



KIT NO. MRK III

NOVA

FLIGHT SYSTEMS, INC.
~~1313 CANNON ST.~~
~~PO BOX 145~~
~~LOUISVILLE, COLO, 80027~~

RECOMMENDED FSI ENGINES

B3-4	D6-6
C4-4	E5-6
D4-6	F7-6

**THE HOME
OF THE
PROUD BIRDS
THAT LOVE TO FLY**

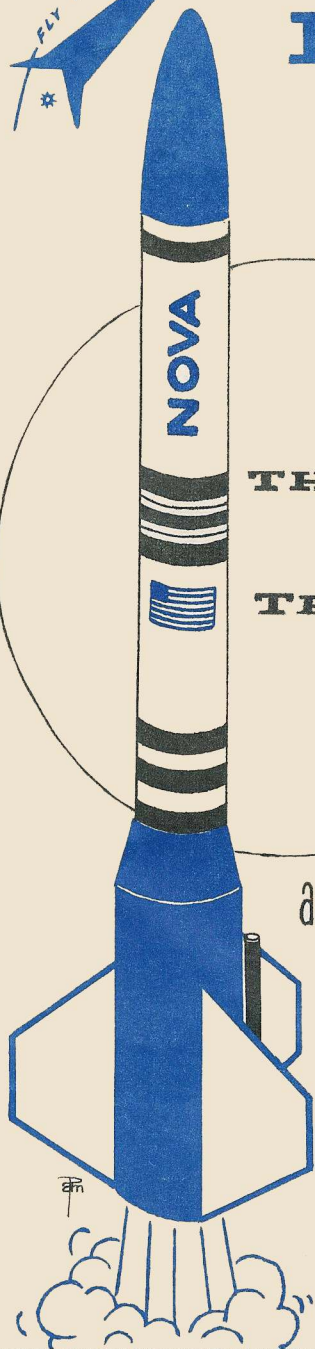


NATIONAL ASSOCIATION
OF
ROCKETRY APPROVED

assembled NOVA rocket **18"** long

- * SAFE & GENTLE PARACHUTE RECOVERY
- * CAN BE FLOWN OVER AND OVER
- * ALL PARTS FINISHED AND SANDED
- * NO FRAGILE BALSA OR PLASTIC PARTS
- * EASILY AND QUICKLY ASSEMBLED
- * FULL CONSTRUCTION DETAILS

THE NOVA IS A SOPHISTICATED MODEL ROCKET. ALTITUDES TO 3000' WITH LARGER F.S.I. MODEL ROCKET ENGINES. SEE YOUR DEALER FOR DETAILS OF F.S.I. SUPERIOR MODEL ROCKET ENGINES.



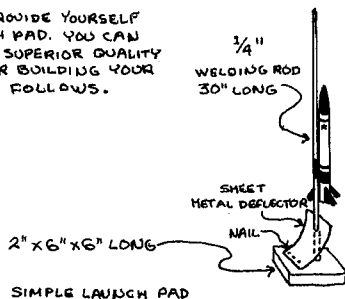
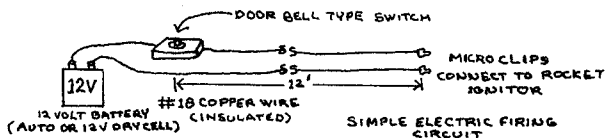
ASSEMBLY DETAILS & PROCEDURES

FOLLOW ORDER GIVEN:

- ① **THRUST RING** — PLACE A HEAVY BAND OF ELMER'S GLUE ABOUT 2" INSIDE OF ENGINE COMPARTMENT. INSERT THRUST RING BY USING A F.S.I. A, B, C, OR D ROCKET ENGINE. PUSH THRUST RING FORWARD UNTIL A, B, C, OR D ENGINE PROJECTS 1/4" OUTSIDE ENGINE COMPARTMENT, FOR F.S.I. "E" ENGINE PUSH FORWARD UNTIL 3/8" OF ENGINE PROJECTS OUTSIDE ENGINE COMPARTMENT. THE THRUST RING FORCES THE GLUE FORWARD AND PROVIDES FOR A STRONG BAND OF THRUST RING TO ENGINE COMPARTMENT. NOW EXTRACT ENGINE AND LET GLUE DRY. NEXT TAKE THE 2 SPACER RINGS AND GLUE TO ENGINE COMPARTMENT (DETAIL A). AFTER GLUE HARDENS, PLACE ASSEMBLY INTO LOWER BODY TUBE (DETAIL A). USE FIN ALIGNMENT MARKED END. MAKE END OF ENGINE COMPARTMENT EVEN WITH LOWER BODY TUBE. NOW GLUE LOWER SPACER RING TO BODY TUBE BY PLACING A RING OF GLUE AT JUNCTION OF BODY TUBE AND SPACER RING. LET GLUE DRY.
- ② **SHOCK CORD MOUNT** — SPREAD HEAVY LAYER OF ELMER'S GLUE ALL OVER THE SIDE OPPOSITE THE SHOCK CORD KNOT AFTER TAKING UP SLACK IN CORD. CURVE SHOCK CORD MOUNT AND INSERT INTO NOSE CONE END OF BODY TUBE AND FIRMLY PRESS IN PLACE, USING FINGER, UNTIL GLUE HOLDS FIRMLY. SEE DETAIL SHEET SHOWING PROPER POSITION IN BODY TUBE.
- ③ **FINS** — ALL FINS IN YOUR KIT ARE MARKED WITH RED EDGE. THIS RED EDGE IS TO BE PLACED NEXT TO THE BODY TUBE. BEFORE GLUING IN PROPER POSITION YOU MAY WANT TO SAND AND ROUND OFF ALL FIN EDGES, EXCEPT DO NOT SAND RED EDGE. AFTER SANDING EDGES, PLACE A SMALL AMOUNT OF ELMER'S GLUE ALONG THE RED EDGE AND IMMEDIATELY PRESS AGAINST ANY FIN ALIGNMENT MARK ON LOWER BODY TUBE. HOLD SECURELY UNTIL GLUE SETS STRONG ENOUGH TO SUPPORT FIN. BE SURE FIN IS PARALLEL TO BODY TUBE AND RADIAL THROUGH CENTER OF BODY TUBE. REPEAT FOR THE OTHER TWO REMAINING FINS. YOUR BODY TUBE IS MARKED WITH 3 BLACK MARKS. PLACE FINS ALONG THESE LINES FOR PROPER SPACING OF 120° AND PARALLEL ALIGNMENT. AFTER TACK COAT OF GLUE DRIES HARD PLACE TWO MORE LINES OF GLUE ALONG FIN AND BODY TUBE TO BUILD UP A STRONG FILLET.
- ④ **FLAME PROOF WADDING** — USE FLAME PROOF WADDING EACH TIME ROCKET IS FIRED. PUSH WADDING ALL THE WAY DOWN TO TOP OF TRANSITION AND PACK IN FIRMLY WITH A 5/8" DOWEL OR SIMILAR TOOL. USE ENOUGH WADDING TO MAKE APPROXIMATELY A 5/8" LONG PLUG. SEE DETAIL SHEET.
- ⑤ **PARACHUTE** — CUT THE PARACHUTE WITH SCISSORS ALONG THE INCH LINES THAT GIVE YOU THE SIZE YOU DESIRE (FOR NOVA ROCKET — 14"). LAY PARACHUTE ON FLAT SURFACE AND ATTACH SHROUD LINES TO PARACHUTE USING STRIPPABLE TABS (SEE DETAIL C). CAUTION: LET NO PORTION OF TAB PROJECT BEYOND PARACHUTE AS GLUE ON TAB WILL STICK PARACHUTE TOGETHER AND INTERFERE WITH ITS OPENING. TRY NOT TO TOUCH THE GLUE SIDE OF TAB WITH FINGERS.
- ⑥ **SHOCK CORD & PARACHUTE** — COIL SHOCK CORD AROUND YOUR FINGER AND STUFF INTO BODY TUBE. NEXT FOLD PARACHUTE (SEE DETAIL C). GATHER THE PARACHUTE TOGETHER LIGHTLY, THEN WRAP SHROUD LINES GENTLY AROUND FOLDED PARACHUTE AS SHOWN IN DETAIL C. DIAMETER OF FOLDED PARACHUTE SHOULD BE SLIGHTLY SMALLER THAN INSIDE DIAMETER OF UPPER BODY TUBE. NOW SEE DETAIL D. BE SURE NOSE CONE IS A GENTLE FIT INTO BODY TUBE. LIGHT SANDING MAY BE NEEDED.
- ⑦ **ROCKET ENGINE** — WRAP A SMALL AMOUNT OF 1/2" WIDE MASKING TAPE AROUND THE ROCKET ENGINE AT THE POSITION SHOWN ON DETAIL A. USE ENOUGH TAPE TO SECURE A SNUG FIT INTO THE BODY TUBE AS TO REQUIRE A FIRM PUSH ON ENGINE TO PLACE IN CONTACT WITH THRUST RING. IF ENGINE DOES NOT FIT SNUGLY, IT WILL BE EJECTED INSTEAD OF PARACHUTE AND YOUR ROCKET WILL FREE FALL. INCLUDED WITH ALL F.S.I. MODEL ROCKET ENGINES ARE DETAILS FOR LAUNCHING AND FIRING. ASK YOUR DEALER FOR THESE INSTRUCTIONS.

MODEL ROCKET FIRING AND LAUNCHING EQUIPMENT

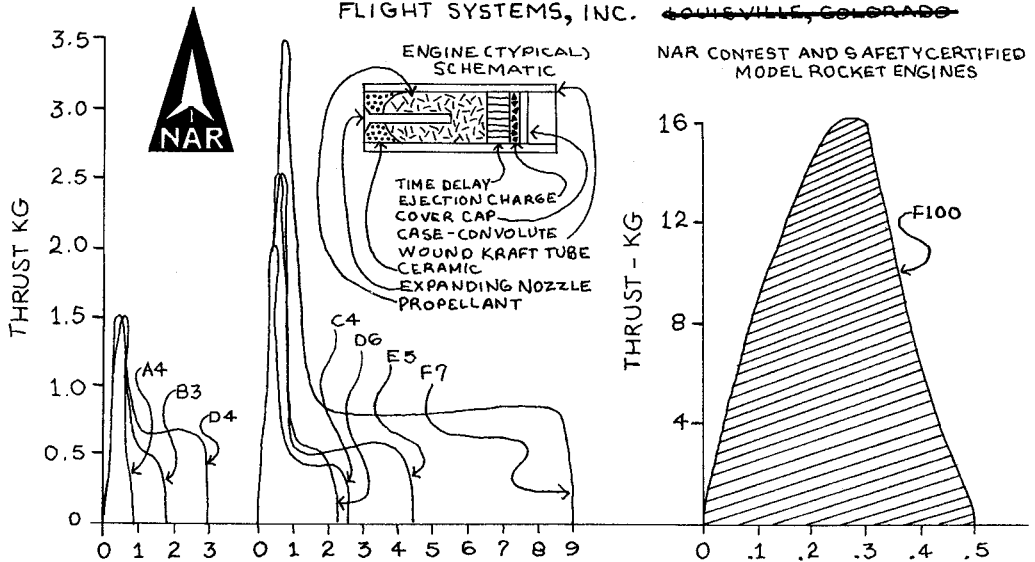
TO FLY YOUR F.S.I. MODEL ROCKET PROPERLY YOU WILL NEED TO PROVIDE YOURSELF WITH A 12 VOLT FIRING CIRCUIT AND A SIMPLE ROCKET LAUNCH PAD. YOU CAN EASILY BUILD YOUR OWN OR PURCHASE FROM YOUR DEALER. F.S.I. SUPERIOR QUALITY LAUNCHERS AND ELECTRIC IGNITION PANEL. DETAILS FOR BUILDING YOUR OWN LAUNCHER AND ELECTRIC IGNITION CIRCUIT ARE AS FOLLOWS.



TYPICAL THRUST/TIME CURVES for MODEL ROCKET ENGINES

FLIGHT SYSTEMS, INC. ~~LOUISVILLE, COLORADO~~

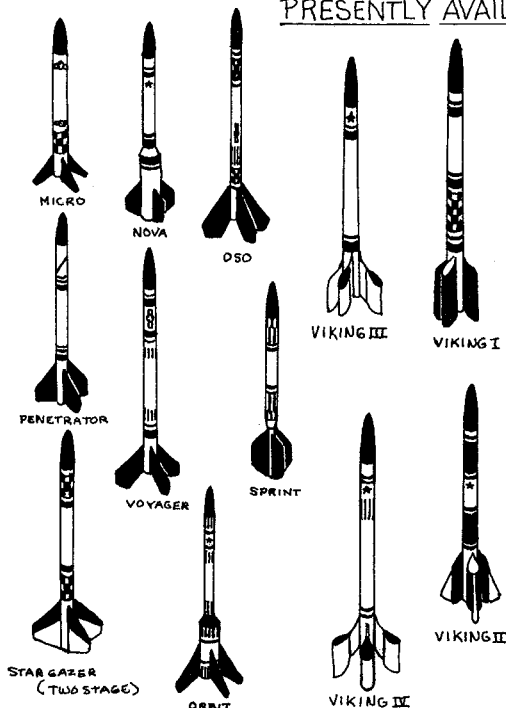
NAR CONTEST AND SAFETY CERTIFIED MODEL ROCKET ENGINES



ALL OF THE ABOVE ROCKET ENGINES ARE AVAILABLE AT MOST OF THE BETTER HOBBY SHOPS THROUGHOUT THE UNITED STATES. IF YOUR FAVORITE HOBBY STORE DOES NOT STOCK THE F.S.I. LINE, HAVE HIM WRITE US FOR OUR LATEST CATALOG AND PRICES. IF YOU DESIRE YOUR OWN CATALOG, SEND ~~25¢~~ TO FLIGHT SYSTEMS, INC., ~~Box 145, LOUISVILLE, COLORADO 80027~~.

YOU HAVE JUST PURCHASED ONE OF FSI'S SUPERIOR QUALITY MODEL ROCKETS. OTHER FINE FSI KITS ARE ALSO AVAILABLE. THE FSI ROCKET FLEET IS CONSTANTLY BEING ADDED TO. SEE ALL OF THESE MODELS AT YOUR HOBBY DEALER.

PRESENTLY AVAILABLE FSI MODEL ROCKET KITS



RECOMMENDED FSI ENGINES

MICRO: A4-4, B3-4, C4-4, D4-6

PENETRATOR: A4-4, B3-4, C4-4, D4-6, D6-6, E5-6

STAR 1st stage: B3-0, C4-0, D6-0, E5-0
GAZER 2nd stage: B3-6, C4-6, D6-8, D4-8, E5-8

NOVA: B3-4, C4-4, D4-6, D6-6, E5-6, F7-6

VOYAGER: D6-6, F7-6, F100-8

ORBIT: B3-4, C4-4, D4-6, D6-6, E5-6, F7-6

OSO: D6-6, F7-6, F100-8
SPRINT: C4-4, D4-6, D6-6

VIKING I: A4-4, B3-4, C4-4, D4-6, D6-6, E5-6

VIKING II: A4-4, B3-4, C4-4, D4-6, D6-6, E5-6

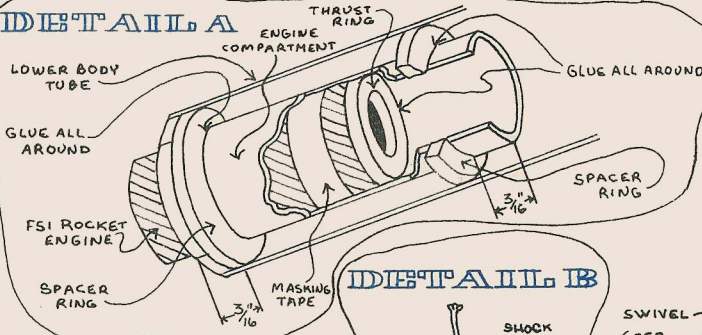
VIKING III: A4-4, B3-4, C4-4, D4-6, D6-6, E5-6

VIKING IV: F7-6, F100-8

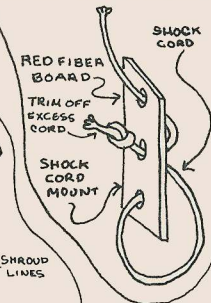
A COMPLETE LINE OF QUALITY FIRING CIRCUITS, LAUNCH GEAR, MODEL ROCKET ACCESSORIES AND INSTRUMENTS ARE ALSO AVAILABLE FROM FSI. SEE YOUR DEALER FOR DETAILS.

ASSEMBLY DETAILS FOR NOVA ROCKET

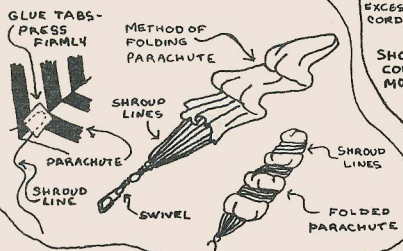
DETAIL A



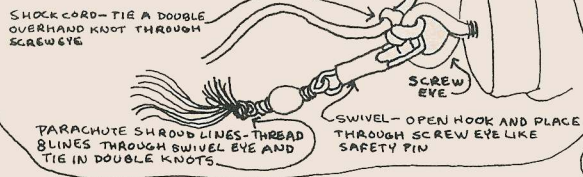
DETAIL B



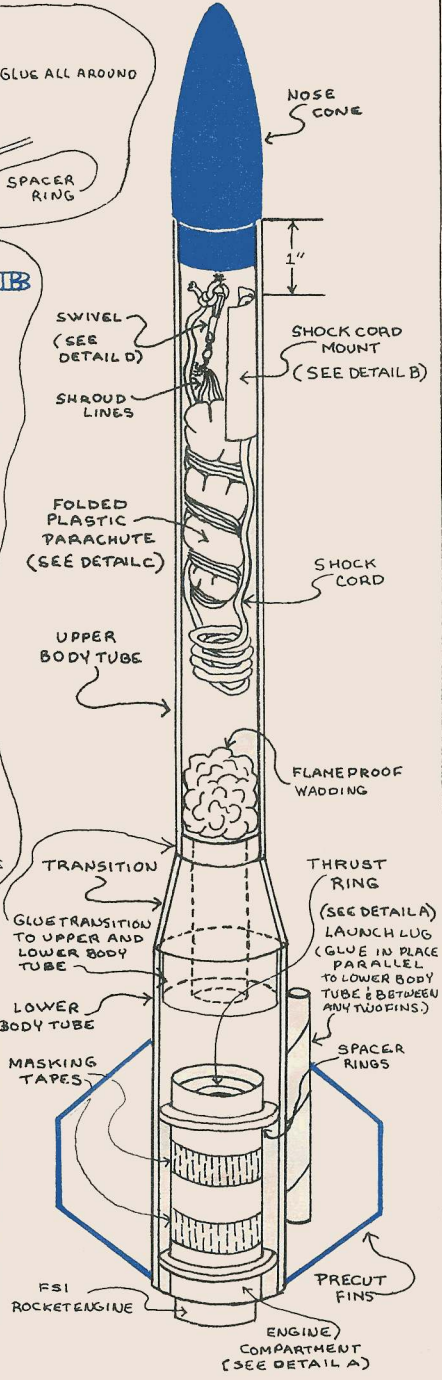
DETAIL C



DETAIL D

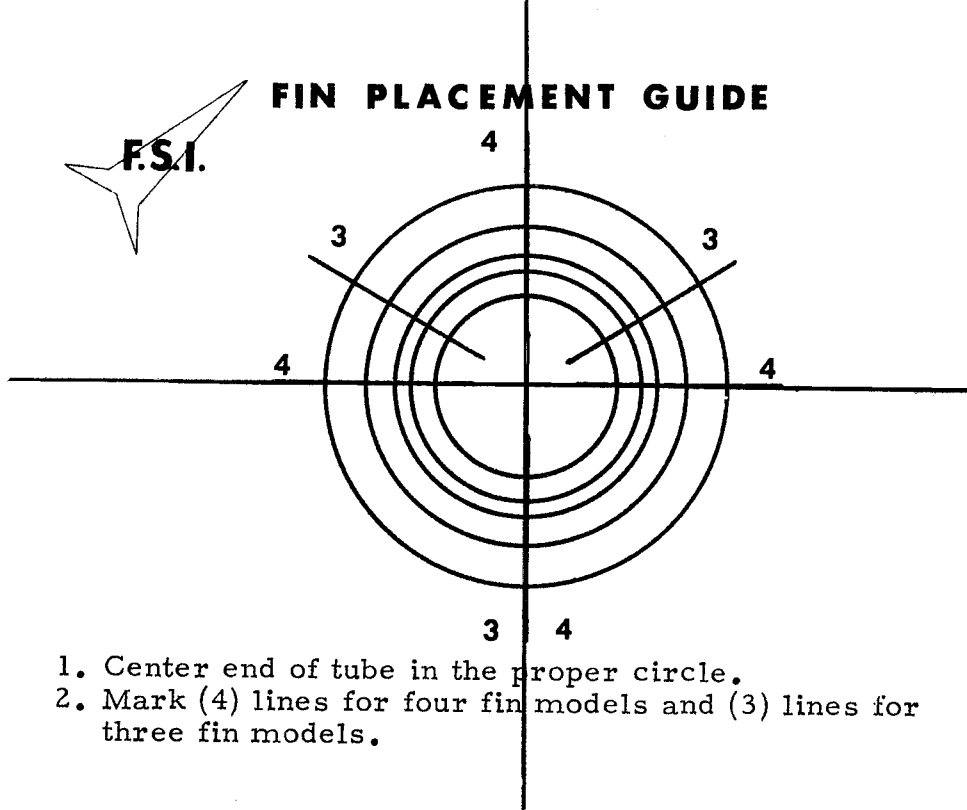


PARTS LIST





FIN PLACEMENT GUIDE



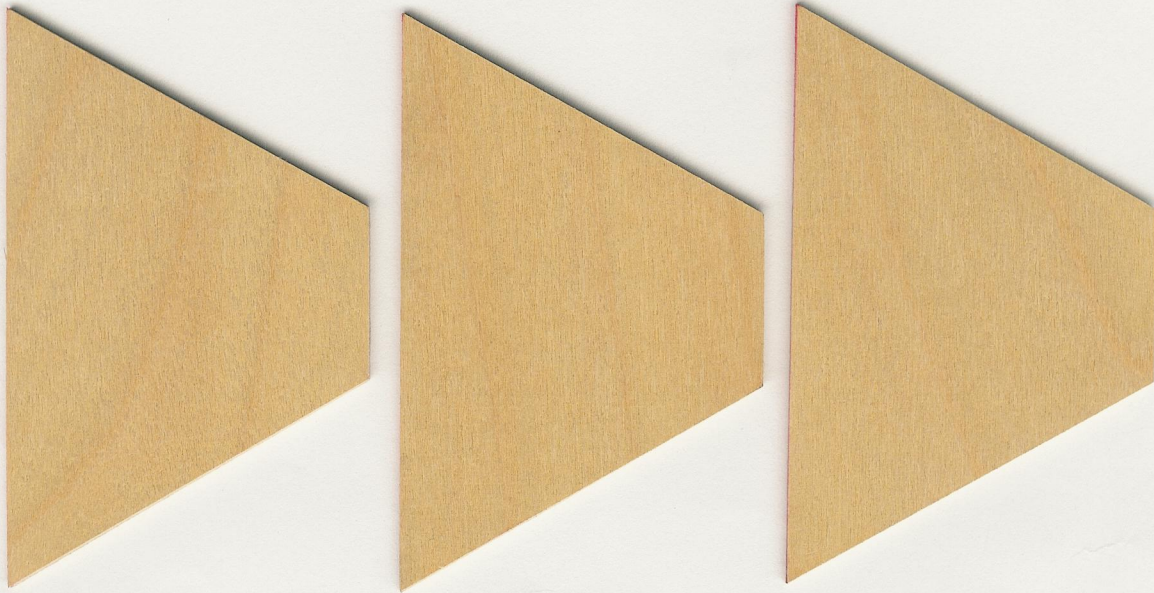
1. Center end of tube in the proper circle.
2. Mark (4) lines for four fin models and (3) lines for three fin models.

FSI MRK-III NOVA

Fin Patterns

Root Edge: 76 mm (3.0 inches)
Semi-Span: 48 mm (1.875 inches)
Tip Edge: 23 mm (0.875 inches)

Fins are made from 1/6" birch 3-ply. Make 3.



| < 1 inch > |

NOVA

FLIGHT SYSTEMS

1
2
3
4
5
6
7
8



F.S.I. NOVA, kit MRK-III

Parts List

Description	Dimensions	FSI Part #	Comments
Lower Body Tube	1.130" x 6.0"	HRT-1009	
Upper Body Tube	0.903 x 8.0"	HRT-808	
Motor Tube	0.903 x 3.5"	HRT-804	
Nose Cone	2.8" Long	HNC-81	
Hardwood Transition	1.0" log	HTS-810	Center drilled with 5/8" hole
Centering Rings (2)			Center .908 tube within 1.13 tube
Motor Block		TR-1	For .908 tube
Launch Lug	0.125" x 1.625"	LL-23	(1/8" I.D. x 1 5/8" L)
Parachute		P-12	8 sided Select-a-chute; 12" is more than enough
Shock Cord Anchor		SA-6	
Screw Eye	3/8" diam.	ES-21	
Shock Cord	1/8" x 24"	S-1	Round elastic
Fins (3)			Root=3.0" 1/16" Birch Ply Symmetrical trapezoid Tip = 0.875" Semi Span = .91"