

FLINT AERO, INC.


1935 North Marshall Avenue
El Cajon, CA 92020

FAA APPROVED PILOT'S OPERATING HANDBOOK AIRPLANE FLIGHT MANUAL SUPPLEMENT NO. 185.14, AND SUPPLEMENTAL AIRPLANE FLIGHT MANUAL

FOR
CESSNA MODELS 185, 185A, 185B, 185C, 185D
185E, A185E, AND A185F PLACARD, POH,
AND FAA APPROVED AIRPLANE FLIGHT MANUAL AIRCRAFT

This document must be carried on board (and attached to the Pilot's Operating Handbook or 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 SA8036NM.
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 document, consult the basic placards, Pilot's Operating Handbook, and Airplane Flight Manual.

Model 185:	632, 185-0001 through 185-0237 except 185-0222
Model 185A	185-0238 through 185-0512
Model 185B:	185-0513 through 185-0653
Model 185C:	185-0654 through 185-0776
Model 185D:	185-0777 through 185-0967
Model 185E:	185-0968 through 185-1149
Model A185E:	185-0968 through 18502090
Model A185F:	652, 18502091 through 18502310 except 18502300
	18502311 through 18502838
	18502839 through 18503153 *Cessna P/N D1063-13
	18503154 through 18503458 *Cessna P/N D1088-13
	18503459 through 18503683 *Cessna P/N D1116-13
	18502300 *Cessna P/N D1144-13PH
	18503684 through 18503938 *Cessna P/N D1144-13PH
	18503939 through 18504138 *Cessna P/N D1179-13PH
	18504139 through 18504328 *Cessna P/N D1200-13PH
	18504329 through 18504394 *Cessna P/N D1219-13PH
	18504395 through 18504415 *Cessna P/N D1237-13PH
	18504416 through 18504424 *Cessna P/N D1258-13PH
	18504425 through 18504448
	18504449 and on



Manager, Flight Test Branch, ANM-160L
Federal Aviation Administration

Los Angeles Aircraft Certification Office
Transport Airplane Directorate

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STC SA8036NM	FLINT AERO, INC SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Page P-1
Report Number 185.14		Revision
Origination Date		Revision Date
Originated By		Revised By

REVISIONS AND ADDITIONS

REV LEV	DATE	PAGES AFFECTED	REMARKS	APPROVED BY
IR		Title P-1 P-2 P-3 1-21	Installation of wing tip fuel tanks	Manager, Flt. Test Branch FAA Los Angeles ACO ANM160L Date

STC SA8036NM	FLINT AERO, INC SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Page P-2
Report Number 185.14		Revision
Origination Date		Revision Date
Originated By		Revised By

EFFECTIVE PAGES

Page	Rev	Date	Page	Rev	Date	Page	Rev	Date
P-1	IR							
P-2	IR							
P-3	IR							
1-21	IR							

FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC	Page P-3
Report Number 185.14	SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Revision
Origination Date		Revision Date
Originated By		Revised By

TABLE OF CONTENTS

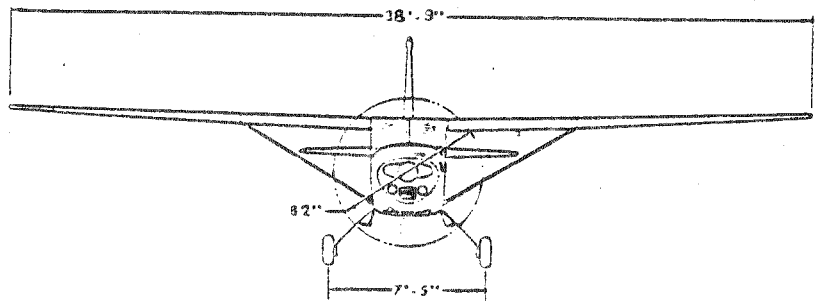
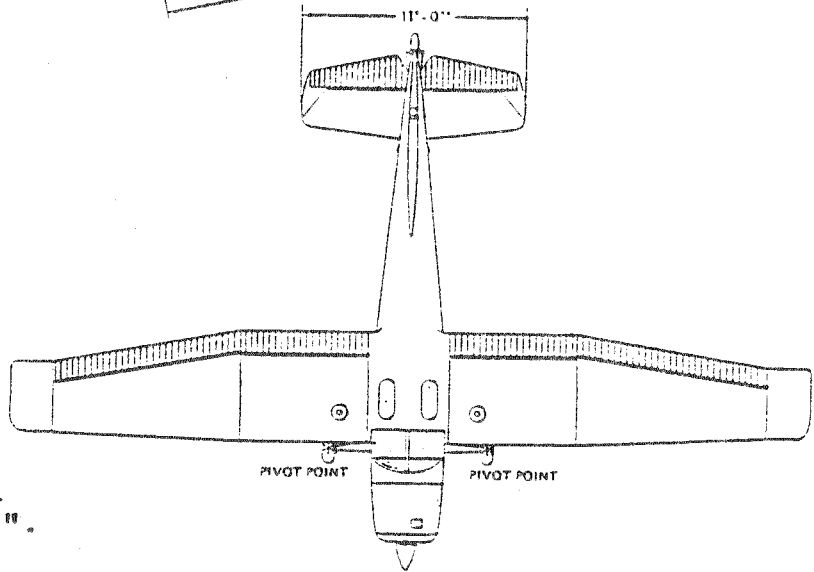
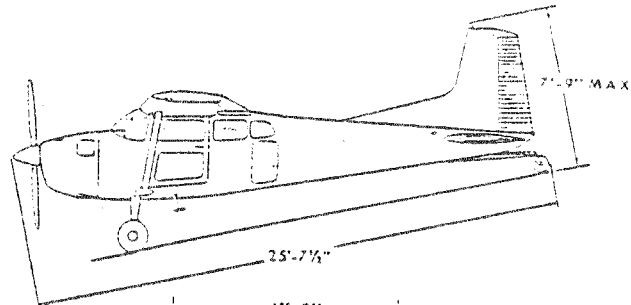
<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1	General.....	1
2	Limitations.....	2
3	Emergency Procedures.....	8
4	Normal Procedures.....	9
5	Performance.....	10
6	Weight and balance/Equipment List.....	15
7	Airplane and Systems Description.....	17
8	Airplane Handling, Service and..... Maintenance	21

FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC. SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Page 1
Report Number 185.14		Revision
Origination Date		Revision Date
Originated By		Revised By

NOTES:

1. Dimensions shown are based on standard empty weight and proper tire inflation.
2. Wheel base length is 20'6".
3. Propeller ground clearance is 13".
4. Wing area is 185 square feet.
5. Minimum turning radius (*pivot point to outboard wing tip) is 23'0".



FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC. SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Page 2
Report Number 185.14		Revision
Origination Date		Revision Date
Originated By		Revised By

SECTION 1

GENERAL INTRODUCTION

This supplement addresses the operation of the Cessna 185 airplane when modified by installation of Flint Aero Wing Tip Fuel Tanks in accordance with STC SA8036NM. A maximum gross weight increase to 3600 pounds is also authorized for specific configurations when these Tip Fuel Tanks are installed. At gross weights above the Cessna original, new performance data are included herein.

SECTION 2

LIMITATIONS

1. Airspeed Limitations
Never exceed speed (Vne) and maximum structural cruising speed (Vno) remains unchanged for all models.
2. Airspeed Indicator Markings
Airspeed indicator color code significance remain unchanged for all models. The lower limit of the white arc of the indicator is increased for each model by 3 knots or 3 MPH as appropriate.
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

FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC.	Page 3
Report Number 185.14	SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Revision
Origination Date		Revision Date
Originated By		Revised By

SECTION 2

LIMITATIONS

4. Weight Limitations

For Cessna 185, 185A, 185B, 185C, 185D, 185E, A185E and A185F airplanes incorporation STC SA8036NM, the maximum gross weight, in pounds, is limited as follows:

CONFIGURATION	MTOGW	MLGW
Basic Airplane with wheels	3600	3600
Ag Carryall	3600	3600
Amphibian, Edo 597-2790 floats, land	3625	3100
Amphibian, Edo 597-2790 floats, water	3100	3100
Cargo Pack	3600	3600
Floatplane, Edo 628-2960 Floats	3320	3320
Skiplane	3350	3350

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		
Forward Limit	Aft Limit	Weight, lbs.
43.3	46.5	3600
34.5	46.5	2100
34.5	46.5	1700

Straight line variation between points.

6. Fuel Limitations

A. Wing Tip Fuel Tank Capacities (U.S. Gallons)
In addition to standard tanks and long range tanks (if installed).

<u>Wing Tip Fuel Tank</u>	<u>185-A185E</u>	<u>A185F</u>
Total Capacity	= 28.0	30.0
Total Capacity Each Tank	= 14.0	15.0
Total Usable	= 27.6	29.6
Total Usable Each Tank	= 13.8	14.6

FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC. SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Page 4
Report Number 185.14		Revision
Origination Date		Revision Date
Originated By		Revised By

SECTION 2

LIMITATIONS

B. 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 14.0 gallons below full (15.0 U.S. gallons for the A185F).

-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 versus time.

FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC. SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Page 5
Report Number 185.14		Revision
Origination Date		Revision Date
Originated By		Revised By

SECTION 2

LIMITATIONS

Placards

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

1. In full view of pilot:

For 185, 185A, 185B, 185C, 185D, 185E, A185E:

TOTAL WING TIP FUEL 28 U.S. GALLONS (27.6 GALLONS USABLE).
TRANSFER FUEL DURING LEVEL FLIGHT.
TRANSFER FUEL WHEN MAIN TANK CONTAINS NOT LESS THAN 5.0
GALLONS AND IS AT LEAST 14.0 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.

For A185F:

TOTAL WING TIP FUEL 30 U.S. GALLONS (29.6 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.

2. Forward of each wing tip tank filler:

For 185, 185A, 185B, 185C, 185D, 185E, A185E:

14.0 U.S. GALLONS (13.8 GALLONS USABLE)
100LL OR 100/130 MIN. GRADE AVIATION GASOLINE

For A185F:

15.0 U.S. GALLONS (14.8 GALLONS USABLE)
100LL OR 100/130 MIN. GRADE AVIATION GASOLINE

FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC. SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Page 6
Report Number 185.14		Revision
Origination Date		Revision Date
Originated By		Revised By

SECTION 2

LIMITATIONS

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.

4. At wing tip fuel tank pump switches:

For 185, 185A, 185B, 185C, 185D, 185E, A185E:

LEFT WING TIP FUEL	RIGHT WING TIP FUEL
14.0 GALLONS	14.0 GALLONS
13.8 GALLONS USABLE	13.8 GALLONS USABLE

ON	ON
OFF	OFF

For A185F:

LEFT WING TIP FUEL	RIGHT WING TIP FUEL
15.0 GALLONS	15.0 GALLONS
14.8 GALLONS USABLE	14.8 GALLONS USABLE

ON	ON
OFF	OFF

5. Installed near wing tip fuel gauge:

For 185, 185A, 185B, 185C, 185D, 185E, A185E:

LEFT WING TIP FUEL	RIGHT WING TIP FUEL
13.8 U.S. GALLONS	13.8 U.S. GALLONS
USABLE	USABLE

For A185F:

LEFT WING TIP FUEL	RIGHT WING TIP FUEL
14.8 U.S. GALLONS	14.8 U.S. GALLONS
USABLE	USABLE

FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC.	Page 7
Report Number 185.14	SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Revision
Origination Date		Revision Date
Originated By		Revised By

SECTION 2

LIMITATIONS

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

FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC.	Page 8
Report Number 185.14	SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Revision
Origination Date		Revision Date
Originated By		Revised By

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 switchesOFF.

WING FIRE (add)

Wing Tip Fuel Tank transfer pump switchesOFF.

FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC. SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Page 9
Report Number 185.14		Revision
Origination Date		Revision Date
Originated By		Revised By

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

FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC.	Page 10
Report Number 185.14	SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Revision
Origination Date		Revision Date
Originated By		Revised By

SECTION 5

PERFORMANCE

The performance tables in this supplement address the operation of an airplane incorporating STC SA8036NM at gross weights greater than previously certificated. For any weight greater than the previously certificated gross weight, use the performance tables in this supplement. However, interpolation of performance data may be used between that appropriate to the highest previous Cessna weights and the 3600 pound maximum gross weight of these performance tables. For weights equal to or less than the previously certificated gross weight, use the standard performance tables applicable to the basic unmodified airplane.

The Flint Tip Fuel Tanks may be used in conjunction with other approved modifications provided it is determined that no interference exists. In this instance, the performance procedure in the paragraph above applies and in addition performance decrements must be applied as previously defined for that other installation.

FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC. SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Page 11
Report Number 185.14		Revision
Origination Date		Revision Date
Originated By		Revised By

SECTION 5
STALL SPEEDS

CONDITIONS:
Power Off

NOTES:

- Altitude loss during a stall recovery may be as much as 200 ft.

STALL SPEED, CAS		Angle of Bank							
		0 Deg		30 Deg		45 Deg		60 Deg	
		MPH	KCAS	MPH	KCAS	MPH	KCAS	MPH	KCAS
Model 185, 185A, 185B, 185C, 185D, 185E 3600 lbs Gross Weight	Flaps Up	69	60	75	65	83	72	98	85
	Flaps 20 Deg	67	58	72	62	79	69	94	82
	Flaps 40 Deg	66	57	71	61	78	68	93	81

STALL SPEED, CAS		Angle of Bank							
		0 Deg		30 Deg		45 Deg		60 Deg	
		MPH	KCAS	MPH	KCAS	MPH	KCAS	MPH	KCAS
Model A185E 3600 lbs Gross Weight	Flaps Up	66	58	71	62	79	69	94	82
	Flaps 20 Deg	65	56	70	60	77	67	91	80
	Flaps 40 Deg	63	55	68	59	75	65	89	77

STALL SPEED, CAS		Angle of Bank							
		0 Deg		30 Deg		45 Deg		60 Deg	
		MPH	KCAS	MPH	KCAS	MPH	KCAS	MPH	KCAS
Model A185F 3600 lbs Gross Weight	Flaps Up	65	57	70	61	78	68	92	80
	Flaps 20 Deg	61	53	65	57	72	63	86	75
	Flaps 40 Deg	60	52	64	56	71	62	84	73

FAA APPROVED DATE: _____

STC SA8036NM	FLINT AERO, INC. SUPPLEMENTAL AFM, P.O.H. AND AFM SUPPLEMENT TO CESSNA MODELS 185, 185A, 185B, 185C, 185D 185E, A185E, A185F	Page 12
Report Number 185.14		Revision
Origination Date		Revision Date
Originated By		Revised By

SECTION 5

PERFORMANCE - TAKEOFF DISTANCE

CONDITIONS:

Flaps 20
2850 RPM, Full Throttle,
and Mixture Set at Placard
Fuel Flow Prior to Brake
Release
Cowl Flaps Open
Paved, Level, Dry Runway
Zero Wind

NOTES:

1. Short field technique as specified in Section 4.
2. Where distance value has been deleted, climb performance after lift-off is less than 150 fpm at takeoff speed.
3. Decrease distances 10% for each 10 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2.5 knots.
4. For operation on a dry, grass runway, increase distances by 15% of the "ground roll" figure
*if a 3-bladed propeller is installed, increase KIAS values by 3

CESSNA 185 - 185E				TAKEOFF DISTANCE, FEET										
GROSS WEIGHT, POUNDS	TAKEOFF SPEED			PRESS ALT FT	0 DEG C		10 DEG C		20 DEG C		30 DEG C		40 DEG C	
	IAS				GND ROLL	TOTAL 50 FOOT OBSTCL	GND ROLL	TOTAL 50 FOOT OBSTCL	GND ROLL	TOTAL 50 FOOT OBSTCL	GND ROLL	TOTAL 50 FOOT OBSTCL	GND ROLL	TOTAL 50 FOOT OBSTCL
	LIFT OFF	AT 50 FT	UNITS											
3600	67	73	MPH	S. L.	1086	1788	1177	1850	1239	1901	1319	2003	1415	2131
				58	64	KTS	1000	1177	1850	1247	1911	1331	2019	1425
				2000	1244	1908	1327	2013	1435	2158	1549	2315	1688	2508
				3000	1335	2024	1445	2171	1571	2345	1700	2525	1838	2722
				4000	1450	2178	1571	2345	1712	2543	1858	2750	2014	2974
				5000	1583	2361	1724	2560	1871	2769	2021	2984	2156	3180
				6000	1724	2560	1878	2778	2027	2994	2171	3202	2358	3476
				7000	1884	2788	2042	3014	2200	3245	2373	3499	2530	3730
			8000	2056	3035	2215	3268	2381	3510	2546	3754			

CESSNA A185E, F				TAKEOFF DISTANCE, FEET														
GROSS WEIGHT, POUNDS	TAKEOFF SPEED			PRESS ALT FT	0 DEG C		10 DEG C		20 DEG C		30 DEG C		40 DEG C					
	IAS				GND ROLL	TOTAL 50 FOOT OBSTCL	GND ROLL	TOTAL 50 FOOT OBSTCL	GND ROLL	TOTAL 50 FOOT OBSTCL	GND ROLL	TOTAL 50 FOOT OBSTCL	GND ROLL	TOTAL 50 FOOT OBSTCL				
	LIFT OFF	AT 50 FT	UNITS															
3600	64	71	MPH	S. L.	771	1548	862	1610	924	1661	1004	1763	1100	1891				
				A185E	58	62	KTS	1000	862	1610	932	1671	1016	1779	1110	1904	1202	2030
3600	60	68	MPH	2000	929	1668	1012	1773	1120	1918	1234	2075	1373	2268				
				A185F	52	58	KTS	3000	1020	1784	1130	1931	1256	2105	1385	2285	1523	2482
				4000	1135	1938	1256	2105	1397	2303	1543	2510	1699	2734				
				5000	1268	2121	1409	2320	1556	2529	1706	2744	1841	2940				
				6000	1409	2320	1563	2538	1712	2754	1856	2962	2043	3236				
				7000	1569	2548	1727	2774	1885	3005	2058	3259	2215	3490				
			8000	1741	2795	1900	3026	2066	3270	2231	3514	2393	3755					

FAA APPROVED DATE: _____

