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Report No. 050.06

FAA APPROVED
AIRPLANE FLIGHT MANUAL APPENDIX

to the

CESSNA 206H AND T206H

PILOT'S OPERATING HANDBOOK AND
FAA APPROVED AIRPLANE FLIGHT MANUAL

Extended Wing Tip Fuel Tanks – 3600 LBTOGW

STC No: SA4366WE

Airplane S/N _____ **Airplane Reg. No.** _____

This Appendix is applicable to Cessna 206H airplanes serial numbers 20608060 through 20608091 when Cessna Aircraft Company Accomplishment Instruction AI 206-57-01 is not incorporated.

This Appendix is also applicable to Cessna T206H airplanes serial numbers 20608101 through 20608158 when Cessna Aircraft Company Accomplishment Instruction AI 206-57-01 is not incorporated.

This Appendix must be attached to the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual (POH/AFM), Cessna 206H P/N 206HPHUS00 or POH/AFM Cessna T206H P/N T206HPHUS00, or later FAA Approved revisions, when the airplane is modified by the installation of the Flint Aero Extended Wing Tip Fuel Tanks in accordance with STC SA4336WE.

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 Appendix, consult the basic Airplane Flight Manual.

FAA Approved Donald Armstrong

Manager, Flight Test Branch, ANM-160L
Federal Aviation Administration
Los Angeles Aircraft Certification Office
Transport Airplane Directorate

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LOG OF PAGES

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SECTION 1:
GENERAL INTRODUCTION

This Flint Aero, Inc. Appendix to the Approved Flight Manual addresses the operation of the Cessna 206H and T206H airplanes when modified by installation of Flint Aero Wing Tip Fuel Tanks in accordance with STC SA4366WE. With the tips installed, the wing span increases to 39 feet, 0 inches, and the wing area increases to 185 square feet. The new set of Performance Specifications is shown in Table 1-1 below.

Table 1-1

PERFORMANCE – SPECIFICATIONS 3600 POUNDS T.O. GROSS WEIGHT			206H	T206H	
			6,000 FT	20,000 FT	10,000 FT
SPEED	Maximum at Sea Level / 17,000 ft.		151 KTS SL	178 KTS	
	Cruise, 75% Power.		142 KTS	164 KTS	150 KTS
CRUISE	Recommended lean mixture with fuel allowance for engine start, taxi, takeoff, climb and 45 minutes reserve.				
	75% Power 117.8 Gallons usable Fuel	Range	857 NM	825 NM	774 NM
		Time	6.1 HRS	5.3 HRS	5.3 HRS
	Max Range 117.8 Gallons Usable Fuel	Range	1018 NM	983 NM	1001 NM
		Time	9.3 HRS	8.6 HRS	9.0 HRS
CLIMB	Sea Level Std Day Rate of Climb		1118 FPM	1180 FPM	
	Service Ceiling		15,700 FT	27,000 FT	
TAKEOFF	Sea Level Std Day Ground Roll		910 FT	915 FT	
	Total Distance Over 50 Ft. Obstacle		1860 FT	1745 FT	
LANDING	Sea Level Std Day Ground Roll		735 FT	735 FT	
	Total Distance Over 50 Ft. Obstacle		1395 FT	1395 FT	
STALL	Flaps Up, Power Off		58 KCAS	58 KCAS	
	Flaps Down, Power Off		54 KCAS	54 KCAS	
MAXIMUM WEIGHT	Ramp		3614 LBS	3617 LBS	
	Takeoff		3600 LBS	3600 LBS	
	Landing		3600 LBS	3600 LBS	
STANDARD EMPTY WEIGHT			2248 LBS	2312 LBS	
MAXIMUM USEFUL LOAD			1366 LBS	1305 LBS	
BAGGAGE ALLOWANCE			180 LBS	180 LBS	
WING LOADING: lbs./Sq.Ft.			20.7 PSF	20.7 PSF	
POWER LOADING lbs./HP			12.0 PPHP	11.6 PPHP	
FUEL CAPACITY			122 GAL	122 GAL	
OIL CAPACITY			11 QTS.	12 QTS.	
ENGINE: Textron Lycoming	206H: 300 BHP at 2700 RPM T206H: 310 BHP at 2500 RPM		IO-540-AC1A5	TIO-540-AJ1A	
PROPELLER: 3-Bladed, Constant Speed, Diameter			79 IN	79 IN	

The above performance figures are based on the indicated weights, standard atmospheric conditions, level hard-surface dry runways and no wind. They are calculated values derived from the Cessna AFM and flight tests conducted by Flint Aero, Inc., and will vary with individual airplanes and numerous factors affecting flight performance.

Fuel capacity is increased to the values in Table 1-2 below:

Table 1-2

FUEL CAPACITY, U.S. GALLONS	206H and T206H
Total Capacity	122.0
Total Usable	117.8
Total Capacity, Each Wing Tank	46.0
Total Usable, Each Wing Tank	44.0
Total Capacity, Each Tip Tank	15.0
Total Usable, Each Tip Tank	14.9

Maximum Certificated Weights are unchanged:

Table 1-3

MAXIMUM CERTIFICATED WEIGHTS, LBS.	206H	T206H
Ramp Weight	3614	3617
Takeoff Weight	3600	3600
Landing Weight	3600	3600

Standard Airplane Weights are unchanged:

Table 1-4

STANDARD AIRPLANE WEIGHTS, LBS.	206H	T206H
Standard Empty Weight	2248	2312
Maximum Useful Load, Normal Category	1366	1305

The Specific loadings of the airplane are unchanged:

Table 1-5

SPECIFIC LOADINGS	206H	T206H
Wing Loading, lbs./sq. ft.	20.7	20.7
Power Loading, lbs./hp.	12.0	11.6

SECTION 2:
LIMITATIONS

1. Airspeed Limitations
   Never exceed speed (Vne) and maximum structural cruising speed (Vno) remain unchanged for non-turbo models.
   Reduce Vne 5 MPH per 1,000 above 18,000 feet. (Turbocharged models only).
2. Airspeed Indicator Markings
   Airspeed indicator color-code significance remains unchanged.
   The white arc limits of the indicator remain unchanged.
3. Power Plant Instrument Markings
   The following entry is added to the Powerplant Instrument Markings Table:

Power plant markings and their color-code significance.

INSTRUMENT	RED LINE MINIMUM LIMIT	GREEN ARC NORMAL OPERATING	RED LINE MAXIMUM LIMIT
Wing Tip Fuel Tank Quantity Indicators	E		
	(0.2 U.S. Gal.	------	-----
	Unusable Each Tank)		

3. Weight Limitations

WEIGHT LIMITS, LBS.	206H	T206H
Maximum Ramp Weight	3614	3617
Maximum Takeoff Weight	3600	3600
Maximum Landing Weight	3600	3600
Maximum Weight in Baggage Compartment (Station 109 to 145)	180	180

For installation of other modifications by STC, the maximum gross weight is limited to that which is authorized by each particular STC. The pilot is advised to determine this gross weight limit from each appropriate STC.

5. Center of Gravity Limits

Center of gravity range, inches aft of datum, is unchanged

Forward:	33.0 inches aft of datum at 2500 lbs. or less, with straight line variation to 42.5 inches aft of datum at 3600 lbs.
Aft:	49.7 inches aft of datum at all weights.
Reference datum:	Front face of lower firewall.

6. Fuel Limitations

6.1. Fuel Capacity Limitations

FUEL CAPACITY, U.S. GALLONS	
Total Capacity	122.0
Total Usable	117.8
Total Capacity, Each Wing Tank	46.0
Total Usable, Each Wing Tank	44.0
Total Capacity, Each Tip Tank	15.0
Total Usable, Each Tip Tank	14.9

6.2. Wing Tip Fuel Tank Transfer Limits

- When feeding from either or both main tanks, do not transfer wing tip tank fuel into a main fuel tank until it is at least 15.0 gallons below full.
- When feeding from either main tank, begin tip tank transfer into that tank before its level drops below five gallons remaining.
- When feeding from both main tanks, begin tip tank transfer before either main tank drops below five gallons remaining.
- Do not transfer wing tip fuel unless in level flight.
- Do not transfer wing tip fuel during take off, landing, refueling, 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 rate indicator vs. time.

7. Placards

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

7.1. In full view of pilot:

> TOTAL WING TIP FUEL 30 U.S. GALLONS (29.8 GALLONS USABLE). TRANSFER FUEL DURING LEVEL FLIGHT.
> TRANSFER FUEL WHEN MAIN TANK CONTAINS NOT LESS THAN 5.0 GALLONS AND IS AT LEAST 15.0 GALLONS BELOW FULL.
> WING TIP FUEL SWITCH MUST BE OFF DURING TAKEOFF, LANDING, REFUELING, AND WHEN EMPTY.
> MONITOR MAIN FUEL TANK GAUGE WHILE TRANSFERRING WING TIP FUEL TO PREVENT OVER FILLING.

7.2. Forward of each wing tip tank filler:

> 15.0 U.S. GALLONS (14.9 GALLONS USABLE)
> 100LL OR 100/130 MIN. GRADE AVIATION GASOLINE

7.3. 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.

7.4. At wing tip fuel tank pump switches:

> LEFT WING TIP FUEL
> 15.0 U.S. GALLONS
> 14.9 GALLONS USABLE
> ON
> OFF

> RIGHT WING TIP FUEL
> 15.0 U.S. GALLONS
> 14.9 GALLONS USABLE
> ON
> OFF

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

7.6.

> FUEL OR VAPOR FROM DRAIN
> REQUIRES IMMEDIATE REPAIRS

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

> TIP TANK L PUMP

> TIP TANK R PUMP

7.8. Installed adjacent to the airspeed indicator (Turbocharged models only):

> REDUCE VNE 5 KTS PER
> 1,000 ABOVE 18,000 FEET

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 tank transfer 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. Visually inspect external areas of wing around wing tip fuel tanks for any signs of fuel leakage.
2. Check each wing tip tank filler cap for security and vent lines for obstructions. Visually check wing tip fuel tanks for quantity.
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. Master switch on. Check wing tip fuel tank gauges for fuel quantity.
5. 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 serviceability.

Before Takeoff (add)

a. Add the following to the before takeoff procedure:
Wing tip fuel tank transfer pump switches.....OFF

SECTION 5:
PERFORMANCE

The Flint Tip Fuel Tanks may be used in conjunction with any other approved modifications provided it is determined that no interference exists.

STALL SPEEDS

The stall speeds published in the Cessna 206H and T206H Official Pilot's Operating Handbook for a gross weight of 3600 pounds are slightly high for the Flint Aero wingtip-modified airplane at 3600 pounds gross weight, since the added wing area of this modification reduces the stall speed. For flaps up, reduce stall speed by 4 knots. For flaps 20 and 40 degrees, there is no change to the stall speed.

SHORT FIELD TAKEOFF DISTANCE

Use the standard performance tables applicable to the basic unmodified airplane.

MAXIMUM RATE OF CLIMB

The maximum rate-of-climb data published in the Cessna 206H and T206H Official Pilot's Operating Handbook for a gross weight of 3600 pounds will be exceeded by the Flint Aero wingtip-modified airplane at 3600 pounds gross weight, since the added wing area of this modification will increase the rate of climb. At sea level, this increase is 100 FPM. The published climb data for 3300 and 3000 pounds are valid for the modified airplane at 3500 and 3200 pounds gross weight, respectively.

RANGE PROFILE

With the Flint Aero wing tip fuel tanks installed, the manufacturer's cruise performance charts are valid for the usable fuel quantity as stated in the basic manual. The use of full 30.0 U.S. Gallons (29.8 gal. usable) wing tip tank fuel increases the range and endurance shown in Figures 5-10 and 5-11 of the 206H and T206H Official Pilot's Operating Handbooks. The total range and endurance for full main and wing tip tanks is shown in the table below:

RANGE PERFORMANCE		206H	T-206H	
75% Power at indicated altitude, 117.8 Gallons usable Fuel	Altitude	6200 FT	20,000 FT	10,000 FT
	Range	857 NM	825 NM	774 NM
	Time	6.1 HRS	5.3 HRS	5.2 HRS
Max Range at indicated altitude, 117.8 Gallons Usable Fuel	Altitude	6500 FT	20,000 FT	10,000 FT
	Range	1018 NM	983 NM	1001 NM
	Time	9.3 HRS	8.6 HRS	9.0 HRS
Recommended lean mixture with fuel allowance for engine start, taxi, takeoff, climb and 45 minutes reserve.				

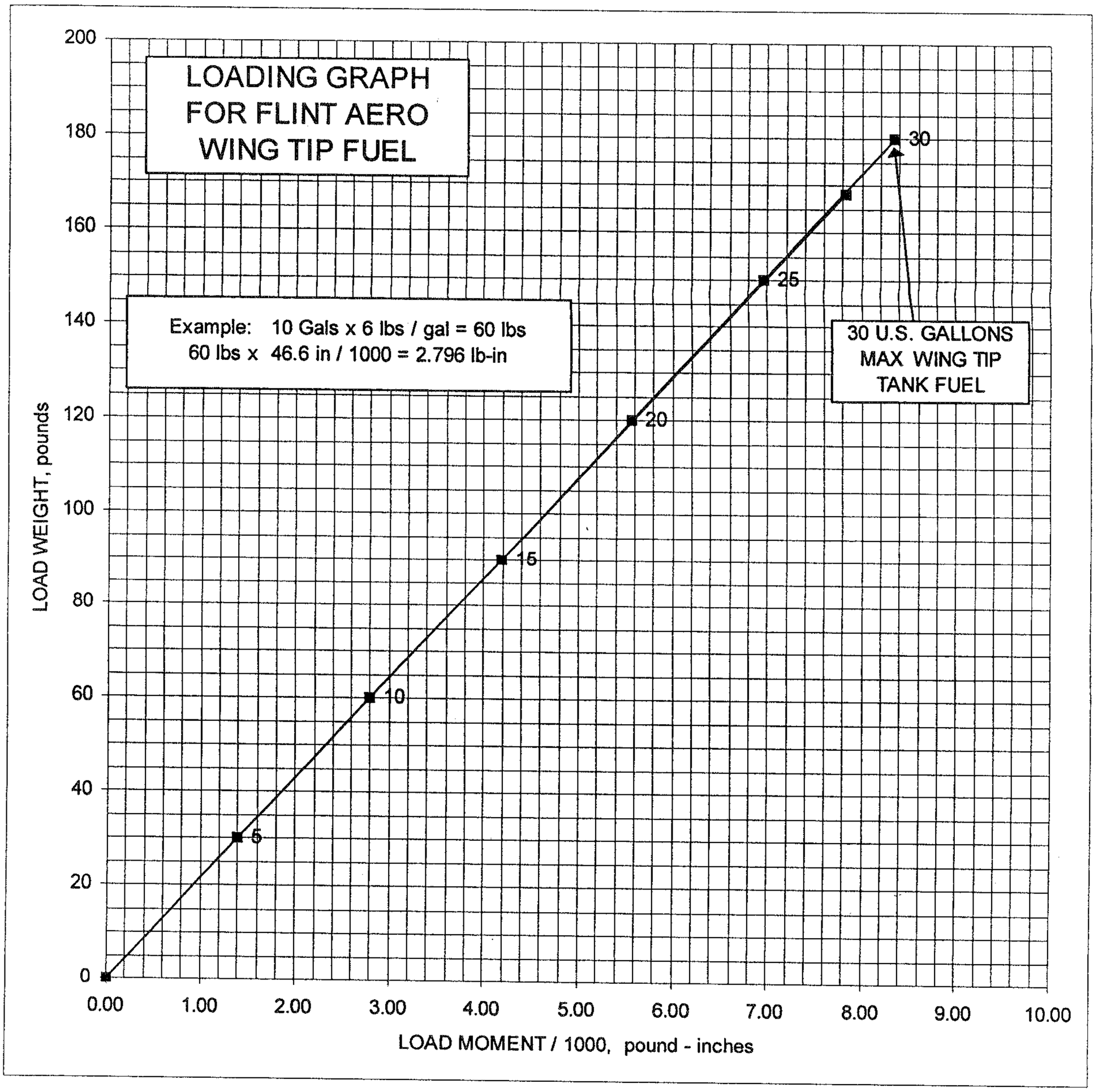
LANDING DISTANCE - SHORT FIELD

The landing distances published in the Cessna 206H and T206H Official Pilot's Operating Handbook for a gross weight of 3600 pounds are valid for the Flint Aero, Inc. wingtip-modified airplanes, which also have a maximum landing gross weight of 3600 pounds.

SECTION 6:
WEIGHT AND BALANCE/EQUIPMENT LIST

ITEM NO	EQUIPMENT LIST DESCRIPTION	REF DRAWING	WEIGHT lbs.	ARM inches	MOMENT lb.-in.
	C. ELECTRICAL SYSTEMS				
31	Fuel Pump - L.H. Wing Tip Tank	FA3330	1.5	34.3	51.5
31	Fuel Pump - R.H. Wing Tip Tank	FA3330	1.5	34.3	51.5
	D. INSTRUMENTS				
64	Gauges - L.H. & R.H. Wing Tip Fuel Tank Quantity Indicator	FA3330	2.5	37.8	95
Various	Placards: Various - see this supplement section 2 limitations	FA3330	neg'l	neg'l	neg'l
	J. SPECIAL PACKAGES				
2, 3	Wing tips & fuel tanks including position lights (net change) 1 - Remove Cessna wing tips and install Flint Aero Wing Tip Fuel Tanks (net)	FA3330	31.0	52.6	1631
	2 - Unusable fuel in Flint Aero Wing Tip Tanks (0.2 U.S. Gal. at 6 lbs./U.S.gal.)	FA3330	1.2	46.6	55.9
	TOTAL INSTALLATION NET CHANGE		37.7	50.0	1884.9

In calculating weight and balance for full wing tip fuel tank: 29.8 U.S. gal. usable x 6 lbs./U.S. gal. x 46.6 in. arm = 8332 lbs. - in. or 8.322 lbs. - in/1000 C.G. = total moment divided by total weight.


LOADING GRAPH
FOR FLINT AERO
WING TIP FUEL
Example: 10 Gals x 6 lbs / gal = 60 lbs
60 lbs x 46.6 in / 1000 = 2.796 lb-in
30 U.S. GALLONS
MAX WING TIP
TANK FUEL
LOAD WEIGHT, pounds
LOAD MOMENT / 1000, pound - inches
0
20
40
60
80
100
120
140
160
180
200
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
5
10
15
20
25
30

SECTION 7:
AIRPLANE & SYSTEMS DESCRIPTIONS

1. Fuel Tank Capacities (U.S.Gallons)

FUEL CAPACITY, U.S. GALLONS	
Total Capacity	122.0
Total Usable	117.8
Total Capacity, Each Wing Tank	46.0
Total Usable, Each Wing Tank	44.0
Total Capacity, Each Tip Tank	15.0
Total Usable, Each Tip Tank	14.9

2. Operation of Wing Tip Fuel Tanks (transfer)

- 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 until after burning approximately 15 U.S. gallons of fuel from each main tank.

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

3. Airframe

Left and right wing tip fuel transfer tank quantity gauges and pump switches are located on subpanels in left and right wing roots. Fuses or circuit breakers are connected to the airplane's electrical system main bus bar, are accessible, and have visible placarding.

4. Fuel Quantity Data (U.S. Gallons)

Add 29.8 U.S. gallons additional usable fuel to the total fuel available in the Cessna tanks.
In addition to the Cessna main fuel tanks, two wing tip fuel transfer tanks are installed as wing tip extensions. The capacity is 15.0 U.S. gallons each tank (14.9 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.

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. There are no provisions for visually determining reduced tank quantity.

The fuel in the wing tip fuel transfer tanks is available to the engine only through the airplane's main fuel tanks. The main 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 fuel available through the standard fuel system.

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

NOTE

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