

DA40-180 (Ted Yin v1.0)

## 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 Pump ..... check
- ▶ Fuel ..... note
- ▶ Master ..... off
- ▶ Controls ..... free & correct
- ▶ Hobbs Time ..... note

### Walkaround

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

### Pre-Start

- ▶ Rear Door ..... secure
- ▶ Rudder Pedals ..... adjust
- ▶ Seat Belts ..... on
- ▶ Parking/Brakes ..... test/set
- ▶ Circuit Brkr. .... check
- ▶ Strobe (ACL) ..... on
- ▶ Avionics ..... off
- ▶ Essential Bus ..... off
- ▶ Fuel Selector ..... least
- ▶ Canopy ..... pos. 1/2
- ▶ Passenger ..... brief

### Start

- ▶ Prime
  - Mixture ..... idle cutoff
  - Prop ..... high RPM
  - Friction ..... adjust
  - Master (Battery) ..... on
  - Throttle ..... 1.2"

- Electric Pump ..... on
- Warm
  - Mixture ..... 1-3 sec
- Cold
  - Mixture ..... 3-5 sec
  - Throttle ..... 0.4"
- ▶ Electric Pump ..... off
- ▶ "Prop Clear!"
- ▶ Mags. .... start
  - Mixture ..... rich
- ▶ Throttle ..... 1000 RPM
- ▶ Oil Pressure ..... 15 secs.
- ▶ Fuel Pressure ..... 14-35 psi
- ▶ Master (Alternator) ..... on
- ▶ Volts/Amps ..... 25-30V/2-75A
- ▶ Engine Inst. .... no Xs
- ▶ Mixture ..... lean (peak)

### Pre-Taxi

- ▶ Flaps ..... UP, then T/O
- ▶ 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 ..... release/test

### Run-Up

- ▶ Brake ..... set
- ▶ Seat Belts ..... check
- ▶ Canopy/Door ..... lock
- ▶ Door Warning ..... off
- ▶ Flight Controls ..... check
- ▶ Heading/Altitude ..... set
- ▶ Comm/Nav/FPL ..... set
- ▶ Engine
  - Fuel Selector ..... fullest
  - Mixture ..... rich
  - Throttle ..... 2000 RPM
  - Cycle Prop x3 ..... -250-500
  - Mags. L/R ..... -175, +/-50
  - Alternate Air ..... check
  - Indicators ..... check
  - Throttle ..... idle
  - Throttle ..... 1000 RPM
  - Mixture ..... lean
- ▶ Full Check (initial)
  - Alternate Static ..... check
  - GPS/System/Ann. .... check
  - AP ..... MET/HDG

- MFD Range/Track Up ..... set
- Instruments ..... scan
- Lights ..... as required
- (ADS-B Handheld ..... on)

### 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
- ▶ Master ..... off

### Post-Flight

- ▶ (ADS-B Handheld ..... off)
- ▶ Flight Plan ..... close
- ▶ Hobbs Time ..... note
- ▶ Under Seats ..... check
- ▶ Gust Lock ..... on
- ▶ Pitot Cover ..... on
- ▶ Tiedowns/Chocks ..... on
- ▶ Canopy/Door ..... lock
- ▶ Post-Flight ..... walkaround

### Flooded Engine

- ▶ Electric Pump ..... off
- ▶ Mixture ..... lean (full aft)
- ▶ Throttle ..... 1/2 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 Speeds
  - 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 @ below 2284/2161
- ▶ Steep Turn: <=45°, >=68

## 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** ..... 2400 RPM
  - **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** ..... 2400 RPM
- ▶ **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, <=75%
  - Best ..... 100°F (55°C) lower
  - Higher Power ..... richen
- ▶ 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
  - <= 50°F (22.8°C)/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** ..... 2400 RPM
  - **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
- ▶ Clearance ..... obtain

### C0 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

## 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 ..... [E>26] [E>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