

## Chapter 2

### BILL OF MATERIALS

This chapter is a listing of the materials and components which are required to build a Long-EZ. The parts are catagorized by type for your convenience when ordering. The parts are also categorized by plans chapter to assist you in locating them during construction.

RAF maintains a close liaison with the distributors listed to assure proper materials specification and quality control. The distributors listed here are the only approved sources for materials. Do not make substitutions for the structural materials shown. The indicated materials were selected, developed, tested, and optimized for ease of construction and structural integrity. RAF cannot provide assistance in the application of substitute materials. Each authorized distributor has a catalog or descriptive price list of the materials and components that they provide. The catalogs often cover a range of items beyond the basic requirements shown in this B.O.M. and serve as a very handy reference. Those distributors who charge for their catalogs will refund the catalog charge with your first order.

AIRCRAFT SPRUCE & SPECIALTY	WICKS AIRCRAFT SUPPLY
P.O. Box 424	410 Pine Street
Fullerton, CA 92632	Highland, IL 62249
(714) 870 - 7551	(618) 654 - 7447

CUSTOM PREFAB PARTS	
(1)	SC Strut Cover (fiberglass)
(1)	NB Nosegear Box (fiberglass)
(2)	Seat belt/Harness Assembly
(2)	Main gear axles 1 1/4" dia.
(2)	SB Sump Blister (fiberglass)
(1)	CI Cowl Inlet (fiberglass)
(1 ea)	CCT and CCB Continental Cowl
	OR
(1 ea)	LCT and LCB Lycoming Cowl
(1 kit)	Upholstry, including 2 custom-fit suitcases, 2 custom seat cushions and 2 custom headrests

VFR INSTRUMENTS	
Airspeed	0-200 kts or 0-230 mph
Altitude	Sensitive
Compass	
Engine	Due to the many options, refer to Chapter 22 and Chapter 21 and order to suit

TOOLS	
2 pcs. 16"x48"	Birch aircraft plywood for templates
Box of 200	Disposable co-polymer examination gloves
(1 lb) jar	Ply No.9 Gell Skin Protector
(1 pint)	Epo Cleanse, epoxy hand cleaner
(2 each)	6-in long rubber squeegee
	8 oz. unwaxed paper epoxy mixing cups
(200 each)	Lily Bristle paint brushes
(100 each)	1-in wide scissors
(50 each)	2-in wide scissors
1 pair	Wiss model 20W
(1 each)	Wood straight edge 1" x 4" x 72"
	Decimal tape measure
(1 each)	Stanley #61-112
Box of 500	Wood mixing sticks

TOOLS

Disston Abrader #401C
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5/8" counter bore with 1/4" pilot and 10" long shank

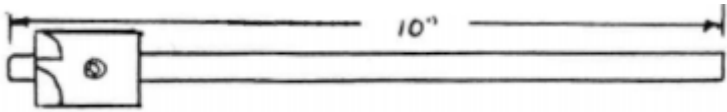


Figure 2-1:10 inch paddle bit

PEEL PLY

1" wide 50 yd.	4 rolls
2" wide 50 yd.	4 rolls

Safety Wire

0.041 safety wire	25 ft coil
0.035 safety wire	25 ft coil

Note: Aircraft Spruce catalog lists a large variety of composite-working tools.

KEN BROCK MANUFACTURING INC.

11852 Western Ave.
Stanton, CA 90680
(714) 898 - 4366

Catalog \$2 - shows photos of all parts

CUSTOM PREFAB PARTS		CHAPTER
(1)	STEP - Formed aluminum	8
(2)	LMGA Assembly	9
(2)	AX 5 Main gear axle 1 1/4" dia.	9
(1)	LB-12345 Weldment	9
(1)	LB-6 Spacer	9
(1)	LB-10 Arm	9
(1)	LB-11 Spring clip	9
(1)	LB-131415 Handle assy. with bearing	9
(2)	LB-16 Spacer	9
(2)	LB-18 Brackets	9
(1)	LB-21 Rod	9
(2)	CLT Lift tab	10
(7)	CS2 Formed hinge with bushing	11
(9)	CS3 Bracket	11
(2)	CS9 Plug	11
(2)	CS10 Lead weight	11
(2)	CS11 Lead weight	11
(2)	CS12 Belhorn with bushing	11
(1)	PTB Belcrank	11
(2)	CNL Aluminum bushing	12
(2)	CN2 STL bushing	12
(1)	Word-drive retract assy. including hand crank	13
(1)	NG6 Casting	13
(1)	NG15A Casting	13
(1)	NG16 Casting	13

CUSTOM PREFAB PARTS		CHAPTER
(1)	NG-3 Bracket	13
(1)	NG-4 Bracket	13
(1)	NG 10A/NG9 Assembly (pushrod)	13
(1)	NG6 Assy including NG7 and NG23 Bracket	13
(2)	NG8 Plates	13
(1)	NG401A Lower node gear assy with tire tube friction, bolts, etc.	13
(2)	LE2026 Welded rudder pedal (1 left, 1 right)	13
(4)	CS13 Steel pushing	13
(2)	SH1 Strap	14
(2)	CS15 Belcrank with bearing	15
(2)	CS71 Brackets	15
(2)	CS72 Pulley brackets (2 pieces each)	15
(2)	CS75 Steel Bushings	15
(2)	BA Brake arms	15
(2)	CS171 Brackets	15
(2)	Stick grips - rubber	16
(10)	CS1 Inserts	16
(2)	CS1A Inserts	16
(4)	CS17 Spacer	16
(2)	CS131 Spacer	16
(2)	CS128 Belcrank with bearing	16
(4)	CS127 Bracket	16
(2)	CS201 Steel bushings	16
(2)	CS132L Welded belhorn	16
(1)	CS122/124 Welded belhorn	16
(2)	CS202 Aluminum bushings	16
(3)	CS181 Inserts	16
(2)	CS112 Steel bushings	16
(1)	PTH Handle	17
(1)	RT1 Handle	17
(2)	RT2 Brackets (1 left, 1 right)	17
(1)	C1-L Handle	18
(2)	C2-L Arm	18
(2)	C3 Lug	18
(1)	C4 Block	18
(2)	C5 Rod	18
(2)	C6 Tube	18
(1)	SC1 Catch	18
(1)	C21 Machined handle	18
(2)	CS13 Spacer	18
(12)	LWA9 Aluminum bushings	19
(2)	A2 Brackets	19
(4)	A5 Brackets	19
(2)	CS301 Steel belhorn (1 left, 1 right	20

CUSTOM PREFAB PARTS		CHAPTER
(2)	FT-18 Fuel cap assembly	21

Note: Brock also has available the individual parts for all assemblies listed.

RUTAN AIRCRAFT FACTORY INC.

Bldg 13, Airport
Mojave, CA 93501
(305) 824 - 2645

Part	Description
MG-1L	Main gear strut 22-lb S-glass
NG-1L	Node gear strut 2.8 lb S-glass
	Plexiglass canopy bubble

Note: This list is complete **only** if you purchase all available prefab parts. If you decide to build a prefab part, refer to its drawing and order material and hardware as required. **Do** obtain catalogs from all distributors. They contain photos of available parts and a considerable amount of information on hardware, components and use of them.

BASIC AIRFRAME KIT

Epoxy	
5 minute epoxy	1 qt. Kit
Epoxy	15 Gallons (10 kits of Safe-T-Epoxy)*

- if you are using the RAE system, substitute 8 gal. RAEF + 7 gal RAES for the 15 gal Safe-T-Epoxy

Rigid Foam			
Urethane foam 2 lb/cu ft (green or tan)	1" x 24" x 48"	3	
Urethane foam 2 lb/cu ft (green or tan)	2" x 24" x 48"	4	
Styrofoam Blocks 2 lb/cu ft (light blue or white)	7" x 14" x 41"	5	
Styrofoam Blocks 2 lb/cu ft (light blue or white)	7" x 14" x 64"	10	
Poly-vinyl PV-core R250 (Dark red, 16 lbs/cu ft)	0.2" x 37" x 26"	2	
Poly-vinyl PV-core R100 (light red, 6 lbs/cu ft)	1"x6"x10"	1	
Poly-vinyl PV-core R100 (light red, 6 lbs/cu ft)	0.25" x 35" x 44"	2	
Poly-vinyl PV-core R45 (Dark blue, 3 lbs/cu ft)	0.35" x 32" x 48"	8	
Poly-vinyl PV-core R45 (Dark blue, 3 lbs/cu ft)	0.8" x 24" x 48"	5	
Poly-vinyl PV-core R45 (Dark blue, 3 lbs/cu ft)	1.6" x 24" x 48"	2	

Fiberglass	
90	Yds. BID 0.013 x 38" (7725)
150	Yds. UND 0.009 x 38"(7715)
120	Yds. UND 0.035 x 3" tape roll

Filler Material	
2 lbs	Flocked Cotton
4 Gallons	3M B23, 500 Glass Balloons (micro)

Wood	
3	Pcs. 0.7" x 1 " x 104" Spruce
2	Pcs. .7" x .4" x 60" Spruce
2	Pcs. 0.7" x 0.7 " x 104" Triangular Spruce
1	Pc. .7" x X.7" x 48" Triangular Spruce
1	Pcs. 1" x 1" x 12" Spruce
1	Pc. 24" x 36" 5-ply Birch ¼" Plywood

Aluminum Extrusions				
90 Degree angle				
6061 T6	2" x 2" x 0.25"	24"	1	
2024 T3	1" x 1" x 0.125" or 7/8" x 7/8" X 0.125"	60"	1	
2024 T3	1.5" x 1.5" x 0.125"	6"	1	
Rectangular Bar				
2024 T3	2" x 0.25"	60"	1	
2024 T3	2" x 0.25"	30"	1	

Sheet Metal				
301 or 302	Stainless Steel	24" x 30"	0.16"	1
2024T3	Aluminum	3" x 10"	0.16"	1
6061-0	Soft Aluminum	20" x 24"	0.20"	1
2024T3	Aluminum	12" x 8"	0.25"	1
2024T3	Aluminum	1.5" x 8"	0.32"	1
6061T6	Aluminum	8" x 10"	0.32"	1
2024T3	Aluminum	6" x 8"	0.63"	1

Metal Tubing and Rod				
6061T6	Aluminum	62"	1.25" O.D. x 0.035W	1
6061T6	Aluminum	80"	1.25" O.D. x 0.035W	1
6061T6	Aluminum	10 feet	1.0" O.D. x 0.035" W	1
6061T6	Aluminum	6 feet	0.75" O.D. x 0.58" W	3
2024T3	Aluminum	6 feet	0.5" O.D. x 0.035"w	2
1100-0 or				
3003-0	Aluminum	26 feet	0.375" O.D. x 0.035" W	1
1100-0 or				
3003-0	Aluminum	14 feet	0.25" O.D. x 0.035"W	1
4130 N	Steel	36"	0.625"O.D. x 0.049"W	1
Cold Rolled	Steel	36"	0.375"	4
Piano wire	Steel (hard)	12"	0.32"	1

Airframe Bolts	
3/16"	
AN3-4A	2
AN3-5A	14
AN3-6A	18
AN3-7A	25
AN3-10A	5
AN3-12A	1
AN3-13A	6
AN3-15A	2
AN3-16A	2
AN3-20A	2
AN3-6	1
AN3-7	1
AN3-11	16
1/4"	

1/4"		
AN4-5A	9	
AN4-7A	6	
AN4-10A	7	
AN4-11A	2	
AN4-13A	2	
AN4-15A	9	
AN4-16A	26	
AN4-17A	3	
AN4-22A	8	
AN4-24A	1	
AN4-26A	1	
AN4-41A	2	
AN4-20	2	
5/16"		
AN5-41A	1	
3/8"		
AN6-80A	2	
Machine Screws		
Counter Sunk		
AN-509-10R7	9	
AN-509-10R8	2	
AN-509-10R10	14	
AN-509-10R14	12	
AN-509-10R28	4	
AN-509-10R30	8	
AN-509-416R14	2	
AN-509-416R18	2	
AN-509-8-R9	10	
Button Head Screws		
AN526-832-14	2	
AN525-10R8	26	
AN525-10R10	19	
AN525-10R12	8	
AN525-10R16	1	
AN525-10R24	1	
AN525-416R16	6	
Nuts		
MS21042-3	169	
MS21042-4	70	
AN310-3	2	
AN310-4	2	
AN316-4	2	
AN316-6	2	
AN364-832	2	

Nuts	
AN365-524	1
AN363-624	2
AN363-820	6
Washers	
AN960-10L	200
AN960-10	150
AN960-416L	150
AN960-416	8
AN960-616	4
AN960-816L	10
AN960-816	12
AN960-1016	2
AN970-3	28
AN970-4	5
AN970-5	2

Phenolic ½” O.D. x 3/16” I.D. x 1/16” T(hick) (Need 4)

Nut Plates	
K1000-3	22
K1000-4	9
K1000-08	10

Cotter Pins	
AN380-2-2	4
AN380-2-3	4

Rivets		
1/8” Pop type	AVEX 1601-410	100
	AVEX 1604-412	100
	Or	
	Cherry MSP 43	100
	Cherry MSC 43	100
Solid Aluminum	AN426-AD3-3	50
	AN426-AD3-4	50
	AN470-AD3-7	10
	AN470-AD4-5	10
	AN470-AD4-10	40

Cable and Cable Hardware	
1/16” 7x7 Stainless Cable	50 ft
3/32” 7x17 Stainless Cable	50 ft
AN100-3 Thimble	30
18-1-C Sleeve	20
18-2-G Sleeve	15

Plumbing and Conduits		
Brass Elbow	#269 P	4
Polyethylene Tee	#0715-153	1

Plumbing and Conduits

Polyethylene Adapter	#0700-153	2
Tygon Tube 3/8" OD x 1/4" ID	4 ft	1
Nylaflow Tube 3/16" OD x 0.025" Wall	60 ft	1

Wheels Brakes and Tires

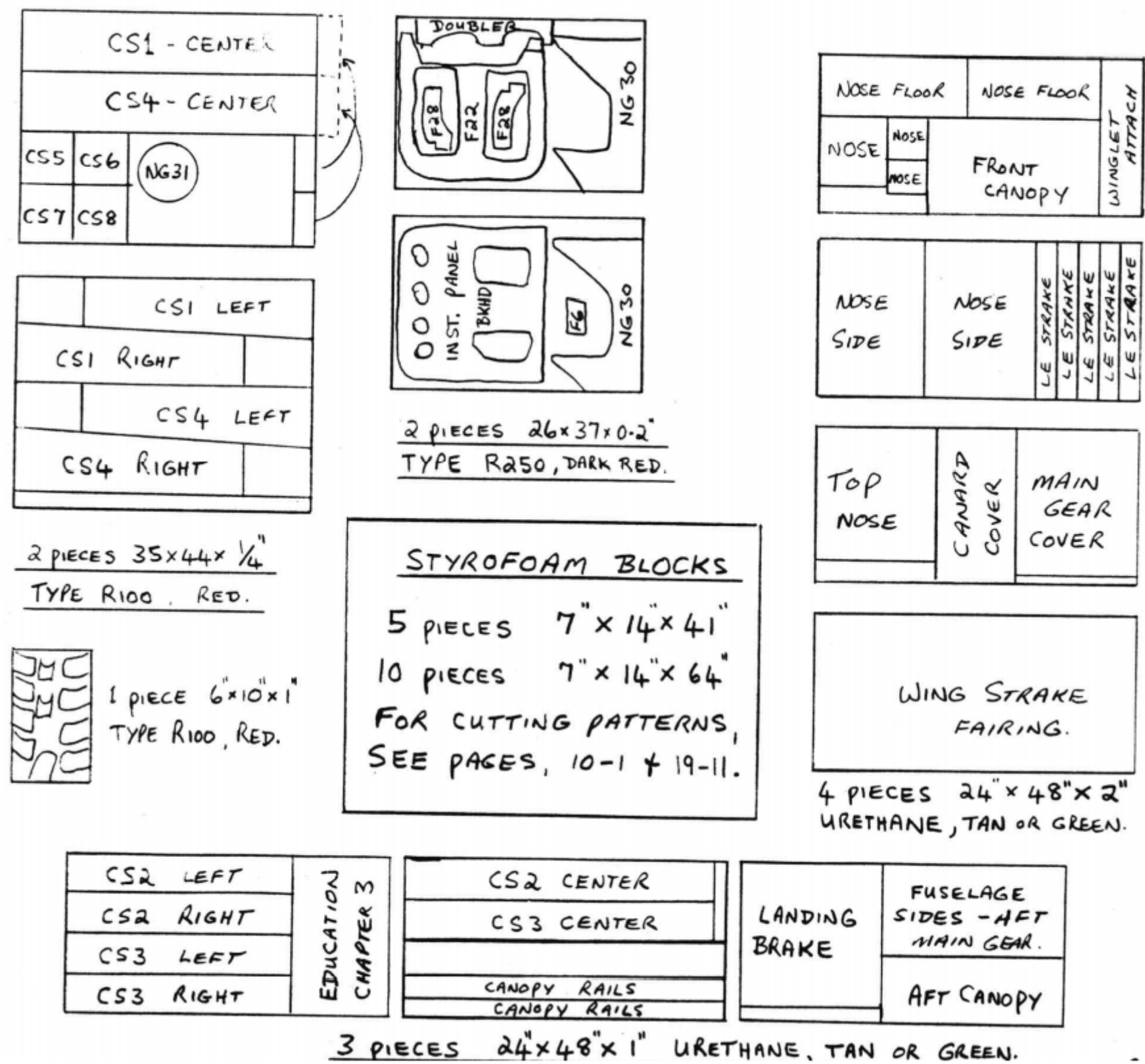
Cleveland Wheels and Brakes 500 x 5	1 Set
Tires Goodyear 3.40 x 5 6 ply Industrial Rib	2
Tubes for 3.4 x 5 Tires	2
Gerdes 049 Brake Master Cylinders	2

MISCELLANEOUS

Clevis Pin	AN393-9	4
Clevis Pin	AN393-19	3
Safety Pin	AN463-1	7
Rod End	HEIM HM-3	10
Rod End	HEIM HM-4	2
Rod End	HEIM F34-14 Or FAFNIR REB3N	2
Rod End	RAFNIR RE4M6 Or HEIM HM-6 with Insert	2
Pulley	AN210-2A	2
Universal Joint	MS20271-B10	3
Bearing	Boston FB-1013-8 Bronze	1
Latch	Hartwell H-5000-2 Flush	1
Arrow Stock, Fiberglass	5/16 x 0.028"wall 24 inches long	3
Insulation	Fiber Frax 970-F 0.04"thick 24"x30"	1
Hinge	MS20257-P2 3"	1
Hinge	MS20001-P6 84"	1
Spring	.35 OD x 0.06 wire Compression 1/2 inch long	2
Spring	.35 OD x 0.06 wire Tension 30" (several pieces OK)	1
Spring	.35 OD x 0.06 wire Tension, 10" long	2
Phenolic (bearing)	1/4" Sheet 4" x 12"	1







3: R100, R240, Styrofoam parts layout

Figure 2-

Materials list by Chapter

Chapter 3: Education

Education			
Glass:	1	1.1 yd	BID
	1	0.1 yd	UND
Epoxy:		0.1	gallon
Foam:	1	1 board foot	urethane board (tan) 1" thick

Chapter 4: Fuselage Bulkheads

Fuselage Bulkheads			
Hardware:	6	AN509-10R10	screws
	1	3 yd	UND
Glass:	1	5 yd	BID
		0.5	gallons
Epoxy:	1	8 sq ft	0.8" thick type R45
	1	9 sq ft	0.2" thick type R250
Foam:			
Wood:	1	24" x 30" x 0.25"	5-ply birch plywood
Metals:	1	24" x 30" x 0.016"	stainless steel (301)

Fuselage Bulkheads

Misc:	1	24" x 30" x .040" fiberfrax 970-F
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Chapter 5: Fuselage Sides

Fuselage Sides

Prefab parts:	2	LMGA assembly
	4	LMGA-B bushing (any steel)
Hardware:	2	AN6-80A bolts
	16	AN4-16A bolts
	4	AN960-616 washers
	32	AN960-416L washers
	16	MS21042-4 nuts
	2	AN363-624 nuts
Glass:	1	3 yds BID
	1	9 yds UND
Epoxy:	0.8	
Foam:	6	32 sq. ft. 0.8" thick type R45
	1	3 sq. ft. 1" thick urethane, tan
Wood:	3	0.7" x 1" x 104" spruce longerons
	2	0.4" x 0.7" x 60" spruce stiffener
	2	0.7" x 0.7" triangle spruce 105" long
	1	0.7" x 0.7" triangle spruce 48" long
Metals:	1	24", 2" x 2" x 0.25" 6061-T6 extruded 90 angle

Chapter 6: Fuselage Assembly

Fuselage Assembly

Prefab parts:	1	NB nose wheel box cover
Glass:	1	6 yd. BID
Epoxy:	0.4 gallon	
Foam:	2	16 sq. ft. 1.6" thick type R45 dark blue

Chapter 7: Fuselage Exterior

Fuselage Exterior

Glass:	14 yd UND
Epoxy:	0.85 gal EZ poxy

Chapter 8: Roll over and seat belts

Roll over and seat belts

Prefab parts:	1	Step
	2	seat belt / shoulder harness assembly
Hardware:	6	AN525-416R16 screws
	2	AN509-416R18 Screws
	2	AN509-416R14 Screws
	4	AN4-5A Bolts
	2	AN4-10A Bolts
	16	AN960-416L Washers

## Roll over and seat belts

	2	AN970-4 Washers
	6	MS21042-4 nuts
Glass:	1	2 yd BID
Epoxy:		0.1 Gallon
Foam:	1	4 sq. ft. .35" thick type R45 dark blue
Metals:	4	8" of 1" x 1" x 0.125" 2024-T3 aluminum 90 angle
Wood:	4	scraps of 0.25" thick plywood left over from firewall

## Chapter 9: Main gear and landing brake

### Landing gear and brake

Prefab parts:	1	MG1-L "S" Glass main gear strut
	2	Cleveland 500 x 5 main wheels and brakes
	2	Goodyear tires, 3.50 x 5, 6 ply industrial rib
	2	Axel for Cleveland 500 x 5 wheels
	1	LB-12345 Weldment (landing brake)
	1	LB-6 Spacer
	1	LB-10 Aluminum Arm
	1	LB-11 Spring Clip
	1	LB-131415 Handle Assembly
	2	LB-16 Spacers
	2	LB-18 Bracket
	1	LB-21 Threaded Rod
Hardware:	4	AN3-7A Bolts
	5	AN4-5A bolts
	8	AN4-22A Bolts
	1	AN4-24A Bolts
	1	AN4-26A Bolts
	2	AN525-10R8 screws
	6	AN525-10R10 screws
	25	AN960-416L washers
	24	AN960-10L washers
	12	MS21042-3 nuts
	10	MS21042-4 nuts
	1	K1000-4 Nutplate
	2	90 Nyloseal #269P Brass Fittings
	2	AN100-3 Thimbles
	3	18-1-3 Nicropress Sleeves
	2	AN316-4 Nuts
Glass:	5 yds	BID
	10 yds	UND
Epoxy:	0.8	gallon
Foam:	1	1" thick urethane (24"x24")
Metal:	1	1 ft 2024-T3 aluminum 0.25" thick (16 square inches)
	1	1 ft 1" x 1" x 0.125" 2024-T3 aluminum 90 angle

Landing gear and brake

Wood:	3	scraps of 0.25" plywood (left over from firewall)
Misc:		
	12	12 ft Nylaflo <sup>TM</sup> Tube 3/16" OD x 0.025" Wall
	1	Hinge MS20001-P6 8"
	1	4ft of 1/16" 7x7 cable
	2	Rod End (HEIM F34-14 Or FAFNIR REB3N)
	1	Phenolic (bearing) 1/4" x 2" x 4"

Chapter 10: Canard Construction

Canard Construction

Prefab:	2	CLT Canard Lift Tabs
Hardware:	6	AN4-7A Bolts
	6	AN960-416L Washers
	6	K1000-4 Nutplates
	12	AN426AD3-4 Rivets
Glass:	1	4 Yds BID
	1	17 yds UND
Epoxy:	1	1 gallon
Foam:	2	part of 7 x 14 x 41 Styrofoam
	2	part of 7 x 14 x 64 Styrofoam
	1	1 " x 6" x 10" type R100 PV
Metal:	1	1/8" x 1.5" x 6" 2024-T3 Alum.

Chapter 11: Elevators

Elevators

Prefab:	7	CS-2 Formed hinge with busing
	9	CS-3 Bracket
	2	CS-9 Plugs
	2	CS- 10 lead weights
	2	CS- 11 lead weights
	2	CS-12 Bellcrank with bushings
	1	PTB Bellcrank
Hardware:	7	AN525-10R10 Screws
	2	AN3-6A Bolts
	2	AN3-15A Bolts
	4	AN3-10A Bolts
	9	AN509-10R7
	4	AN509-10R14
	22	AN960-10L Washers
	28	MS21042-3 Nuts
	2	AN470AD 4-5 Rivets
	8	AN3-13A Bolts
	8	MS21042-3 Nuts
	24	BSPQ-43 Cherry pop rivets

Elevators

	6	BSPQ-44 Cherry pop rivets
	2	10-32 Allen head set screws
Glass:	1	3 yds UND
Epoxy:		0.1 Gallon
Foam:	2	Part of two 7 x 14 x 64 Styrofoam blocks (pg 10-1)
Metal:	1	62" of 1.5" O.D. x 0.35 wall 6061-T6 Alum. Tubing
	1	80" of 1.5" O.D. x 0.35 wall 6061-T6 Alum. Tubing

Chapter 12: Canard Installation

Canard Installation

Prefab Parts	2	CNL Aluminum Bushings
	2	CN2 Steel Bushings
Hardware	2	AN3-20A Bolts
	2	AN3-13A Bolts
	2	AN960-416L Washers
	2	AN970-4 Washers
	2	K1000-4 Nut plates
	4	AN426AD3-3 Rivets
Glass	scraps	BID
Epoxy		Minimal amount
Foam		none

Chapter 13: Nose and Nose Gear

Nose and Nose Gear

Prefab Parts	1	NG1-L 'S' Glass Strut
	1	SC Fiberglass strut cover
	1	Worm Drive Retraction assy. (includes belcrank components)
	1	NG3 Bracket
	1	NG4 Bracket
	1	NG10A / NGO Assembly
	1	NG6 Assembly
	2	NG8 Plates
	1	NG401A Castering Nose wheel Assy.
	2	LE 2026 Rudder Pedals
	4	CS13 Bushings
	1	SC Fiberglass strut cover
Hardware	3	AN525-10R10 Screws
	2	AN526-832-14 Screws
	8	AN509-10R14 Screws
	4	AN509-10R28 Screws
	3	AN4-10RA Bolts
	1	AN4-15A Bolts
	2	AN4-41A Bolts
	1	AN5-41A Bolts

Nose and Nose Gear		
	2	AN3-6A Bolts
	2	AN3-7A Bolts
	2	K1000-3 Nut Plates
	2	AN364-832 Nuts
	19	MS21042-3 Nuts
	6	MS21042-4 Nuts
	1	AN365-524 Nuts
	2	AN316-6 Nuts
	14	AN960-10 Washers
	6	AN970-3 Washers
	7	AN970-4 Washers
	2	AN970-5 Washers
	4	AN426AD3-3 Rivet
	10	AN509 8R8 Screws
	10	K1000-08 Nut plates
	20	AN426AD3-4 Rivet
Glass	7 yds BID	
Epoxy	½ gallon	
Foam	1	10 sq. ft. 2” thick urethane foam
	1	4.5 sq. ft. 0.2” thick type R250 dark red
Metal	1	2.5 x 3 x 1/8” 2024T3 aluminum sheet
	1	4 ft ¼” O.D. x 0.035 wall 5052-0 Aluminum
	1	8” x 10” of 0.32 6061T6 alum. Tube
Misc	1	4 ft 3/8” O.D. x ¼” I.D. Tygon tubing
	1	0715-153 tee
	2	0700-153 adapters
	2	HM-6 rodends (RE4M6)

Chapter 14: Center Section Spar

Center Section Spar		
Prefab Parts	2	SH1 Aluminum Straps
Hardware	4	AN4-15A Bolts
	10	AN4-16A Bolts
	32	AN960-416L Washers
	16	MS21042-4 Nuts
	2	AN4-17A Bolts
Glass	1	1 yd UND
	1	18 yd BID
Epoxy	2 gallons	
Foam	9	10 sq ft ½” thick, type R100 red foam
	6	10 sq ft 1” thick, urethane foam
Metal	1	3 ft 1/8” x 1” x 1” 2024-T3 Alum. angle
	1	30” 1/8” x 2” 2024-T3 alum bar
	1	12” ¼” x 2” 2024-T3 alum. Bar

Center Section Spar

Wood	1	1 ft 1"x 1" Spruce
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Chapter 15: Firewall and Accessories

Firewall and Accessories		
Prefab Parts	2	CS15 Belcrank with bearing
	4	CS71 Brackets
	2	CS72 Brackets
	2	CS75 Bushings
	2	BA Brake arms
Hardware	10	AN3-6A Bolts
	4	AN3-7A Bolts
	2	AN509-10R8 Screws
	2	AN4-10A Bolts
	2	AN4-11A Bolts
	34	AN960-10L Washers
	18	AN960-416L Washers
	22	MS21042-3 Nuts
	4	MS21042-4 Nuts
	4	AN380-2-3 Cotter pins
Glass	None	
Epoxy	None	
Foam	None	
Metal	1	6" 1/8" x 1" x 1.5" 2024T3 extruded angle
Misc	2	AN210-2A pulleys
	2	Gerdes Model 049 master cylinders
	2	Nyloseal #269-P elbows

Chapter 16: Control System

Control System		
Prefab Parts	2	Stick grips
	10	CS1 Inserts
	4	CS17 spacers
	2	CS1A inserts
	2	CS131 Spacers
	2	CS128 Belcrank with bearing
	4	CS127 Brackets
	2	CS201 Bushings
	2	CS132L Belhorn
	1	CS122-124 Belhorn
	2	CS202 Bushings
	3	CS181 Inserts
	2	CS112 Bushings
	Hardware	2 AN3-13A Bolts
		1 AN4-15A Bolts



Control System		
	1	AN4-17A Bolts
	12	AN3-7A Bolts
	2	AN4-20 Bolts
	13	AN3-11A Bolts
	2	AN3-6A Bolts
	6	AN3-5A Bolts
	90	AN960-10 Washers
	8	AN960-416 Washers
	8	AN3-5A Bolts
	2	AN3-16A Bolts
	15	NS21042-3 Nuts
	2	MS21042-4 Nuts
	2	AN310-4 Nuts
	20	AN100-3 Thimbles
	30	AN470AD4-10 Rivets
	8	18-1-C Nicropress Sleeves
	12	18-2-5 Nicropress Sleves
	15	AN970-3 Washers
	4	AN393-9 Clevis pin
	3	AN393-19 Clevis pin
	7	AN416-1 Safety pin
	2	AN960-1016 Washers
	2	AN380-2-2 Cotter Pin
Glass	1	2 yds BID
Epoxy		0.1 Gallons
Foam	1	35" thick type R35 dark blue
Metal	1	15 sq inch, 0.063" 2024-T3 Alum
	2	6 ft ½" x 0.35 wall
2024-T3 alum. Tube		
	3	6 ft. ¾" x 0.058 wall 2024-T3 alum.
Tube		
Phenolic	1	¼" thick sheet 2" x 12"
Wood:	1	4" x 6" x ¼" plywood (firewall)
Misc:	3	MS20271-BIO Universals
	10	HM-3 HEIM rodends
	2	HM-4 HEIM rodends
	1	32 ft 1/16" dia. 7 x 7 steel cable
	1	22ft of 3/32" dia. 7 x 19 steel cable
	1	14 ft 3/16" x 0.025 Nylaflow tubing
	1	Boston FB 1013-8 Bronze flanged bearing

Chapter 17: Pitch and roll trim

Pitch and roll trim		
Prefab Parts	1	PTH Aluminum Handle

Pitch and roll trim		
	1	PT1 Handle
	2	RT2 Steel bracket
Hardware	1	AN3-6 Bolts
	1	AN3-7 Bolts
	3	AN3-11A Bolts
	1	AN3-13A Bolts
	14	AN960-10 Washers
	1	AN970-3 Washers
	4	MS21042-3 Nuts
	2	AN310-3 Nuts
	2	AN380-2-2 Cotter Pins
	6	AN100-3 Thimbles
	4	18-1-C Nicroprrs Sleeves
	1	0.5" O.D. X 3/16" I.D. X 1/16" Washer
		BID Scraps
		Minimal
		None
Misc:		1/2" plywood scraps (from firewall)
	3	.35 x .05 steel springs 6" long
	1	4 ft 1/16" x 7 x 7 cable
	2	.35 x .06 compression springs, .5 long

Chapter 18: Canopy.

Canopy		
PreFab Parts:	1	Long Ez Plexiglass canopy bubble
	1	C1-L Handle
	2	C2-L Arms
	2	C3 Lugs
	1	C4 Block
	2	C5 Rods
	2	c6 Tubes
	1	SC1 Catch
	1	C21 Handle
	2	CS13 Spacer
Hardware:	8	AN509-10R30 Screws
	8	AN509-10R10 Screws
	3	AN525-10R10 Screws
	8	AN525-10R12 Screws
	1	AN525-10R24 Screws
	1	AN525-10R16 Screws
	1	AN3-10A Bolts
	3	AN3-13A Bolts
	3	AN3-7A Bolts
	2	AN3-4A Bolts

Canopy		
	2	AN3-6A Bolts
	1	AN3-12A Bolts
	4	AN470AD3-7 Rivets
	53	AN960-10L Washers
	6	AN970-3 Washers
	35	MS21042-3 Nuts
	2	18-1-C Sleeves
	2	AN100-3 Thimbles
Glass	1	7 yds BID
	1	2 yds UND
Epoxy		0.8 Gallons
Foam	scraps	1" x 2" Urethane (see page 2-3)
Metal	1	1.5" x 5" x 0.32" 2024-T3 Aluminum
	1	8" 1/8" x 1" x 1" 2024-T3 Aluminum angle
	1	5" x 5" x .025" 2024-T3 Aluminum
Misc	2	4" long, .35 x .05 steel springs
	1	10" 3/32" steel piano wire
	1	1 ft 1/16 x 7 x 7 cable
	3	5/16 O.D. x 0.028 wall fiberglass arrow stock
	1	16" MS20001-P6 Hinge
	1	2.5" MS20257-P2 Hinge
	1	Hartwell H-5000-2 flush latch

Chapter 19: Wings, Ailerons, Wing attachment

Wings, Ailerons, attachment		
PreFab Parts	12	LWA9 Bushings
	2	A2 Brackets
	4	A5 Brackets
Hardware	12	AN960-816 Washers
	10	AN960-816L Washers
	6	AN363-820 Nuts
	14	AN525-10R8 Screws
	14	AN960-10L Washers
	14	K1000-3 Nutplate
	28	AN426AD3-3 Rivets
Glass	1	70 yds 3" wide x 0.35 UND Tape
	1	56 yds UND
	1	9 yds BID
Foam	10	7x14x64 styrofoam blocks
	4	7x14x41 styrofoam blocks
Epoxy		4 Gallons
Metal	2	3"x10" of 0.016" 2024-T3 Aluminum
	2	24" of 1/8" x 2" 2024-T3 Aluminum bar
	2	12" of ¼" x 2" 2024-T3 Aluminum Bar

Wings, Ailerons, attachment

	2	18" of ¾" x 0.058 thick 6061-T6 Aluminum tube2
Misc	2	3 ft. MS20001-P6 hinge
	4	3 ft x 3/8" diameter cld rolled steel
	1	25 ft of 3/16 O.D. x .025" wall Nylaflow tubing

Chapter 20: Winglets and rudders

Winglets and rudders

Prefab Parts	2	CS301 Steel Belhorn
Hardware	10	AN525-10R8 Screw
	6	AN950= 10L Washers
	4	MS21042-3 Nuts
	6	K1000-3 Nut plates
	12	AN426AD3-3 Rivets
Glass	10	UND
	6	BIT
Epoxy	1	
Foam	4	scrap from wing styrofoam blocks
	2	scrap from urethane foam
Metal	2	10" of 1" x .035" wall 6061-T6 Aluminum tube
	2	16" MS20001-P6 hinge
	2	4" long .35" x .05" steel spring
	2	10" 3/32" steel piano wire

Chapter 21: Strake, Fuel, Baggage

Strake, Fuel, Baggage

Prefab Parts	2	SB Glass sump blisters
	2	FT 18 fuel cap assembly
Hardware		None
Glass	1	16 yds UND
	1	11 yds BID
Epoxy		1.9 Gallons
Foam	8	6.3 sheets 32" x 48" x .35" type R45 Dark blue
Metal	2	2 sq. in. 1/8" 2024-T3 Aluminum
	1	26 ft 3/8" O.D. x .035" wall 1100-0 Aluminum tube
	1	10 ft ½" O.D. x .035 wall 1100-0 Aluminum tube

Note! Fuel system plumbing and hardware, including engine components, hose lengths, pressure gauge, etc. can vary depending on engine installation. See plans and order components to suit.

Chapter 22: Electrical

Note! Due to the various option, this bill of materials does not include electrical items. Order to suit.

Chapter 23: Engine Installation

Engine Installation

Prefab Parts	1	CI – Cowl inlet
Hardware	1	CCT and CCB – Continental Cowl

Engine Installation

Or		
LCT and LCB – Lycoming Cowl		
Glass	1	3 yds BID
Epoxy		0.2 Gallons
Metal	1	20” x 24” x 0.020 soft aluminum 6061-0

Chapter 24: Covers, fairings, consoles

Covers, fairings, consoles

Prefab Parts		None
Hardware		none
Glass	1	2 yds BID
Epoxy		0.3 Gallons
Foam	1	2” x 24” x 30” Urethane
	1	.35 thick type R45 dark blue foam
Metal	1	5” x 7” x .025 2024-T3 Aluminum

Chapter 25: Finishing

Finishing

Sandpapers	50	Coarse – 36, 40 or 60 grit sheets
	100	Medium – 100 grit, wet / dry sheets
	100	Fine – 220 grit, wet / dry sheets
	100	Fine – 320 grit, wet/ dry sheets
Filler Materials:		
		Epoxy and Micro (as required)
	6	Feather Fill (with catalyst) quarts
Primer	3	Dupont 100S, 70s or 3011s lacquer primer surfacer. Gallons
	1	Spot putty (tube)
		Stitts Micro Putty*
	1	Tube of Silicon Bath tub caulk
Paint:		Acrylic lacquer or Acrylic enamel (Dupont)

Note: Due to the wide variance of preferences finishing materials are not supplied with the basic kit.

Chapter 26: Upholstery

Upholstery

2	Custom-fit suitcases
2	Custom-fit seat cushions
2	Custom head rests