

I. Model 177, Cardinal, 4 PCLM (Normal Category), 2 PCLM (Utility Category) (cont'd)

Oil capacity	8 qt. (+44) (2 qt. unusable) <i>See Note 1 for data on undrainable oil.</i>		
Control surface movements	Wing flaps		Down 30° ± 2°
	Aileron	Up 20° ± 2°	Down 15° ± 2°
	Stabilator	Up 20° ± 1°	Down 5° ± 1°
	Stabilator tab	Up 2° ± 1°	Down 7° ± 1°
	Rudder (measured perpendicularly to hinge line)	Right 24° ± 1°	Left 24° ± 1°
Serial numbers eligible	661, 17700001 and 17700003 through 17701164		

**II. Model 177A, Cardinal, 4 PCLM (Normal Category), approved June 22, 1968
2 PCLM (Utility Category), approved June 28, 1968**

Engine	Lycoming O-360-A2F		
*Fuel	100/130 minimum grade aviation gasoline		
*Engine limits	For all operations, 2700 rpm (180 hp)		
Propeller and propeller limits	McCauley 1A170/EFA		
	Diameter: not over 76 in., not under 74 in. Static rpm, at maximum permissible throttle setting: not over 2460, not under 2360 No additional tolerance permitted		
*Airspeed limits (CAS)	Never exceed	185 mph (160 knots)	
	Maximum structural cruising	150 mph (130 knots)	
	Maneuvering	117 mph (101 knots)	
	Flaps extended	105 mph (91 knots)	
C.G. range	Normal category:		
	(+101.0) to (+114.5) at 2000 lbs. or less		
	(+107.4) to (+114.5) at 2500 lbs.		
	Straight line variation between points given		
Empty weight C.G. range	Utility category:		
	(+101.0) to (+109.0) at 2000 lbs. or less		
	(+103.6) to (+109.0) at 2200 lbs.		
	None		
*Maximum weight	Normal category	2500 lbs.	
	Utility category	2200 lbs.	
Number of seats	4 (2 at sta. +93.0, 2 at sta. +134.0)		
Maximum baggage	120 lbs. (+162.0)		
Fuel capacity	40 gal. (two 24.5 gal.) fuel bays in wing at sta. +112; 48 gal. usable <i>See Note 1 for data on system fuel.</i>		
Oil capacity	8 qt. (+44) (2 qt. unusable) <i>See Note 1 for data on undrainable oil.</i>		

II. Model 177A, Cardinal, 4 PCLM (Normal Category), 2 PCLM (Utility Category) (cont'd)

Control surface movements	Wing flaps		Down	30° ± 2°
	Aileron	Up	20° ± 2°	Down 15° ± 2°
	Stabilator	Up	20° ± 1°	Down 5° ± 1°
	Stabilator tab	Up	6° + 2°, -0°	Down 12° + 0°, -2°
	Rudder (measured perpendicularly to hinge line)	Right	24° ± 1°	Left 24° ± 1°
Serial numbers eligible	17701165 through 17701370			

**III. Model 177B, Cardinal, 4 PCLM (Normal Category), approved July 28, 1969
2 PCLM (Utility Category), approved July 28, 1969**

Engine	Lycoming O-360-A1F6 or O-360-A1F6D				
*Fuel	91/96 or 100/130 grade aviation gasoline (S/N 17701371 through 17702522) 100LL/100 grade aviation gasoline (S/N 17702523 and on)				
*Engine limits	For all operations, 2700 rpm (180 hp)				
Propeller and propeller limits	(1)	(a)	McCauley 2D34C202/82PA-6 Diameter: not over 76 in., not under 75 in. Pitch setting at 30 in. sta.: low 12.1°, high 26.0° No additional tolerance permitted.		
		(b)	Cessna spinner 0752637		
		(c)	McCauley hydraulic governor C290D2/T11 or C290D3/T11		
		(d)	Woodward hydraulic governor C210460		
		(2)	(a)	McCauley B2D34C206/78TA-0 Diameter: not over 78 in., not under 74 in. Pitch setting at 30 in. sta.: low 11.6°, high 27.5° No additional tolerance permitted.	
		(b)	Cessna spinner 0752637		
		(c)	McCauley hydraulic governor C290D2/T11 or C290D3/T11		
		(d)	Woodward hydraulic governor C210460		
		(3)	(a)	McCauley B2D34C208/82PA-6 or D2D34C211/82 PCA-6 Diameter: not over 76 in., not under 75 in. Pitch setting at 30 in. sta.: low 12.1°, high 26.0° No additional tolerance permitted.	
		(b)	Cessna spinner 0752637		
		(c)	McCauley hydraulic governor C290D2/T11, C290D3/T11 (O-360-A1F6) or C290D2/T12, C290D3/T12 (O-360-A1F6D)		
		(d)	Woodward hydraulic governor C210460 (O-360-A1F6 only)		
	*Airspeed limits (CAS)	<u>17701371 through 17702313</u> Never exceed 185 mph (160 knots) Maximum structural cruising 155 mph (135 knots) Maneuvering 117 mph (101 knots) Flaps extended 105 mph (91 knots)			
	(IAS) (See Note 4 on use of IAS)	<u>17702314 and up</u> Never exceed 167 knots Maximum structural cruising 138 knots Maneuvering 102 knots Flaps extended 90 knots			
C.G. range	Normal category: (+101.0) to (+114.5) at 2000 lbs. or less (+102.2) to (+114.5) at 2250 lbs. (+105.7) to (+114.5) at 2500 lbs. Straight line variation between points given				

III. Model 177B, Cardinal, 4 PCLM (Normal Category), 2 PCLM (Utility Category) (cont'd)

	Utility category: (+101.0) to (+109.0) at 2000 lbs. or less (+102.0) to (+109.0) at 2200 lbs.		
Empty weight C.G. range	None		
*Maximum weight	Normal category	2500 lbs.	
	Utility category	2200 lbs.	
Number of seats	4 (2 at sta. +93.0), 2 at sta. +135.0)		
Maximum baggage	120 lbs. (+162.0)		
Fuel capacity	50 gal. (two 25 gal. fuel bays in wing at sta. +112; 49 gal. usable) <i>See Note 1 for data on unusable fuel.</i>		
Oil capacity	8 qt. (+44) (1 at. (+45) with oil filter) (3 qt. unusable - 2 qt. in sump plus 1 qt. in oil filter) <i>See Note 1 for data on undrainable oil.</i>		
Control surface movements	Wing flaps		Down 30° ± 2°, -0°
	Aileron	Up 20° ± 1°	Down 15° ± 2°
	Stabilator	Up 20° ± 1°	Down 5° ± 1°
	Stabilator tab	Up 5° ± 1°	Down 13° ± 1°
	Rudder (measured perpendicularly to hinge line)	Right 24° ± 1°	Left 24° ± 1°
Serial numbers eligible	17701371 through 17701530, except 17701472 (1970) 17700002, 17701531 through 17701633 (1971) 17701634 through 17701773 (1972) 17701774 through 17701973 (1973) 17701974 through 17702123 (1974) 17701472, 17702124 through 17702313 (1975) 17702314 through 17702522 (1976) 17702523 through 17702672 (1977) 17702673 through 17702752 (1978)		
<u>Data Pertinent to All Models</u>			
Datum	54.0 forward of front face of lower portion of firewall		
Leveling means	Jig located nut plates and screws at sta. +213.0 and sta. +238.0 on left of tail cone		
Certification basis	Part 23 of the Federal Aviation Regulations effective February 1, 1965, as amended by 23-1, 23-2 and 23-3. Application for Type Certificate dated June 20, 1966. Type Certificate No. A13CE issued February 16, 1967, obtained by the manufacturer under delegation option procedures.		
	<u>Equivalent Safety Items</u>	17702314 and on	
	Airspeed Indicator	FAR 23.1545 (see Note 4 on use of IAS)	
	Airspeed Limitations	FAR 23.1583(a)(1)	
Production basis	Production Certificate No. 4. Delegation Option Manufacturer No. CE-1 authorized to issue airworthiness certificates under delegation option procedures of Part 21 of the Federal Aviation Regulations.		

Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification. In addition, the following items of equipment are required:

1. Stall Warning Indicator, Cessna Dwg. 1706014.

NOTE 1.

Current weight and balance report including list of equipment included in certificated empty weight, and loading instructions when necessary, must be provided for each aircraft at the time of original certification.

Serial No. 17700001 through 17702313

The certificated empty weight and corresponding center of gravity location must include undrainable oil of 0.0 lb. at 44.0 and unusable fuel of 6 lb. at 100.0.

Serial No. 17702314 and on

The certificated empty weight and corresponding center of gravity locations must include oil of 17 lbs. at 45.0 and unusable fuel of 6 lb. at 100.0.

NOTE 2.

The following placards must be displayed as indicated:

- A. Applicable to Model 177 (S/N 661, 17700001 & 17700003 through 17701164)

1. In full view of the pilot:

"This airplane must be operated in compliance with the operating limitations as stated in the form of placards, markings and manuals.

		<u>MAXIMUMS</u>			
		<u>Normal Category</u>		<u>Utility Category</u>	
Maneuvering speed		113 mph	(CAS)	113 mph	(CAS)
Design weight		2350		2200	
Load factor	Flaps up	+3.8	-1.52	+4.4	-1.76
	Flaps down	+3.5		+3.5	
Altitude loss in stall recovery		110 ft.		110 ft.	
Normal category	No acrobatic maneuvers including spins approved				
Utility category	Baggage compartment and rear seat must not be occupied.				
No acrobatic maneuvers approved except those listed below:					

<u>Maneuver</u>	<u>Maximum Entry Speed</u>	<u>Maneuver</u>	<u>Maximum Entry Speed</u>
Chandelles	113 mph (98 knots)	Spins	Slow deceleration
Lazy Eights	113 mph (98 knots)	Stalls (except	Slow deceleration
Steep turns	113 mph (98 knots)	whip stalls)	

Spin Recovery - Opposite rudder - Neutral elevator - Slow deceleration
Intentional spins with flaps extended prohibited.

Airplane is controllable in 16 knots crosswind. Known icing conditions to be avoided.

This airplane is certificated for the following flight operations as of date of original airworthiness certificate.

(IFR - VFR - DAY - NIGHT)" (as applicable)

2. On control lock: "Control lock - remove before starting engine."
3. On fuel shutoff control (at appropriate location): "Fuel shutoff - pull off."
4. On fuel selector valve (at appropriate locations):
 - a. "Both 48 gal."
 - b. "Left 24 gal."
 - c. "Right 24 gal."
 - d. "Both on for takeoff and landing."
5. On fuel tank cap: "Service this airplane with 80/87 minimum grade aviation gasoline."
"Total capacity 24.5 gal." "Capacity to white line on indicator, 21.0 gal."

6. In baggage compartment:
 - a. "120 lb. maximum baggage and/or auxiliary seat passenger."
 - b. "For additional loading instructions see weight and balance data."
7. Next to door ventilation windows: "Do not open window above 120 mph."
8. On airspeed indicator (CAS)
 - a. Radial red line 185 mph
 - b. Yellow arc 145-185 mph
 - c. Green arc 64-145 mph
 - d. White arc 53-105 mph
9. On oil temperature gauge
 - a. Red line at 245° F.
 - b. Green arc at 100° to 245° F.
10. On oil temperature gauge
 - a. Red line at 25 psi
 - b. Green arc 60 psi to 90 psi
 - c. Red line at 100 psi
11. Tachometer

(S.L.)	2200 rpm - 2500 rpm	(inner green arc)
(5000 ft.)	2200 rpm - 2600 rpm	(middle green arc)
(10000 ft)	2200 rpm - 2700 rpm	(outer green arc)
(Maximum allowable)	- 2700 rpm	(red line)
12. On fuel pressure gauge
 - a. Red lines at 2 psi and 8.0 psi.
 - b. Green arc at 2 psi to 8.0 psi.
13. On flap control and indicator
 - a. Up to 1/4 - T.O. (Takeoff range with blue color code and 130 mph callout, also mechanical detent at 1/4)
 - b. 1/4 - 1/2 - 3/4 - Down (indices at these positions with white color code and 105 mph callout)
 - c. "Avoid slips with flaps extended."

B. Applicable to 177A (S/N 17701165 through 17701370)

1. In full view of the pilot:
"This airplane must be operated in compliance with the operating limitations as stated in the form of placards, markings and manuals.

		<u>MAXIMUMS</u>			
		<u>Normal Category</u>		<u>Utility Category</u>	
Maneuvering speed		113 mph	(CAS)	113 mph	(CAS)
Design weight			2500		2200
Load factor	Flaps up	+3.8	-1.52	+4.4	-1.76
	Flaps down	+3.5		+3.5	
Altitude loss in stall recovery			180 ft.		110 ft.
Normal category	No acrobatic maneuvers including spins approved				
Utility category	Baggage compartment and rear seat must not be occupied.				
No acrobatic maneuvers approved except those listed below:					

<u>Maneuver</u>	<u>Maximum Entry Speed</u>	<u>Maneuver</u>	<u>Maximum Entry Speed</u>
Chandelles	117 mph (101 knots)	Spins	Slow deceleration
Lazy Eights	117 mph (101 knots)	Stalls (except	Slow deceleration
Steep turns	117 mph (101 knots)	whip stalls)	
Slip Recovery -	Opposite Rudder	- Neutral Elevator -	Slow deceleration

Intentional spins with flaps extended prohibited.

Airplane is controllable in 16 knots crosswind. Known icing conditions to be avoided.

This airplane is certificated for the following flight operations as of date of original airworthiness certificate.

(IFR - VFR - DAY - NIGHT)" (as applicable)

2. On control lock: "Control lock - remove before starting engine."
3. On fuel shutoff control (at appropriate location): "Fuel shutoff - pull off."
4. On fuel selector valve (at appropriate locations):
 - a. "Both 48 gal."
 - b. "Left 24 gal."
 - c. "Right 24 gal."
 - d. "Both on for takeoff and landing."
5. On fuel tank cap: "Service this airplane with 100/130 minimum grade aviation gasoline." "Total capacity 24.5 gal." "Capacity to line of holes on indicator, 21.0 gal."
6. In baggage compartment:
 - a. "120 lb. maximum baggage and/or auxiliary seat passenger."
 - b. "For additional loading instructions see weight and balance data."
7. Next to door ventilation windows: "Do not open window above 120 mph."
8. On airspeed indicator (CAS)
 - a. Radial red line 185 mph
 - b. Yellow arc 150-185 mph
 - c. Green arc 66-150 mph
 - d. White arc 56-105 mph
9. On oil temperature gauge
 - a. Red line at 245° F.
 - b. Green arc 100° to 245° F.
10. On oil pressure gauge
 - a. Red line at 25 psi.
 - b. Green arc 60 psi, to 90 psi.
 - c. Red line at 100 psi.
11. Tachometer

(S.L.)	2200 rpm - 2500 rpm	(inner green arc)
(5000 ft.)	2200 rpm - 2600 rpm	(middle green arc)
(10000 ft)	2200 rpm - 2700 rpm	(outer green arc)
(Maximum allowable)	- 2700 rpm	(red line)
12. On fuel pressure gauge
 - a. Red lines at 2 psi, and 8.0 psi.
 - b. Green arc at 2 psi, to 8.0 psi.
13. On flap control and indicator
 - a. 0° to 10° - T.O. (Takeoff range with blue color code and 130 mph callout, also mechanical detent at 10°).
 - b. 10° -20° -30° (Indices at these positions with white color code and 105 mph callout; also, mechanical detent at 20°).

C. Applicable to 177B

1. In full view of the pilot:

a. 17701371 through 17702313

"This airplane must be operated in compliance with the operating limitations as stated in the form of placards, markings, and manuals."

		<u>MAXIMUMS</u>			
		<u>Normal Category</u>		<u>Utility Category</u>	
Maneuvering speed		117 mph	(CAS)	117 mph	(CAS)
Gross weight		2500		2200	
Load factor	Flaps up	+3.8	-1.52	+4.4	-1.76
	Flaps down	+3.5		+3.5	
Altitude loss in stall recovery		180 ft.		110 ft.	
Normal category	No acrobatic maneuvers including spins approved				
Utility category	Baggage compartment and rear seat must not be occupied.				
No acrobatic maneuvers approved except those listed below:					

<u>Maneuver</u>	<u>Maximum Entry Speed</u>	<u>Maneuver</u>	<u>Maximum Entry Speed</u>
Chandelles	117 mph (101 knots)	Spins	Slow deceleration
Lazy Eights	117 mph (101 knots)	Stalls (except	Slow deceleration
Steep turns	117 mph (101 knots)	whip stalls)	
Slip Recovery -	Full Opposite Rudder	-	Stabilator to Neutral Position -

Ailerons Neutral - Recover from Dive.

Intentional spins with flaps extended prohibited.

Airplane is controllable in 16 knots crosswind. Known icing conditions to be avoided.

This airplane is certificated for the following flight operations as of date of original airworthiness certificate.

(IFR - VFR - DAY - NIGHT)" (if applicable)

b. 17702314 and up

"This airplane must be operated in compliance with the operating limitations as stated in the form of placards, markings and manuals."

		<u>MAXIMUMS</u>			
		<u>Normal Category</u>		<u>Utility Category</u>	
Maneuvering speed		102 knots		102 knots	
Gross weight		2500 lb.		2200 lb.	
Load factor	Flaps up	+3.8	-1.52	+4.4	-1.76
	Flaps down	+3.5		+3.5	

Normal category No acrobatic maneuvers including spins approved

Utility category Baggage compartment and rear seat must not be occupied.

NO ACROBATIC MANEUVERS APPROVED EXCEPT THOSE LISTED BELOW:

<u>Maneuver</u>	<u>Recom. Entry Speed</u>	<u>Maneuver</u>	<u>Recom. Entry Speed</u>
Chandelles	100 knots	Spins	Slow deceleration
Lazy Eights	100 knots	Stalls (except	Slow deceleration
Steep turns	100 knots	whip stalls)	

Altitude loss in stall recovery - 180 ft.

Abrupt use of the controls prohibited above 102 knots

Spin recovery - opposite rudder - forward stabilizer - neutralize controls.

Intentional spins with flaps extended are prohibited. Flight into known icing conditions prohibited. This airplane is certified for the following flight operations as of date of original airworthiness certificate.

DAY - NIGHT - VFR - IFR" (as applicable)

2. On control lock: "Control lock - remove before starting engine."

3. On fuel shutoff control (at appropriate location): "Fuel shutoff - pull off."

4. On fuel selector valve (at appropriate locations)
 - a. "Both 49 gal."
 - b. "Left 24.5 gal."
 - c. "Right 24.5 gal."
 - d. "Both on for takeoff and landing."

5. Aft of fuel tank cap:
 - a. S/N 17701371 through 17702672
"Service this airplane with 91/96 minimum or 100/130 grade aviation gasoline."
"Total capacity 25.0 gal." "Capacity to line of holes inside filler neck - 22 gal."
 - b. S/N 17702673 and on
"Service this airplane with 100LL or 100 aviation grade gasoline." "Total capacity 25.0 gal." "Capacity to line of holes inside filler neck - 22 gal."

6. In baggage compartment
 - a. Without hat shelf in baggage wall
(Through S/N 17702123)
"120 lb. maximum baggage and/or auxiliary seat passenger."
"For additional loading instructions see weight and balance data."
 - b. With hat shelf in baggage wall
(S/N 17702124 through 17702672)
"120 lb. maximum baggage and/or auxiliary seat passenger including 25 lb. maximum in baggage wall hat shelf."
"For additional loading instructions see weight and balance data."
 - c. (S/N 17702673 and on)
"120 lb. maximum baggage, including 12 lbs. maximum in baggage wall hat shelf."
"For additional loading instructions see weight and balance data."

7. Next to door ventilation windows:
 - a. 17701371 through 17702313
"Do not open window above 120 mph or when using alternate static source."
 - b. 17702314 and up
"Do not open window above 105 knots or when using alternate static source."

8. On airspeed indicator
 - a. 17701371 through 17702313 (CAS)

Radial red line	185 mph
Yellow arc	155-185 mph
Green arc	66-155 mph
White arc	56-105 mph
 - b. 17702314 and up (IAS)

Radial red line	167 knots
Yellow arc	138-167 knots
Green arc	54-138 knots
White arc	45- 90 knots

9. On oil temperature gauge:
 - a. Red line at 245° F.
 - b. Green arc 100° to 245° F.

10. On oil pressure gauge:
 - a. Red line at 25 psi
 - b. Green arc 60 psi to 90 psi
 - c. Red line at 100 psi

11. Tachometer
- a. When using 2D34C202/82PA-6 or B2D34C208/82PA-6 propeller:

Normal operating	2100-2500 rpm	(green arc)
Caution	1700-1900 rpm	(yellow arc)
Maximum allowable	2700 rpm	(red line)
 - b. When using B2D34C206/78TA-0 propeller:

Normal operating	2100-2500 rpm	(green arc)
Caution	1400-1750 rpm	(yellow arc)
Maximum allowable	2700 rpm	(red line)
 - c. When using B2D34C211/82PCA-6 propeller:

Normal operating	2100-2500 rpm	(inner green arc)
	2100-2700 rpm	(outer green arc)
Caution	1700-1900 rpm	(yellow arc)
Maximum allowable	2700 rpm	(red line)
12. On fuel pressure gauge:
- a. Red lines at 2 psi and 8.0 psi.
 - b. Green arc at 2 psi to 8.0 psi.
13. On flap control and indicator
- a. 17701371 through 17702313

0 to 10°	(Blue color code and 130 mph callout, also, mechanical detent at 10°)
10° - 20° - 30°	(Indices at these positions with white color code and 105 mph callout; also, mechanical detent at 20°).
 - b. 17702314 and up

0° to 10°	(Blue color code and 115 knots callout; also, mechanical detent at 10°)
10° - 20° - 30°	(Indices at these positions with white color code and 90 knots callout; also, mechanical detent at 20°).
14. On manifold pressure gauge:
- a. When using 2D34C202/82PA-6, B2D34C208/82PA-6 or B2D34C211/82PCA-6 propeller:

15 to 24 in. Hg.	(green arc)
*With less than 10" manifold pressure, avoid continuous operation between 1700-1900 rpm."	
 - b. When using B2D34C206/78TA-0 propeller:

15 to 24 in. Hg.	(green arc)
"With less than 10" manifold pressure, avoid continuous operation between 1400-1750 rpm."	
15. On cylinder head temperature gauge:
- a. Red line at 500° F.
 - b. Green arc 200° to 500° F.
16. On instrument panel:
- a. "Do not turn off alternator in flight except in emergency."
(1970 and 1971 models only)

NOTE 3. The cylinder head probe location for the Model 177B is No. 3 cylinder.

NOTE 4. The marking of the airspeed indicator with IAS provides an equivalent level of safety to FAR 23.1545 when approved airspeed calibration data presented in Section V of the Pilot's Operating Handbooks listed below is available to the pilot:

177B, Cessna P/N D1058-13 (S/N 17702314 through 17702522)
 177B, Cessna P/N D1084-13 (S/N 17702523 through 17702672)
 177B, Cessna P/N D1111-13 (S/N 17702673 through 17702752)

NOTE 5. 14-volt electrical system
 (177 series through S/N 17702672)

 28-volt electrical system
 (177 series, S/N 17702673 and on)

In addition to the placards specified above, the prescribed operating limitations indicated by an asterisk (*) under Sections I, II, and III of this data sheet must also be displayed by permanent markings.

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