





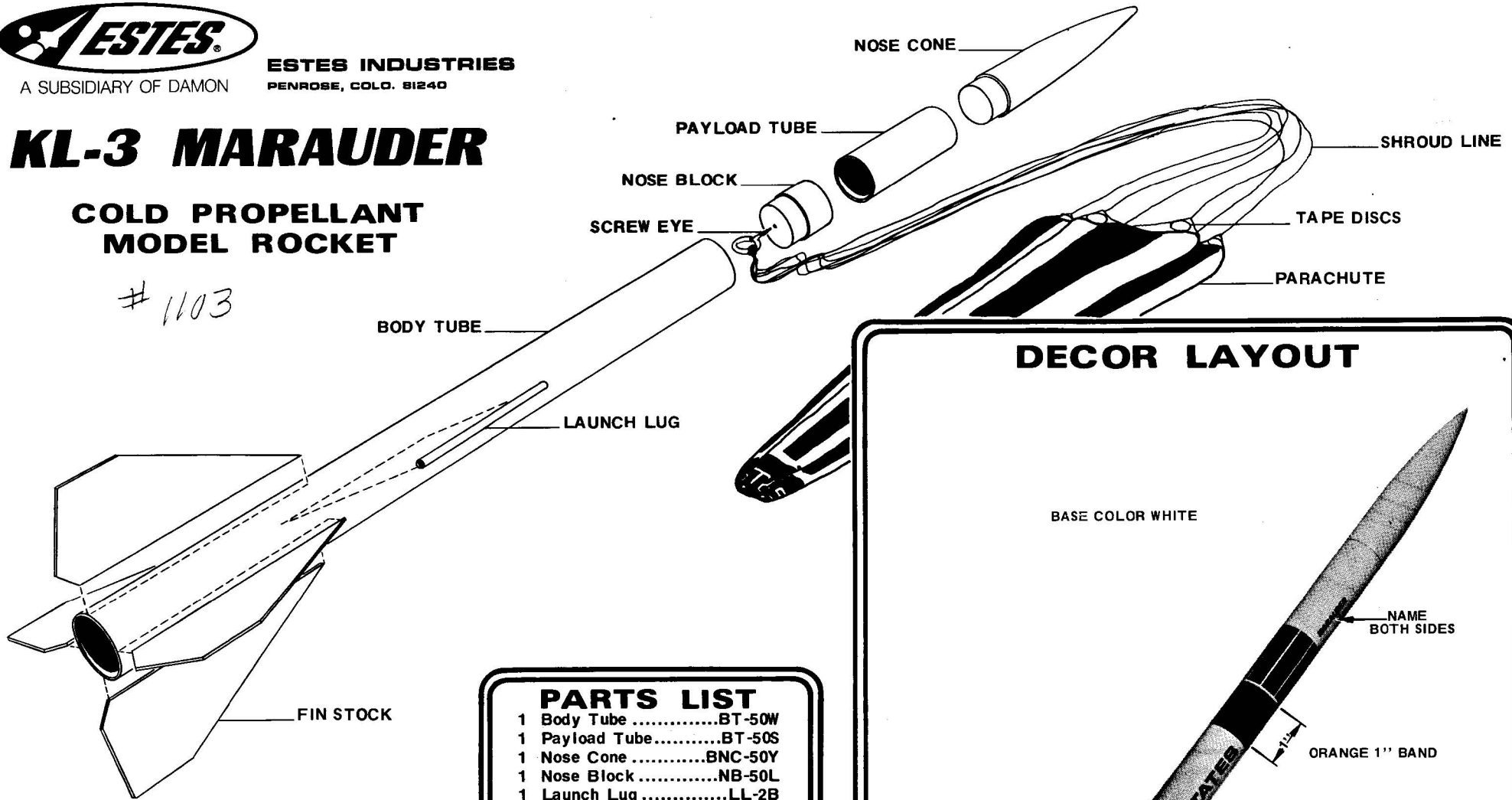
A SUBSIDIARY OF DAMON

ESTES INDUSTRIES
PENROSE, COLO. 81240

KL-3 MARAUDER

COLD PROPELLANT MODEL ROCKET

1103

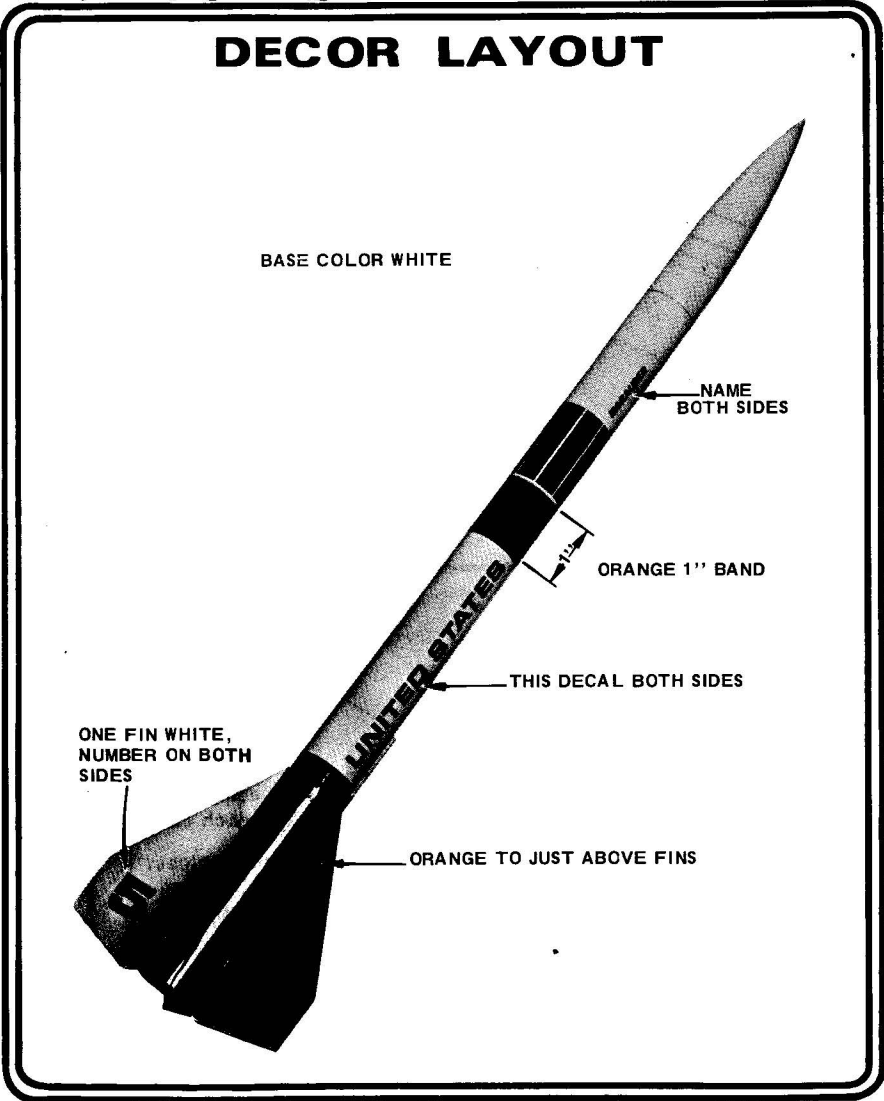


PARTS LIST	
1	Body TubeBT-50W
1	Payload Tube.....BT-50S
1	Nose ConeBNC-50Y
1	Nose BlockNB-50L
1	Launch LugLL-2B
1	Fin StockBF-L3
1	ParachutePK-12A
1	Shroud LineSLT-72
1	Tape Strips/Discs.....TD-3F
1	Screw Eye.....SE-2
1	DecalKD-L3

**ADDITIONAL TOOLS AND MATERIALS
REQUIRED**

Sharp modeling knife
Ruler
Pencil
Brush
Sandpaper: coarse and extra fine

Sanding Sealer
Spray Paint
Masking Tape
White Glue



1 Cut out fin marking guide. Wrap around body tube and hold with masking tape. Mark at arrow points.

NOTE: Use pencil only.

2 Remove guide. Using door sill or drawer, extend lines length of tube.

3 Fine sand both sides of the die cut fin sheet. Remove the fins from the sheet. Sand round. Leave square. Rub a line of glue into root edge of each fin and allow to dry.

4 Position and glue the fins next to the alignment lines, aligning them straight away from the body tube. Apply a glue fillet to both sides of each fin. Allow to dry.

5 Glue the launch lug next to its alignment line so the rear of the launch lug is 2-3/4" from the rear of the body tube.

6 Glue the large end of the nose block into one end of the payload tube. Slide the nose cone into the other end.

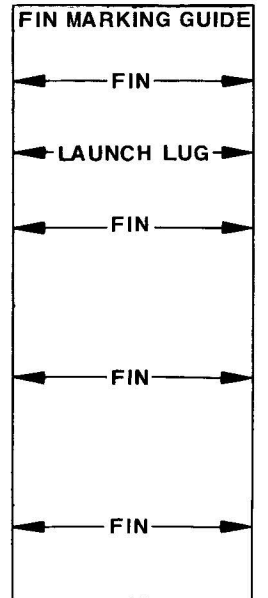
7 Be sure all glue has dried hard and clear. Brush on sanding sealer. Let dry. Sand with extra fine sandpaper. Repeat as necessary to completely fill pores in wood. Smooth out.

2457-72

8 Spray paint for best results. Roll up old magazine for rocket holder. Shake can before spraying. First coats are light, dry mist coats. Masking tape and paper protect model from second color spray. Let dry completely between each coat. To obtain gloss, final coat should be slightly heavier. **NOTE:** Apply final coat with "wet" look. Hold can straight up and spray in long smooth "strokes". Shake can periodically.

9 Peel decal from backing. For accurate positioning as shown on decor layout, dip decal in mild soap solution. Apply decal to model. Smooth out any bubbles with a dry rag.

10 Insert screw eye, remove, squirt glue into hole, and replace. Assemble parachute following instructions printed on parachute. Connect parachute to screw eye.

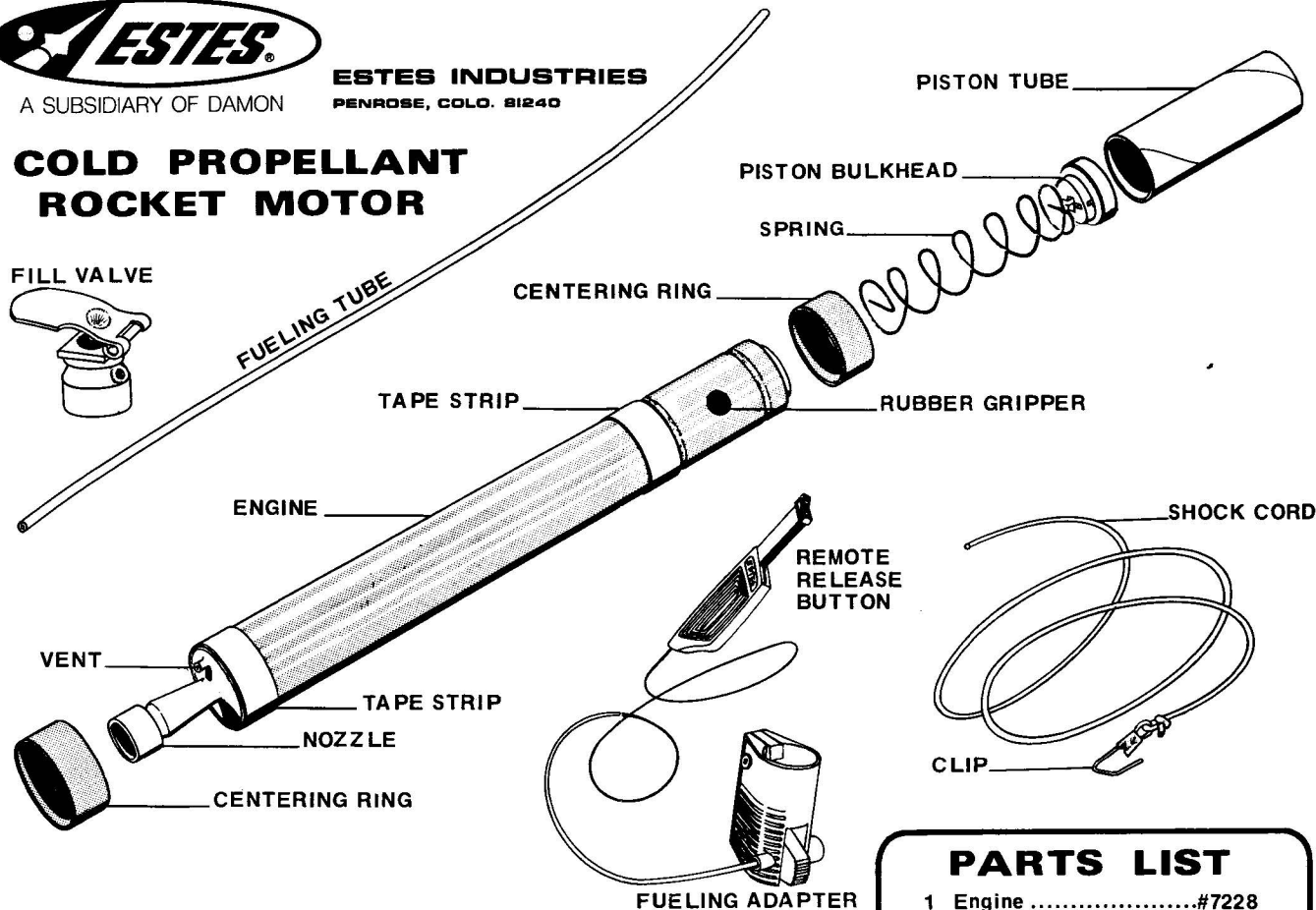




A SUBSIDIARY OF DAMON

ESTES INDUSTRIES
PENROSE, COLO. 81240

COLD PROPELLANT ROCKET MOTOR



DESCRIPTION

Your Estes cold propellant motor uses a non-flammable, odorless aerosol for propellant (RP-100, or Freon-12*), consequently it may be flown even in places which have strict fireworks codes. Be sure, however, to fly it in places with adequate open space for safe recovery.

The engine is loaded through the nozzle by means of a fueling adapter. A latch in the adapter holds the rocket, and releases it when the remote button is pressed. Pressure from the fuel expands rubber grippers which hold the piston tube and ejection spring compressed in place over the front of the engine. When the fuel is exhausted, the pressure slowly escapes, releasing the piston which ejects the parachute forward out of the rocket. A built-in timer provides about 2 seconds delay from "burnout" (end of thrust) to release of the parachute.

The entire engine unit (engine, ejection spring, and piston) slips in or out of your rocket. You may use one engine unit to power a variety of appropriately designed rockets, or convert your rockets eventually to solid propellant power with a conversion adapter available from Estes.

For display of your rocket, we recommend removing the piston and spring; the engine can be inserted or removed, as desired.

*DuPont trademark

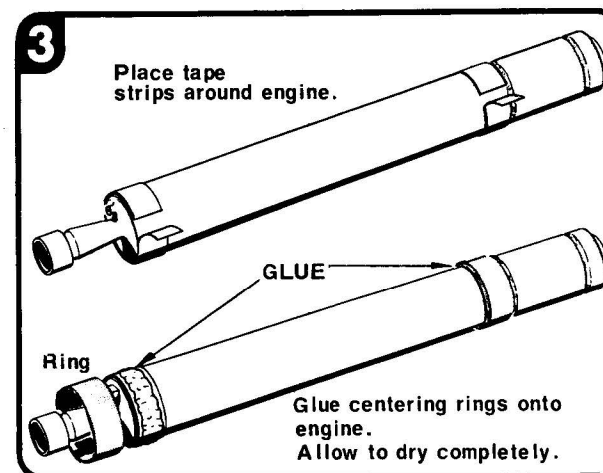
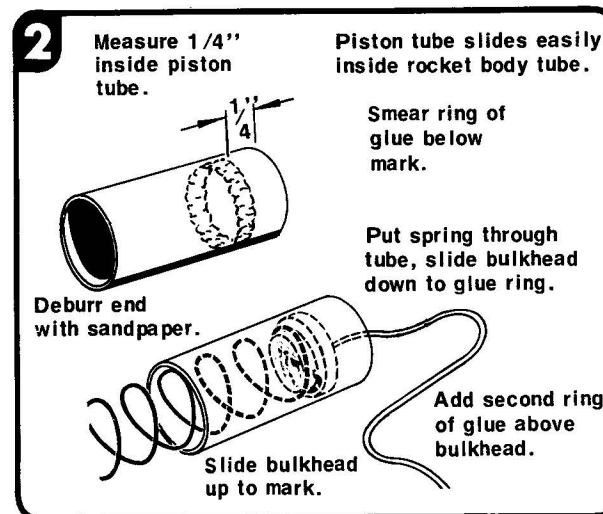
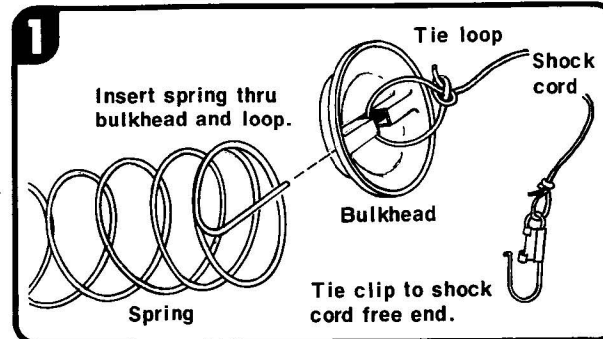
PARTS LIST

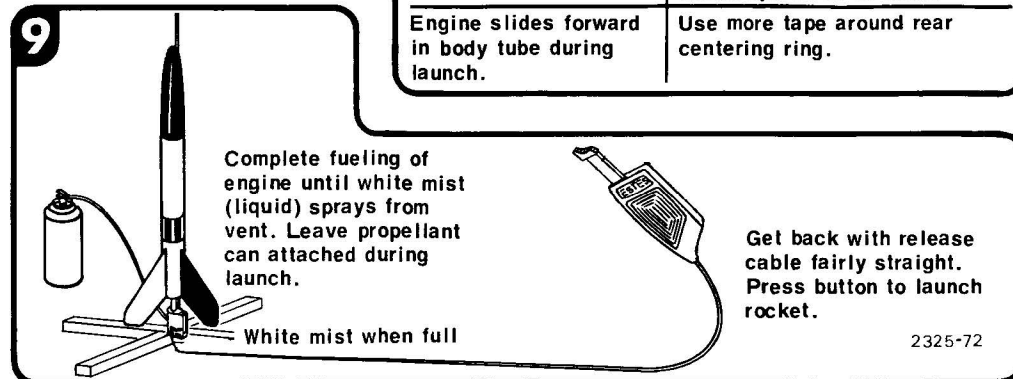
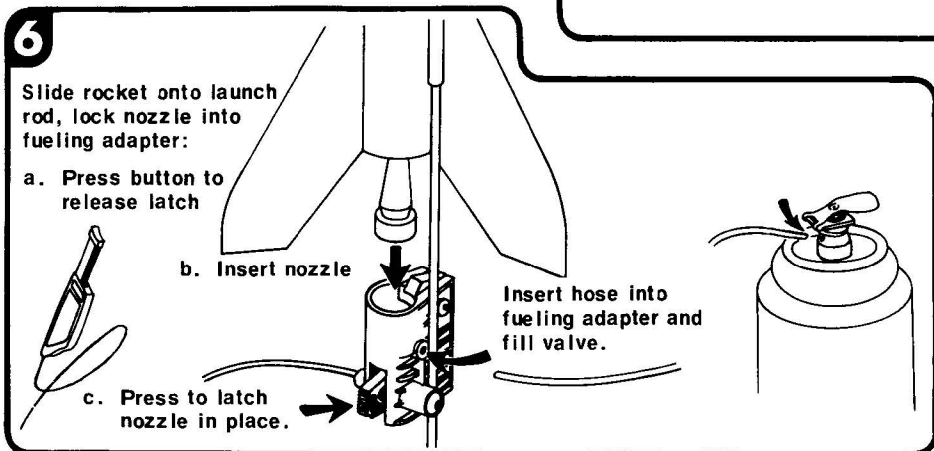
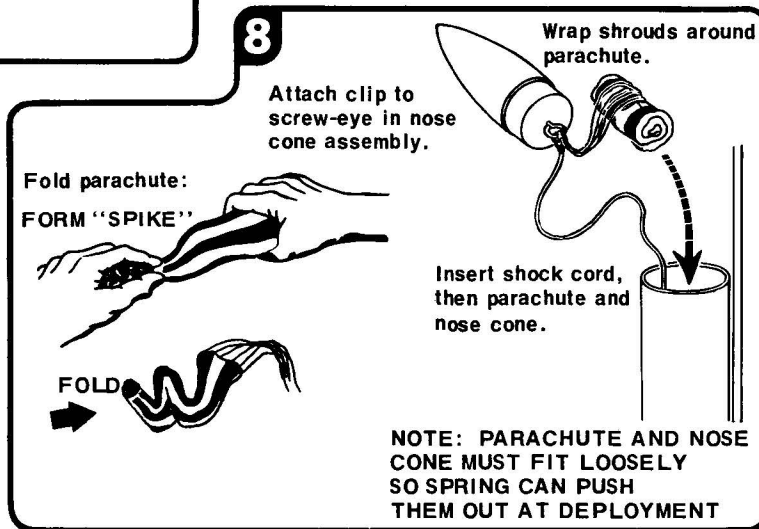
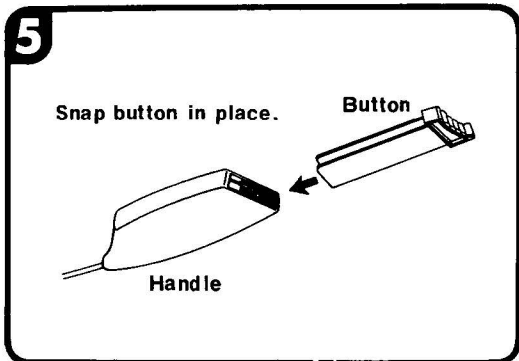
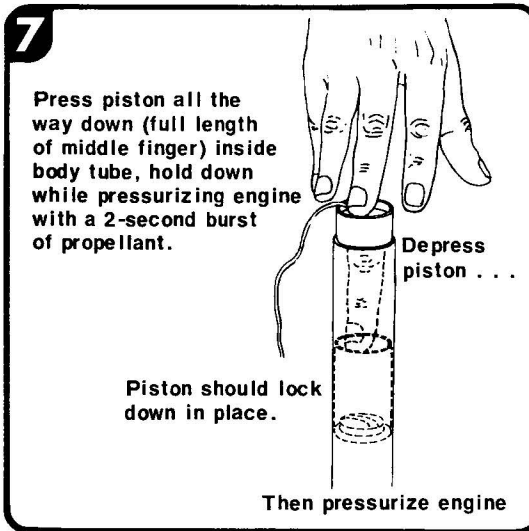
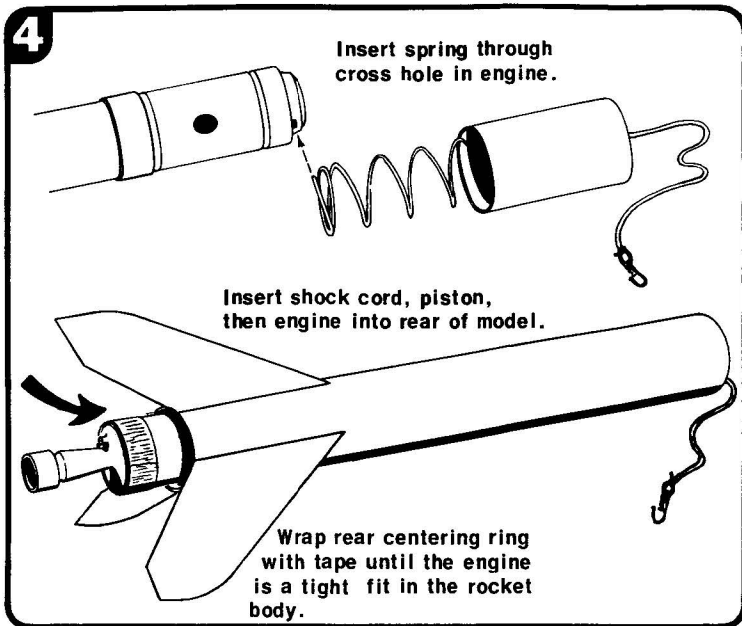
- 1 Engine#7228
- 1 Spring#7241
- 1 Piston Bulkhead.....#7246
- 1 Piston Tube#BT-48BJ
- 2 Centering Rings.....#JT-50B
- 2 Tape Strips#TH-1
- 1 Shock Cord.....#SC-4B
- 1 Fueling Adapter#7250
- 1 Clip#SV-2
- 1 Fill valve#7027
- 1 Fueling tube#72100

SPECIFICATIONS

Length-engine only: 18.7 cm. 7.275"
 Diameter: 2.25 cm 0.885"
 Thrust:..... 3.1 Newton0.7 lb.
 Total Impulse:.. 2.50 Newton-Sec.
 0.560 lb./sec.
 Delay: 2 seconds
 Weight, complete: . 32.7 gm .. 1.16 oz.

ASSEMBLY INSTRUCTIONS





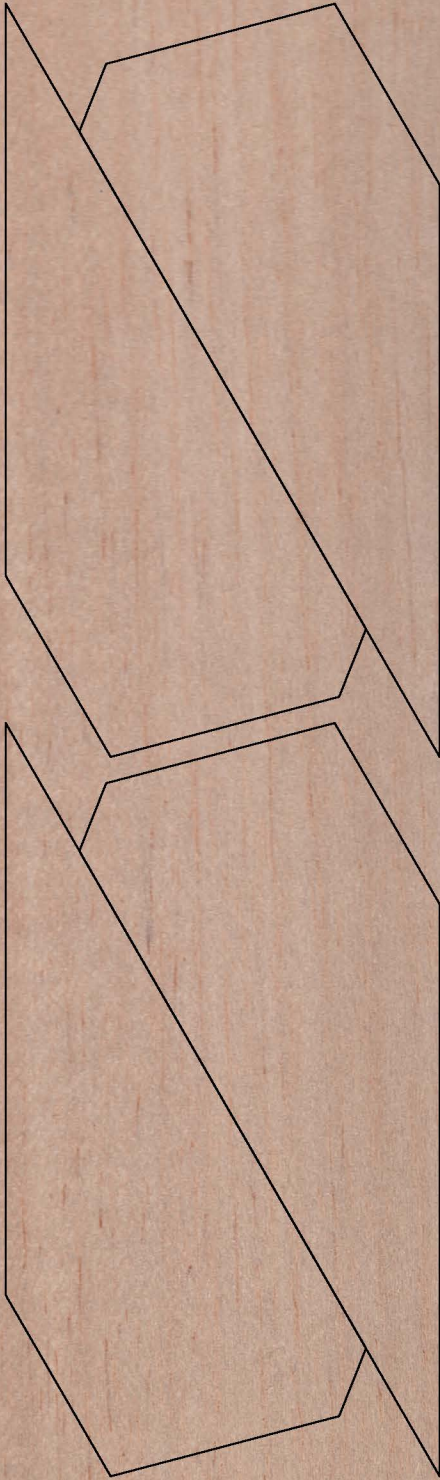
OPERATIONAL NOTES

1. Do not attempt to fly with RP-100 propellant below 45° F. Poor performance would result.
2. Allow engine to warm up 10 minutes between flights for best performance.
3. Do not invert engine while full or while fueling it. This will affect delay time to release.
4. Do not fuel engine outside of rocket body. Rubber grippers might be damaged if exposed.
5. RP-100 safety hints:
 - a. Keep can cool – below 120° F.
 - b. Do not puncture propellant can.
 - c. Keep RP-100 away from open flame.
 - d. Exhaust is extremely cold, do not allow it to hit you directly.
 - e. Exhaust is quite powerful, do not direct it near fragile objects.

PROBLEM SOLUTION

PROBLEM	SOLUTION
Sticky sliding of piston tube.	De-burr piston tube rear end with sandpaper.
Nose cone fails to eject.	De-burr front end of rocket body tube with fine sandpaper. Loosen fit of nose cone in tube.
Chute fails to come out after nose cone comes off.	Parachute jammed in tube; wrap chute more tightly for loose fit in body tube.
Model achieves only relatively low altitude.	Engine not full; fuel until liquid sprays out of vent. Engine too cold. Propellant too cold. Launch rod needs cleaning.
Model fails to release from fueling adapter.	There may be some dirt between the adapter and the nozzle; check operation of latch.
Engine slides forward in body tube during launch.	Use more tape around rear centering ring.

3/32"



300
DPI

32

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95 8 4 0 4 8 12 16 20 24 28

4

UNITED STATES
UNITED STATES



55



37503 ESTES INDUSTRIES, COLO.



MARAUDER
MARAUDER

PARTS LIST KIT NO. 1103 - Marauder								
Quantity	Description	Type	Number	Detail1	Detail2	Detail3	Detail4	Comment
1	PAPER BODY TUBE	BT-50W	30372	9.5" long	0.950" ID	0.976" OD	0.013" wall	Glassine
1	PAPER BODY TUBE	BT-50S	30368	4" long	0.950" ID	0.976" OD	0.013" wall	Glassine
1	BALSA FIN STOCK	BFS-30	*3168	3" wide	9" long	3/32" thick	0.09375	Scan
1	PLASTIC NOSE CONE	PNC-50Y	71009	4.35" long	.974" dia.	.6" shoulder	BT-50 - Ogive	Blow Molded
1	BALSA NOSE BLOCK	NB-50	70158	1.0" long	0.950" dia.			BT-50
1	LAUNCH LUG	LL-2B	38178	5/32" ID	1/8" rod	2-3/8" long		Mylar
1	PAPER BODY TUBE	BT-20J	*30326	2.75" long	0.710" ID	0.736" OD	0.013" wall	Glassine
1	ENGINE HOLDER	EH-2	*35025	2.8" long	.100" wide	.025" thick		Reg. & D
1	SPLIT ADAPTER RING	AR-2050S	*80425	1/4" long	.737" ID	.949" OD	0.106" wall	Green
1	CENTERING RING	AR-2050	*30164	0.25" long	0.737" ID	0.949" OD	0.106" wall	Green
1	MYLAR RETAINER RIN	HR-20	*30168	0.3" long	0.74" ID	0.76" OD	0.01" wall	BT-20
1	Screw Eye (Small)	SE-2A	38252	3/4" long				
1	Parachute	PK-12	85564	12" dia.				
1	Shock Cord	SC-1	85730	18" long	1/8" wide			Rubber
1	Shroud Line	SLT-72	38237	72"				
1	Tape Disc	TD-3F	38406	1/2" dia.				6x
1	Decal	KD-L3	37503	4" wide	4.25" long	Blk/Wht	Self Stick	Scan
* Die Cut Balsa Sheet (BF-L3) Part #32254								
* BP motor parts, not included with cold power								
This is basically the Estes Polaris #1324. The cold power Marauder did not include the motor mount parts. The balsa is the same. The decals are different even though the part number 37503 is the same in both kits.								

From liftoff to landing - you're in command



A DIVISION OF DAVENPORT

COLDPOWER™ CONVERTIBLE

MARAUDER FLIGHT KIT

Complete with re-usable engine

*Everything you need
to fly your own rocket.*

- ★ Flying Model Rocket
- ★ New EP-100 Cold Power™
- ★ Launcher & Launch Control System
- ★ Parachute Recovery System
- ★ Authentic Rocket Decals
- ★ SPECIAL ATTENTION!
Solid Propellant Converter
Complete in Package Inside Box!



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FLYING

COLD PROPELLANT MODEL ROCKET



IMMORTAL RAIDER

DEGREE OF CHALLENGE: TWO

(Propellant and launcher not included)

Attractive, parachute-recovery sports model with soaring rocket decelerator, Cle-cat beta fins, Press-24 decals. Easy to build and launch. Pre-assembled engine uses Estes RP-100 cold propellant, or the rocket can be converted to be flown with Estes solid-propellant engines. Watch this bird soar to altitudes of several hundred feet right after flight!

SPECIFICATIONS

Length: 18"

Diameter: 0.875"

Weight (with engine): 3.18 oz.