 18,000 ft

Flap Limitations

- Approved Take off Range: 0° to 20°
- Approved Landing Range: 0° to FULL

Flap speed limitations

- 0° - 10° : 140 KIAS
- 10° - 20° : 120 KIAS
- 20° - FULL : 100 KIAS

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Aircraft Limitations– T182T

Icing Conditions

Although the aircraft is equipped with propeller deicing, the aircraft is not approved for flight in known icing conditions.

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Pre-flight Inspection– T182T

- Similar to Cessna 172, with following exceptions:
  - If planning IFR operations, check pitot heat and heated stall warning for operation
  - Check stall warning (vane type) with Master Switch on
  - Check Low Fuel Annunciators
  - Check Avionics Cooling Fan works
  - Test the Annunciator Panel on the glareshield
  - Check Oxygen Supply Pressure if planning to use oxygen

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Pre-flight Inspection– T182T

- Similar to Cessna 172, with following exceptions:
  - On rear fuselage left side, check green Oxygen Overboard Discharge Indicator disc is present
  - Both wings have a fuel vent that should be checked for blockage. On the 172 it is only on the left side
  - The wheels are each enclosed in a streamline fairing which prevents seeing the whole tire and brake assembly. Check the tire for tread and inflation.
  - Check the inside of the fairings for snow/mud/slush accumulations as best you can.

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Pre-flight Inspection– T182T

- Similar to Cessna 172, with following exceptions:
  - Each fuel tank has five fuel drains. Check a sample from each.
  - There are three fuel drains under the fuselage. Check a sample from each.
  - There is a static source on each side of the nose. Check both to ensure they are not blocked.
  - Oil should be no less than 5 Quarts. Add a quart as soon as it goes below 5 quarts. Due to replacement of a cylinder, engine is currently using M Type Oil.

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Weight and Balance– T182T

- This calculation is similar to that for the Cessna 172, with following exceptions:
  - There are three baggage areas, as previously described in the Limitations Section. Each baggage area has its own arm and weight limit. Make sure area and combined weight limits are not exceeded.
  - Make sure any baggage is properly secured.
  - Ensure that if you are taking off at maximum gross weight of 3100 lbs, that you are flying long enough to burn off 150 lbs of fuel before your first landing, in order not to exceed the 2950 lb maximum weight limit.

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Weight and Balance– T182T

- This calculation is similar to that for the Cessna 172, with following exceptions:
  - You can taxi at 3112 lb, as long as you will burn 2 USG before takeoff.
  - Note that the heavier you are, the farther rearward the front C of G limit is. This is so that you will still have sufficient elevator authority to flare the aircraft.

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Performance Charts– T182T

- Performance Charts provided in the POH are of the same type as provided for the Cessna 172Ns, with the following exceptions:
  - In addition to an Airspeed Calibration Chart for use with Alternate Static Source, there is also an Altimeter Calibration Chart. It shows possible altimeter errors of up to 50 feet when using the Alternate Static Source.
  - A Wind Component Chart is included for figuring crosswind/headwind/ tailwind components.
  - Takeoff distance tables are provided for 3100 lb, 2700 lb, and 2300 lb takeoff weight.
  - Cruise performance tables are given in 11 pages for even thousands of feet from sea level to 20,000 feet. Keep in mind that the standard cruise power setting for CFC is 24” Hg and 2300 rpm.
- Always read the chart Conditions and Notes to fully understand chart usage.

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Normal Procedures– T182T

- Airspeeds for Normal Operation at 3100 lb:
  - Best Angle of Climb:
    - Sea Level: 64 KIAS
    - Springbank 65 KIAS
    - 20,000 ft 68 KIAS
    - About 5 kt higher than for 172N
  - Best Rate of Climb:
    - Sea Level: 84 KIAS
    - Springbank 83 KIAS
    - 20,000 ft 80 KIAS
    - About 12 kt higher than for 172N
  - Enroute Climb: 90-100 KIAS
    - About 15 kt higher than for 172N

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Normal Procedures– T182T

- Airspeeds for Normal Operation at 3100 lb:

– Normal Approach, Flaps Up:	70-80 KIAS
– 10 kt higher than 172N	
– Normal Approach, Flaps Full:	60-70 KIAS
– 5 kt higher than 172	
– Short Field Approach, Flaps Full:	60 KIAS

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Normal Procedures– T182T

- Aircraft Operating Manual contains Normal Procedures Checklists and Amplified Procedures
- Before Starting Engine:
  - Same as 172N, but need to open cowl flaps
- Starting Engine:
  - Same as 172S (fuel injected), but need to set Prop full forward (high rpm)
  - Follow the checklist

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Normal Procedures– T182T

Starting Engine:

Hot Start

- Within 20-30 min after shutdown the fuel manifold is adequately primed and the empty injector nozzle lines will fill before the engine dies
- After 30 min the vaporized fuel in the manifold will have dissipated and some slight “priming” could be required
  - Advance mixture control promptly to 1/3 open when the engine fires and then smoothly to full rich as power develops.
  - Should the engine die after starting, turn on the auxiliary fuel pump temporarily and adjust the throttle and/or mixture as necessary to keep the engine running.
  - If over priming floods the engine, turn off the aux pump, open the throttle from ½ to full open and continue cranking with the mixture full lean. When engine fires, smoothly advance the mixture control to full rich and retard the throttle to desired idle speed.

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Normal Procedures– T182T

Starting Engine:

- If Oil Pressure does not begin to indicate pressure within 30 seconds in the summer time and approx. 1 min in very cold weather, stop the engine and investigate

- Recommended Starter Duty Cycle:
  - Crank starter for 10 sec followed by 20 sec cool down; Repeat **two additional times** followed by **10 min** cool down period before trying again; Crank starter again, 3 cycles of 10 sec each, followed by 20 seconds of cool down. If engine fails to start, an investigation to determine the cause is needed

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Normal Procedures– T182T

Leaning for taxi:

- Move the mixture control out about ¾” towards lean for taxi.

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Normal Procedures– T182T

- Runup:
  - Same as 172N, except:
    - Done at 1800 rpm
    - Cycle prop from high to low rpm and back
    - Max magneto drop is 150 rpm
    - No leaning as part of runup, this is done during takeoff run
    - Check that no annunciators are illuminated

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Normal Procedures– T182T

- Pre-takeoff Checks:
  - Same as 172N, except:
    - Ensure autopilot is off
    - Make sure the prop control is full forward
    - Make sure the cowl flaps are open
    - Takeoffs can be made with up to 20° flaps
- Warmup
  - If engine idles (approx. 650 RPM) and accelerates smoothly the airplane is ready for take off
  - Take off with turbocharged engine should not be started if indicated lubricating oil pressure due to cold temperature is above maximum
    - Excessive oil pressure can cause over boost and engine damage

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Normal Procedures– T182T

NORMAL TAKEOFF

- Wing Flaps – 0° to 20°
- Power – 32” Hg and 2400 RPM
- Mixture – Adjust to 24 GPH Fuel Flow
- Elevator Control – Lift Nose Wheel (at 50-60 KIAS)
- Climb Speed
- a. 70 KIAS (20° flap)
- b. 80 KIAS (0° flap)
- Wing Flaps Retract at safe altitude

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Normal Procedures– T182T

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Normal Procedures– T182T

Power Check

- Check power early in takeoff roll; any sign of engine roughness is good cause to abort
- Full power run ups over loose gravel are harmful to prop tips – advance throttle slowly
- On first flight of the day when throttle is advanced for T/O, manifold pressure will normally exceed 32” Hg and fuel flows will exceed 24 GPH if the throttle is opened fully. Open the throttle slowly and smoothly to avoid overboosting.

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Normal Procedures– T182T

Power Check

- On T/O the manifold pressure should be monitored and the throttle set to 32” Hg; then, for max engine power, the mixture should be adjusted as required, during the initial takeoff roll to 24 GPH fuel flow
- Manifold Pressure and Fuel Flow are both shown on the same gauge under the turn co-ordinator, and both needles should be pointing to near the red line.

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Normal Procedures– T182T

Wing Flap Settings

- Normal take off flaps 0-20 degrees
- Using 20° flap reduces the ground roll and total distance over an obstacle by approx. 20%
- On short field, 20° flap is used for takeoff; they should be left down until all obstacles are cleared and a safe flap retraction altitude, and speed of 70 KIAS is reached
- Soft or rough field takeoffs are done with 20° flaps. However, CFC rules say only hard surfaced airports are to be used.

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Normal Procedures– T182T

Crosswind Takeoff

- Under strong x-wind conditions minimum flap setting necessary for the field length, to minimize drift angle immediately after take off
- With ailerons into the wind the aircraft is accelerated to a slightly higher than normal speed and pulled briskly off to prevent possible settling back to the runway while drifting

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Normal Procedures– T182T

MAXIMUM PERFORMANCE CLIMB

- Airspeed – 84 KIAS at Sea Level to 80 KIAS at 20,000 ft
- If obstacle clearance required, 64 KIAS at sea level increasing to 68 KIAS at 20,000 ft, flaps retracted. Monitor engine temperatures. Increase speed as soon as obstacles cleared.
- Power – 32” Hg and 2400 RPM
- Mixture – Adjust to 24 GPH
- Cowl Flaps – Open
- Fuel Selector Valve – Both

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Normal Procedures– T182T

NORMAL CLIMB

Normal climb power should be set at 400 feet AGL

- Airspeed – 90-100 KIAS
- Power – 25” Hg and 2400 RPM
- Mixture – 16 GPH
- Fuel Selector Valve – Both
- Cowl Flaps – Open as required

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Normal Procedures– T182T

NORMAL CLIMB

- Throughout the climb, Manifold Pressure will have to be increased (1” per 1000’) to maintain 25 in MP.
- 200 feet prior to level off, close the cowl flaps to reduce rapid cooling of the engine as the aircraft accelerates.

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Normal Procedures– T182T

CRUISE

- Set Power – 24” Hg (Sea Level – 18 000 ft), 2300 or 2250 RPM
- Elevator and Rudder Trim – Adjust
- Mixture – Lean
- Cowl Flaps – Closed
- Oxygen – Monitor quantity (if in use) and check passengers for adequate supply periodically during flight
- Engine Gauges and Annunciators - Monitor

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Normal Procedures– T182T

LEANING

- Turbine Inlet Temperature (T.I.T.) should be used for leaning in cruising flight
- Cruise is performed at 24” Hg manifold pressure and 2300 or 2250 rpm.
- Power settings must be within the green arcs.
- Cruise performance data in handbook is based on a recommended lean mixture setting, which may be established using the T.I.T. indicator as follows:
  1. Lean the mixture slowly until the T.I.T. peaks and begins to drop or until reaching the T.I.T. red line
  2. Richen the mixture 50F rich of peak T.I.T. or red line (whichever is lower).

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Normal Procedures– T182T

LEANING

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Normal Procedures– T182T

LEANING

- At maximum cruise power settings, the 1685 F limit (red line) T.I.T may occur before reaching peak T.I.T. In this case, richen the mixture from redline 50°F for Recommended Lean Mixture.
- Any change in altitude or power setting will require a change in the recommended lean mixture setting and a recheck of the T.I.T setting

NOTE

OPERATION ON THE LEAN SIDE OF PEAK T.I.T. IS NOT APPROVED

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Normal Procedures– T182T

Staged Cooling and Descent

- Pre-descent planning: Four minutes prior to starting descent, reduce power 1” per minute until you reach 20 in MP. Wait 1 minute before reducing power further.
- After initiating descent, continue to reduce MP by 1” per 1000’ to maintain 20” MP.
- Cowl flaps should be closed for descent.

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Normal Procedures– T182T

Staged Cooling & Descent

- Descent should be initiated far enough in advance of estimated landing to allow a gradual rate of descent (i.e., 500 FPM for passenger comfort) at cruising speed.
- Use this simple calculation – Cruising at 10,000’ with Circuit at 5,000’ will need to lose 5000’. At 500 fpm will need to start descent at least 10 min (2 min per 1000’) prior to arriving in the circuit. Travelling at close to 2 ½ miles per minute in the descent, you will be starting your descent at least 25 miles prior to the airport. Use VCALC on the GPS if desired.
- However, you will need to start reducing from 24” cruise power four minutes before that, or about 35 miles away from the airport.

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Normal Procedures– T182T

Staged Cooling & Descent

- Richen mixture ½ turn every 1000’ descent
- During all phases of flight, cylinder head temperatures and T.I.T. should be monitored. Use of cowl flaps, power and mixture settings should be determined in consideration of cylinder head temperatures and T.I.T.
- Descent should be at approx. 500 ft FPM, using enough engine power to keep the engine warm
- Optimum engine RPM in a letdown is usually the lowest RPM in the green arc range that will allow cylinder head temperature to remain in the recommended operating range

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Normal Procedures– T182T

DESCENT

- Power – As desired once staged power reduction to 20” has been achieved
- Mixture – Richen as required
- Cowl Flaps – Closed
- Altimeter – Set
- Fuel Selector Valve – Both
- Wing Flaps – As desired (0° - 10° below 140 KIAS; 10° - 20° below 120 KIAS; 20° - full below 100 KIAS)

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Normal Procedures– T182T

BEFORE LANDING

- Pilot and Passenger Seat Backs – Most upright position
- Seat and Seat Belts – Secured and Locked
- GUMPS check:
  - Fuel Selector Valve – Both
  - Mixture – Rich
  - Propeller – High RPM
  - Landing/Taxi Lights – ON
  - Autopilot – OFF

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Normal Procedures– T182T

NORMAL LANDING

- Airspeed – 70-80 KIAS (flaps UP)
- Airspeed – 60-70 KIAS (flaps FULL)
- Wing Flaps – As Desired
- a. Below 140 KIAS – 0° to 10°
- b. Below 120 KIAS – 10° to 20°
- c. Below 100 KIAS – 20° to FULL
- Trim – Adjust
- Touchdown – Main Wheels First
- Landing Roll – Lower Nose Wheel Gently
- Braking – Minimum Required

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Normal Procedures– T182T

SHORT FIELD LANDING

- Airspeed – 70-80 KIAS (flaps UP)
- Wing Flaps – FULL (below 100 KIAS)
- Airspeed – 60 KIAS (until flare)
- Trim – Adjust
- Power – Reduce to idle as obstacle is cleared
- Touchdown – Main Wheels First
- Wing Flaps – Retract for maximum brake effectiveness
- Brakes – Apply heavily as flaps retract

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Normal Procedures– T182T

BALKED LANDING

- Power – 32” Hg and 2400 RPM
- Mixture – Adjust to 24 GPH Fuel Flow
- Wing Flaps – Retract to 20°
- Climb Speed – 55 KIAS (after clearing obstacles accelerate to 70 KIAS)
- Wing Flaps – Retract slowly after reaching a safe altitude and 70 KIAS
- Cowl Flaps – Open

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Normal Procedures– T182T

AFTER LANDING

- Same as 172N except:
  - Cowl Flaps – Open

SECURING AIRPLANE

- Same as 172N except:
  - Fuel Selector Valve – Left or Right to prevent cross-feeding
  - Oxygen System – Confirm Off

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Normal Procedures– T182T

COLD WEATHER OPERATION

- The waste gate controller will not respond quickly to variations in manifold pressure when oil temperature is near the lower limit of the green arc. Therefore, under these conditions, throttle motion should be made slowly and care should be exercised to prevent exceeding the 32” Hg manifold pressure limit. In addition, the fuel flow indications may exceed 24 GPH on takeoff if the mixture is not leaned to compensate.
- Cessna says Winterization Kit is not required, but we do have cooling intake baffles that can be installed in cold weather.

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High Altitude Operations– T182T

Oxygen System Usage Requirements

- above 10,000 ft MSL but below 13,000 ft MSL for longer than 30 minutes:
  - use of oxygen for all crew required for all the time above 10,000 ft,
  - Oxygen must be available for 10% of passengers, minimum of one.
- Above 13,000 ft:
  - use of oxygen for all crew required for all the time above 10,000 ft,
  - Oxygen must be available for all passengers.

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High Altitude Operations– T182T

Oxygen System Usage

- If Oxygen use is required:
  - Assemble cannula to hose if not already attached.
  - Adjust cannula to face.
  - Delivery Hose…PLUG INTO OUTLET NEAREST TO THE SEAT YOU ARE OCCUPYING
  - Oxygen Supply Control Knob…ON
  - Hold flow indicator vertical. Adjust knob on delivery hose for the current altitude using the cannula scale on the hose flow indicator.

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High Altitude Operations– T182T

Oxygen System Usage

- When Oxygen is no longer required:
  - Delivery Hose…Unplug from outlet. This automatically stops the flow of oxygen
  - Oxygen Supply Control Knob…OFF

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High Altitude Operations– T182T

CLASS B AIRSPACE OPERATIONS

- Class B airspace is controlled airspace above 12,500 ft ASL, generally on airways or above Terminal Control Areas.
- Control zones can also be designated Class B, but there are currently no Class B control zones in Canada
- Class B airspace operations are conducted under IFR or Controlled VFR only.
- Any and all changes to the flight including, but not limited to, altitude and routing changes must be conducted only after the appropriate clearance from ATC has been obtained, or ATC must be immediately advised in the event of changes required due to an emergency.

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High Altitude Operations– T182T

CLASS B AIRSPACE OPERATIONS

Controlled VFR Requirements

- Pilots intending to fly CVFR SHALL file a flight plan and obtain an ATC clearance PRIOR to entering Class B airspace.
- CVFR flights must be conducted in accordance with procedures designed for use by IFR flights, except when IFR weather conditions are encountered, the pilot of a CVFR flight must avoid such weather conditions. This should be accomplished by:
  - Requesting an amended ATC clearance which will enable the aircraft to remain in VFR weather conditions. This could mean leaving Class B Airspace.
  - Requesting an IFR clearance if the pilot has a valid Instrument Rating and the aircraft is equipped for IFR flight.

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High Altitude Operations– T182T

CLASS B AIRSPACE OPERATIONS

Equipment Requirements for Class B

- Two-way radio communication equipment
- Radio navigation equipment to be used to navigate the flight planned route (GPS, VOR, ADF, etc)
- Transponder with automatic pressure altitude reporting equipment (Mode C or Mode S at minimum)

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High Altitude Operations– T182T

CLASS B AIRSPACE OPERATIONS

Communication Requirements

- Continuous listening watch must be maintained by a flight crew member on a radio frequency assigned by ATC.
- Except as otherwise authorized by ATC, when the aircraft is over a reporting point a position report is transmitted to the appropriate unit or, when so directed by ATC, to an FSS.

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High Altitude Operations– T182T

CLASS B AIRSPACE OPERATIONS

Weather Requirements

- Flights conducted under IFR must be completed in accordance with an IFR clearance.
- Flights conducted under VFR must be conducted in VMC at all times and under Controlled VFR.
- If unable to comply with the above requirements:
  - The aircraft must be operated in VMC at all times.
  - The aircraft must exit Class B controlled airspace by the safest and shortest route, either horizontal or descending
  - An ATC unit must be informed of the actions taken as soon as possible

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EMERGENCY PROCEDURES– T182T

AIRSPEEDS FOR EMERGENCY OPERATIONS

Engine Failure after takeoff, best glide speed

- Wing flaps up 75 KIAS
- Wing flaps down 70 KIAS

Maximum Glide, Flaps Up

- 3100 lb 75 KIAS
- 2600 lb 69 KIAS
- 2300 lb 65 KIAS

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EMERGENCY PROCEDURES– T182T

ENGINE FAILURES

Engine failure procedures as very similar to those for the Cessna 172.

ENGINE FAILURE DURING TAKEOFF ROLL

- Throttle – IDLE
- Brakes – APPLY
- Wing Flaps – RETRACT

If unable to stop on runway:

- Mixture – IDLE CUT OFF
- Ignition Switch – OFF
- Master Switch – OFF
- Fuel Selector – OFF

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EMERGENCY PROCEDURES– T182T

ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

- Airspeed
  - 75 KIAS (flaps UP)
  - 70 KIAS (flaps DOWN)
- Mixture – IDLE CUT OFF
- Fuel Selector Valve – PUSHED DOWN and ROTATE TO OFF
- Ignition Switch – OFF
- Wing Flaps – AS REQUIRED (FULL recommended)
- Master Switch – OFF
- Cabin Door – UNLATCH
- Land – STRAIGHT AHEAD

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EMERGENCY PROCEDURES– T182T

ENGINE FAILURE IN FLIGHT

- Airspeed – 75 KIAS (Best Glide Speed)
- Find a potential landing field, plan and start your approach
- Transmit MAYDAY (while you still have altitude).
- Switch on the ELT.
- Squawk 7700.

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EMERGENCY PROCEDURES– T182T

ENGINE FAILURE IN FLIGHT

RESTART PROCEDURE

If time:

- Fuel Selector Valve – BOTH
- Auxiliary Fuel Pump Switch – ON
- Mixture – RICH (if restart does not occur)
- Ignition Switch – BOTH (or START, if propeller is stopped)

If propeller is windmilling, engine will restart automatically within a few seconds. If propeller has stopped (possible at low speeds), turn ignition switch to START, advance throttle slowly from idle, and lean the mixture from full rich, as required, to obtain smooth operation.

- Auxiliary Fuel Pump Switch – OFF

If the fuel flow indication immediately drops to zero, signifying an engine driven fuel pump failure, return the auxiliary fuel pump switch to ON

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EMERGENCY PROCEDURES– T182T

EMERGENCY LANDING WITHOUT ENGINE POWER

- Passenger Briefing
  - Passenger Seat Backs – MOST UPRIGHT POSITION
  - Seats and Seat Belts – SECURE
- Airspeed
  - 75 KIAS (flaps UP)
  - 70 KIAS (flaps DOWN)
- Mixture – IDLE CUT OFF
- Fuel Selector Valve – PUSH DOWN and ROTATE TO OFF
- Ignition Switch – OFF
- Wing Flaps – AS REQUIRED (FULL recommended)
- Master Switch – OFF (when landing is assured)
- Doors – UNLATCH PRIOR TO TOUCHDOWN
- Touchdown – SLIGHTLY TAIL LOW
- Brakes – APPLY HEAVILY

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EMERGENCY PROCEDURES– T182T

PRECAUTIONARY LANDING WITH ENGINE POWER

- Passenger Briefing:
  - Passenger Seat Backs – MOST UPRIGHT POSITION
  - Seats and Seat Belt – SECURE
- Airspeed – 75 KIAS
- Wing Flaps – 20 degrees
- Selected Field – FLY OVER, noting terrain and obstructions, then retract flaps upon reaching a safe altitude and airspeed
- Decide if a landing is possible and where the touchdown point should be

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EMERGENCY PROCEDURES– T182T

PRECAUTIONARY LANDING WITH ENGINE POWER

- Transmit Pan Call
- Avionics Master Switch and Electrical Switches – OFF
- Wing Flaps – FULL (on final approach)
- Airspeed – 70 KIAS
- Master Switch – OFF
- Doors – UNLATCH PRIOR TO TOUCHDOWN
- Touchdown – SLIGHTLY TAIL LOW
- Mixture – IDLE CUT OFF
- Ignition Switch – OFF
- Brakes – APPLY HEAVILY

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EMERGENCY PROCEDURES– T182T

FIRES

DURING START ON GROUND

- Cranking – CONTINUE to get start which would suck the flames and accumulated fuel into the engine
- If engine starts:
- Power – 1700 RPM for a few minutes
- Engine – SHUTDOWN and inspect for damage

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EMERGENCY PROCEDURES– T182T

FIRES

DURING START ON GROUND

- If engine fails to start
- Throttle – FULL OPEN
- Mixture – IDLE CUT OFF
- Cranking – CONTINUE
- Fuel Selector Valve – PUSH DOWN and ROTATE TO OFF
- Auxiliary Fuel Pump Switch – OFF
- Fire Extinguisher – OBTAIN (have ground attendants obtain if not installed)

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EMERGENCY PROCEDURES– T182T

FIRES

DURING START ON GROUND

- Engine – SECURE
  - Master Switch – OFF
  - Ignition Switch – OFF
- Parking Brake – RELEASE
- Airplane – EVACUATE
- Fire – EXTINGUISH using fire extinguisher, wool blanket or dirt
- Fire Damage – INSPECT, repair damage or replace damaged components or wiring before conducting another flight

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EMERGENCY PROCEDURES– T182T

FIRES

ENGINE FIRE IN FLIGHT

- Mixture – IDLE CUT OFF
- Fuel Selector Valve – PUSH DOWN AND ROTATE TO OFF
- Auxiliary Fuel Pump Switch – OFF
- Master Switch – OFF
- Cabin Heat and Air – OFF (except overhead vents)
- Airspeed – 100 KIAS (If fire is not extinguished, increase glide speed to find an airspeed – within airspeed limitation – which will provide an incombustible mixture)
- Forced Landing – EXECUTE (as described in Emergency Landing Without Engine Power)

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EMERGENCY PROCEDURES– T182T

FIRES

ELECTRICAL FIRE IN FLIGHT

- Master Switch – OFF
- Vents/Cabin Air/Heat – CLOSED
- Fire Extinguisher – ACTIVATE (if available)
- Avionics Master Switch – OFF
- All Other Switches (except ignition switch) – OFF
- Vents/Cabin Air/Heat – OPEN when it is ascertained that fire is completely extinguished
- If possible, proceed to an airport where a safe landing can be made without turning the electrical power back on.

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EMERGENCY PROCEDURES– T182T

FIRES

ELECTRICAL FIRE IN FLIGHT

If fire has been extinguished and electrical power is necessary for continuance of flight to nearest suitable airport or landing area

- Master Switch – ON
- Circuit Breakers – CHECK for faulty circuit, do not reset
- Radio Switches – OFF
- Avionics Master Switch – ON
- Radio/Electrical Switches – ON one at a time (only what's necessary), with delay to check if problem is with the circuit just turned on.

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EMERGENCY PROCEDURES– T182T

FIRES

CABIN FIRE

- Master Switch – OFF
- Vents/Cabin Air/Heat – CLOSED (to avoid drafts)
- Fire Extinguisher – ACTIVATE (if available)
- Vents/Cabin Air/Heat – Open when it is ascertained that fire is completely extinguished
- Land the airplane as soon as possible to inspect for damage

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EMERGENCY PROCEDURES– T182T

FIRES

WING FIRE

- Landing/Taxi Light Switches – OFF
- Navigation Light Switch – OFF
- Strobe Light Switch – OFF
- Pitot Heat Switch – OFF

Perform a sideslip to keep the flames away from the fuel tank and cabin. Land as soon as possible using flaps only as required for final approach and touchdown.

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EMERGENCY PROCEDURES– T182T

ICING

- Turn Pitot Heat switch – ON
- Turn Prop Heat switch – ON.
- Confirm green PROP HEAT light on glareshield comes on.
- Turn back or change altitude to obtain an outside air temperature that is less conducive to icing
- Pull cabin heat control full out and rotate defroster control clockwise to obtain maximum defroster airflow
- Increase engine speed to minimize ice buildup on propeller blades
- Watch for signs of induction air filter icing. An unexplained loss of manifold pressure could be caused by ice blocking the air intake filter. Adjust the mixture, as required, for any change in power settings
- Plan a landing at the nearest airport. With an extremely rapid ice buildup, select a suitable “off airport” landing site.

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EMERGENCY PROCEDURES– T182T

ICING

- With an ice accumulation of ¼” or more on the wing leading edges, be prepared for significantly higher stall speeds
- Leave wing flaps retracted. With severe ice buildup on the horizontal tail, the change in wing wake airflow direction caused by wing flap extension could result in a loss of elevator effectiveness.
- Open left window and if practical scrape ice from a portion of the windshield for visibility in the landing approach
- Perform a landing approach using a forward slip, if necessary, for improved visibility
- Approach at 80-90 KIAS depending upon the amount of the accumulation
- Perform a landing in level attitude

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EMERGENCY PROCEDURES– T182T

STATIC SOURCE BLOCKAGE

(Erroneous Instrument Reading Suspected)

- Static Pressure Alternate Source Valve – PULL ON
- Airspeed – Consult appropriate tables in Section 5 of the Pilot Operating Handbook
- Altitude – Consult appropriate tables in Section 5 of the Pilot Operating Handbook

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EMERGENCY PROCEDURES– T182T

LANDING WITH A FLAT MAIN TIRE

- Approach – NORMAL
- Wing Flaps – FULL DOWN
- Touchdown – GOOD MAIN WHEEL FIRST, hold airplane off flat tire as long as possible with aileron control
- Directional Control – MAINTAIN using brake on good wheel as required

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EMERGENCY PROCEDURES– T182T

LANDING WITH A FLAT NOSE TIRE

- Approach – NORMAL
- Flaps – AS REQUIRED
- Touchdown – ON MAINS, hold nose wheel off the ground as long as possible
- When nose wheel touches down, maintain full up elevator as airplane slows to a stop

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EMERGENCY PROCEDURES– T182T

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

AMMETER SHOWS EXCESSIVE RATE OF CHARGE (Full Scale Deflection)

- Alternator – OFF
- Nonessential Electrical Equipment – OFF
- Flight – TERMINATE as soon as practical
- Be aware that the Heading Indicator (HSI) is electric and may fail.

NOTE:

WITH THE ALTERNATOR SIDE OF THE MASTER SWITCH OFF, COMPASS DEVIATIONS OF AS MUCH AS 25 DEGREES MAY OCCUR

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EMERGENCY PROCEDURES– T182T

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

LOW VOLTAGE ANNUNCIATOR (VOLTS) ILLUMINATES DURING FLIGHT (AMMETER INDICATES DISCHARGE)

- Avionics Master Switch – OFF
- Alternator Circuit Breaker (ALT FLD) – CHECK IN
- Master Switch – OFF (both sides)
- Master Switch – ON
- Low Voltage Annunciator (VOLTS) – CHECK OFF
- Avionics Master Switch – ON

If low voltage annunciator (VOLTS) illuminates again:

- Alternator – OFF
- Non-essential Radio and Electrical Equipment – OFF
- Flight – Terminate as soon as practicable

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EMERGENCY PROCEDURES– T182T

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

LOW VOLTAGE ANNUNCIATOR (VOLTS) ILLUMINATES DURING FLIGHT (AMMETER INDICATES DISCHARGE)

NOTES:

Illumination of “VOLTS” on the annunciator panel may occur during low RPM conditions with an electrical load on the system such as during a low RPM taxi. Under these conditions, the annunciator will go out at higher RPM. The master switch need not be recycled since an overvoltage condition has not occurred to deactivate the alternator system

WITH THE ALTERNATOR SIDE OF THE MASTER SWITCH OFF, COMPASS DEVIATIONS OF AS MUCH AS 25 DEGREES MAY OCCUR

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EMERGENCY PROCEDURES– T182T

VACUUM SYSTEM FAILURE

- Left Vacuum Annunciator (L VAC) or Right Vacuum Annunciator (VAC R) Illuminates
- Vacuum Gauge – CHECK to ensure vacuum within normal operating limits.

IF VACUUM IS NOT WITHIN NORMAL OPERATING LIMITS, A FAILURE HAS OCCURRED IN THE VACUUM SYSTEM AND PARTIAL PANEL PROCEDURES MAY BE REQUIRED FOR CONTINUED FLIGHT

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EMERGENCY PROCEDURES– T182T

Landing without Elevator Control

- Trim for horizontal flight with an airspeed of approximately 80 KIAS by using the throttle and elevator trim controls.
- Then **DO NOT CHANGE THE ELEVATOR TRIM CONTROL SETTING**; control the glide angle by adjusting power exclusively
- At flare out, the nose down moment resulting from power reduction is an adverse factor and the airplane may hit on the nose wheel
- Consequently, at flare out, the elevator trim control should be adjusted toward the full nose up position and the power adjusted so that the airplane will rotate to the horizontal attitude for touchdown.
- Close throttle at touchdown

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EMERGENCY PROCEDURES– T182T

Emergency Operation in Clouds

- If both vacuum pumps fail in flight the attitude indicator will fail and you will have to rely on the turn coordinator and HSI.
- However, the autopilot will still work, as long as the aircraft has electrical power.

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EMERGENCY PROCEDURES– T182T

Executing a 180 turn in clouds with only the turn co-ordinator and no autopilot

- Note compass heading
- Using the clock, initiate a standard rate left turn, holding the turn coordinator symbolic airplane wing opposite the lower left index mark for **60 SECONDS**. Then roll back to level flight by leveling the miniature airplane
- Check accuracy of the turn by observing the compass heading which should be reciprocal of the original
- If necessary, adjust heading primarily with skidding motions rather than rolling motions so compass is more accurate
- Maintain altitude and airspeed by cautious application of elevator control. Avoid over controlling by keeping the hands off the control wheel as much as possible and steering only with rudder

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EMERGENCY PROCEDURES– T182T

Emergency Descent Through Clouds for Non-Instrument Pilots

- If can't establish VFR by a 180° turn, a descent through a cloud deck to VFR conditions may be appropriate
- If possible, obtain radio clearance for an emergency descent through clouds
- To guard against a spiral dive, choose an easterly or westerly heading to minimize compass card swings due to changing bank angles
- In addition, keep hands off the control wheel and steer a straight course with rudder control by monitoring the turn coordinator
- Occasionally check the compass heading and make minor corrections to hold approximate course

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EMERGENCY PROCEDURES– T182T

Emergency Descent Through Clouds for Non-Instrument Pilots (cont'd)

- Before descending into clouds, set up a stabilized letdown condition as follows
  - Apply full rich mixture
  - Reduce power to set up a 500-800 FPM rate of descent
  - Adjust the elevator trim and rudder trim for a stabilized descent at 80 KIAS
- Keep hands off the control wheel
- Monitor turn coordinator and make corrections by rudder alone
- Adjust rudder trim to relieve unbalanced rudder force, if present
- Check trend of compass card movement and make cautious corrections with rudder to stop the turn
- Upon breaking out of clouds, resume normal cruising flight

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EMERGENCY PROCEDURES– T182T

Recovery from Spiral Dive in the Clouds

If a spiral is encountered in the clouds, proceed as follows:

- Retard throttle to idle position
- Stop the turn by using coordinated aileron and rudder control to align the symbolic airplane in the turn coordinator with the horizon reference line
- Cautiously apply elevator back pressure to slowly reduce the airspeed to 80 KIAS
- Adjust the elevator trim control to maintain an 80 KIAS glide
- Keep hands off the control wheel, using rudder control to hold a straight heading
- Clear engine occasionally, but avoid using enough power to disturb the trimmed glide
- Upon breaking out of the clouds, resume normal cruising flight

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EMERGENCY PROCEDURES– T182T

Spins

INTENTIONAL SPINS ARE PROHIBITED IN THIS AIRPLANE.

Should an inadvertent spin occur, the following recovery procedure should be used:

- Retard throttle to idle position
- Place ailerons in the neutral position
- Apply and **hold** full rudder opposite to the direction of the rotation
- Just **after** the rudder reaches the stop, move the control wheel **briskly** forward far enough to break the stall
- **Hold** these control inputs until rotation stops. Premature relaxation of the control inputs may extend the recovery
- As rotation stops, neutralize rudder, and make a smooth recovery from the resulting dive

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EMERGENCY PROCEDURES– T182T

Rough Engine Operation or Loss of Power

Spark Plug Fouling

- May be caused by a spark plug(s) becoming fouled by carbon or lead deposits
- Can be verified by turning ignition switch momentarily from BOTH to either L or R position. An obvious loss of power is evidence of spark plug or magneto trouble
- Assuming spark plug
  - Lean mixture to recommended lean setting for cruising flight
  - If problem does not clear up in several minutes, determine if a richer mixture setting will produce a smoother operation
  - If not, proceed to the nearest airport for repairs using BOTH position of the ignition switch unless extreme roughness dictates the use of a single ignition position

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EMERGENCY PROCEDURES– T182T

Rough Engine Operation or Loss of Power

Magneto Malfunction

- Sudden engine roughness or misfiring is usually evidence of faulty mag
- Switching from BOTH to either L or R ignition switch position will identify which magneto is malfunctioning
- Select different power settings and richen the mixture to determine if continued operation on BOTH magnetos is practicable
- If not, switch to good magneto and proceed to nearest airport for repairs

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EMERGENCY PROCEDURES– T182T

Rough Engine Operation or Loss of Power

Engine Driven Fuel Pump Failure

- Will be evidenced by a sudden reduction in the fuel flow indication **immediately prior to a loss of power**, while operating from a tank that contains adequate fuel
- Immediately turn the auxiliary fuel pump ON to restore the engine power
- Terminate flight when practical and have fuel pump repaired

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EMERGENCY PROCEDURES– T182T

Low Oil Pressure

- If low oil pressure annunciator (OIL PRESS) illuminates, check oil pressure gauge to confirm low oil pressure condition
- If oil pressure and oil temp remain normal, it is possible the oil pressure sending unit or relief valve is malfunctioning
- However, land at the nearest airport to determine the source of trouble
- If loss of oil pressure is accompanied by a rise in oil temperature, engine failure may be imminent
- Reduce engine power immediately and select a suitable forced landing field. Use only the minimum power required to reach the desired touchdown spot

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EMERGENCY PROCEDURES– T182T

Windshield Damage

- If a bird strike or other incident should damage the windshield in flight creating an opening a significant loss of performance may be expected
- This may be potentially minimized by opening a window while the airplane is maneuvered for landing at the nearest airport
- If airplane performance precludes landing at an airport, prepare for an “off airport” landing in accordance with the Precautionary Landing with Engine Power or Ditching checklists.

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CROSS-COUNTRY EMERGENCY PROCEDURES– T182T

Weather Deviations Around Thunderstorms

Note:

As per POH Supplement 23, the WX-500 Stormscope is approved for use only in avoiding hazardous weather (thunderstorms); use of the WX-500 to penetrate hazardous weather is prohibited.

- Stormscope…CONFIRM ON

Notes:

A yellow lightning bolt on a light blue background signifies that Stormscope data is being displayed.

A black lightning bolt on a grey background indicates that Stormscope data is not being displayed.

A black lightning bolt on a grey background with a red slash and circle (international "NO" symbol) indicates that there is a problem with the WX-500 unit.

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CROSS-COUNTRY EMERGENCY PROCEDURES– T182T

Weather Deviations Around Thunderstorms

- Stormscope…ADJUST AND CHECK AS REQUIRED

Note:

Utilize stormscope information to assist with determining areas of thunderstorms to be deviated around.

If deviation is required:

- ATC…ADVISE IF REQUIRED
- Deviation…COMPLETE
- Track Correction…COMPLETE
- Fuel…CHECK

Note

It is recommended to determine fuel utilized prior to the deviation and fuel utilized during the deviation and reassess the current fuel situation and compare it against the flight plan requirements.

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CROSS-COUNTRY EMERGENCY PROCEDURES– T182T

Weather Deviations Around Thunderstorms

If diversion is required:

- Diversion Destination…DETERMINE
- Direction…DETERMINE
- Diversion to Alternate Aerodrome…INITIATE
- Distance…CALCULATE
- Time to Alternate…CALCULATE
- Altitude…ADJUST

Note

A safe altitude should be selected giving consideration to all important factors including but not limited to weather, obstacle/terrain clearance, and traffic.

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CROSS-COUNTRY EMERGENCY PROCEDURES– T182T

Weather Deviations Around Thunderstorms

Fuel…CALCULATE

- Endurance + Takeoff Time = Fuel Exhaustion Time
- Fuel Exhaustion Time less ETA at Alternate = Fuel Remaining at Alternate (hrs and minutes)
- Fuel…Confirm Fuel Remaining at Alternate is greater than applicable required reserves and contingencies.
- FSS/ATC…ADVISE

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CROSS-COUNTRY EMERGENCY PROCEDURES– T182T

EMERGENCY DESCENT FROM ABOVE 10,000 FT

The following procedure is based upon general practice in absence of a published procedure.

If Emergency Descent is required:

- Safe Altitude…DETERMINE

Selected safe altitude to descend to should be 10,000ASL or the minimum altitude that would permit safe flight with respect to weather and terrain avoidance (whichever is greater)

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CROSS-COUNTRY EMERGENCY PROCEDURES– T182T

EMERGENCY DESCENT FROM ABOVE 10,000 FT

- Heading…TURN IF REQUIRED
- Power…IDLE
- Propeller Control…FULL FORWARD
- Airspeed…HOLD Va
- Transponder…7700
- ATC…ADVISE
- Desired Altitude…MAINTAIN
- Destination…DIVERT OR CONTINUE AS REQUIRED

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CROSS-COUNTRY EMERGENCY PROCEDURES– T182T

Severe Turbulence Encounters

During the turbulence:

- Seatbelts…ENSURE FASTENED
- Airspeed…REDUCE TO Va OR LESS
- Attitude…MAINTAIN LEVEL ATTITUDE
- Deviations…CONSIDER

Note

Changes to altitude or heading should be determined with consideration to factors such as but not limited to obstacle/terrain clearance, weather, aircraft loading.

After completion of flight in which severe turbulence was encountered:

- Journey Log…COMPLETE ENTRY IN DEFECTS COLUMN

Encounters with severe turbulence require maintenance action and therefore require a snag entry in the Journey Log

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Calgary Flying Club Operating Rules and Limits– T182T

Recurrent Training

Recurrent training is completed once a year and is dependant on the type of checkout the member is seeking.

VFR Below 10,000ft Day or Night

- **Lesson Plan 4 or 5** may be completed as part of the recurrent training dependent on Day or Night check.

VFR Above 10,000ft

- **Lesson Plan 6** may be completed as part of recurrent training. Weather permitting, alternative routes may be selected as long as the objectives for that lesson are completed.

IFR All altitudes

- **Lesson Plan 8** may be completed as part of the recurrent training. Destination may be adjusted to meet WX and altitude (below or above 10,000ft) requirements

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Calgary Flying Club Operating Rules and Limits– T182T

The aircraft shall be operated in accordance with this aircraft operating manual and any limitations contained therein.

Fuel Limitations

Minimum Fuel Quantity: 46 U.S. Gal OR Fuel required for flight + 45 min, **whichever is greater**

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Calgary Flying Club Operating Rules and Limits– T182T

Airport Runway Limitations

All CFC T182T aircraft are permitted to land on paved (Asphalt) runways at registered aerodromes only. (Aerodrome must exist in the CFS)

Minimum runway length

2500 ft or as per calculated from the POH for the existing conditions, whichever is greater

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Calgary Flying Club Operating Rules and Limits– T182T

Operations on Contaminated Runways:

A runway is considered contaminated when 25% or more of the required length and width of the runway is contaminated.

CFC T182T aircraft are permitted to take off and land on Dry, Wet and Trace contaminated runways. Trace contamination refers to any contaminant with a depth of 1/8in (0.13 in) or less.

Wind Limitations

Maximum tailwind for take off and landing operations: 10 knots

Maximum crosswind component for take off and landing: 15 knots

All other CFC wind limits also apply

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Calgary Flying Club Operating Rules and Limits– T182T

Parking Limitations

When the OAT is below 0°C, it is the responsibility of the PIC to store the aircraft in a heated hangar.

It is also the responsibility of the PIC to store the aircraft in a hangar when thunderstorms are forecast.

Flight in IMC (Instrument Meteorological Conditions)

An operational Autopilot is required for all flights in IMC.

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AVIONICS– T182T

C-GPMK AVIONICS STACK

The avionics stack in GPMK contains the following equipment:

- Garmin GTN 750Xi (Nav 1)
- 2nd Com radio with VOR/LOC/GS (Nav 2)
- Garmin transponder
- Bendix/King KAP 140 2-axis autopilot with altitude pre-select

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CFC's Cessna T182T

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AVIONICS– T182T

GARMIN GTN 750Xi

The avionics stack in GPMK contains the following equipment:

- Garmin GTN 750Xi

  This contains:

  – GPS/nav display
  – Comm 1
  – Audio panel
  – VOR/LOC/GS (Nav 1)
  – Stormscope display
  – ADS-B traffic display

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AVIONICS– T182T

GARMIN GTN 750Xi

- Touchscreen technology makes this unit far easier and faster to use than the 430/530 series.
- In addition to the Map display, also has pages for:
  - Flight plan entry
  - Procedures selection (Departures/Arrivals/Approaches)
  - Nearest (airports/waypoints/ATC/FSS, etc.)
  - Charts
  - Traffic
  - Weather (if subscribed)
  - Terrain
  - Waypoint info

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AVIONICS– T182T

GARMIN GTN 750Xi

- One important feature is VCALC, which allows the pilot to input altitude and descent rate info, after which it will calculate the time to start descent to destination. Working back from that time, you can tell when to start reducing manifold pressure towards 20” in preparation for descent.
- Unit can also give guidance for entry and establishment in holds.
- Glide range ring tells you how far you can glide in the event of an engine failure.
- Fuel range ring gives an indication of range based on the fuel amount and consumption info provided, based on current performance and wind.

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AVIONICS– T182T

GARMIN GTN 750Xi

- Basic operation will be reviewed on checkout in the aircraft

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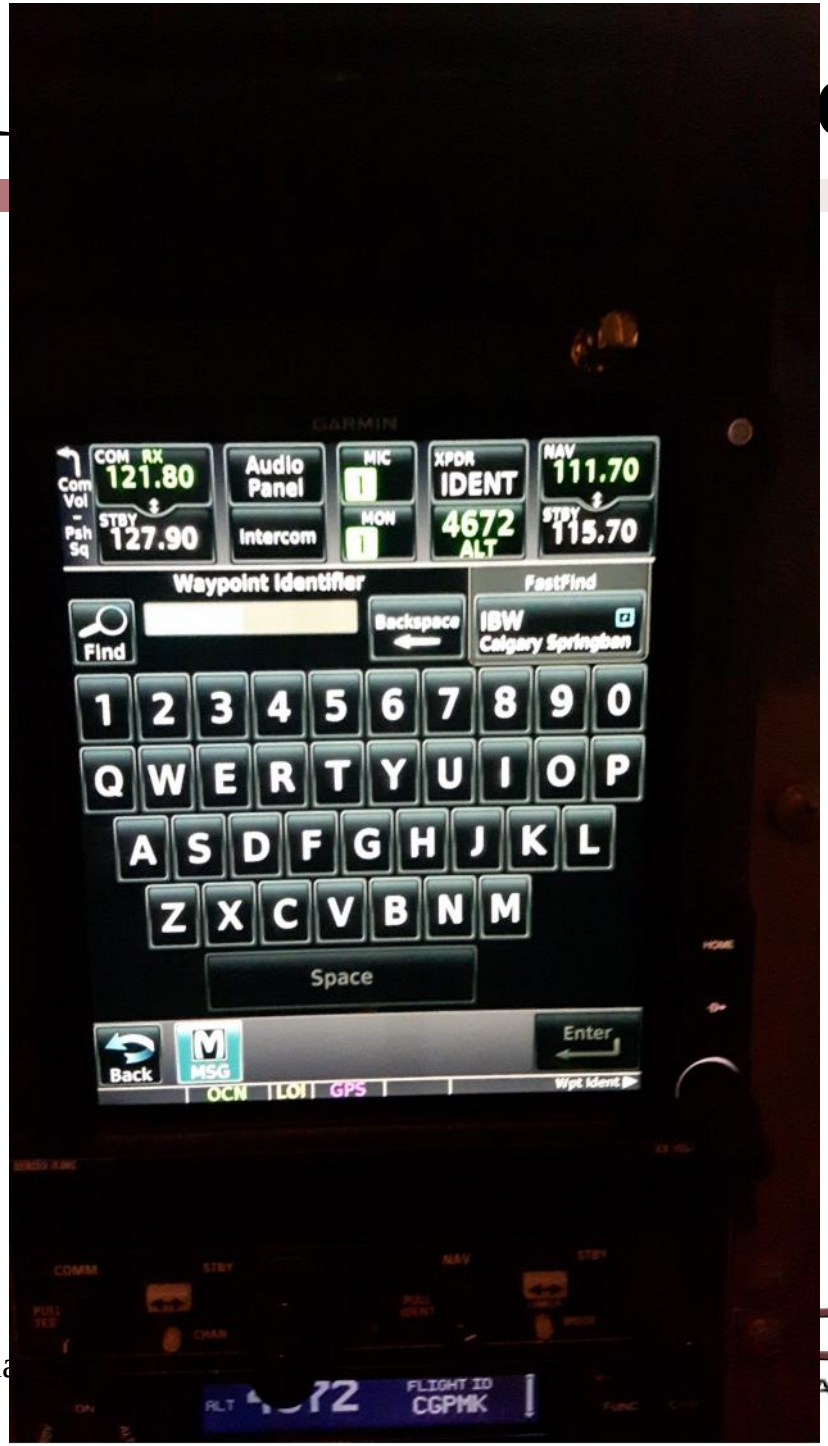

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AVIONICS– T182T

Bendix/King KAP 140 Autopilot

- Basic ROL (wing leveler)/HDG/NAV/APR modes for lateral/directional control
- Pitch and VS modes, plus Altitude pre-select capability for pitch/altitude control

Autopilot Limitations

- Maximum Airspeed: 160 KIAS
- Minimum Airspeed: 80 KIAS
- Recommended Approach Speed: 100 KIAS
- Maximum Flap Extension with AP engaged: 10°
- Take off: Autopilot can be engaged after 800 feet AGL
- Approach and Landing: Autopilot must be disengaged prior to 800 feet AGL on approach. The only exception to this is when the APR mode is active. With APR mode active, the autopilot must be disengaged prior to 200 feet AGL.

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AVIONICS– T182T

Bendix/King KAP 140 Autopilot

- Autopilot operation will be reviewed on checkout in the aircraft

Standard Call-Outs for Autopilot Usage

Phase of Flight	Call-Outs
Autopilot engage	"AUTOPILOT ON"
Autopilot disengaged	"AUTOPILOT DISENGAGED"
Approaching transition altitude/flight level	"TRANSITION ____ SET"
Altitude Change	" ____ FEET SET " OR "____ ALT ARM " (If AP is engaged)
1000 Feet above/below desired Altitude	"16000 FOR 17000" OR "16000 FOR 17000, ALT ARM" (if AP is engaged)
100 Feet above/below desired Altitude	"100 ABOVE/BELOW, LEVELLING"
Extending Flaps	"SPEED CHECKS ____ KTS FLAPS __"

Autopilot Mode Change Call-Outs

All Autopilot Mode changes must be called out.

Example: When switching from HDG to NAV mode, call "NAV"

When on vectors for an ILS approach and arming APR mode, call "APR armed"

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AVIONICS– T182T

T182T TYPE CHECK EXAM

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