


FLINT AERO  
1935 North Marshall Avenue  
El Cajon, CA 92020  
Report No. 337.13

FAA APPROVED  
PILOT'S OPERATING HANDBOOK AND FAA APPROVED  
AIRPLANE FLIGHT MANUAL SUPPLEMENT NO.1  
FOR  
Cessna Models 337H, T337H, P337H and T337H-SP  
POH AND FAA APPROVED AIRPLANE FLIGHT MANUAL

This supplement must be carried on board and attached to the Pilot's Operating Handbook FAA Approved Airplane Flight Manual as noted below\* when the airplane is modified by the installation of the Flint Aero Wing Tip Fuel Tanks in accordance with STC SA5090NM.

The information contained herein supplements or supersedes the basic manual only in those areas listed herein. For limitations, procedures, and performance information not contained in this Supplement, consult the basic Pilot's Operating Handbook and Airplane Flight Manual.

337H,	Cessna P/N D1567-13PH (S/N 33701875 through 33701921)
T337H,	Cessna P/N D1568-13PH (S/N 33701875 through 33701919, 33701921 and 33701854)
P337H,	Cessna P/N D1569-13PH (S/N P3370319 through P3370341 and P3370196)
337H,	Cessna P/N D1578-13H (S/N 33701922 and up except 33701923 through 33701927)
T337H,	Cessna P/N D1579-13PH (S/N 33701922 through 33701950 except 33701923 through 33701927)
P337H,	Cessna P/N D1580-13PH (S/N P3370342 and up)
T337H-SP,	Cessna P/N D1579-13PH and Supplement D1579-13PHH (S/N 33701920, 33701923 through 33701927, 33701951)
T337H-SP,	Cessna P/N D1579-13PH and Supplement D1579-13PHH2 (S/N 33701952 and up)

  
Manager, Flight Test Branch, ANM-160L  
Federal Aviation Administration  
Los Angeles Aircraft Certification Office  
Transport Airplane Directorate  
FAA APPROVED DATE: June 7, 1991

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STC No. SA5090NM

REVISIONS AND ADDITIONS

REV LEV	DATE	PAGES AFFECTED	REMARKS	FAA APPROVED
Orig.	6/7/91	Title	Installation	<i>Ronald Livingston</i>
	"	P-1	of wing tip	Manager, Flt.
	"	P-2	fuel tanks	Test Branch
	"	P-3		FAA Los Angeles ACO
	"	1		ANM-160L
		to		Date <u>6-7-91</u>
		17		

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EFFECTIVE PAGES

PAGE	REV	DATE	PAGE	REV	DATE	PAGE	REV	DATE
Title	N/C	6/7/91						
P-1	N/C	"						
P-2	N/C	"						
P-3	N/C	"						
1	N/C	"						
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16	N/C	"						
17	N/C	"						

FAA APPROVED DATE: JUN 7 1991

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SECTION 1  
 GENERAL

NOTES:

- 1 Maximum height shown with nose gear depressed, all tires and nose strut properly inflated and flashing beacon installed.
- 2 Wheel base length is 94"
- 3 Propeller ground clearance:  
 front - 9"  
 rear - 20"
- 4 Wing area is 224.0 square feet.
- 5 Minimum turning radius ( $\phi$  pivot point to outboard wing tip) is 27'.

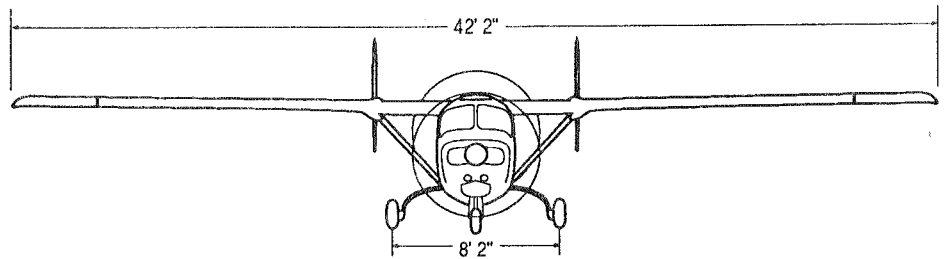
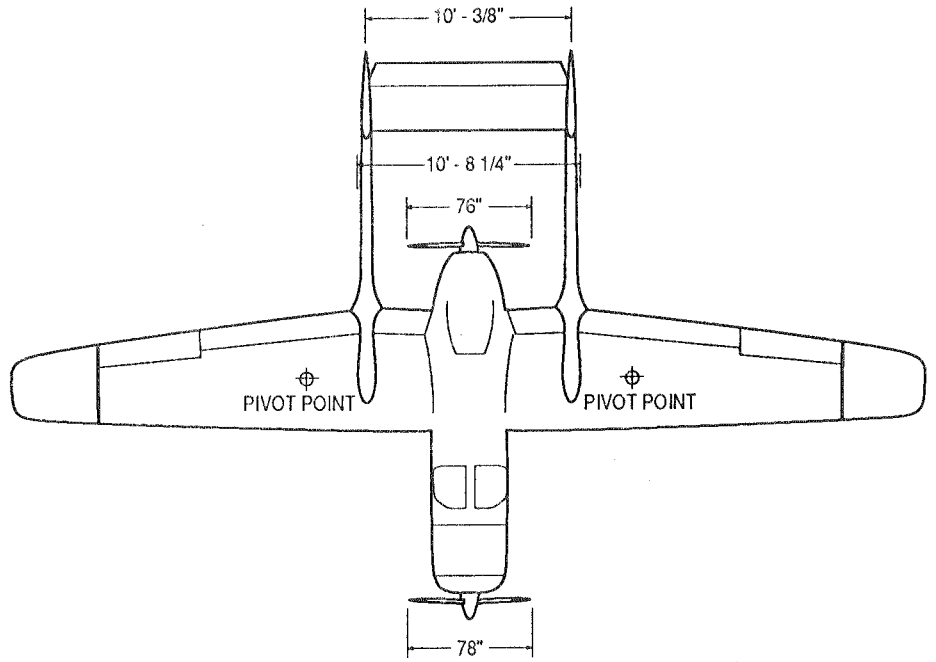
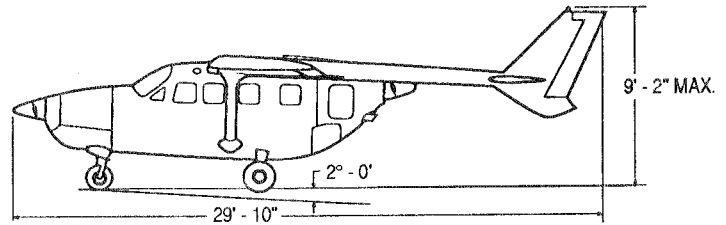


Figure 1-1 Three View

SPECIFIC LOADINGS

	For models 337H and T337H	For models P337H and T337H-SP
Wing loading:	20.7 lbs./sq. ft.	20.9 lbs./sq. ft.
Power loading:	11.0 lbs./hp	10.4 lbs./hp

SECTION 2  
 LIMITATIONS

1. Airspeed Limitations

Never exceed speed (Vne) and maximum structural cruising speed (Vno) remains unchanged for all non-turbocharged models.  
 For all turbocharged models, reduce Vne and Vno by 5 KIAS (6 MPH) per 1,000 feet pressure altitude (Hp) above 18,000 feet (Hp).

2. Airspeed Indicator Markings

Airspeed indicator markings and their color code significance.

Models	Markings	KIAS Value or Range	Significance
337H T337H P337H T337H-SP	White Arc	57-110 48-110 52-110 53-110	Full Flap Operating Range. Lower limit is maximum weight Vso in landing configuration. Upper limit is maximum speed permissible with flaps extended.
337H T337H P337H T337H-SP	Green Arc	66-168 56-164 54-169 61-165	Normal Operating Range. Lower limit is maximum weight Vs with flaps retracted. Upper limit is maximum structural cruising speed.

Figure 2-2 Airspeed Indicator Markings - Knots Indicated Airspeed

3. Power Plant Instrument Markings

Power plant markings and their color code significance.

Instrument	Red Line	Green Arc	Red Line
	Minimum Limit	Normal Operating	Maximum Limit
Wing Tip Fuel Tank Quantity Indicators	E (0.2 U.S. Gal. Unusable Each Tank)	...	...

Figure 2-3 Power Plant Instrument Markings

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Supplemental to Cessna  
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SA 5090W  
STC No. \_\_\_\_\_

SECTION 2  
LIMITATIONS

4. Weight Limits

<u>Model</u>	<u>337H/T337H</u>	<u>T337H-SP/P337H</u>
-Maximum takeoff weight is	4630 pounds	4700 pounds
-Maximum landing weight is	4400 pounds	4465 pounds
-Maximum zero fuel weight is	4330 pounds	4330 pounds

5. Center of Gravity Limits

-Center of gravity range (landing gear extended)

Forward Limit	Aft Limit	Weight
140.4	143.0	4700 lbs (for T337H-SP & P337H)
140.0	143.0	4630 lbs
137.3	143.2	4400 lbs
134.5	143.3	3600 lbs

Straight line fairing between points.

6. Fuel Limitations

A. Wing Tip Fuel Tank Capacities

a. In addition to standard tanks and long range tanks (if installed)

Wing Tip Fuel Tank:

Total Capacity	= 39.0 U.S. Gallons
Total Capacity Each Tank	= 19.5 U.S. Gallons
Total Usable	= 38.6 U.S. Gallons
Total Usable Each Tank	= 19.3 U.S. Gallons

B. Fuel Loading Limitations

-At weights between 4630 and 4330 pounds, there must be at least 12 U.S. gallons of fuel in each wing tip tank.

Note: With low fuel loading and takeoff weights above 4330 pounds, a practical zero fuel weight will be 4180 pounds.

C. Wing Tip Fuel Tank Transfer Limits

-Do not transfer wing tip tank fuel until weight is below 4330 pounds.

-Do not transfer wing tip tank fuel until the main fuel tank on that side is at least 11 gallons below full and is the selected engine fuel source.

-Do not transfer wing tip tank fuel to a main tank that is not a selected engine fuel source until that main tank quantity is at least 20 gallons below full.

-Do not transfer wing tip fuel unless in level flight or on the ground.

-Do not transfer wing tip fuel during take off, landing, refueling, and when empty.

SECTION 2  
LIMITATIONS

-Do not transfer wing tip fuel unless in level flight or on the ground.

-Do not transfer wing tip fuel during take off, landing, or fueling and when empty.

Note: Main fuel tank quantity below the full level can be determined by reference to fuel quantity gauges and by calculating fuel used by:  
1) Estimating engine fuel flow rates versus time.  
2) If installed, using engine fuel flow rates indicators versus time.

Placards

The following information is displayed in the form of composite or individual placards.

1. Adjacent to fuel selector valve cover at appropriate locations:

TOTAL WING TIP FUEL 39 U.S. GALLONS (38.6 GALLONS USABLE). TRANSFER WING TIP FUEL ONLY IN LEVEL FLIGHT WHEN MAIN TANK IS 11 U.S. GALLONS BELOW FULL AND IS A SELECTED ENGINE FUEL SOURCE OR 20 U.S. GALLONS BELOW FULL WHEN NOT A SELECTED ENGINE FUEL SOURCE.  
WING TIP FUEL TANK PUMP SWITCHES MUST BE OFF DURING TAKEOFF, LANDING, REFUELING, AND WHEN EMPTY.  
MONITOR MAIN FUEL TANK GAUGE WHILE TRANSFERRING WING TIP FUEL.

2. Forward of each wing tip tank filler

19.5 U.S. GALLONS (19.3 GALLONS USABLE)  
100LL OR 100/130 MIN. GRADE AVIATION GASOLINE

3. Adjacent to wing tip fuel tank pump switches

WING TIP FUEL TANK PUMPS MUST BE OFF DURING TAKEOFF, LANDING, REFUELING AND WHEN EMPTY. MONITOR MAIN FUEL TANK GAUGE WHILE TRANSFERRING WING TIP FUEL TO PREVENT OVER FILLING.

SECTION 2  
LIMITATIONS

Placards (cont.)

4. At wing tip fuel tank pump switches

LEFT WING TIP FUEL	RIGHT WING TIP FUEL
19.5 GALLONS	19.5 GALLONS
19.3 GALLONS USABLE	19.3 GALLONS USABLE
ON	ON
OFF	OFF

5. Installed near fuel wing tip fuel gauge

LEFT WING TIP FUEL	RIGHT WING TIP FUEL
19.3 U.S. GALLONS	19.3 U.S. GALLONS
USABLE	USABLE

6. Installed adjacent to each wing tip fuel tank leak detection drain  
(3 per side)

FUEL OR VAPOR FROM DRAIN  
REQUIRES IMMEDIATE REPAIRS

7. Installed adjacent to appropriate wing tip tank pump circuit breakers  
or fuses

TIP TANK L PUMP  
TIP TANK R PUMP

8. Near the airspeed indicator (for turbocharged models only)

REDUCE VNE AND VNO BY 5 KNOTS PER 1000 FEET  
(HP) ABOVE 18,000 FEET (HP).

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SECTION 3  
EMERGENCY PROCEDURES

NOTE

All references in the Cessna Pilot's Operating Handbook to the auxiliary fuel pump are to the electric fuel pump supplying fuel to the engine. With Flint Aero, Inc. Wing Tip Fuel Tanks installed, fuel transfer to the standard main wing tanks is provided by the wing tip fuel transfer tank pumps controlled by the wing tip fuel transfer tank pump switches.

EMERGENCY LANDING WITH OR WITHOUT ENGINE POWER (add)

Wing Tip Fuel Tank transfer pump switches.....OFF.

WING FIRE (add)

Wing Tip Fuel Tank transfer pump switches.....OFF.

SECTION 4

NORMAL PROCEDURES

PREFLIGHT INSPECTION - WING TIP FUEL TRANSFER TANKS

1. Master switch on. Check wing tip fuel tank gauges for fuel quantity. Visually check wing tip fuel tanks for quantity.
2. With master switch on, check each wing tip fuel tank pump for operation by operating each pump separately with wing tip fuel tank transfer switches. Listen for pump operation. If no noise or vibration, assume pump is not operating. Check for service.
3. From each wing tip fuel tank, drain a sample quantity of fuel. Check for contamination. If any water is visible, drain additional amounts of fuel until all water is expelled from the tank.
4. Visually inspect external areas of wing around wing tip fuel tanks for any signs of fuel leakage.
5. Check each wing tip tank filler cap for security and vent lines for obstructions.

Before Takeoff (add)

a. Add the following to the before takeoff procedure:

- Wing tip fuel tank transfer pump switches.....OFF

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SECTION 5  
 PERFORMANCE

1. Stall speed, Power off, forward center of gravity  
 a. Model 337H

Condition		Angle of Bank							
		0°		30°		45°		60°	
		MPH	KTS	MPH	KTS	MPH	KTS	MPH	KTS
Model 337H  4630 lbs Gross Weight	Flaps up L/G Up	76	66	82	71	90	78	107	93
	Flaps 1/3 L/G Dn	71	62	77	67	86	75	103	89
	Full Flaps L/G Dn	66	57	70	61	78	68	93	81

Indicated Airspeed

- b. Model T337H

Condition		Angle of Bank							
		0°		30°		45°		60°	
		MPH	KTS	MPH	KTS	MPH	KTS	MPH	KTS
Model T337H  4630 lbs Gross Weight	Flaps up L/G Up	65	56	73	63	84	73	104	90
	Flaps 1/3 L/G Dn	67	58	73	63	82	71	100	87
	Full Flaps L/G Dn	55	48	66	57	76	66	95	82

Indicated Airspeed

SECTION 5  
 PERFORMANCE

1. Stall speed, Power off, forward center of gravity  
 c. Model P337H

Condition		Angle of Bank							
		0°		30°		45°		60°	
		MPH	KTS	MPH	KTS	MPH	KTS	MPH	KTS
Model P337H 4700 lbs Gross Weight	Flaps up L/G Up	62	54	70	61	83	72	105	91
	Flaps 1/3 L/G Dn	58	50	67	58	81	70	101	88
	Full Flaps L/G Dn	60	52	67	58	76	66	93	81

Indicated Airspeed

1. Stall speed, Power off, forward center of gravity  
 d. Model T337H-SP

Condition		Angle of Bank							
		0°		30°		45°		60°	
		MPH	KTS	MPH	KTS	MPH	KTS	MPH	KTS
Model T337H-SP 4700 lbs Gross Weight	Flaps up L/G Up	70	61	77	67	86	75	105	91
	Flaps 1/3 L/G Dn	67	58	73	63	82	71	100	87
	Full Flaps L/G Dn	61	53	67	58	78	68	93	81

Indicated Airspeed

SECTION 5  
PERFORMANCE

2. Single Engine Rate-of-Climb

a. Vyse is unchanged

Single Engine Climb Rates			
Front Engine Operating, Rear Engine Feathered			
Model No	Gross takeoff Wt., lbs.	Rate of Climb, FPM	
		Sea Level, 59°F.	5000 ft, 41°F.
337H	4630	289	139
T337H	4630	349	264
P337H	4700	429	369
T337H-SP	4700	389	329

RANGE PROFILE

With wing tip fuel tanks 39 U.S. Gallons (38.6 usable)

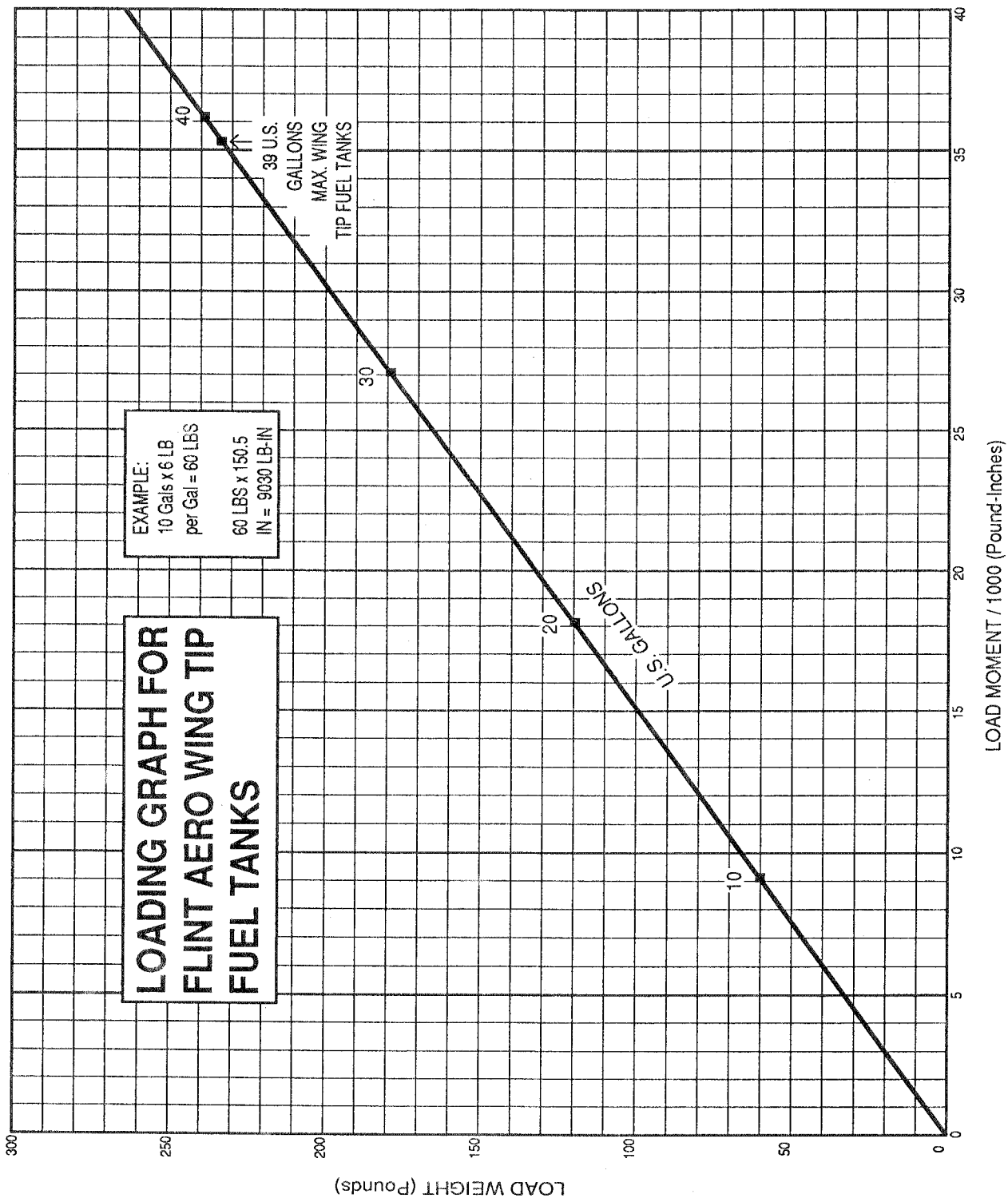
Manufacturer's maximum usable fuel charts for range and endurance calculations are valid for usable fuel quantity as stated in the basic manual. Full use of wing tip tank fuel for extended range and endurance was not determined.

GENERAL PERFORMANCE

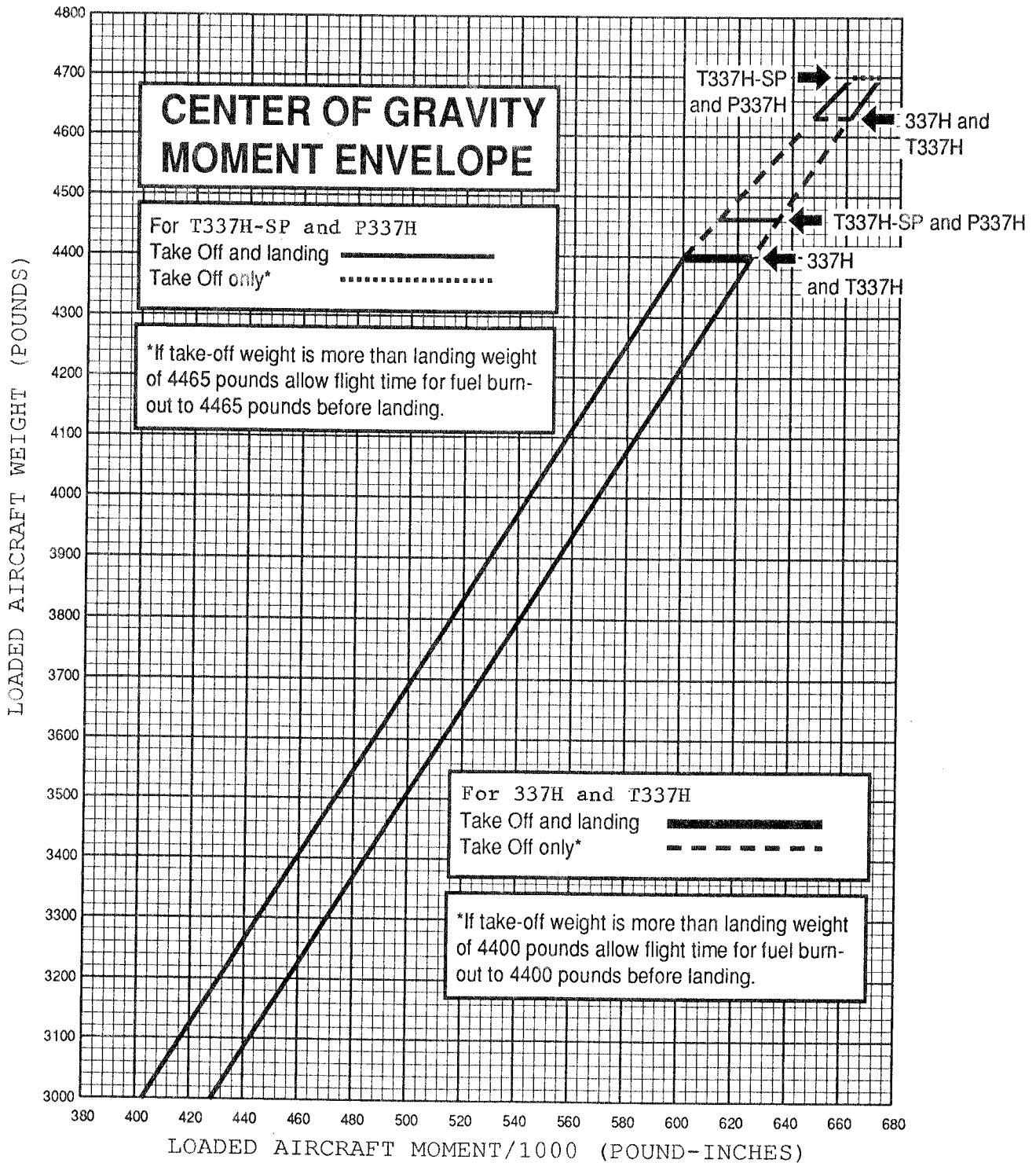
As a result of this modification, the performance presented in the applicable basic POH-FAA approved AFM is conservative except for the stall speed values which are incorporated in this supplement.

SECTION 6

WEIGHT AND BALANCE/EQUIPMENT LIST



SECTION 6  
 WEIGHT AND BALANCE/EQUIPMENT LIST



SECTION 6  
 WEIGHT AND BALANCE/EQUIPMENT LIST

ITEM NO	EQUIPMENT LIST DESCRIPTION	REF DRAWING	WT - LBS	ARM - INS
	<b>C. ELECTRICAL SYSTEMS</b>			
C-1-F	Fuel Pump - L.H. Wing Tip Tank	FA337-IN	+2.0	+145.0
C-2-F	Fuel Pump - R.H. Wing Tip Tank	FA337-IN	+2.0	+145.0
	<b>D. INSTRUMENTS</b>			
D-1-F	Gauges - L.H. & R.H. Wing Tip Fuel Tank Quantity Indicator	FA337-IN		75.5*
	1. Dual needles - single gauge		+0.2	
	2. Single needle - two gauges		+0.8	
	<b>F. PLACARDS &amp; WARNING</b>			
F-1-F	Placards: Various- see this supplement section 2 limitations	FA337-IN	neg'1	neg'1
	<b>J. SPECIAL PACKAGES</b>			
J-1-F	Wing tips & fuel tanks including position lights (net change)			
	1 - Remove Cessna wing tips and install Flint Aero Wing Tip Fuel Tanks		+45.7	+150.5
	2 - Unusable fuel in Flint Aero Wing Tip Tanks (0.4 U.S. Gal. at 6 lbs/U.S. gal.)		+2.4	+150.5
	<b>TOTAL INSTALLATION NET CHANGE</b>		+52.3 or +52.9	-
NOTE	In calculating weight and balance for full wing tip fuel tank: $38.6 \text{ U.S. gal. usable} \times 6 \text{ lbs/U.S. gal.} \times 150.5 \text{ in. arm} = 34,855.8 \text{ in. lbs.}$ or $34.86 \text{ in. lbs./1000}$ C.G. = total moment divided by total weight			

\*Determine arm after installation for various gauge(s) location.

SECTION 7  
AIRPLANE & SYSTEMS DESCRIPTIONS

1. Wing Tip Fuel Tank Capacities

a. In addition to standard tanks:

Wing Tip Fuel Tanks:

Total Capacity	= 39.0 U.S. Gallons
Total Capacity Each Tank	= 19.5 U.S. Gallons
Total Usable	= 38.6 U.S. Gallons
Total Usable Each Tank	= 19.3 U.S. Gallons

2. Operation of Wing Tip Fuel Tanks (Transfer)

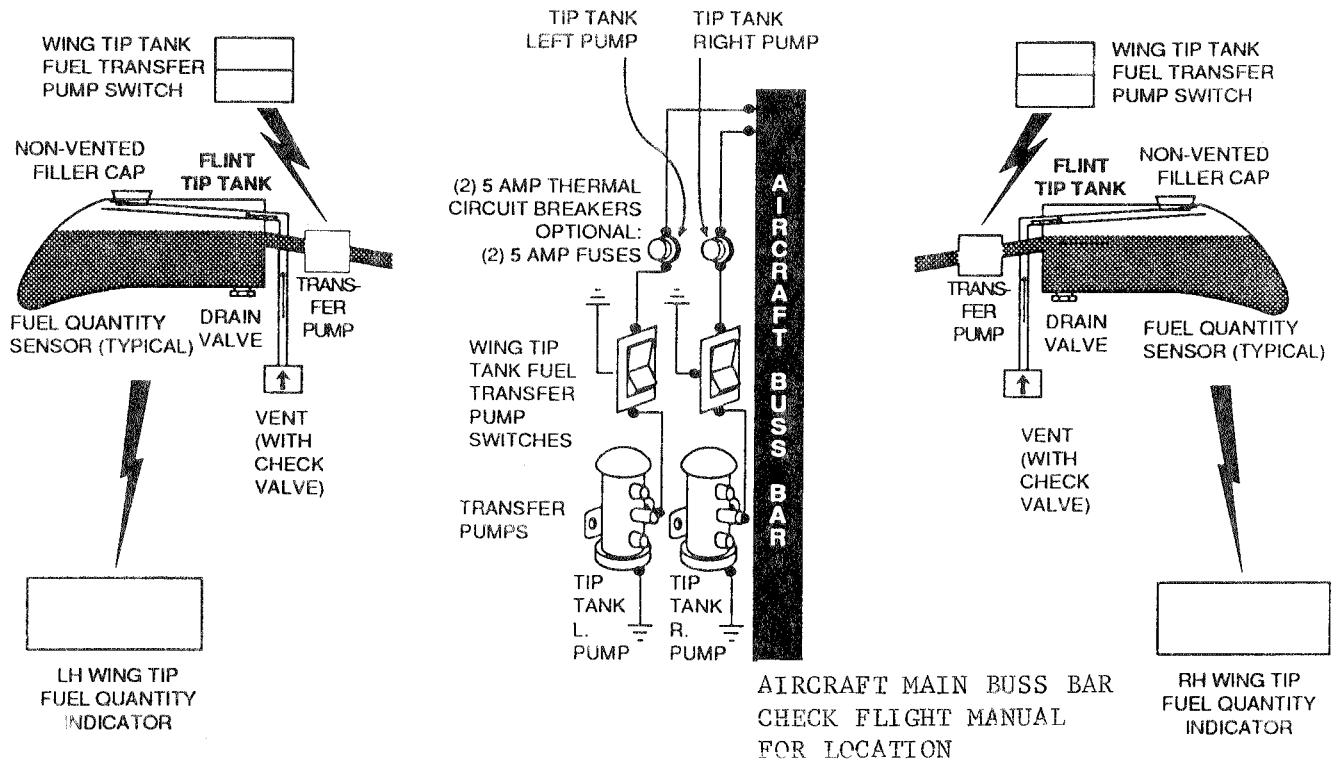
a. To transfer, turn applicable "wing tip fuel tank transfer switch" on. When wing tip tanks indicate empty, turn applicable transfer switch off.

As a general procedure, do not transfer wing tip tank fuel while using the auxiliary tanks or until burning approximately one... hour of fuel from the main tanks.

NOTE: Should the transfer pump fail, it is not possible to transfer fuel from the affected tank in flight.

See diagram on page 15

SECTION 7  
 AIRPLANE & SYSTEMS DESCRIPTIONS



SECTION 7  
AIRPLANE & SYSTEMS DESCRIPTIONS  
WITH WING TIP FUEL TANKS (TRANSFER)

AIRFRAME

Left and right wing tip fuel transfer tank quantity gauges and pump switches are located on a subpanel to the left of the center pedestal or in instrument panel or other area accessible to pilot. Fuses or circuit breakers are connected to aircraft electrical system main buss bar and are accessible with visible placarding.

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FUEL QUANTITY DATA (U.S. GALLONS)

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Add 38.6 U.S. gallons additional usable fuel to the total fuel available in the Cessna tanks.

---

In addition to the Cessna Auxiliary and/or main fuel tanks, two wing tip fuel transfer tanks are installed as wing tip extensions. The capacity is 19.5 U.S. gallons each tank (19.3 usable U.S. gallons)

These tanks transfer to their respective main wing tank by transfer pumps controlled by switches in the cockpit.

Each wing tip tank has a water drain and is vented through an overboard vent line. Each tank has an individual quantity gauge.

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NOTES

The wing tip fuel (transfer) tank quantity gauges are similar in operation to the main fuel tank gauges and visual inspection of the tanks during preflight is the best assurance of fuel quantities. No provision is provided to visually determine reduced tank quantity.

The fuel in the wing tip fuel transfer tanks is available to the engine only through the aircraft main fuel tanks. The main fuel tank and Cessna auxiliary fuel tank gauges are the sole reference gauges for immediately available engine fuel.

Should a wing tip fuel (transfer) tank pump fail, it is not possible to transfer fuel from the affected tank during the flight in progress and the pilot must immediately adjust his range and endurance calculations on the basis of the available fuel through the standard fuel system.

SECTION 8  
AIRPLANE HANDLING, SERVICE AND MAINTENANCE  
WITH WING TIP FUEL (TRANSFER)

NOTE

Before flight, check through filler neck for wing tip tank fuel quantity. No provision is made for calculating reduced capacity fuel in the auxiliary tanks.

NOTE

In servicing the fuel system, the pilot must note that operating the aircraft with fuel level in either or both wing tip fuel tanks below 12 U.S. gallons reduces maximum take off weights significantly. The pilot in command must consider the advantages of keeping the wing tip fuel (transfer) tanks full or filled to at least 12 gallons. (See limitations, Section 2).