

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.

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.	193	186
Maximum Structural Cruising Speed (VNO) - Do not exceed this speed except in smooth air and then only with caution.	152	148
Design Maneuvering Speed (VA) - Do not make full or abrupt control movements above this speed.		
At 2900 lbs. G.W.	124	121
At 1893 lbs. G.W.	97	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.

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.	133	130
Maximum Landing Gear Retraction Speed - Do not exceed this speed when retracting the landing gear.	111	109
Maximum Landing Gear Extended Speed (VLE) - Do not exceed this speed with the landing gear extended.	133	130

2.5 AIRSPEED INDICATOR MARKINGS

MARKING	IAS
Red Radial Line (Never Exceed)	193 KTS
Yellow Arc (Caution Range - Smooth Air Only)	152 KTS to 193 KTS
Green Arc (Normal Operating Range)	66 KTS to 152 KTS
White Arc (Flap Down)	61 KTS to 108 KTS

2.7 POWER PLANT LIMITATIONS

(a) Number of Engines	1
(b) Engine Manufacturer	Teledyne Continental
(c) Engine Model No.	TSIO-360-FB
(d) Engine Operating Limits	
(1) Maximum Horsepower	200
(2) Maximum Rotation Speed (RPM)	2575
(3) Maximum Manifold Pressure (In. Mercury)	41
(4) Maximum Oil Temperature	240° F
(e) Oil Pressure	
Minimum (red line)	10 PSI
Maximum (red line)	100 PSI
(f) Fuel Pressure	
Maximum (red line)	19 PSI
(g) Fuel (AVGAS ONLY) (minimum grade)	100 or 100LL Aviation Grade
(h) Number of Propellers	1
(i) Propeller Manufacturer	Hartzell
(j) Propeller Hub and Blade Model	
(1) Optional (Three Blade)	PHC-C3YF-1()F/ F7663-2R
(2) Standard (Two Blade)	BHC-C2YF-1()F/ F8459A-8R
(k) Propeller Diameter	
(1) Optional (Three Blade)	
Minimum	72
Maximum	76
(2) Standard (Two Blade)	
Minimum	75
Maximum	76
(l) Blade Angle Limits	
(1) Optional (Three Blade)	
Low Pitch Stop	13.2 ± .2°
High Pitch Stop	33 ± 1°
(2) Standard (Two Blade)	
Low Pitch Stop	14.4 ± .2°
High Pitch Stop	29 ± 1°

- (m) RPM Restrictions (Two Bladed Propeller Only)
- Avoid Continuous Ground Operation 1700-2100 RPM In Cross/Tail Wind Over 10 KTS.
- Avoid Continuous Operation 2000-2200 RPM Above 32 Inches Manifold Pressure.

2.9 POWER PLANT INSTRUMENT MARKINGS

- (a) Tachometer
- | | |
|-------------------------------------|-----------------|
| Green Arc (Normal Operating Range) | 500 to 2575 RPM |
| Red Line (Maximum Continuous Power) | 2575 RPM |
- (b) Oil Temperature
- | | |
|------------------------------------|---------------|
| Green Arc (Normal Operating Range) | 100° to 240°F |
| Red Line (Maximum) | 240°F |
- (c) Oil Pressure
- | | |
|--|-------------------|
| Green Arc (Normal Operating Range) | 30 PSI to 80 PSI |
| Yellow Arc (Caution Range) (Idle) | 10 PSI to 30 PSI |
| Yellow Arc (Caution Range) (Start and Warm-Up) | 80 PSI to 100 PSI |
| Red Line (Minimum) | 10 PSI |
| Red Line (Maximum) | 100 PSI |
- (d) Fuel Pressure
- | | |
|------------------------------------|-------------------|
| Green Arc (Normal Operating Range) | 3.5 PSI to 19 PSI |
| Red Line (Maximum) | 19 PSI |
- (e) Exhaust Gas Temperature (EGT)
- | | |
|------------------------------------|------------------|
| Green Arc (Normal Operating Range) | 1200°F to 1650°F |
| Red Line (Maximum) | 1650°F |
- (f) Manifold Pressure
- | | |
|------------------------------------|---------------------|
| Green Arc (Normal Operating Range) | 10 IN. to 41 IN. HG |
| Red Line (Maximum) | 41 IN. HG |

2.11 WEIGHT LIMITS

(a) Maximum Weight	2900 LBS.
(b) Maximum Ramp Weight	2912 LBS.
(c) 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
2900	89.0	93.0
2400	85.0	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.

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 OPERATING ALTITUDE LIMITATIONS

Flight above 20,000 feet is not approved. Flight up to and including 20,000 feet is approved if equipped with oxygen in accordance with FAR 23.1441 and avionics in accordance with FAR 91 or FAR 135.

2.25 NOISE LEVEL

The noise level of this aircraft is 69.4 d B(A) for two bladed propeller installations and 72.8 d B(A) for three bladed propeller installations.

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.

2.27 PLACARDS

In full view of the pilot:

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.

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 Check List and one of the following Landing Check Lists will be installed:

TAKEOFF CHECK LIST

Fuel on Proper Tank	Fasten Belts/Harness
Auxiliary Fuel Pump Off	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 (133 KIAS Max.)
Fasten Belts/Harness	Flaps Set (108 KIAS Max.)
Aux. Fuel Pump Off	Air Conditioner Off
Mixture Rich	

LANDING CHECK LIST

Fuel on Proper Tank	Propeller Set
Seat Backs Erect	Gear Down
Fasten Belts/Harness	Flaps Set (White Arc)
Aux. Fuel Pump Off	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 124 KIAS
AT 2900 LBS. (SEE A.F.M.)
or
VA 124 AT 2900 LBS. (SEE P.O.H.)**

On the instrument panel in full view of the pilot:

**DEMONSTRATED CROSSWIND COMPONENT 17 KTS
or
DEMO. X-WIND 17 KTS**

In full view of the pilot:

**NO ACROBATIC MANEUVERS,
INCLUDING SPINS, APPROVED**

On the instrument panel in full view of the pilot:

GEAR DOWN	133 KIAS (MAX.)
GEAR UP	111 KIAS (MAX.)
EXTENDED	133 KIAS (MAX.)

or
VLO 133 DN, 111 UP VLE 133 MAX.

Near emergency gear lever:

EMERGENCY DOWN

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

**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	111 KIAS MAX.
DOWN	133 KIAS MAX.

Adjacent to upper door latch:

ENGAGE LATCH BEFORE FLIGHT

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.**

In full view of the pilot:

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

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

**AVOID CONTINUOUS GROUND OPERATION 1700-
2100 RPM IN CROSS TAIL WIND OVER 10 KTS.**

**AVOID CONTINUOUS OPERATION 2000-2200 RPM
ABOVE 32" MANIFOLD PRESSURE.**

On the aft baggage closeout:

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

**SECTION 2
LIMITATIONS**

**PIPER AIRCRAFT CORPORATION
PA-28RT-201T, TURBO ARROW IV**

Adjacent to fuel tank filler caps (Prior to serial number 28R-8031031):

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

**USABLE CAPACITY TO BOTTOM OF FILLER
NECK INDICATOR 25 GAL.**

Adjacent to fuel tank filler caps (Serial numbers 28R-8031031 and up):

FUEL - 100 OR 100LL AVIATION GRADE

(Serial numbers 28R-8331015 and up)

