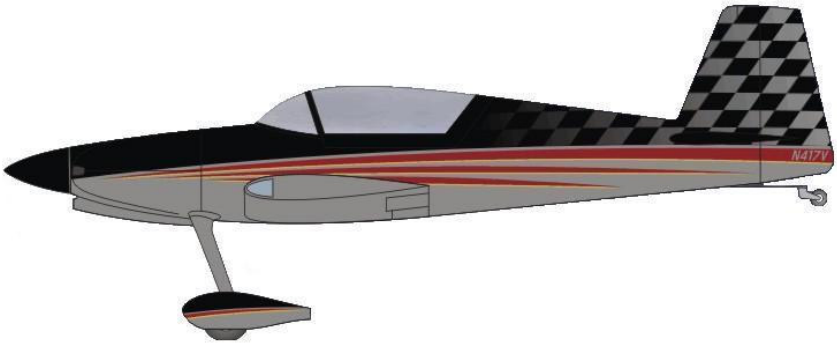
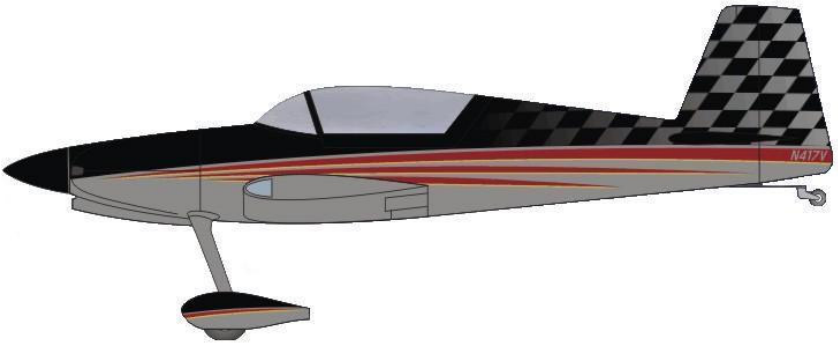
PILOT'S OPERATING HANDBOOK



N417G

PFLANZER F1 ROCKET
SERIAL NUMBER 095

Issued: 05/24/2005
Revised: None



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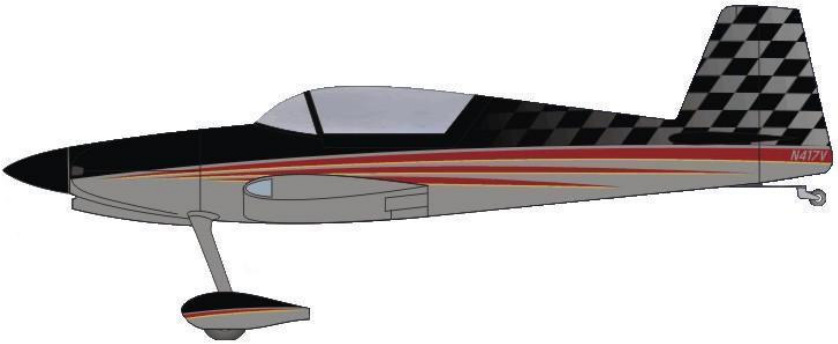

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SECTION 1
GENERAL

1.1 INTRODUCTION

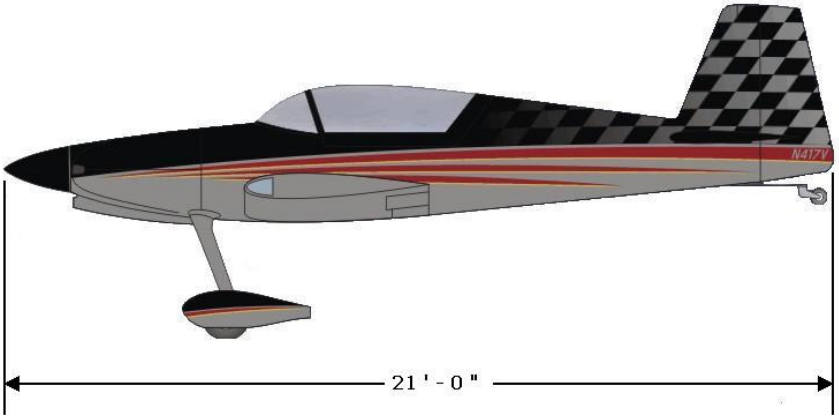
This Pilot's Operating Handbook is designed for maximum utilization and as an operating guide for the pilot. It includes material required to be furnished to the pilot by Federal Aviation Regulations.

This handbook is not designed as a substitute for adequate and competent flight instruction, knowledge of current airworthiness directives, applicable Federal air regulations or advisory circulars. It is not intended to be a guide for basic flight instruction or a training manual and should not be used for operational purposes unless kept in a current status.

Assurance that the airplane is in an airworthy condition is the responsibility of the owner. The pilot in command is responsible for determining that the airplane is safe for flight. The pilot is also responsible for remaining within the operating limitations as outlined by instrument markings, placards, and this handbook.

Although the arrangement of this handbook is intended to increase its in-flight capabilities, it should not be used solely as an occasional operating reference. The pilot should study the entire handbook to become familiar with the limitations, performance, procedures, and operational handling characteristics of the airplane before flight.

The handbook has been divided into numbered sections, each provided with a "finger-tip" tab divider for quick reference. The limitations and emergency procedures have been placed ahead of the normal procedures, performance and other sections to provide easier access to information that may be required in flight. The "Emergency Procedures" Section has been furnished with a red tab divider to present an instant reference to the section.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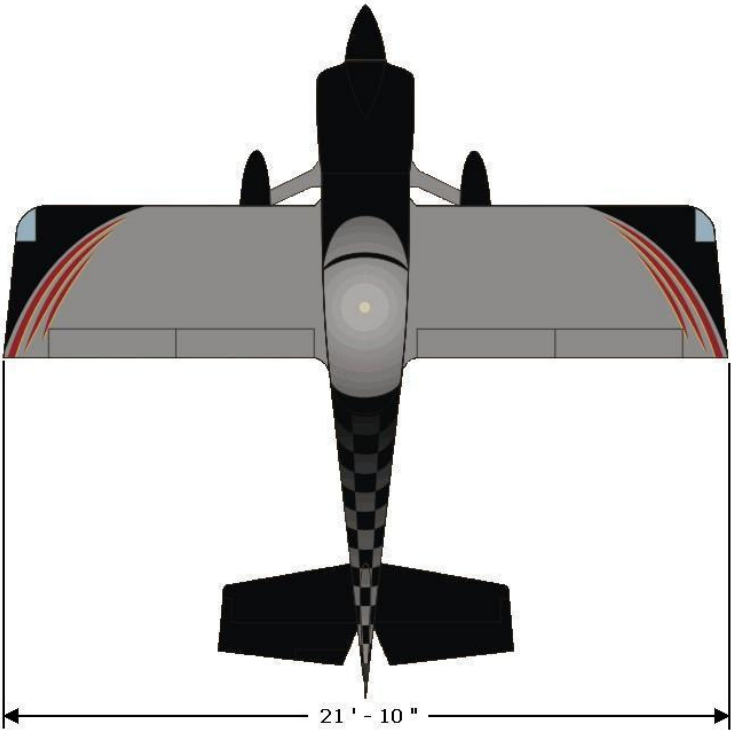
21 ' - 0 "


21 ' - 10 "

1.2 ENGINE

(a)	Number of Engines	1
(b)	Number of Cylinders	6
(c)	Engine Manufacturer	Lycoming
(d)	Engine Model Number	IO-540-D4A5 with one Slick magneto (left) and one Lightspeed Engineering electronic ignition module (right)
(e)	Rated Horsepower	260 hp @ 2700 RPM
(f)	Engine Type	Direct drive, horizontally opposed, air cooled
(g)	Fuel Metering	Fuel injected

1.3 PROPELLER

(a)	Propeller Manufacturer	MT-Propellers
(b)	Model	MTV-9-B/198-52
(c)	Number of Blades	3
(d)	Propeller Diameter (in.)	77
(e)	Propeller Type	Constant Speed Non-Feathering
(f)	Propeller TBO	6 years/2400 hours
(g)	Governor Manufacturer	Jihostroj
(h)	Governor Model	P-920-017

1.4 FUEL

(a)	Fuel Capacity (U.S. gal.) (total)	52
(b)	Usable Fuel (U.S. gal.) (total)	51.5
(c)	Fuel Grade, Aviation	100 LL – Blue

1.5 OIL

(a)	Oil Capacity (U.S. qts.)	12
(b)	Preferred Fill Point (U.S. qts.)	9 to 10
(c)	Oil Grades:	
	All Temperatures	SAE 15W-50 or 20W-50
	Below 40 ^{o}F	SAE 30 or 10W-30
	Above 40 ^{o}F	SAE 50

IMPORTANT NOTES

- When measured in the tail low (3-point) configuration, the oil dipstick will read approximately 1.5 quarts lower than the actual oil level present in the crankcase.
- This aircraft is equipped with an optional oil cooler which is located on the upper right baffle in the engine compartment. The cooler holds approximately 1 quart of oil.

1.6 MAXIMUM WEIGHTS

(a)	Maximum Takeoff Weight (lbs.)	2000
(b)	Maximum Landing Weight (lbs.)	2000
(c)	Maximum Aerobatic Gross Weight (lbs.)	1800
(d)	Maximum Weight (lbs.) in Forward Baggage Compartment at Fuselage Station 157.0	80
(e)	Maximum Weight (lbs.) in Aft Baggage Compartment at Fuselage Station 182.0	30
(f)	Maximum Weight (lbs.) when rear seat area is used to carry baggage at Fuselage Station 131.5	250

1.7 AIRPLANE WEIGHTS

(a)	Empty Weight (lbs.) Weight of the airplane including unusable fuel, full operating fluids, and full oil.	1196
(b)	Maximum Useful Load (lbs.) The difference between the maximum takeoff weight and the empty weight.	804

1.8 SYMBOLS, ABBREVIATIONS AND TERMINOLOGY

The following definitions are of symbols, abbreviations and terminology used throughout the handbook and those which may be of added significance to the pilot.

(a) General Airspeed Terminology and Symbols

CAS Calibrated Airspeed means the indicated speed of the aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.

KCAS Calibrated airspeed expressed in knots.

GS Ground Speed in the speed of the airplane relative to the ground.

IAS Indicated Airspeed in the speed of the aircraft as shown on the airspeed indicator when corrected for instrument error.

KIAS Indicated airspeed expressed in knots.

TAS True Airspeed is the airspeed of the airplane relative to undisturbed air which is the CAS corrected for altitude, temperature, and compressibility.

V_A Maneuvering Speed is the maximum speed at which application of full aerodynamic control will not overstress the airplane.

V_{FE} Maximum Flap Extended Speed is the highest speed permissible with wing flaps in a prescribed extended position.

V_{NE} Never Exceed Speed is the speed limit that may not be exceeded at any time.

V_{NO}	Maximum Structural Cruising Speed is the speed that should not be exceeded except in smooth air and then only with caution.
V_S	Stalling Sped or the minimum steady flight speed at which the airplane is controllable.
V_{SO}	Stalling Speed or the minimum steady flight speed at which the airplane is controllable in the landing configuration.
V_X	Best Angle-of-Climb speed is the airspeed which delivers the greatest gain in altitude in the shortest possible horizontal distance.
V_Y	Best Rate-of-Climb speed is the airspeed which delivers the greatest gain in altitude in the shortest possible time.

(b) Meteorological Terminology

Indicated Pressure Altitude	The number actually read from an altimeter when the barometric subscale has been set to 29.92 inches of Mercury.
Pressure Altitude	Altitude measured from standard sea-level pressure (29.92 in. Hg) by a pressure or barometric altimeter. It is the indicated pressure altitude corrected for position and instrument error.
Station Pressure	Actual atmospheric pressure at field elevation.

(c) Weight and Balance Terminology

Reference Datum	An imaginary vertical plane from which all horizontal distances are measured for balance purposes.
Station	A location along the airplane fuselage usually given in terms of distance in inches from the reference datum.
Arm	The horizontal distance from the reference datum to the center of gravity (C.G.) of an item.
Moment	The product of the weight of an item multiplied by its arm.
Center of Gravity (C.G.)	The point at which an airplane would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight of the airplane.
Usable Fuel	Fuel available for plight planning.
Unusable Fuel	Fuel remaining after a run out test has been completed in accordance with government regulations.
Empty Weight	Weight of the airplane including unusable fuel, full operating fluids and full oil.
Payload	Weight of occupants, cargo and baggage.
Useful Load	Difference between takeoff weight and empty weight.
Maximum Takeoff Weight	Maximum weight approved for the start of a takeoff run.

Maximum Landing Weight	Maximum weight approved for the landing touchdown.

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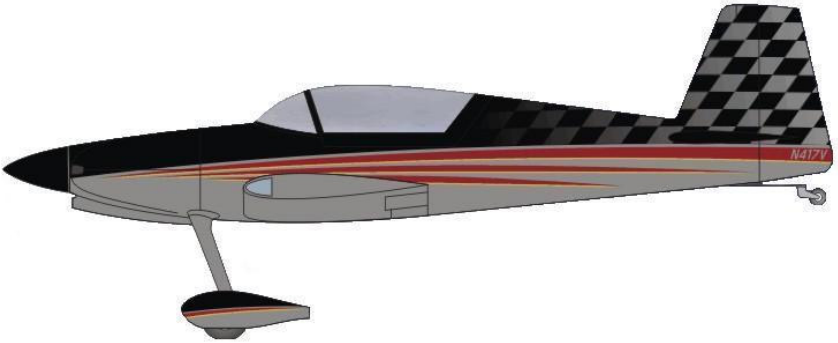

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SECTION 2
LIMITATIONS

2.1 GENERAL

This section provides the operating limitations, instrument markings, and color coding necessary for the operation of the airplane and its systems.

This airplane must be operated as a normal category airplane in compliance with the operating limitations stated in this section of the handbook.

2.2 AIRSPEED LIMITATIONS

SPEED	KIAS
Maneuvering Speed **(V_A)** – Do not make full or abrupt control movements above this speed.	125
Never Exceed Speed **(V_{NE})** – Do not exceed this speed in any operation.	240
Maximum Structural Cruising Speed **(V_{NO})** – Do not exceed this speed except in smooth air and then only with caution.	160
Maximum Flap Extended Speed **(V_{FE})** – Do not exceed this speed with the flaps extended.	95

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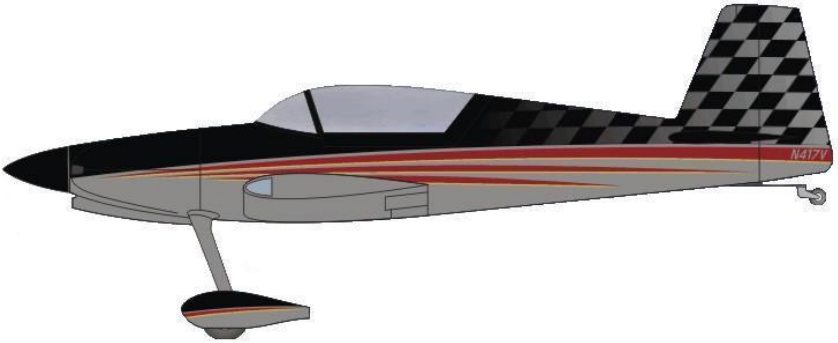

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SECTION 3
EMERGENCY PROCEDURES

3.1 GENERAL

The recommended procedures for coping with various types of emergencies and critical situations are provided by this section. All the required emergency procedures and those necessary for the operation of the airplane as determined by the operating and design features of the airplane are presented.

Aircraft emergencies are very dynamic events. Because of this, it is impossible to address every action a pilot might take to handle a situation. However, four basic actions can be applied to any emergency. They are:

- **Maintain Aircraft Control** – Many minor aircraft emergencies turn into major ones when the pilot fails to maintain aircraft control. Remember, do not panic and do not fixate on a particular problem. Over attention to a faulty warning light during an instrument approach can lead to a pilot induced unusual attitude and possibly worse. To avoid this, even in an emergency, ***Aviate, Navigate, and Communicate*** in this order. Never let anything interfere with your control of the airplane. Never stop flying.

- **Analyze the Situation** – Once you are able to maintain control of the aircraft, assess the situation. Look at the engine instruments. Listen to the engine. Determine what the airplane is telling you.

- **Take Appropriate Action** – On most situations, the procedures listed in this section will either correct the aircraft problem, or allow safe recovery of the aircraft. Follow then and use good pilot judgment.

- **Land as soon as Conditions Permit** – Once you have handled the emergency, assess your next move. Handle any non-critical "clean-up" items in the checklist and put the aircraft on the ground. Remember, even is the airplane appears to be in sound condition, it may not be.

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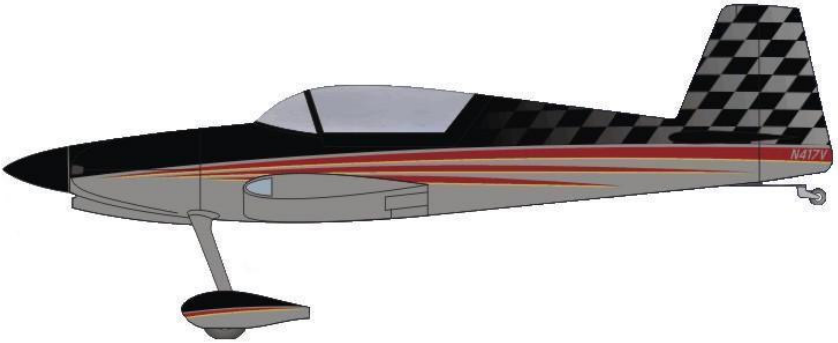

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SECTION 4
NORMAL PROCEDURES

4.1 GENERAL

This section describes the recommended procedures for the conduct of normal operations for this airplane. All of the required procedures and those necessary for the operation of the airplane as determined by the operating and design features of the airplane are presented.

These procedures are provided to present a source of reference and review and to supply information on procedures which are not the same for all aircraft. Pilots should familiarize themselves with the procedures given in this section in order to become proficient in the normal operations of the airplane.

4.2 AIRSPEEDS FOR SAFE OPERATIONS

The following airspeeds are those which are significant to the safe operation of the airplane. These figures are for the airplane flown at gross weight under standard conditions at sea level.

(a) Best Rate of Climb Speed.....100 KIAS
(b) Best Angle of Climb Speed.....80 KIAS
(c) Turbulent Air Operation.....160 KIAS
(d) Maximum Flap Speed.....95 KIAS
(e) Landing Final Approach Speed (no flaps).....75 KIAS
20^o flaps.....70 KIAS
40^o flaps (full).....65 KIAS
(f) Maximum Demonstrated Crosswind.....20 Knots

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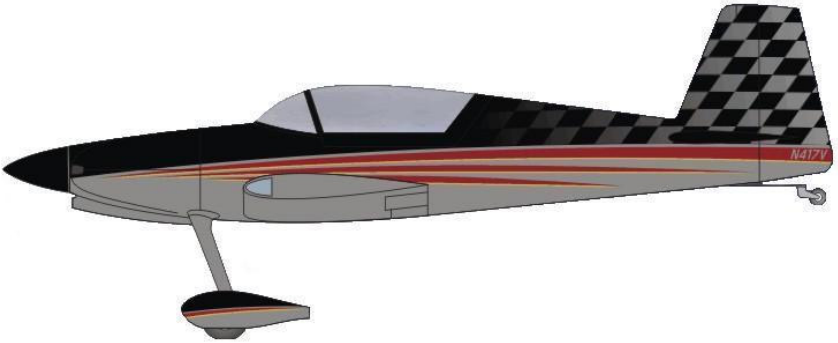

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SECTION 5
PERFORMANCE

5.1 GENERAL

This section of the manual will be updated once the flight testing phase has been completed.

5.2 CALIBRATED AIRSPEEDS

(a) Maximum speed at sea level.....XXX KCAS
(b) Cruise speed, 75% power at 10,000'.....XXX KCAS
(c) Cruise speed, 65% power at 10,000'.....XXX KCAS
(d) Cruise speed, 55% power at 10,000'.....XXX KCAS
(e) Cruise speed, 45% power at 10,000'.....XXX KCAS

5.3 RANGE

The following calculations assume the use of 3.0 gallons for taxi, takeoff, and climb:

(a) 75% power at 10,000' one hour reserve.....XXX nm
(b) 65% power at 10,000' one hour reserve.....XXX nm
(c) 55% power at 10,000' one hour reserve.....XXX nm
(d) 45% power at 10,000' one hour reserve.....XXX nm

(e) 75% power at 10,000' no reserve.....XXX nm
(f) 65% power at 10,000' no reserve.....XXX nm
(g) 55% power at 10,000' no reserve.....XXX nm
(e) 45% power at 10,000' no reserve.....XXX nm

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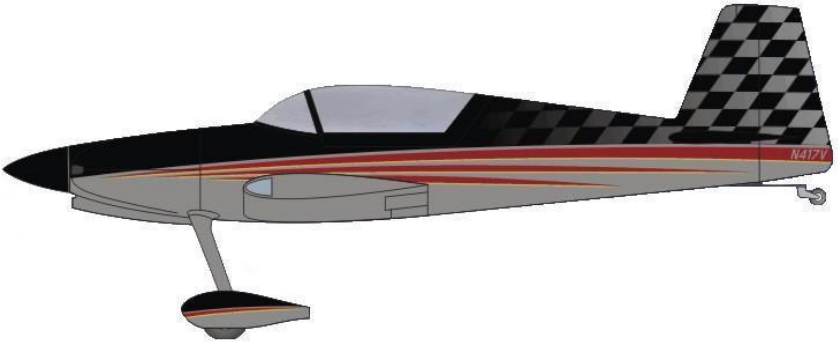

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SECTION 6
WEIGHT AND BALANCE

6.1 GENERAL

In order to achieve the performance and flying characteristics which are designed into the airplane, it must be flown with the weight and center of gravity (C.G.) position within the approved operating range (envelope). Although the airplane offers flexibility of loading, it cannot be flown with the maximum number of adult passengers, full fuel tanks, and maximum baggage. With flexibility comes responsibility. The pilot must ensure that the airplane is loaded within the loading envelope before takeoff.

Misloading carries consequences for any aircraft. An overloaded airplane will not takeoff, climb or cruise as well as a properly loaded one. The heavier the airplane is loaded, the less climb performance it will have.

Center of gravity is a determining factor in flight characteristics. If the C.G. is too far forward in any airplane, it may be difficult to rotate for takeoff or landing. If the C.G. is too far aft, the airplane may rotate prematurely for takeoff or tend to pitch up during climb. Longitudinal stability will be reduced. This can lead to inadvertent stalls and even spins; and spin recovery becomes more difficult as the center of gravity moves aft of the approved limit.

A properly loaded airplane, however, will perform as intended. Before the airplane is licensed, it is weighed and the empty weight and C.G. location are computed. Using the empty weight and C.G. location, the pilot can easily determine the weight and C.G. position for the loaded airplane by computing the total weight and moment and then determining whether they are within the approved envelope.

The empty weight and C.G. locations are recorded in the Weight and Balance Data Form and the Weight and Balance Record. The current values should always be used. Whenever new equipment is added or any modification work is done, the mechanic responsible for the work is required to compute a new empty weight and C.G. position

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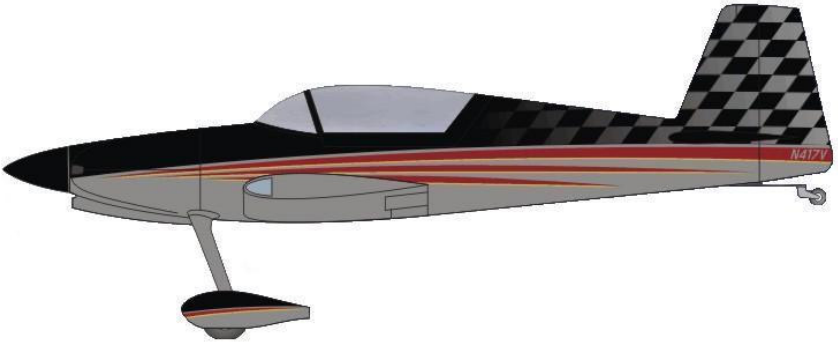

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7.1 THE AIRPLANE

The Pflanzer F1 Rocket is a single-engine, fixed gear, low wing monoplane of all metal construction with traditional landing gear (tail wheel). It has two-place seating and a 110 pound baggage capacity.

The aircraft was built from a kit of parts designed and supplied by Mark Frederick of Team Rocket, of Taylor, Texas. For more information on the design, the designer, and the kit, the reader is referred to www.teamrocketaircraft.com.

This particular aircraft was built by Randy J. Pflanzer in Indianapolis, Indiana over three years. The project began in May, 2002 and finished in May, 2005. Over 2000 man-hours were expended to complete the airplane. The full history of the construction is documented on www.pflanzer-aviation.com.

7.2 AIRFRAME

The primary structure, with the exception of the steel tube engine mount, titanium landing gear legs, and assorted miscellaneous parts, is of aluminum alloy construction. Fiberglass and carbon fiber are used in the engine cowling, fairing, wing tips, etc.

The fuselage is a conventional, all metal, semi-monocoque structure with riveted skin. The canopy slides rear allowing entrance and exit across the wing walks which extend to the trailing edge of each wing.

The wings are all metal with the exception of the fiberglass wing tips. The I-beam main spar extends through the length of each wing and into the center of the fuselage, where the spars are joined with high strength fittings, making, in effect, one continuous main spar. The wing is also attached to the forward fuselage near the leading edge of the fuel tanks. An aft spar in each wing extends from the wing tip to the wing root and is bolted to the side of the fuselage.

The empennage is a standard configuration with fixed horizontal stabilizer and vertical fin.