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LIMITATIONS

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SECTION 2
LIMITATIONS

2.1 GENERAL

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

Limitations associated with those optional systems and equipment which require handbook supplements can be found in Section 9 (Supplements).

2.3 AIRSPEED LIMITATIONS

| SPEED | KIAS | KCAS |
|---|------|------|
| Never Exceed Speed (VNE) - Do not exceed this speed in any operation. | 183 | 186 |
| Maximum Structural Cruising Speed (VNO) - Do not exceed this speed except in smooth air and then only with caution. | 146 | 148 |
| Design Maneuvering Speed (VA) - Do not make full or abrupt control movements above this speed. | | |
| At 2750 lbs. G.W. | 118 | 120 |
| At 1865 lbs. G.W. | 96 | 96 |

CAUTION

Maneuvering speed decreases at lighter weight as the effects of aerodynamic forces become more pronounced. Linear interpolation may be used for intermediate gross weights. Maneuvering speed should not be exceeded while operating in rough air.

2.3 AIRSPEED LIMITATIONS (continued)

| SPEED | KLAS | KCAS |
|---|------|------|
| Maximum Flaps Extended Speed (V _{FE}) - Do not exceed this speed with the flaps extended. | 103 | 103 |
| Maximum Landing Gear Extension Speed - Do not exceed this speed when extending the landing gear. | 129 | 130 |
| Maximum Landing Gear Retraction Speed - Do not exceed this speed when retracting the landing gear. | 107 | 107 |
| Maximum Landing Gear Extended Speed (V _{LE}) - Do not exceed this speed with the landing gear extended. | 129 | 130 |

2.5 AIRSPEED INDICATOR MARKINGS

| MARKING | IAS |
|---|--------------------|
| Red Radial Line (Never Exceed) | 183 KTS |
| Yellow Arc (Caution Range - Smooth Air Only) | 146 KTS to 183 KTS |
| Green Arc (Normal Operating Range) | 60 KTS to 146 KTS |
| White Arc (Flap Down) | 55 KTS to 103 KTS |

2.7 POWER PLANT LIMITATIONS

| | |
|-----------------------------------|--------------------------------|
| (a) Number of Engines | 1 |
| (b) Engine Manufacturer | Lycoming |
| (c) Engine Model No. | IO-360-C1C6 |
| (d) Engine Operating Limits | |
| (1) Maximum Horsepower | 200 |
| (2) Maximum Rotation Speed (RPM) | 2700 |
| (3) Maximum Oil Temperature | 245°F |
| (e) Oil Pressure | |
| Minimum (red line) | 25 PSI |
| Maximum (red line) | 100 PSI |
| (f) Fuel Flow/Pressure | |
| Maximum (red line) | 21.4 GPH/12 PSI |
| (g) Fuel Grade (minimum octane) | 100 or 100LL Aviation Grade |
| (h) Number of Propellers | 1 |
| (i) Propeller Manufacturer | McCauley or Hartzell |
| (j) Propeller Hub and Blade Model | |
| (1) McCauley | B2D34C213/90DHA-16 |
| (2) Hartzell | HC-C2YK-1()F/ F7666A-2R |
| (k) Propeller Diameter | |
| (1) McCauley | |
| Minimum | 73 |
| Maximum | 74 |
| (2) Hartzell | |
| Minimum | 72 |
| Maximum | 74 |
| (l) Blade Angle Limits | |
| (1) McCauley | |
| Low Pitch Stop | 12.5 + 0.2° |
| High Pitch Stop | 27.5 + 0.5° |
| (2) Hartzell | |
| Low Pitch Stop | 14.0 + 0.2° |
| High Pitch Stop | 29.0 + 2.0° |
| (m) RPM Restriction | Avoid continuous |
| (McCauley Propeller Only) | operation between |
| | 1500 and 1950 rpm |
| | below 15 inches |
| | manifold pressure. |

2.9 POWER PLANT INSTRUMENT MARKINGS

- | | |
|--|-----------------------------------|
| (a) Tachometer | |
| Green Arc (Normal Operating Range) | 500 to 2700 RPM |
| Red Line (Maximum Continuous Power) | 2700 RPM |
| (b) Oil Temperature | |
| Green Arc (Normal Operating Range) | 75° to 245°F |
| Red Line (Maximum) | 245°F |
| (c) Oil Pressure | |
| Green Arc (Normal Operating Range) | 60 PSI to 90 PSI |
| Yellow Arc (Caution Range) (Idle) | 25 PSI to 60 PSI |
| Yellow Arc (Caution Range) (Start and Warm-up) | 90 PSI to 100 PSI |
| Red Line (Minimum) | 25 PSI |
| Red Line (Maximum) | 100 PSI |
| (d) Fuel Flow/ Pressure | |
| Green Arc (Normal Operating Range) | 2 GPH/0.05 PSI to 21.4 GPH/12 PSI |
| Red Line (Maximum) | 21.4 GPH/12 PSI |

2.11 WEIGHT LIMITS

- | | |
|---------------------|-----------|
| (a) Maximum Weight | 2750 LBS. |
| (b) Maximum Baggage | 200 LBS. |

NOTE

Refer to Section 5 (Performance) for maximum weight as limited by performance.

2.13 CENTER OF GRAVITY LIMITS

| Weight Pounds | Forward Limit Inches Aft of Datum | Rearward Limit Inches Aft of Datum |
|-------------------|--------------------------------------|---------------------------------------|
| 2750 | 88.9 | 91.5 |
| 2375 and Below | 82.0 | 91.5 |

NOTES

Straight line variation between points given.

The datum used is 78.4 inches ahead of the wing leading edge at the intersection of the straight and tapered section.

It is the responsibility of the airplane owner and the pilot to insure that the airplane is properly loaded. See Section 6 (Weight and Balance) for proper loading instructions.

2.15 MANEUVER LIMITS

No acrobatic maneuvers including spins.

Approved maneuvers which do not exceed 60° of bank and 30° of pitch:

Steep Turns

Lazy Eights

Chandelles

ISSUED: JULY 12, 1995
REVISED: SEPTEMBER 12, 2005

REPORT: VB-1612
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2.17 FLIGHT LOAD FACTORS

- | | |
|------------------------------------|-----------------------------------|
| (a) Positive Load Factor (Maximum) | 3.8 G |
| (b) Negative Load Factor (Maximum) | No inverted maneuvers approved |

2.19 TYPES OF OPERATIONS

The airplane is approved for the following operations when equipped in accordance with FAR 91 or FAR 135.

- (a) Day V.F.R.
- (b) Night V.F.R.
- (c) Day I.F.R.
- (d) Night I.F.R.
- (e) Non Icing

2.21 FUEL LIMITATIONS

- | | |
|--|--------------|
| (a) Total Capacity | 77 U.S. GAL. |
| (b) Unusable Fuel | 5 U.S. GAL. |
| The unusable fuel for this airplane has been determined as 2.5 gallons in each wing tank in critical flight attitudes. | |
| (c) Usable Fuel | 72 U.S. GAL. |
| The usable fuel in this airplane has been determined as 36.0 gallons in each wing tank. | |
| (d) Fuel remaining when the quantity indicators read zero cannot be used safely in flight. | |

2.23 PLACARDS

In full view of the pilot:

| LIMITATIONS | INFORMATION |
|--|---|
| <p>THIS AIRCRAFT APPROVED FOR NIGHT I.F.R., NON-ICING FLIGHT WHEN EQUIPPED IN ACCORDANCE WITH FAR 91 OR FAR 135. NO ACROBATIC MANEUVERS, INCLUDING SPINS, APPROVED. THIS AIRCRAFT MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS. FUEL REMAINING WHEN THE QUANTITY INDICATORS READ ZERO CANNOT BE USED SAFELY IN FLIGHT.</p> | <p>OIL COOLER WINTERIZATION PLATE TO BE REMOVED WHEN AMBIENT TEMPERATURE EXCEEDS 50°F.</p> <p>WARNING</p> <p>TURN OFF STROBE LIGHTS WHEN IN CLOSE PROXIMITY TO GROUND OR DURING FLIGHT THROUGH CLOUD, FOG OR HAZE.</p> |

On the instrument panel in full view of the pilot (not required if Avidyne Entegra is installed):

NO ACROBATIC MANEUVERS,
INCLUDING SPINS, APPROVED

Above fuel quantity gauges (not required if Avidyne Entegra is installed):

FUEL REMAINING WHEN THE QUANTITY
INDICATORS READ ZERO CANNOT BE USED
SAFELY IN FLIGHT.

On the instrument panel in full view of the pilot (not required if Avidyne Entegra is installed):

W A R N I N G

TURN OFF STROBE LIGHTS WHEN IN
CLOSE PROXIMITY TO GROUND OR
DURING FLIGHT THROUGH CLOUD,
FOG OR HAZE.

On the instrument panel in full view of the pilot:

| | |
|-----------|-----------------|
| GEAR DOWN | 129 KIAS (MAX.) |
| GEAR UP | 107 KIAS (MAX.) |
| EXTENDED | 129 KIAS (MAX.) |

2.23 PLACARDS (continued)

(Serial Numbers 2844001 through 2844021 only) In full view of the pilot, the following Takeoff and Landing Checklists will be installed:

TAKEOFF CHECKLIST

| | |
|-----------------------|----------------------|
| Fuel on Proper Tank | Fasten Belts/Harness |
| Electric Fuel Pump On | Flaps Set |
| Engine Gauges Checked | Trim Tab Set |
| Alternate Air Closed | Controls Free |
| Seat Backs Erect | Doors Latched |
| Mixture Set | Air Conditioner Off |
| Propeller Set | |

LANDING CHECKLIST

| | |
|-----------------------|-----------------------|
| Fuel on Proper Tank | Propeller Set |
| Seat Backs Erect | Gear Down |
| Fasten Belts/Harness | Flaps Set (White Arc) |
| Electric Fuel Pump On | Air Conditioner Off |
| Mixture Rich | |

The Air Conditioner Off item in the above Takeoff and Landing Checklists is mandatory for air conditioned aircraft only.

On the instrument panel in full view of the pilot (not required if Avidyne Entegra is installed):

MANEUVERING SPEED 118 KIAS
AT 2750 LBS. (SEE P.O.H.)

On the instrument panel in full view of the pilot (not required if Avidyne Entegra is installed):

DEMONSTRATED CROSSWIND COMPONENT 17 KTS

On the instrument panel in full view of the pilot (only required if Avidyne Entegra is installed):

V_A - 118 KIAS
AT 2750#(SEE POH)
DEMO. X-WIND 17 KTS.

NOTE

Demonstrated crosswind values are NOT limitations.

2.23 PLACARDS (continued)

On the instrument panel in full view of the pilot in aircraft with McCauley propeller installations only:

AVOID CONTINUOUS OPERATIONS BETWEEN
1500 AND 1950 RPM BELOW 15" MANIFOLD
PRESSURE.

In full view of pilot:

CAUTION
COMPASS
CAL. MAY
BE IN ERROR
WITH ELECT.
EQUIPMENT
OTHER THAN
AVIONICS ON

In full view of the pilot, in the area of the air conditioner controls, when the air conditioner is installed:

WARNING
AIRCONDITIONER MUST BE OFF TO INSURE
NORMAL TAKEOFF CLIMB PERFORMANCE.

In full view of the pilot and passengers (serial numbers 2844012 and up):

NO SMOKING

Near emergency gear lever:

EMERGENCY DOWN

Near gear selector switch:

| | |
|---------|---------------|
| GEAR UP | 107 KIAS MAX. |
| DOWN | 129 KIAS MAX. |

2.23 PLACARDS (continued)

On the aft baggage closeout:

**MAXIMUM BAGGAGE 200 LBS. NO HEAVY
OBJECTS ON HAT SHELF.**

Adjacent to upper door latch:

ENGAGE LATCH BEFORE FLIGHT

On inside of baggage compartment door:

**BAGGAGE MAX. 200 LBS. SEE WEIGHT AND
BALANCE DATA FOR BAGGAGE LOADINGS
BETWEEN 150 LBS. AND 200 LBS.**

Adjacent to fuel tank filler caps:

