

DA40-180 (Ted Yin v1.2)

## Ground Operations

### Initial

- ▶ Papers ..... A.R.O.W.
- ▶ Fire Extinguisher ..... check
- ▶ Mags. .... key out
- ▶ Electrical ..... off
- ▶ Avionics ..... off
- ▶ Essential Bus ..... off
- ▶ Mixture ..... idle cutoff
- ▶ Prop ..... high RPM
- ▶ Throttle ..... idle
- ▶ Master ..... on
- ▶ Flaps ..... check & set T/O
- ▶ Lights/Pitot ..... test
- ▶ Fuel ..... note
- ▶ Master ..... off
- ▶ Controls ..... free & correct
- ▶ Hobbs Time ..... note

### Walkaround

- ▶ Fuel/Oil ..... test/sample
- ▶ Caps/Drains/Vents
- ▶ Surfaces/Controls
- ▶ Exhaust/Antennas
- ▶ Prop/Air Intakes x3
- ▶ Pitot/Static/Stall
- ▶ Struts/Tires/Brakes
- ▶ Ties/Chocks
- ▶ Canopy/Door
- ▶ Final Walkaround

### Pre-Start

- ▶ Passenger ..... brief
- ▶ Rear Door ..... secure
- ▶ Canopy ..... pos. 1/2
- ▶ Seat Belts ..... on
- ▶ Brakes ..... test/set
- ▶ Circuit Brkr. .... check
- ▶ Strobe (ACL) ..... on
- ▶ Avionics ..... off
- ▶ Essential Bus ..... off
- ▶ Mixture ..... idle cutoff
- ▶ Prop ..... high RPM
- ▶ Friction ..... adjust
- ▶ Master (Battery) ..... on
- ▶ Rudder Pedals ..... adjust
- ▶ 10000 DB Date ..... check
- ▶ Fuel Selector ..... least

### Start

- ▶ Throttle ..... 1.2"
- ▶ Electric Pump ..... on
- ▶ Warm

- ▶ Mixture ..... 1-3 sec
- ▶ Cold
  - Mixture ..... 3-5 sec
  - Throttle ..... 0.4"
- ▶ "Clear Prop!"
- ▶ Mags. .... start
  - Mixture ..... rich
- ▶ Throttle ..... 1000 RPM
- ▶ Mixture ..... lean (peak)
- ▶ Oil Pressure ..... 15 sec
- ▶ Electric Pump ..... off
- ▶ Alternators ..... on
- ▶ Engine Indicators ..... check

### Pre-Taxi

- ▶ Flaps ..... UP, then T/O
- ▶ Lights ..... as required
- ▶ Avionics ..... on/set
- ▶ Fuel Totalizer ..... enter
- ▶ ATIS ..... PFD/backup/(AP)
- ▶ Radio ..... test
- ▶ Transponder ..... check
- ▶ Check ..... AI/HSI(MC)/TC
- ▶ Clearance ..... obtain
- ▶ Brakes ..... release/test

### Run-Up

- ▶ Brake ..... set
- ▶ Seat Belts ..... check
- ▶ Canopy/Door ..... lock
- ▶ Door Warning ..... off
- ▶ Flight Controls ..... check
- ▶ Instruments
  - Alternate Static ..... check
  - GPS/System/Ann. .... check
  - AP ..... MET/HDG
  - Heading/Altitude ..... set
  - Com/Nav/FPL ..... set
  - MFD Range/Track Up ... set
  - Instruments ..... scan
  - Lights ..... as required

- ▶ Engine
  - Fuel Selector ..... fullest
  - Mixture ..... rich
  - Throttle ..... 2000 RPM
  - Cycle Prop x3 ..... -250-500
  - Mags. L/R ..... -175, +/-50
  - Alternate Air ..... check
  - Indicators ..... check
  - (Standby Alternator)
    - Master (Alt.) ..... off
    - STBYALT ON ..... glow
    - Elect. Load ..... increase
    - STBYALT ON ..... flashing

- Master (Alt.) ..... on
- STBYALT ON ..... dark
- Elect. Load ..... normal
- Throttle ..... idle
- Throttle ..... 1000 RPM
- Mixture ..... lean
- Each Tank ..... 1 min. 1500

### Shutdown

- ▶ ELT ..... check (121.5)
- ▶ Avionics ..... off
- ▶ Electrical ..... off
  - ACL Strobes ..... on
- ▶ Throttle ..... 1000 RPM
- ▶ Mags. .... off then both
- ▶ Mixture ..... idle cutoff
- ▶ Mags. .... key out
- ▶ Tach Time ..... note
- ▶ (Standby Alternator .. off)
- ▶ Master ..... off

### Post-Flight

- ▶ Flight Plan ..... close
- ▶ Hobbs Time ..... note
- ▶ Under Seats ..... check
- ▶ Gust Lock ..... on
- ▶ Covers/Tiedowns/Chocks ..... on
- ▶ Canopy/Door ..... lock

### Flooded Engine

- ▶ Electric Pump ..... off
- ▶ Mixture ..... lean (full aft)
- ▶ Throttle ..... mid position
- ▶ Mags. .... start
- ▶ When engine fires:
  - Throttle ..... idle
  - Mixture ..... rich (rapidly)
- ▶ Finish up normal start

### Airspeeds (KIAS)

- ▶ Vr ..... 59
- ▶ Vs0 ..... 49, Vs1 ..... 52
- ▶ Mass ..... 2646/2535/2205/1874
  - Vg ..... 76/73/68/60
  - Vy(Up) ..... 76/73/68/60
  - Climb(T/O) ..... 67/66/60/54
  - Approach
    - Up ..... 76/73/68/60
    - T/O ..... 74/72/66/59
    - LDG ..... 73/71/63/58
- ▶ Va ..... MAM 40-227
  - yes ..... 111 @ 2646-2284
  - no ..... 108 @ 2535-2161
  - o/w ..... 94 @ <2284/2161
- ▶ Bank: 30/45/60° ..... 58/68/83

## In-Flight Operations

### Pre-Takeoff

- ▶ Abort Plan/Lost Comm.
- ▶ Canopy/Door ..... lock
- ▶ Trim ..... T/O
- ▶ Fuel Selector ..... fullest
- ▶ Flaps ..... T/O
- ▶ **Mixture** ..... rich
- ▶ **Prop** ..... high RPM
- ▶ Pitot Heat ..... as required
- ▶ (Air Conditioner ..... off)
- ▶ Review Airspeeds
- ▶ Time ..... note/start

### Takeoff

- ▶ "Lights, Camera, Action"
  - **Electric Pump** ..... on
  - Mixture/Prop/Throttle
- ▶ Engine Inst. .... green
- ▶ Vr ..... 59, then ..... 67-60
- ▶ Safe Altitude
  - **Prop** ..... as required
  - **Pump** ..... off
  - Lights ..... as required

### Climb

- ▶ T/O: Vy ..... 67-54 KIAS
- ▶ Cruise ..... 76-60 KIAS
  - Flaps ..... UP
- ▶ **Mixture** ..... rich
  - >5000 hold const. EGT
- ▶ **Prop** ..... as required
- ▶ **Throttle** ..... full
- ▶ Engine Inst. .... green
- ▶ Trim ..... as required
- ▶ High Altitude ..... **pump** on

### Cruise

- ▶ Flaps ..... UP
- ▶ **Throttle** ..... 21-24"
- ▶ **Prop** ..... 1800-2400 RPM
- ▶ **Mixture**
  - Economy ... max EGT,  $\leq 75\%$
  - Best ... 100°F (55°C) lower
  - Higher Power ..... richer
- ▶ High Altitude ..... **pump** on
- ▶ Flow Check (↻ 15 min)
  - Trim, Switch Tanks
  - Mixture/Prop/Throttle
  - Flaps, Engine Inst.
  - Pump, Mag., Master
- ▶ CHT ..... 150-400°F
- ▶ Oil ..... 165-220°F

### Descent

- ▶ **Mixture** .... richen slowly
- ▶ **Throttle** ..... as required
- ▶ **Prop** ..... 1800-2400 RPM
- ▶ High Altitude ..... **pump** on
- ▶ CHT Cool Down
  - $\leq 50^\circ\text{F} (22.8^\circ\text{C})/\text{min.}$

### Pre-Landing

- ▶ ATIS/Rwys/Approach Plan
- ▶ "CCGUMPSF"
  - **G** Fuel Selector
  - **M** **Mixture** ..... rich
  - **P** **Pump** ..... on
  - **P** **Prop** ..... high RPM
  - **S** Seat Belts ..... secure
  - **F** Flaps ..... as required
- T/O ..... <108 KIAS
- LDG ..... <91 KIAS
- ▶ Trim ..... as required
- ▶ Lights ..... as required
- ▶ Approach Speed ..... 73-58
- ▶ (Air Conditioner ..... off)

### Go Around

- ▶ **Throttle** ..... full
- ▶ Vy ..... 67-54 KIAS
- ▶ Flaps ..... T/O
- ▶ Safe Altitude
  - **Prop** ..... as required
  - **Pump** ..... off
  - Lights ..... as required
  - Cruise Climb

### Post-Landing

- ▶ **Throttle** ..... 1000 RPM
- ▶ **Mixture** ..... lean
- ▶ Flaps ..... UP
- ▶ **Electric Pump** ..... off
- ▶ Pitot Heat ..... off
- ▶ Trim ..... T/O
- ▶ Lights ..... as required
- ▶ Transponder ..... as required
- ▶ Clearance ..... obtain

### CO Contamination

- ▶ Cabin Heat ..... off
- ▶ Ventilation ..... open
- ▶ Emergency Windows ..... open
- ▶ Canopy ..... open (partially,  
DO NOT unlock rear door  
during flight)

### Engine Failure

- ▶ Short Flow
- 1. Fuel Selector ..... fullest

2. **Mixture** ..... full/check
3. **Pump** ..... on
4. Alternate Air ..... on
5. Mags. .... check all

### Glide and Trim

- Airspeed ..... 76-60 KIAS
- Windmill ..... 1.45nm/1kft
- Stationary ..... 1.7nm/1kft
- ▶ Wind and Landing Site
- ▶ Longer Flow
  - Engine Inst. .... check
  - Short Flow
- ▶ **Windmill Restart**
  - Airspeed ..... 70-80 KIAS
  - Mags. .... both
  - **Mixture** ..... lean then  
slowly richen
- ▶ **Stationary Restart**
  - Airspeed ..... 80 KIAS
  - Electrical ..... off
  - Avionics ..... off
  - Master ..... on
  - Mags. .... start

### Engine-off Landing

- Fuel Selector ..... off
- **Mixture** ..... idle cutoff
- Mags. .... off
- Master ..... off
- Belt and Seat ..... check
- Flaps ..... LDG (when able)
- Unlatch Door?/Brace

### Engine Fire

- ▶ Cabin Heat ..... off
- ▶ Emergency Descent
- ▶ Landing is ensured
  - Fuel Selector ..... off
  - **Throttle** ..... full
  - **Pump** ..... off
  - Master ..... on
  - Emergency Windows ..... open
- ▶ Engine-off Landing

### Electrical Fire

- ▶ Emergency Switch ..... on
- ▶ Master ..... off
- ▶ Cabin Heat ..... off
- ▶ Emergency Windows ..... open
- ▶ Canopy ..... partially
- ▶ Land ASAP

C172S-G1000 (Ted v1.2)

### Initial

► Papers ..... A.R.O.W.  
► Control Lock ..... off  
► Mags. .... key out  
► Mixture ..... idle cutoff  
► Throttle ..... idle  
► Avionics ..... off  
► Fuel Shutoff ..... on  
► Fuel ..... both  
► Master ..... on  
► Fuel ..... note  
► Flaps ..... down  
► Lights/Pitot ..... test  
► Avionics on/off ..... fans  
► Master ..... off  
► Hobbs Time ..... note

### Walkaround

► Fuel/Oil ..... dip/sample  
► Caps/Drains/Vents  
► Surfaces/Controls  
► Exhaust/Antennas  
► Prop/Belt/Air Intake  
► Pitot/Static/Stall  
► Gear/Tires/Brakes  
► Ties/Baggage Door  
► Final Walkaround

### Pre-Start

► Doors ..... secure  
► Belts/Seat Track  
► Brakes ..... check, set  
► Circuit Brkr. .... check  
► Passenger ..... brief  
► Beacon ..... on  
► Avionics ..... off  
► Fuel ..... both

### Start

► Stby. Battery ..... test/arm  
► Engine Ind. .... no Xs  
► Volts ..... [E>24] [M<1.5]  
► Amps ..... S<0/ann on  
► Prime:  
    • Mixture ..... idle cutoff  
    • Brakes ..... secure  
    • Master ..... on  
    • Throttle ..... slight  
    • Aux. Pump ..... on  
    • Mixture ..... prime  
    • warm: 0-3 sec  
    • cold: 3-5 sec  
    • Aux. Pump ..... off

► Mixture ..... 3/4 rich  
► "Prop Clear!"  
► Mags. .... start  
► Throttle ..... 1000 RPM  
► Oil Pressure ..... 30 secs.  
► Volts/Amps ..... [I>26] [I>0]  
► Mixture ..... lean for taxi

### Pre-Taxi

► Flaps ..... up  
► Lights ..... as required  
► Avionics ..... on/set  
► GPS ..... DB date  
► Fuel Totalizer ..... enter  
► ATIS ..... PFD/backup/AP(?)  
► Radio ..... test  
► Transponder ..... squawk  
► Check ..... TC/AI/HSI<->MC  
► Clearance ..... obtain  
► Brakes ..... test

### Run-Up

► Brakes ..... set  
► Seat Belts ..... check  
► Doors/Windows ..... secure  
► Flight Controls ..... correct  
► Instruments ..... scan  
► Alternate Static ..... check  
► AP ..... MET/HDG  
► Trim ..... takeoff  
► Fuel ..... on/both  
► Hdg./Alt. Bugs  
► GPS/Status Bar/Ann. Test  
► MFD Range/Track Up  
► Comm/Nav/VOR/FP

► Mixture ..... rich  
► Throttle ..... 1800 RPM  
► Mags. .... 150, 50  
► Engine Inst. .... check  
► Idle Check  
► Throttle ..... 1000 RPM  
► Mixture ..... lean  
► Lights ..... as required  
► ADSB Handheld ..... on

### Pre-Takeoff

► Abort Plan/Lost Comm.  
► Fuel ..... on/both  
► Flaps ..... 0-10°  
► Mixture ..... rich  
► Aux. Pump ..... off  
► Pitot heat ..... as required  
► Review Airspeeds  
► Time ..... note/start

### Takeoff

► "Lights, Camera, Action"  
    • Mixture/Throttle  
► Engine Inst. .... green  
► Vr ..... 55 kts  
► Vx ..... 62 kts, Vy ..... 74 kts

### Climb / Cruise

► Cruise Climb ..... 75-85 kts  
    • Flaps ..... up  
► Mixture ..... lean >3000'  
► Flow Check (✓15 min)  
    • Fuel, Trim  
    • Flaps, Engine Inst.  
    • Mixture, Throttle  
    • Master, Mag., Pump

### Descent

► Mixture ..... richen slowly  
► Throttle ..... as required  
► Flow Check

### Pre-Landing

► ATIS/Rwys & Patterns  
► "CCGUMPSF"  
    • G: Fuel ..... on/both  
    • M: Mixture ..... rich  
    • S: Seat Belts ..... secure  
    • F: Flaps ..... as required  
► Trim ..... as required  
► Ldg. Light ..... on  
► Approach ..... 80-65 kts

### Post-Landing

► Throttle ..... 1000 RPM  
► Mixture ..... lean  
► Flaps ..... up  
► Pitot Heat ..... off  
► Trim ..... takeoff  
► Lights ..... as required  
► Clearance ..... obtain

### Shutdown

► ELT ..... check (121.5)  
► Avionics ..... off  
► Lights ..... off  
    • Beacon ..... on  
► Throttle ..... 1000 RPM  
► Mags. .... off then both  
► Mixture ..... idle cutoff  
► Mags. .... key out  
► Master ..... off  
► Tach Time ..... note  
► Stby. Battery ..... off

## Post-Flight

- ▶ ADSB Handheld ..... off
- ▶ Tiedowns/Chocks
- ▶ Pitot Cover
- ▶ Fuel ..... switch to L/R
- ▶ Gust Lock
- ▶ Close Flight Plan
- ▶ Hobbs Time ..... note
- ▶ Check Under Seats
- ▶ Cabin / Baggage ..... lock
- ▶ Post-Flight Walkaround

## Engine Failure

- ▶ Short Flow
  - Fuel ..... on/both
  - Mixture ..... full/check
  - Electrical Pump ..... on
  - Alternate Air ..... on
  - Mags. .... check all
- ▶ **Glide and Trim**
  - **Speed: 68 kts**
  - **Ratio: 9, 1.48nm/1000ft**
- ▶ Wind and Landing Site
- ▶ Longer Flow
  - Engine Indicators
  - Short Flow Again
- ▶ **No Restart**
  - Fuel ..... off
  - Mixture ..... idle cut-off
  - Prop/Throttle ..... off
  - Mags. .... off
  - Master ..... off
  - Belt and Seat ..... check
  - Unlatch Door
  - Brace
- ▶ Approach ..... 80/70/65 kts

## Flight Planning Checklist (Ted Yin v0.5)

### Airports

- ▶ ATIS/Tower/Ground Frequencies
- ▶ Runways and Pattern
  - Rwy Length
  - Multiple Rwys?
  - TPA & Directions
- ▶ Descent and Approach Plan
  - Slow Down (engine cooling)
  - Reach TPA in time with stable rate
  - Terrain Hazards
- ▶ Taxiways and FBO (Refueling)
- ▶ Obstructions/Mountains
- ▶ Emergency Landing during T/O
- ▶ Airport Guide (check website)

### Route

- ▶ Cruising Altitude
  - Westerly vs. Easterly (even/odd kft)
  - Glide Range
  - Terrain Separation (e.g. 2000+)
  - Cloud Clearance (Detour?)
  - Climb Performance & Oxygen
- ▶ Obstructions
- ▶ Flat Land vs. Mountains
  - Highway is a good start
- ▶ SUA/TFR
- ▶ Fuel Reserve & Diversions

### Aircraft

- ▶ Fuel
- ▶ Weight and Balance
  - MTOW
  - CG before/after the flight
- ▶ T/O & LDG distance to clear obstacles

### Weather

- ▶ Airports
  - Ceiling
  - Visibility
  - Wind (crosswind, gusts)
  - Density Altitude
- ▶ En Route
  - Cloud Base & Coverage
  - Wind Aloft
  - Icing (freezing point, day/night?)
  - AIRMET & SIGMETs
  - IMC
  - Convective Weather
  - Known Icing Conditions
- ▶ Global Picture
  - Fronts
  - Satellite Image (trend of moisture)
- ▶ Resources

- AlWC <https://aviationweather.gov/>
- Windy <https://www.windy.com/>
- COD <https://weather.cod.edu/satrad/>

### Before Go

- ▶ This Sheet
- ▶ Leidos (1800wx) Briefing
- ▶ PPL & Med & Driver's License
- ▶ Flight Bag
- ▶ Garmin inReach Beacon
- ▶ iPad: foreflight pack up
- ▶ Water & Energy Bars
- ▶ "IMSAFE" & "PAVE"