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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 ( $V_{NE}$ ) - Do not exceed this speed in any operation.	191	188
Maximum Structural Cruising Speed ( $V_{NO}$ ) - Do not exceed this speed except in smooth air and then only with caution.	152	149
Design Maneuvering Speed ( $V_A$ ) - Do not make full or abrupt control movements above this speed.		
At 3600 LBS. G.W.	132	132
At 2170 LBS. G.W.	100	102

#### 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.

Maximum Flaps Extended Speed ( $V_{FE}$ ) - Do not exceed this speed with the flaps extended.	106	109
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.	106	109
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)	191 KTS
Yellow Arc (Caution Range - Smooth Air Only)	152 KTS to 191 KTS
Green Arc (Normal Operating Range)	57 KTS to 152 KTS
White Arc (Flap Down)	52 KTS to 106 KTS

## 2.7 POWER PLANT LIMITATIONS

(a) Number of Engines	1
(b) Engine Manufacturer	Lycoming
(c) Engine Model No.	IO-540-K1G5D
(d) Engine Operating Limits	
(1) Maximum Horsepower	300
(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)	12 PSI
Maximum (red line)	40 PSI
(g) Fuel Grade (minimum octane)	100/130 - Green
(h) Number of Propellers	1
(i) Propeller Manufacturer	Hartzell
(j) Propeller Hub and Blade Model	HC-C2YK-1( )F/F8475D-4
(k) Propeller Diameter	
Minimum	78.5 IN.
Maximum	80 IN.
(l) Blade Angle Limits	
Low Pitch Stop	13.5 ± .2°
High Pitch Stop	34° ± 1°

## 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 Pressure                              |                   |
| Green Arc (Normal Operating Range)             | 18 PSI to 40 PSI  |
| Red Line (Minimum)                             | 12 PSI            |
| Red Line (Maximum)                             | 40 PSI            |
| Yellow Arc (Idle Range)                        | 12 PSI to 18 PSI  |

## 2.11 WEIGHT LIMITS

- |  |          |
|--|----------|
| (a) Maximum Weight                             | 3600 LBS |
| (b) Maximum Baggage (100 lbs each compartment) | 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
3600	91.4	95.0
2900	80.0	95.0
2400	76.0	95.0

#### 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.

### 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 98 U.S. GAL
- (b) Unusable Fuel 4 U.S. GAL  
The unusable fuel for this airplane has been determined as 2.0 gallons in each wing in critical flight attitudes (2.0 gallons is the total per side, each side having two interconnected tanks).
- (c) Usable Fuel 94 U.S. GAL  
The usable fuel in this airplane has been determined as 47.0 gallons in each wing (47.0 gallons is the total per side, each side having two interconnected tanks).

## 2.23 FLIGHT WITH REAR CABIN DOOR OR REAR CABIN DOOR AND CARGO DOOR REMOVED

The following limitations must be observed in the operation of this airplane with the rear cabin door or rear cabin door and cargo door removed:

- (a) The airplane may be flown with the rear cabin door or rear cabin door and cargo door removed. Flight with the front door removed is not approved.
- (b) Maximum speed - 144 KIAS
- (c) No smoking.
- (d) All loose articles must be tied down and stowed.
- (e) Jumper's static lines must be kept free of pilot's controls and control surfaces.
- (f) Operation approved VFR flight conditions only.

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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. NO ACROBATIC MANEUVERS, INCLUDING SPINS, APPROVED."

THIS AIRCRAFT APPROVED FOR V.F.R., I.F.R., DAY AND NIGHT 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	Mixture - Set	Flaps - Set
Electric Fuel Pump - On	Propeller - Set	Trim Tab - Set
Engine Gauges - Checked	Fasten Belts/Harness	Controls - Free
Alternate Air - Closed		Doors - Latched
Seat Backs Erect		Air Conditioner - Off

### LANDING CHECK LIST

Fuel on Proper Tank	Electric Fuel Pump - On	Gear Down (129 KIAS Max)
Seat Backs Erect	Mixture - Rich	Flaps - Set (106 KIAS Max)
Fasten Belts/Harness	Propeller - Set	Air Conditioner - Off

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  
132 KIAS AT 3600  
LBS. (SEE P.O.H.)

On the instrument panel in full view of the pilot:

"DEMONSTRATED CROSSWIND COMPONENT 17 KTS"



In full view of the pilot: (For operation with the rear door removed)

**"FOR FLIGHT WITH THE DOOR REMOVED, SEE THE  
LIMITATIONS AND PROCEDURES SECTIONS OF THE  
PILOT'S OPERATING HANDBOOK."**

On instrument panel in full view of the pilot:

<b>"GEAR DOWN</b>	<b>129 KIAS (MAX)"</b>
<b>"GEAR UP</b>	<b>106 KIAS (MAX)"</b>
<b>"EXTENDED</b>	<b>129 KIAS (MAX)"</b>

Near emergency gear lever:

**"EMERGENCY DOWN"**

| Near emergency gear lever: (Aircraft equipped with the backup gear extender)

**"OVERRIDE ENGAGED"**

**TO ENGAGE OVERRIDE:  
LEVER UP, LATCH DOWN  
TO RELEASE OVERRIDE:  
LEVER FULL UP & RELEASE"**

| On gear override latch: (Aircraft equipped with the backup gear extender)

**"GEAR OVERRIDE LATCH"**

Near gear selector switch:

<b>"GEAR UP</b>	<b>106 KIAS MAX"</b>
<b>"DOWN</b>	<b>129 KIAS MAX"</b>

Adjacent to upper door latch (front and rear doors):

**"ENGAGE LATCH BEFORE FLIGHT"**

On the instrument panel in full view of the pilot:

**"WARNING — TURN OFF STROBE LIGHTS WHEN  
TAXIING IN VICINITY OF OTHER AIRCRAFT, 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 the inside of forward baggage compartment:

“MAXIMUM BAGGAGE THIS COMPARTMENT 100 LBS. SEE  
THE LIMITATIONS SECTION OF THE PILOT'S OPERATING  
HANDBOOK.”

On aft baggage closeout:

“MAXIMUM BAGGAGE THIS COMPARTMENT 100 LBS. NO  
HEAVY OBJECTS ON HAT SHELF.”

On storm window:

“DO NOT OPEN ABOVE 129 KIAS”

Adjacent to fuel tank filler caps:

“FUEL – 100/130 AVIATION GRADE – USABLE CAPACITY  
47.0 GAL.”