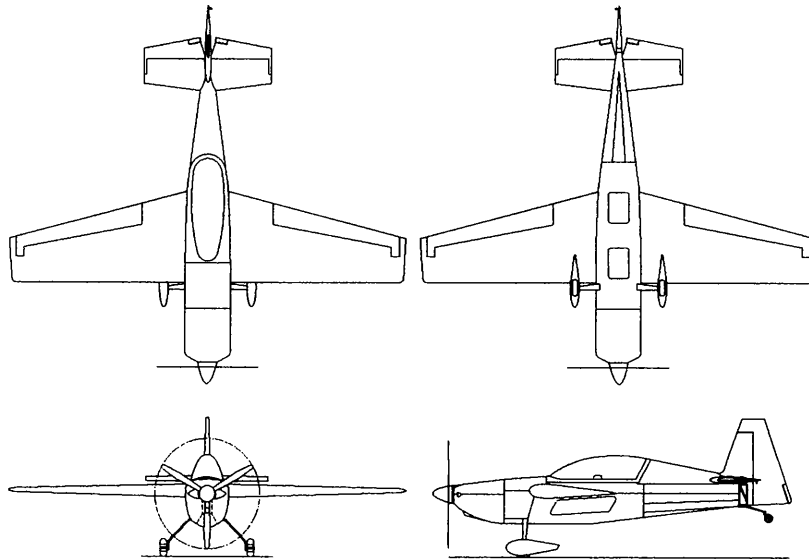


Pilot's Operating Handbook And Flight Manual



EDGE 540-T

Serial no: 2017

CERTIFIED EXPERIMENTAL

Manufactured by:



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EDGE⁵⁴⁰
AEROBATIC TANDEM

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1 Introduction

This handbook contains the information required for successful operation of the Edge 540-T aerobatic airplane. It assumes the user of the handbook is a competent pilot and is familiar with aerobatic aircraft operation and performance. Zivko Aeronautics Inc suggests full familiarity with this manual to enable the pilot to operate the airplane safely, efficiently and ensure that they get the best results and performance.

1.1 Notes

- 1.1.1 It is the pilots responsibility to ensure full familiarity with all the aircraft systems and performance.
- 1.1.2 Amendments to this manual will be made available to currently registered owners when required.
- 1.1.3 Should this flight manual be lost, immediately contact Zivko Aeronautics Inc for a replacement.
- 1.1.4 **Important aviation documentation:** If found please return to Zivko Aeronautics Inc, 502 Airport Road, Guthrie OK 73044.

CAUTION

Flying aerobatics could result in injury, bodily harm, or even death if not performed correctly.

2 General Information

The Edge 540-T is an experimental single engine, two place, aerobatic airplane. It is constructed from a steel tube fuselage and composite wing, empennage and fairings. Powered by a modified Lycoming IO-540EXP the aircraft has exceptional aerobatic performance and is ideal for use in aerobatic training and competition aerobatics. The airplane is fitted with a full dual flight control system to facilitate full aerobatic flight training requirements. **Solo flight should be performed from the rear seat only.** Primary flight instruments (airspeed, altimeter and compass) are provided in the front seat for reference.

2.1 Certification

The Edge 540-T is certified under 14 CFR 21.191 in the experimental category.

2.2 Main information

2.2.1 Overall Dimensions

Length: 23ft 0"
Height: 7ft 9"
Span: 25ft 10"

2.2.2 Wing

Span: 25ft 10"
Area: 106ft²
Airfoil design: Unique John Ronz Design
Chord: Root: 66" Tip: 33"
Aileron Deflection: +/-25°

2.2.3 Horizontal

Span: 8ft 1"
Area: 22ft²
Elevator Deflection: +/-25°

2.2.4 Vertical

Area: 14ft 10"
Height: 5ft 2"
Rudder Deflection: +/-30°

2.2.5 Engine

Modified Textron-Lycoming AEIO-540-EXP Rated power: 327HP @ 2450RPM. Refer to Textron Lycoming Aircraft Engines Series AEIO-320,-36 & 540 operators manual for further operating information. **Note:** As the engine on the Edge 540 is a modified AEIO-540 some operating information may differ from that stated in the Lycoming manual. Please refer to engine modifier for further information.

2.2.6 Propeller

Hartzell HC-C3YR-4AX composite, three blade, constant speed, counter balanced with Hartzell governor. The propeller is approved for full aerobatic flight.

2.2.7 Exhaust System

Custom manufactured by Sky Dynamics, Inc.

2.2.8 Fuel

Fuel type: AVGAS 100LL



Total fuel capacity: 61.5 US Gallons (17.5 fuselage + 22 each wing)

2.2.9 Oil System

Christen inverted oil system.

Aeroshell straight mineral SAE 50 should be used for the first 25 hours or until the engine stops using oil and a leak down test indicating that the piston rings are seated. Then Aeroshell Ashless dispersant (detergent) SAE 50.7 should be used for normal operation. Please refer to engine operating manual for more information.

Max. Capacity: 12 qts.

Min. Capacity: 10 qts.

Note: Multigrade oil is not recommended.

Empty weight:	1320lbs
Max gross Takeoff weight:	2200lbs
G rating gross:	±3G
Max gross Landing weight:	2100lbs
Max aerobatic weight single:	1600lbs
G rating single:	±10
Max aerobatic weight dual:	1850lbs
G rating dual:	±8G
Wing loading empty:	12.4 lbs/ft ² typ.
Maximum airspeed V_{ne}:	230 Kts
Max full aerobatic airspeed V_a:	170 Kts
Power off stall V_{so}:	62 Kts @2200lbs
Max roll rate:	420°/sec typically
Max rate of climb:	3,700 ft/min

3 Equipment

Engine Equipment:

Engine: Modified Lycoming IO540-EXP
Alternator: B&C 8 amp
Starter: B&C lightweight
Fuel Pump: A/C
Boost Pump: Welden
Inverted oil system: Christen
Inverted fuel system: ZAI
Cold air induction: Barrett Performance Inc.
Propeller: Hartzell HC-C3YR-4AX

Landing Gear:

Main gear spring: Grove Aircraft
Main gear tires: Airhawk 500 x 5 6ply
Main gear brakes: Cleveland
Tail wheel: Aviation products steerable

Instruments/Avionics:

Altimeter (feet) X 2
Airspeed (KIAS) X 2
Becker Com with remote head
Becker Transponder with remote head
ACK A-30 Altitude Encoder
EDM-900 Engine monitor
Compass
G-meter
MAC Trim System
ELT
Two place intercom system

Restraint system:

Harness: Hooker 7 Point Ratchet harness (front and rear).

4 Operational Limitations

This section describes limitations for safe operation of the airplane, and points out important information the pilot should adhere to.

4.1 Airspeed limitations

V_{NE}	Never Exceed Speed:	230knots
V_{NO}	Max. Structural Cruising Speed:	195knots
V_A	Maneuver Speed:	170knots

4.2 Engine Operating Limits

Normal rated power:	327 HP @2450RPM
Max cylinder head temp:	450°F
Fuel grade:	100LL min
Rt. wing tank fuel capacity (non-aerobatic):	22.0 gal
Lt. wing tank fuel capacity (non-aerobatic):	22.0 gal
Fuselage tank fuel capacity (aerobatic):	17.5 gal
Oil grade:	Aeroshell 50W(Mineral Oil for first 25 Hrs)
Oil sump capacity:	12 quarts max, 10 quarts min
Max oil temperature:	245°F
Oil pressure:	75 psi @2450RPM, 190°F
Smoke oil capacity (aerobatic):	8.5 gal

CAUTION

Under normal operating conditions, when changing from non-inverted to inverted flight the oil pressure indicator will flicker due to the oil scavenging system configuration. Inverted flight longer than 4 minutes is not recommended. During knife edge and zero-G flights the oil system cannot function properly for a period exceeding 10 seconds. Flights longer than this may result in complete engine failure.

To prevent an engine overspeed situation occurring upon loss of oil pressure the propeller will fail coarse, thus decreasing engine RPM.

4.3 Aircraft Operating Limits

Max G rating:	±10 @ max single aerobatic weight (1600lbs) ±8 @ max dual aerobatic weight (1850lbs) ±3 @ max gross takeoff weight (2200lbs)
Power off stall @ 1600lbs:	53 Kts typ
Power off stall @ 1850lbs:	57 Kts typ
Power off stall @ 2200lbs:	62 Kts typ
Max Rate of Climb @ 1600lbs:	3,700 ft/min @ 95 Kts (sea level, standard)
Max Rate of Climb @ 2200lbs:	2,700 ft/min @ 100 Kts (sea level, standard)
Takeoff speed @ 1600lbs:	70 Kts
Takeoff speed @ 2200lbs:	85 Kts
Landing speed @ 1600lbs:	70 Kts
Landing speed @ 2100lbs:	85 Kts
Max Climb Angle speed @ 1600lbs:	60 Kts
Max Climb Angle speed @ 2200lbs:	75 Kts
Min Sink Rate @ 1600lbs:	~750 fpm @ 65 Kts
Min Sink Rate @ 2200lbs:	~900 fpm @ 75 Kts
Best Glide @ 1600lbs:	9:1 @ 80 Kts
Best Glide @ 2200lbs:	9:1 @ 95 Kts
Max demonstrated crosswind comp:	15 Kts
Max aerobatic weight:	1600 lbs
Max gross landing weight:	2100 lbs

4.4 Structural Temperature Limitations

The aircraft structure is cured to allow a maximum operating temperature of 180°F (82°C). Structural temperatures above this are not allowed as there will be a rapid decrease in structural performance due to the nature of composite materials.

4.5 Tire Pressure

Required tire pressure is 50 PSI (3.6 Bar).

4.6 Markings and Placards

EXPERIMENTAL AMATEUR BUILT AIRCRAFT			
MODEL	EDGE 540 T K	EMPTY WT	XXX LBS
SERIAL NO	2016	GROSS WT	XXX LBS
DATE OF MFG	05-20-03	HP	320
ENGINE	LYCOMING IO-540EXP	BUILT BY	
NAME	TODD WHITMER		
ADDRESS	4901 COUNTRY LANE		
CITY STATE	SAN JOSE CA 95129		

Location: Exterior, bottom, left side.

EXPERIMENTAL

Location: Interior, behind rear seat.

100 OCT. MIN

Location: Exterior, near each fuel filler cap.



Location: Interior, fuel selector valve.

[REDACTED]

Location: Interior, front & rear, right side longeron.

CANOPY – PUSH TO LOCK

Location: Interior, front & rear, left side longeron.

G-LIMITS:
1 PERSON = ±10G
2 PEOPLE = ± 8G

Location: Interior, rear instrument panel.

WING TANKS MUST BE EMPTY FOR AEROBATICS

Location: Interior, rear instrument panel.

THROTTLE – PUSH FULL

Location: Interior, front & rear throttle.

**P
R
O
P**

Location: Interior, propeller control.

**M
I
X
T
U
R
E**

Location: Interior, mixture control.

PASSENGER WARNING
THIS AIRCRAFT IS AMATEUR-BUILT AND DOES NOT
COMPLY WITH THE FEDERAL SAFETY
REGULATIONS FOR A "STANDARD AIRCRAFT".

Location: Interior, front instrument panel.

**SOLO FLIGHT SHOULD ONLY BE PERFORMED
FROM THE REAR SEAT**

Location: Interior, front and rear instrument panel.

5 Aerobatic Flight

The Edge 540-T is designed for full competition Unlimited aerobatics. Listed in section 5.2 below are recommended entry speeds for basic aerobatic maneuvers.

WARNING

Aerobatic maneuvers should **only** be performed with **empty** wing fuel tanks. Due to high G loading during aerobatic flight, wing structural failure may result. Excess fuel can be easily drained from the wing tanks by use of the applicable fuel drains.

NOTE

It is the responsibility of the pilot to ensure that the passenger/co-pilot is physiologically capable of aerobatic flight and that the airplane is within C of G limits.




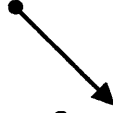


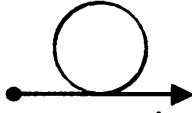
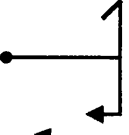

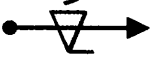
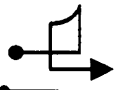

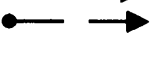
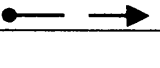
5.1 Load Factor Limits

Weight	Load Factor Limits
1600lbs max single aerobatic	+/-10
1850lbs max dual aerobatic	+/-8
2200 lbs max gross takeoff	+3/-3
2100 lbs max gross takeoff	+3/-3

CAUTION

Landing above max gross aircraft landing weight could result in aircraft structural damage.

5.2 Aerobatic Maneuver Entry Speeds

Maneuver	Recommended Entry Speeds		Symbol	Remarks
	Min KIAS	Max KIAS		
Horizontal Line	V_S	V_{NE}		
45° climbing	80	V_{NE}		
90° up	160	V_{NE}		
45° diving	V_S	V_{NE}		Reduce Throttle
90° diving	V_S	V_{NE}		Reduce Throttle
Pull to Vertical	90	V_{NE}		
Looping	90	V_{NE}		
Stall turn	90	V_{NE}		
Aileron Roll	80	170		Full deflection
Snap Roll	80	140		
Tail slide	80	V_{NE}		
Spin	V_S	N/A		
Knife Edge	90	180		<10sec
Inverted Flight	V_S	V_{NE}		< 4 min

6 Aircraft Systems

The Edge-540T utilizes a computer optimized steel tube fuselage designed to take over 15G's of sustained loading. The Edge-540T aircraft has all the performance required for unlimited aerobatics and complete dual controls, allowing the aircraft to be flown to full capability from either seat. No other competition aerobatic aircraft combines the utility of a two seat aircraft with this level of unlimited aerobatic performance.

6.1 Fuselage

The Edge 540-T fuselage consists of a 4130 steel tube, powder coated, inside oiled, designed and fatigue analyzed on a computer. The lower aft fuselage is fabric covered to keep the fuselage weight at a minimum. The fuselage integrates the wing and empennage into the structure through eight hardpoint locations. The seat and harness mounts are also attached to the tube fuselage. The main part of the fuselage is covered with a carbon fiber composite bottom boot cowling. This cowling has four integral polycarbonate "Lexan" viewing windows.

6.2 Wing

The Edge wing is constructed from carbon fiber and high density foams. It has a modified 'C' section carbon spar consisting of caps inside of a shear web. The skin is a laminate of carbon and high density foams. The wing has a unique John Ronz designed airfoil and has been statically tested to 20 G's. The wing contains two leading edge style wet wing fuel tanks. The wing is attached to the fuselage by two bolts piercing the carbon main spar hardpoints, and also by two attach brackets at the wing rear spars. The ailerons are each mounted on three ball bearing attach hinges and are push tube actuated. Each aileron has a spade to assist with control force and is dynamically balanced to prevent flutter.

Because all controls are ball bearing, and freedom of movement is light, the control stick should be tied anytime aircraft is stored outside for extended periods of time. This is to prevent the ailerons from banging against stops.

6.3 Empennage

The Edge has a standard cruciform empennage consisting of a vertical and horizontal stabilizer, with a rudder and elevator attached by spherical bearing hinges. The elevator contains an electronic trim tab mechanism that is electronically controlled from the cockpit. Both control surfaces are mass balanced to prevent fluttering.

6.4 Primary Flight Control System

The 540-T is equipped with full dual controls. The two control sticks are linked through a torque tube and push-pull tube mechanism. The aileron and elevator system are both push-pull tube type. The rudder is cable system with all systems having ball bearings for smooth control response. The rudder pedals can be adjusted fore and aft. The rear pedals can be adjusted electrically by use of the switches located in the instrument panel.

6.5 Secondary Flight Control System

The elevator trim control can be found on the instrument panel. It is a small toggle switch which controls the trim servo motor position in the elevator. A trim position indicator is also provided for trim reference.

The canopy can be operated from both the interior handle or the exterior handle. When locking the canopy from the inside ensure that the handle goes over center and is positively located in the safety latch to prevent inflight canopy opening.

6.6 Engine Controls

6.6.1 Throttle

Dual throttles are located on the left side of the cockpit. The throttles are linked by a push-pull tube. The engine throttle is retarded when the throttle handle is pulled all the way back.

6.6.2 Mixture

The mixture control is found only in the rear of the cockpit on the left hand side below the throttle. It is colored red for the purposes of identification. Full rich mixture is obtained by placing the control full forward.

6.6.3 Propeller Pitch

The propeller control is also found only in the rear of the cockpit on the left hand side, below the mixture control. It is color coded blue for identification. High engine RPM can be obtained by placing the control in the full forward position.

6.7 Fuel System

The Edge fuel system has a fuel selector valve located behind the fire wall on the right hand side. It is controlled by a torque tube that runs to the rear cockpit position. Positions available are clearly placarded and include an OFF position. In addition to an engine driven fuel pump an electrically driven boost pump with by-pass and having sufficient capacity to feed the engine at full throttle during take-off is provided.



Note: Fuel selector pictured above is located in the OFF position.

6.8 Ignition/Starter System

The engine is fitted with a lightweight B+C starter. By turning the magneto/start key switch all the way to the start position, the starter motor will be energized and engage the fly wheel. Upon release of the key the switch will automatically return to the both magneto position.

6.9 Seats + Harnesses

The Edge 540-T has two lightweight carbon fiber contoured seats. The rear seat can be vertically adjusted and reclined. The Hooker 7 point harnesses are attached to the steel tube fuselage and can be easily adjusted.

6.10 Ventilation

Cabin ventilation can be controlled using the eyeball vents located on the canopy.

6.11 Single-place canopy conversion (optional)

The two-place aircraft can be easily fitted with a single place canopy. Unlatch the two-place canopy (left and right latches - remove safety wire). Install top boot cowl extension attach brackets. **NOTE: Prior to installation of top boot cowl extension, ensure forward seat area aircraft controls are free from interference by harness, headsets etc - otherwise this may result in obstruction of control movement.**

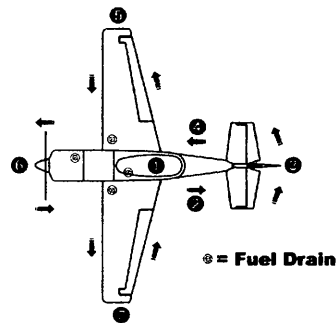
Install top boot cowl extension and fasten in position along forward edge and attach brackets. Install single place canopy and safety wire jettison latch handle in position.

7 Normal Operating Procedures

7.1 Airspeeds for Normal Operation

Category (Speeds in KIAS)		Aerobic		Non-Aerobic
		1 seat	2 seats	
Start:	Rotation Speed	58	63	70
	Climb:	V _X	70	74
V _Y		95	98	105
Recommended Normal Climb Speed		100	110	120
Max. Cruise		195	195	195
Landing:	Approach	80	85	92
	On Final	69	75	81
	Go-Around Speed	90	95	103
V _A		170	170	160
Max. Demonstrated Cross Wind Component		15	15	15

7.2 Preflight Inspection



7.2.1 Cockpit ●

Pilots Operating Handbook	AVAILABLE
Airplane Weight and Balance	CALCULATED & CHECKED
Ignition Switch	OFF
Master Switch	ON
Fuel Quantity	CHECK LEVEL
Master Switch	OFF
Fuel Selector	SHUTOFF

7.2.2 Left Fuselage ●

Fuselage turtle deck	CHECK FOR DAMAGE
Fuselage fabric	CHECK FOR DAMAGE
Static Port	CHECK

7.2.3 Empennage ●

All round inspection for damage and conformity	CHECK
View inspection window for debris	CHECK
Horizontal Stabilizer attachment Bolts	CHECK FOR FREEPLAY
Elevator, Rudder freedom of movement and security	CHECK

7.2.4 Right Fuselage ●

Fuselage turtle deck	CHECK FOR DAMAGE
Fuselage fabric	CHECK FOR DAMAGE
Static Port	CHECK

7.2.5 Right Wing ●

Aileron, freedom of movement and security	CHECK
Aileron spade	CHECK
Trailing Edge	CHECK
Fuel quantity	VISUALLY CHECK
Fuel Tank Filler cap	CHECK
Fuel Tank drain ⊙	DRAIN AND INSPECT FUEL
Right landing gear, wheel and brake	CHECK

7.2.6 Nose ●

Engine oil dipstick	CHECK
Propeller and spinner	CHECK
Air inlet	CHECK
Fuel Filter drain ⊙	DRAIN FOR AT LEAST 4 SECONDS TO CLEAR ANY POSSIBLE WATER
Fuselage tank fuel drain ⊙	DRAIN FOR AT LEAST 4 SECONDS TO CLEAR ANY POSSIBLE WATER

7.2.7 Left Wing ●

Left Landing gear, wheel and brake	CHECK
Fuel quantity	VISUALLY CHECK
Fuel tank filler cap	CHECK
Fuel Tank drain ⊙	DRAIN AND INSPECT FUEL
Pitot tube	REMOVE COVER – CHECK
Trailing edge	CHECK
Aileron spade	CHECK
Aileron, freedom of movement and security	CHECK

7.3 Before Engine Start

Preflight inspection completed	COMPLETE
Passenger briefing	COMPLETE
Parachute handling briefing	COMPLETE
Seats, seatbelts and harnesses	ADJUST AND LOCK
Canopy	CLOSE AND LOCK
Brakes	CHECK ON
Electrical equipment	OFF
Alternator	OFF FOR START
Wingtip position/strobe lights	OFF FOR START

7.4 Engine Start**7.5 Cold start**

Canopy	CLOSED AND LOCKED
Master Switch	ON
Radios	OFF
Fuel Boost Pump Breaker	IN
Mixture	RICH
Throttle	OPEN ONE INCH
Fuel boost pump	ON UNTIL INDICATION ON GAUGE (~4sec)
Mixture	FULL LEAN
Throttle	SLIGHTLY CRACKED
Left Magneto switch	ON
Prop	HIGH RPM & CLEAR
Starter	ON
Mixture	FULL RICH WHEN ENGINE FIRST FIRES
Throttle	AS REQUIRED
Right magneto switch	ON
Radios	ON
Instruments	CHECK

7.6 Hot Start

Canopy	CLOSED AND LOCKED
Master Switch	ON
Radios	OFF
Fuel Boost Pump Breaker	IN
Mixture	RICH
Throttle	OPEN ONE INCH
Fuel boost pump	IF ANY REQUIRED
Mixture	FULL LEAN
Throttle	SLIGHTLY CRACKED
Left Magneto switch	ON
Prop	HIGH RPM & CLEAR
Starter	ON
Mixture	FULL RICH WHEN ENGINE FIRST FIRES
Throttle	AS REQUIRED
Right magneto switch	ON
Radios	ON
Instruments	CHECK

7.7 Alternate Hot Start (Flood Start)

Canopy	CLOSED AND LOCKED
Master Switch	ON
Radios	OFF
Fuel Boost Pump Breaker	IN
Mixture	RICH
Throttle	FULL OPEN
Fuel boost pump	UNTIL ENGINE FLOODED
Mixture	FULL LEAN
Left Magneto switch	ON
Prop	HIGH RPM & CLEAR
Starter	ON
Throttle	CLOSE THROTTLE UNTIL ENGINE RUNS SMOOTHLY
Mixture	FULL RICH ASAP
Right magneto switch	ON
Radios	ON
Instruments	CHECK

7.8 Taxiing the Airplane

Brake	CHECK
Altimeter	SET
Avionics	ON
Electrical systems	ON
Mixture	FULL RICH

7.9 Before Take-off

Canopy	CHECK CLOSED AND LOCKED
Flight Control	CHECK FULL AND FREE MOVEMENT
Instruments	CHECK T's & P's. SET ALT, RADIO, TRANS.
Fuel selector	FUSELAGE TANK SELECTED
Boost Pump	ON
Trim	NEUTRAL. SET FOR T/O
Run-up	CHECK MAGS, PROP, T's & P's.
Safety	CHECK HARNESS & CANOPY SECURE

7.10 Take-off

Throttle	SMOOTHLY ADVANCE TO FULL POWER
Rotate	69 KIAS

7.11 Climb

Boost Pump	OFF
RPM	SET AS REQUIRED
Mixture	SET AS REQUIRED
Trim	SET AS REQUIRED

7.12 Cruise

Throttle	SET AS REQUIRED
Mixture	SET AS REQUIRED
Prop	SET AS REQUIRED
Trim	SET AS REQUIRED
Fuel selector	SET AS REQUIRED

7.13 Landing

Boost pump	ON
Mixture	FULL RICH
Prop	HIGH RPM
Trim	SET AS REQUIRED
Approach Speed	100 KIAS RECOMMENDED
Touchdown Speed	70 KIAS RECOMMENDED
Boost pump	OFF

7.14 Shutdown

Mixture	CUT-OFF
Magneto switches	OFF
Fuel	OFF
Master switch	OFF
Alternator breaker	PULL
Controls	SECURED AND LOCKED*

* It is important to ensure the controls are tied as this prevents control surfaces hitting against their respective stops.

8 Emergency Procedures

8.1 Airspeeds for Emergency Operations

Stall Speed	62 KIAS
Engine Failure after take-off	85 KIAS
Best recommended Glide	85 KIAS
Cautionary landing	85 KIAS
Landing without engine power	85 KIAS
Max. Demonstrated crosswind	15 Knots

8.2 Engine Failure During Take-off Roll

Throttle	IDLE
Brakes	APPLY
Mixture	IDLE CUT OFF
Ignition	OFF
Master Switch	OFF

8.3 Engine Failure Immediately After Take-off

Airspeed	85 KIAS
Mixture	IDLE CUT OFF
Fuel Selector	OFF
Ignition	OFF
Master Switch	OFF
Forced landing	PERFORM AS PRACTICAL

8.4 Engine Failure During Flight (Restart Procedure)

Airspeed	85 KIAS
Fuel selector	FULLEST TANK
Mixture	RICH
Boost Pump	ON
Ignition	BOTH
Starter	ON

8.5 Oil System Malfunction

Oil Pressure Low	APPLY POSITIVE G LOAD
Airspeed	85 KIAS
Throttle	IDLE
Oil temperature	OBSERVE INDICATION
Land	ASAP

8.6 Emergency Landing Without Engine Power

Seat belts, shoulder harnesses	SECURE
Airspeed	85 KIAS
Landing site	FIND
Engine restart	ATTEMPT
Radio Call	MAYDAY
Mixture	IDLE CUT OFF
Fuel selector	OFF
Ignition	OFF

Master switch	OFF
Touchdown	SLIGHTLY TAIL LOW
Brakes	OPTIMUM BRAKING

8.7 Cautionary Landing With Engine Power

Seat belts, shoulder harnesses	SECURE
Airspeed	85 KIAS
Landing site	FIND AND VERIFY SUITABILITY
Master switch	OFF
Touchdown	SLIGHTLY TAIL LOW
Mixture	IDLE CUT OFF
Ignition	OFF
Fuel selector	OFF
Brakes	APPLY HEAVILY

8.8 Fire During Start-up

Cranking	CONTINUE
Fuel selector	OFF
Power	1700 RPM FOR ONE MINUTE
Engine	SHUTDOWN
Airplane	EXIT AND INSPECT FOR DAMAGE
Fire	EXTINGUISH ALL

WARNING

Do not open engine compartment doors if fire is present as this will further fuel any fire.

8.9 Fire in flight

Mixture	IDLE CUT OFF
Fuel selector	OFF
Master switch	OFF
Airspeed	100 KIAS OR REQUIRED TO EXTINGUISH FIRE
Attitude	KEEP FIRE FROM COCKPIT
Land	ASAP
If fire persists	BAIL OUT

8.10 Icing

Heading	TURN 180
Altitude	FIND LESS CONDUCTIVE TO ICING
Land	ASAP

8.11 Bail-out Procedure

Inform passenger	CHECK
Speed	<100 KIAS IF POSSIBLE
Mixture	LEAN
Canopy	PULL JETTISON AND LATCH HANDLES
Headsets	REMOVE
Seatbelt	RELEASE
Exit airplane avoiding wing and tail	CHECK
Parachute	OPEN AND CHECK

9 Performance

This section contains important performance reference information that should be consulted while planning a flight.

9.1 Stall Speeds

Conditions: Power at idle

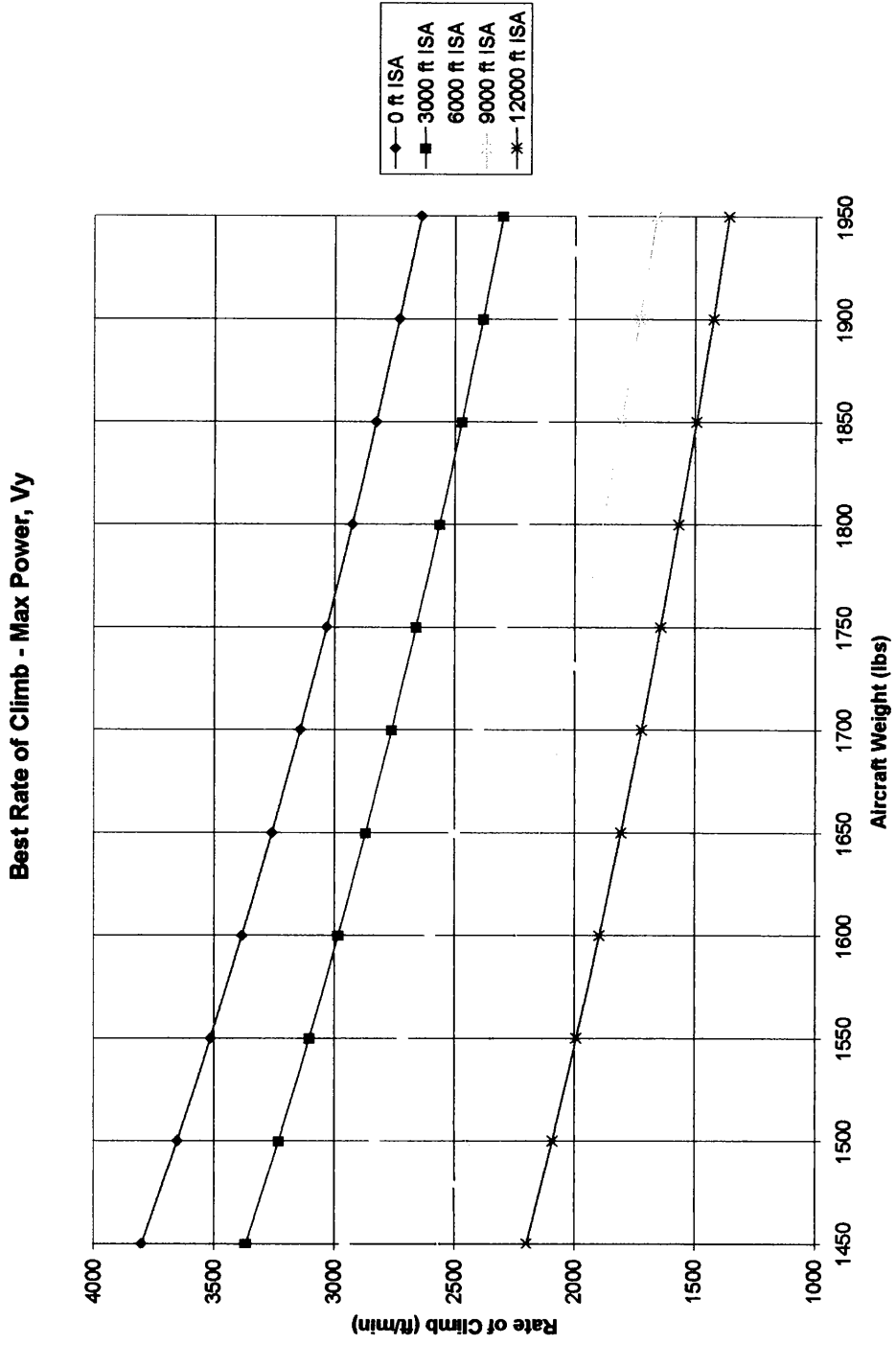
Weight (lbs)	Stall speeds		
	Angle of Bank		
	0°	30°	45°
1600	53	57	63
1850	57	61	68
1950	59	63	70

9.2 Take-Off performance

Conditions: T/O Power, asphalt runway, zero head wind.

OAT			0°C(32°F)		15°C(59°F)		30°C(86°F)	
T/O Weight (lbs)	Rotating Speed (KIAS)	PA (ft)	T/O Roll (ft)	T/O over 50ft (ft)	T/O Roll (ft)	T/O over 50ft (ft)	T/O Roll (ft)	T/O over 50ft (ft)
1600	58	SL	153	257	181	293	212	335
		2000	184	296	217	342	255	392
		4000	222	348	262	402	306	465
		6000	268	410	316	479	369	563
1850	63	SL	226	365	268	419	314	480
		2000	272	425	322	491	378	566
		4000	329	500	388	518	545	675
		6000	397	593	469	696	548	825
1950	65	SL	262	417	310	479	363	550
		2000	315	486	373	563	437	650
		4000	380	573	450	667	526	777
		6000	460	681	543	801	635	953
2200	69	SL	346	551	410	633	480	727
		2000	416	642	493	744	578	859
		4000	502	757	595	882	695	1027
		6000	608	900	718	1059	840	1260

9.3 Rate of Climb Performance



9.4 Time to Climb

Time to Climb - Max Power, Vy

