RANGER™

ABBREVIATED CHECKLIST

Date: 1/20/20

PREFLIGHT INSPECTION

CABIN

- **Pilot Operating Handbook** – REQUIRED
- **Aircraft Registration** - REQUIRED
- **Airworthiness Certificate** – REQUIRED
- **Weight & Balance** – REQUIRED
- **Flight Control Locks** – REMOVE ALL
- **Ignition** – OFF
- **Ignition Key** – ON DASH
- **Master Switch** – ON
- **Avionics Switch** – ON
- **Autopilot Switch** – ON
- **Alternator Switch** – ON
- **Flaps** – FULL DOWN, CHECK INDICATION ON EFIS
- Precautionary walk around; check for structural integrity, leaks & lights
- **Lights** – CHECK
- **Strobe & Landing Lights (steady)** – CHECK
- **Navigational & Landing Lights (Pulse)** – CHECK
- **Header Tank** – CHECK INDICATION ON EFIS
- **Fuel gauges**– CHECK FUEL LEVEL INDICATION ON EFIS

WARNING

TAKEOFF IS PROHIBITED WITH LESS THAN 4 GALLONS FUEL IN WING TANKS.

- **Battery** – CHECK INDICATION ON EFIS
- **Hobbs/Tach** – RECORD
- **Warning Messages** – CHECK
- **Alternator Switch** – OFF
- **Autopilot Switch** – OFF
- **Avionics Switch** – OFF
- **Master Switch** – OFF
- **EFIS** – DOUBLE CHECK POWER OFF IN 30 SEC.
- **ELT** – CHECK OFF
- **Rudder Pedal Position** – ADJUST (if needed)

FUEL LEVEL

- **Left Fuel Quantity** – CHECK VISUALLY OR WITH DIPSTICK
- **Left Fuel Filler Cap** – SECURE (tab down)
- **Left Fuel Sump** – DRAIN
- **Right Fuel Quantity** – CHECK VISUALLY OR WITH DIPSTICK
- **Right Fuel Filler Cap** – SECURE (tab down)
- **Right Fuel Sump** – DRAIN
- **Header Tank Fuel Sump** – DRAIN (pull cabin lever)
- **Oil Dipstick** – CHECK VISUALLY (4-5 Quarts)

WARNING

IF, AFTER REPEATED SAMPLING, EVIDENCE OF CONTAMINATION STILL EXISTS, THE AIRPLANE SHOULD NOT BE FLOWN. TANKS SHOULD BE DRAINED AND SYSTEM PURGED BY QUALIFIED MAINTENANCE PERSONNEL. ALL EVIDENCE OF CONTAMINATION MUST BE REMOVED BEFORE FURTHER FLIGHT.

EMPENNAGE

- **Start aft of pilot door**
- **Left side skin / wrap condition** – CHECK
- **ADS-B Antennas (belly of aircraft)** – CHECK
- **ELT Antenna** – CHECK CONDITION & SECURITY
- **GPS Antenna** - CHECK CONDITION & SECURITY
- **Left Side Aircraft Structural Inegrity** – CHECK
- **Rudder Gust Lock** – REMOVE (if installed)
- **Control Surfaces** – CHECK OVERALL CONDITION & FREEDOM OF MOVEMENT & SECURITY
- **Trim Motor Access Plates** – CHECK proper screw installation
- **Elevator Trim Tab** – CHECK CONDITION & SECURITY
- **Rudder Anti-Servo Tab** – CHECK attachment of push rod, presence of cotter pin, free play not greater than 3 mm (1/8 inch)
- **Tail Tie Down** – DISCONNECT (if installed)
- **Right Side Access Plates / Aircraft Structural Integrity** – CHECK

RIGHT WING TRAILING EDGE

- **Flap** – CHECK CONDITION, SECURITY
- **Flap Hinge Pins** – CHECK INSTALLATION
- **Aileron** – CHECK CONDITION, STRAIGHTNESS OF TRAILING EDGE, FREEDOM OF MOVEMENT
- **Aileron Hinge Brackets** – CHECK BOLT / WASHER / NUT INSTALLATION
- **Aileron Pushrod** – CHECK INSTALLATION, FREEDOM OF BEARING, JAM NUT TIGHT

RIGHT WING LEADING EDGE

- **Wingtip** – CHECK CONDITION
- **Strobe/Nav Light** – CHECK CONDITION
- **Landing Light** – CHECK CONDITION
- **Wing Tie-Down** – DISCONNECT (if installed)
- **Leading Edge** – CHECK CONDITION; no dents, damage, missing rivets
- **Main Wheel Tire** – CONDITION (PROPER INFLATION 25 PSI)
- **Brake Line** – CHECK CONDITION, no leaks, bends, damage
- **Axle Nut** – CHECK COTTER PIN INSTALLATION
- **Wheel Attach Bolts** – CHECK PROPER INSTALLATION
- **Wheel Chocks** – REMOVE (if installed)

NOSE

- **Engine Cooling Air Inlets** – CHECK CLEAR OF OBSTRUCTIONS
- **Propeller and Spinner** – CHECK FOR NICKS & SECURITY
- **Cowl Attach Screws aft of spinner** - CHECK PROPER INSTALLATION
- **Air Filter** – CHECK FREE OF BLOCKAGE
- **Nose Landing Gear Leg** – CHECK CONDITION
- **Nose Tire** – CONDITION, (PROPER INFLATION 22 PSI)
- **Nose Landing Gear Fork** – CHECK PIVOT NUT COTTER PIN INSTALLATION, PIVOT FLANGE, STOP SCREW INSTALLATION
- **Engine Exhaust Outlet** – CHECK CONDITION & SECURITY
- **Cowling** – CHECK CONDITION, SCREWS PROPERLY INSTALLED
- **Cowl Hinge Pins** – CHECK PROPER INSTALLATION
- **Cowl Attach Screws aft of Spinner** – CHECK PROPER INSTALLATION
- **Top Cowl Hinge Pin Retainer** – CHECK PROPER INSTALLATION
- **Windscreen** – CHECK CONDITION
- **Nose Wheel Chocks** – REMOVE (if installed)

LEFT WING LEADING EDGE

- **Cabin Door –** CHECK (SECURITY AND CONDITION)
- **Comm Antenna –** CHECK CONDITION & SECURITY
- **Leading Edge –** CHECK CONDITION; no dents, damage, missing rivets
- **Pitot Tube / Static Ports / Fuel Vent –** CHECK FOR OBSTRUCTION
- **Landing Light –** CHECK CONDITION
- **Strobe/Nav Light –** CHECK CONDITION
- **Wingtip –** CHECK CONDITION

LEFT WING TRAILING EDGE

- **Aileron** – CHECK CONDITION & FREEDOM OF MOVEMENT
- **Aileron Hinge Brackets** – CHECK BOLT / WASHER / NUT INSTALLATION
- **Aileron Pushrod** – CHECK INSTALLATION, FREEDOM OF BEARING, JAM NUT TIGHT
- **Flap** – CHECK CONDITION, SECURITY
- **Flap Hinge Pins** – CHECK INSTALLATION
- **Main Wheel Tire** – CONDITION (PROPER INFLATION 25 PSI)
- **Brake Line** – CHECK CONDITION,, NO LEAKAGE
- **Axle Nut** – CHECK COTTER PIN INSTALLATION
- **Wheel Attach Bolts** – CHECK PROPER INSTALLATION
- **Outside Air Temp (OAT) Probe** – CHECK CONDITION
- **Wheel Chocks** – REMOVE (if installed)

NORMAL PROCEDURES

BEFORE STARTING ENGINE

1. **Brakes** – PRESS & HOLD
2. **Preflight Inspection** – COMPLETE
3. **Passenger Briefing** – COMPLETE
4. **Seat Belts** – ADJUST & SECURE
5. **Cabin Doors** – CLOSED & LATCHED
6. **Brakes** – PRESS & HOLD
7. **Master Switch** – ON
8. **Avionics Switch** – ON
9. **Autopilot Switch** – ON
10. **Alternator Field Switch** – ON
11. **Strobe Lights** – ON STROBE
12. **Flaps** – UP
13. **Fuel Valve** – ON (PUSH FULL IN)

STARTING ENGINE

1. **Mixture** – FULL RICH (PUSH FULL IN)
2. **Carb Heat** – OFF (PUSH FULL IN)
3. **Fuel Pressure** – 0.5 psi min
4. **Prime** – USING THROTTLE CONTROL
   ENGINE COLD – PUMP (3 to 6 STROKES)
   ENGINE WARM – PUMP ONCE (PUSH FULL IN AND PULL FULL OUT)
5. **Throttle** – SLIGHTLY OPEN (PUSH IN 1/8 inch)
6. **Brakes** – PRESS & HOLD
7. **Propeller** – CLEAR
8. **Ignition Key** – START, RELEASE TO BOTH AFTER ENGINE FIRES
9. **Throttle** – TO 1000 RPM
10. **Oil Pressure** – CHECK 10 PSI MIN WITHIN 30 SECONDS OR IMMEDIATELY SHUT DOWN THE ENGINE
11. **Volt Meter** – 13.8 to 14.4 Volts

AFTER START

1. **Nav/Strobe Lights** – STROBES ON
2. **Landing Light** – PULSE (Day) / STEADY (Night)
3. **COM Radio** – TUNE, ADJUST VOLUME
4. **Intercom** – CHECK, ADJUST VOLUME/SQUELCH
5. **Mixture** – LEAN AS DESIRED (PULL OUT)
6. **ATIS** – GET INFORMATION
7. **Altimeter** – SET BARO PRESSURE
8. **Cabin** – SET FOR DEPARTURE
9. **Flight Plan** – UPLOAD / ENTER MANUALLY

TAXIING

1. **Engine Gauges** – CHECK
2. **Brakes** – RELEASE & TEST
3. **Taxi RPM**– 900 – 1000 RPM; UNTIL OIL TEMP OVER 75° F (24° C)

ENGINE RUN UP

1. **Brakes** – PRESS & HOLD
2. **Seatbelts** – CHECK SECURE
3. **Cabin Doors** – CLOSED & LATCHED
4. **Flight Controls** – FREE & CORRECT
5. **Flight Instruments** – CHECK & SET (No Red X's)
6. **Engine Instruments** – CHECK (No Red X's)
7. **Altimeter** – CONFIRM BARO PRESSURE SET
8. **Fuel Valve** – ON (PUSH FULL IN)
9. **Mixture** – RICH (PUSH FULL IN)
10. **Fuel Quantity Indication** CHECK
    Do not take-off with less than 4 gallons fuel
11. **Elevator Trim** – SET FOR TAKEOFF
12. **Flaps** – AS NEEDED – (0° or 20°)
13. **Engine Run-Up:**
    Elevator – STICK BACK
    Minimum Oil Temp – 75° F
    Throttle – 1700 RPM
    Magnetos Switch – CHECK LEFT & RIGHT (RPM drop not to ex ceed 150 on either magneto or 50 RPM differential between man etos)
    Carb Heat – ON
    (Verify Carb Temp increase & Engine RPM decrease)
    Engine Instruments – CHECK INDICATION IN THE GREEN
    Volts – Check 13.8 - 14.2
14. **Throttle** – BACK TO 1000 RPM
15. **Throttle Friction Lock** – ADJUST AS DESIRED
16. **COM Frequency** – SET
17. **Flight Plan** – CONFIRM AS DESIRED
18. **Transponder** – SET [1200 / VFR] / AS ASSIGNED
19. **Brakes** – RELEASE

BEFORE TAKE OFF

1. **Flaps** – AS NEEDED
2. **Fuel Valve** – ON (PUSH FULL IN)
3. **Mixture** – RICH (PUSH FULL IN)
4. **Carb Heat** – OFF (PUSH FULL IN)
5. **Lights** – PULSE (Day) / STEADY (Night)
6. **Brakes** – RELEASE

NORMAL TAKE-OFF

1. **Control Stick** – HALFWAY BETWEEN NEUTRAL AND AFT
2. **Throttle** – SMOOTHLY PUSH FULL IN
3. **Directional Control** – MAINTAIN (use differential braking until rudder becomes effective)
4. **Elevator Control** – LIFT NOSE WHEEL AT 45-50 KIAS

CLIMB OUT

1. **Airspeed** – 60 KIAS (Vx)
   – 75 KIAS (Vy)
   – 85 KIAS (Cruise climb)
2. **Wing Flaps** – RETRACT AT SAFE ALTITUDE
3. **Trim** – AS REQUIRED
4. **Engine Instruments** – CHECK; Lean Mixture as needed
5. **Lights** – PULSE (Day) / STEADY (Night)
6. **Autopilot** – AS REQUIRED

CRUISE

1. **Flaps** – CHECK UP
2. **Trim** – AS NEEDED
3. **Airspeed** – AS NEEDED [Above 103 KIAS in smooth air only]
4. **Power –** 2200 – 2700 RPM (2750 RPM max)
5. **Mixture** – LEAN WHEN BELOW 75% POWER
   (Monitor EMS information for PEAK leaning)
6. **Engine Instruments** – CHECK & MONITOR
7. **Autopilot** – AS REQUIRED

DESCENT

1. **ATIS** – Get Information
2. **Altimeter** – SET
3. **Autopilot** – ADJUST AS REQUIRED
4. **Carb Heat** – AS NEEDED
5. **Throttle** – REDUCE AS NEEDED
6. **Airspeed** – AS DESIRED
7. **Mixture** – ADJUST AS NEEDED [PUSH IN]
8. **Flaps** – AS NEEDED [Below 90 KIAS]
9. **Trim** – AS REQUIRED
10. **Landing Light** – PULSE (Day) / STEADY (Night)
11. **Autopilot** - AS DESIRED

BEFORE LANDING

1. **Carb Heat** – ON (PULL OUT - IF NEEDED)
2. **Fuel Valve** – ON (PUSH FULL IN)
3. **Mixture** – RICH (PUSH FULL IN)
4. **Cabin** – SECURE
6. **Seat Belts**– SECURE
7. **Autopilot** – OFF

NORMAL APPROACH TO LANDING

1. **Downwind Leg** – 80 KIAS / Flaps 20
2. **Base Leg** – 70 KIAS / Flaps 20
3. **Final** – 60 KIAS / Flaps 20 or 40
4. **Touchdown** – 55 KIAS / Flaps 20 or 40
5. **Brakes** – MINIMUM REQUIRED

AFTER LANDING

1. **Flaps** – RETRACT
2. **Carb Heat** – OFF (PUSH FULL IN)
3. **Mixture** – LEAN (PULL OUT)
4. **Landing Light** – PULSE (Day) / STEADY (Night)
5. **NAV/ Strobe Light** – AS DESIRED

SHUT DOWN / SECURING AIRPLANE

1. **Brakes** – PRESS & HOLD
2. **Throttle** – IDLE
3. **Mixture** – PULL OUT [CUT – OFF]
4. **Lights & Switches** – OFF (Rocker Switches to Neutral)
5. **ELT** – CHECK LIGHT OFF & CHECK SIGNAL ON **121.5** MHZ
6. **Ignition** – OFF
7. **Alternator Field Switch** – OFF
8. **Autopilot Switch** – OFF
9. **Avionics Switch** – OFF
10. **Master Switch** – OFF
11. **Secure / Tie down**

V-SPEED REFERENCE CARD

FLIGHT PHASE	V speed	KIAS
Take-Off & Climb	Vr (Normal)	60
	Vr (Short/Soft)	55/F20
	Vx	60/F20
	Vy	75
	Cruise Climb	85
In-Flight	Va	90
	Vfe	90
	Vs	50
	Vso	46
	Vno	103
	Vne	131
	Vglide (min sink)	59
	Vglide (max dist)	63
Maneuvers	Chandelle/Lazy 8	95
	Steep Turns	95
Approach	Downwind / Base / Final	80/70/60
Landing	Normal	60
	Short	55
	Go Around	60/F20

ENGINE PERFORMANCE CARD

Tachometer		
	Normal Range (green arc)	900 to 2750 RPM
	Caution Range (yellow arc)	675 to 900 RPM
	Maximum (red line)	above 2750 RPM
Cylinder Head Temperature		
	Minimum for Take-Off	205°F
	Normal in Cruise (green arc)	205° to 385°F
	Caution Range (yellow arc)	385° to 445°F
	Maximum (red line)	445°F
Oil Temperature		
	Minimum for Take-Off	75°F
	Normal in Cruise	170° to 220°F
	Caution Range (yellow arc)	220° to 240°F
	Maximum (red line)	240°F
Oil Pressure		
	Minimum at Idle (red line)	10 PSI
	Normal Operation	30 to 60 PSI
	Maximum – Cold (red line)	100 PSI
Fuel Pressure		
	Minimum	0.1 PSI
	Maximum (red line)	6.0 PSI
		*0.3 PSI in the system when SkyView displays 0 PSI and Fuel on

PERFORMANCE PROCEDURES

SHORT FIELD TAKE-OFF

1. **Wing Flaps** – 20°
2. **Carb Heat** – OFF (PUSH FULL IN)
3. **Brakes** – APPLY
4. **Mixture** – RICH
5. **Throttle** – FULL IN
6. **Brakes** – RELEASE
7. **Directional Control** – MAINTAIN
8. **Lift** – OFF – 50 to 55 KIAS
9. **Climb** – 60 kts (best angle of climb) until clear of obstacle
10. **Wing Flaps** – RETRACT SLOWLY (WHEN AIRSPEED IS ABOVE 60 KIAS)

SOFT FIELD TAKE-OFF

For soft field takeoff, use the normal take-off procedures with the following exceptions:

1. **Wing Flaps** – 20°
2. **Carb Heat** – OFF (PUSH FULL IN)
3. **Mixture** – RICH
4. **Throttle** – PUSH FULL IN
5. **Elevator Control** – RAISE NOSE TO TAKEOFF ATTITUDE
6. **Lift** – **OFF** – AS EARLY AS POSSIBLE
7. **After Lift** – **OFF** – LEVEL FLIGHT TO OBTAIN SAFE MARGIN OF AIRSPEED PRIOR TO CLIMB
8. **Climb** – 60 KIAS (Vx) UNTIL CLEAR OF OBSTACLE

WARNING
THE AIRCRAFT WILL LIFT OFF AT VERY LOW KIAS BUT CONTINUED CLIMB OUT BELOW 60 KTS IMMEDIATELY AFTER TAKE OFF IS NOT RECOMMENDED.

ENROUTE CLIMB

1. **Throttle** – FULL
2. **Mixture** – RICH
3. **Airspeed** – Best Angle (Vx) **60 KIAS** (Flaps – 20°)
   Best Rate (Vy) **75 KIAS** (Flaps – UP)
   Cruise-climb **85 KIAS** (Flaps – UP)
4. **Trim** – AS REQUIRED

SHORT FIELD LANDING

Use of normal landing procedures in addition:
1. **Flaps** – 40 ° (FULL DOWN)
2. **Approach Airspeed** – 55 KIAS
3. **Throttle** – AS DESIRED TO CONTROL RATE OF DESCENT
4. **Touchdown** - FIRMLY
5. **Braking** - MAXIMUM AS NEEDED FOR MINIMUM GROUND ROLL

Slip aircraft as necessary to increase rate of descent

BALKED LANDING (Go Around)

Use of normal landing procedures in addition at the time of going around:
1. **Throttle** – FULL OPEN
2. **Carburetor Heat** – OFF (PUSH FULL IN)
3. **Wing Flaps** – RETRACT TO 20°
4. **Climb Speed** – 60 KIAS / Flaps 20° [UNTIL CLEARED OF OBSTACLE]
5. **Climb Speed** – 75 KIAS / FLAPS UP [AFTER CLEAR OF OBSTACLE]
6. **Flaps** – RETRACT to 0° AT SAFE ALTITUDE AND 75 KIAS

HOT WEATHER PROCEDURES

WARNING
PROLONGED HIGH OIL, CHT, & EGT TEMPERATURES WILL LEAD TO ENGINE DAMAGE.

THE FOLLOWING PROCEDURES ARE AIMED AT REDUCING HIGH TEMPERATURES IN THE ENGINE.

PLEASE SEE THE ENGINE PERFORMANCE CARD FOR NORMAL OPERATING RANGES.

TAKE OFF and/ or CLIMB OUT

Use normal takeoff & climb out procedures, then when practical:
Airspeed - Cruise - climb 85 KIAS (Flaps - UP)
Throttle - ESTABLISH MANIFOLD PRESSURE of 24'' or less for Airspeed
Mixture - RICH
Trim - AS REQUIRED
Monitor Engine Temperatures

ENROUTE CLIMB

Airspeed - Cruise - climb 85 KIAS
Throttle - ESTABLISH MANIFOLD PRESSURE of 24'' or less for Airspeed
Mixture - RICH
Trim - AS REQUIRED
Monitor Engine Temperatures

EMERGENCY CHECKLIST

FIRES

ENGINE FIRE DURING START ON GROUND

If the fire is believed to be confined to the intake or exhaust system (result of flooding engine):

- Continue cranking engine with starter
- Throttle – FULL OPEN
- Mixture – IDLE CUT-OFF
- Inspect aircraft thoroughly for damage and cause prior to restart

If fire persists or is not limited to intake or exhaust system:

- Fuel Shut-Off Valve – PULL OUT – OFF
- Electrical switches – ALL OFF
- Ignition switch – OFF
- Exit Aircraft

Direct fire extinguisher through the air outlet tunnel at the bottom of the cowl

Inspect Aircraft thoroughly for damage and cause prior to restart

ENGINE FIRE IN FLIGHT

- Fuel Valve – OFF (PULL OUT)
- Ignition Switch – OFF
- Effect an expedited descent and land immediately
- Establish Glide Speed – 63 KIAS
- Trim – AS REQUIRED
- Radio – MAYDAY 121.5 MHz (or frequency in use)
- On Final Approach – Master Switch – OFF

WARNING
DO NOT ATTEMPT TO RESTART ENGINE

ALTERNATOR/ELECTRICAL FAILURE

An alternator failure is indicated by a voltage indication less than 13.5 volts.

- Turn OFF all non-essential electrical equipment to conserve battery power.

WARNING
ELECTRICAL FUEL PUMP OPERATION DEPENDS UPON SUFFICIENT BATTERY POWER. TURN FUEL PUMP ON ONLY IN CASE OF LOW FUEL INDICATION ON THE EFIS.

- Avionics switch – OFF

NOTE
The primary EFIS and GPS will continue to operate on their internal battery.

- Land as soon as possible as the battery will furnish electrical power for a limited time only.

OVERVOLTAGE CONDITION

An overvoltage condition is indicated by a voltage indication in excess of 14.8 volts.

- ALT switch – OFF
- Turn OFF all non-essential electrical equipment to conserve battery power.
- Airspeed – 60 kts (55 kts minimum)
- Flaps – DOWN after intended point of landing assured
- Touchdown with minimum airspeed particularly if landing on rough terrain.

ELECTRICAL FIRE

An electrical fire is usually indicated by an odor of hot or burning insulation.

- Electrical Switches – ALL OFF (Both Master and Alternator
- or OFF) (leave ignition switches ON)
- Doors &/or Air Vent – OPEN if necessary for smoke removal and ventilation
- Use hand fire extinguisher if available
- Land immediately (or as soon as practical if location for safe landing is not available)

The battery will furnish electrical power for a limited time only.

ENGINE MALFUNCTION

ENGINE FAILURE ON TAKE-OFF

WARNING
IN THE EVENT OF ENGINE FAILURE, THE CONTROL STICK MUST BE IMMEDIATELY AND AGGRESSIVELY MOVED FORWARD TO PREVENT LOSS OF AIRSPEED.

- Airspeed – 60 kts IAS (55 kts IAS minimum)

If airborne and sufficient runway remains:

- Throttle – CLOSED
- Land using maximum braking after touchdown.

If airborne and insufficient runway remains for landing, attempt an engine restart if altitude permits:

- Ignition Switch – BOTH
- Fuel Shut-Off Valve – CHECK ON – PUSH
- Mixture – FULL RICH - PUSH
- Fuel Pump – ON
- Carburetor Heat - ON - PULL

If no restart is possible:

- Select most favorable landing area ahead
- Flaps – FULL DOWN
- Fuel Shut-Off Valve – OFF
- Ignition switch – OFF

WARNING
MAINTAIN FLYING SPEED AT ALL TIMES AND DO NOT ATTEMPT TO TURN BACK TOWARD THE RUNWAY UNLESS SUFFICIENT ALTITUDE HAS BEEN ACHIEVED.

Just before touchdown:

- Master switch – OFF
- Touchdown with minimum airspeed particularly if landing on rough terrain.

ENGINE AIR RESTART

- Maintain Airspeed – 60 kts IAS (55 kts IAS minimum)
- Ignition Switch – BOTH
- Fuel Shut-Off Valve – CHECK ON – DOWN
- Mixture – FULL RICH – PUSH
- Fuel Pump – ON
- Carburetor Heat – ON
- Engine starter may be engaged when propellor stops windmilling. (Properller will not windmill below 70 KIAS.)
- If restart not possible, change throttle and/or mixture settings in attempt to restart
- Follow “Forced Landing Procedure” if unable to restart

PARTIAL POWER LOSS/ROUGH RUNNING

- Follow the engine air restart procedures
- Land as soon as possible using “Precautionary Landing Approach” procedures

ABNORMAL OIL PRESSURE/TEMPERATURE INDICATIONS

Oil pressure and temperature problems are usually related with one affecting the other. Before any drastic action is taken, cross check other engine instruments and control settings in an attempt to determine the source of the problem.

High oil temperature is generally a result of loss of oil or overheating (note CHT). If the situation remains unchecked, oil pressure usually drops resulting in possible engine damage.

Power should be reduced while maintaining cruise airspeed; land as soon as practical.

Low or zero oil pressure is usually caused by a failed pressure relief valve, oil pump, loss of oil, high oil temperature or a defective gauge. A landing should be made as soon as practical using minimum RPM changes. Plan a “Precautionary Landing Approach” as complete engine failure is possible at any time.

LANDING EMERGENCIES

PRECAUTIONARY LANDING APPROACH

A precautionary landing approach should be used whenever power is still available. But, a complete power failure is considered imminent. Maintain a higher and closer pattern than normal in attempt to remain in gliding distance of the intended touchdown point. Use the normal landing procedures in addition:

- Airspeed – 60 kts recommended (55 kts minimum)
- Throttle – CLOSED when in gliding distance of runway
- Flaps – LOWER AS NEEDED to increase approach descent angle

NOTE

Slipping the aircraft by cross controlling the rudder and ailerons will increase the rate of descent either with or without flaps.

NOTE

If a crosswind exists, place the lower wing into the wind.

INDICATED AIRSPEED IN A FULL RUDDER DEFLECTION SLIP IS 3 KT HIGHER THAN IN COORDINATED FLIGHT.

FORCED LANDING (Complete Power Failure)

If the engine cannot be restarted in flight, trim the aircraft to the recommended glide speed (63 KIAS). Remain within gliding distance of the intended point of landing. Maintain a higher and closer pattern than normal, making allowance for wind.

Extending flaps or slipping the aircraft can lose additional altitude. Diving the aircraft in an attempt to lose altitude when flying into a headwind will only increase the required landing distance.

- Maintain a higher and closer pattern than normal making allowance for wind.
- Fuel Valve – OFF (PULL OUT)
- Flaps – UP to maximize glide range
- Radio – MAYDAY 121.5 MHz (or frequency in use)
- Ignition Switch – OFF

On Final Approach:

- Airspeed – 60 kts (55 kts minimum)
- Flaps – DOWN (After intended point of landing assured)
- Master switch – OFF
- Touchdown with minimum airspeed particularly if landing on rough terrain.

DITCHING

Should it become necessary to make a forced landing over water, follow the “Forced Landing Procedures” in addition to the following:

On Final Approach:

- Land into wind if high winds are evident or parallel to swells with calm winds
- Flaps – UP (allows higher nose attitude at touchdown)
- Door – UNLATCH (just before touchdown)
- Contact the water with nose high attitude
- After coming to complete stop – EXIT AIRCRAFT

NOTE

Aircraft cannot be depended upon to provide flotation after contacting the water.

UNUSUAL FLIGHT CONDITIONS

SEVERE TURBULENCE

To prevent overstressing the aircraft do not exceed 103 KIAS in rough air.

To minimize personal discomfort, decrease the KIAS below 90 kts.

Maintain a level flight attitude rather than flying by reference to the EFIS as the pitot-static indications may become very erratic.

STALLS

The RANGER R7 stall characteristics are conventional. Additionally, the RANGER R7 is equipped with an Angle of Attack (AoA) system that warns of impending stall via visual indication and audio indications beginning approximately 5 knots above stall speed.

Aileron control response in a fully stalled condition is marginal. Large aileron deflections will aggravate a near stalled condition and their use is not recommended to maintain lateral control. The rudder is very effective and should be used for maintaining lateral control in a stalled condition with the ailerons placed in a neutral position.

To recover from a stall, proceed as follows:

- Nose attitude – LOWER with relaxation of back pressure on control stick
- Throttle – FULL OPEN simultaneously with relaxation of back pressure on stick
- Use rudder to maintain lateral control

SPINS

If a spin is inadvertently entered, immediate recovery should be initiated. The recovery procedure is as follows:

- Throttle – CLOSED
- Rudder – FULL DEFLECTION opposite direction of rotation
- Elevator – SLIGHTLY FORWARD OF NEUTRAL
- Ailerons – NEUTRAL POSITION

When rotation stops (1/2 – 1 turn after recovery initiated):

- Rudder – NEUTRALIZE
- Nose Attitude – RAISE smoothly to level flight attitude

WARNING
DURING THE SPIN RECOVERY, THE AIRSPEED WILL BUILD VERY RAPIDLY WITH A NOSE LOW ATTITUDE. DO NOT USE FULL OR ABRUPT ELEVATOR CONTROL MOVEMENTS.

RUNAWAY TRIM MOTOR

If the trim motor should begin to run uncommanded in either direction the following actions should be taken:

- Autopilot Switch - OFF
- Elevator - HOLD against out of trim condition
- (Airspeed may be reduced as a way to lessen the amount of stick force required to maintain level flight)
- Land as soon as possible

IN-FLIGHT OVERSTRESS

Should an overstress occur due to exceeding the airspeed and/or load factor limits, aggressive maneuvering should be immediately terminated.

Fly at a reduced airspeed (65 – 75 kts) IAS to a suitable landing point. DO NOT under any circumstances make large control movements or subject the aircraft to additional G loadings above that required for straight and level flight.

After landing, the aircraft should be inspected by a mechanic or repairman prior to the next flight.

Date: 1/20/20