RV-10

# *N720AK*

# Pilot's Operating Handbook

Revision 1.0

*Insert aircraft photo here*

`images/aircraft.jpg`

Constructed by:
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Serial number 41649
Construction: 2015 - 2025

# Table of Contents

# 1 General

## *1.1 Introduction*

The RV-10 is a four-place, single-engine aircraft powered by a [ENGINE MODEL] [CYLINDER COUNT]-cylinder reciprocating engine turning a [PROP TYPE] propeller. The aircraft is primarily constructed of alclad aluminum using flush rivets to the maximum extent possible.

## *1.2 Exterior Dimensions*

| Dimension | Value |
|---|---|
| Wing Span | 32′ 9” |
| Horizontal Stab Span | |
| Length | 25′ |
| Height | |
| Wheel Base | |
| Wing Area | 147 sq. ft. |

## *1.3 Interior Dimensions*

## *1.4 General Specifications*

| Specification | Value |
|---|---|
| Wing Span | 32′ 9” |
| Length | 25′ |
| Height | |
| Wing Area | 147 sq. ft. |
| Empty Weight | lbs |
| Gross Weight | 2,700 lbs |
| Wing Loading – Gross | lbs/sq. ft. |
| Power Loading – Gross | lbs/HP |
| Engine | |
| Propeller | |
| Fuel Capacity | U.S. Gallons |
| Baggage Capacity | lbs |

## *1.5 Performance Specifications*

| Performance | Light Weight | Gross Weight |
|---|---|---|
| Top Speed | KIAS | KIAS |
| Cruise (75% @ 8,000 ft) | KIAS | KIAS |
| Cruise (55% @ 8,000 ft) | KIAS | KIAS |
| Stall Speed | KIAS | KIAS |
| Rate of Climb | ft/min | ft/min |
| Ceiling | ft | ft |
| Takeoff Distance | ft | ft |
| Landing Distance | ft | ft |
| Range (75%) | SM | SM |
| Range (55%) | SM | SM |

## *1.6 Engine*

| Parameter | Value |
|---|---|
| Manufacturer | |
| Model | |
| Serial Number | |
| Rated Horsepower | HP |
| Rated Speed | RPM |
| Bore | inches |
| Stroke | inches |
| Displacement | cubic inches |
| Compression Ratio | |
| Type | |

## *1.7 Propeller*

| Parameter | Value |
|---|---|
| Manufacturer | |
| Model | |
| Serial Number | |
| Blades | |
| Low Pitch | degrees |
| High Pitch | degrees |
| Diameter (max) | inches |
| Diameter (min) | inches |
| Type | |

## *1.8 Fuel*

| Parameter | Value |
|---|---|
| Fuel Capacity | U.S. gallons |
| Usable Fuel | U.S. gallons |
| Minimum Grade | 100LL octane |

## *1.9 Oil*

| Parameter | Value |
|---|---|
| Oil Capacity | quarts max, quarts min |
| Oil Specifications | |
| Oil Viscosity (All Temps) | SAE15W-50 or SAE20W-50 |

## *1.10 Maximum Weights*

| Weight | Value |
|---|---|
| Maximum Takeoff Weight | lbs |
| Maximum Ramp Weight | lbs |
| Maximum Landing Weight | lbs |
| Maximum Baggage Weight | lbs |
| Empty Weight | lbs |
| Gross Weight | lbs |

## *1.11 Baggage Space*

| Dimension | Value |
|---|---|
| Entry Width | |
| Entry Height | |
| Volume | cubic feet |

## *1.12 Specific Loadings*

| Loading | Value |
|---|---|
| Wing Loading | lbs/sq. ft. |
| Power Loading | lbs/HP |

# 2 Operating Limitations

## *2.1 General*

This section provides the operating limitations, instrument markings, color coding and basic placards necessary for the safe operation of the airplane and its systems.

## *2.2 Airspeed Limitations*

| Type | Description | KIAS |
|---|---|---|
| $V_{S0}$ | Stall, Flaps Down | |
| $V_{S1}$ | Stall, Flaps Up | |
| $V_X$ | Best Angle of Climb | |
| $V_Y$ | Best Rate of Climb | |
| $V_G$ | Best Glide | |
| $V_{FE}$ | Maximum Flap Extended | |
| $V_{NO}$ | Maximum Structural Cruising | |
| $V_A$ | Design Maneuvering | |
| $V_{NE}$ | Never Exceed | |

## *2.3 Power Plant Limitations*

| Parameter | Limit |
|---|---|
| Engine | |
| Maximum Horsepower | HP |
| Maximum Speed | RPM |
| Maximum Manifold Pressure | |
| Maximum CHT | °F |
| Maximum Oil Temperature | °F |
| Oil Pressure (Min) | PSI |
| Oil Pressure (Max) | PSI |
| Fuel Pressure (Min) | PSI |
| Fuel Pressure (Max) | PSI |

## *2.4 Power Plant EFIS Markings*

### 2.4.1 Tachometer

| Arc | Range |
|---|---|
| Green Arc | 0 – RPM |
| Red Line (Max) | RPM |

### 2.4.2 Oil Temperature

| Arc | Range |
|---|---|
| Green Arc | °F – °F |
| Yellow Arc | °F – °F |
| Red Line (Max) | °F |

### 2.4.3 Oil Pressure

| Arc | Range |
|---|---|
| Green Arc | – PSI |
| Yellow Arc | – PSI |
| Red Line (Min) | PSI |
| Red Line (Max) | PSI |

### 2.4.4 Cylinder Head Temperature

| Arc | Range |
|---|---|
| Green Arc | °F – °F |
| Yellow Arc | °F – °F |
| Red Line (Max) | °F |

## *2.5 Weight Limits*

| Limit | Value |
|---|---|
| Maximum Takeoff Weight | lbs |
| Maximum Ramp Weight | lbs |
| Maximum Landing Weight | lbs |
| Maximum Baggage Weight | lbs |

## *2.6 Center of Gravity Limits*

| Category | Range |
|---|---|
| Utility | " – " aft of datum |

Note: Datum is located forward of the wing leading edge.

## *2.7 Flight Maneuvering Load Factors*

| Category | Positive | Negative |
|---|---|---|
| Utility | +G | -G |

## *2.8 Types of Operations*

The airplane is approved for the following operations when equipped in accordance with FAR 91:

- Day VFR
- Night VFR
- Day IFR
- Night IFR
- Non-Icing

## *2.9 Fuel Limitations*

| Parameter | Value |
|---|---|
| Fuel Capacity | U.S. gallons |
| Usable Fuel | U.S. gallons |
| Minimum Grade | 100LL octane |

## *2.10 Placards*

| Location | Placard |
|---|---|
| On baggage area | Maximum Baggage Capacity lbs |
| In view from entrance | EXPERIMENTAL |
| In view of occupants | PASSENGER WARNING: THIS AIRCRAFT IS AMATEUR BUILT AND DOES NOT COMPLY WITH FEDERAL SAFETY REGULATIONS FOR STANDARD AIRCRAFT. |
| At each fuel filler | 100LL, XX Gal. |

# 3 Additional Engine Information

## *3.1 General*

Refer to your engine manufacturer's Operator's Manual for detailed performance charts and operating information.

### 3.1.1 Key Engine Data

| Parameter | Value |
|---|---|
| Model | |
| Serial Number | |
| TBO | hours |
| Installed | |
| Hours at Installation | |

# 4 Emergency Procedures

This section will be generated from your efis-editor checklist JSON. Run: `python3 json_to_markdown.py your-checklist.json`

If your checklist has groups with `category: 2` (EMERGENCY), they will appear here.

# 5 Normal Procedures

These procedures are derived from the efis-editor checklist file. Update the source JSON and regenerate to modify.

## *5.1 Preflight*

### 5.1.1 Preflight Inspection

---

- Pilot's Operating Handbook … **AVAILABLE IN THE AIRPLANE**
- Keys … **CLIP TO THROTTLE**
- Control Wheel Lock … **REMOVE**
- Ignition Switch … **OFF**
- Avionics Power Switch … **OFF**
- Master Switch … **ON**
- Fuel Quantity Indicators … **CHECK**
- Master Switch … **OFF**
- Alternate Static Source Valve … **OFF**
- Fuel Selector Valve … **BOTH**
- Baggage Door … **CHECK**

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- Rudder Gust Lock … **REMOVE**
- Tail Tie-Down … **DISCONNECT**
- Control Surfaces … **CHECK**

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- Aileron … **CHECK**

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- Wing Tie-Down … **DISCONNECT**
- Fuel Tank Vent Opening … **CHECK**
- Main Wheel Tire … **CHECK**
- Fuel Tank Sump … **CHECK**
- Fuel Quantity … **CHECK VISUALLY**
- Fuel Filler Cap … **SECURE** and vent unobstructed

---

- Static Source Openings … **CHECK**
- Propeller and Spinner … **CHECK** for nicks, security, and oil leaks
- Landing Lights … **CHECK**
- Carburetor Air Filter … **CHECK**
- Nose Wheel, Strut and Tire … **CHECK**
- Nose Tie-Down … **DISCONNECT**

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- Engine Oil Level … **CHECK** Do not operate with less than nine quarts. Fill to twelve quarts for extended flight.
- Fuel Strainer … **CHECK**

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- Main Wheel Tire … **CHECK**
- Fuel Tank Sump … **CHECK**
- Fuel Quantity … **CHECK VISUALLY**
- Fuel Filler Cap … **SECURE** and vent unobstructed

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- Pitot Tube Cover … **REMOVE**
- Fuel Tank Vent Opening … **CHECK**
- Stall Warning Vane … **CHECK**
- Wing Tie-Down … **DISCONNECT**

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- Aileron … **CHECK**

### 5.1.2 Before Starting Engine

- Preflight Inspection … **COMPLETE**
- Seats, Belts, Shoulder Harnesses … **ADJUST AND LOCK**
- Fuel Selector Valve … **BOTH**
- Cowl Flaps … **OPEN**
- Avionics Power Switch … **OFF**
- Electrical Equipment … **OFF**
- Circuit Breakers … **CHECK IN**
- Brakes … **TEST AND SET**

### 5.1.3 Starting Engine

- Mixture … **RICH**
- Propeller … **HIGH RPM**
- Carburetor Heat … **COLD**
- Throttle … **OPEN 1/2 INCH**
- Prime … **AS REQUIRED** 3-6 strokes (none if engine is warm). Check in and locked
- Master Switch … **ON**
- Beacon Light … **ON**
- Propeller Area … **CLEAR**
- Ignition Switch … **START** release after engine starts

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```
If engine has been overprimed (2x):
- place mixture idle
- start with throttle 1/4 to 1/2 open.
- Mixture full rich when engine fires and throttle to idle promptly.
```

- RPM … **ADJUST TO 1,000** reset to 1000 RPM as engine warms up

---

- Oil Pressure … **CHECK IN GREEN**
- Mixture … **LEAN FOR TAXI** at least 3/4"

### 5.1.4 Before Taxi

- Avionics Power Switch … **ON**
- Wing Flaps … **RETRACT, VERIFY UP**
- Radios ON … **BDU AWOS 118.825** obtain AWOS/ATIS
- Altimeter … **SET**
- Heading indicator … **SET**
- Lights … **AS REQUIRED**
- Brakes … **TEST ON ROLL**

### 5.1.5 Before Takeoff

- Brakes … **HOLD**
- Cabin Doors and Windows … **CLOSED AND LOCKED**
- Elevator and Rudder Trim … **TAKEOFF**
- Flight Controls … **FREE AND CORRECT**
- Flight Instruments … **SET**
- Fuel Selector Valve … **BOTH**
- Cowl Flaps … **OPEN**
- Propeller Control … **HIGH RPM**
- Mixture … **RICH**
- Throttle … **1700 RPM**
- Mixture Control … **SET** lean => RPM drop, enrich to peak RPM, three 1/2 turns rich
- Propeller … **CYCLE 2X** RPM dip, then oil pressure dip
- Carburetor Heat … **CHECK RPM DROP**
- Magnetos … **CHECK** L, Both, R, Both: ≤150 RPM drop ≤ 50 RPM difference
- Engine Instruments (Oil Pressure, Temp) … **CHECK**
- Fuel Gauge … **CHECK QUANTITY**
- Ammeter … **CHECK**
- Suction Gage … **CHECK**
- Throttle … **IDLE, THEN 1000 RPM**
- Radios, Navigation … **SET** BDU CTAF 122.725
- Transponder … **ALT, 1200**
- Flashing Beacon … **AS REQUIRED**
- Navigation Lights … **AS REQUIRED**
- Strobe Lights … **AS REQUIRED**
- Pitot Heat … **AS REQUIRED**
- Wing Flaps … **SET FOR TAKEOFF**
- Throttle Friction Lock … **ADJUST**
- Radio Call … **BDU CTAF 122.725**

### 5.1.6 Normal Takeoff

- Wing Flaps … **0º - 20º**
- Carburetor Heat … **COLD**
- Power … **FULL THROTTLE AND 2600 RPM**
- Elevator Control … **LIFT NOSE WHEEL AT 50 KIAS**
- Climb Speed … **70 KIAS (FLAPS 20º)** 80 KIAS (flaps UP)

## *5.2 In Flight*

### 5.2.1 Normal Climb

- Airspeed … **85-95 KIAS**
- Power … **23" HG AND 2450 RPM**
- Fuel Selector Valve … **BOTH**
- Mixture … **SET** mixture may be leaned above 5000 feet
- Engine Gauges … **CHECK**
- Cowl Flaps … **OPEN** as required

### 5.2.2 Cruise

- Power … **15-23" HG AND 2200-2450 RPM** no more than 75%
- Elevator and Rudder Trim … **ADJUST**
- Mixture … **LEAN**
- Engine Gauges … **CHECK**
- Lights … **AS REQUIRED**
- Cowl Flaps … **CLOSED**

### 5.2.3 Pre-Maneuver

- Fuel Selector Valve … **BOTH**
- Mixture Control … **SET** as needed
- Carburetor Heat … **AS REQUIRED**
- Cowl Flaps … **AS REQUIRED**
- Lights … **AS REQUIRED**
- Clearing Turns … **PERFORM** 90º L - 90º R / 180º turn
- Power … **AS DESIRED**

### 5.2.4 Descent

- Fuel Selector Valve … **BOTH**
- Mixture … **ENRICHEN** as required
- AWOS/ATIS … **BDU AWOS 118.825**
- Power … **AS DESIRED**
- Carburetor Heat … **AS REQUIRED** to prevent carburetor icing
- Cowl Flaps … **CLOSED**
- Wing Flaps … **AS DESIRED** 0º to 10º below 140 KIAS, 10º to 40º below 95 KIAS

- Lights … **AS REQUIRED**

### 5.2.5 Before Landing

- Radio Call … **BDU CTAF 122.725**
- Carburetor Heat … **ON** apply full heat before closing throttle
- Cowl Flaps … **CLOSED**
- Fuel Selector Valve … **BOTH**
- Mixture … **RICH**
- Propeller … **HIGH RPM**
- Seats, Belts, Harnesses … **ADJUST AND LOCK**

### 5.2.6 Normal Landing

- Airspeed … **70-80 KIAS (FLAPS UP)**
- Wing Flaps … **AS DESIRED** 0º TO 10º below 140 KIAS, 10º TO 40º below 95 KIAS
- Airspeed … **65-75 KIAS (FLAPS DOWN)**
- Trim … **ADJUST**
- Touchdown … **MAIN WHEELS FIRST**
- Landing Roll … **LOWER NOSE WHEEL GENTLY**
- Braking … **MINIMUM REQUIRED**

## *5.3 Postflight*

### 5.3.1 After Landing

- Carburetor Heat … **COLD**
- Cowl Flaps … **OPEN**
- Wing Flaps … **UP**
- Elevator and Rudder Trim … **TAKEOFF**
- Lights … **AS REQUIRED**
- Pitot Heat … **AS REQUIRED**
- Transponder … **ALT, 1200**
- Radio Call … **BDU CTAF 122.725**

### 5.3.2 Securing Airplane

- Avionics Power Switch … **OFF**
- Electrical Equipment … **OFF**
- Ignition … **GROUNDING CHECK** L, R, then OFF, back R
- Throttle … **IDLE**
- Mixture … **IDLE CUT-OFF**
- Lights … **OFF** except beacon
- Ignition Switch … **OFF**
- Master Switch … **OFF**
- Fuel Selector Valve … **RIGHT**
- Cowl Flaps … **CLOSED**

- Control Lock … **INSTALL**
- Hobbs + Tach Time … **RECORD**

## *5.4 Takeoff And Climb*

### 5.4.1 Short Field Takeoff

- Wing Flaps … **20º**
- Carburetor Heat … **COLD**
- Brakes … **APPLY**
- Power … **FULL THROTTLE AND 2600 RPM**
- Brakes … **RELEASE**
- Elevator Control … **SLIGHTLY TAIL LOW**
- Climb Speed … **59 KIAS** until all obstacles are cleared
- Wing Flaps … **RETRACT** slowly after reaching 70 KIAS

### 5.4.2 Maximum Performance Climb

- Airspeed … **78 KIAS TO 72 KIAS**
- Power … **FULL THROTTLE AND 2600 RPM**
- Fuel Selector Valve … **BOTH**
- Mixture … **FULL RICH** mixture may be leaned above 5000 feet
- Cowl Flaps … **FULL OPEN**

## *5.5 Landing*

### 5.5.1 Short Field Landing

- Airspeed … **70-80 KIAS (FLAPS UP)**
- Wing Flaps … **40º** below 95 KIAS
- Airspeed … **MAINTAIN 60 KIAS**
- Trim … **ADJUST**
- Power … **REDUCE TO IDLE** as obstacle is cleared
- Touchdown … **MAIN WHEELS FIRST**
- Brakes … **APPLY HEAVILY**
- Wing Flaps … **RETRACT**

### 5.5.2 Go Around

- Power … **FULL THROTTLE AND 2600 RPM**
- Carburetor Heat … **COLD**
- Wing Flaps … **RETRACT TO 20º**
- Climb Speed … **61 KIAS** positive rate of climb
- Wing Flaps … **RETRACT TO 10º**
- Climb Speed … **77 KIAS**
- Wing Flaps … **RETRACT** after reaching safe altitude

- Cowl Flaps … **OPEN**

## *5.6 Engine Failures*

### 5.6.1 Engine Failure During Takeoff Run

- Throttle … **IDLE**
- Brakes … **APPLY**
- Wing Flaps … **RETRACT**
- Mixture … **IDLE CUT-OFF**
- Ignition Switch … **OFF**
- Master Switch … **OFF**

### 5.6.2 Engine Failure Immediately After Takeoff

- Airspeed … **75 KIAS (FLAPS UP)** 70 KIAS (flaps DOWN)
- Landing Area … **WITHIN 30º**
- Fuel Selector Valve … **OFF**
- Mixture … **IDLE CUT-OFF**
- Ignition Switch … **OFF**
- Wing Flaps … **AS REQUIRED** 40º recommended
- Master Switch … **OFF**

### 5.6.3 Engine Failure During Flight

- Airspeed … **76 KIAS**
- Landing Area … **LOCATE**
- Fuel Selector Valve … **BOTH**
- Carburetor Heat … **ON**
- Mixture … **RICH**
- Ignition Switch … **BOTH** or START if propeller is stopped
- Primer … **IN AND LOCKED**
- Forced Landing … **EXECUTE** as described in Emergency Landing Without Engine Power

## *5.7 Forced Landings*

### 5.7.1 Emergency Landing Without Engine Power

- SQUAWK … **7700**
- Airspeed … **75 KIAS (FLAPS UP)** 70 KIAS (flaps DOWN)
- Fuel Selector Valve … **OFF**
- Mixture … **IDLE CUT-OFF**
- Ignition Switch … **OFF**
- Wing Flaps … **AS REQUIRED (40º RECOMMENDED)**
- Master Switch … **OFF**
- Radio Call … **MAYDAY 121.5** time permitting

- Doors … **UNLATCH PRIOR TO TOUCHDOWN**
- Touchdown … **SLIGHTLY TAIL LOW**
- Brakes … **APPLY HEAVILY**

### 5.7.2 Precautionary Landing With Engine Power

- Airspeed … **70 KIAS**
- Wing Flaps … **20º**
- Selected Field … **FLY OVER**
- Terrain And Obstructions … **NOTE**
- Wing Flaps … **RETRACT** at safe altitude and airspeed
- Electrical Switches … **OFF**
- Wing Flaps (On Final) … **40º**
- Airspeed … **70 KIAS**
- Avionics Power and Master Switches … **OFF**
- Doors … **UNLATCH PRIOR TO TOUCHDOWN**
- Touchdown … **SLIGHTLY TAIL LOW**
- Ignition Switch … **OFF**
- Brakes … **APPLY HEAVILY**

### 5.7.3 Ditching

- Transmit Mayday … **121.5 MHZ, GIVING LOCATION**
- SQUAWK … **7700**
- Heavy Objects … **SECURE OR JETTISON**
- Flaps … **20º - 40º**
- Power … **SET** ESTABLISH 300 FT/MIN DESCENT at 60 KIAS

---

```
High Winds, Heavy Seas -- INTO THE WIND.
Light Winds, Heavy Swells -- PARALLEL TO SWELLS
```

---

```
If no power is available, approach at 70 KIAS with flaps up or at 65 KIAS with 10º
flaps.
```

- Cabin Doors … **UNLATCH**
- Touchdown … **LEVEL ATTITUDE AT ESTABLISHED DESCENT**
- Face … **CUSHION AT TOUCHDOWN WITH FOLDED COAT**
- Airplane … **EVACUATE**
- Life Vests and Raft … **INFLATE**

### 5.7.4 Landing With A Flat Main Tire

- Approach … **NORMAL**
- Wing Flaps … **FULL DOWN**
- Touchdown … **GOOD TIRE FIRST** hold airplane off flat tire as long as possible with aileron control

### 5.7.5 Landing Without Elevator Control

- Airspeed … **80 KIAS**
- Elevator Trim … **LEVEL FLIGHT**
- Elevator Trim … **DO NOT CHANGE**
- Glide Angle … **CONTROL** by adjusting power exclusively
- Elevator Trim … **FULL NOSE UP**
- Power … **ADJUST** so airplane will rotate to horizontal attitude for touchdown
- Throttle … **CLOSE** at touchdown

## *5.8 Fires*

### 5.8.1 Fire During Start On Ground

- Cranking … **CONTINUE**

---

- Power … **1700 RPM** for a few minutes
- Engine … **SHUTDOWN**

---

- Throttle … **FULL OPEN**
- Mixture … **IDLE CUT-OFF**
- Cranking … **CONTINUE** 2-3 min

---

- Fire Extinguisher … **OBTAIN**
- Fuel Selector Valve … **OFF**
- Master Switch … **OFF**
- Ignition Switch … **OFF**
- Fire … **EXTINGUISH**
- Fire Damage … **INSPECT**

### 5.8.2 Engine Fire In Flight

- Fuel Selector Valve … **OFF**
- Mixture … **IDLE CUT-OFF**
- Master Switch … **OFF**
- Cabin Heat and Air … **OFF** except overhead vents
- Airspeed … **100 KIAS** If fire is not extinguished, increase glide speed to find an airspeed which will provide an incombustible mixture If fire goes out:
- Glide speed … **76 KIAS**
- Landing Area … **LOCATE**
- Forced Landing … **EXECUTE** as described in Emergency Landing Without Engine Power

### 5.8.3 Electrical Fire In Flight

- Master Switch … **OFF**
- Avionics Power Switch … **OFF**

- All Other Switches … **OFF** Except Ignition Switch
- Vents/Cabin Air/Heat … **CLOSED**
- Fire Extinguisher … **ACTIVATE**

---

```
After discharging an extinguisher within a closed cabin, ventilate the cabin.
```

---

```
and electrical power is necessary for continuance of flight:
```

- Master Switch … **ON**

*Note: monitor ammeter*

- Circuit Breakers … **CHECK** for faulty circuit, do not reset
- Radio Switches … **OFF**
- Avionics Power Switch … **ON**
- Radio/Electrical Switches … **ON** one at a time, with delay after each until short circuit is localized
- Vents/Cabin Air/Heat … **OPEN** when it is ascertained that fire is completely extinguished

### 5.8.4 Cabin Fire

- Master Switch … **OFF**
- Vents/Cabin Air/Heat … **CLOSED**
- Fire Extinguisher … **ACTIVATE**

---

```
After discharging an extinguisher within a closed cabin, ventilate the cabin
```

- Land … **AS SOON AS POSSIBLE**
- Airplane … **INSPECT FOR DAMAGE**

### 5.8.5 Wing Fire

- Navigation Light Switch … **OFF**
- Strobe Light Switch … **OFF**
- Pitot Heat Switch … **OFF**

---

```
Perform a sideslip to keep the flames away from the fuel tank and cabin, and land as
soon as possible using flaps only as required for final approach and touchdown.
```

## *5.9 Icing*

### 5.9.1 Inadvertent Icing Encounter

- Pitot Heat Switch … **ON**

- Icing Conditions … **EXIT** Turn back or change altitude to obtain an outside air temperature that is less conducive to icing
- Cabin Heat … **ON**
- Defroster Control … **MAX AIRFLOW**
- Engine Speed … **INCREASE** to minimize build up on propeller blades
- Carb Heat … **AS REQUIRED** Lean the mixture if carburetor heat is used continuously
- Land … **NEAREST AIRPORT** With an extremely rapid ice build-up, select a suitable " off airport" landing site With an ice accumulation of 1/4 inch or more on the wing leading edges, be prepared for significantly higher stall speed
- Wing Flaps … **LEAVE RETRACTED**
- Windshield Ice … **REMOVE** Open left window and if practical scrape ice from a portion of the windshield for visibility in the landing approach
- Forward Slip … **PERFORM** if necessary during landing approach, for improved visibility
- Approach … **80 TO 90 KIAS** depending upon the amount of ice accumulation
- Land … **AT LEVEL ATTITUDE**

### 5.9.2 Static Source Blockage

---

- Alternate Static Source Valve … **PULL ON**
- Airspeed … **REFERENCE** Consult appropriate table in Section 5
- Cruise … **50 FT HIGHER THAN NORMAL**
- Approach … **30 FT HIGHER THAN NORMAL**

### 5.9.3 Carburetor Icing

- Note RPM decrease … **CHECK**
- Carburetor Heat … **ON** monitor RPM for "decrease then increase" as carburetor ice melts
- Mixture … **RE-LEAN**

## *5.10 Electrical / Oil Malfunctions*

### 5.10.1 Ammeter Shows Excessive Rate Of Charge

- Alternator … **OFF**
- Non-Essential Electrical Equipment … **OFF**
- Flight … **TERMINATE** as soon as practical

### 5.10.2 Ammeter Shows Discharge

- Avionics Power Switch … **OFF**
- Master Switch … **ALT OFF (LEFT)**
- Check ALT Breakers … **RESET ONCE**
- Master Switch … **ALT ON** attempt only one reset

---

- Master Switch … **ALT OFF**

- Avionics Power Switch … **ON**
- Electrical Equipment … **MINIMIZE**
- Flight … **TERMINATE** as soon as practical

### 5.10.3 Low-Voltage Light Illuminates During Flight

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```
Illumination of the low-voltage light may occur during low RPM conditions with an
electrical load on the system such as during a low RPM taxi. Under these conditions, the
light will go out at higher RPM. The master switch need not be recycled since an over-
voltage condition has not occurred to deactivate the alternator system.
```

- Avionics Power Switch … **OFF**
- Master Switch … **OFF (BOTH SIDES)**
- Master Switch … **ON**
- Low-Voltage Light … **CHECK OFF**
- Avionics Power Switch … **ON**

---

- Alternator … **OFF**
- Non-Essential Radio and Electrical Equipment … **OFF**
- Flight … **TERMINATE** as soon as practical

### 5.10.4 High Oil Temperature

- Mixture … **ENRICH**
- If Climbing … **STOP CLIMB**
- RPM … **DECREASE**
- Airspeed … **INCREASE**

## *5.11 Emergency Operation In Clouds*

### 5.11.1 Executing A 180º Turn In Clouds

- Compass Heading … **NOTE**
- Time … **NOTE**
- Standard Rate Turn … **INITIATE** maintain for 60 seconds
- Level Flight … **MAINTAIN**
- Turn Accuracy … **CHECK** compass heading should be the reciprocal of the original heading
- Heading … **ADJUST AS NECESSARY** Using rudder
- Altitude and Airspeed … **MAINTAIN**

### 5.11.2 Emergency Descent Through Clouds

- Heading … **EAST OR WEST** to minimize compass card swings due to changing bank angles In addition, keep hands off the control wheel and steer a straight course with rudder control by monitoring the turn coordinator. Occasionally check the compass heading and make minor corrections to hold an approximate course.
- Mixture … **FULL RICH**

- Carb Heat … **FULL**
- Power … **REDUCE** for 500 to 800 FPM descent
- Elevator and Rudder Trim … **ADJUST** for stabilized descent at 80 KIAS
- Turn Coordinator … **MONITOR** Make corrections by rudder alone

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- Normal Cruising Flight … **RESUME**

### 5.11.3 Recovery From A Spiral Dive

- Throttle … **CLOSE**
- Turn … **STOP** by using coordinated aileron and rudder control
- Elevator … **APPLY BACK PRESSURE** cautiously to slowly reduce the indicated airspeed to 80 KIAS
- Elevator Trim … **ADJUST** to maintain an 86 KIAS glide Keep hands off the control wheel, using rudder control to hold straight heading. Use rudder trim to relieve unbalanced rudder force, if present.
- Carb Heat … **APPLY**
- Engine … **CLEAR OCCASIONALLY**

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- Normal Cruising Flight … **RESUME**
- Throttle … **IDLE**
- Ailerons … **NEUTRAL**
- Rudder … **FULL OPPOSITE DIRECTION OF ROTATION**
- Elevator Control … **FORWARD** Briskly to break stall
- Control Inputs … **HOLD** Until Rotation Stops
- Normal Flight … **RESUME**

# 6 Performance

## *6.1 Stall and Approach Speeds*

| Speed | Weight | Flaps Up | Flaps Down |
|---|---|---|---|
| Stall | lbs | KIAS | KIAS |
| Approach (1.3×$V_S$) | lbs | KIAS | KIAS |

## *6.2 Takeoff Performance*

## *6.3 Climb Performance*

## *6.4 Cruise Performance*

## *6.5 Landing Performance*

# 7 Weight and Balance

## *7.1 Airplane Weighing Procedure*

The aircraft was weighed with the fuselage level. The aircraft was empty with the exception for oil located in the engine sump.

## *7.2 Empty Weight and Balance Data*

The datum is located XX" forward of the wing leading edge.

| Station | Weight (lbs) | Arm (inches) | Moment (lb-in) |
|---|---|---|---|
| Left Main | | | |
| Right Main | | | |
| Nose/Tail | | | |
| **Total** | | | |
| **CG** | | " | |

## *7.3 Allowable Weight and Balance Envelope*

## *7.4 Sample Weight and Balance Calculation*

| Item | Weight (lbs) | Arm (in) | Moment (lb-in) |
|---|---|---|---|
| Empty Weight | | | |
| Pilot | | | |
| Front Passenger | | | |
| Rear Passengers | | | |
| Baggage | | | |
| Fuel (gal × 6.0) | | | |
| **Total** | | | |

CG = Total Moment / Total Weight = " aft of datum

# 8 System Descriptions

## *8.1 The Airplane*

The airplane is a single engine, low wing configuration with tricycle landing gear. The airframe is aluminum alloy construction except for some steel components comprising: engine mount, landing gear components, control surface bellcranks, and other miscellaneous items.

## *8.2 Engine and Components*

## *8.3 Propeller*

## *8.4 Landing Gear*

## *8.5 Brake System*

## *8.6 Flight Control System*

## *8.7 Fuel System*

## *8.8 Electrical System*

## *8.9 Pitot-Static System*

## *8.10 Instrument Panel*

## *8.11 Heating, Ventilation and Defrosting*

## *8.12 Cabin Features*

## *8.13 Baggage Area*

## *8.14 Exterior Lighting*

# 9 Handling, Servicing and Maintenance

## *9.1 General*

The airplane should be moved using a tow bar which connects to the nose wheel. The airplane may be pushed or pulled from the inboard portions of the prop blades. Do not push on the spinner!

## *9.2 Ground Handling*

The airplane has three tie-down rings. The tie-down rings are removable and may be kept inside the baggage compartment area.

## *9.3 Engine Air Filter*

## *9.4 Brake Service*

| Item | Specification |
|---|---|
| Brake Linings | |
| Brake Fluid | |

## *9.5 Landing Gear Service*

| Item | Specification |
|---|---|
| Main Tire Pressure | PSI |
| Nose Tire Pressure | PSI |

## *9.6 Propeller Service*

The propeller must be lubricated at intervals not to exceed 100 hours or 12 calendar months, whichever occurs first.

| Grease Type | |
|---|---|
| Interval | 100 hrs / 12 months |

## *9.7 Oil System Service*

| Item | Specification |
|---|---|
| Oil Filter | |
| Change Interval | hours |

## *9.8 Fuel System*

## *9.9 Battery Service*

| Battery | Location | Type |
|---|---|---|
| Main | | |

## *9.10 Lubrication*

| Item | Lubricant | Interval |
|---|---|---|
| Wheel Bearings | | Annual |
| Control Hinges | | As needed |