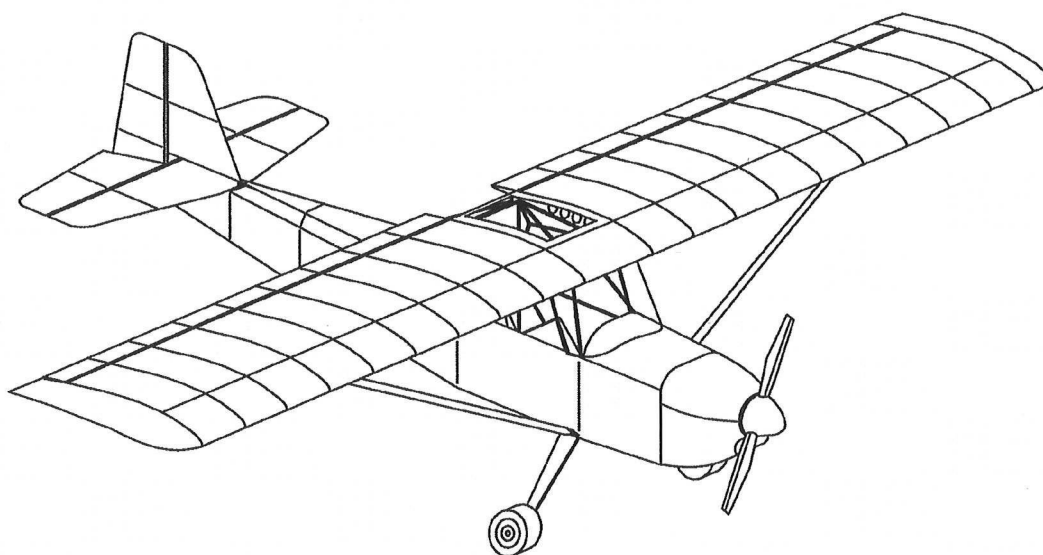


ACROLITE 2M



CONSTRUCTION MANUAL

WARNING !

DANGER !

THE INFORMATION CONTAINED HEREIN IS PRESENTED FOR EDUCATIONAL AND INFORMATION PURPOSES ONLY. DO NOT ATTEMPT TO BUILD THIS AIRCRAFT UNLESS YOU HAVE THE EXPERTISE TO DETERMINE ITS SUITABILITY FOR FLIGHT, ARE QUALIFIED TO EVALUATE ITS DESIGN FOR SAFETY AND HAVE THE TECHNICAL SKILLS REQUIRED FOR SAFE CONSTRUCTION.

THERE IS NO GUARANTEE EITHER EXPRESSED NOR IMPLIED THAT THE DESIGN IS SAFE OR SUITABLE FOR FLIGHT.

THIS IS A HIGH PERFORMANCE AIRCRAFT AND IS NOT SUITABLE FOR THE BEGINNER PILOT. DO NOT ATTEMPT TO FLY THIS AIRCRAFT UNLESS YOU HAVE AT LEAST 300 HOURS TOTAL FLIGHT TIME AND AT LEAST 100 HOURS AS PILOT IN COMMAND IN AN AEROBATIC OR TAILDRAGGER TYPE AIRCRAFT.

DO NOT MODIFY OR ALTER ANY OF THE PARTS SHOWN IN THE PLANS. ALTERNATE MATERIALS MAY BE USED ONLY IF THEY ARE STRONGER, LIGHTER AND PERFORM THE SAME FUNCTION AS THE COMPONENTS SHOWN IN THE PLANS.

LIST OF DRAWINGS
ACROLITE 2M

No.	Name	Contents	Scale	Unit Size
0	Cover	Cover, Warning	16	352 x 544
1	3View	3 View & Cutaway	16	352 x 544
2	WingRib	Rib, Spars	1	34 x 22
3	Wing	Planform, Spars, Tip	8	176 x 272
4	WingFit	Fittings, Section, Strut, Aileron	2	64 x 44
5	FuseSide	Layout, Sections	8	176 x 272
6	FuseTop	Right side, Layout, Sections	8	176 x 272
7	FuseFit	Fittings, Tailwheel, Axles, Pedals	2	64 x 44
8	FuseDet	Motor, Cowl, Cabin, Door, Floor	8	176 x 272
9	Empennage	Stab, Elev, Fin, Rudder, Gear	8	176 x 272
10	Controls	Stick, Pushrods, Trim Throttle	4	88 x 136
11	TankPanel	Fuel Tank, Panel, Firewall, Wiring	4	88 x 136
12	CntrlArms	Control Arms, Pedals, Tail Gussets	1	34 x 22
13	FitPat	Patterns, Fuselage & Tail Fittings	1	34 x 22
14	RibPat	Patterns, Wing & Aileron Ribs	1	34 x 22
15	PanelPat	Patterns, Panel & Motor Mount	1	34 x 22

DISCRIPTION OF ACROLITE 2M LIGHT AIRCRAFT

The Acrolite 2M was designed to meet the Canadian TP10141 criteria for Advanced Ultralight Aircraft and the US Light Sport Aircraft requirements. The general requirements are for a light sport aircraft with a seating capacity of one or two, a gross weight of not greater than 1200 lbs., a stalling speed not to exceed 45 m.p.h. and a top speed of not over 115 m.p.h. Performance statistics indicate that these requirements are easily met with this design. The aircraft is stressed for this category with a 4 g. limit load and 6 g. ultimate load.

It is anticipated that the aircraft will be used primarily in the rugged areas of the country. With this in mind the aircraft was designed with strength, ability to take abuse, ease of repair, good short field performance and stable flight characteristics as the most important features. The high wing design affords good visibility and requires a pilot with only average flying ability. The design and basic construction is in accordance with standard aircraft practices and aircraft grade materials are used throughout.

Tandem seating was selected for its low drag characteristics, sleek appearance and that by positioning the pilot in either of the seats almost any engine can be used in this aircraft. Most of the popular ultralight twin cylinder two stroke engines can be used from the 582 65 hp Rotax up to the four cylinder 912 80 hp Rotax and the lighter four cylinder aircraft engines. With an engine of 65 h.p. or more the aircraft is easily capable of carrying two 180 lb. persons of over 6 ft. in height.

The fuselage is long for better stability and is constructed of welded 4130 chrome moly steel as per standard aircraft methods and covered with Stits 1.7 oz. fabric. A welded steel fuselage is generally considered to be the most durable, is easy to repair and provides the best protection against impact damage.

The tail assembly is constructed of 6061 aluminum tube riveted together with 2024-T3 aluminum gusset plates and fabric covered. This type construction allows a full cantilever empennage with low drag and light weight.

Control linkages to the ailerons and elevator are push-pull rods with bearings on each end for positive control and friction free operation. Rudder and steerable tailwheel control is via a common cable.

The wing is of stressed skin construction with a box section main spar, a channel section rear spar and strut braced. Preliminary stress analysis shows it is good for well over 6 g. ultimate load. It is built entirely of 2024-T3 aluminum, fully sheeted and flush riveted with 1/8 inch diameter stainless steel blind rivets. The ailerons are full span aluminum tube, fabric covered and static balanced.

The landing gear is one piece spring aluminum clamped and bolted directly to the bottom of the fuselage with four bolts. This type landing gear has low drag is easy to construct and handles hard landings and rough ground well. The wheels and tires are 600 X 5 aircraft type with cable operated drum brakes. Optionally hydraulic operated disk brakes can also be used. The tailwheel spring is formed from aluminum flat bar and the tailwheel swivel unit is welded from chrome moly sheet steel. The 5 inch diameter tail wheel is moulded hi-impact plastic. Floats and skis can also be used with a minimum of adaption.

The fuselage, emmpenage and ailerons are fabric covered in accordance with the Stits manual and standard aircraft covering methods. The fabric is clear coated with Stits polybrush dope then sprayed with polyspray silver for ultraviolet protection. The entire aircraft is finish coated with polyurethane enamel, for a durable high quality finish.

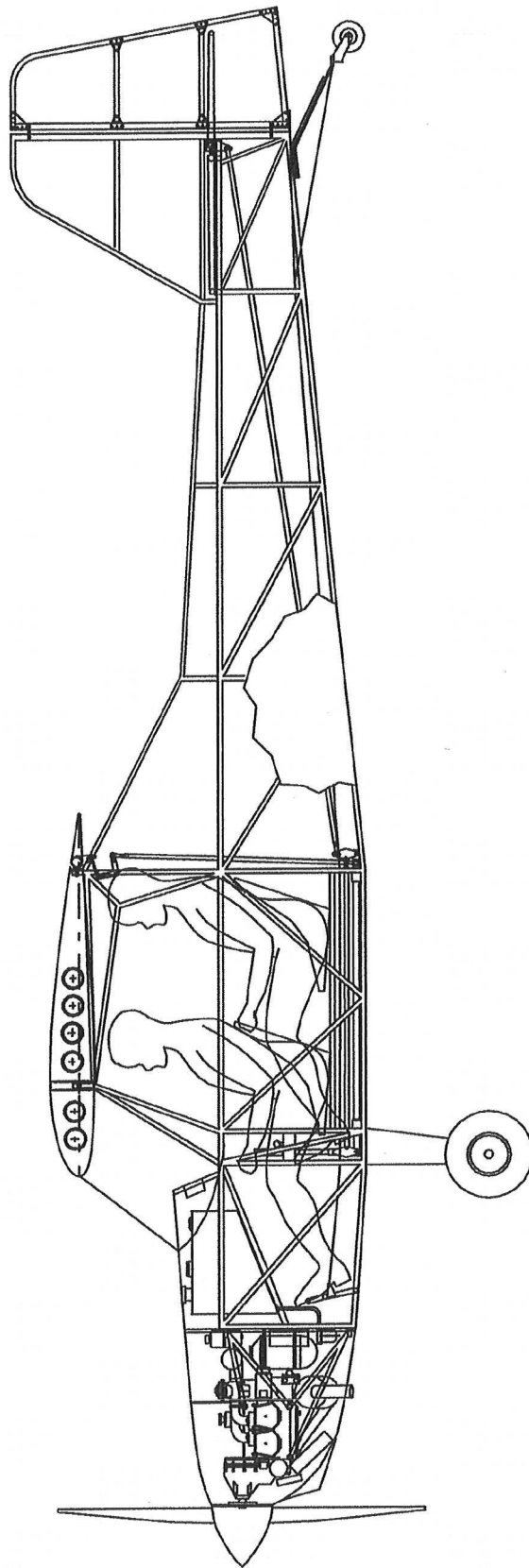
Aircraft Physical Specifications

Aircraft model	AC2M
Type	2 Place Light Sport high wing monoplane Steel tube fuselage. Full sheeted box spar wing. Aluminum tube tail.
Engine	Rotax 912U 80 hp.
Drive ratio	2.27 to 1
Propeller	68d x 50p
Propeller speed	2500 rpm
Airfoil	GA30U-412
Wing span	28.4 ft.
Wing chord	5 ft.
Wing area	141 sq. ft.
Gross weight	1200 lbs. max.
Gross weight	1100 lbs. 582 engine
Empty weight	600 lbs.
Fuel load	14 gal.
Range	450 miles
Load rating	+ 4 pos. - 2 neg. plus 1.5 factor
Aspect ratio	5.72 to 1
Span loading	42.25 lb./ft.
Wing loading	8.51 lb./sq. ft.
Overall length	20.3 ft.
Tail length	12.125 ft.
Horizontal tail area	22 sq. ft.
Vertical tail area	13 sq. ft.
Elevator area	9.75 sq. ft.
Rudder area	5.25 sq. ft.
Aileron area	17 sq. ft.
Wheel size	600x6 and 5 in.
Clean stall speed	43 mph.
Renolds number at stall	2077400
Stall (20 deg. flaps)	38 mph.

Aircraft Performance Specifications

Engine	Rotax 912U 80 bhp
Propeller	68d X 50p
Power loading	15.00 lb./bhp.
Maximum level speed	122 mph.
Best cruise speed	103 mph.
Reynolds number at cruise	4785226
Never exceed speed	150 mph.
Maneuvering speed	90 mph.
Best rate of sink	800 fpm.
Best glide speed	75 mph.
Best rate of climb	1100 fpm.
Best rate of climb speed	80 mph.

Engine	Rotax 582 65 bhp
Propeller	66d X 48p
Power loading	16.92 lb./bhp.
Maximum level speed	110 mph.
Best cruise speed	93 mph.
Renolds number at cruise	4320641
Never exceed speed	150 mph.
Maneuvering speed	90 mph.
Best rate of sink	800 fpm.
Best glide speed	75 mph.
Best rate of climb	750 fpm.
Best rate of climb speed	80 mph.



ACROLITE 2 PLACE MONOPLANE		DRAWING NO.	0
CUTAWAY		MODEL	211
		SERIAL NO.	
DRN. BY	RON WILSON	REV.	SCALE 1/24
APP.		REV. 08/09/98	DATE 23/10/90

