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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.	190	186
Maximum Structural Cruising Speed (VNO) - Do not exceed this speed except in smooth air and then only with caution.	149	148
Design Maneuvering Speed (VA) - Do not make full or abrupt control movements above this speed.		
At 2750 lbs. G.W.	121	121
At 1863 lbs. G.W.	96	97

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.

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SPEED	KIAS	KCAS
Maximum Flaps Extended Speed (VFE) - Do not exceed this speed with the flaps extended.	108	104
Maximum Landing Gear Extension Speed - Do not exceed this speed when extending the landing gear.	130	130
Maximum Landing Gear Retraction Speed - Do not exceed this speed when retracting the landing gear.	109	109
Maximum Landing Gear Extended Speed (VLE) - Do not exceed this speed with the landing gear extended.	130	130

**2.5 AIRSPEED INDICATOR MARKINGS**

MARKING	IAS
Red Radial Line (Never Exceed)	190 KTS
Yellow Arc (Caution Range - Smooth Air Only)	149 KTS to 190 KTS
Green Arc (Normal Operating Range)	58 KTS to 149 KTS
White Arc (Flap Down)	53 KTS to 108 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 Pressure	
Minimum (red line)	14 PSI
Maximum (red line)	45 PSI
(g) Fuel Grade (minimum octane)	100/130 - Green
(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°

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- |  |   |
|--|---|
| (m) RPM Restrictions (McCauley Propeller Only) | Avoid Continuous Operation Between 1500 and 1950 RPM Below 15 Inches Map. |
|--|---|

**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 |
| Red Line (Minimum)                  | 25 PSI           |
| Red Line (Maximum)                  | 100 PSI          |
| (d) Fuel Pressure                   |                  |
| Green Arc (Normal Operating Range)  | 14 PSI to 45 PSI |
| Red Line (Minimum)                  | 14 PSI           |
| Red Line (Maximum)                  | 45 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	90.0	93.0
2400	85.5	93.0

**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.

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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 NOISE LEVEL**

The noise level of this aircraft is 75.5 d B(A).

No determination has been made by the Federal Aviation Administration that the noise levels of this airplane are or should be acceptable or unacceptable for operation at, into, or out of, any airport.

The above statement notwithstanding the noise level stated above has been verified by and approved by the Federal Aviation Administration in noise level test flights conducted in accordance with FAR 36, Noise Standards - Aircraft Type and Airworthiness Certification. This aircraft model is in compliance with all FAR 36 noise standards applicable to this type.

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**2.25 PLACARDS**

In full view of the pilot:

THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS.

THIS AIRCRAFT APPROVED FOR NIGHT I.F.R. NON-ICING FLIGHT WHEN EQUIPPED IN ACCORDANCE WITH FAR 91 OR FAR 135.

In full view of the pilot, the following Takeoff and Landing Check Lists will be installed:

**TAKEOFF CHECK LIST**

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 CHECK LIST**

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 Check Lists is mandatory for air conditioned aircraft only.

On the instrument panel in full view of the pilot:

**MANEUVERING SPEED 121 KIAS  
AT 2750 LBS. (SEE A.F.M.)**

On the instrument panel in full view of the pilot:

DEMONSTRATED CROSSWIND COMPONENT 17 KTS

On the instrument panel in full view of the pilot:

NO ACROBATIC MANEUVERS,  
INCLUDING SPINS. APPROVED

On the instrument panel in full view of the pilot:

GEAR DOWN	130 KIAS (MAX.)
GEAR UP	109 KIAS (MAX.)
EXTENDED	130 KIAS (MAX.)

Near emergency gear lever:

EMERGENCY DOWN

Near emergency gear lever (aircraft equipped with backup gear extender) |

2/2 | OVERRIDE ENGAGED AUTO-EXT-OFF  
LOCK PIN ON SIDE  
TO ENGAGE OVERRIDE:  
PULL LEVER FULL UP, PUSH LOCK PIN  
TO RELEASE OVERRIDE:  
PULL LEVER FULL UP & RELEASE

Near gear selector switch:

GEAR UP	109 KIAS MAX.
DOWN	130 KIAS MAX.

Adjacent to upper door latch:

ENGAGE LATCH BEFORE FLIGHT

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On the instrument panel in full view of the pilot:

**WARNING**

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

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

**WARNING**

AIR CONDITIONER MUST BE OFF TO  
INSURE NORMAL TAKEOFF CLIMB  
PERFORMANCE.

On inside of baggage compartment door:

BAGGAGE MAXIMUM 200 LBS. SEE WEIGHT AND  
BALANCE DATA FOR BAGGAGE LOADING BE-  
TWEEN 150 LBS. AND 200 LBS.

Adjacent to fuel tank filler caps:

FUEL - 100/130 AVIATION GRADE - MIN. USABLE  
CAPACITY 36 GAL.

USABLE CAPACITY TO BOTTOM OF FILLER  
NECK INDICATOR 25 GAL.

Above fuel quantity gauges:

FUEL REMAINING WHEN QUANTITY INDICATOR  
READS ZERO CANNOT BE USED SAFELY IN  
FLIGHT.

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

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

On the aft baggage closeout:

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