

T210 Aircraft Checkout

Training Guide

REFERENCES

- ☐ T210 POH
- ☐ SCFC Member Regulations

MINIMUMS

- ☐ 300 hours total time
- ☐ 10 hours in complex
- ☐ 10 hours in high performance
- ☐ 5 hours Turbo
- ☐ 5 hours in T210
- ☐ 2 hours solo in T210
- ☐ 10 takeoffs and landings in T210

GROUND REVIEW

High Performance Engine

- ☐ High Performance aircraft because it is rated at >200 hp
- ☐ Two maximum power settings
 - ☐ 5-minute max power = 310 hp: 36.5"Hg @ 2700 RPM used for takeoff and high-power climbs
 - ☐ Continuous max power = 285 hp: 35"Hg @ 2600 RPM for all other operations
- ☐ Fuel injected
- ☐ Cowl flaps to aid in cooling (more power = more heat output)
 - ☐ Cowl flaps open: start, surface taxi, takeoff, climb, go-around
 - ☐ Cowl flaps closed: cruise, descent
- ☐ Rudder trim to reduce pedal pressure and increase pilot comfort

Turbocharged Engine

- ☐ Basic design and function of a turbocharger
- ☐ Definition of Critical Altitude
- ☐ T210 Critical Altitude is 17,000 feet
- ☐ Below 17,000 feet
 - ☐ Do not lean for climb even after initial 5 minute throttle back
- ☐ Above 17,000 feet
 - ☐ Reduce maximum Manifold Pressure down from 35" by 1" for every 1,000 feet above 17,000 feet.
- ☐ Service Ceiling 24,000MSL
- ☐ Turbocharged engines susceptible to damage from poor engine temperature management
- ☐ Plan ahead, and reduce power slowly in descent to avoid shock cooling

- ☐ Engine must run at least 5 minutes after power reduced to idle to allow for heat dissipation
- ☐ Explanation of TIT

Intercooler

- ☐ Basic design and function of intercooler
- ☐ Reduces all engine operating temperatures (inlet air, CHT, valve, oil, EGT, CDT)
- ☐ Intercooled air being chilled is more dense => more fuel burn => more HP power than published for given MP and RPM
- ☐ On takeoff (in standard conditions)
 - ☐ Slowly advance throttle until differential temperature = -30 °C
 - ☐ Reduce power if differential temperature is more negative than -30 °C
- ☐ For every 15 °C above standard temperature, add 1" of manifold pressure
- ☐ For every 15 °C below standard temperature, subtract 1" of manifold pressure

Constant Speed Propeller

- ☐ Three blade, constant speed propeller
- ☐ Q-tip propeller blade has curled a tip (looks different, not the result of damage)
- ☐ Hydraulically actuated
- ☐ High RPM for high power
- ☐ Low RPM for cruise efficiency
- ☐ In engine-out emergencies, set to low RPM (better windmilling, less drag)

Retractable Landing Gear

- ☐ Extend and retract using handle in cockpit
- ☐ Don't confuse landing gear lever and flap control
- ☐ Gear are hydraulically actuated
- ☐ There are two Landing Gear Position Indicator lights:
 - ☐ One Green light: gear are down and locked
 - ☐ One Amber light: gear are up and locked
 - ☐ No Light: gear are in transition (or light burned out, test light in runup)
- ☐ For emergency gear extension: hand pump until heavy resistance ~35 pumps
- ☐ $V_{LO} = 165$ kts, do not extend or retract gear above this speed
- ☐ $V_{LE} = V_{NE}$

SCFC Member Regulations / Limitations

- ☐ No touch and go's in complex or high-performance aircraft
- ☐ No aerobatics, which means no intentional spins
- ☐ Flight into known icing is prohibited

Fuel Systems

- ☐ 3 fuel tanks
 - ☐ Left and right main tanks hold 45 gallons each
 - ☐ Rear auxiliary tank holds 28 gallons
 - ☐ 90 gallons, 89 gallons usable fuel in mains
 - ☐ Rear 28g auxiliary tank pumps to Right only

- ☐ Fuel selection has only Left, Right, and Off positions (no both)
- ☐ Switch tanks every 30 minutes using timer on Garmin 345 transponder
- ☐ Fill main tanks slowly and rock wings avoid air bubbles in mains
- ☐ Vents on outside of both wings
 - ☐ Taxi slow around turns
 - ☐ Park with wings level
- ☐ Fuel in POH and some fuel gauges shown in pounds/hr not gallons/hr (AvGas is about 6 pounds/gallon)
- ☐ G750 slave to JPI for fuel capacity calculations

Electrical System

- ☐ 24 volt system
- ☐ Alternator, battery 28V
- ☐ Voltmeter, ammeter
- ☐ Low volts indicator red upper left on panel ?

Instruments, Gauges, and Indicators

- ☐ Location and indication of primary flight instruments
- ☐ Heading bug
- ☐ Control of instrument lighting

Engine Monitoring Instruments

- ☐ Manifold pressure gauge for power settings
- ☐ Fuel flow shown in pounds/hr (not gallons/hr)
- ☐ CHT, EGT, TIT
- ☐ Intercooler temperature difference

Radios / Intercom

- ☐ Audio panel operation
- ☐ Intercom isolation settings
- ☐ Intercom volume vs radio volume
- ☐ Intercom squelch vs. radio squelch
- ☐ Test during runup prior to use
- ☐ Nav1/Nav2 sourcing for CDI ?

GPS

- ☐ Basic GPS operation
- ☐ GPS startup screen
- ☐ GPS menus and display screens
- ☐ Direct To function
- ☐ Using GPS to identify and divert to nearest airport
- ☐ Using GPS to determine distance to a waypoint
- ☐ How to view moving map page (if separate unit)
- ☐ How to view/clear GPS messages and alerts

Autopilot

- ☐ 2-axis,
- ☐ Lateral navigation modes
- ☐ Vertical navigation modes Alt hold, set pitch
- ☐ Test during runup prior to use
- ☐ What inputs autopilot uses (T/C, heading bug, altitude bug, HSI, etc.)
- ☐ 3 ways to disconnect the autopilot (yoke toggle, GA button, autopilot on/off)
- ☐ Electric elevator pitch trim can be pilot activated

Moving Map / Multi-Function Display

- ☐ Moving map set meaningfully
- ☐ Traffic
- ☐ Weather

Oxygen System

- ☐ Oxygen system is built in
- ☐ Can be refilled at KSQL by Rabbit Aviation (allow sufficient time)
- ☐ Using cannulas vs. using masks
- ☐ Oxygen mask usage is mandatory above 18,000 feet
- ☐ Personal oximeter use is strongly recommended whenever you use onboard oxygen (bring your own, oximeter is not part of standard equipment)

Airplane Performance Charts

- ☐ Takeoff
- ☐ Climb
- ☐ Cruise
- ☐ Landing

Weight and Balance Limitations

- ☐ Different maximum gross weights for ramp, takeoff, and landing
- ☐ Baggage weight limitations divided by storage areas
- ☐ Six seats does not guarantee 6-person carrying capacity
- ☐ Use of Aft Fuel tank to prevent Forward CG issues

FLIGHT TRAINING PORTION

Aircraft Familiarization

- ☐ Aircraft cover, use caution to keep debris off soft side to avoid scratching windscreen surface
- ☐ Maximum ramp weight 4,016 lbs, too heavy to push or tow by oneself
- ☐ Tie down hooks are spring-loaded to stow in upper wing
- ☐ Oil door located on top of engine cowling, may be hard to reach, and hard to position funnel into filler neck to service oil without spilling
- ☐ Oxygen masks and cannulas stowed in baggage compartment
- ☐ Oxygen filling port located right wing root

Cockpit Familiarization

- ☐ Pilot seat safety release lever
- ☐ Propeller control
- ☐ Rudder trim control
- ☐ Cowl flaps control
- ☐ Avionics and circuit breaker panel
- ☐ Alternator circuit breaker
- ☐ Gear pump circuit breaker
- ☐ Autopilot and electric trim disconnect on yoke
- ☐ Timer on Garmin 345 transponder (for fuel switching and 5 minute cool down)
- ☐ Landing gear handle
- ☐ Gear position lights
- ☐ Emergency landing gear extension handle and operation
- ☐ Fuel selector positions (no Both position)
- ☐ Fuel transfer switch and rear tank gauge (Off on start)
- ☐ Intercooler digital readout (IN / OUT & DIF)
- ☐ Manifold pressure and fuel flow gauge (pounds per hour x10)
- ☐ Graphic engine monitor shows CHT and TIT
- ☐ Oxygen system on/off lever and oxygen level gauge

Preflight Inspections

- ☐ Push on landing gear
- ☐ Cowl flaps open during preflight to test operation
- ☐ Stall horn is electric tab, power must be on to check operation (90-hz buzz)
- ☐ Need ladder to inspect main tanks (provided in baggage)
- ☐ Different fuel sampler for rear tank (2 sump positions)

Start

- ☐ Cowl flaps open
- ☐ Propeller control full forward = high RPM
- ☐ Priming 5 seconds after fuel flow stabilizes

Taxi

- ☐ Initial contact with Ground Control
- ☐ Knowledge of SQL departure procedures
- ☐ Understanding and compliance of taxi instructions
- ☐ Cowl flaps open for taxi
- ☐ Turn and maneuver slowly avoid fuel spillage

Runup

- ☐ Cycle prop 3x: rpm drop, oil pressure drop, manifold pressure increase
- ☐ Rudder trim to takeoff
- ☐ Flaps 10° for all takeoffs

Takeoff #1

- ☐ Tower communication for departure
- ☐ Power up right to left
- ☐ Mixture rich, propeller forward, throttle full
- ☐ Intercooler Temp -30°C in standard conditions (adjust for OAT)

Departure #1

- ☐ Departs using standard airport departures or as instructed by control tower
- ☐ Can understand and comply with tower departure instructions
- ☐ Comply with established Noise Abatement Procedures

Climb Check #1

- ☐ Intercooler Temp -30°C in standard conditions (adjust for OAT)
- ☐ Power back to 35" (mandatory)
- ☐ Propeller to 2500 RPM
- ☐ Fuel flow per POH
- ☐ Do not lean for climb below 17,000 feet
- ☐ Rudder trim

Cruise

- ☐ Power to cruise (as desired)
- ☐ Propeller to cruise (as desired)
- ☐ Cowl flaps closed
- ☐ Mixture lean per the POH (TIT below 1500 °C)
- ☐ Rudder trim

Flight Maneuvers

- ☐ Straight and level flight at various airspeeds, including slower flight
- ☐ Power-off stall and recovery
- ☐ Simulated alternator failure
- ☐ Simulated Emergency gear extension
- ☐ Autopilot usage (HDG and NAV modes, altitude hold)
- ☐ If instrument rated, fly a coupled ILS approach
- ☐ Short approach

Descent

- ☐ Adjust mixture for smooth operation (full rich for idle operation)
- ☐ Gradual descent 1" / minute MP reduction avoid shock cooling Turbo
- ☐ Plan descent and shutdown to protect turbo are critical to avoid damage
- ☐ Cowl flaps closed
- ☐ Rudder trim

Return to SQL #1

- ☐ Visually identify landmarks local to the airport
- ☐ Initial radio contact and arrival communication

- ☐ Enter traffic pattern using established procedures or as instructed by control tower
- ☐ Comply with reporting instructions

Landing #1

- ☐ Pre-Landing Checklist
- ☐ Verify landing gear extended
- ☐ Cowl flaps open for landing
- ☐ Prop High RPM
- ☐ Mixture appropriate for power setting and altitude
- ☐ Complies with all V_{FE} limitations
- ☐ Stabilized 70 kts on final approach

After Landing

- ☐ Clears runway and runway exit at SQL
- ☐ Cowl flaps open for taxi

The following tasks are required for New Member Checkout in T210

Departure #2 (different direction from Departure #1)

- ☐ Airport communication for departure
- ☐ Departs using standard airport departures or as instructed by control tower
- ☐ Can understand and comply with tower departure instructions
- ☐ Comply with established Noise Abatement Procedures

Climb Check #2

- ☐ Intercooler Temp -30°C or more negative
- ☐ Power back to 35" (mandatory)
- ☐ Propeller to 2400 RPM
- ☐ Do not lean below 17,000 feet
- ☐ Rudder trim

Return to SQL #2

- ☐ Visually identify landmarks local to the airport
- ☐ Re-entry radio contact and arrival communication
- ☐ Enter traffic pattern using established procedures or as instructed by control tower
- ☐ Comply with traffic pattern entry instructions
- ☐ Comply with reporting instructions

Landing #2

- ☐ Pre-Landing Checklist
- ☐ Cowl flaps closed for landing
- ☐ Prop High RPM
- ☐ Mixture appropriate for power setting and altitude
- ☐ Complies with all V_{FE} limitations
- ☐ Stabilized 70 kts on final approach

After Landing

- ☐ Clears runway and runway exit at SQL
- ☐ Cowl flaps open for taxi
- ☐ 5 minute cooldown procedure before turning off engine

Additional Takeoffs and Landings (as directed by Flight Instructor)

- ☐ Normal takeoff and landing
- ☐ Crosswind takeoff and landing
- ☐ Go around
- ☐ Short-field takeoff and landing (flaps 10°, $V_R = 65$, $V_{X20^\circ} = 78$ until clear)
- ☐ Soft-field takeoff and landing (flaps 10°, nose wheel liftoff ASAP)

Taxi to Parking

- ☐ Understands and complies with taxi instructions
- ☐ Drive back into spot (no touch on spinner)
- ☐ Position such that wings are level no fuel draining through downhill vent
- ☐ Must wait 5 minute cooldown after reducing power to idle before turning off engine, to prevent damage to the engine

Securing

- ☐ Cowl flaps closed
- ☐ Fuel selector
- ☐ Control lock
- ☐ Propeller positioning
- ☐ Airplane cover secure
- ☐ Airplane knots secure

T210 Aircraft Checkout

Checkout Form

Flight Instructor affirms that SCFC member _____:

- ☐ meets minimum pilot requirements for this type
- ☐ has completed the T210 POH Review Form and it has been reviewed
- ☐ has completed the required ground and flight training
- ☐ has a logbook endorsement for High Performance aircraft
- ☐ meets SCFC proficiency standards in Cessna 210

Signature: _____

CFI Name: _____

SCFC checkout total: # hours _____ # T/O and landings _____

As a representative of the SCFC Chief Pilot Office, I approve this aircraft checkout.

Signature: _____

Name: _____

Date Approved: _____

Front Desk follow up actions

- ☐ Add "Aircraft Checkout" for Cessna 210 as indicated by CFI
- ☐ Verify that member has "Endorsement" for High Performance in FSP
- ☐ Place photocopy of logbook endorsement for High Performance and this signature page in member's file

FD initials: _____ Date: _____