
AIRPLANE FLIGHT MANUAL SUPPLEMENT

FM1023, REVISION C

FOR THE CESSNA MODEL 414A

MODIFIED IN ACCORDANCE WITH STC SA8125SW

Installation of RAM Vortex Generators

SERIAL NO:	414A 0421
REGISTRATION NO:	N414PH

This supplement is FAA approved and must be attached to the FAA-approved Airplane Flight Manual when the aircraft has been modified in accordance with STC SA8125SW.

The information contained in this document supplements or supersedes the Airplane Flight Manual only in those areas listed herein. For limitations, procedures, and performance not contained in this supplement, consult the Airplane Flight Manual.

This supplement is applicable only to Cessna 414A airplanes equipped with RAM Aircraft Limited Partnership Winglets and Series III/IV Engines installed in accordance with STCs SA4943SW and SA4546SW, respectively.

Approved 
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Date: AUG 15 2012



LOG OF REVISIONS

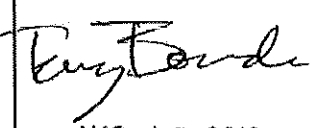
Revision	Pages Affected	Description	Approval Date
---	---	Original Submittal	Mark R. Schilling November 15, 1991
A	2,3,4,5,6,7,8,9,11,12,13,17,18,19,20,21,23	Addition of McCauley 3AF32C515/82NLA-4.0 propeller; Increase in maximum zero fuel weight to 6515; Addition of fuel flow limitations; and change in takeoff and climb performance to incorporate performance improvement due to vortex generators.	Patrick J. Long for Mark R. Schilling April 19, 1994
B	2 4	Updated Log of Revisions Removed Series II and added Series III/IV, pg. 4.	S. Frances Cox October 18, 2005
C	2 6, 8 9	Updated Log of Revisions Removed camshaft part number and updated camshaft note as pertinent to the turbo limitations placard. (was) 1058-3, (now) "If TCM camshaft is installed, use". Corrected series IV placard T.O. fuel flow to match approved p/n 1078-51. Separated note added, stating: "If RAM...". Adjusted spacing of placards and text on page.	 AUG 15 2012



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NOTE:

For information not contained in this supplement, see the Airplane Flight Manual or the Information Manual for the Cessna Model 414A



SECTION 1 GENERAL

ELIGIBILITY

This supplement is applicable only to Cessna Model 414A airplanes equipped with RAM Aircraft Limited Partnership Winglets and Series III/IV Engines installed in accordance with STC's SA4943SW and SA4546SW, respectively.

ENGINE

Teledyne Continental Motors TSIO-520-NB as modified by STC SE4327SW.

PROPELLERS

The following propellers can be installed in addition to the propellers listed in the flight manual:

Hartzell PHC-C3YF-2UF/FC7663D-2Q	-or-
Hartzell PHC-C3YF-2UF/FC7663D-2Q	-or-
McCauley 3AF32C93/82NC-6.0 to -7.0	-or-
McCauley 3AF32C505/82NEA-6.0 to -7.0	-or-
McCauley 3AF32C515/82NLA-4.0	

SPECIFIC LOADINGS

Wing Loading:	31.39 lbs/ft ²
Power Loading:	10.90 lbs/hp



SECTION 2 LIMITATIONS

This supplement supersedes and replaces AFM Supplement FM1067 which corresponds to STC SA4943SW (RAM Winglet Installation).

AIRSPEED LIMITATIONS TABLE

SPEED	CIAS	KCAS	REMARKS
Maneuvering Speed V_A (knots)	151	146	Do not make abrupt control movements above this speed.
Max. Flap Extended Speed V_{FE} (knots)	15° 45° 171 140	175 145	Do not exceed this speed with the given flap setting.
Max. Gear Operating Speed V_{LO} (knots)	178	175	Do not extend or retract landing gear above this speed.
Max. Gear Extended Speed V_{LE} (knots)	178	175	Do not exceed this speed with landing gear extended.
Air Minimum Control Speed V_{MCA} (knots)	72	72	This is the minimum flight speed at which the airplane is directionally controllable with one engine inoperative and with a 3° bank towards the operative engine.
One Engine Inoperative Best Rate of Climb Speed V_{YSE} (knots)	112	108	This speed delivers the greatest gain in altitude in the shortest possible time with one engine inoperative at sea level, standard day conditions and 7087 lbs. weight.
Never Exceed Speed V_{NE} (knots)	230	232	Do not exceed this speed in any operation.
Max. Structural Cruising Speed V_{NO} (knots)	201	200	Do not exceed this speed except in smooth air and then only with caution.

AIRSPEED INDICATOR TABLE

MARKING	CIAS VALUE OR RANGE	SIGNIFICANCE
Red Radial	72	Air minimum control speed.
White Arc	72 to 140	Operating speed range with 45° wing flaps. Lower limit is maximum eight stalling speed in landing configuration. Upper limit is maximum speed permissible with wing flaps extended 45°.
Green Arc	71 to 201	Normal operating range. Lower limit is maximum weight stalling speed with flaps and landing gear retracted. Upper limit is maximum structural cruising speed.
Blue Radial	112	One engine inoperative best rate-of-climb speed at sea level standard day conditions and 7087 lbs. weight
Yellow Arc	201 to 230	Caution range. Operations must be conducted with caution and only in smooth air.
Red Radial	230	Maximum speed for all operations.



ENGINE LIMITATIONS

RAM SERIES III ENGINE

Manifold Pressure (In. Hg.)	Engine Speed (rpm)	Fuel Flow (pph)	Power Output (hp)	Altitude Limit (feet)
40.0	2700	205	325	sea level
40.0	2700	205	325	13,000
38.0	2700	187	310	20,000
25.0	2700	125	200	30,000

Manifold Pressure (In. Hg.)	Engine Speed (rpm)	Fuel Flow (pph)	Power Output (hp)	Altitude Limit (feet)
40.0	2650	200	320	sea level
40.0	2650	200	320	13,000
38.0	2650	182	305	20,000
25.0	2650	120	195	30,000

RAM SERIES IV ENGINE (TSIO-520-NB with RAM Camshaft)

Manifold Pressure (In. Hg.)	Engine Speed (rpm)	Fuel Flow (pph)	Power Output (hp)	Altitude Limit (feet)
41.0	2700	210	325	sea level
41.0	2700	210	325	13,000
39.0	2700	195	310	20,000
25.0	2700	125	200	30,000

Manifold Pressure (In. Hg.)	Engine Speed (rpm)	Fuel Flow (pph)	Power Output (hp)	Altitude Limit (feet)
41.0	2650	205	325	sea level
41.0	2650	205	325	13,000
39.0	2650	187	310	20,000
25.0	2650	125	200	30,000

ENGINE INSTRUMENT MARKINGS

Definition of Limit	Minimum Operating	Normal Operating Range	Preferred Operating Range	Caution Range	Maximum Operating
Marking Description	Red Radial	Green Arc	Wide Green Arc	Yellow Arc	Red Radial
Tachometer	---	2100-2650 rpm	---	---	2700 rpm
Manifold Pressure Gage (Series III Engine)	---	17.0 - 35.0 In. Hg	---	---	40.0 In. Hg
Manifold Pressure Gage (Series IV Engine)	---	17.0 - 35.0 In. Hg	---	---	41.0 In. Hg
Cylinder Head Temp. Gage	200°F	200°F - 320°F 400°F - 460°F	320°F - 400°F	---	460°F
Oil Temp Gage	75°F	75°F - 140°F 190°F - 240°F	140°F - 190°F	---	240°F
Exhaust Gas Temp Gage	---	1300°F - 1550°F	---	1550°F-1650°F	1650°F



PROPELLER LIMITATIONS

Hartzell Model Nos. PHC-C3YF-2UF/FC7663D-2Q and DB-2Q

Diameter: Maximum 76.0 inches
Minimum 76.0 inches

Pitch: Low $14.0^\circ \pm 0.5^\circ$ (measured at 30 inch station)
Feathered 84° (measured at 30 inch station)

2700 RPM Maximum Speed

McCauley Model Nos. 3AF32C93/82NC-6.0 to -7.0 and 3AF32C505/82NEA-6.0 to -7.0

Diameter: Maximum 76.0 inches
Minimum 75.0 inches

Pitch: Low $14.9^\circ \pm 0.2^\circ$ (measured at 30 inch station)
Feathered $81.2^\circ \pm 0.3^\circ$ (measured at 30 inch station)

2700 RPM Maximum Speed

McCauley 3AF32C93/82NC-6.0 to -7.0 (only):

Avoid continuous operation at or above 36 in. Hg. manifold pressure between 2300 and 2600 RPM.

McCauley Model No. 3AF32C515/82NLA-4.0

Diameter: Maximum 78.0 inches
Minimum 76.5 inches

Pitch: Low $14.0^\circ \pm 0.2^\circ$ (measured at 30 inch station)
Feathered at $82.2^\circ \pm 0.3^\circ$ (measured at 30 inch station)

2700 RPM Maximum Speed

Avoid continuous operation between 2250 and 2400 RPM above 32 In. Hg. manifold pressure at or below 7500 ft. MSL

Avoid continuous operation between 2250 and 2400 RPM above 34 In. Hg. manifold pressure, and 2450 and 2650 RPM above 36 In. Hg., above 7500 ft. MSL.



MAXIMUM CERTIFICATED WEIGHTS

Ramp Weight:	7087 lbs.
Maximum Takeoff Weight	7087 lbs.
Maximum Landing Weight	6750 lbs.
Maximum Zero-Fuel Weight	6515 lbs.

CENTER OF GRAVITY LIMITATIONS

Aft Limit:	159.04 inches aft of datum at 7087 lbs. and 160.04 inches aft of datum at 6750 lbs., or less, with straight line variation between these points.
Forward Limit:	152.2 inches aft of datum at 7087 lbs. and 147.82 inches aft of datum at 5800 lbs., or less, with straight line variation between these points.

FLIGHT LOAD FACTOR LIMITS

At design Takeoff Weight of 7087 pounds:

- a. Landing Gear Up, Wing Flaps 0° +3.53g to -1.44g
- b. Landing Gear Down, Wing flaps 45° +2.0g to 0.0 g

REQUIRED PLACARDS

On Instrument Panel In Plain View:

If TCM camshaft is
installed, use:

TURBO LIMITATIONS	
Alt. X1000	Max. M.P.
13	40.0
20	38.0
22	35.2
24	32.3
26	29.8
28	27.4
30	25.0

If RAM camshaft is
installed, use:

TURBO LIMITATIONS	
Alt. X1000	Max. M.P.
13	41.0
20	39.0
22	35.2
24	32.3
26	29.8
28	27.4
30	25.0

Near Operational Limits placard or on pilot's instrument panel in plain view:

**WARNING: With Visible Ice Accumulation on the Aircraft
DO NOT EXCEED 185 KIAS**



On Operation Limitations placard these airspeeds replace the previously listed airspeeds.

Air Minimum Control Speed	72 KIAS
Maximum Gear Operating Speed	178 KIAS
Maximum Gear Extended Speed	178 KIAS
Maximum Flap Extended Speed: 15° Flap	171 KIAS
Maximum Flap Extended Speed: 45° Flap	140 KIAS
Maximum Maneuvering Speed	151 KIAS

On the instrument panel adjacent the tachometer:

AVOID CONTINUOUS OPERATION AT OR
ABOVE 36 IN. HG. MANIFOLD PRESSURE
BETWEEN 2300 AND 2600 RPM

Note: For aircraft equipped with McCauley 3AF32C93/82NC-6.0 to -7.0 propellers only.

AT OR BELOW 7500 FEET MSL
AVOID CONTINUOUS OPERATION BETWEEN 2250 AND
2400 RPM ABOVE 32 IN. HG MANIFOLD PRESSURE
ABOVE 7500 FEET MSL
AVOID CONTINUOUS OPERATION BETWEEN 2250 AND
2400 RPM ABOVE 34 IN. HG MANIFOLD PRESSURE;
AND BETWEEN 2450 AND 2650 RPM ABOVE 36 IN. HG.

Note: For aircraft equipped with McCauley 3AF32C515/82NLA-4.0 propellers only.

On the instrument panel just below or near the electronic digital fuel flowmeter:

Airplanes with RAM Series III Engines

T.O. POWER FUEL FLOW	35.0-33.5 gph / 205-195 pph
M.C.P FUEL FLOW	34.2-32.5 gph / 200-190 pph

FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMIT TABLE: TSIO-520-NB; SERIES III

Airplanes with RAM Series IV Engines

T.O. POWER FUEL FLOW	35.9-34.2 gph / 210-200 pph
M.C.P FUEL FLOW	35.0-33.3 gph / 205-195 pph

FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMIT TABLE: TSIO-52-NB; SERIES IV



On the Flap Handle Console these airspeeds replace the previously listed airspeeds:

0 deg.	
171 KIAS	
15 deg.	
140 KIAS	
30 deg.	
45 deg.	

On Trim Wheel Console this placard replaces the existing Cessna placard:

NOSE DN
T. O.
NOSE UP



SECTION 3 EMERGENCY PROCEDURES

ENGINE INOPERATIVE PROCEDURES

RAM Series III Engines

Maximum continuous power setting for rate-of-climb - single engine: 325 HP - 2650 RPM - 40.0 In. Hg. - 200 pph
- S.L. to 13,000 feet. Above 13,000 feet, see Turbo Limitations

RAM Series IV Engines

Maximum continuous power setting for rate-of-climb - single engine: 325 HP - 2650 RPM - 41.0 In. Hg. - 205 pph
- S.L. to 13,000 feet. Above 13,000 feet, see Turbo Limitations

SINGLE-ENGINE AIRSPEEDS FOR SAFE OPERATION

CONDITIONS: - TAKEOFF WEIGHT 7087 pounds - STANDARD DAY, SEA LEVEL - LANDING WEIGHT 6750 pounds	
AIR MINIMUM CONTROL SPEED	72 KIAS
INTENTIONAL ONE ENGINE INOPERATIVE SPEED	94 KIAS
ONE ENGINE INOPERATIVE BEST ANGLE-OF-CLIMB SPEED	103 KIAS
ONE ENGINE INOPERATIVE BEST RATE-OF-CLIMB SPEED	112 KIAS

ENGINE FAILURE DURING TAKEOFF

(Speed Below 94 KIAS Or Gear Down)

1. Throttles - CLOSE IMMEDIATELY
2. Brake Or Land-and-Brake - AS REQUIRED

NOTE

The distance required for the airplane to be accelerated from a standing start to 94 KIAS on the ground, and to decelerate to a stop with heavy braking, is presented in the Accelerate Stop Distance chart in Section 5 for various combinations of conditions.

ENGINE FAILURE AFTER TAKEOFF

(Speed At Or Above 94 KIAS With Gear Up Or In Transit)

1. Mixtures	- FULL RICH
2. Propellers	- FULL FORWARD
3. Throttles	- FULL FORWARD
4. Landing Gear	- CHECK UP
5. Inoperative Engine:	
a. Throttle	- CLOSE
b. Mixture	- IDLE CUT-OFF
c. Propeller	- FEATHER

6. Establish Best Performance Bank and Yaw - Bank wings 3° toward operative engine and apply rudder for a slip indication of 1/2-ball out-of-center toward operative engine.
7. Climb To Clear 50-ft Obstacle - 94 KIAS
8. Climb At One Engine Inop Best Rate-of-Climb Speed - 112 KIAS
9. Trim Tabs - ADJUST
10. Cowl Flap - CLOSED on inoperative engine.
11. Inoperative Engine - SECURE
12. As Soon As Practical - LAND



SECTION 4 NORMAL PROCEDURES

STARTING HOT ENGINES

1. Propellers Clear
2. ThrottlesFull Open
3. Mixtures..... Idle - Cut-off
4. Auxiliary Fuel Pumps..... On (high 30-90 seconds) - Off
5. Throttles Set
6. Mixtures..... Full Rich
7. Prime One(1) second
8. Magneto Switches - On
9. Engines Start
10. Auxiliary Fuel Pumps Low
11. Engine Instruments Check

EXHAUST GAS TEMPERATURE GAGE OPERATION: Refer to system manufacturer's instructions for proper operation.

DIGITAL FUEL FLOW METER OPERATION: Refer to system manufacturer's instructions for operation.

NOISE ABATEMENT: The flyover noise level, established in compliance with FAR 36 Appendix G at maximum continuous power, is 84.5 dB(A). No determination has been made by the Federal Aviation Administration that the noise level of this airplane is, or should be acceptable or unacceptable, for operation at, into, or out of any airport.

AIRSPEEDS FOR SAFE OPERATION

CONDITIONS: - TAKEOFF WEIGHT 7087 pounds - STANDARD DAY, SEA LEVEL - LANDING WEIGHT 6750 pounds	
AIR MINIMUM CONTROL SPEED	72 KIAS
TAKEOFF and CLIMB to 50 feet AGL (0° Wing Flaps)	94 KIAS
ALL ENGINES BEST ANGLE-of-CLIMB SPEED (0° Wing Flaps)	90 KIAS
ALL ENGINES BEST RATE-of-CLIMB SPEED (0° Wing Flaps)	112 KIAS
ALL ENGINES LANDING APPROACH SPEED (45° Wing Flaps)	97 KIAS
MANEUVERING SPEED	151 KIAS
STRUCTURAL CRUISING SPEED	201 KIAS
NEVER EXCEED SPEED	230 KIAS
TRANSITION SPEED TO BALKED LANDING CONDITIONS	83 KIAS



TAKEOFF

1. Power - SET MAX TAKEOFF POWER
2. Mixtures - CHECK fuel flows within range for takeoff power.
3. Engine Instruments - CHECK
4. Air Minimum Control Speed - 72 KIAS
5. Elevator Control - Raise nosewheel at 89 KIAS
6. Lift-Off - 94 KIAS

AFTER TAKEOFF

1. Landing Gear - RETRACT
2. Best Angle-of-Climb Speed - 90 KIAS at S.L. to 94 KIAS at 20,000 feet.
3. Best Rate-of-Climb Speed - 112 KIAS at S.L. and 7087 pounds.

Refer to Section 5 for speed at reduced weight.



SECTION 5 PERFORMANCE

The following charts replace the corresponding performance information in the Basic Airplane Flight Manual. The actual performance information is contained on the following pages.

Airspeed Calibration - Normal Static Source
Stall Speed
Normal Takeoff Distance
Accelerate-Go Distance
Accelerate-Stop Distance
Rate-of-Climb - Maximum Climb
Rate-of-Climb - One Engine Inoperative
Rate-of-Climb - Balked Landing Climb

The following charts are unchanged from previous approvals.

Airspeed Calibration - Alternate Static Source
Altimeter Correction - Normal Static Source
Altimeter Correction - Alternate Static Source
Rate-of-Climb - Cruise Climb
Normal Landing Distance
One Engine Inoperative Service Ceiling



AIRSPEED CALIBRATION NORMAL STATIC SOURCE

NOTE:

1. Indicated airspeed assumes zero instrument error.
2. The following calibrations are not valid in the prestall buffet.
3. The following calibrations are valid for the pilot's and copilot's airspeed indicators when the standard or optional dual static system is installed.

GEAR UP FLAPS 0°		GEAR DOWN FLAPS 15°		GEAR DOWN FLAPS 45°	
KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
70	70	70	64	70	66
80	79	80	75	80	77
90	88	90	85	90	88
--	--	--	--	94	93
100	97	100	97	100	100
110	106	110	108	110	110
120	115	120	118	120	122
140	135	130	130	130	133
160	155	140	140	140	145
180	177	150	151	145	150
200	199	160	162	--	--
220	221	170	174	--	--
230	232	179	183	--	--
237	239	--	--	--	--



STALL SPEEDS

CONDITIONS:

Throttles - ZERO THRUST

NOTE:

Maximum altitude lost during a stall is 550 feet.

WEIGHT	CONFIGURATION		ANGLE OF BANK							
			0°		20°		40°		60°	
	Flaps (deg.)	Gear	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
7087 pounds	0	UP	71	71	73	73	82	81	103	100
	15	DOWN	75	71	78	73	85	81	103	100
	45	DOWN	72	66	73	68	79	75	94	93
6750 pounds	0	UP	69	69	71	71	80	79	101	98
	15	DOWN	74	69	76	71	84	79	101	98
	45	DOWN	70	64	72	66	77	73	93	91
6200 pounds	0	UP	66	66	68	68	75	75	96	93
	15	DOWN	70	66	72	68	80	75	97	93
	45	DOWN	69	62	70	64	76	71	90	88
5700 pounds	0	UP	64	64	66	66	73	73	94	91
	15	DOWN	68	64	70	66	78	73	95	91
	45	DOWN	66	59	68	61	73	67	86	83
5200 pounds	0	UP	61	61	63	63	70	70	88	86
	15	DOWN	65	61	67	63	75	70	91	86
	45	DOWN	65	57	66	59	71	65	83	81



NORMAL TAKEOFF DISTANCE

CONDITIONS:

1. MANIFOLD PRESSURE and ENGINE SPEED - SET MAX TAKEOFF POWER
2. FUEL FLOWS - WITHIN RANGE FOR TAKEOFF POWER
3. WING FLAP POSITION - UP
4. COWL FLAP POSITION - OPEN
5. LEVEL- DRY- HARD SURFACED RUNWAY

NOTES:

1. TOTAL DISTANCE IS DISTANCE TO 50 ft ABOVE GROUND LEVEL.
2. DISTANCES APPLY FROM POINT WHERE TAKEOFF POWER IS SET
3. DECREASE DISTANCE 7% FOR EACH 10 KNOTS OF HEADWIND.
4. INCREASE DISTANCE 5% FOR EACH 2 KNOTS OF TAILWIND.

WEIGHT	TEMPERATURE		-20°C (-4°F)		-10°C (14°F)		0°C (32°F)		10°C (50°F)		20°C (68°F)		30°C (86°F)		40°C (104°F)		50°C (122°F)	
	SPEED AT 50 ft AGL	PRESSURE ALTITUDE feet	GRND ROLL DIST. feet	TOTAL DIST. feet	GRND ROLL DIST. feet	TOTAL DIST. feet	GRND ROLL DIST. feet	TOTAL DIST. feet	GRND ROLL DIST. feet	TOTAL DIST. feet	GRND ROLL DIST. feet	TOTAL DIST. feet	GRND ROLL DIST. feet	TOTAL DIST. feet	GRND ROLL DIST. feet	TOTAL DIST. feet	GRND ROLL DIST. feet	TOTAL DIST. feet
7087 pounds	94 KIAS	Sea Level	1297	1707	1422	1862	1555	2035	1696	2218	1904	2482	2087	2720	2286	2984	2526	3302
		1000	1380	1798	1505	1962	1646	2145	1846	2391	2020	2619	2212	2875	2428	3158	2687	3497
		2000	1463	1898	1596	2072	1788	2309	1954	2528	2137	2765	2345	3039	2577	3340	2857	3702
		3000	1546	2008	1738	2236	1896	2446	2079	2674	2270	2930	2494	3212	2735	3541	3025	3935
		4000	1679	2163	1837	2364	2012	2583	2203	2829	2411	3103	2652	3404	2910	3760	3219	4187
		5000	1788	2282	1954	2501	2137	2729	2345	2993	2569	3285	2818	3614	3101	3988	3440	4437
		6000	1896	2418	2079	2647	2270	2893	2494	3176	2735	3486	3001	3842	3309	4244	3678	4726
		7000	2012	2555	2203	2802	2419	3066	2652	3368	2910	3705	3201	4079	3533	4517	3933	5043
		8000	2145	2710	2353	2966	2577	3258	2827	3577	3109	3933	3417	4344	3775	4810	4204	5368
		9000	2278	2875	2503	3149	2752	3459	3018	3806	3317	4189	3658	4627	4032	5138	4481	5751
		10000	2436	3057	2669	3349	2935	3678	3226	4052	3550	4463	3908	4937	4323	5485	4822	6142
6750 pounds	94 KIAS	Sea Level	1225	1587	1343	1731	1468	1892	1602	2062	1798	2308	1971	2529	2159	2775	2385	3070
		1000	1303	1672	1421	1824	1555	1994	1743	2223	1908	2435	2089	2673	2293	2936	2538	3252
		2000	1382	1765	1508	1926	1688	2147	1845	2350	2018	2571	2214	2826	2434	3106	2698	3442
		3000	1461	1867	1641	2079	1790	2274	1963	2486	2144	2724	2356	2987	2583	3292	2857	3659
		4000	1586	2011	1735	2198	1900	2401	2081	2630	2277	2885	2505	3165	2748	3496	3040	3893
		5000	1688	2121	1845	2325	2018	2537	2214	2783	2426	3055	2662	3360	2929	3708	3249	4126
		6000	1790	2249	1963	2461	2144	2690	2356	2953	2583	3241	2835	3572	3125	3946	3474	4394
		7000	1900	2376	2081	2605	2285	2851	2505	3131	2748	3445	3023	3793	3337	4200	3714	4689
		8000	2026	2520	2222	2758	2434	3029	2670	3326	2937	3657	3227	4039	3565	4472	3970	4991
		9000	2152	2673	2364	2927	2599	3216	2850	3538	3133	3895	3455	4302	3808	4777	4232	5348
		10000	2301	2843	2521	3114	2772	3420	3047	3768	3353	4149	3691	4591	4083	5100	4554	5711
6200 pounds	94 KIAS	Sea Level	1139	1433	1246	1563	1362	1702	1486	1851	1620	2019	1771	2205	1985	2475	2241	2798
		1000	1210	1516	1317	1647	1442	1795	1575	1954	1718	2140	1922	2382	2109	2614	2334	2893
		2000	1282	1600	1397	1740	1531	1898	1673	2065	1869	2307	2038	2521	2234	2763	2469	3053
		3000	1362	1684	1486	1842	1620	2000	1816	2233	1985	2437	2172	2661	2376	2921	2622	3234
		4000	1442	1777	1575	1944	1762	2158	1922	2354	2100	2577	2305	2819	2528	3098	2795	3433
		5000	1531	1888	1709	2093	1869	2279	2047	2493	2234	2726	2447	2986	2688	3284	2976	3641
		6000	1664	2028	1816	2214	1985	2409	2172	2642	2376	2893	2608	3172	2866	3489	3175	3868
		7000	1762	2140	1931	2344	2109	2558	2314	2800	2536	3070	2777	3368	3053	3712	3384	4125
		8000	1878	2270	2056	2484	2252	2716	2465	2968	2706	3256	2964	3582	3257	3944	3610	4380
		9000	2002	2409	2189	2633	2394	2884	2625	3154	2884	3461	3168	3805	3489	4205	3873	4685
		10000	2127	2549	2332	2791	2554	3061	2803	3358	3079	3684	3382	4056	3729	4484	4145	4998



ACCELERATE STOP DISTANCE

CONDITIONS:

1. MANIFOLD PRESSURE and ENGINE SPEED - MAX TAKEOFF POWER
2. FUEL FLOWS - WITHIN RANGE FOR TAKEOFF POWER
3. WING FLAP POSITION - UP
4. COWL FLAP POSITION - OPEN
5. LEVEL-DRY-HARD SURFACED RUNWAY
6. ENGINE FAILURE AT ENGINE FAILURE SPEED
7. IDLE POWER AND MAXIMUM EFFECTIVE BRAKING AFTER ENGINE FAILURE

NOTE:

1. DISTANCES APPLY FROM POINT WHERE TAKEOFF POWER IS SET
2. DECREASE DISTANCE 3% FOR EACH 4 KNOTS HEADWIND
3. INCREASE DISTANCE 5% FOR EACH 2 KNOTS TAILWIND

WEIGHT	ENGINE FAILURE SPEED	TEMPERATURE	-20°C (-4°F)	-10°C (14°F)	0°C (32°F)	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)	60°C (122°F)
		PRESSURE ALTITUDE feet	TOTAL DISTANCE TO STOP - FEET							
7087 pounds	94 KIAS	sea-level	3132	3338	3552	3873	4127	4395	4643	4890
		1000	3283	3496	3811	4056	4324	4564	4895	5226
		2000	3441	3740	3985	4253	4500	4801	5133	5464
		3000	3607	3914	4182	4421	4722	5046	5409	5772
		4000	3859	4112	4358	4643	4967	5307	5686	6065
		5000	4041	4287	4580	4896	5235	5591	6002	6413
		6000	4224	4501	4817	5141	5504	5907	6334	6760
		7000	4437	4738	5070	5418	5805	6223	6674	7125
		8000	4659	4991	5339	5718	6129	6571	7069	7566
		9000	4912	5252	5631	6026	6461	6935	7472	8009
		10000	5173	5544	5940	6366	6825	7346	7922	8499
6750 pounds	94 KIAS	sea-level	2950	3143	3344	3607	3843	4088	4360	4631
		1000	3090	3292	3554	3782	4027	4290	4587	4885
		2000	3239	3493	3721	3966	4228	4509	4815	5121
		3000	3397	3659	3904	4158	4438	4736	5069	5401
		4000	3607	3843	4097	4368	4666	4981	5331	5682
		5000	3782	4036	4307	4596	4911	5244	5620	5997
		6000	3975	4237	4526	4832	5165	5533	5927	6321
		7000	4176	4456	4762	5086	5445	5830	6251	6671
		8000	4386	4692	5016	5366	5743	6154	6610	7065
		9000	4622	4937	5288	5655	6058	6496	6986	7476
		10000	4867	5209	5577	5971	6399	6872	7397	7923
6200 pounds	94 KIAS	sea-level	2666	2838	3020	3203	3413	3624	3922	4219
		1000	2790	2972	3164	3366	3576	3864	4113	4363
		2000	2924	3116	3318	3529	3807	4056	4324	4593
		3000	3068	3270	3481	3749	3998	4257	4545	4833
		4000	3222	3433	3692	3941	4200	4478	4785	5091
		5000	3385	3644	3883	4133	4411	4708	5034	5360
		6000	3586	3826	4075	4353	4641	4957	5302	5648
		7000	3768	4018	4286	4574	4890	5226	5600	5974
		8000	3960	4228	4516	4823	5149	5513	5906	6300
		9000	4171	4449	4756	5082	5437	5820	6242	6664
		10000	4391	4689	5015	5360	5743	6146	6597	7047



ACCELERATE GO DISTANCE

CONDITIONS:

1. MANIFOLD PRESSURE and ENGINE SPEED - SET MAX TAKEOFF POWER
2. FUEL FLOWS - WITHIN RANGE FOR TAKEOFF POWER
3. WING FLAP POSITION - UP
4. COWL FLAP POSITION - OPEN
5. LEVEL - DRY - HARD SURFACED RUNWAY
6. ENGINE FAILURE AT ENGINE FAILURE SPEED
7. PROCEDURE:
 - LANDING GEAR IN TRANSIT OR UP
 - PROPELLER FEATHERED DURING CLIMB
 - MAINTAIN ENGINE FAILURE SPEED

NOTES:

1. DISTANCES APPLY FROM POINT WHERE TAKEOFF POWER IS SET
2. DECREASE DISTANCE 6% FOR EACH 10 KNOTS OF HEADWIND.
3. INCREASE DISTANCE 2% FOR EACH KNOT OF TAILWIND.
4. DISTANCES SHOWN IN *ITALICS PRINT* REPRESENT CLIMB RATES LESS THAN 50 FT/MIN.
5. EMPTY CELLS IN TABLE INDICATE SUSTAINED FLIGHT IS NOT POSSIBLE.

WEIGHT	ENGINE FAILURE SPEED	TEMPERATURE PRESSURE ALTITUDE feet	-20° C (-4° F)	-10° C (14° F)	0° C (32° F)	10° C (50° F)	20° C (68° F)	30° C (86° F)	40° C (104° F)	50° C (122° F)
			TOTAL DISTANCE TO CLEAR 50-FOOT OBSTACLE - FEET							
7087 pounds	94 KIAS	sea-level	2212	2463	2761	3127	3673	4316	5259	6823
		1000	2333	2604	2929	3398	3916	4632	5787	<i>7636</i>
		2000	2466	2764	3167	3618	4185	5042	6442	--
		3000	2614	2982	3368	3842	4513	5508	<i>7271</i>	--
		4000	2824	3170	3571	4117	4886	6080	<i>8342</i>	--
		5000	2992	3346	3820	4433	5319	6765	--	--
		6000	3148	3557	4083	4794	5824	<i>7647</i>	--	--
		7000	3356	3805	4386	5202	6439	--	--	--
		8000	3580	4076	4742	5670	<i>7202</i>	--	--	--
		9000	3818	4374	5132	6235	--	--	--	--
		10000	4089	4712	5588	6918	--	--	--	--
6750 pounds	94 KIAS	sea-level	1958	2170	2420	2722	3146	3652	4386	5631
		1000	2064	2291	2563	2934	3350	3924	4786	6213
		2000	2178	2427	2752	3115	3584	4242	5270	6929
		3000	2306	2601	2919	3320	3849	4605	5875	<i>7860</i>
		4000	2473	2760	3108	3546	4144	5036	6639	<i>9066</i>
		5000	2616	2926	3312	3803	4484	5550	<i>7683</i>	--
		6000	2768	3108	3531	4091	4877	6193	<i>9202</i>	--
		7000	2941	3312	3781	4416	5346	<i>7017</i>	--	--
		8000	3130	3539	4068	4786	5913	<i>8144</i>	--	--
		9000	3335	3788	4386	5225	6616	<i>9823</i>	--	--
		10000	3562	4068	4749	5747	<i>7539</i>	--	--	--
6200 pounds	94 KIAS	sea-level	1565	1716	1890	2095	2329	2624	3032	3785
		1000	1648	1807	1996	2216	2473	2828	3236	4009
		2000	1732	1906	2110	2337	2654	3002	3456	4300
		3000	1830	2011	2223	2510	2820	3206	3713	4641
		4000	1928	2125	2389	2662	2994	3418	4000	5041
		5000	2034	2276	2526	2828	3191	3667	4325	5481
		6000	2178	2412	2677	3002	3410	3940	4703	6014
		7000	2299	2548	2843	3199	3652	3977	5149	<i>6954</i>
		8000	2435	2707	3025	3418	3917	4613	5686	<i>7436</i>
		9000	2586	2881	3229	3660	4227	5028	<i>6359</i>	<i>8459</i>
		10000	2745	3070	3448	3932	4575	5520	<i>7229</i>	--



RATE-OF-CLIMB - MAXIMUM CLIMB

CONDITIONS:

1. Manifold Pressure and Engine Speed - Set **MAX CONTINUOUS POWER**
2. Fuel Flows - within range for **Max Continuous Power**
3. Landing Gear - **UP**
4. Wing Flaps - **UP**
5. Cowl Flaps - **OPEN**

NOTE:

- Above 13,000 feet, use placarded manifold pressure.
- Empty cells in table indicate rate-of-climb is less than 100 feet / minute.

Altitude feet	Climb Speed KIAS
sea-level	112
20,000	111
30,000	108

Weight	Temperature	-30°C (-22°F)	-20°C (-4°F)	-10°C (14°F)	0°C (32°F)	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)	50°C (122°F)	60°C (140°F)
	Pressure Altitude feet	RATE-OF-CLIMB feet/minute									
7087 pounds	sea-level	2198	2045	1906	1763	1624	1486	1347	1229	1090	971
	4000	1990	1857	1709	1575	1436	1308	1179	1041	922	793
	8000	1793	1659	1525	1387	1248	1120	991	868	744	635
	12000	1610	1466	1337	1199	1065	937	808	684	566	452
	16000	1392	1263	1135	1006	882	764	645	536	412	299
	20000	1159	1036	907	788	670	556	447	338	239	125
	24000	719	610	506	412	318	224	130	--	--	--
	28000	289	200	111	--	--	--	--	--	--	--
6500 pounds	sea-level	2371	2211	2071	1926	1786	1646	1506	1386	1246	1121
	4000	2161	2021	1871	1736	1596	1466	1336	1196	1076	946
	8000	1961	1821	1686	1546	1406	1276	1146	1021	896	786
	12000	1776	1626	1496	1356	1221	1091	961	836	691	576
	16000	1561	1421	1291	1161	1036	916	771	661	536	421
	20000	1326	1191	1061	941	796	681	571	461	361	246
	24000	856	746	641	546	451	356	261	171	--	--
	28000	431	341	251	161	--	--	--	--	--	--
6000 pounds	sea-level	2577	2427	2287	2137	1992	1852	1712	1577	1432	1292
	4000	2397	2242	2092	1942	1812	1647	1522	1377	1257	1102
	8000	2177	2017	1892	1762	1617	1482	1327	1182	1047	927
	12000	1987	1827	1702	1557	1407	1267	1122	982	842	717
	16000	1772	1627	1497	1332	1212	1072	897	807	687	557
	20000	1502	1387	1232	1092	962	832	722	617	497	377
	24000	1022	902	797	692	582	482	385	287	197	--
	28000	567	492	407	337	252	177	--	--	--	--
5500 pounds	sea-level	2834	2684	2534	2384	2229	2084	1944	1789	1644	1484
	4000	2674	2499	2334	2184	2034	1879	1754	1594	1474	1284
	8000	2409	2259	2134	1984	1849	1704	1539	1399	1239	1119
	12000	2234	2064	1939	1784	1634	1484	1329	1179	1029	884
	16000	1999	1879	1729	1559	1424	1264	1124	984	849	734
	20000	1734	1614	1444	1274	1159	1029	899	784	659	544
	24000	1219	1094	974	859	744	634	529	429	334	239
	28000	754	674	594	514	434	354	274	194	114	--



RATE-OF-CLIMB - ONE ENGINE INOPERATIVE

CONDITIONS:

1. Man. Pres. and Eng. Speed - Set **MAX CONT POWER***
2. Mixture-within range for **MAX CONT POWER**
3. Landing gear-**UP**
4. Wing flaps-**UP**
5. Inoperative propeller-**FEATHERED**
6. Wings banked 3° toward operative engine with approximately 1/2 ball slip indicated on the turn and bank indicator.
7. Cowl Flap-Open on operative engine; Closed on inoperative engine.

NOTE:

Approximate effect of configuration on single-engine rate-of-climb

Subtract values listed below from the value obtained in the table. Effects for a combination of gear, flap, or windmilling propeller may be obtained by adding the effects of each.

Inoperative Engine Windmilling	400 ft/min
Gear Down	350 ft/min
Flaps Down 15°	200 ft/min
Flaps Down 45°	800 ft/min

*Above 13,000 feet, use placarded manifold pressure and climb fuel flow.

Weight pounds	Climb Speed - KIAS		
	Sea- Level	10,000	20,000
7087	112	112	106
6750	110	106	104
6250	106	104	102
5750	103	102	101

WEIGHT	TEMPERATURE	-40°C (-40°F)	-30°C (-22°F)	-20°C (-4°F)	-10°C (14°F)	0°C (32°F)	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)	50°C (122°F)
	PRESSURE ALTITUDE feet	RATE-OF-CLIMB feet/minute									
7087 pounds	sea-level	558	498	434	405	355	312	257	207	152	131
	4000	460	415	358	310	272	225	179	129	86	51
	8000	370	332	282	225	189	139	109	54	16	-34
	12000	292	249	192	161	126	74	31	-15	-64	-102
	16000	204	159	134	71	53	0	-44	-99	-139	-170
	20000	143	89	51	0	-29	-67	-112	-147	-185	-225
	24000	-22	-74	-107	-142	-175	-224	-243	-283	-318	-358
6750 pounds	sea-level	631	571	521	471	421	371	316	266	211	161
	4000	531	481	431	376	331	281	231	181	131	81
	8000	436	391	341	291	241	191	146	91	46	-4
	12000	351	301	251	206	156	111	61	11	-34	-79
	16000	256	211	171	116	76	31	-14	-69	-109	-154
	20000	166	126	81	41	0	-44	-89	-124	-169	-209
	24000	0	-44	-84	-119	-159	-204	-231	-274	-309	-349
6500 pounds	sea-level	683	623	583	518	468	413	358	308	253	183
	4000	593	528	483	423	373	313	268	218	163	103
	8000	483	433	383	338	278	228	173	118	75	18
	12000	393	338	293	238	178	138	83	38	-12	-62
	16000	293	248	198	148	93	58	0	-47	-90	-142
	20000	183	153	103	68	23	-27	-72	-107	-157	-197
	24000	18	-22	-67	-102	-147	-189	-222	-267	-302	-342
6000 pounds	sea-level	818	748	718	658	598	538	473	408	338	263
	4000	723	658	608	548	498	418	363	298	243	168
	8000	608	558	508	448	378	308	248	183	138	78
	12000	518	448	398	338	253	198	148	98	38	-17
	16000	388	348	278	238	163	118	58	0	-47	-102
	20000	258	218	163	133	63	28	-32	-67	-122	-162
	24000	68	28	-17	-57	-117	-152	-197	-242	-272	-312
5500 pounds	sea-level	983	938	883	823	753	683	608	513	433	343
	4000	883	833	758	693	643	533	483	403	323	248
	8000	758	713	653	583	493	403	333	263	203	158
	12000	663	583	513	458	343	278	213	163	103	58
	16000	503	463	373	343	233	193	113	73	0	-57
	20000	358	323	243	203	133	93	23	-17	-77	-117
	24000	148	98	43	0	-67	-107	-167	-207	-237	-277

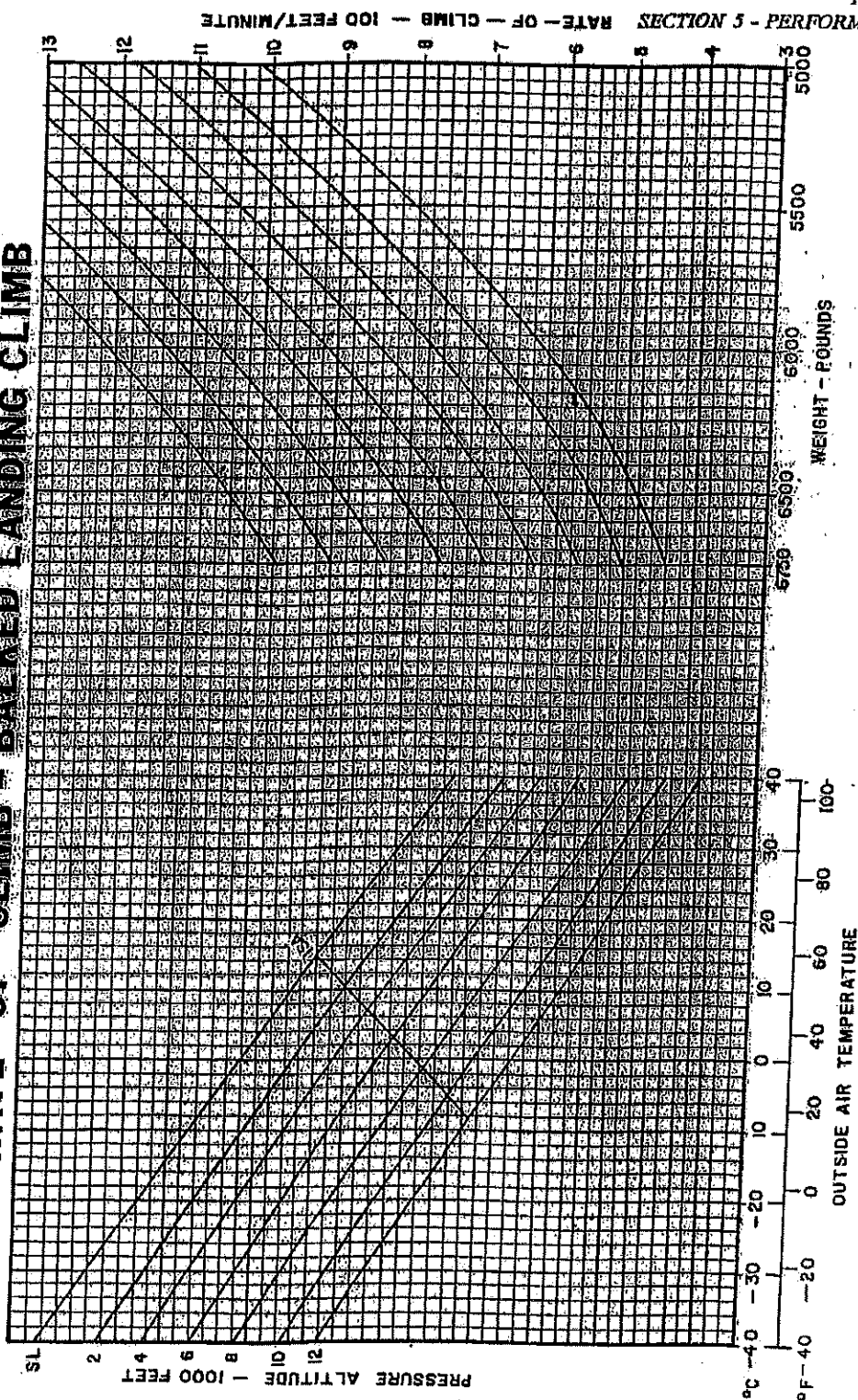
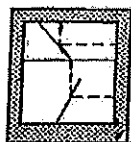


FM1023

SECTION 5 - PERFORMANCE

RATE-OF-CLIMB - BALKED LANDING CLIMB

1. 2700 AND 40.0 INCHES Hg.
2. MIXTURE - 32.5 GPH MIN. FUEL FLOW
3. LANDING GEAR - DOWN
4. WING FLAPS - 45°
5. COWL - APS - OPEN
6. CLIMB SPEED - 84 KIAS



SECTION 6 WEIGHT AND BALANCE

The following limits apply to the Cessna 414A modified by STC SA8125SW and SA4943SW.

Maximum Zero Fuel Weight: The maximum weight with no useable fuel in the wings is 6515 lbs.

Maximum Landing Weight: The maximum weight for landing operations is 6750 lbs.

Maximum Takeoff Weight: The maximum weight for takeoff operations is 7087 lbs.

CENTER OF GRAVITY LIMITS: See table below and the following C.G. chart.

<u>WEIGHT</u>	<u>FORWARD LIMIT</u>	<u>AFT LIMIT</u>
7087	152.2	159.04
6750	151.2	160.04
5800	147.8	160.04
4700	147.8	160.04

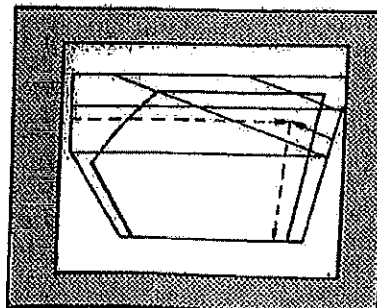
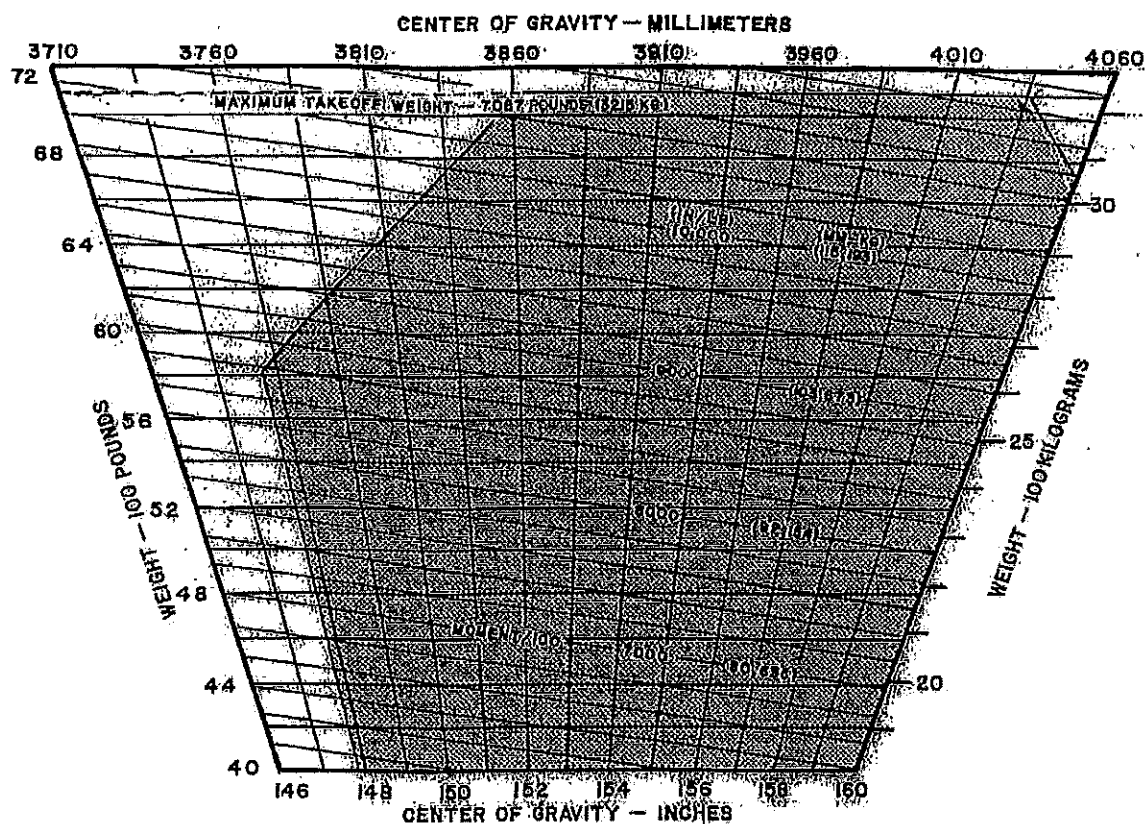
NOTE: Linear variation between points.

See page 24 for Weight and Moment Table.



FM1023
SECTION 6 - WEIGHT AND BALANCE

WEIGHT AND MOMENT TABLES



FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT

AFMS 1043

Cessna Model
340, 340A, 414, or 414A
Modified by
RAM Aircraft, L.P.
STC SA5796SW

for
Digital, Electronic Fuel Flow Indicating System

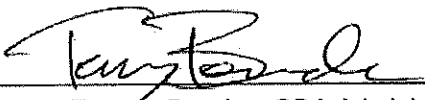
Aircraft Model Number 414A

Serial Number 414A0421

Registration Number N414PH

This supplement is FAA approved and must be attached to the FAA-Approved Airplane Flight Manual when the aircraft has been modified in accordance with STC SA5796SW. The information contained in this document supplements or supersedes the Airplane Flight Manual only in those areas listed herein. For limitations, procedures, and performance not contained in this supplement, consult the Airplane Flight Manual.

Approved by the Federal Aviation Administration

By: 
Terry L. Bowden, ODA Administrator
RAM Aircraft Limited Partnership
ODA-700100-SW
Waco, Texas

Date: AUG 15 2012



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LOG OF REVISIONS

Rev. No.	Page No.	Description of Revision	Rev. Date	FAA Approved
—	—	Original.	09-01-1993	Mark R. Schilling
A	all	Revised supplement format. Added General section. Added placards d, e, i, j, and k. Removed Alcor Tru-Flow I, SDI/Hoskins CFS-1000A/1001A, FT-100, and FT-101, and Shadin 91053X. Added manufacturer references.	03-21-2000	S. Frances Cox Manager Special Certification Office FAA Southwest Region Fort Worth, TX
B	1 3 4 5 6 7	Revised RAM logo, deleted "Corporation"; Section 1, deleted "Corporation"; Section 2, Table 2.a) added STC SA2345SW option for 414; Table 2.b) added STC SA4943SW data; Table 2.c) added "-N" engine, "STC SE3714SW" ref., optional 6350-lb. takeoff weight for 414, and 7087-lb takeoff weight for 414A aircraft with winglets; Table 2.d) added STC SA8989SW option for 340, 340A, STC SA5998SW option for 414, and "STC SE4327SW" ref.; Table 2.e) added "STC SE4327SW" ref. and 7087-lb takeoff weight for 414A aircraft with winglets; Table 2.f) added STC SA8989SW option for 340, 340A and STC SA5998SW option for 414, corrected 340, 340A takeoff weight (was 6920 lbs.), and added "STC SE4327SW" ref.; Table 2.g) added "STC SE4327SW" ref. and 7087-lb takeoff weight for 414A aircraft with winglets; Table 2.h) added "STC SE4327SW" and "STC SE09104SC or SE09261SC" ref.; Tables 2.j) & 2.k) added "STC SE09104SC or SE09261SC" ref.; Section 4, deleted "Corporation."	06-25-2001	S. Frances Cox Manager Special Certification Office FAA Southwest Region Fort Worth, TX
C	All 3 4 6 7	Updated to Rev. C. Added Table 1.1, Added "General" section in section 2. Updated fuel flow lower limit in section 2.d. (was) 34.2 gph / 200 pph. Added DigiData placard. Added DigiData and JPI systems	06-02-2004	S. Frances Cox Manager Special Certification Office FAA Southwest Region Fort Worth, TX
D	3, 7	Removed all references to JPI system. ECN 4970	AUG 15 2012	<i>Temy Borsali</i>

Indicates changed item.

Revision D
FAA Approved

DATE: **AUG 15 2012**

RAM

SECTION 1 — GENERAL

The information in this supplement is FAA approved material and must be attached to the FAA-Approved Airplane Flight Manual when the airplane is equipped with Alcor, SDI/Hoskins, Silver Instruments, or Shadin electronic fuel flow indicating systems, which has been installed in accordance with STC SA5796SW, available from RAM.

The information in this supplement supersedes or adds to the basic Pilot's Operating Handbook and FAA Approved Airplane Flight Manual only in those areas listed herein. For limitations, procedures, and performance not contained in this supplement, consult the Airplane Flight Manual.

RAM has established compatibility between STC # SA5796SW and each fuel flow metering system STC listed in Table 1.1. The information in this supplement supersedes or adds to the operators' manual for the applicable fuel flow metering system STC only in those areas listed herein.

<u>Fuel Flow Indicating System</u>	<u>Compatible STC #</u>
Alcor Tru-Flow II	SA5581SW

Table 1.1

SECTION 2 — LIMITATIONS

GENERAL

The digital fuel flow indicator is approved as the primary reading of fuel flow on the aircraft. However, it is not approved as the primary reading of other indications such as fuel quantity, cylinder head temperature (CHT), exhaust gas temperature (EGT), Oil Temperature, Oil Pressure, Manifold Pressure, Outside Air Temperature (OAT), or Airspeed (for gauges so equipped). All indications, other than fuel flow, are supplemental information only.

REQUIRED PLACARDS

1. Attach on instrument panel, near the fuel quantity indicator (all models):

ORIGINAL EQUIPMENT FUEL QUANTITY
INDICATOR IS THE PRIMARY READING
OF FUEL ON BOARD THE AIRCRAFT

2. Attach on instrument panel, below the electronic fuel flow indicator, as specified (one placard, only):
 - a) FOR:

Aircraft	STC No.	Takeoff Weight	Engine	RAM Series	HP/RPM/in. Hg
340	SA2346SW	5975 Lbs.	TSIO-520-N, -NB	I	310/2700/38.0
340A	N/A	5990 Lbs.			
414	N/A or SA2345SW	6350 Lbs.			

USE: **T.O. AND M.C.P. FUEL FLOW 31.6-29.0 GPH / 185-170 PPH**
FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMITS TABLE: TSIO-520-N, -NB, SERIES I

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RAM

b) FOR:

Aircraft	STC No.	Takeoff Weight	Engine	RAM Series	HP/RPM/in. Hg
414A	N/A	6750 Lbs.	TSIO-520-N, -NB	I	310/2700/38.0
	SA4943SW	7087 Lbs.			
	SA8726SW	7105 Lbs.			

USE:

T.O. AND M.C.P. FUEL FLOW 31.8-30.8 GPH / 186-180 PPH
FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMITS TABLE: TSIO-520-N, -NB, SERIES I

c) FOR:

Aircraft	STC No.	Takeoff Weight	Engine	RAM Series	HP/RPM/in. Hg
340	SA7382SW	6140 Lbs.	TSIO-520-N, -NB (STC SE3714SW)	II	310/2700/39.0
340A	SA7365SW	6140 Lbs.			
414	SA7570SW	6350 Lbs. or 6510 Lbs.			
414A	SA7463SW	6900 Lbs. or 7087 Lbs. (winglets)			
	SA8727SW	7105 Lbs.			

USE:

T.O. AND M.C.P. FUEL FLOW 35.0-33.3 GPH / 205-195 PPH
FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMITS TABLE: TSIO-520-N, -NB, SERIES II

d) FOR:

Aircraft	STC No.	Takeoff Weight	Engine	RAM Series	HP/RPM/in. Hg
340	SA2346SW or SA8989SW	6290 Lbs.	TSIO-520-NB (STC SE4327SW)	III	325/2700/40.0
340A	SA4241SW or SA8989SW	6290 Lbs.			
414	SA4379SW or SA5998SW	6510 Lbs.			
414A	SA4546SW	6750 Lbs.			

USE:

T.O. AND M.C.P. FUEL FLOW 35.0-33.3 GPH / 205-195 PPH
FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMITS TABLE: TSIO-520-NB, SERIES III

e) FOR:

Aircraft	STC No.	Takeoff Weight	Engine	RAM Series	HP/RPM/in. Hg
414A	SA4546SW	6900 Lbs. or 7087 Lbs. (winglets)	TSIO-520-NB (STC SE4327SW)	III	325/2700/40.0
	SA8728SW	7105 Lbs.			

USE:

T.O. POWER FUEL FLOW 35.0-33.3 GPH / 205-195 PPH
M.C.P. FUEL FLOW 34.2-32.5 GPH / 200-190 PPH
FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMITS TABLE: TSIO-520-NB, SERIES III

f) FOR:

Aircraft	STC No.	Takeoff Weight	Engine	RAM Series	HP/RPM/in. Hg
340	SA2346SW or SA8989SW	6290 Lbs.	TSIO-520-NB (STC SE4327SW)	IV	325/2700/41.0
340A	SA4241SW or SA8989SW	6290 Lbs.			
414	SA4379SW or SA5998SW	6510 Lbs.			
414A	SA4546SW	6750 Lbs.			

USE:

T.O. AND M.C.P FUEL FLOW 35.9-34.2 GPH / 210-200 PPH
FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMITS TABLE: TSIO-520-NB, SERIES IV

g) FOR:

Aircraft	STC No.	Takeoff Weight	Engine	RAM Series	HP/RPM/in. Hg
414A	SA4546SW	6900 Lbs. or 7087 Lbs. (winglets)	TSIO-520-NB (STC SE4327SW)	IV	325/2700/41.0
	SA8728SW	7105 Lbs.			

USE:

T.O. POWER FUEL FLOW 35.9-34.2 GPH / 210-200 PPH
M.C.P. FUEL FLOW 35.0-33.3 GPH / 205-195 PPH
FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMITS TABLE: TSIO-520-NB, SERIES IV

h) FOR:

Aircraft	STC No.	Takeoff Weight	Engine	RAM Series	HP/RPM/in. Hg
414A	SA7633SW	7087 Lbs.	TSIO-550-A	V	350/2700/38.0
	SA8920SW	7105 Lbs.			

USE:

T.O. POWER FUEL FLOW 31.6-29.9 GPH / 185-175 PPH
M.C.P. FUEL FLOW 30.8-29.1 GPH / 180-170 PPH
FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMITS TABLE: TSIO-550-A, SERIES V

i) FOR:

Aircraft	STC No.	Takeoff Weight	Engine	RAM Series	HP/RPM/in. Hg
340, 340A	SA8604SW	6390 Lbs.	TSIO-520-NB (STC SE4327SW)	VI	335/2700/41.0
	SA8424SW	6765 Lbs.			
414	SA09469SC	6765 Lbs.	TSIO-520-NB (STC SE09104SC or SE09261SC)	VII	335/2700/38.0

USE:

T.O. AND M.C.P. FUEL FLOW 35.9-34.2 GPH / 210-200 PPH
FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMITS TABLE: TSIO-520-NB, SERIES VI OR SERIES VII

j) FOR:

Aircraft	STC No.	Takeoff Weight	Engine	RAM Series	HP/RPM/in. Hg
340, 340A	SA09574SC	6390 Lbs.	TSIO-520-NB (STC SE09104SC or SE09261SC)	VII	335/2700/38.0

USE:

T.O. AND M.C.P. FUEL FLOW 35.9-35.5 GPH / 210-208 PPH
FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMITS TABLE: TSIO-520-NB, SERIES VII

k) FOR:

Aircraft	STC No.	Takeoff Weight	Engine	RAM Series	HP/RPM/in. Hg
414A	SA09105SC	7105 Lbs. or 7087 Lbs. (winglets)	TSIO-520-NB (STC SE09104SC or SE09261SC)	VII	335/2700/38.0

USE:

T.O. POWER FUEL FLOW 35.9-34.2 GPH / 210-200 PPH
M.C.P. FUEL FLOW 35.0-34.2 GPH / 205-200 PPH
FOR ADDITIONAL INFORMATION SEE RAM ENGINE OP LIMITS TABLE: TSIO-520-NB, SERIES VII

3. For aircraft with Shadin Digi-Data system, attach on instrument panel near gauge:

**ORIGINAL EQUIPMENT AIRSPEED,
ALTITUDE, AND OAT GAGES ARE
PRIMARY AIRSPEED, ALTIUDE, AND
OAT INDICATORS ON AIRCRAFT.**

FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT

AFMS 1096

Cessna Model 300 & 400 Series
(with TCM TSIO-520 Series Engines)

Modified by RAM Aircraft
STC SA09971SC
Installation of
Hartzell PHC-C3YF-2UF/FC7693DF or -DFB
Propellers

Aircraft Model Number 414A

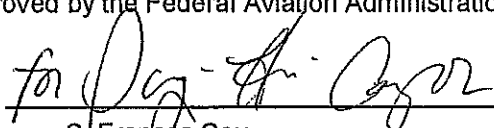
Serial Number 414A 0421

Registration Number N414PH

This supplement is FAA approved and must be attached to the FAA-Approved Airplane Flight Manual when the aircraft has been modified in accordance with STC SA09971SC. The information contained in this document supplements or supersedes the Airplane Flight Manual only in those areas listed herein. For limitations, procedures, and performance not contained in this supplement, consult the Airplane Flight Manual.

Approved by the Federal Aviation Administration

By:



S. Frances Cox
Manager, Special Certification Office
FAA Southwest Region
Fort Worth, Texas

Date: DEC 02 2002



SECTION 1 - GENERAL

INTRODUCTION

The information in this supplement is FAA approved material and must be attached to the FAA-Approved Airplane Flight Manual when the airplane is equipped with Hartzell PHC-C3YF-2UF/FC7693DF or PHC-C3YF-2UF/FC7693DFB constant speed, feathering propellers installed in accordance with STC SA09971SC. The information in this supplement supersedes or adds to the basic Pilot's Operating Handbook and FAA Approved Airplane Flight Manual only in those areas listed herein. For limitations, procedures, and performance not contained in this supplement, consult the FAA Approved Airplane Flight Manual.

The Hartzell PHC-C3YF-2UF/FC7693DF and PHC-C3YF-2UF/FC7693DFB propeller is approved for use on Cessna model 300 & 400 series aircraft with Teledyne Continental Motors TSIO-520 series engines. The propellers may be installed with stock or modified TSIO-520 series engines rated from 285 HP to 350 HP maximum continuous power.

PROPELLERS

Number of Propellers: 2
Manufacturer: Hartzell Propeller, Inc.
Propeller Model Number: PHC-C3YF-2UF/FC7693DF or -DFB
Number of Blades: 3
Propeller Diameter: 76.0 to 78.0 in.
Propeller Type: Constant speed, full feathering, nonreversible, hydraulically actuated
Blade Range: see Limitations, Section 2

SECTION 2 - LIMITATIONS

ENGINE LIMITATIONS

Propellers:

- a. Number of Propellers: 2
- b. Manufacturer: Hartzell Propeller, Inc.
- c. Propeller Model Number: PHC-C3YF-2UF/FC7693DF or -DFB
- d. Number of Blades: 3
- e. Diameter: 76.0 to 78.0 in.
- f. Blade Range: (measured at 30 in. station)
 - (1) Low Pitch: (See Table 2.1) $\pm 0.5^\circ$
 - (2) Feather: $81.1^\circ \pm 1.0^\circ$
- g. Operating Limits: 2700 RPM maximum speed.

Engine Takeoff Power	Low Pitch Setting
285 HP	11.6°
300 - 310 HP	12.4°
325 - 335 HP	13.0°

Table 2.1. Low Pitch Settings.

SECTION 3 - EMERGENCY PROCEDURES

- No Change -

SECTION 4 - NORMAL PROCEDURES

NOISE ABATEMENT

There is no acoustic change to the previously approved airplane fly-over noise level (for 78-inch diameter propellers) when modified in accordance with STC SA09971SC.

SECTION 5 - PERFORMANCE

The Takeoff and Climb Performance of this airplane, when modified in accordance with STC SA09971SC, meets or exceeds the performance data published in the FAA Approved Airplane Flight Manual or Pilot's Operating Handbook. Fuel Burn, Range, and Endurance Performance will differ from standard performance if pilot operates airplane at higher power settings and fuel flows.

SECTION 6 - WEIGHT & BALANCE/EQUIPMENT LIST

Revise the airplane equipment list with the information in Table 6.1. Revise the airplane weight and balance by subtracting the existing propeller and spinner weight and moment and adding the new propeller and spinner weights and moments.

ITEM	PART NUMBER	QTY.	WEIGHT (LBS)	ARM (IN)
PROP 3-BLADE HARTZELL	PHC-C3YF-2UF/FC7693DF	2	164.4	Refer to POH for appropriate arm for applicable aircraft model.
PROP 3-BLADE (De-Ice Installed)	PHC-C3YF-2UF/FC7693DFB	2	171.4	
PROP SPINNER & BULKHEAD	C-4558-2P	2	11.5	
PROP SPINNER & BULKHEAD	D-7267-2P	2	13.7	

Table 6.1. Equipment List Changes.

SECTION 7 - AIRPLANE & SYSTEMS DESCRIPTIONS

- No Change -

SECTION 8 - HANDLING, SERVICE & MAINTENANCE

Refer to Hartzell Propeller Owner's Manual 115N, Rev. 6, dated September 2000, or later FAA approved revision, for propeller description, operation information, installation and removal procedures, testing and troubleshooting information, inspection checks, maintenance practices, and de-ice systems. Refer to Hartzell Propeller Overhaul and Maintenance Manual 117D, Rev. 4, dated May 1999, or later FAA approved revision, for overhaul and maintenance information.