

BEFORE STARTING

Preflight	COMPLETE
Passenger Briefing	COMPLETE
Seat Belts and Shoulder Harnesses	FASTENED and ADJUSTED
Fuel Quantity and Quality	CHECKED
Parking Brake	SET
Avionics Master Switch	OFF
Emergency Static Air Selector	EMERGENCY to drain, then NORMAL
Landing Gear Handle	DOWN
Cowl Flaps	OPEN
Fuel Selectors	ON
All Electrical Switches	OFF
Circuit Breakers	CHECK
Emergency Landing Gear Handcrank	STOWED

STARTING ENGINES

Battery and Alternator Switches	ON (if external power used, OFF)
Fuel Quantity Indicators	CHECK
Landing Gear Position Lights	ILLUMINATED
<i>Engine Start Procedure (if using external power, start right engine first)</i>	
Mixture	FULL RICH
Propeller Control	HIGH RPM
Throttle	FULL OPEN
Fuel Boost Pump Switch	HI until flow peaks, then OFF
Throttle	CLOSE, then open ½ INCH
Propeller Area	CLEAR
Magneto/Start Switch	START, release when engine fires
Throttle	1000 RPM
Oil Pressure	10 PSI within 30 seconds
External Power	DISCONNECT
Alternator Switch	ON
Loadmeter	CHECK normal charge (< 20 AMPS)
START annunciator	EXTINGUISHED
<i>Start other engine using above procedure</i>	

BEFORE TAXIING

Engine Warm-Up	1200 RPM or less <i>Until oil temp > 24 degrees C</i>
Mixtures	LEAN aggressively
Lights	ON AS REQUIRED
Avionics Master Switch	ON
Avionics	SET
ATIS / Weather	RECEIVE
Flight Instruments	CHECK and SET
Autopilot	TEST
Clearance	RECEIVE
Transponder	STANDBY, CODE SET

TAXIING

Brakes	CHECK
Steering	CHECK
Gyro Instruments	CHECK DURING TURNS

BEFORE TAKEOFF

Brakes	SET
Cabin Doors and Windows	CLOSED and LATCHED
Seat Belts and Shoulder Harnesses	FASTENED and ADJUSTED
Fuel Boost Pumps	OFF, or LOW per ambient temperature
Fuel Indicators	CHECK
Throttles	2200 RPM
Propellers	EXERCISE (300 RPM MAX) <i>Do not move levers past feather detent</i>
Throttles	1700 RPM
Magnetos	CHECK
All Instruments	CHECK
Throttles	1500 RPM
Propellers	CHECK FEATHER (300 RPM MAX)
Throttles	CHECK IDLE then 1000 RPM
Electric Trim	CHECK OPERATION
Trim	AS REQUIRED
Flaps	SET FOR TAKEOFF
Flight Controls	FREE and CORRECT
Doors and Windows	LOCKED
Parking Brake	OFF

RECOMMENDED AIRSPEEDS (KIAS)

Vr (Rotation Speed)	85
Vmca Minimum Control Speed	84
V50 (50 Ft Speed)	100
Vx Two Engine Best Angle of Climb	92
Vy Two Engine Best Rate of Climb	105
VxSE One Engine Inoperative Best Angle of Climb	100
VySE One Engine Inoperative Best Rate of Climb	101
Vcc Cruise Climb	136
Vlo / Vle Maximum Landing Gear Operating / Extended	152
Va Turbulent Air Penetration Speed	156
Vref Landing Reference Approach Speed (Flaps 30 degrees, 5400 LBS)	95
Vsse Minimum Intentional Engine Failure Speed	88
Balked Landing Climb	95

TAKEOFF

Power	SET TAKEOFF POWER (Full Throttle, 2700 RPM)
Airspeed	ACCELERATE TO AND MAINTAIN RECOMMENDED AIRSPEEDS (See chart below)
Landing Gear	RETRACT (when positive ROC established and insufficient landing runway remains)
Airspeed	RECOMMENDED CLIMB SPEED

CRUISE CLIMB

Mixture	FULL RICH with AC fuel pumps, otherwise lean as required to Cruise Climb Fuel Flow Schedule
Cowl Flaps	AS REQUIRED
Power	FULL THROTTLE
Propellers	2500 RPM
Engine Temperatures	MONITOR
Fuel Boost Pumps	OFF, or LOW per ambient temperature

CRUISE CLIMB FUEL FLOW SCHEDULE – GPH vs. Altitude

MSL Altitude	Altitude Compensating Pumps	Manual Leaning
SL	24.6 - 26.3	25.5
2000	23.2 - 24.2	23.7
4000	21.8 - 23.4	22.6
6000	20.3 - 22.3	21.3
8000	18.8 - 21.2	20.0
10000	17.5 - 20.0	18.8
12000	16.3 - 19.0	17.7
14000	14.8 - 18.0	16.4
16000	13.4 - 17.0	15.2
17000	12.7 - 16.5	14.6

CRUISE

Cowl Flaps	CLOSED
Power	SET
Fuel Boost Pumps	OFF, or LOW per ambient temperature
Mixtures	SET USING EGT
	CRUISE RICH – 20 degrees ROP
	CRUISE LEAN – 20 degrees LOP
Engine Temperatures	MONITOR

CRUISE POWER SETTINGS (20 Degrees Rich of Peak EGT) Recommended Cruise Power 25 IN. HG or Full Throttle / 2500 RPM								
	Press Alt	IOAT		Man Press	Fuel Flow (Per Engine)		Airspeed	
	Feet	C	F	IN. HG	PPH	GPH	KIAS	KTAS
ISA -20 C (ISA -36 F)	SL	-2	29	25	101	16.8	194	187
	2000	-6	22	25	105	17.5	195	193
	4000	-9	15	25	109	18.2	196	199
	6000	-13	8	24	105	17.5	191	200
	8000	-17	1	22	98	16.3	184	198
	10000	-21	-6	21	92	15.3	177	196
	12000	-25	-14	19	86	14.3	169	194
	14000	-29	-21	18	80	13.3	162	191
	16000	-33	-28	16	74	12.3	154	187
Standard Day (ISA)	SL	18	65	25	98	16.3	189	188
	2000	15	58	25	101	16.8	190	195
	4000	11	51	25	105	17.5	191	201
	6000	7	44	24	102	17.0	186	202
	8000	3	37	22	95	15.8	179	200
	10000	-1	30	21	89	14.8	171	198
	12000	-5	23	19	83	13.8	162	195
	14000	-9	15	18	77	12.8	156	192
	16000	-13	8	16	72	12.0	148	188
ISA +20 C (ISA +36 F)	SL	38	101	25	95	15.8	184	190
	2000	35	94	25	98	16.3	185	196
	4000	31	88	25	101	16.8	185	202
	6000	27	81	24	98	16.3	181	203
	8000	23	73	22	92	15.3	183	201
	10000	19	66	21	89	14.3	166	199
	12000	15	59	19	80	13.3	159	196
	14000	11	51	18	75	12.5	151	193
	16000	7	44	16	70	11.7	143	188
Notes: 1. Full-Throttle Manifold Values (8000 FT and above) are approximate. 2. Fuel flows are to be used for flight planning only and will vary from airplane to airplane. Lean using the EGT.								

DESCENT

Cowl Flaps	CLOSED
Crossfeed	OFF
Flaps	AS REQUIRED
Mixtures	FULL RICH (AC Pumps) or ENRICHEN (Manual Lean)
Power	AS REQUIRED <i>Avoid IDLE settings and do not allow CHT to drop below 149 degrees C for longer than 5 minutes</i>
Boost Pumps	OFF, or LOW per ambient temperature
Altimeter	SET

BEFORE LANDING

Seat Backs	POSITION for landing
Seat Belts and Shoulder Harnesses	LOCKED and ADJUSTED
Cowl Flaps	AS REQUIRED
Flaps	APPROACH below 152 KIAS
Landing Gear	DOWN below 152 KIAS
Boost Pumps	OFF, or LOW per ambient temperature
Mixture Controls	FULL RICH
Propeller Controls	HIGH RPM

BALKED LANDING

Mixtures	FULL RICH
Propellers	HIGH RPM
Throttles	FULL FORWARD
Airspeed	95 KIAS
Flaps	UP (0 degrees)
Landing Gear	UP
Cowl Flaps	OPEN AS REQUIRED

AFTER LANDING

Cowl Flaps	OPEN
Trim Tabs	ZERO
Flaps	UP
Mixtures	LEAN aggressively
Transponder	STANDBY
Lights	AS REQUIRED
Fuel Boost Pumps	OFF or LOW, AS REQUIRED
De-Icing / Anti-Icing Systems	OFF or AS REQUIRED

SHUTDOWN

Parking Brake	SET
Avionics Master Switch	OFF
Lights (Except Beacon)	OFF
Mixture Controls	IDLE-CUT-OFF
Magneto / Starter Switches	OFF after engines stop
Battery and Alternator Switches	OFF
Controls	LOCKED
Covers, Plugs, Chocks	INSTALL