

Advanced Rocketry



MODEL

AVIATION FUELS®

LARGE SCALE ROCKETRY DIV.

CATALOG

\$2.50

April 1992

AAA Model Aviation Fuels Clarks Summit, Pa. 18411 U.S.A



Mr. & Mrs. Alexander A. Andrade, Sr.

This issue is dedicated to my parents who celebrated their golden 50th Anniversary this January and the ideal which they both imparted throughout my formative years - God, Country, then Self! This is truly a "Golden" era for all of us, as we move ahead in our endeavors. One can only be awed at all that has taken place recently, be it in the world or in our hobbies. Who ever believed that there would be an end to the Berlin Wall, Iron Curtain and the U.S.S.R.? Or the fact that you now can reload your own Rocket Motors, into a metallic casing without the fears or dangers of the past.

I grew up during a time when rocketry was so new that the government could not even get a handle on it, let alone develop a hobby into useful safe products. This was a time when rocketry per se, didn't abound in information and, trial and error were the text. Alas, the so called "basement bomber" became the recognized buzz word and accidents in various degrees proliferated.

Recognizing the great need to keep rocketry from going underground and eliminate the accidents involved, a few small companies emerged in the early 50's to teach proper methods, materials and a regard for safety. One that formulated, developed, and guided my interest in early rocketry was the "Central Rocket Co." of Waupac, Wisconsin. There were a few others, but in the late 50's, two companies began to expand the market with the advent of the manufactured model motor, they being "Estes Industries" via The Mails and "Model Missiles, Inc" through the Hobby Store Network. The beginning of the 60's introduced the larger rocket and motor trend with High Thrust Core Burners from the "Coaster Corp." of Eules, Texas. At the same time Mr. John Rakohnen developed the Long Burn "Prodyne" Motors. From this glorious past we learn and build a future for young and old alike to enjoy. We have attempted to stock a wide spectrum of rocketry supplies and discovered that we couldn't possibly list everything, so we've concentrated on the advanced lines and remind you that we do stock Estes and MRC's kits, motors and some parts.

In the view of last year's Gulf War and the extreme workload involved, I decided not to publish our 1991 catalog, thereby remembering all those who served.

Happy Flying & God Bless
Alexander A. & Mary C. Andrade
(Doc) The Corporate Officers

*We live in deeds, not years; in thoughts, not
breaths; in feelings, not in figures on a dial. We
should count time by heart-throbs. He most lives
who thinks most, feels the noblest, acts the best.*

- FESTUS

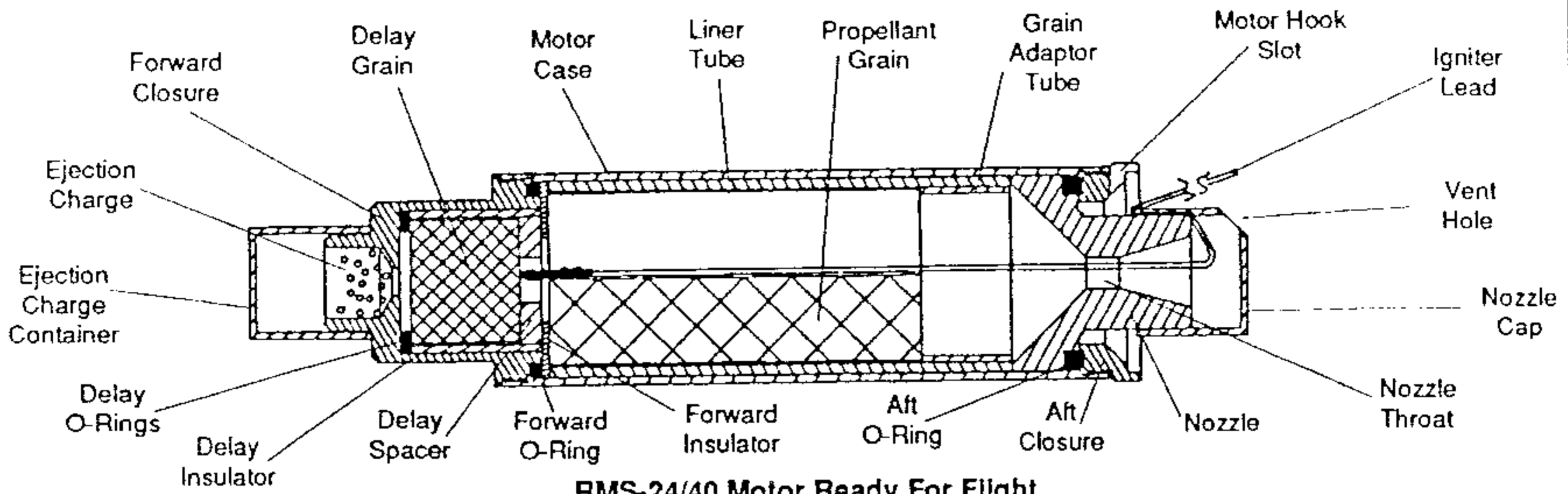
1992

Being LEAP YEAR and (until July 4)
216th year of American Independence

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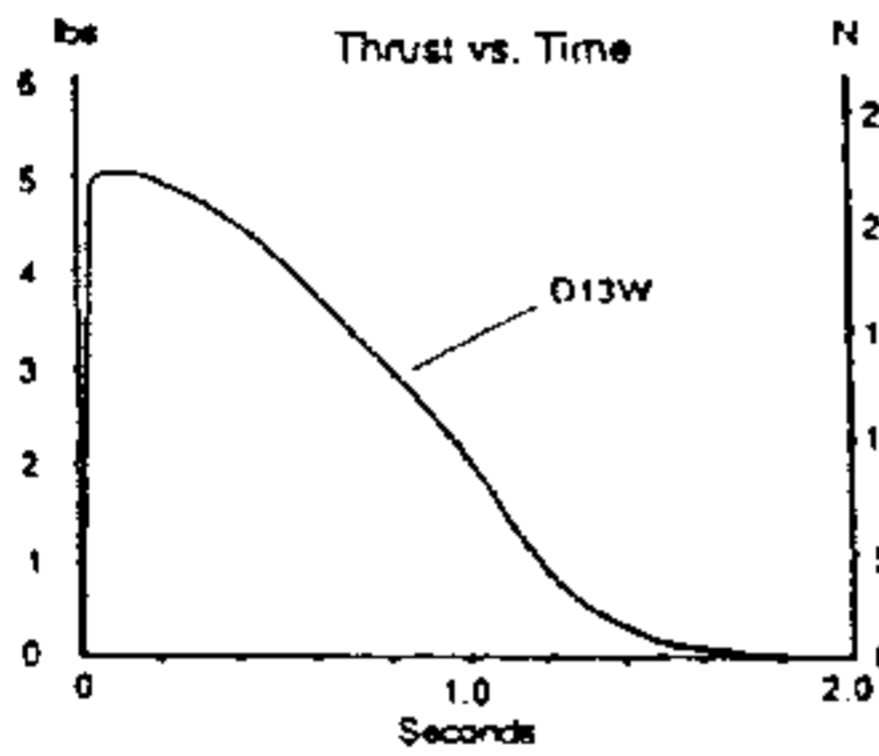
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Reloadable Motor System[™]



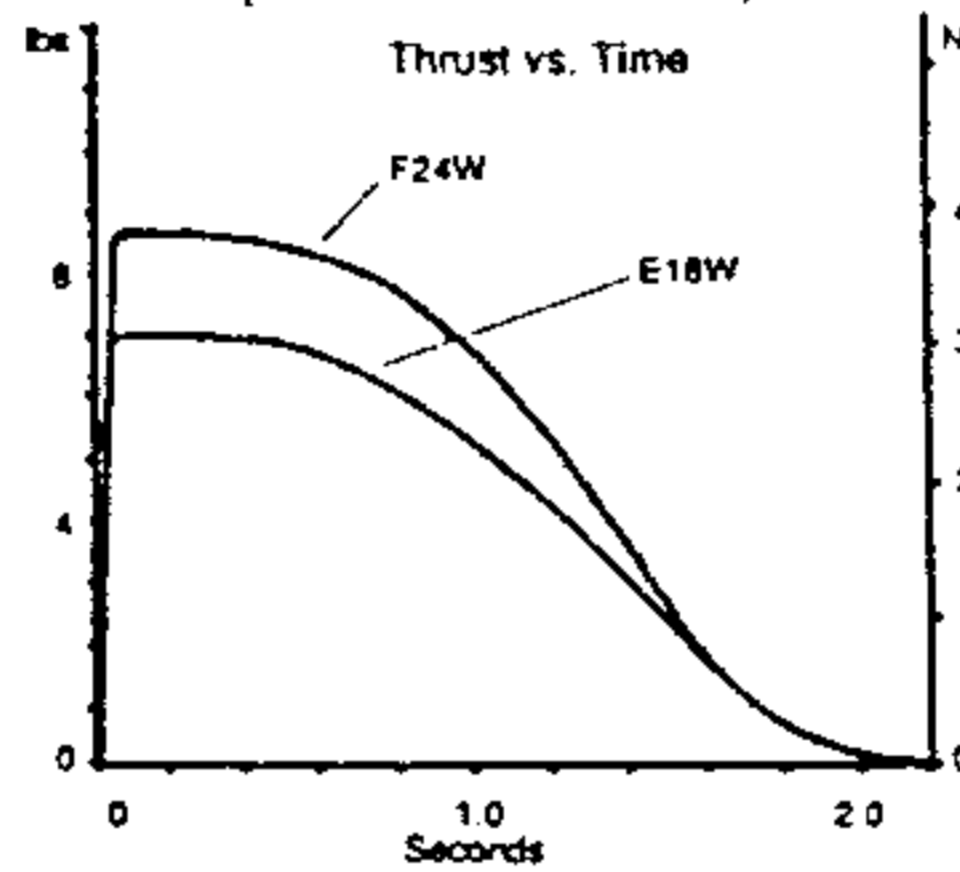
RMS-24/40 Motor Ready For Flight

RMS-18/20
(Product No. 91181)



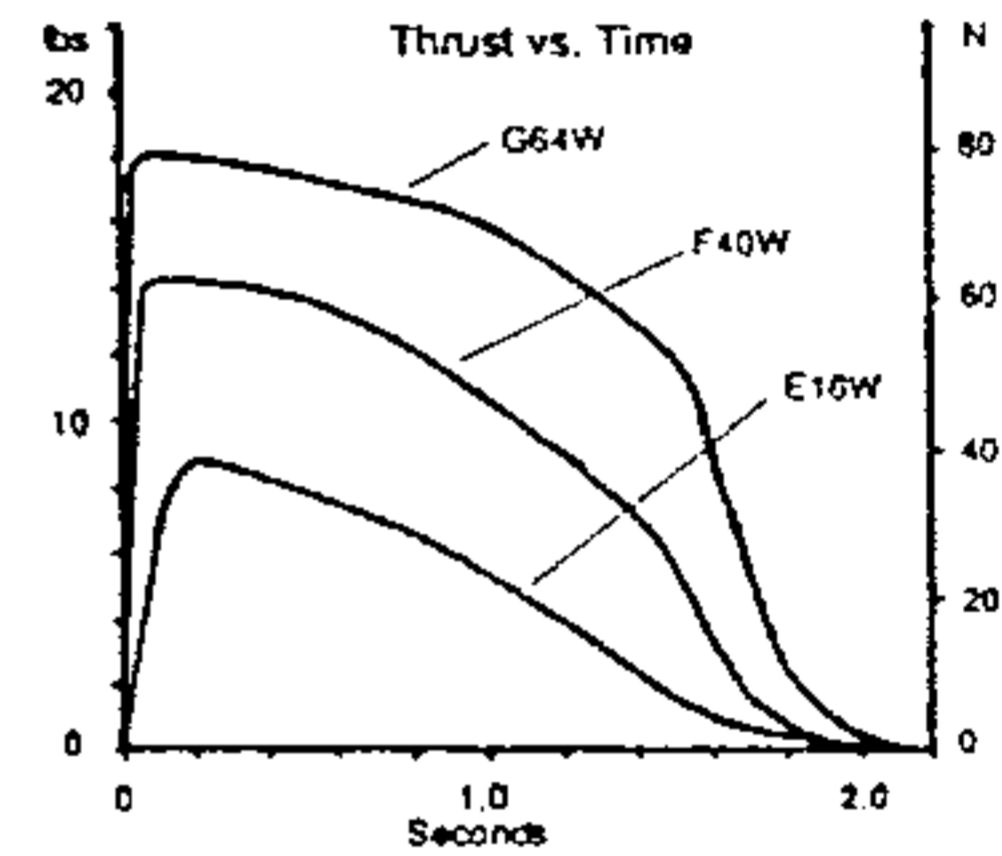
Fits All Kits Designed For
 Black Powder "A"- "C" Motors

RMS-24/40
(Product No. 91241)



Fits All Kits Designed For
 Black Powder "D" Motors

RMS-29/40-120
(Product No. 91291)



Fits All Kits Designed For "F"
 & "G" Motors

PRODUCT NUMBER	MOTOR TYPE	TIME DELAY sec	MOTOR DIAMETER in / mm	MOTOR LENGTH in / mm	PROPELLANT WEIGHT oz / gms	MOTOR WEIGHT oz / gms	MAX LIFTOFF WEIGHT oz / gms	TOTAL IMPULSE lb-sec / N-sec	AVERAGE THRUST lbs / N
41304	D13	4W*	.70 / 18	2.75 / 70	.35 / 9.8	1.2 / 33	16.0 / 454	4.5 / 20.0	2.9 / 13.0
41307		7W	.70 / 18	2.75 / 70	.35 / 9.8	1.2 / 33	11.2 / 318	4.5 / 20.0	2.9 / 13.0
41310		10W	.70 / 18	2.75 / 70	.35 / 9.8	1.2 / 33	8.0 / 227	4.5 / 20.0	2.9 / 13.0
51804	E18	4W	.94 / 24	2.75 / 70	.73 / 20.7	2.0 / 57	16.0 / 454	9.0 / 40.0	4.0 / 18.0
51807		7W	.94 / 24	2.75 / 70	.73 / 20.7	2.0 / 57	9.5 / 269	9.0 / 40.0	4.0 / 18.0
51810		10W	.94 / 24	2.75 / 70	.73 / 20.7	2.0 / 57	5.5 / 156	9.0 / 40.0	4.0 / 18.0
62404	F24	4W	.94 / 24	2.75 / 70	.89 / 25.3	2.2 / 62	16.0 / 454	11.2 / 50.0	5.4 / 24.0
62407		7W	.94 / 24	2.75 / 70	.89 / 25.3	2.2 / 62	9.5 / 269	11.2 / 50.0	5.4 / 24.0
62410		10W	.94 / 24	2.75 / 70	.89 / 25.3	2.2 / 62	5.5 / 156	11.2 / 50.0	5.4 / 24.0
51604	E16	4W	1.13 / 29	4.88 / 124	.67 / 19.0	3.8 / 107	16.0 / 454	9.0 / 40.0	3.6 / 16.0
51607		7W	1.13 / 29	4.88 / 124	.67 / 19.0	3.8 / 107	9.5 / 269	9.0 / 40.0	3.6 / 16.0
51610		10W	1.13 / 29	4.88 / 124	.67 / 19.0	3.8 / 107	5.5 / 156	9.0 / 40.0	3.6 / 16.0
64004	F40	4W	1.13 / 29	4.88 / 124	1.41 / 40.0	4.4 / 126	30.0 / 851	18.0 / 80.0	9.0 / 40.0
64007		7W	1.13 / 29	4.88 / 124	1.41 / 40.0	4.4 / 126	19.0 / 539	18.0 / 80.0	9.0 / 40.0
64010		10W	1.13 / 29	4.88 / 124	1.41 / 40.0	4.4 / 126	13.0 / 369	18.0 / 80.0	9.0 / 40.0
76404	G64	4W	1.13 / 29	4.88 / 124	2.20 / 62.5	5.3 / 151	44.0 / 1247	27.0 / 120.0	14.4 / 64.0
76407		7W	1.13 / 29	4.88 / 124	2.20 / 62.5	5.3 / 151	28.0 / 794	27.0 / 120.0	14.4 / 64.0
76410		10W	1.13 / 29	4.88 / 124	2.20 / 62.5	5.3 / 151	17.0 / 482	27.0 / 120.0	14.4 / 64.0

*W = White Lightning[™] propellant formulation produces a brilliant flame and a dense, bright white exhaust that is easy to track and exciting to watch! Great lift-off roar.

**"NOTE": SPECIAL RESTRICTIONS ON
 H70-X, H90-X, H140-X**

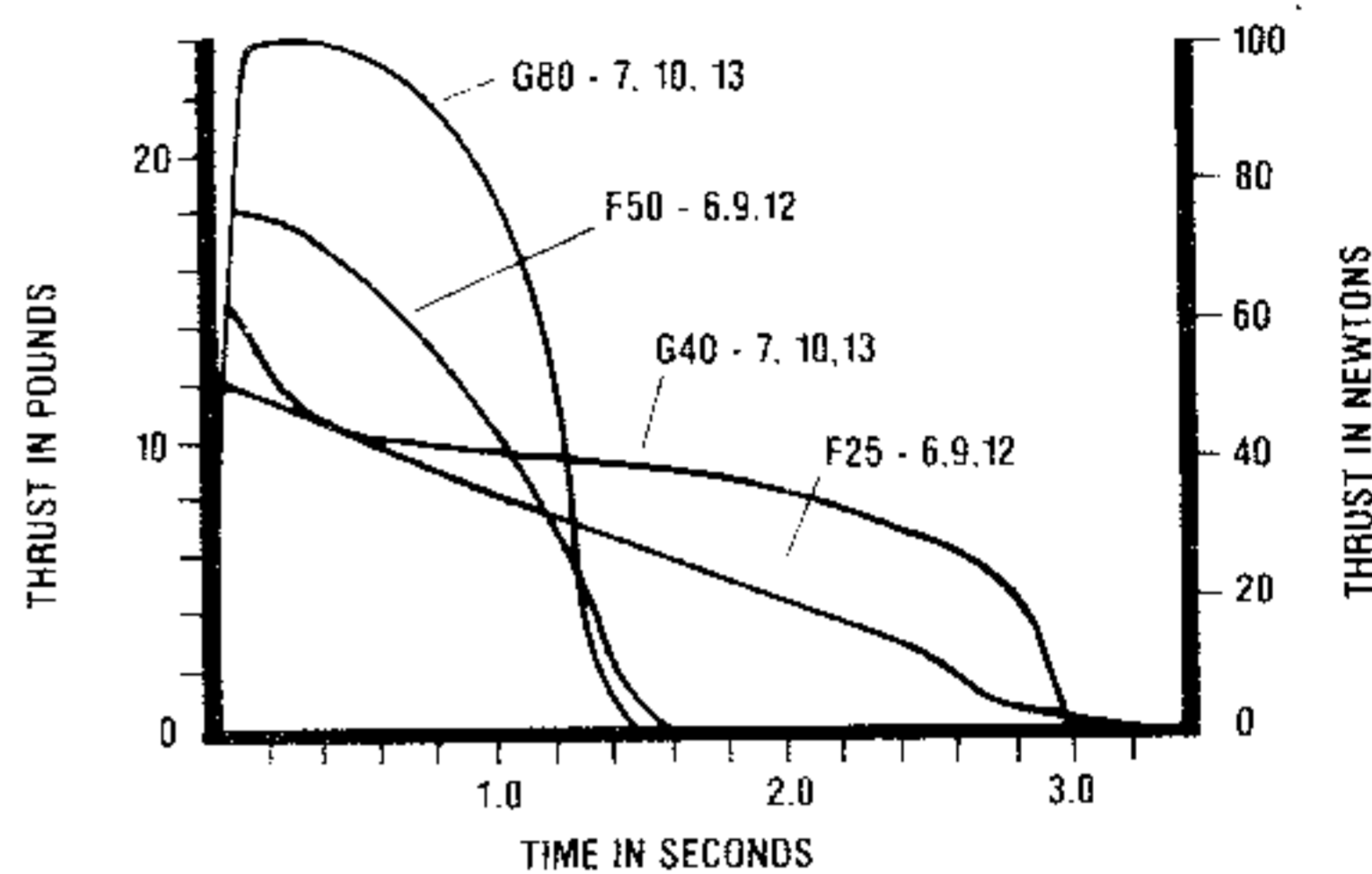
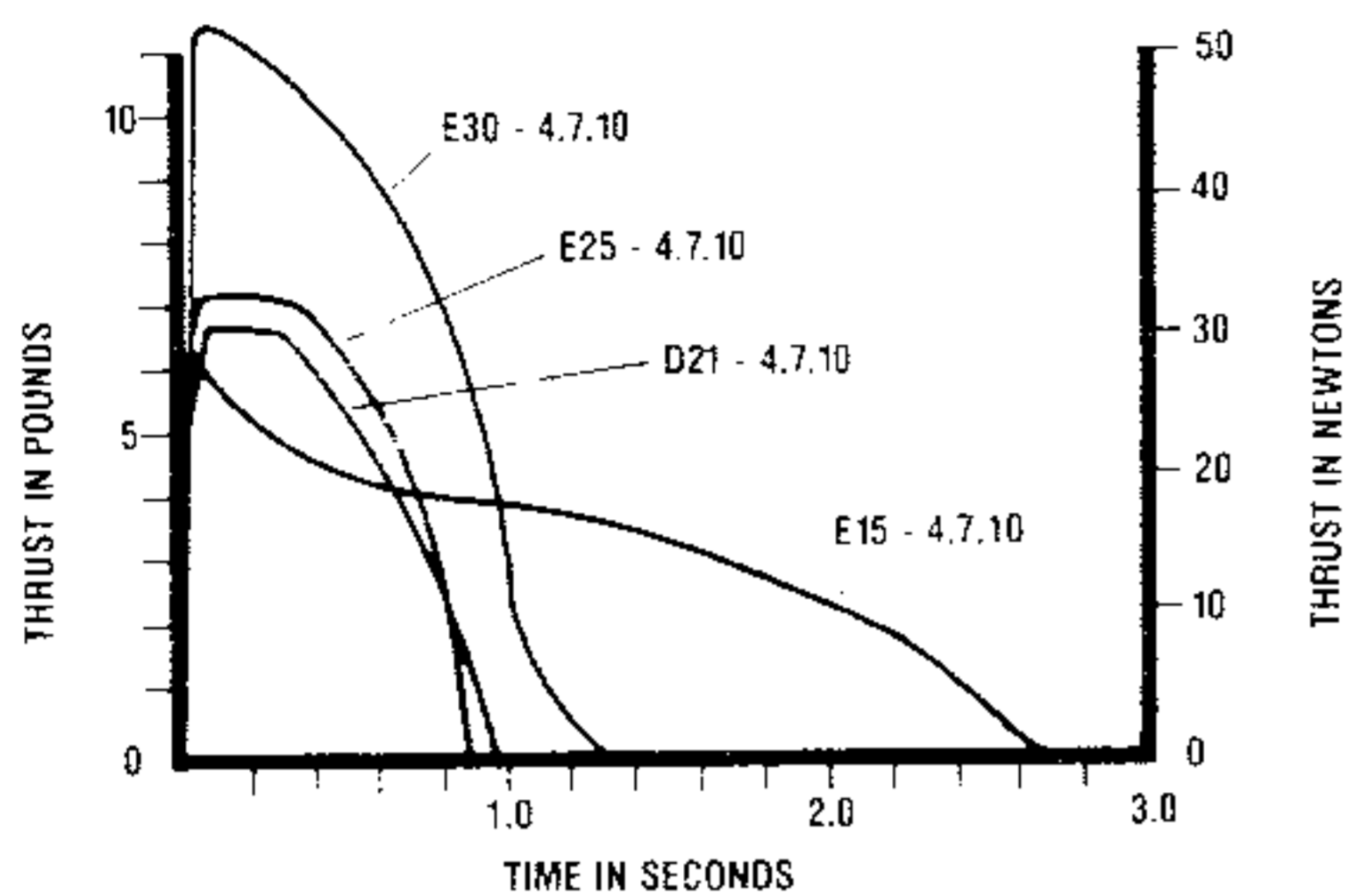
Delays are approx.
 6, 10 or 14 sec.



MOTOR TYPE	TOTAL IMPULSE		AVERAGE THRUST		DIAMETER		LENGTH	
	lbs.-sec	N-sec	lbs.	N	in	mm	in	mm
D21	4.5	20.0	4.7	21.0	0.70	18	2.75	70
E25	4.9	22.0	5.6	25.0	0.70	18	2.75	70
E15*	9.0	40.0	3.4	15.0	0.94	24	2.75	70
E30	9.0	40.0	6.7	30.0	0.94	24	2.75	70
F25*	18.0	80.0	5.6	25.0	1.13	29	3.88	98
F50	18.0	80.0	11.2	50.0	1.13	29	3.88	98
G40*	27.0	120.0	9.0	40.0	1.13	29	4.88	124
G80	27.0	120.0	18.0	80.0	1.13	29	4.88	124

*WHITE LIGHTNING

FLY LARGER MODEL ROCKETS ▲ LOFT HEAVIER PAYLOADS ▲ ACHIEVE HIGHER ALTITUDES



E25 and D21 Fit Standard Black Powder 'A' through 'C' Motor Mounts.
E15 and E30 Fit Standard Black Powder 'D' Motor Mounts.

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MODEL & EXPERIMENTAL ROCKET MOTORS

MOTOR DESIGNATION	DIMENSIONS	TOTAL IMPULSE	THRUST DURATION	INITIAL WEIGHT
D8 (0,2,4,8,12)	.69"x2.75"	20 N-sec.	2.42 sec.	18.5g
D21 (4,7,10)	.69"x2.75"		.95 sec.	23.6g
E6 (0,2,4,8)	.94"x2.75"	40 N-sec.	7.2 sec.	39.7g
E10 (0,2,4,8)	.94"x2.75"	40 N-sec.	4.0 sec.	39.2g
E28 (0,4,8,12)	.94"x2.75"	40 N-sec.	1.4 sec.	39.6g
E45 (4,8,12)	.69"x4.125"		.81 sec.	36.9g
E50 (0,5,10,15)	.94"x2.75"	40 N-sec.	.8 sec.	38.4g
F32 (5,10,15)W	.94"x4.8125"		2.5 sec.	72.2g
F10 (0,2,4,8)	1.13"x3.25"	80 N-sec.	7.9 sec.	69.4g
F72 (5,10,15)	.94"x4.8125"		1.1 sec.	73.1g
F20 (0,4,8,12)	1.13"x3.75"	80 N-sec.	4.0 sec.	84.0g
F30 (0,5,10,15)	1.13"x3.75"	80 N-sec.	2.7 sec.	84.0g
F44 (5,10,15)W	.94"x4.8125"		1.7 sec.	73.5g
F41 (0,6,9,14)	1.13"x3.75"	80 N-sec.	1.9 sec.	87.0g
F55 (4,8,12)	.69"x5.438"		.92 sec.	45.7g
F80 (0,5,10,15)	1.13"x3.75"	80 N-sec.	1.0 sec.	85.0g
F101 (5,10,15)			0.8 sec.	
G25 (0,5,10,15)	1.13"x4.75"	120 N-sec.	4.8 sec.	105.0g
G42 (4,8,12)W	.94"x5.688"		2.1 sec.	90.8g
G45 (0,5,10,15)	1.13"x4.75"	120 N-sec.	2.7 sec.	107.9g
G55 (5,10,15)W	.94"x6.9375"		2.2 sec.	103.7g
G60 (0,5,10,15)	1.13"x4.75"	120 N-sec.	2.0 sec.	108.0g
G70 (5,10,15)	.94"x4.75"	120 N-sec.	2.0 sec.	
G125 (0,5,10,15)	1.13"x4.75"	125 N-sec.	1.0 sec.	105.0g



NAR SAFETY & CONTEST CERTIFIED

*W DENOTES WHITE LIGHTNING SMOKEY MOTOR.

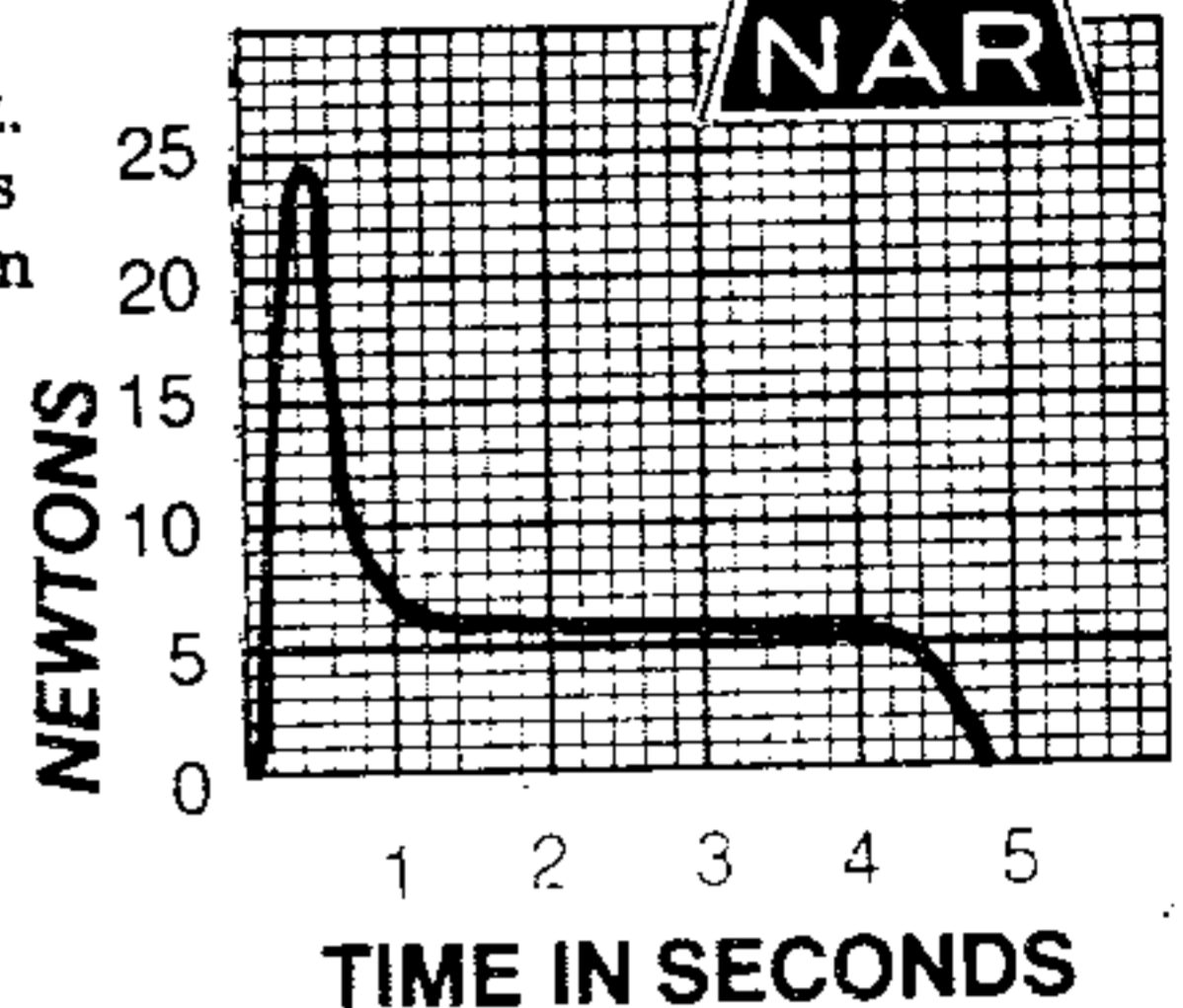
FLIGHT SYSTEMS, INC.

Rocket Engines- Typical Thrust VRS Time Curves



Motor Designation E5
 Total Impulse . . 22 nt/sec., 5 lb/sec.
 Maximum Thrust . . 2.5 Kg/88 oz.
 Thrust Duration 4.5 sec.
 Time Delays Available 0, 4, 6

Initial Weight 45 oz.
 Propellant Weight . . . 21 grams
 Engine Casting Size 21 x 95 mm
 Recommended Maximum
 Lift Off Weight 150 grams.

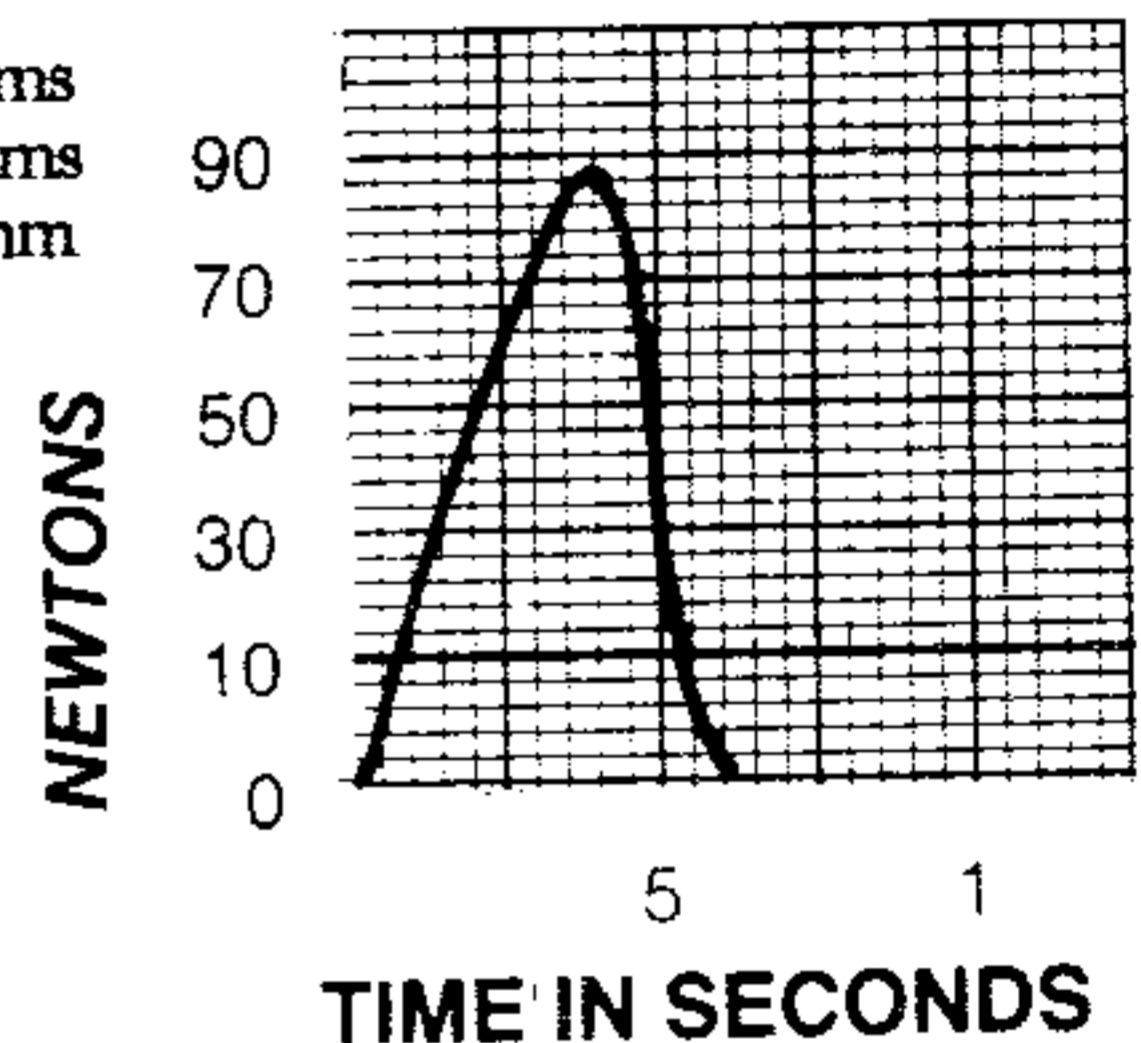


CATALOG NO.	ENGINE TYPE	DELAY
2031	E5	0
2032	E5	4
2033	E5	6

(Engines come 3 per package)

Motor Designation E60
 Total Impulse . 30 nt/sec., 6.6 lb/sec.
 Maximum Thrust . . 9.06 Kg/20 oz.
 Thrust Duration6 sec.
 Time Delays Available . . . 0, 4, 6, 8

Initial Weight 80 grams
 Propellant Weight . . . 3.36 grams
 Engine Casting Size 27 x 100 mm
 Recommended Maximum
 Lift Off Weight 448 grams.

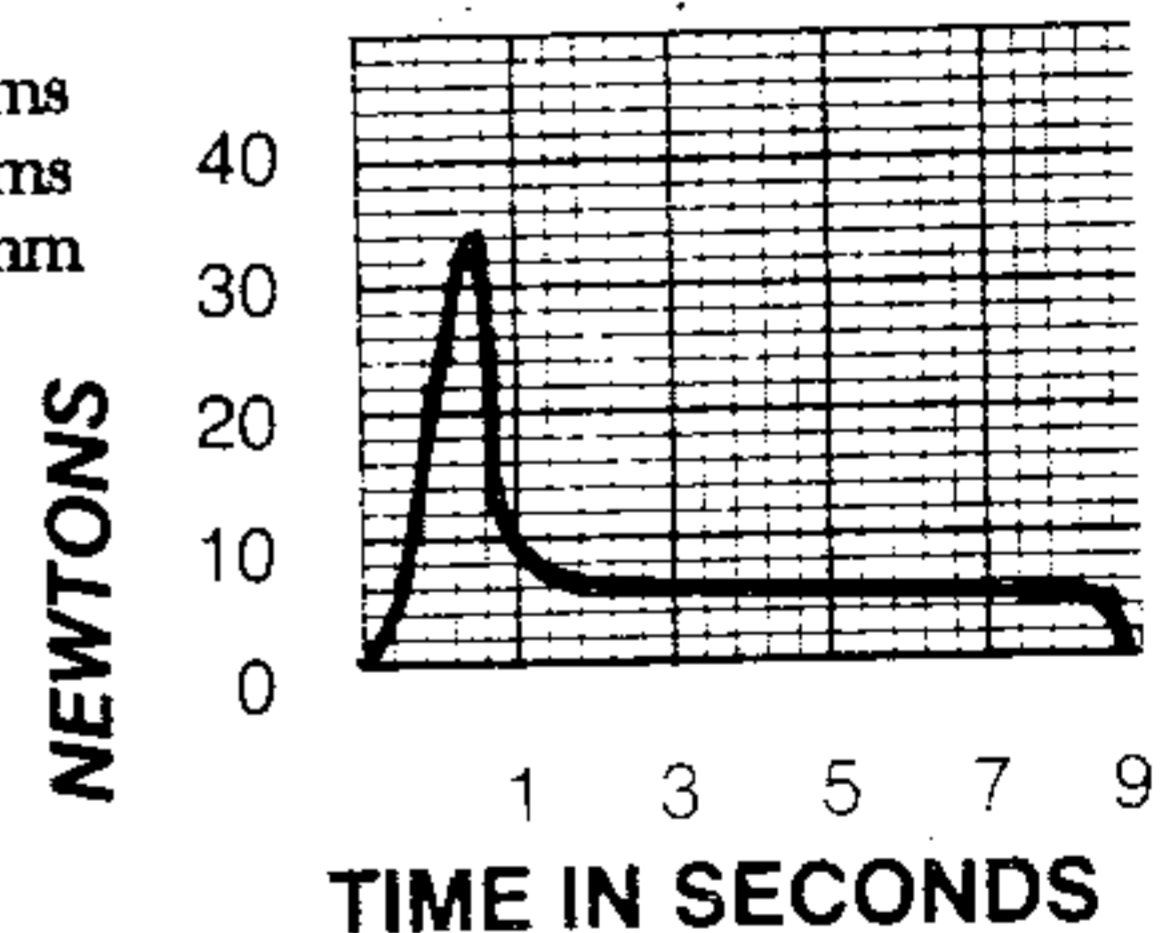


CATALOG NO.	ENGINE TYPE	DELAY
2041	E60	0
2042	E60	4
2043	E60	6
2044	E60	8

(Engines come 3 per package)

Motor Designation F7
 Total Impulse . 60 nt/sec. 13.5 lb/sec.
 Maximum Thrust . . 3.5 Kg/7.7 lb.
 Thrust Duration9 sec.
 Time Delays Available 4, 6

Initial Weight 110 grams
 Propellant Weight . . . 50 grams
 Engine Casting Size 27 x 150 mm
 Recommended Maximum
 Lift Off Weight 200 grams.

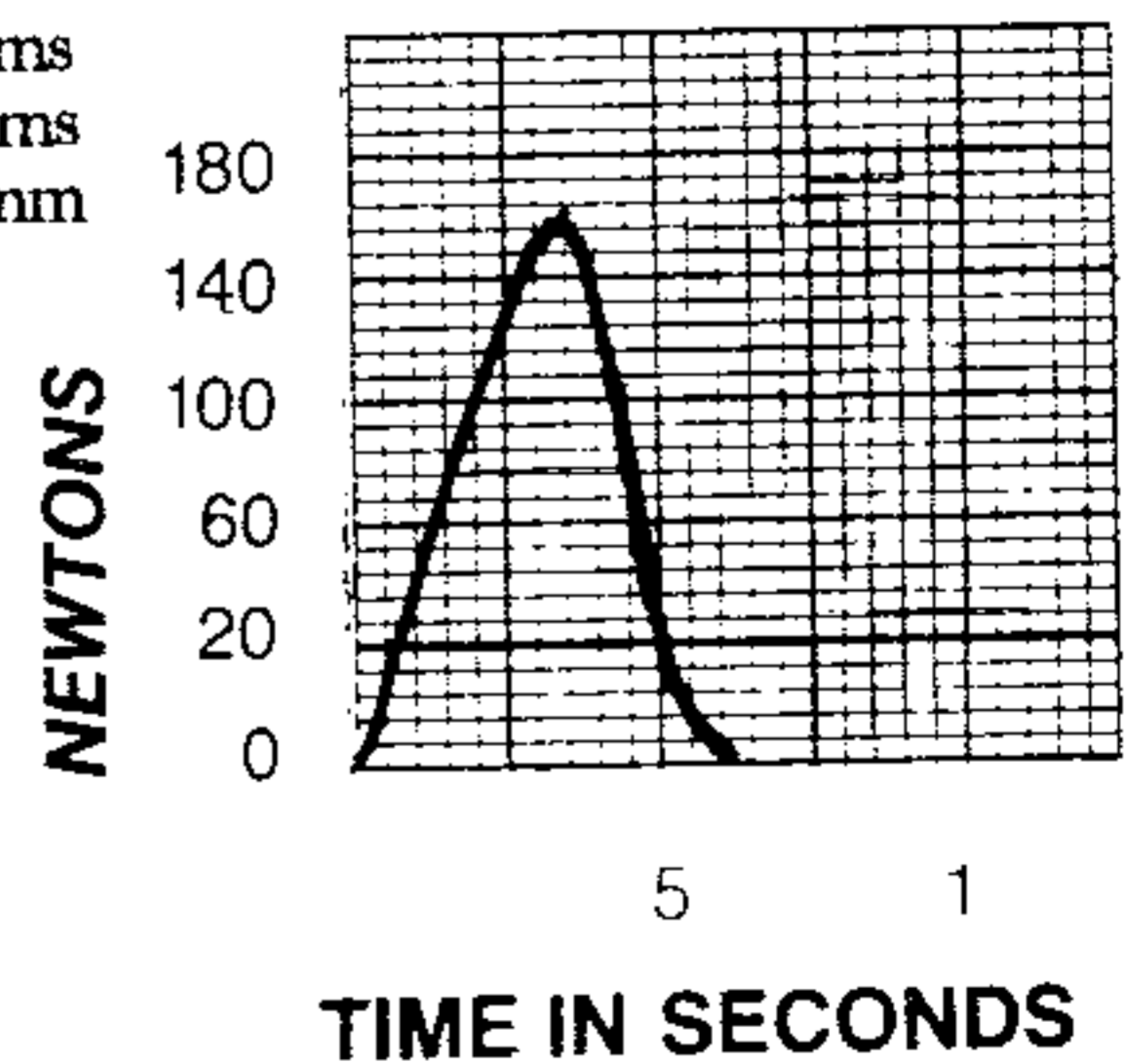


CATALOG NO.	ENGINE TYPE	DELAY
2051	F7	4
2052	F7	6

(Engines come 3 per package)

Motor Designation F-100
 Total Impulse . 50 nt/sec. 11.3 lb/sec.
 Maximum Thrust . . . 16 Kg/35 lb.
 Thrust Duration5 sec.
 Time Delays Available . . 0, 4, 6, 8, 10

Initial Weight 110 grams
 Propellant Weight . . . 50 grams
 Engine Casting Size 27 x 150 mm
 Recommended Maximum
 Lift Off Weight 500 grams.



CATALOG NO.	ENGINE TYPE	DELAY
2053	F100	0
2054	F100	4
2055	F100	6
2056	F100	8
2057	F100	10

(Engines come 3 per package)

All FSI model rocket engines are certified by the National Association of Rocketry.

All FSI Model Rocket engines comply with the National Fire Protection Association code for Model Rocketry, No. 411-1968.

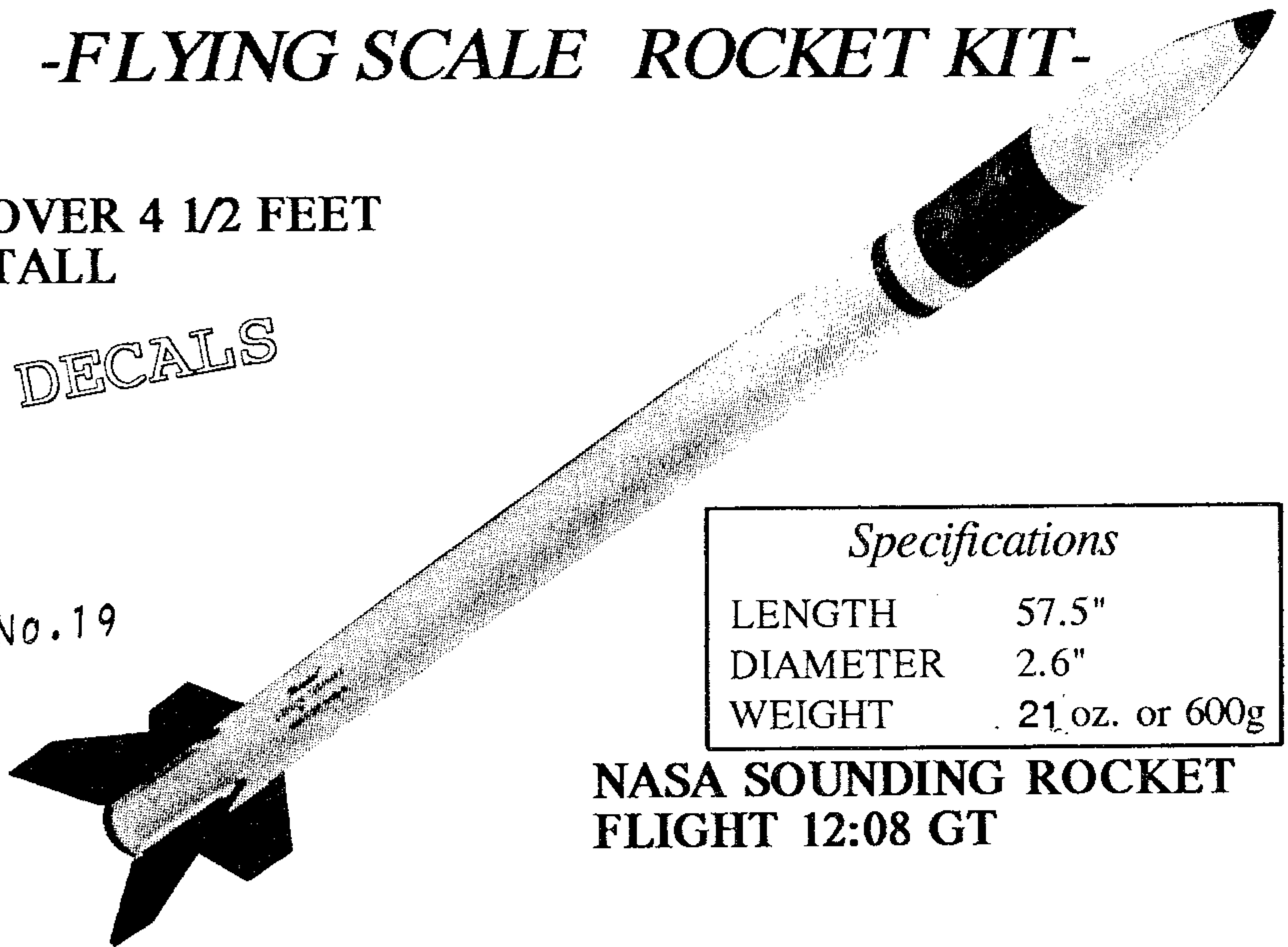
D - REGION TOMAHAWK

-FLYING SCALE ROCKET KIT-

**OVER 4 1/2 FEET
TALL**

DECALS

No. 19



Specifications

LENGTH	57.5"
DIAMETER	2.6"
WEIGHT	21 oz. or 600g

**NASA SOUNDING ROCKET
FLIGHT 12:08 GT**

THE D-REGION TOMAHAWK GIVES YOU:

SCALE PAINTING GUIDE

CHROME MYLAR SCREW HEAD DETAILING

SITKA SPRUCE REINFORCED SCALE FIN MOUNTS

PRECISION ENGINEERED BODY TUBE OF UNSURPASSED STRENGTH

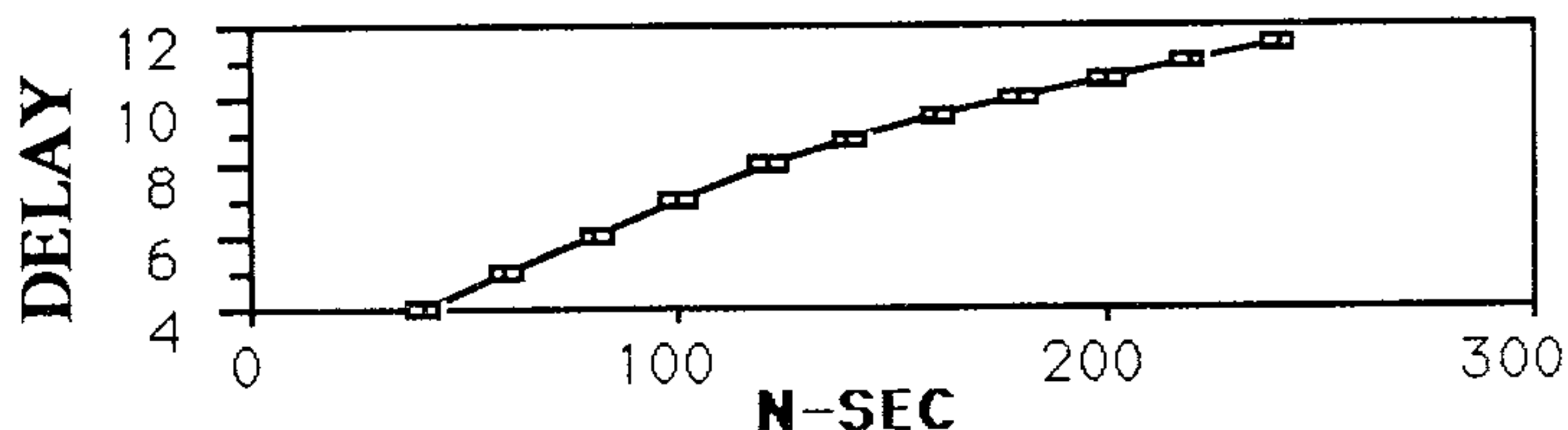
PRECISION MACHINED PLYWOOD FINS & CENTERING RINGS

HEAVY DUTY ELASTIC NYLON SHOCK CORD FOR HIGH POWER

BRIGHT PARACHUTE OF RUGGED RIP-STOP NYLON

29MM MOTOR MOUNT

DELAY TIMES:





CHEROKEE - G

ADVANCED ROCKETRY KIT

"Precision with Purpose"

DECALS

SKILL LEVEL 3
Recommended for the experienced model builder.

CHEROKEE - G

Specifications

LENGTH	37.75"
DIAMETER	2.1"
WEIGHT	12.5 oz.

- * REALISTIC KIT DECALS
- * HD 'Whitewall' AIRFRAME TUBING
- * NYLON PARACHUTE RECOVERY
- * EXTREMELY SIMPLE CONSTRUCTION & VERY STABLE DESIGN !
- * PRECISION MACHINED PLYWOOD FINS & CENTERING RINGS !
- * HD ELASTIC-NYLON SHOCK CORD

ADVANCED EJECTION DUCTING SYSTEM

Cools ejection gases completely by the time they reach your parachute.

MOTORS: F100-8, F10-8, F20, F30, F41-9
F80-10, G25-10, G40, G45-10, G60-10
H70-10, H140-10

No. 06

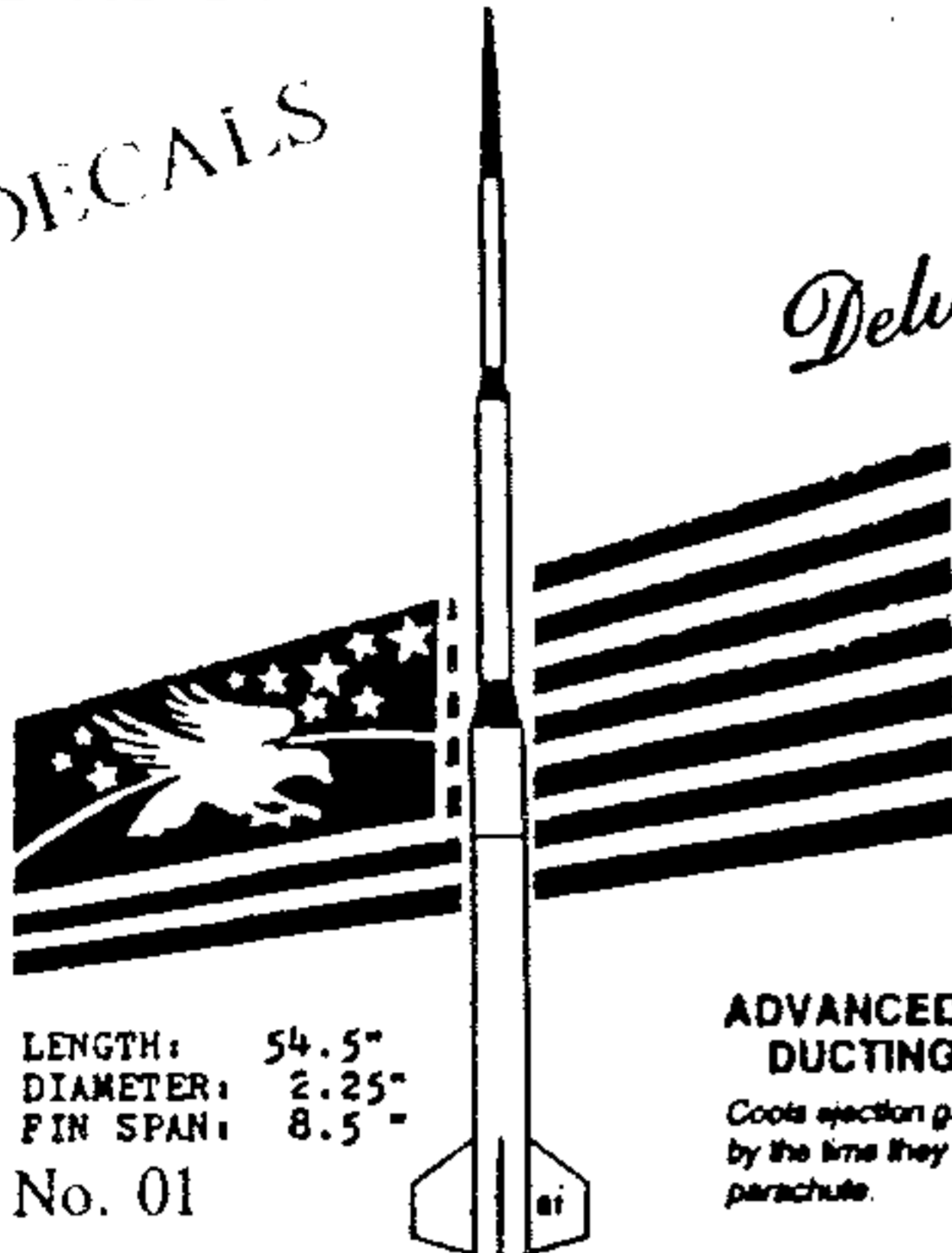
The AAA CHEROKEE - G is a scaled up version of the ESTES 'D' kit discontinued several years ago. This sleek and powerful "G" engine kit will give impressive high performance flights from E thru G power !! Our kit features through-the-wall plywood fins, our exclusive AAA BT 2.1 HD tubing, a large BNC and most impressive scaled up DECALS to truly beautify this high power Kit. Try a G25 or G60 if you dare !

The American Dream © 1976

DECALS

SKILL LEVEL
2

Deluxe



LENGTH: 54.5"
DIAMETER: 2.25"
FIN SPAN: 8.5"

No. 01

ADVANCED EJECTION DUCTING SYSTEM

Cools ejection gases completely by the time they reach your parachute.

The American Dream was designed with you in mind. We have kept it a Skill Level 2 so construction is quick and easy, with great eye appeal as well as fantastic performance. It features, pre-cut plywood fins and rings. A special AAA "Ejection Baffle/Shock Cord & Engine Mount", through-the-wall fins and mounting. A test mount for using D & E size engines. Nylon Parachute recovery gives this graceful bird a safe landing every launch. As with all AAA Model Aviation Fuels custom kits, this is 100% quality engineered for fun & safety. NAR legal in either standard or heavy-duty AAA Body Tubes.

RECOMMENDED MOTOR (1)

F100-4, F50-6, G40 45-10, F20, F25, F41-9, E30-4, E50-5, F50-7, F44-5, G25-10

'PENNSYLVANIA'

**CRUDE
SPORT-PAYLOADER**

"CHEAPEST & EASIEST KIT"

LESS THAN 1 HR. ! DESIGNED TO USE THE POWERFUL "E & F'S" !

THE P.C. GIVES YOU:

- * STURDY HI-STRENGTH BODY TUBES !
- * PRE-CUT PLYWOOD FINS !
- * HI-STRENGTH SHOCK CORD
- * HI-STABILITY DESIGN !!
- * VERY SIMPLE CONSTRUCTION
- * EFFICIENT PLASTIC NOSE-CONE !
- * HI-VISIBILITY STREAMER !

RECOMMENDED MOTORS :

E60-4, E30-6, E38-5
F100-6, F50-7, F30-7, F10-4, F15-4
F20-8, F41-9, F45-8, F67-8, F80-10

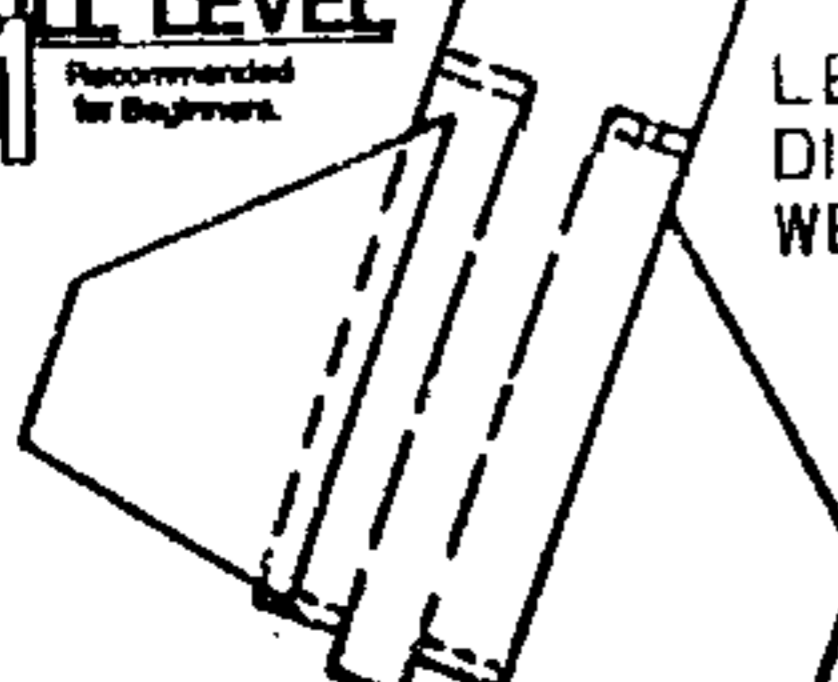
SKILL LEVEL

Recommended for Beginners.

LENGTH: 32 1/4"
DIAMETER: 2.6"
WEIGHT: 7 OZ.

No. 5

DECALS



**MAGNUM
NIKE-RAM 2**

SKILL
2

ADVANCED ROCKETRY KIT

- * REALISTIC KIT DECALS
- * HD 'Whitewall' AIRFRAME TUBING
- * NYLON PARACHUTE RECOVERY
- * PLASTIC NOSE CONE
- * IMPRESSIVE 44.5" TALL
- * PRECISION MACHINED PLYWOOD FINS & CENTERING RINGS !
- * HD ELASTIC-NYLON SHOCK CORD
- * EXTREMELY SIMPLE CONSTRUCTION & VERY STABLE DESIGN !

"Precision with Purpose"



DECALS

ADVANCED EJECTION DUCTING SYSTEM

Cools ejection gases completely by the time they reach your parachute.

Engines, launch system, glue, and supplies not included.

Length : 44.5" (113.0cm)
Diameter : 2.6" (6.6cm)
Weight : 16. oz (454. g)

No. 04

RECOMMENDED MOTORS:
29mm mount

H140-10, H125-10, H120-10, H90-15
H70-10, H55-10, G125-10, G80-7
G60-10, G45-10, G40-7, G25-10
F80-5, F60-6, F41-6

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Made in U.S.A.

LASER SONICS KITS

OUR LASERSONIC LINE ARE TRULY HIGH PERFORMANCE ROCKET KITS DESIGNED TO GIVE YOU THE MAXIMUM PERFORMANCE A MOTOR HAS TO OFFER. MOST FLIGHTS WILL BE OF THE "OUT OF SIGHT" TYPE WITH VELOCITIES EXCEEDING MACH 1.



TRAN-SON-IC 775

No. 7

SMALLEST OF THE FLEET, AT .775" USING OUR EXCLUSIVE .038 WALL BT-20HD WITH PLY FINS AND DECALS. THIS IS MINIMUM DIAMETER HIGH POWER RUGGEDNESS THAT LASTS & LASTS! THE TRAN-SON-IC 775 HAS BEEN FLIGHT TESTED WITH 18MM AEROTECH E MOTORS FOR "MACHBUSTING" PERFORMANCE

LENGTH: 27" DIAMETER: .775" MOTORS: 18MM A-F, LONGEST DELAY

LASERSONIC 1350

No. 11

MID SIZED VERSION OF THE LASERSONIC LINE, THE 1350 WAS DESIGNED TO FLY ON ANY 1.125" MOTORS. THE PAYLOAD SECTION WILL HOUSE ANY ITEM THAT CAN FIT IN A 1.25" INSIDE DIAMETER. RUGGEDLY DESIGNED TO BE RECOVERED BY A BRIGHT STREAMER AGAIN AND AGAIN, THIS KIT IS COMPLETE WITH PNC-56RW, OUR THICK WHITE-WALL TUBING, PLYWOOD FINS FOR THROUGH-THE-WALL STRENGTH, AN EM-F, COMPLETE HARDWARE & DECALS.

LENGTH: 38.25" DIAMETER: 1.34" MOTORS: F, 10-12 SEC DELAYS, G 12-15 SEC DELAYS

LASERSONIC 1650

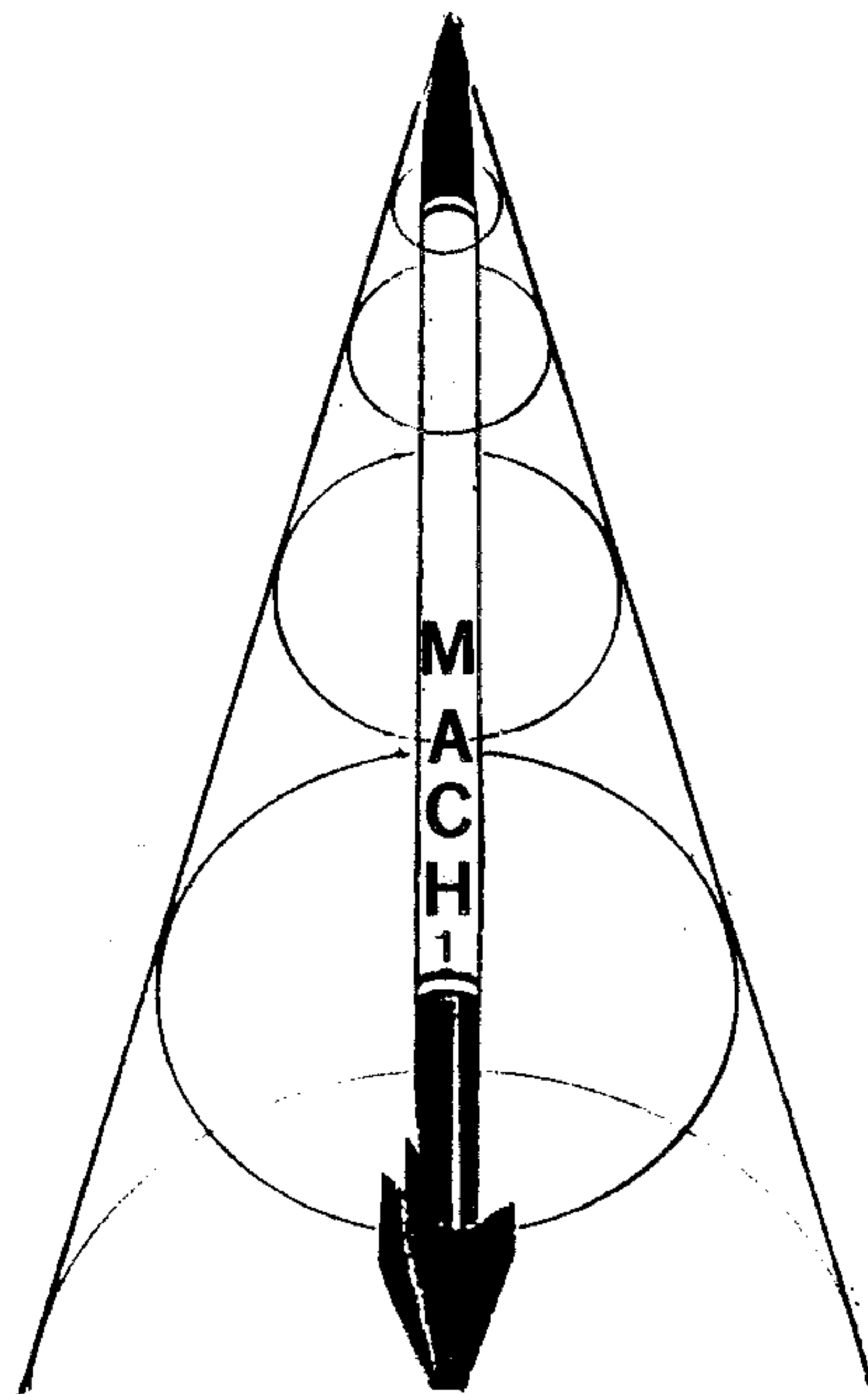
No. 13

THE 1650 IS THE LARGEST OFFERED AT THIS TIME, UTILIZING OUR THICK WHITE-WALL BT 1.65HD & 5 PLY BIRCH PLYWOOD FINS WITH A RUGGED PLASTIC NOSECONE. YOU HAVE THE OPTION OF INSTALLING THE "F" ENGINE MOUNT OR JUST SLIPPING IN A 1.5" MOTOR AND PUNCHING A HOLE IN THE SKY! THIS KIT WITH ITS THROUGH-THE-WALL FIN MOUNTING AND SMALL RUGGED NYLON CHUTE PRODUCES GREAT FLIGHTS WHETHER YOU DECIDE TO USE E OR H MOTORS. THIS KIT COMES COMPLETE WITH ALL HARDWARE & DECALS.

LENGTH: 47.5" DIAMETER: 1.646" & (1.52" ID) MOTORS: MEDIUM DELAY E-G, LONG DELAY H

MACH 1.2 & 1.6

GO FOR IT - IF YOU DARE



DECALS

No. 12A-P
No. 12A-G
No. 12B-P
No. 12B-G

LASERSONICS MACH 1.2 MACH 1.6

PREMIERED IN 1987, THESE KITS COULD BE CONSIDERED PART OF THE LASERSONIC LINE AVAILABLE IN FOUR VERSIONS DUE TO ECONOMIC CONSIDERATIONS. THIS IS THE ONLY MINIMUM DIAMETER PRODUCTION KIT FAMILY FOR BREAKING THE SOUND-BARRIER. IT IS PRODUCED IN TWO DISTINCT SIZES AND TWO AIRFRAME MATERIALS, FIBERGLASS AND PAPER. THESE ROCKETS ARE CAPABLE OF SINGLE ENGINE SUPERSONIC FLIGHTS TO ALTITUDES OF OVER ONE MILE. NO BULL ABOUT IT!

	MACH 1.2	MACH 1.2+	MACH 1.6	MACH 1.6+
DIAMETER :	1.22" OD	1.22" OD	1.65" OD	1.65" OD
LENGTH :	27.50"	24.50"	47.50"	46.75"
AIRFRAME :	PAPER	FIBERGLASS	PAPER	FIBERGLASS
FINS (3) :	ALL MODELS HAVE PRECISION CUT THIN SHEET FIBERGLASS FINS			
NOSECONE :	MACH 1.2 AND MACH 1.2+ HAVE PRECISION TURNED AND POLISHED HARDWOOD NOSECONE WITH HOLLOW SPACE FOR ADDING WEIGHT TO BALANCE THE MASS OF THE MOTOR		MACH 1.6 AND 1.6+ HAVE DENSE ABS PLASTIC SHELL NOSE TO BE FILLED WITH LEAD/EPOXY FOR BALANCING MOTOR MASS	
SHOCKCORD :	ALL MODELS HAVE HEAVY DUTY NYLON ELASTIC SHOCK CORD			
RECOVERY :	STREAMER FIBER	STREAMER RIP-STOP NYLON	BOTH MODELS HAVE HEAVY-DUTY NYLON PARACHUTE	
PAYLOAD :	NONE	NONE	13.50" PAPER	14.00" FIBERGLASS
SKILL :	PAPER KITS QUICK & EASY, STRAIGHTFORWARD FIBERGLASS KITS A LITTLE MORE THAN AVERAGE			
MOTORS :	G45-G60-G80-G125-15 SEC H70-H140-15 SEC		H70-H140-10 SEC H76-15 H142-15 H316-15 1283 20	

MODEL ROCKET

PARTS AND ACCESSORIES

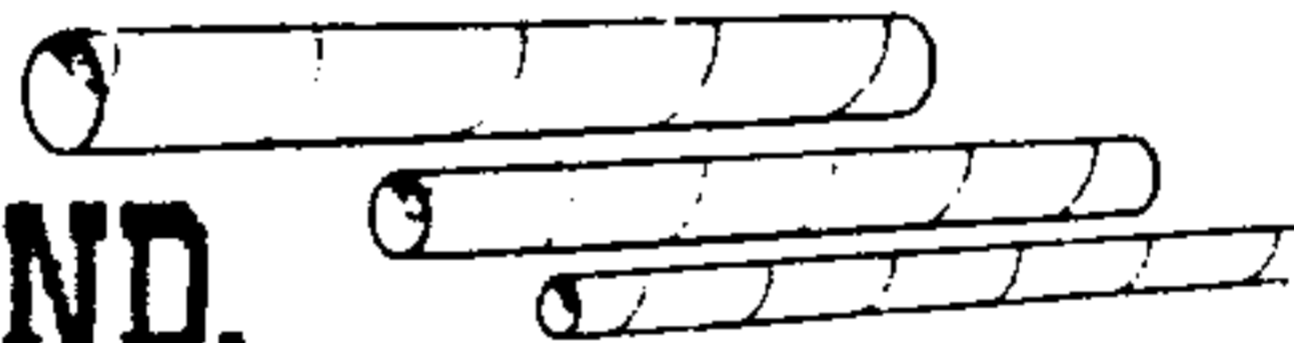
HIGH QUALITY AIRFRAME TUBES

Heat-welded
Strong
Lightweight
Smooth

HEAVY DUTY



Catalog No.	I.D."	O.D."		Length	Wt.
AAA-BT20HD	.705	.775	(19.7mm)	24" (610mm)	25.0 gm
-BT110HD	.955	1.01	(25.6mm)	24" (610mm)	30.0 gm
-BT112HD	1.14	1.22	(31.0mm)	24" (610mm)	47.0 gm
-BT113HD	1.26	1.34	(34.0mm)	24" (610mm)	53.0 gm
-BT1.64HD	1.56	1.64	(41.6mm)	27" (686mm)	69.0 gm
-BT1.65HD	1.52	1.65	(41.9mm)	27" (686mm)	114.0 gm
-BT2.1HD	2.00	2.10	(53.3mm)	27" (686mm)	100.0 gm
-BT72HD	2.17	2.25	(57.1mm)	B18 (457); C24 (610)	55-75
-BT80HD	2.53	2.60	(66.0mm)	24" (610mm)	65.0 gm
-BT95HD	3.28	3.40	(86.3mm)	27" (686mm)	220.0 gm
-BT101HD	3.89	3.99	(101.0 mm)	27" (686mm)	188.0 gm
-BT2.34EM	2.17	2.34	(59.4 mm)	24" (610mm)	70.0 gm
-EM1.19 Rocket engine mount					



ESTES IND.

Prod. No.	Description	Price Each	Length	Inside Diameter	Outside Diameter	Wall Thickness	Weight in Oz. Net.	Ship.
Spiral-Wound Paper Tube, for nose sections and strap-on payloads.								
30302	BT-5		18"	0.515"	0.541"	0.013"	.219	11
Spiral-Wound Paper Tube, for competition and sport models.								
30316	BT-20		18"	0.710"	0.736"	0.013"	.288	11
Spiral-Wound Paper Tube, for sport and high performance payload models.								
30352	BT-50		18"	0.950"	0.976"	0.013"	.378	11
Spiral-Wound Paper Tube, for sport and demonstration models.								
30382	BT-55		18"	1.283"	1.325"	0.021"	.672	11
Spiral-Wound Paper Tube, for sport and demonstration models.								
30396	BT-60		18"	1.595"	1.637"	0.021"	.960	11
Spiral-Wound Paper Tube, for monster models and tall rings.								
30424	BT-70		17.5"	2.175"	2.217"	0.021"	1.300	14

Rocket Body Tubes

FLIGHT SYSTEMS, INC.



CAT. NO.	DESCRIPTION	I.D.	O.D.	LENGTH	NET WEIGHT
6006	RT-6	.175"	.755"	18"	.425 oz.
6008	RT-8	.903"	.921"	18"	.425 oz.
6010	RT-10	1.13"	1.17"	18"	.725 oz.
6012	RT-12	1.30"	1.34"	18"	.738 oz.
6015	RT-15	1.60"	1.64"	18"	.936 oz.
6017	RT-17	1.80"	1.84"	18"	.950 oz.
6019	RT-19	2.00"	2.04"	18"	1.184 oz.
6022	RT-22	2.25"	2.34"	22"	3 oz.

SKILL LEVEL 3

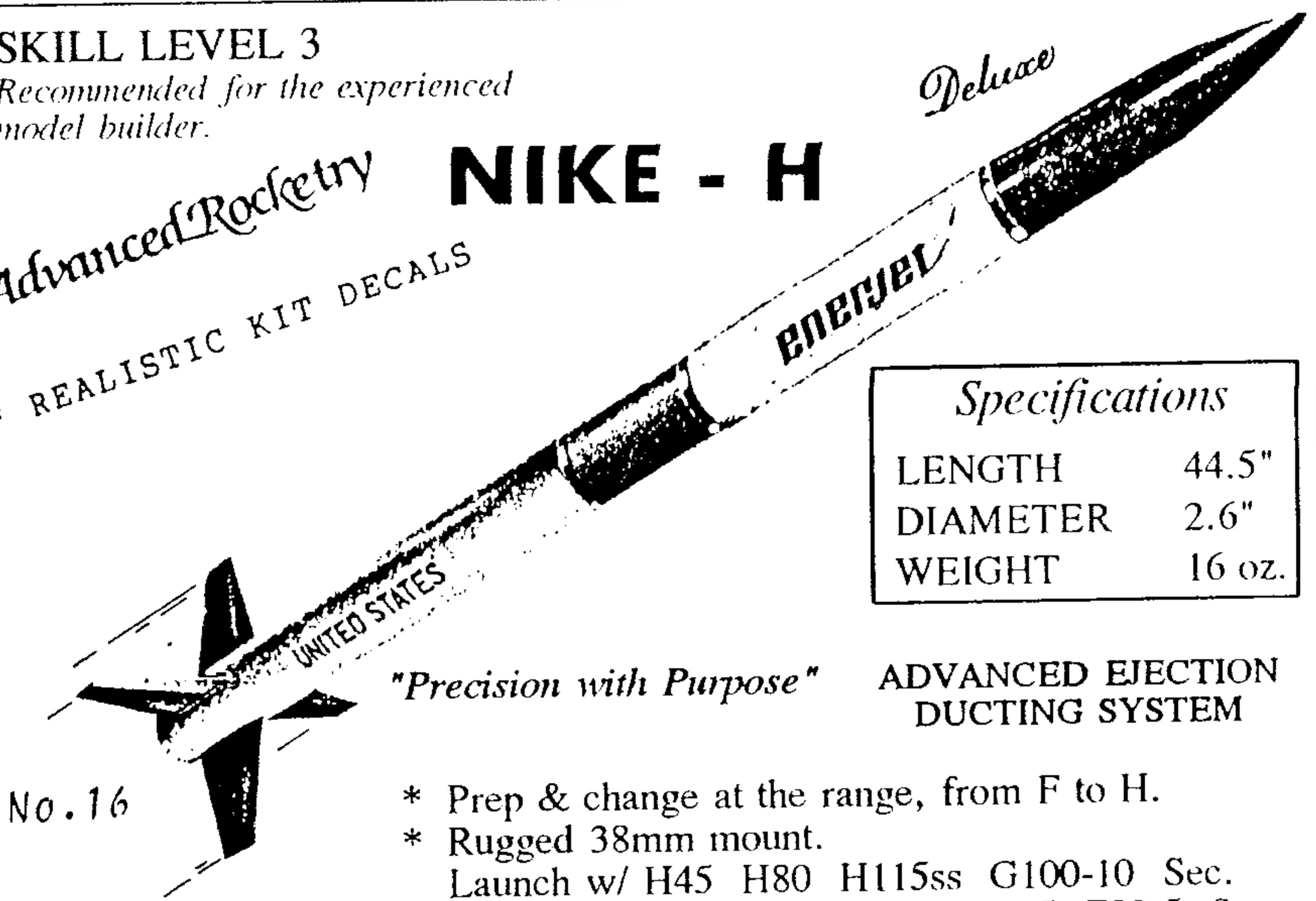
Recommended for the experienced model builder.

Advanced Rocketry

NIKE - H

Deluxe

* REALISTIC KIT DECALS



No. 16

"Precision with Purpose"

<i>Specifications</i>	
LENGTH	44.5"
DIAMETER	2.6"
WEIGHT	16 oz.

ADVANCED EJECTION DUCTING SYSTEM

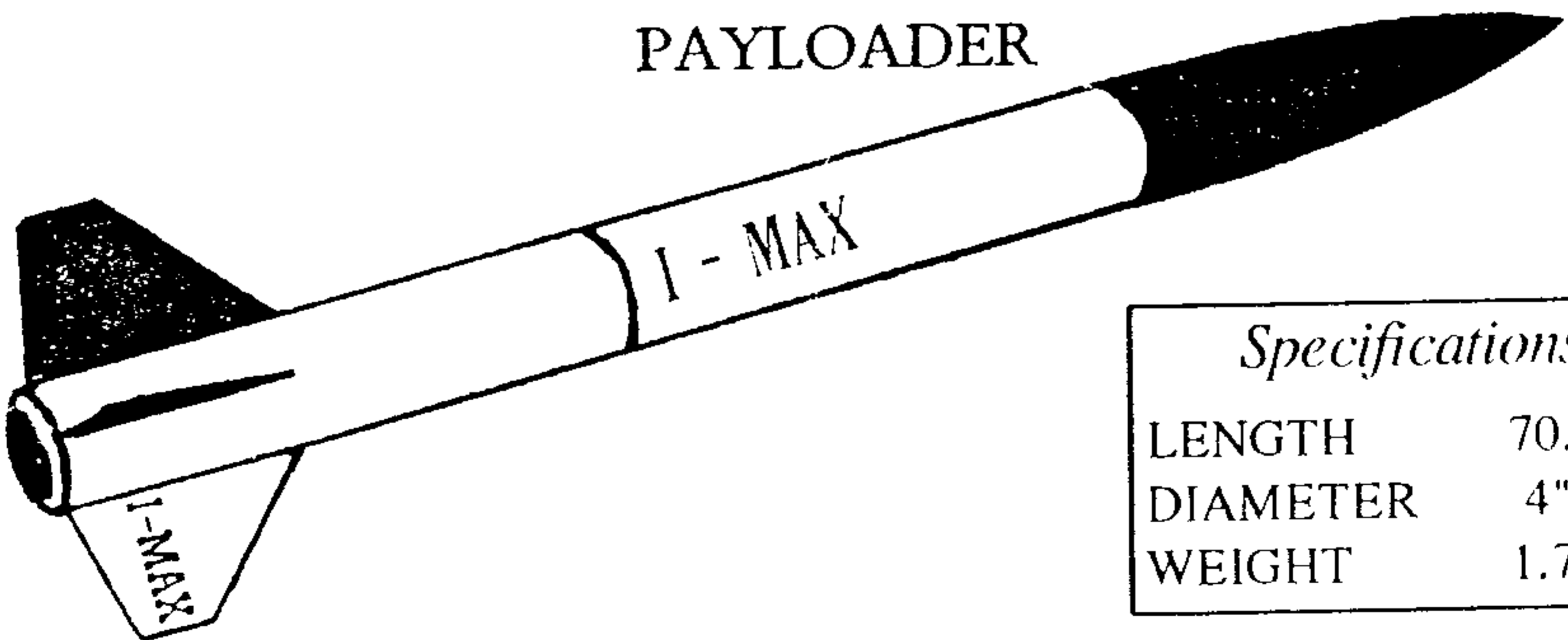
- * Prep & change at the range, from F to H.
- * Rugged 38mm mount.
- Launch w/ H45 H80 H115ss G100-10 Sec.
- W/ adapter H70 H90 H140 G125 F80-5 Sec.

*** * * BOTH HAVE THE FOLLOWING * * ***

- * Precision engineered body tubing of unsurpassed strength !
- * Precision machined plywood fins & centering rings !
- * Heavy-duty elastic-nylon shock cord for high power!
- * Large bright parachute of rugged rip-stop nylon !
- * Extremely simple construction & very stable design !
- * Very efficient plastic nosecone !

I - MAX

PAYLOADER



<i>Specifications</i>	
LENGTH	70.0"
DIAMETER	4"
WEIGHT	1.75lbs

- * Rugged host 2.125" mount for I's & J's W/ .085" wall.
- * 1/4" Plywood Throughout !!! Airframe of .050".

No. 15

Launch W/ I65-10, I140-15, I32-10, J125-15
W/ adapter H (70-140)-6, H125-10, H45 & 80-10, G125-5, G60-5

Pq.	Catalog #		Pq.	Catalog #		Pq.	Catalog #	
3	AT -RMS-18/20	\$ 39.95	11	AAA-BT80 HD	\$ 4.00	17	AT -89001	\$100.00
	-D13-x 3/	6.95		-BT95 HD	5.95		-89281	50.00
	-RMS-24/40	39.95		-BT101 HD	5.95		-89381	38.00
	-E18-x	3.95		-BT2.34 EMT	7.00		-89341	3.40
	-F24-x	4.95		-BT-EM1.19	2.00		-89011	35.00
	-RMS-29/40-120	39.95		EST-BT-5	2.15		-89010	34.00
	-E16-x	3.95		-BT-20	2.45		-89012	46.00
	-F40-x	4.95		-BT-50	2.45		-89013	40.00
	-G64-x	5.95		-BT-55	2.80		-89014	40.00
	-H70-x	24.95		-BT-60	3.00		-89015	59.00
	-H90-x	29.95		-BT-70	3.70		-91010	190.00
	-H140-x	24.95	11	FSI-RT-6	1.45		-89018	39.00
4	AT -D8-x	10.95		-RT-8	1.65		-89016	30.00
	-D21-x	4.95		-RT-10	1.90		-89017	50.00
	-F6-x	11.95		AAA-RT-10 VHD	2.00		-89019	70.00
	-E10-x	8.00		FSI-RT-12	2.00	17	FSI-1002	7.75
	-E15-x	5.95		-RT-15	2.10		-1003	7.75
	-E25-x	5.95		-RT-17	2.35		-1004	7.75
	-E28-x	8.00		-RT-19	2.55		-1005	8.25
	-E30-x	5.95		-RT-22	3.50		-1014	34.00
	-E45-x	9.95	12	AAA-NIKE-H #16	41.95		-1016	13.25
	-E50-x	8.95		-I MAX #15	74.95		-1017	13.25
	-F10-x	15.95	15	AAA-MAG. PA #8	70.00		-1018	12.25
	-F20-x	11.95	16	AAA-TC 7	.45		-1020	17.25
	-F25-x	8.95		FSI-SC 6	.80		-1022	17.25
	-F30-x	11.95		-SC 8	.85		-1023	32.00
	-F41-x	11.95		AAA-TC110	.55		-1024	37.00
	-F44-x	11.95		FSI-SC10	.90		-1025	38.95
	-F55-x	10.00		AAA-TC112 HD	.85		-1031	30.95
	-F50-x	8.95		FSI-SC12	1.00		-1030	26.75
	-F80-x	11.95		AAA-TC13	.65		-1032	36.95
	-F101-x	9.95		FSI-SC15	1.10	18	AAA-CR2.1 D 2/	1.50
	-G25-x	18.95		AAA-TC16	.80		-CR2.1 F 2/	1.50
	-G40-x	9.95		-TC165	2.25		-CR70 8 2/	1.85
	-G42-x	7.50		FSI-SC17	1.15		-CR70 D 2/	1.85
	-G45-x	15.00		-SC19	1.20		-CR70 F 2/	1.85
	-G55-x	15.00		AAA-TC2.1 HD	2.00		-CR80 D 2/	2.00
	-G60-x	15.00		-TC72-4	1.60		-CR80 F 2/	2.00
	-G70-x	15.00		FSI-SC22	1.60		-CR80 3D 2/	2.00
	-G80-x	9.95		AAA-TC80-4	2.00		-CR95 F 2/	3.50
	-G125-x	18.95		-TC95	2.35		-CR95 3F 2/	3.50
	- AT*-F13-RCT 2/	5.95		-TC101	2.25		-CR95 1.5 2/	3.50
17	AT*-F16-RCJ 2/	7.95	16	FSI-BR 8	1.20		-CR101D 2/	4.00
17	AT*-F23-RCW-SK 2/	9.95		-BB10	1.20		-CR101 3D 2/	4.00
	- AT*-G12-RCT 2/	9.95		-BB12	1.25		-CR101 5D 2/	4.95
5	FSI-D18 or D20 3/	6.50		-BB15	1.25		-CR101F 2/	4.00
	-E5-x 3/	6.50		-BB17	1.60		-CR101 3F 2/	4.50
	-E60-x 3/	15.00		-BB19	1.95		-CR101 5F 2/	4.95
	-F7-x 3/	16.25		-BB22	2.25		-CR101 1.52/	4.00
	-F100-x 3/	16.25		AAA-HR 20	1.25	18	AAA-CR810 2/	.90
6	AAA-Tomahawk -D	44.95		-HB110	1.45		-CR812 2/	1.25
7	AAA-Cherokee-G	35.95		-HB112	1.55		-CR815 2/	1.30
8	AAA-Amer. Dream	35.00		-HB113	1.55		-CR817 2/	1.40
	-PA Crude #5	17.00		-HB164	1.75		-CR819 2/	1.35
	-Mag. Nike Ram	36.95		-HB165	2.50		-CR1012 2/	1.00
9	AAA-LS TS 775 #7	6.50		-HB2.1	2.25		-CR1015 2/	1.30
	-LS 1350 #11	16.95		-HB72	1.95		-CR1017 2/	1.45
	-LS 1650 #13	19.95		-HB80	2.25		-CR1019 2/	1.50
10	AAA-Mach 1.2 A-P	14.95		-HB95	3.00		-CR225 2/	2.00
	-Mach 1.2+A-G	29.95		-HB101	3.25		-CR3010 2/	1.00
	-Mach 1.6 B-P	26.95	16	FSI-NC 71	1.60		-CR3912 2/	1.20
	-Mach 1.6+B-G	54.95		-HNC81	2.10		-CR3913 2/	1.40
11	AAA-BT20 HD	2.20		-HNC101	2.30		-CR3116 2/	1.50
	-BT110 HD	2.30		-NC 121	2.40	19	AAA-Aerobee # 9	21.95
	-BT112 HD	2.50		-NC 152	3.90		-Aerobee #10	42.95
	-BT113 HD	2.60		-NC 191	6.00	20	AAA-EM2.1 D	4.00
	-BT164 HD	2.75		-NC 171	3.30		-EM2.1 F	4.00
	-BT165 HD	3.75		-NC 172	5.10		-EM72 D	4.00
	-BT2.1 HD	4.50		-NC 122	2.10		-EM72 F	4.00
	-BT72B HD	3.25		-NC 192	3.40		-EM72 3D	4.00
	-BT72C HD	4.25		-NC 193	4.70		-EM80 F	4.50

Pg.	Catalog #		
20	AAA-EM95 3F	\$	7.50
	-EM95 1.5"		7.50
	-EM101 F		5.00
	-EM101 3F		5.95
	-EM101 4D		6.95
	-EM101 1.5"		7.50
	-EM101 2.34HD		15.00
20	AAA-PNC56A		3.75
	-PNC165		4.00
	-PNC160RW		5.95
	-PNCBOK		5.00
	-PNCBOSP		6.00
	FSI-NC225M		6.00
	ACE-PNC39		16.95
20	FSI-NP20		5.50
	-NP22		5.65
	-NP24		5.75
	-NP26		6.25
	-NP30		7.50
	-NP36		8.50
	AAA-NP24 Pro		10.00
	-NP34 Pro		14.00
	-NP44 Pro		18.00
	-NP54 Pro		22.00
	-PK12		4.50
	-PK18 'MRC'		4.50
	-M45 /ft.		5.00
	-S12 2/		2.30
	-S13 2/		2.30
	AAA-SS1 6/		1.35
	-SS2 6/		1.60
	-SS3 6/		1.60
	-SS4 6/		3.60
	AAA-SC18		1.50
	-SC25		1.80
	-SC38		2.00
	-SC50		2.20
	-SC75		3.20
	-SC100		3.95
21	FST-TA5560		4.75
	-TA6070		4.30
	FSI-6881		2.60
	-6812		2.80
	-6810		2.80
	-6815		3.00
21	AAA-FGT 1 per "		.60
	-FGT 3 per "		.65
	-FGT 4 per "		1.00
	-FGTEM 1.1 /"		.85
	-FGTEM 1.5 /"		.95
	-FGT 5 per "		1.35
	-FGTRG /"		1.25
21	AAA-GR 58		9.00
	-GR 1		12.95
	-GR 150		20.00
	-GR 200		26.50
	-GR YARN		4.75
21	AAA-BFS 1		2.65
	-BFS 1		4.95
	-BFS 2		2.65
	-BFS 2		5.00
	-BFS 3		3.50
	-BFS 4		4.10
	-PFU 1		4.50
	-PFU 2		2.25
22	AAA-BANDIT 3X		79.95
23	AAA-Therm. RED		4.00
	-Therm. YEL.		4.50
	-Therm. White		5.00
	-CDIE		3.50
	-CDIF		3.75

Pg.	Catalog #		
23	FST-1A10 20/ S		3.25
	-1A20 16/		3.25
	-1A25 12/		3.25
	-1A30 8/		3.25
	AAA-SF 100		15.95
	-EEM		7.00
	-EFM		8.00
23	AAA-LL 1B		1.40
	-LL 1G		1.25
	-LL 2		1.70
	-LL 3		1.75
	-LL 4B		2.75
	AAA-HF 1		2.00
	-SP 5s		6.00
	-SP 5L		9.99
	-SP15s		6.00
	-SP15L		9.99
	-SP30s		6.00
	-SP30L		9.99
	-SP120s		6.00
	-CEPOXY		13.50
	SC -ACC ZIP		5.99
	SC -HST 1 1/2 oz.		3.40
	SC -HST 7 1 oz.		5.75
	SC -HST 4 2 oz.		10.00
	SC -US1 2 oz. SOL		4.95
	AAA-FMC		2.25
	-LWP		1.25
	-PR55N 4/		1.00
	-HMGS 1		.25
	-TR 1 2/		1.00
	-TR 2 2/		1.00
	-TR 3 2/		1.00
	-EB 1 6/		2.25
	-EB 2 6/		2.35
	FSI-Cat 92-91		2.50
	AAA-CAN Cat.		10.00
	-CAN Gui.		10.00
	AT -Cat. first		3.00
	AT -CAT '92-1		2.00
	ET -CAT'88		10.00
	AAA-CL C		1.50
	-SE 214 12/		1.50
	-SE 114 6/		1.50
	-SE 10 6/		2.00
	-SE 6 3/		2.00
24	CD -MC4P		3.00
	CD -2250P		2.50
	CD -2650P		2.50
	AAA-MLN-1 B.W.S.		2.75
	-MLN-2 BL.2P		2.75
	-MLN-3 B.R.S		3.00
	-RMI Gold		3.00
	-RMI Chrome		2.50
	-RMI S Steel		2.75
	AAA-Nike 2.600		99.95
--	ARG-Sweatshirt		15.00
	ARG-T Shirts		8.50

THE BIGGER THE BETTER



MAGNUM
PENNSYLVANIA CRUDE



LARGE SPORT-PAYLOADER
LEAST EXPENSIVE-MOST VERSATILE
ROCKET KIT PRODUCED TO DATE !!

DECALS

THE MAGNUM P.C. GIVES YOU :

- * PRECISION ENGINEERED BODY TUBING OF UNSURPASSED STRENGTH
- * PRECISION MACHINED PLYWOOD FINS & CENTERING RINGS !
- * HEAVY-DUTY ELASTIC SHOCK CORD FOR HIGH POWER APPLICATIONS
- * LARGE BRIGHT PARACHUTE OF RUGGED RIP-STOP NYLON !
- * EXTREMELY STABLE DESIGN & EASY SIMPLE CONSTRUCTION !!
- * VERY EFFICIENT - EASY TO FINISH PLASTIC NOSECONE !

INTERCHANGEABLE EM SYSTEM !!!

- * PREP & CHANGE AT THE RANGE FROM F TO H, SINGLE TO MULTI.
- * RUGGED HOST 2.6 ACCEPTS ONE 1.125" OR 1.5" MOUNT INCLUDED.
- * ACCEPTS THREE 1.125" OR FOUR .94" MOUNTS INCLUDED.

MASTER THE POSSIBILITIES-LIMITED ONLY BY YOUR IMAGINATION !!!!!
LENGTH : 57 "
DIAMETER : 4 "

The MAGNUM PENNSYLVANIA CRUDE is our response to request for a BIG rocket to become familiar with the new wave of High Power. Simply great for demonstration flights with a slow, realistic lift off, majestic recovery and its versatility for field size. With the NEW N.A.R. weight & propellant limits increase, you can fly as a Model Rocket or opt for the max in power. Designed to allow you to use Vulcan 1.5" motors in our new AAA BT-1.65 EM as well as standard 'D' & 'F' sized motors, our MAGNUM P.C. features plywood through-the-wall fin attachment for max strength.

No. 8

THE STANDARD OF INDUSTRY - 4⁰⁰

© 1985

MOTORS: F41, F50, F80-5 (1) G40, G45, G60, G80-10
F10, F20, F30-10 (3) G25, G45, G60-15
E28, E30, E50, D12-5 (4) F32, F44, G42, G55-15

Made in U.S.A.

HD SMALL & LARGE TUBING COUPLERS

Connect Same Size Body Tubes
Either Permanently or for Staging.



AAA-TC-7	.705	for	BT20HD
FSI-SC-7	.715	"	RT718
-SC-8	.903	"	RT818
AAA-TC-110	.955	"	BT110HD
FSI-SC-10	1.13	"	RT1018
AAA-TC-112HD	1.14	"	BT112HD
FSI-SC-12	1.30	"	RT1218
AAA-TC-13	1.26	"	BT113HD
FSI-SC-15	1.60	"	RT1518
AAA-TC-16	1.56	"	BT1.64HD
-TC-165	1.52	"	BT1.65HD
FSI-SC-17	1.80	"	RT1718
-SC-19	2.00	"	RT1918
AAA-TC-2.1HD	2.00	"	BT2.1HD
-TC-72-4	2.17	"	BT70-72HD
FSI-SC-22	2.25	"	HT225HD
AAA-TC-80-4	2.53	"	BT80HD
-TC-90-4	3.08	"	BT90HD
-TC-95Exp	3.28	"	BT95Exp
-TC-101	3.89	"	BT101HD

SOLID & HOLLOW BULKHEADS

- * Connect Body Tubes of the Same Size.
- * Build and Connect Payload Sections.
- * Any Application Requiring Complete Blockage of Tubes.

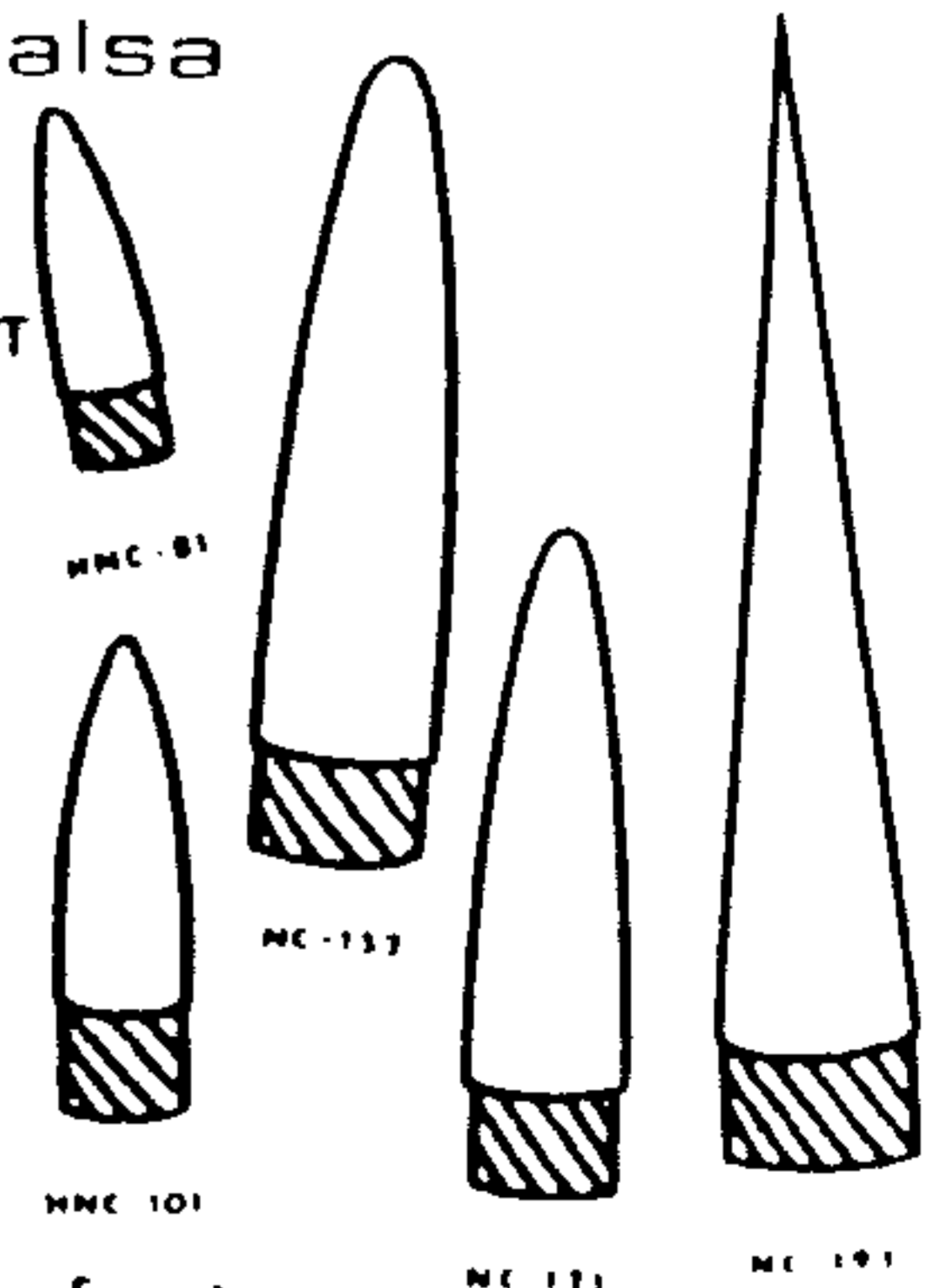
Catalog No.

FSI -BB 8	AAA -HB 20	AAA-HB2.1
-BB10	-HB110	-HB72
-BB12	-HB112	-HB80
-BB15	-HB113	-HB95
-BB19	-HB164	-HB101
-BB22	-HB165	

FLIGHT SYSTEM'S CONES

Precision Machined, Lightweight Balsa
Except as Noted

CAT. NO.	"A" FITS TUBE DESCRIPTION	"B" NOSE CONE I.D.	AVERAGE LENGTH	NET WEIGHT
6171	NC-71	.175"	2.75"	.35 oz.
6181	*HNC-81	.903"	2.8"	.50 oz.
6101	*HNC-101	1.13"	3.5"	.50 oz.
6121	NC-121	1.30"	5.3"	.60 oz.
6152	NC-152	1.60"	6.0"	1.00 oz.
6191	NC-191	2.00"	10.0"	2.00 oz.
6171	NC-171	1.80"	4.00"	.50 oz.
6172	NC-172	1.80"	6.25"	1.50 oz.
6122	NC-122	1.30"	2.75"	.40 oz.
6192	NC-192	2.00"	4.00"	.50 oz.
6193	NC-193	2.00"	5.00"	.50 oz.
6125	NC-225	2.25"	6.25"	2.00 oz.



* Hardwood nose cone when extra weight is needed up front.

AEROTECH's NEW RELOADS April 1992

AT-20602	18 mm: B6-2,4,61	5.0 N-sec	3/ \$3.55
-30408	C4-3,5W	10.0 N-sec	3/ \$3.95
-30603	C6-3,5,7W	10.0 N-sec	3/ \$3.95
-31204	C12-4,7,10T	10.0 N-sec	3/ \$3.95
-42404	D24-4,7,10T	20.0 N-sec	3/ \$6.95
-52704	E27-4T	23.0 N-sec	3/ \$9.95
AT-40904	24 mm: D9-4,7W	20.0 N-sec	3/ \$6.95
-41504	D15-4,7,10T	20.0 N-sec	3/ \$6.95
-51103	E11-3,5J	35.0 N-sec	3/ \$9.95
-52804	E28-4,7,10T	40.0 N-sec	3/ \$9.95
-61203	F12-3,5J	43.0 N-sec	3/ 12.95
-62404	F24-4,7,10W	50.0 N-sec	1/ \$4.95
-63906	F39-6,9,12T	50.0 N-sec	3/ \$9.95
AT-52305	29 mm: E23-5,8,11T	40.0 N-sec	1/ \$3.95
-62205	F22-5,7J	65.0 N-sec	1/ \$4.95
-65205	F52-5,8,11T	80.0 N-sec	1/ \$4.95
-73305	G33-5,7J	100.0 N-sec	1/ \$5.95
AT-91616	32mm: F16- RCJ	80.0 N-sec	2/ \$7.95
-91623	F23- RCW-SK	70.0 N-sec	2/ \$9.95
	(Skywriting - long smoke burn)		



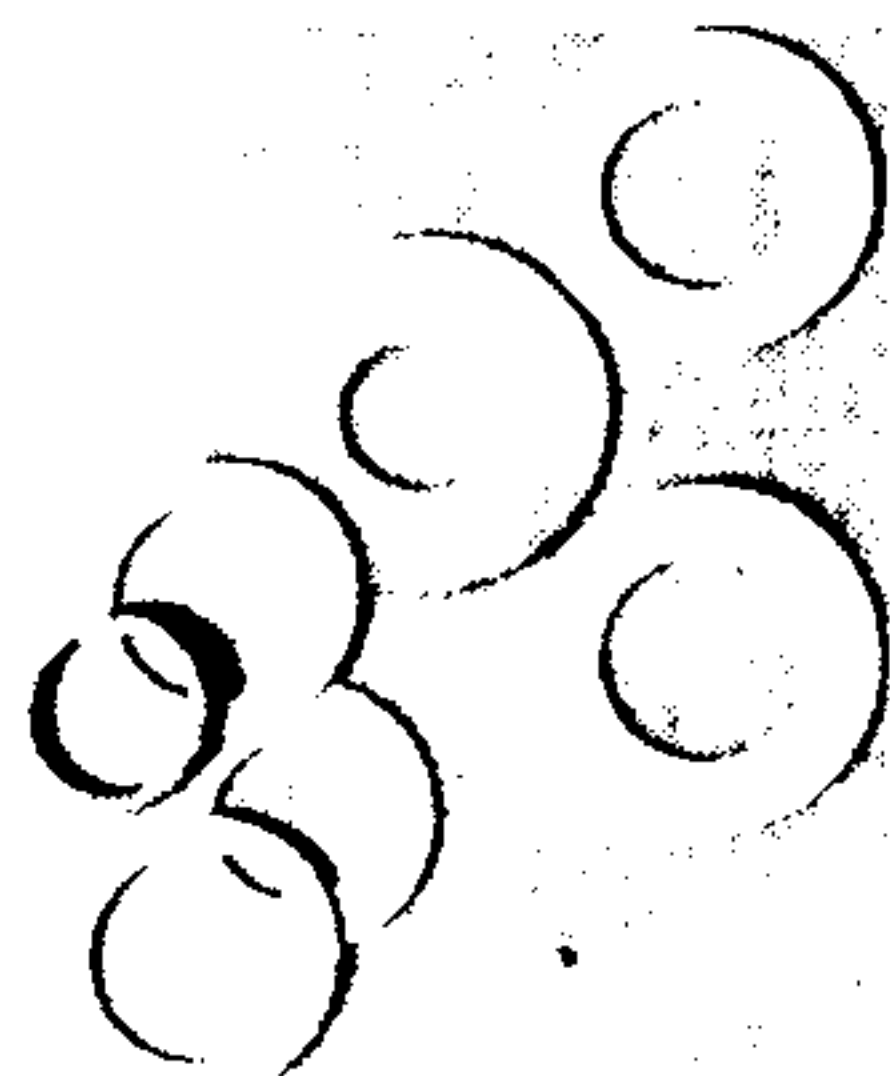
& FSI ROCKET KITS

AT -89001	INITIATOR Systems Package Outfit	
AT -89281	MANTIS HD Launch Pad	
AT -89381	INTERLOCK Controller	
AT -89341	INTERLOCK Ignitor Clip	
AT -89011	Initiator Advanced Kit	39" x 2.6"
-89010	Mustang " "	31" x 1.9"
-89012	HV Arcas " "	56" x 2.6"
-89013	Arreaux " "	43" x 1.9"
-89014	IQSY Tomahawk "	41" x 1.9"
-89015	Astrobee D Advanced Kit	68" x 2.6"
-91010	Phoenix Rocket Glider Outfit	
-89018	Wart-Hog	37" x 2.6"
-89016	Cheetah	32" x 1.9"
-89017	Strong Arm	44" x 2.6"
-89019	Mirage	87" x 2.6"
FSI -1002	Stargazer	23" x .9"
-1003	Nova	18" x 1.1"
-1004	Voyager	23" x 1.1"
-1005	Oso	29" x 1.1"
-1014	Black Brant II "1/8 Scale"	42" x 2.1"
-1016	Eos D	43" x 1.6"
-1017	Eos F	43" x 1.6"
-1018	Maverick	29" x 1.6"
-1020	Heracles	34" x 2.25"
-1022	Megatron	35" x 1.6"
-1023	Nike-Tomahawk 1/8 scale kit	46" x 2.1"
-1024	Wasp 1/8 scale kit	35 x 2.1"
-1025	Javelin 1/10 scale kit	55 x 2.25"
-1031	1/6 Scale Sandia Sandhawk	49 x 2.0"
-1030	1/8 Scale Nike Smoke	28.6" x 2.0"
-1032	Intrepid 49.5" x 2.25"	1.7"

PLYWOOD CENTERING RINGS

Ultra lightweight precision cut plywood extra strong

We make centering rings for our tubing sizes as well as anyone elses. All we need to know is the ID of the tube and the engine size to be used. If more than (1) engine, then the #. Listed below by BT size, HD or regular BT.



Catalog No.

AAA	-CR2.1HD-D	BT2.1HD	AAA Tube	#110	for a	24mm	engine
	-CR2.1HD-F	BT2.1HD		#112	"	29mm	"
AAA	-CR70 HD-8	BT70-72	FSI Tube	#8	"	21mm	"
	-CR70 HD-D	BT70-72	AAA Tube	#110	"	24mm	"
	-CR70 HD-F	BT70-72		#112	"	29mm	"
AAA	-CR80 HD-D	BT80HD		#110	"	24mm	"
	-CR80 HD-F	BT80HD		#112	"	29mm	"
	-CR80 HD-3D	BT80HD		#110	"	3- 24mm	"
AAA	-CR95Exp-F	BT95Exp		#112	"	29mm	"
	-CR95Exp-3F	BT95Exp		#112	"	3- 29mm	"
	-CR95Exp-1.5	BT95Exp		#1.65	"	38mm	"
AAA	-CR101HD-D	BT101HD		#110	"	24mm	"
	-CR101HD-3D	BT101HD		#110	"	3- 24mm	"
	-CR101HD-5D	BT101HD		#110	"	5- 24mm	"
	-CR101HD-F	BT101HD		#112	"	29mm	"
	-CR101HD-3F	BT101HD		#112	"	3- 29mm	"
	-CR101HD-5F	BT101HD		#112	"	5- 29mm	"
	-CR101HD-1.5	BT101HD		#1.65	"	38mm	"

All our rings are the same ones used in our Custom Eng. Mts.

PAPER CENTERING RINGS

Catalog No.

CR-810	Centering Ring	for	.903	tube	in	1.13"	Tube
CR-812	"	"	"	"	"	1.34"	Body
CR-815	"	"	"	"	"	1.64"	Body
CR-817	"	"	"	"	"	1.84"	Body
CR-819	"	"	"	"	"	2.04"	Body
CR-1012	"	"	"	HRT1018	"	1.34"	Body
CR-1015	"	"	"	"	"	1.64"	Body
CR-1017	"	"	"	"	"	1.84"	Body
CR-1019	"	"	"	"	"	2.04"	Body
CR-225	"	"	"	"	"	2.34"	Body
CR-3010	"	"	"	Use in CRT#2110 with 1.01" OD			
CR3912	"	"	"	1.01" OD in 1.22" OD, CRT#2112			
CR3913	"	"	"	1.01" OD in 1.34" OD, CRT#2113			
CR3113	"	"	"	1.22" OD in 1.34" OD, CRT#2113			
CR3116	"	"	"	1.22" OD in 1.64" OD, CRT#2116			

AEROBEE-HI "NRL-41"

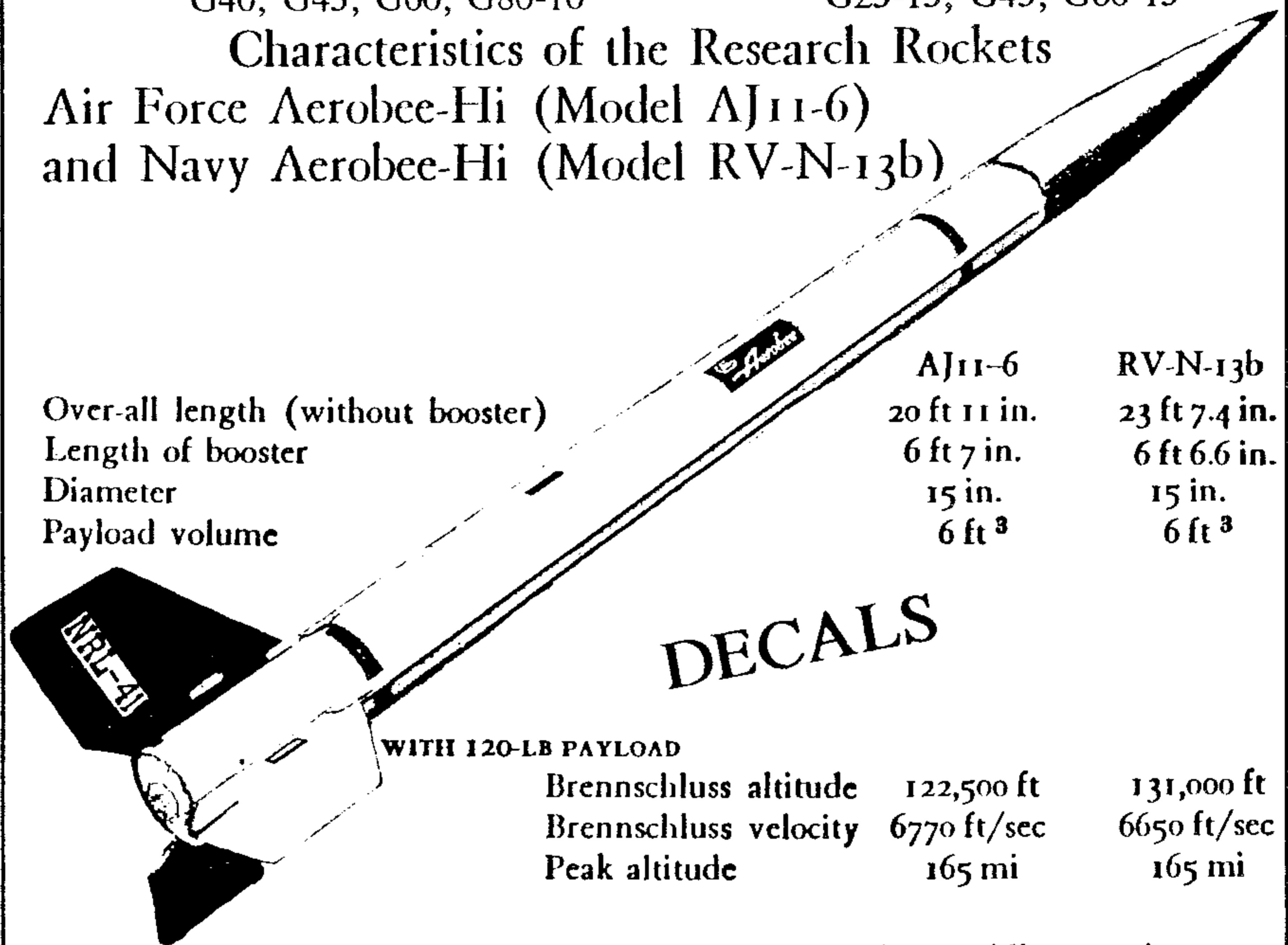
This SCALED Navy version was the real "HI" by Aerojet, Inc. back in 1952. They developed the 23.6 foot rocket to achieve a 165 mile peak alt. the true scale is .173 = 49.125 x 2.6" for the large model and 31.3 x 164". The smaller version has the true scale nosecone from Estes Industries.

No. 10 2.6" Advanced Kit 1:6
Motors: F41, F50, F80-5, F100-4
G40, G45, G60, G80-10

No. 09 Scaled Kit 1:9
Motors: F10, F41, F80-10, F100-8
G25-15, G45, G60-15

Characteristics of the Research Rockets

Air Force Aerobee-Hi (Model AJ11-6)
and Navy Aerobee-Hi (Model RV-N-13b)



Over-all length (without booster)
Length of booster
Diameter
Payload volume

AJ11-6
20 ft 11 in.
6 ft 7 in.
15 in.
6 ft³

RV-N-13b
23 ft 7.4 in.
6 ft 6.6 in.
15 in.
6 ft³

DECALS

WITH 120-LB PAYLOAD

Brennschluss altitude	122,500 ft	131,000 ft
Brennschluss velocity	6770 ft/sec	6650 ft/sec
Peak altitude	165 mi	165 mi

The Aerobee was originally designed to replace the rapidly running out supply of V-2 rockets captured at the end of World War II. Scientists realized the need for a small reliable rocket that could safely carry the valuable payload of instruments required for making measurements at high altitudes. The development of the rocket (originally called Venus) was carried out by the Aerojet Engineering corporation (now Aerojet - General) for the Applied Physics Laboratory at Johns Hopkins University and the Naval Research Laboratory.

What is now only a postscript to the story of the Aerobee will one day be a story in its own right. In 1952 Aerojet, Inc. (now the Aerojet General Corporation), Approached the Air Force and the Navy with a proposal which said that a better Aerobee could be made by building it with a good deal of magnesium and with stainless steel of the 410 series. The proposal was accepted and the new rocket was built. Its name became Aerobee-Hi. Its existence was announced in April 1955 and on May 2, 1956, the first one was fired at White Sands.

Engines, launch system, glue, and finishing supplies not included.

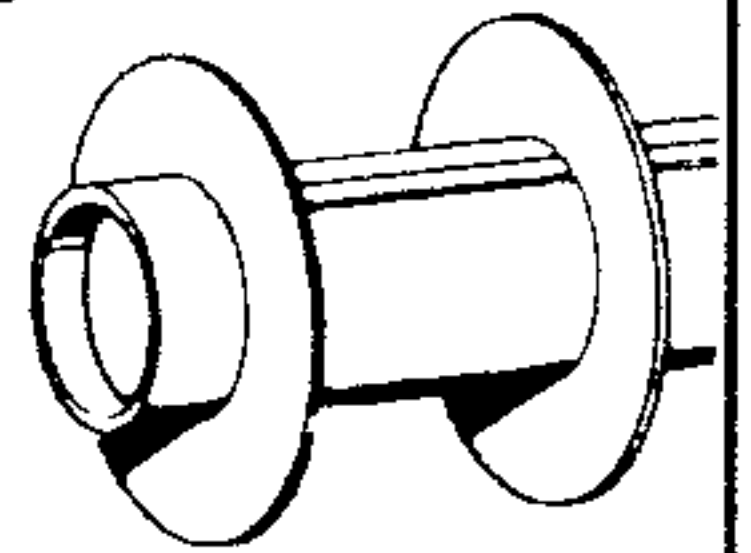
AAA CUSTOM MOTOR MOUNTS

These mounts hold and center the rocket engine in the "airframe" body tube.

CUSTOM ENGINE MOUNTS: Our "Tri-A" engine mounts are INOVATIVE and used exclusively in our kits. Just like a snap-fit kit; you first assemble, check alignment-adjusting & then glue. They include a punched engine tube(s), baffle-shockcord mt., centering rings, a shockcord & snap-swivel. All are ultra lightweight, PRECISION cut Plywood & heavy-duty parts. Custom work done to your sizes.

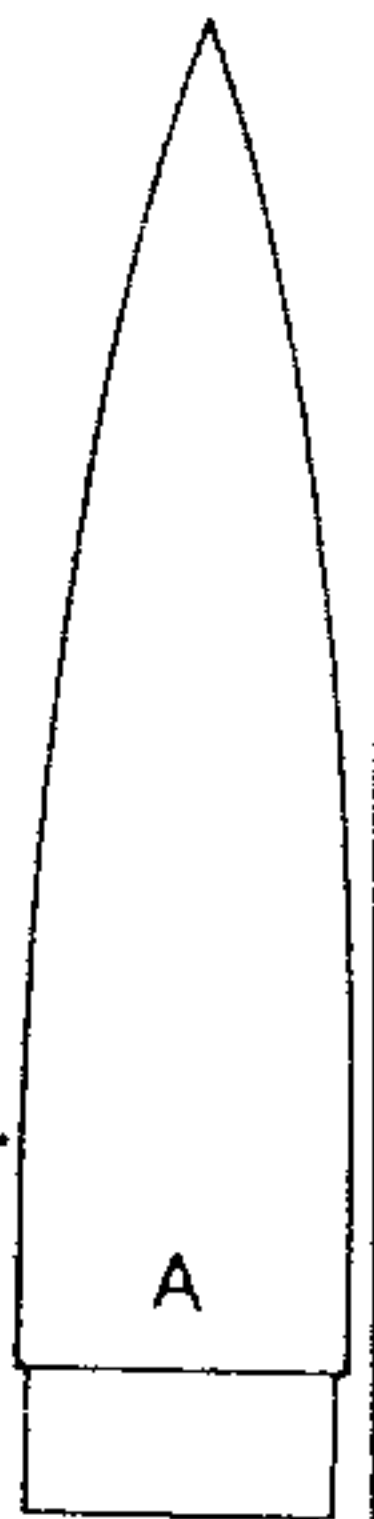
Catalog No.

AAA-EM2.1	D	Fits a .94" dia. motor in our BT-2.1HD.
-EM2.1	F	Fits a 1.125" dia. motor for above tube.
AAA-EM72	D	Fits a .94" dia. motor in BT-72HD.
-EM72	F	Fits a 1.125" dia. motor for above tube.
-EM72-	3D	Three .94" dia. motors for above tube.
AAA-EM80	F	Fits a 1.125" dia. motor in our BT-80HD.
-EM80-	3D	Three .94" dia. motors for above tubes.
AAA-EM95-	3F	Three 1.125" dia. motors in our BT-95 EXPL.
-EM95	?	Call for customer work design.
AAA-EM101-	F	Fits a 1.125" dia. motor in our BT-101HD.
-EM101-	3F	Three 1.125" dia. motors for above tube.
-EM101-	4D	Four .94" dia. motors for above tubes.
-EM101	?	Call for customer work.



LARGE NOSE CONES

AAA-PNC56	A	Same as on the Phoenix-Bird, fits a 1.34" body tube with coupler
-PNC165		Canaroc type on BB-V, fits a 1.64" body tube using a coupler.
-PNC160RW		"Magnum" reworked, fits a CRT-2116 tube using a coupler.
-PNC80-K		Estes cone used on BT-80, 8.12" long, 2.55" dia.
-PNC80-SP		Estes cone Reworked to fit <i>our BT-80HD</i> loosely using a coupler.
FSI -NC225M		For F.S.I.'s large HT-225.
ACE -PNC39		Perfect fit in our BT101HD or ace BT, 16" x 3.98"



H.D. PARACHUTES - STREAMERS - SHOCK-CORDS

Catalog No.


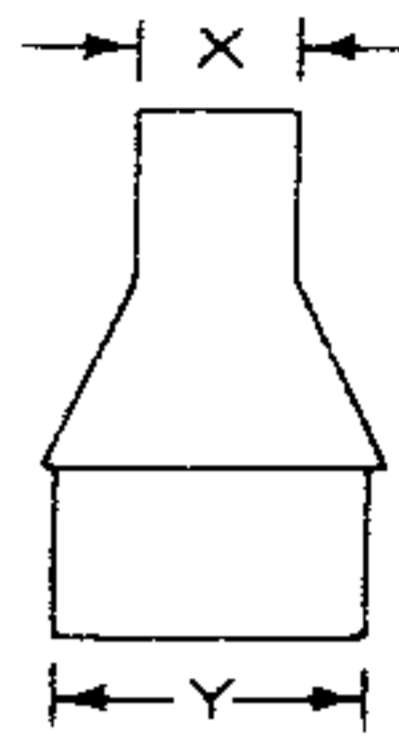
FSI -NP20	Nylon chute	20" dia.
-NP22		22" dia.
-NP24		24" dia.
-NP26		26" dia.
-NP30		30" dia.
-NP36		36" dia.
AAA-NP24P	Pro Chutes	24" - 16 gore
-NP34P	Pro	34" - 16 gore
-NP44P	Pro	44" - 16 gore
-NP54P	Pro	54" - 16 gore
-PK12	Kit	12"
-PK18	Kit	18"
-M45	Mylar 1/2 mil	45" wide/ft.
-S12	Streamers (3)	2" x 10'
-S13	Streamers (2)	3" x 10'

Catalog No.

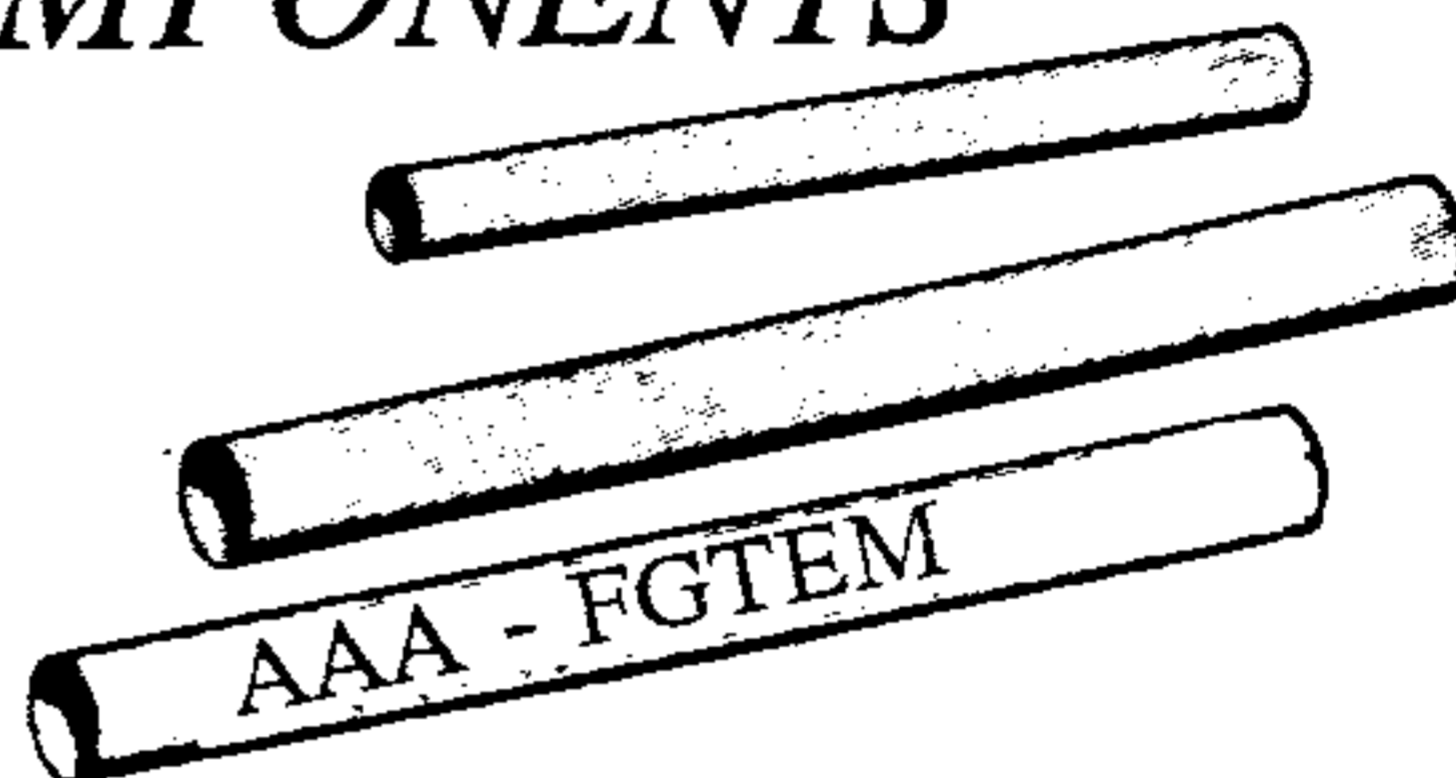
AAA-SS1	Snap swivels pk-	6 sm.
-SS2	Snap swivels pk-	6 med.
-SS3	Snap swivels pk-	6 lg.
-SS4	Snap swivels pk-	6 V. lg.
AAA-SC18	Nylon Elastic Shockcord	1/8 x 10'
-SC25		1/4 x 10'
-SC38		3/8 x 10'
-SC50		1/2 x 10'
-SC75		3/4 x 10'
-SC100		1 x 10'

BALSA & PLASTIC TRANSITIONS

Connect BT's of Different Sizes

Catalog No.	Desc.	Tube (X)	Tube (Y)	Net Wt	
EST-TA5560		Balsa adapter for BT55 to BT60			
EST-TA6070		Balsa adapter for BT60 to BT70, 71's, 72's			
FSI -6881	HTS-810	.903"	1.130"	.18 oz. (5.1 grams)	
-6812	TS-1215	1.300"	1.60"	.24 oz. (6.8 grams)	
-6810	TS-1019	1.13"	2.00"	.28 oz. (8.0 grams)	
-6815	TS-1519	1.60"	2.00"	.30 oz. (8.5 grams)	

STRUCTURAL COMPONENTS



FIBERGLASS TUBING Filament wound fiberglass tubing is useful for any application where an extremely strong, lightweight High Pressure chamber or a High Performance airframe is required. This is the same material used by the Dept. of Defense in it's R & D programs, as well as several Rocket Motor Manuf. We carry two grades, a thick wall for engine designing & a thin wall for engine mounting tubes or high performance airframes.

Catalog No.	I.D. "	O.D. "	Length Max.
AAA -FGT 1	.63 (16.0mm)	.69 (17.5mm)	60" (1524mm)
-FGT 3	1.01 (25.6mm)	1.125 (28.5mm)	60" (1524mm)
-FGT 4	1.50 (38.1mm)	1.625 (41.3mm)	18" (45.7mm)
-FGTEM 1.1	1.13 (28.7mm)	1.22 (31.0mm)	42" (1067mm)
-FGTEM 1.5	1.54 (39.1mm)	1.64 (41.6mm)	60" (1524mm)
-FGT 5	2.00 (50.8mm)	2.125 (54.0mm)	60" (1524mm)
-FGBT80	2.53 (64.2mm)	2.60 (66.0mm)	60" (1524mm)

We will sell to your requirements; by the foot or by the inch !

Pricing will be on the inch per item.

GRAPHITE RODS NASA spec. graphite rods are used to form a nozzle in motor manuf. as well as crucibles or engine bells. We stock four sizes of one foot lengths.

GR-5/8 = .625" dia.: GR-1 = 1" dia.: GR-150 = 1.5" dia.: GR200 = 2" dia.

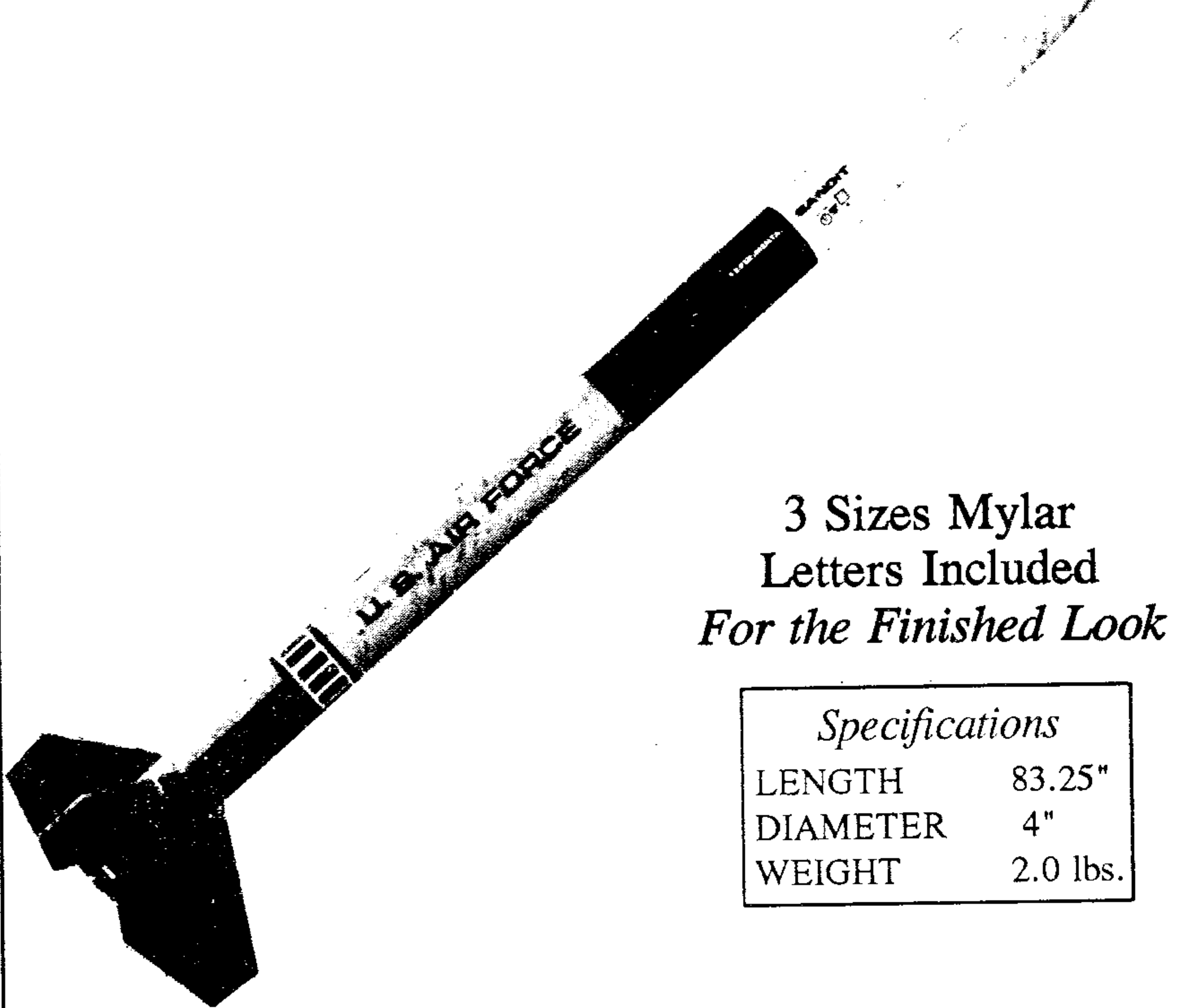
GRAPHITE YARN Graphite fibers, the super lightweight, ultrastrong, ultra stiff material used by aircraft, spacecraft and sporting industries. You can use it to reinforce fins, wings, etc. This yarn is composed of 15K individual continuous filaments, which can be spread into a thin ribbon of 1" or so. Just epoxy in place and when cured you've strengthened the bond. Sold in TEN Foot lengths.

FIN MATERIALS

Catalog No.					
AAA -BFS-1	Balsa Fin Stock	3/32" x 3	x 12	3 Pcs. of	Select
-PFS-1	Plywood	"	3/32" x 6	x "	Birch
-BFS-2	Balsa	"	1/8 x 3	x "	Select
-PFS-2	Plywood	"	1/8 x 6	x "	Birch or Poplar
-BFS-3	Balsa	"	3/16 x 3	x "	Select or Hard
-BFS-4	Balsa	"	1/4 x 4	x "	Select or Hard
-PFU-1	Plastic Fin Unit #13 BT, black 4 fin as Challenger II				
-PFU-2	Plastic Fin Unit as Scorpion kit, for .976" BT				

BANDIT 3X

VERY LARGE SPORT-PAYLOADER



3 Sizes Mylar
Letters Included
For the Finished Look

Specifications

LENGTH	83.25"
DIAMETER	4"
WEIGHT	2.0 lbs.

Included with the 3X Bandit:

- * Precision engineered body tubing of unsurpassed strength !
- * Precision machined plywood fins & centering rings !
- * Heavy-duty elastic-nylon shock cord for high power !
- * Large bright parachute of rugged rip-stop nylon !
- * Extremely simple construction & very stable design !
- * Very efficient ace plastic nosecone !

Interchangeable EM System:

- * Prep & change at the range from F to H, single to multi.
- * Rugged host 2.6 accepts one 1.5" mount included.
- * Accepts three 1.125" or four .94" motors, mounts included.

Master the Possibilities Limited only by your Imagination !

No. 14

MOTORS: (3) F100-4, F50-6, G40, 45-10, G60-10, H70-10, H140-10
(4) E30-4, E50-5, F32-5, F44-5, G42-8, G55-10
(1) H45-10, H65-10, H100-10, I95-10, I132-10 all 1.5" dia.

IGNITION MATERIAL

"THERMALITE WICK": For making your own ignitors as used with the AeroTech, Crown & FSI line. Basically like "EnerJet" material with resistance wire braiding & fabric covering. Used for direct Second- Stage or flashbulb type ignition. *Standard lengths FIVE feet.*

Cat. No.

Therm. Red	"Slow" approx.	1.5"	per second burn rate, fabric red
Therm. Yel.	"Medium" approx.	3.0"	per second burn rate, fabric yellow
Therm. White	"Fast-Rapido"	5.0"	Per second burn rate, Fabric white

Red Thermalite wick, 30 meter rolls \$36.50.

AAA-FBI AG-1 Flashbulbs w/wires soldered, Ignition of Thermalite wick when used in clustering & very LOW voltage. 6/ \$4.99..

IGNITERS

AT-89891 4" Copperheads \$2.59 Pack of 6.

AT-89892 8" Copperheads \$3.39 Pack of 6.

CDI-E Pack of 4, used on A, B, C, D and E Motors.

CDI-F Pack of 4, used on F Motors

FSI-I Packs of different lengths; 1A-10; 1A-20; 1A-25; 1A-30.

AAA-SF 100 Safty-Fuse, 100' of waterproof green fuse, 3/32" Dia. for experiments.

AAA-EEM Electric 'Economical' matches for replacement of AeroTech's 20/ \$7.00.

AAA-EFM Same but longer leads for F coreburn composites 20/ \$8.00.

MISCELLANEOUS

Catalog

* NEW

AAA-LL 1B	Launch Lugs for 1/4" rod, Brass	2/ pk.
-LL 1G	Launch Lugs for 1/4" rod, Glass	2/ pk.
-LL 2	Launch Lugs for 3/16" Maxi-rod, Paper	6/ pk.
-LL3	Launch Lugs for 1/8" rod, Paper	6/ pk.
-LL4	Launch Lugs for 1/2" rod, Brass	2/ pk.
AAA-HF 1	Composit Dynamics Hobby-foam kits of 80 grams.	
-SP-5S	Super-Poxy 2 part	Quick cure of 5 min. 4 1/2 oz.
-SP-5L *	Super-Poxy 2 part	Quick cure of 5 min. 9 oz.
-SP15S	Super-Poxy 2 part	Mid cure of 15 min. 4 1/2 oz.
-SP15L *	Super-Poxy 2 part	Mid cure of 15 min. 9 oz.
-SP30S	Super-Poxy 2 part	Slow cure of 30 min. 4 1/4 oz.
-SP30L *	Super-Poxy 2 part	Slow cure of 30 min. 9 oz.
AAA-CEPOX *	COATING Epoxy for use on Balsa Wood 13 oz..	
AAA-ACC *	Cyano glue Accelerator insta-set 3 oz. pump.	
SC-HST4 *	HOT STUFF brand super glue Cyano 2 oz. bottle.	
AAA-EMC *	Epoxy Mixing Cups, all types of graduations & HD Stirers 10 pk.	
-LWP *	Lead weight packets for balancing rockets, Mix w/epoxy 4 oz.	
-PR55N *	Paper rolls made for adders, use as wrapper guide on BT's .25 ea.	
-HMGS-1 *	Hot melt glue sticks of 10" long, clear std. size gun .50 ea.	
AAA-TR 1	Thrust Rings for FSI .903 BT, 2 pk.	
-TR 2	Trust Rings for "F" size BT-112 2 pk.	
-TR 3	Thrust Rings fot "D" size BT-110 2 pk.	
AAA-EB 1	Epoxy Brushes medium size 1/2" 6 pk.	
-EB 2	Epoxy Brushes large size 5/8" 6 pk.	
FSI-CAT92-91	Flight Systems Catalog for 1991 - 1992.	
AAA-CAN-C	Canaroc Catalog, early 80's Collector Item.	
-CAN-G	Canaroc Guide Book.	
-AT-C	AeroTech's first catalog, listing of motors, mid 80's.	
-USR-C	US Rockets Catalog of kits.	
-ET-C *	ENERTEK 1988 Advanced Rocketry Catalog.	
-CL-C	AAA CHEMICAL List & calalog.	
-SE214 1/2	Screw-Eyes, Small 5/8" x 3/16" eye 12 pk.	
-SE114	Screw-Eyes, Medium 1" x 1/4" eye 6 pk.	
-SE10	Screw-Eyes, Large 1 3/8" x 1/2 eye 6 pk.	
-SE6	Screw-Eyes, X-Large 2" x 5/8" eye 3 pk.	

MISCELLANEOUS

TAPES Mil. Spec. Training Cassette's used but perfect to record over. Made in the USA for the U.S. Govt. 3/ \$1.00 or 20/ \$5.00

ROCKET PLANS:

CD-MC4P Mini-Cineroe Modification Plans Due to the phase-out of the Cineroe aerial camera by Estes Ind., this mod. will be limited to Cineroes you have now. Specs. are Dia. 1.25", Net wt. of 2.5 oz.. This is approx. 40% less weight & drag than standard cameras.

CD-2250P ENERJET 2250 Sounding Rocket Plans Scale drawings of the 2250 Sounding Rocket. This rocket was used by the U.S. Air Force in a cadet ballistics training program at the USAF Academy. They are the same as our kits of this fantastic training aid.

CD-2650P UPDATED 2650 Sounding Rocket Plans Originally intended to replace the 2250 Sounding Rocket, These plans show a booster unit for a much greater altitude. The original version was flown at the California Mojave Test Area (MTA) to an altitude of 8,000 feet in the early 60's.

PRESSURE SENSITIVE MYLAR: LETTERS & NUMBERS: Reflective "Mirror Image". The final touch to give your bird an ONLY look as one-of-a-kind. Both letters & numbers come on the same sheet. 3 sizes, 4 colors.

AAA - MLN - 1R	Red 1/4"	1W - White 1/4"	1S - Silver 1/4"	1G - Gold 1/4"
AAA - MLN - 2BL	Black 1/2"	2R - Red 1/2"		
AAA - MLN - 3BL	Black 1"	3R - Red 1"	3S - Silver	
AAA - RMI - GOLD		4" x 27" Strip,	only .002" Thick Mylar	
AAA - RMI - CHROME		" " " "	" "	" "
AAA - RMI - STAINLESS STEEL		4" x 26" Strip	" "	" "

Technical Reports

AIR - 3: This "ACE Information Report" includes instructions for motor installation, clustering and staging techniques. Only \$1.99.

AIR - 6: Motor Selection and Performance Optimization. Necessary and basic techniques and theoretical trends of performance. \$3.95.

AIR - 10: Construction Techniques. Comprehensive summary and "how-to" book of advanced techniques. A must. Only \$4.95 48pp.

CUSTOM ORDERED KITS

No. 20

Nike-Ram 2,600
"All Weather" Magnum

With the FGFBT-80 Pro-Airframe G-10 44.2"L x 2.6"D to use 29, 38, 54 MM. Standard will be 29mm mount. Can be ordered with any above.

Estes - MRC Model Kits & Motors .

Catalog

1274-S T Klingon	\$29.99	1275-S T USS Enter.	\$29.99
2063-Mars Snooper	24.99	2064-Impulse	44.99
2065-Maxi Force	54.99	2066-Patriot	60.00
2073-AstroBlast R/C	75.00	2237-Transroc II	30.00
1380-Phoenix	19.19	2001-Saturn V	49.89
2019-Titan IIIE	29.00	2032-Magnum	21.00
2035-Optima	38.00	2036-Super Vega	32.00
2048-Saturn 1B	40.00	2022-Warp II	15.19
EST -A8-3, 5. 3/	3.89	EST -B4-2, 4, 6, 3/	3.99
-B6-2, 4, 6, 0.3/	3.99	-C6-3, 5, 7, 0.3/	4.69
-B8-5 3/	3.99	-C5-3 3/	4.69
-D12-0, 3, 5, 7. 3/	6.99	-D11-9 3/	6.99
EST -Blast OFF F.P.	27.00	EST - <i>E-15-9</i>	
EST -		EST -	
EST -		EST -	

. . . . CONCEPT II

MRC-LS 101	Standard Arm kit		\$15.98
-LS 102	2 x 2 kit		14.98
-LS 103	Flarepatriot kit		14.98
-LS 104	Trailblazer kit		19.98
-LS 100	Ironman kit		19.98
-LS 140	Thermal Hawk Glider kit		12.98
-LS 201	Sounding Rocket Launcher		24.98
-LS 205	Dual Elect. Launch Control Panel		23.98
-LS 500	Flarepatriot Starter Kit		59.98
MRC-LZ 940	FX Engines	6/	6.49
-LZ 910	A8-3 TRACKER Motors	2/	2.99
-LZ 912	B4-4 TRACKER Motors	2/	3.25
-LZ 913	B6-4 TRACKER Motors	2/	3.25
-LZ 916	C6-3 TRACKER Motors	2/	3.45
-LZ 917	C6-5 TRACKER Motors	2/	3.45

CUSTOM FABRICATED PARTS

Engine mounts longer than standard centering rings -
engine mounts small runs of special size body - tubes.

IMPORTANT

PLEASE READ THIS INFORMATION Before ordering merchandise.

SHIPMENTS *WITHIN* CONTINENTAL U.S.

Please include Full Payment for merchandise plus sufficient allowance for Postage and Insurance.

OVER-PAYMENTS WILL BE REFUNDED

All merchandise is offered subject to prior sale.

SORRY, NO C.O.D. ORDERS ACCEPTED

UPS shipments are insured up to \$100.00. Include .30 for each additional \$100.00 or fraction thereof.

FREIGHT SHIPMENTS

If speed is not essential, motor freight is the most economical for heavy shipments. Minimum rate is for 100 pounds. Specify carrier you prefer or rely on our choice for the best service.

IMPORTANT - Please use a separate page for all correspondence. This will help us to speed servicing your Order and assure a prompt reply to your letter.

POSTAGE CHART

SUB TOTAL	SHIPPING CHARGE
\$ 10-29.99	\$3.50
30-39.99	3.75
40-49.99	4.00
50-74.99	4.75
75-99.99	6.00
Orders over \$100.00 Add 5% for postage and handling.	
Canadian Orders add to the above figures:	
\$10. to \$39.00 Purchase-	\$4.00
\$40. to \$99.99 Purchase-	\$5.00
\$100. up add 3%.	

Notice: The prices in this catalog are current as of April 1992. This catalog supercedes all previous catalogs, data sheets and price lists. Prices subject to change without notice.

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"We guarentee shipment the same week of receipt on "instock" items. Specialty orders take slightly longer."

SHIPPING INFORMATION

The following information is provided in acceptance with the requirement set forth in Trade Regulation Rule 435, promulgated by the Federal Trade Commission.

We normally ship within 3 working days after receipt of your order. Occasionally an item may be temporarily out of stock, in which case delivery is subject to factory reorder. Generally, this is between 3 weeks and 60 days. We refund the full amount of any item which is no longer available. If your order has been shipped after a delay of longer than 30 days without prior agreement, you may, if you desire, return it intact immediately after receipt of order for a full refund, including shipping charges. Our Expediting Staff is available after business hours to answer order status inquiries. **5 pm - 10 pm Voice 717-587-5420 / FAX 717-586-1759.**

- CANADIAN SHIPMENTS -

SMALL PACKAGES WILL BE SHIPPED VIA PARCEL POST. MOTOR FREIGHT WHERE APPLICABLE.. Please note: We will not ship UPS to Canada (unless requested by customer) because of the additional (brokers) fee involved which is the responsibility of the customer.

Manufacturer's and distributor's only obligation shall be to replace such quantity of the product proven to be defective. User shall determine the suitability of the product for his intended use, and assume all risk and liability in connection therewith.

WARNING: NO MERCHANDISE WILL BE SHIPPED WITHOUT DISCLAIMER SIGNITURE.

Watch for new products as we add to our available line.

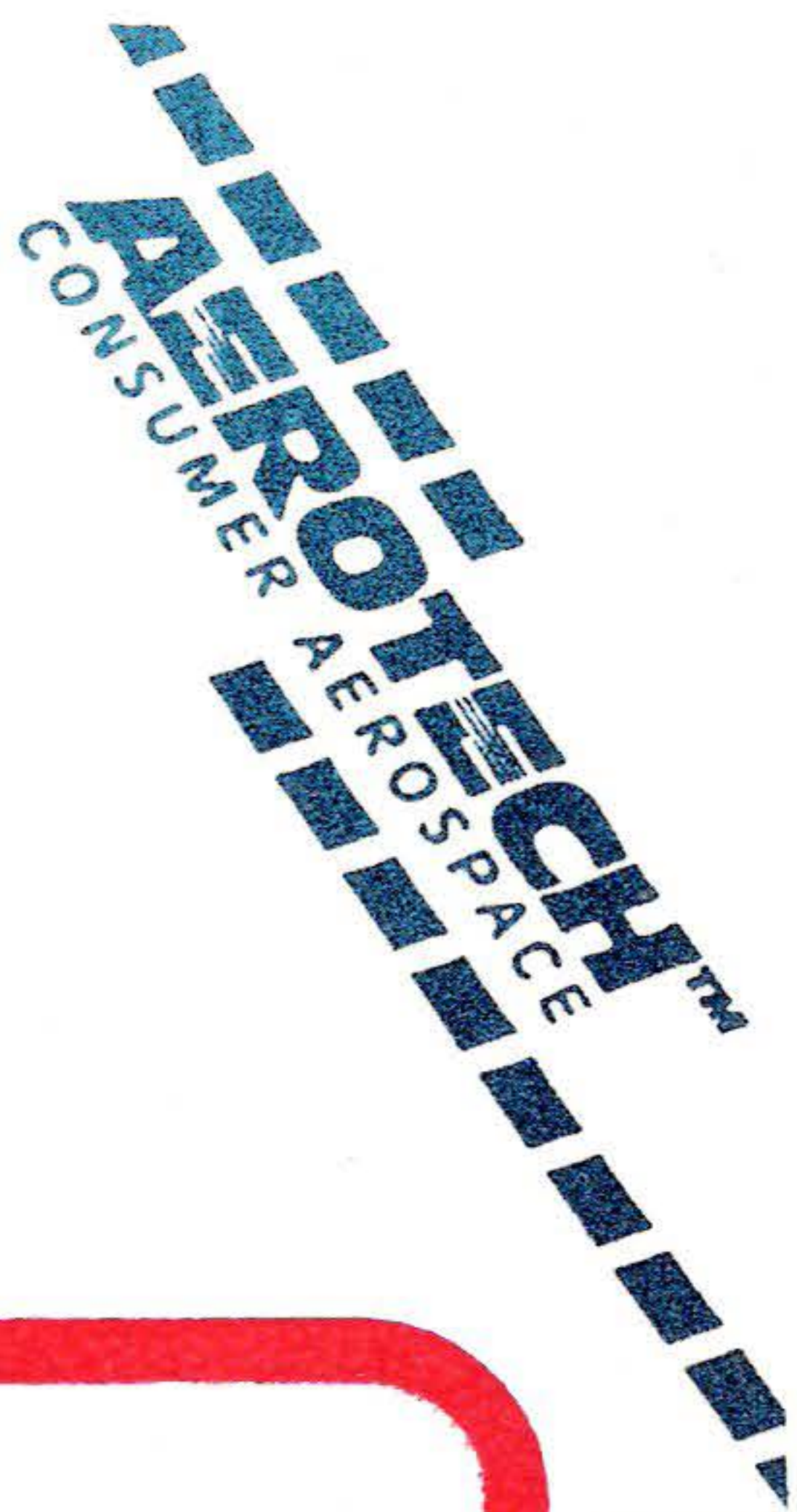
Prices subject to change without notice.

Happy flying and may life always be gentile with you !

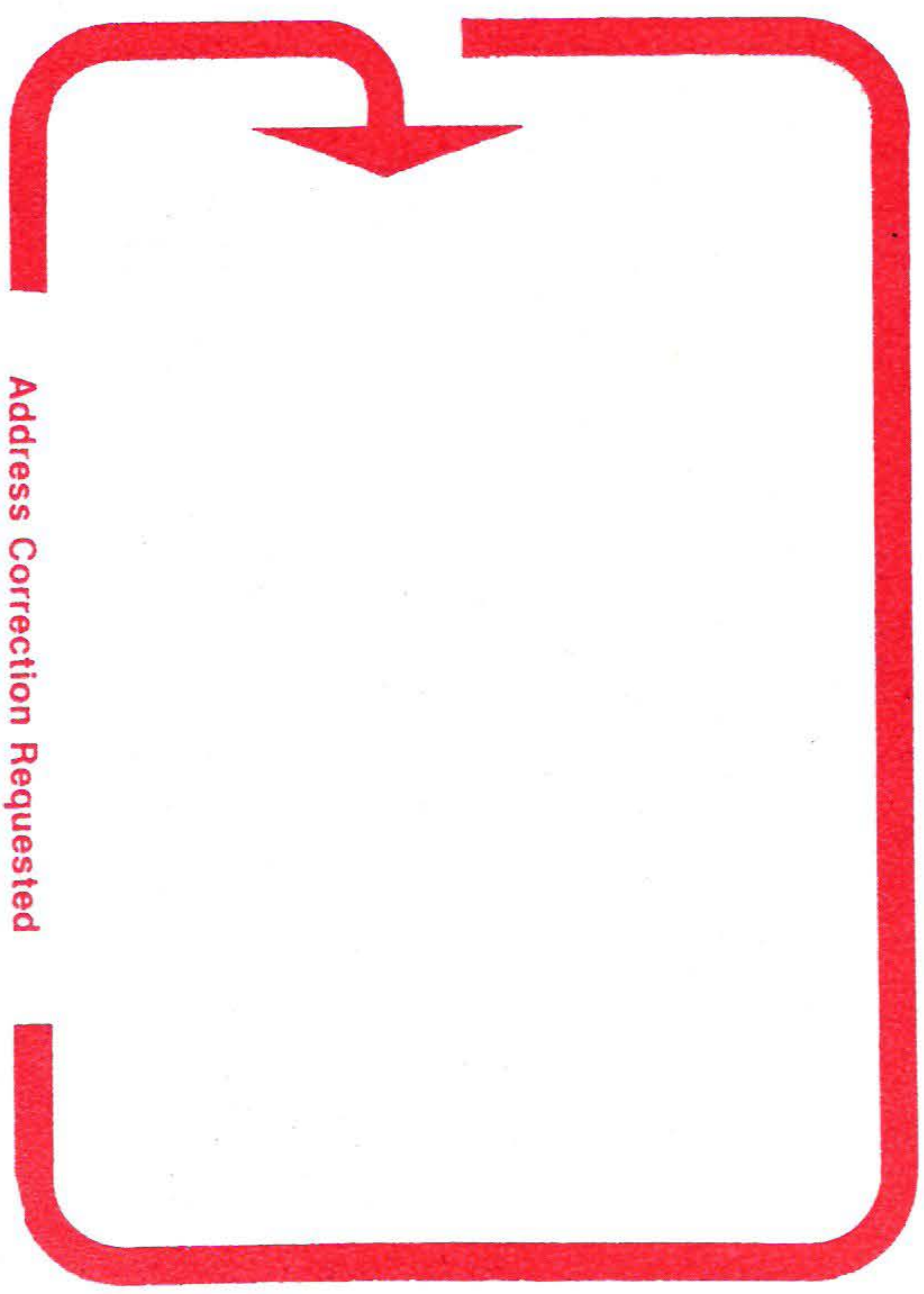
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"PROVIDING LEADERS THE DECISIVE EDGE - ALWAYS"



FIRST CLASS MAIL



Address Correction Requested



NAME _____

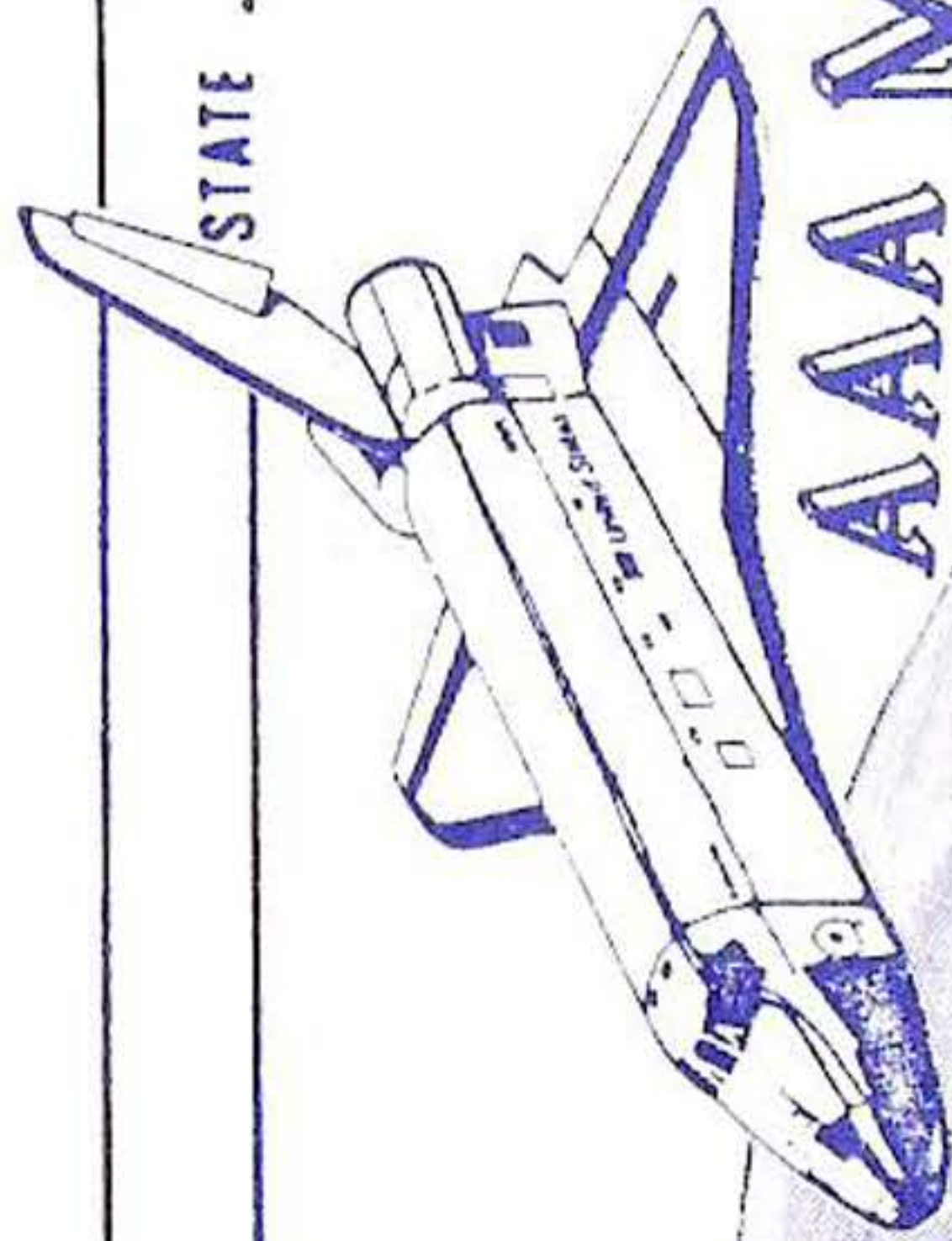
ADDRESS _____

CITY _____

STATE _____

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CODE

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STAMP
HERE



AAA MODEL AVIATION FUELS

LARGE SCALE ROCKETRY DIV.)

c/o 122 SUMNER AVE.

CLARKS SUMMIT, PA. 18411 U.S.A.

