



MICRO
AERODYNAMICS INC.
"Vortex Generator Technology"

(800) 677-2370
4000 Airport Road, Suite D
Anacortes, Washington 98221
(360) 293-8082 FAX (360) 293-5499

POH / AFM SUPPLEMENT

PILOT'S OPERATING HANDBOOK

AND

FAA APPROVED AIRPLANE FLIGHT MANUAL

SUPPLEMENT

FOR

CESSNA 310R MICRO VG SYSTEM

WITH

GROSS WEIGHT INCREASE

REGISTRATION NUMBER: VH-JTV

SERIAL NUMBER: 310R-0712

This Supplement must be attached to the FAA Approved Flight Manual when a MICRO VG SYSTEM is installed in accordance with STC# SA5668NM. The information contained in this Supplement supersedes the information of the basic Airplane Flight Manual only in those areas listed herein. For limitations, procedures and performance information not contained in this Supplement, consult the basic Airplane Flight Manual.

MICRO AERODYNAMICS DOCUMENT C310R-AFMS-1

FAA APPROVED: [Signature]
for Manager, Seattle Aircraft Certification Office

OCT 2 1998
Date: _____

LIST OF ACTIVE PAGES:

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* Not FAA Approved. Provided as supplemental performance information.

EFFECTIVITY:

All Cessna 310R Airplanes
Serial Number 0001 and On
equipped with IO-520-M or IO-520-MB engines. *

* NOTE: Also has been shown to be compatible with STC #SA2207SO (Installation of two Teledyne Continental Motors Model IO-550-A engines)

FAA APPROVED, DATE: 2-Oct-98

GENERAL

The Micro VG System consists of 88 vortex generators affixed to the wings and vertical stabilizer and four strakes, one mounted on the outboard side of each nacelle and one on each side of the fuselage. The purpose of the Micro VG System is to improve stall characteristics and to reduce stall and Vmca speeds through control of boundary layer airflow.

This Gross Weight Increase Supplement allows for increased operating weight. For the changes in ramp weight, takeoff weight and zero fuel weight, refer to Limitations (page 5) and the Weight & Moment table (page 14).

FAA APPROVED, DATE: 2-Oct-98

LIMITATIONS

- 1. MAXIMUM TAKEOFF WEIGHT:** 5,680 POUNDS
MAXIMUM RAMP WEIGHT: 5,725 POUNDS
MAXIMUM LANDING WEIGHT: 5,400 POUNDS (UNCHANGED)
MAXIMUM ZERO FUEL WEIGHT:

The original maximum zero fuel weight of 5015 pounds remains applicable except as follows: At 36.5 inches aft datum, the maximum Zero Fuel Weight is increased in a straight line to 5300 pounds at 41.3 inches aft datum, and continues aft at 5300 pounds to a point 43.3 inches aft datum. The main wing-tip tanks must be filled first. Auxiliary tanks must be empty unless the main tanks are filled.

2. 84 Vortex generators constitute the minimum requirement. The Micro VG System consists of 88 vortex generators, if 5 or more are missing or damaged, the aircraft must be operated in accordance with the original Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.
3. Change all references to Vmca values in text and on placards to: **71 KIAS**

4. AIRSPEED INDICATOR MARKINGS:

<u>MARKING</u>	<u>KIAS</u>
Red Radial	71
White Arc	70-139
Green Arc	76-181
Blue Radial	106
Yellow Arc	181-223
Red Radial	223

EMERGENCY PROCEDURES

Emergency Airspeeds:
Air Minimum Control Speed (Vmca) **71 KIAS**

NORMAL PROCEDURES

Airspeeds for Safe Operation:
Minimum Safe Single Engine Speed (Vsse) **82 KIAS**

Noise Abatement:

The flyover noise level, established in compliance with FAR Part 36, Appendix G, is 81.4 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.

PERFORMANCE

See following Performance Charts.

FAA APPROVED, DATE: 26-SEPTEMBER-1994

CESSNA 310R

STALL SPEED CHART

Condition: Throttles - IDLE

1. Maximum altitude loss during a stall is 300 feet
2. Maximum pitch in a power-off stall is 10°

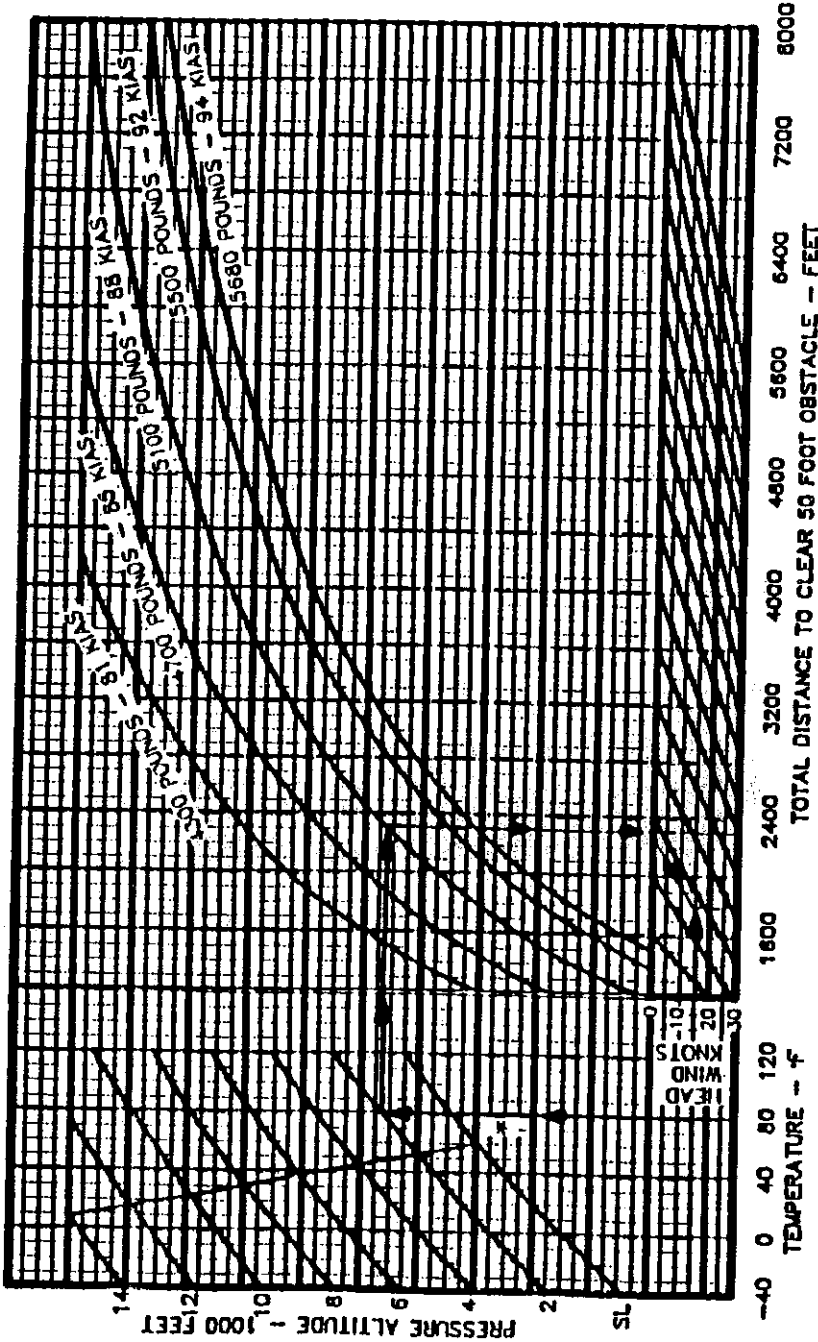
KNOTS

5680 POUNDS GROSS WEIGHT

CONFIGURATION	ANGLE OF BANK			
	0°	20°	40°	60°
	KCAS	KCAS	KCAS	KCAS
Gear and Flaps Up	76	79	87	108
Gear Down and Flaps 15°	74	77	85	105
Gear Down and Flaps 35°	69	71	79	98

FAA APPROVED, DATE: 26-SEPTEMBER-1994

NORMAL TAKEOFF DISTANCE



CONDITIONS

1. Level Hard Surface Runway
2. W/ing Flaps Up
3. Full Throttle and 2700 RPM Before Releasing Brakes
4. Mixture at Recommended Fuel Flow
5. Maintain Speed to 50 Feet

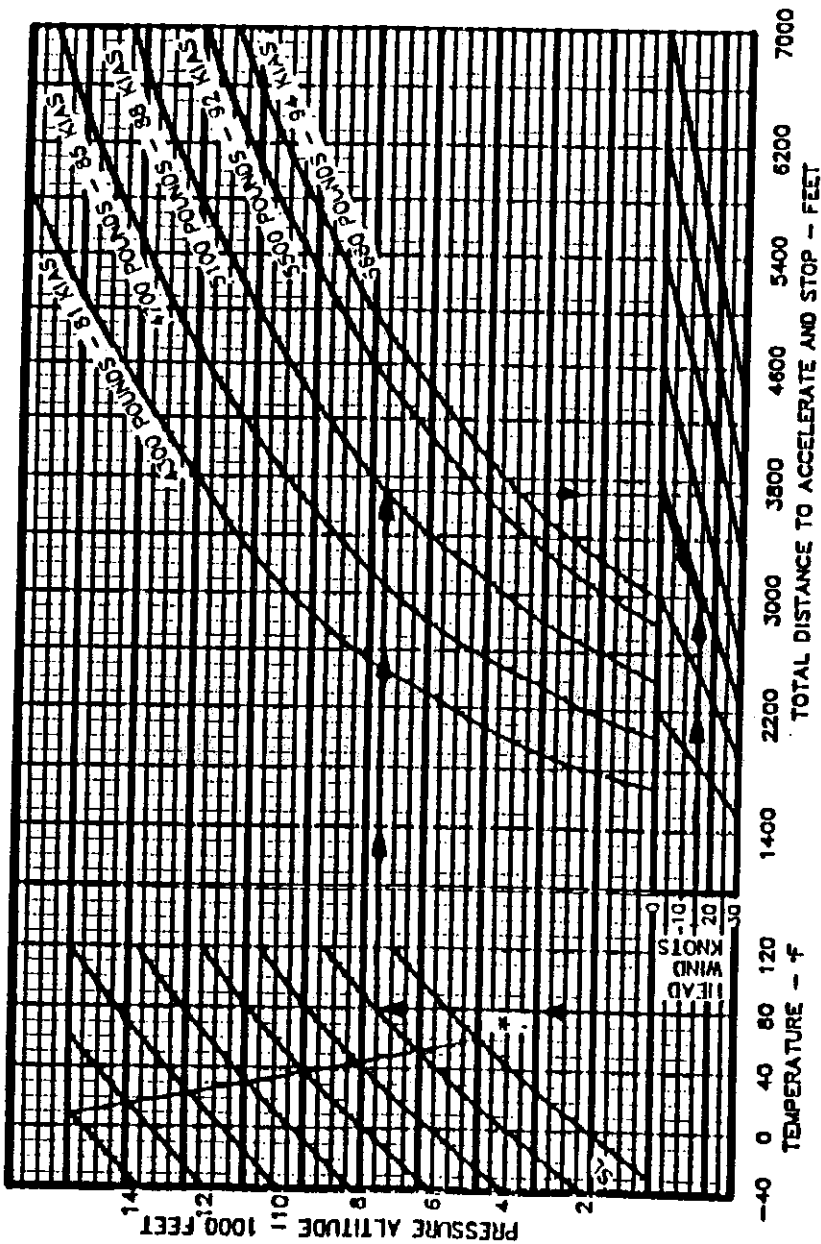
NOTE: Ground Run is Approximately 61% of Total Distance.
Increase Total Distance 7.9% for Operation on Firm Dry Sod Runway.

EXAMPLE

- A. Temperature - 80°F
- B. Pressure Altitude - 2000 Feet
- C. Gross Weight - 5100 Lbs.
- D. Total Distance to Clear 50 Foot Obstacle (No Wind) - 2310 Feet
- E. Headwind - 15 Knots
- F. Total Distance to Clear 50 Foot Obstacle (15 Knot Headwind) - 1800 Feet

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ACCELERATE STOP DISTANCE



* STANDARD TEMPERATURE

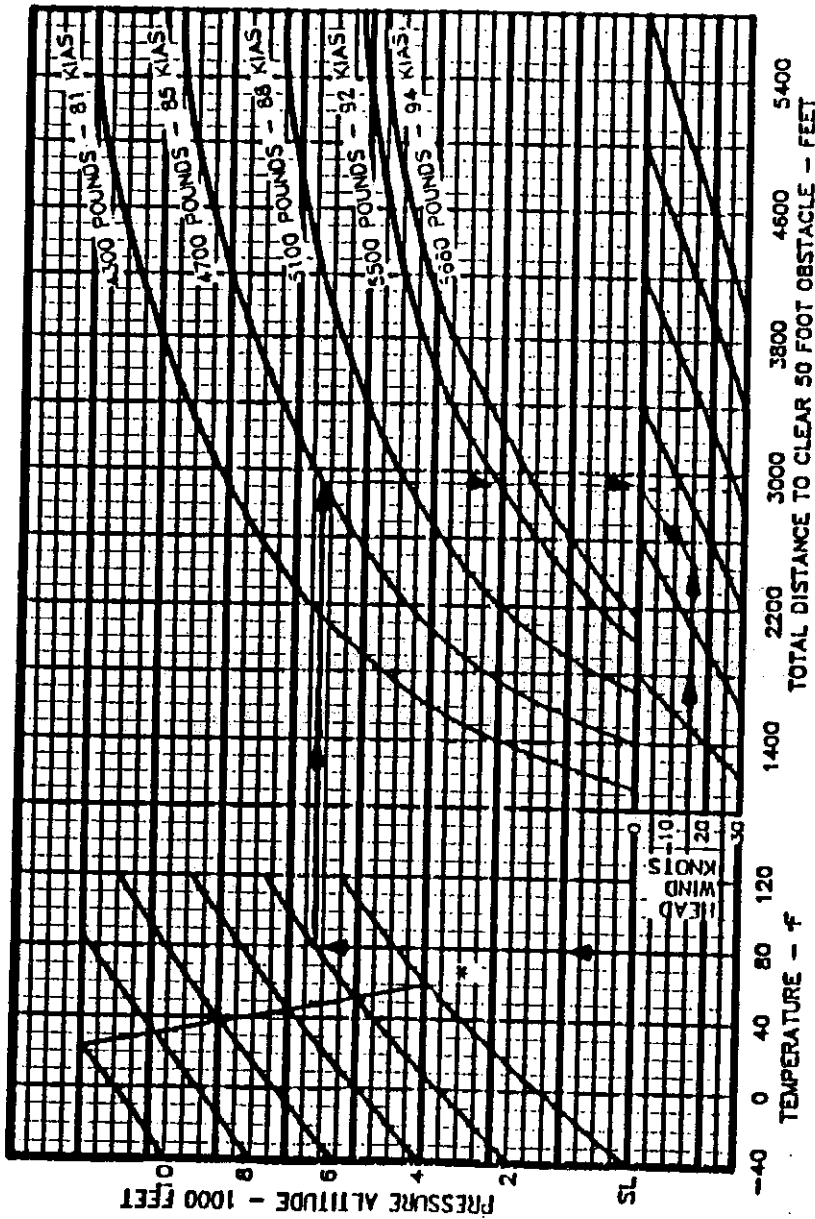
CONDITIONS

1. Level Hard Surface Runway
2. Wing Flaps - Up
3. Full Throttle and 2700 RPM Before Releasing Brakes
4. Mixture at Recommended Fuel Flow
5. Engine Failure at Takeoff Speed
6. Heavy Braking After Engine Failure

EXAMPLE

- A. Temperature - 80°F
- B. Pressure Altitude - 2000 Feet
- C. Gross Weight - 5100 Lbs.
- D. Total Distance to Stop (No Wind) - 3710 Feet
- E. Headwind - 15 Knots
- F. Total Distance to Stop (15 Knot Headwind) - 2940 Feet

SINGLE ENGINE TAKEOFF DISTANCE



CONDITIONS

1. Level Hard Surface Runway
2. Wing Flaps - Up
3. Full Throttle and 2700 RPM Before Releasing Brakes
4. Mixture at Recommended Fuel Flow
5. Engine Failure at Takeoff Speed
6. Propeller Feathered and Gear Retracted During Climb
7. Maintain Speed to 50 Feet

EXAMPLE

- A. Temperature - 80°F
- B. Pressure Altitude - 2000 Feet
- C. Gross Weight - 4700 Lbs.
- D. Total Distance to Clear 50 Foot Obstacle (No Wind) - 2920 Feet
- E. Headwind - 15 Knots
- F. Total Distance to Clear 50 Foot Obstacle (15 Knot Headwind) - 2450 Feet

FAA APPROVED, DATE: 26-SEPTEMBER-1994

MULTI-ENGINE CLIMB DATA AT 5,680 POUNDS

MAXIMUM CLIMB PERFORMANCE														
SEA LEVEL/59°F		5000 FT./41° F			10,000 FT./23° F			15,000 FT./5° F			20,000 FT./-12° F			
Best Climb KIAS	Rate of Climb Ft/Min	Lbs. of Fuel Used	Best Climb KIAS	Rate of Climb Ft/Min	From S.L Fuel Used Lbs.	Best Climb KIAS	Rate of Climb Ft/Min	From S.L Fuel Used Lbs.	Best Climb KIAS	Rate of Climb Ft/Min	From S.L Fuel Used Lbs.	Best Climb KIAS	Rate of Climb Ft/Min	From S.L Fuel Used Lbs.
109	1605	24	106	1215	40	102	825	58.1	98	430	83.5	94	43	141.1

NOTE: FULL THROTTLE, 2700 RPM, MIXTURE AT RECOMMENDED FUEL FLOW, FLAPS AND GEAR UP, AND COWL FLAPS AS REQUIRED. FUEL USED INCLUDES WARM UP AND TAKEOFF ALLOWANCE.

DECREASE RATE-OF-CLIMB 20 FT/MIN FOR EACH 10° F ABOVE STANDARD TEMPERATURE FOR A PARTICULAR ALTITUDE.

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CRUISE CLIMB PERFORMANCE										
FOR 5,680 POUND BRAKE RELEASE WEIGHT										
NOTE: 2500 RPM, 24.5 In. Hg M.P. to 5200 Ft. Full Throttle Afterwards.										
POWER SETTING		5000 FT / 41° F			10,000 FT / 23° F			15,000 FT / 5° F		
		FROM SEA LEVEL			FROM SEA LEVEL			FROM SEA LEVEL		
RPM	MP	Dist. Nautical Miles	Time Min.	Fuel Used Lbs.	Dist. Nautical Miles	Time Min.	Fuel Used Lbs.	Dist. Nautical Miles	Time Min.	Fuel Used Lbs.
2500	24.5	11.0	5.2	44.6	25.9	11.5	65.6	55.9	22.9	94.5

NOTE: MIXTURE AT RECOMMENDED FUEL FLOW, FLAPS AND GEAR UP, AND COWL FLAPS AS REQUIRED, FUEL USED INCLUDES WARM-UP AND TAKEOFF ALLOWANCE (24 POUNDS).

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SINGLE ENGINE CLIMB DATA											
Gross Weight Pounds	SEA LEVEL / 59°F		2500 FT / 50°F		5000 FT / 41°F		7500 FT / 32°F		10,000 FT / 23°F		Rate of Climb Ft/Min
	Best Climb KIAS	Rate of Climb Ft/Min	Best Climb KIAS	Rate of Climb Ft/Min	Best Climb KIAS	Rate of Climb Ft/Min	Best Climb KIAS	Rate of Climb Ft/Min	Best Climb KIAS	Rate of Climb Ft/Min	
5680	108	333	105	231	102	126	99	15	96	-92	
5500	106	370	103	265	100	156	97	48	94	-60	
5100	102	448	99	340	96	230	93	122	90	13	
4700	98	520	95	414	92	305	89	197	86	90	

NOTE: Flaps and gear up, inoperative propeller-feathered, wings banked 5° toward operating engine, full throttle, 2700 RPM and mixture at recommended fuel flow. Decrease rate of climb 15 FT/MIN for each 10°F above standard temperature for particular altitude.

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SINGLE ENGINE SERVICE CEILING

BEST CLIMB SPEED APPROXIMATELY 100 KIAS
 OUTSIDE AIR TEMPERATURE °C

Gross Weight Pounds	-10	0	10	20	30	40	50
	ALTITUDE - FEET						
5680	7500	7280	7190	6940	6790	6600	6390
5500	8190	8000	7850	7650	7500	7320	7100
5100	9790	9630	9420	9260	9100	8920	8690
4700	11,490	11,310	11,140	10,930	10,730	10,520	10,290

NOTE: Table provides performance information to aid in route selection when operating under FAR 135.145(c)(2), FAR 135.181(a)(2), and FAR 91.119 requirements.

Increase indicated service ceilings 100 feet for each 0.10 Inch Hg. altimeter setting greater than 29.92.

Decrease indicated service ceilings 100 feet for each 0.10 Inch Hg. altimeter setting less than 29.92.

The service ceilings are the highest attainable while maintaining a minimum rate-of-climb of 50 ft/min.

WEIGHT AND MOMENT TABLES

ZERO FUEL WEIGHT RANGE:			
WEIGHT		AFT OF DATUM	
Lbs	Kg	in	mm
5015	2275	36.5	927
5300	2404	41.3	1049
5300	2404	43.3	1100

CG RANGE:			
WEIGHT		AFT OF DATUM	
Lbs	Kg	in	mm
4500	2041	32.0	813
5500	2495	38.7	983
5680	2576	39.3	998
5680	2576	42.9	1090
5500	2495	43.1	1095
5100	2313	43.6	1107

