

# Preflight

1	Maintenance Records & Books	Check
2	Weather	Check
3	Aircraft Performance Data	Check
4	AROW Documents	Check
5	Gear	Down
6	Mags	OFF
7	Rocker Switches	OFF
8	MASTER Switch	ON
9	Fuel Gages	Check
10	Battery Voltage	Check
11	Pitot Heat	OFF
12	MASTER Switch	OFF

## RIGHT FUSELAGE / TAIL

1	Instrument Static Port	Clear / Check
2	Rivets & Skin	Check
3	All Panels	Secure
4	Tie Down	Remove

## EMPENNAGE

1	Elevator / Rudder	Check
2	Tail Lights	Inspect
3	Rivets & Skin	Check
4	All Panels	Secure
5	Tie Down	Remove

# Preflight

## LEFT FUSELAGE / TAIL

- |                          |        |
|--------------------------|--------|
| 1 Instrument Static Port | Check  |
| 2 Rivets & Skin          | Check  |
| 3 All Panels             | Secure |

## LEFT WING

- |                                   |               |
|-----------------------------------|---------------|
| 1 Flaps / Ailerons                | Check         |
| 2 Wing Tips and Lights            | Inspect       |
| 3 Pitot Tube                      | Check / Clear |
| 4 Landing / Taxi Lights           | Check         |
| 5 Stall Warning Vane              | Check         |
| 6 Fuel Tank Quantity and Cap      | Secured       |
| 7 Tie Down / Chocks               | Remove        |
| 8 Fuel Vent                       | Clear         |
| 9 Gear / Shocks / Doors / Linkage | Check         |
| 10 Fuel Sump                      | Drain         |

## NOSE

- |                                   |                 |
|-----------------------------------|-----------------|
| 1 Windshield                      | Clean / Check   |
| 2 Cabin Inlet                     | Check           |
| 3 Panels                          | Check Security  |
| 4 Cowl Flaps                      | Check           |
| 5 Prop & Spinner                  | Inspect         |
| 6 Induction Inlets                | Check           |
| 7 Gear / Shocks / Doors / Linkage | Check           |
| 8 Engine Oil                      | <b>6-8</b> Qts. |
| 9 Exhaust Piper                   | Check           |

# Preflight

## RIGHT WING

- |                                   |         |
|-----------------------------------|---------|
| 1 Fuel Sump                       | Drain   |
| 2 Gear / Shocks / Doors / Linkage | Check   |
| 3 Tie Down / Chocks               | Remove  |
| 4 Fuel Vent                       | Clear   |
| 5 Fuel Tank Quantity and Cap      | Secured |
| 6 Landing /Taxi Lights            | Check   |
| 7 Wing Tips and Lights            | Inspect |
| 8 Flaps / Ailerons                | Check   |
| 9 Baggage Door                    | Secured |

## ENGINE STARTUP

- |                            |             |
|----------------------------|-------------|
| 1 Brakes                   | Set         |
| 2 Briefing / Seat Belts    | Check       |
| 3 MASTER / Mags            | OFF         |
| 4 Avionics and Radios      | OFF         |
| 5 ELT (If Applicable)      | ARM         |
| 6 Circuit Breakers / Fuses | Check       |
| 7 Cowl Flaps               | OPEN        |
| 8 Fuel Selector            | Fullest     |
| 9 Carb Heat                | OFF         |
| 10 MASTER                  | ON          |
| 11 Landing Gear            | Verify Down |
| 12 Beacon / Lights         | As Needed   |
| 13 Mixture                 | FULL        |
| 14 Prop                    | FULL RPM    |

CONTINUED

# Preflight

15	Fuel Pump	ON
16	Mixture	RICH
17	Throttle (Pump Twice)	<b>1/4</b> inch Open
18	Area Clear / START	<b>1000</b> RPM
19	Fuel Pump (Check Pressure)	OFF
20	Oil Pressure (30 sec)	Check
21	Avionics / Transponder	ON / STBY
22	Mixture	Lean for taxi
23	Flaps	UP
24	ATIS / AWOS / ASOS	Obtain
25	Taxi Clearance	Obtain

## FLOODED ENGINE START

- |   |                    |                     |
|---|--------------------|---------------------|
| 1 | Fuel Pump          | OFF                 |
| 2 | Prop               | FULL RPM            |
| 3 | Mixture            | Idle Cutoff         |
| 4 | Area Clear / START | <b>1000</b> RPM     |
| 5 | Mixture            | Advance after Start |

**!** *Continue with normal Start Procedures*

# Preflight

## WARM ENGINE START

- |                      |                     |
|----------------------|---------------------|
| 1 Fuel Pump          | OFF                 |
| 2 Prop               | FULL RPM            |
| 3 Throttle           | FULL FORWARD        |
| 4 Mixture            | RICH                |
| 5 Area Clear / START | <b>1000</b> RPM     |
| 6 Mixture            | Advance after Start |
| 7 Throttle           | Reduce to Idle      |

**!** *Continue with normal Start Procedures*

# Takeoff / Cruise

## TAXIING

- |                     |       |
|---------------------|-------|
| 1 Brakes            | Check |
| 2 DG / HI / TC / AI | Check |

## BEFORE TAKEOFF

- |                                     |                    |
|-------------------------------------|--------------------|
| 1 Brakes                            | Set                |
| 2 Flight Controls                   | Check              |
| 3 Fuel Selector                     | Fullest            |
| 4 Fuel Pump                         | ON                 |
| 5 Cowl Flaps                        | OPEN               |
| 6 Mixture                           | Adjust / DA & Elev |
| 7 Fuel Pump                         | ON                 |
| 8 Power                             | <b>1800</b> RPM    |
| 9 Prop                              | Exercise / FULL    |
| 10 Power                            | <b>1700</b> RPM    |
| 11 Ignition Switches                | L&R (125/50)       |
| 12 Carb Heat                        | Check / OFF        |
| 13 Engine Gages / CHT               | Check              |
| 14 Annunciator Panel (If installed) | Check              |
| 15 Suction / Ammeter                | Check              |
| 16 Carb Heat                        | Check              |
| 17 Standby Vacuum Pump              | Check              |
| 18 Power                            | Reduce             |
| 19 Fuel Pump                        | ON                 |
| 20 Instruments                      | Check / Set        |
| 21 COM / NAV                        | Set                |

CONTINUED

# Takeoff / Cruise

22 Doors / Windows	Lock / Closed
23 Flaps	Set
24 Trim	Set for Takeoff
25 Lights / Transponder	Set
26 Clearance	Obtain

## NORMAL TAKEOFF

1 Flaps	<b>0-15°</b>
2 Full Power	Set
3 Engine Instruments	Check
4 Crosswind Corrections	Set
5 Rotate	Vr <b>65 KIAS 75 MPH</b>
6 Climb	Vy <b>91 KIAS 105 MPH</b>
7 Brakes	Apply momentarily
8 Gear	UP
9 Flaps	UP

# Takeoff / Cruise

## SHORT FIELD TAKEOFF

1 Flaps	Set as Needed
2 Runway	To End
3 Brakes	Hold
4 Full Power	Set
5 Engine Inst. / Crosswind	Check / Compensate
6 Brakes	Release
7 Rotate	Vr <b>55 KIAS 65 MPH</b>
8 Obstacle	Vx <b>70 KIAS 80 MPH</b>
9 Climb	Vy <b>91 KIAS 105 MPH</b>
10 Brakes	Apply momentarily
11 Gear	UP
12 Flaps	UP

## SOFT FIELD TAKEOFF

1 Flaps	<b>15°</b>
2 Back Pressure	Keep Nose Up
3 Full Power	Set
4 Engine Instruments	Check
5 Crosswind Corrections	Set
6 Obstacle	Vx <b>70 KIAS/80 MPH</b>
7 Climb	Vy <b>91 KIAS/105 MPH</b>
8 Brakes	Apply momentarily
9 Gear	UP
10 Flaps	UP



# Takeoff / Cruise

## CLIMB

- |                  |                                |
|------------------|--------------------------------|
| 1 Power / Prop   | <b>25" / 2500 RPM</b>          |
| 2 Fuel Pump      | OFF / Check Press.             |
| 3 En-route Climb | <b>95-110 KIAS 115-120 MPH</b> |

## CRUISE

- |                     |                               |
|---------------------|-------------------------------|
| 1 Power / Prop      | Set with table below          |
| 2 Mixture           | Adjust /Up to 75%             |
| 3 ECONOMY           | <b>25°F RICH</b> of Peak EGT  |
| 4 POWER             | <b>100°F RICH</b> of Peak EGT |
| 5 Cowl Flaps        | CLOSE                         |
| 6 Fuel Pump         | As Required                   |
| 7 Heading Indicator | Reset as Needed               |

## CRUISE PROFILE

PALT	PWR	MAN	RPM	MPH	GPH
5000	85%	24.0"	2600	183	12.5
5000	75%	22.0"	2500	169	10.8
5000	65%	21.0"	2300	157	9.3
7500	75%	22.0"	2500	177	11.0
7500	65%	20.0"	2400	161	9.3
FL100	65%	19.0"	2500	166	9.5
FL100	55%	17.5"	2300	146	8.0

# Landing

## APPROACH

1	ATIS / AWOS / ASOS	Obtain
2	Brief / Seat Belts	Check
3	Cowl Flaps	Close
4	Mixture	Set
5	Carb Heat	ON
6	Prop	FULL
7	Fuel Boost Pump	ON
8	Fuel Selector	FULLEST
9	Gear Down Below V <sub>lo</sub>	<b>104 KIAS 120 MPH</b>
10	Flaps Down Below V <sub>fe</sub>	<b>87 KIAS 100 MPH</b>
11	Normal Approach	<b>70-75 KIAS 80-85 MPH</b>
12	Short Field Approach	<b>71 KIAS 81 MPH</b>
13	GUMPS	CHECK

## GO AROUND

1	Power	FULL
2	Carb Heat	OFF
3	Gear / Flaps	Retract As Needed
4	Cowl Flaps	Open
5	Pitch	<b>91 KIAS 105 MPH</b>
6	Runway Offset	When aircraft is in control
7	Communicate	Announce Go-Around

# Landing

## AFTER LANDING

1 Runway	Cleared
2 Carb Heat	OFF
3 Flaps	UP
4 Mixture	Lean for taxi
5 Prop	FULL
6 Cowl Flaps	Open
7 Fuel Pump	OFF
8 Transponder	OFF
9 Strobes	OFF
10 Clearance	Obtain

## SECURE

1 Avionics / Radios	OFF
2 Ignition Grounding Check	Cycle Mags
3 Mixture	OFF
4 Prop	FULL
5 Ignition / Mags	OFF
6 MASTER	OFF
7 Cowl Flaps	CLOSE
8 Control Locks	Set
9 Chocks / Chains / Papers	Complete

# Electrical

## EXCESSIVE RATE OF CHARGE

- |                              |                      |
|------------------------------|----------------------|
| 1 Alternator Field Switch    | OFF / Verify problem |
| 2 Ammeter                    | Confirm discharge    |
| 3 MASTER                     | Cycle                |
| 4 Alternator circuit breaker | PULL / Verify        |
| 5 Electrical Load            | Reduce / Land soon   |

**!** *Landing gear lights will not be visible after complete electrical failure*

## LOW VOLTAGE

- |                              |                      |
|------------------------------|----------------------|
| 1 Alternator Field Switch    | OFF / Verify problem |
| 2 Ammeter                    | Confirm discharge    |
| 3 Alternator circuit breaker | PULL / Verify        |
| 4 Electrical Load            | Reduce / Land soon   |

**!** *Landing gear lights will not be visible after complete electrical failure*

# Engine

## ENGINE FAILURE DURING TAKEOFF ROLL

- |                   |         |
|-------------------|---------|
| 1 Throttle        | Close   |
| 2 Brakes          | Apply   |
| 3 Flaps           | Retract |
| 4 Mixture         | OFF     |
| 5 Ignition / Mags | OFF     |
| 6 MASTER          | OFF     |

## ENGINE FAILURE DURING FLIGHT

**!** *Land if runway remains. If not:*

- |                      |                         |
|----------------------|-------------------------|
| 1 Airspeed           | <b>90 KIAS 105 MPH</b>  |
| 2 Gear               | Up if not after takeoff |
| 3 Flaps              | Up if not after takeoff |
| 4 Landing Site       | Select / Land into Wind |
| 5 Prop               | FULL                    |
| 6 Fuel Selector      | FULLEST / Switch        |
| 7 Fuel Pump (Try ON) | OFF if No improvement   |
| 8 Carb Heat          | Try                     |
| 9 Fuel Pressure      | Check                   |
| 10 Throttle          | FULL                    |
| 11 MASTER Switch     | ON                      |
| 12 Mixture           | RICH                    |
| 13 IGNITION          | BOTH / RESTART          |

# Engine

## FAILURE TO RESTART

1 Pitch	<b>90 KIAS 105 MPH</b>
2 Communicate	<b>121.5</b> or Current Freq
3 Transponder	<b>7700</b>
4 Seat Belts	Secure
5 Fuel Pump	OFF
6 Mixture	Cut-OFF
7 Throttle	Close
8 Fuel Selector / Ignition / Mags	OFF
9 Gear and Flaps	Down when needed
10 MASTER	OFF
11 Doors	Open ajar

## ROUGH ENGINE

1 Engine Instruments	Troubleshoot
2 Fuel Selector	Switch
3 Mixture	Re-adjust
4 Mags	Try L or R only
5 Prop	Check

**!** *Prop Damage can cause major vibrations*

## HIGH CYLINDER OR OIL TEMP

1 Mixture	Enrich as needed
2 Cowl Flaps	OPEN
3 Airspeed	Increase
4 Power	Reduce
5 If in a climb, reduce angle	

# Engine

## ENGINE DRIVEN FUEL PUMP FAILURE

- |             |                 |
|-------------|-----------------|
| 1 Mixture   | Cut-OFF         |
| 2 Throttle  | Cruise Position |
| 3 Fuel Pump | ON              |
| 4 Mixture   | Return to FULL  |

## PROPELLER OVERSPEED

- |                |            |
|----------------|------------|
| 1 Throttle     | Idle       |
| 2 Prop RPM     | Below 2700 |
| 3 Oil Pressure | Check      |
| 4 Airspeed     | Reduce     |

# Fire / Smoke

## ENGINE FIRE DURING START

- |             |                               |
|-------------|-------------------------------|
| 1 Starter   | Engage and crank              |
| 2 Throttle  | <b>1700</b> RPM to extinguish |
| 3 Engine    | Secure                        |
| 4 Fuel Flow | OFF                           |

## ENGINE FIRE DURING FLIGHT

- |                         |                            |
|-------------------------|----------------------------|
| 1 Fuel / Mixture        | OFF                        |
| 2 Throttle              | Close                      |
| 3 Ignition / Mags       | OFF                        |
| 4 Cowl Flaps            | CLOSE                      |
| 5 MASTER Switch         | OFF                        |
| 6 Vents Close / Windows | Close OPEN if smoke enters |

## WING FIRE DURING FLIGHT

- |                             |     |
|-----------------------------|-----|
| 1 MASTER Switch             | OFF |
| 2 Strobes and NAV Lights    | OFF |
| 3 Extinguish with maneuvers |     |
| 4 MASTER                    | ON  |

## ELECTRICAL FIRE DURING FLIGHT

- |                    |                      |
|--------------------|----------------------|
| 1 MASTER Switch    | OFF                  |
| 2 Alternator       | OFF                  |
| 3 Circuit Breakers | Check which is out   |
| 4 Fire             | Extinguish           |
| 5 Vents            | Open if smoke enters |

**!** *Reset Electrical to troubleshoot Problem*



# Other

## EMERGENCY DESCENT

1	Throttle	Close
2	Carb Heat	ON
3	Gear Down	<b>104 KIAS 120 MPH</b>
4	Airspeed to extinguish	<b>104 KIAS 120 MPH</b>
5	Landing site	Acquire

## UNLATCHED DOORS

1	Airspeed	Below <b>95 KIAS 105 MPH</b>
2	Storm Window	Open
3	Aircraft	Right Sideslip
4	Door Pull shut and Latch	

## INADVERTENT SPIRAL DIVE

1	Throttle	Idle
2	Wings	Level
3	Elevator	Level Or Vy Climb
4	Trim	Set For Level Or Climb
5	Power	Set
6	IMC Conditions	Exit

# Other

## SPIN RECOVERY

- |            |                      |
|------------|----------------------|
| 1 Power    | Idle                 |
| 2 Ailerons | Neutral              |
| 3 Rudder   | Full Opposite        |
| 4 Elevator | Briskly Full Forward |

**!** *When rotation stopped...*

- |            |                          |
|------------|--------------------------|
| 5 Rudder   | Neutral                  |
| 6 Elevator | Slowly Recover From Dive |

## UNINTENTIONAL IMC ENCOUNTER

- |                  |                      |
|------------------|----------------------|
| 1 Wings          | Level                |
| 2 Trims          | Set For Level        |
| 3 Heading        | Change For 180° Turn |
| 4 IMC Conditions | Exit                 |

# Emergencies