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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 operation of the airplane and its systems.

This airplane must be operated as a normal or utility category airplane in compliance with the operating limitations stated in the form of placards and markings and those given in this section and handbook.

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.	160	153
Maximum Structural Cruising Speed (V _{NO}) - Do not exceed this speed except in smooth air and then only with caution.	126	122
Design Maneuvering Speed (V _A) - Do not make full or abrupt control movements above this speed.		
At 2325 LBS. G.W.	111	108
At 1531 LBS. G.W.	88	89

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.	103	100
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2.5 AIRSPEED INDICATOR MARKINGS

MARKING	IAS
Red Radial Line (Never Exceed)	160 KTS
Yellow Arc (Caution Range - Smooth Air Only)	126 KTS to 160 KTS
Green Arc (Normal Operating Range)	50 KTS to 126 KTS
White Arc (Flap Down)	44 KTS to 103 KTS

2.7 POWER PLANT LIMITATIONS

(a) Number of Engines	1
(b) Engine Manufacturer	Lycoming
(c) Engine Model No.	0-320-D2A or 0-320-D3G
(d) Engine Operating Limits	
(1) Maximum Horsepower	160
(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)	5 PSI
Maximum (red line)	8 PSI
(g) Fuel (minimum grade)	100 or 100LL Aviation Grade
(h) Number of Propellers	1
(i) Propeller Manufacturer	Sensenich
(j) Propeller Model	74DM6-0-60 or 74DM6-0-58
(k) Propeller Diameter	
Minimum	72 IN.
Maximum	74 IN.
(l) 74DM6-0-60 Propeller Tolerance (static rpm at maximum permissible throttle-setting, Sea Level, ISA)	Not above 2430 RPM Not below 2330 RPM

NOTE

Refer to the airplane maintenance manual for test procedure to determine approved static rpm under non standard conditions.

(m) 74DM6-0-58 Propeller Tolerance (static RPM at maximum permissible throttle setting, Sea Level, ISA)	Not above 2465 RPM Not below 2365 RPM
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NOTE

Refer to the airplane maintenance manual for test procedure to determine approved static rpm under non standard conditions.

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 (Ground 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)		.5 PSI to 8 PSI
Red Line (Minimum)		.5 PSI
Red Line (Maximum)		8 PSI

2.1 WEIGHT LIMITS

(a) Maximum Weight	NORMAL	UTILITY
	2325 LBS	2020 LBS
(b) Maximum Baggage	200 LBS	0 LBS

NOTE

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

2.13 CENTER OF GRAVITY LIMITS

(a) Normal Category

Weight Pounds	Forward Limit Inches Aft of Datum	Rearward Limit Inches Aft of Datum
2325	87.0	93.0
1950 (and less)	83.0	93.0

(b) Utility Category

Weight Pounds	Forward Limit Inches Aft of Datum	Rearward Limit Inches Aft of Datum
1950 (and less)	83.0	93.0
2020	83.8	93.0

NOTES

Straight line variation between points given.

The datum used is 78.4 inches ahead of the wing leading edge at the inboard 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

- (a) Normal Category - All acrobatic maneuvers including spins prohibited.
- (b) Utility Category - Approved maneuvers for bank angles exceeding 60°:

	Entry Speed
Steep Turns	111 KIAS
Lazy Eights	111 KIAS
Chandelles	111 KIAS

2.17 FLIGHT LOAD FACTORS

	NORMAL	UTILITY
(a) Positive Load Factor (Maximum)	3.8 G	4.4 G
(b) Negative Load Factor (Maximum)	No inverted maneuvers approved	

2.19 TYPES OF OPERATION

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 50 U.S. GAL
- (b) Unusable Fuel 2 U.S. GAL
The unusable fuel for this airplane has been determined as 1.0 gallon in each wing in critical flight attitudes.
- (c) Usable Fuel 48 U.S. GAL
The usable fuel in this airplane has been determined as 24.0 gallons in each wing.

2.23 NOISE LEVEL

The noise level of this aircraft is 72dBA.

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 OR UTILITY CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS.

ALL MARKINGS AND PLACARDS ON THIS AIRPLANE APPLY TO ITS OPERATION AS A UTILITY CATEGORY AIRPLANE. FOR NORMAL AND UTILITY CATEGORY OPERATION, REFER TO THE PILOT'S OPERATING HANDBOOK.

NO ACROBATIC MANEUVERS ARE APPROVED FOR NORMAL CATEGORY OPERATIONS. SPINS ARE PROHIBITED FOR NORMAL AND UTILITY CATEGORY.”

In full view of the pilot, one of the following takeoff checklists and one of the following landing check lists will be installed:

TAKEOFF CHECK LIST

Fuel on proper tank
Electric fuel pump on
Engine gauges checked
Flaps - set
Carb heat off

Mixture set
Seat backs erect

Fasten belts/harness
Trim tab - set
Controls - free
Door - latched
Air conditioner - off

TAKEOFF CHECK LIST

Fuel on proper tank
Electric fuel pump-on
Engine gages checked
Flaps - set
Carb. heat off

Mixture set
Primer locked
Seat backs erect

Fasten belts/harness
Trim tab - set
Controls - free
Door - latched
Air conditioner off

LANDING CHECK LIST

Fuel on proper tank
Mixture rich
Electric fuel pump on

Seat backs erect

Flaps - set (103 KIAS max.)
Fasten belts/harness
Air conditioner off

LANDING CHECK LIST

Fuel on proper tank
Mixture rich
Electric fuel pump on

Seat backs erect

Flaps - set (White Arc).
Fasten belts/harness
Air conditioner off

The “AIR COND OFF” item in the above takeoff and landing check lists is mandatory for air conditioned aircraft only.

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

“WARNING—AIR CONDITIONER MUST BE OFF TO INSURE NORMAL TAKEOFF CLIMB PERFORMANCE.”

Adjacent to upper door latch:

“ENGAGE LATCH BEFORE FLIGHT.”

On inside of the baggage compartment door:

“BAGGAGE MAXIMUM 200 LBS”
“UTILITY CATEGORY OPERATION - NO BAGGAGE OR AFT PASSENGERS ALLOWED. NORMAL CATEGORY OPERATION - SEE PILOT’S OPERATING HANDBOOK WEIGHT AND BALANCE SECTION FOR BAGGAGE AND AFT PASSENGER LIMITATIONS.”

In full view of the pilot:

“MANEUVERING SPEED 111 KIAS AT 2325 LBS. (SEE P.O.H.)” OR “VA = 111 KIAS AT 2325 #(SEE P.O.H.)”

“UTILITY CATEGORY OPERATION - NO AFT PASSENGERS ALLOWED.”

“DEMONSTRATED CROSS WIND COMPONENT - 17 KTS.” or
“DEMO. X-WIND 17 KTS.”

In full view of the pilot when the oil cooler winterization kit is installed:

“OIL COOLER WINTERIZATION PLATE TO BE REMOVED WHEN AMBIENT TEMPERATURE EXCEEDS 50°F.”

In full view of the pilot:

“UTILITY CATEGORY OPERATION ONLY.”

- (1) NO AFT PASSENGERS ALLOWED.
- (2) ACROBATIC MANEUVERS ARE LIMITED TO THE FOLLOWING:

	ENTRY SPEED
SPINS PROHIBITED	
STEEP TURNS	111 KIAS
LAZY EIGHTS	111 KIAS
CHANDELLES	111 KIAS

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.”

Adjacent to fuel filler caps:

FUEL - 100 OR 100LL AVIATION GRADE

OR

FUEL - 100 AVIATION GRADE MIN.
USABLE CAPACITY 24 GAL.
USABLE CAPACITY TO BOTTOM OF
FILLER NECK INDICATOR 17 GAL.