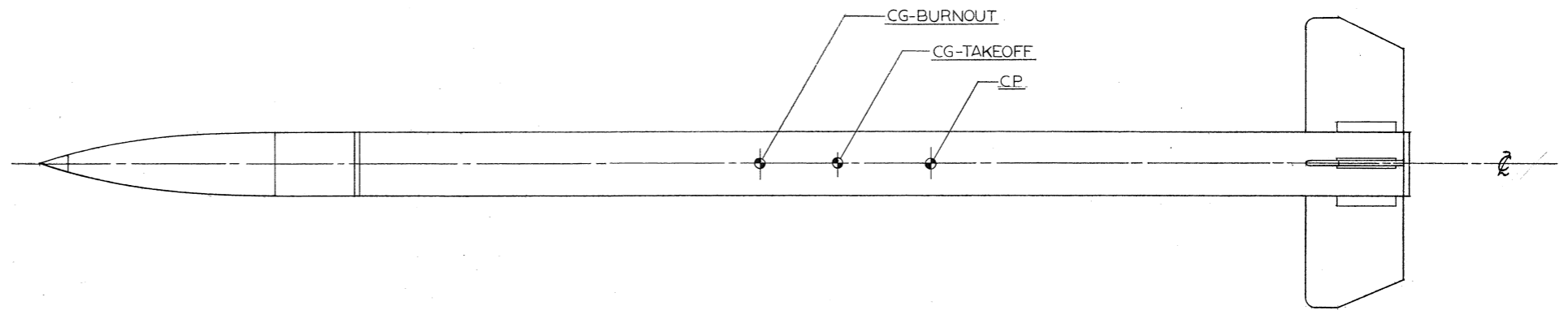
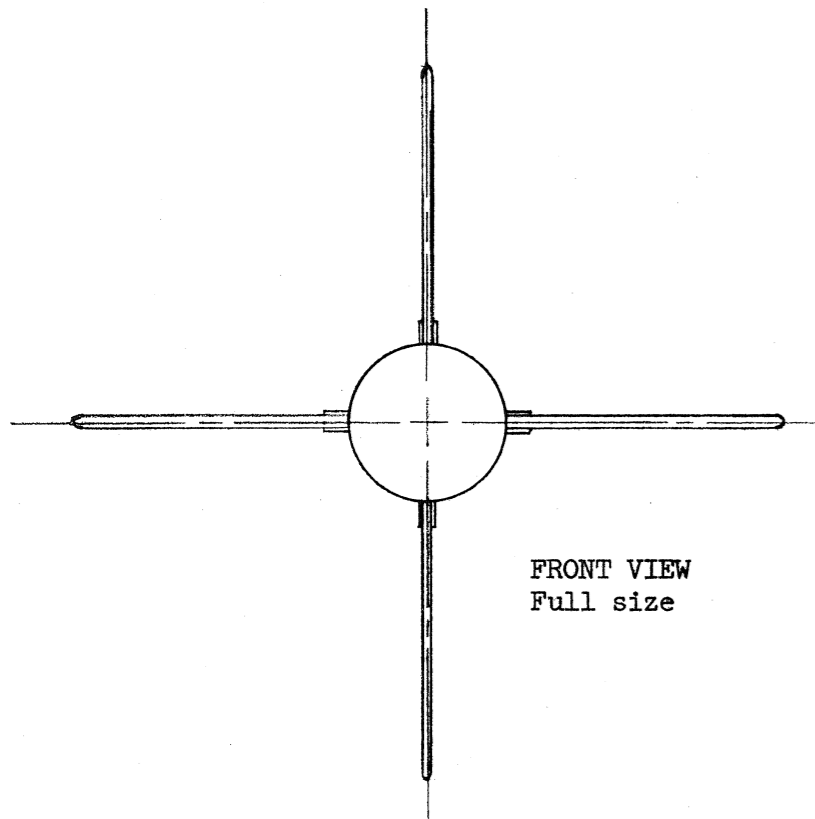


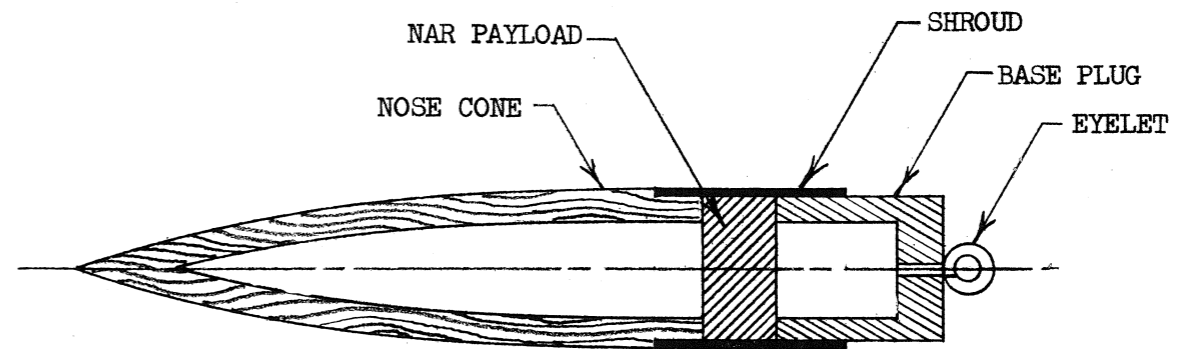
BODY TUBE (paper)
Full size



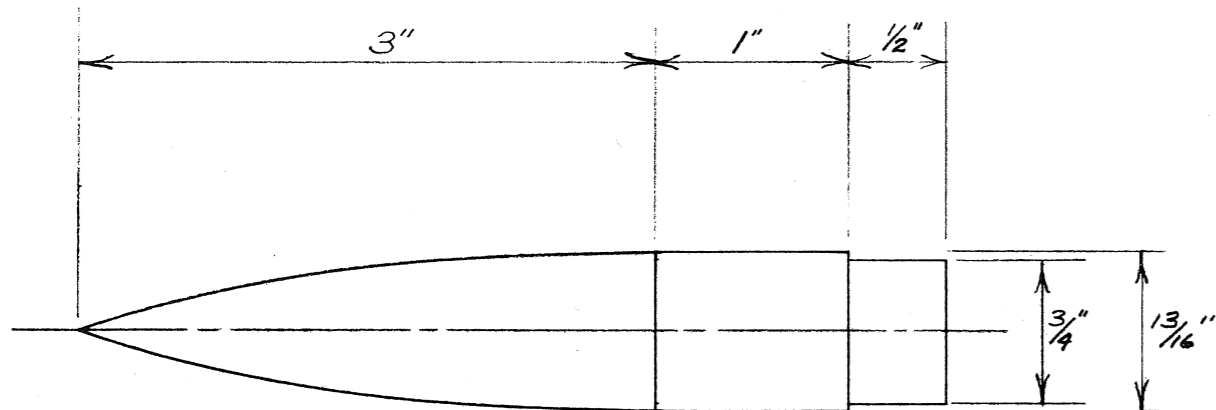
SIDE VIEW
Half-size



FRONT VIEW
Full size

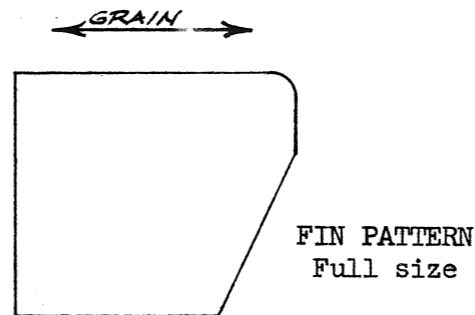


OPTIONAL PAYLOAD NOSE CONE
Full size cross section




NOSE CONE (wood)
Full Size

WEIGHT (NO MOTOR): 1.4 oz.



FIN PATTERN
Full size

FOR NON COMMERCIAL USE ONLY	
 NATIONAL ASSOCIATION OF ROCKETRY PLAN PROGRAM	
ASP-IV	
MODEL SCALE: 1:8	DRAWING SCALE: As noted
SCALE SOURCE: Cooper Development Data	
DESIGN BY: Stine	DRAWN BY: GHS
CHECKED BY: WSR	RELEASED: 6 Feb 1961
DRAWING NUMBER: NAR- 105	

National Association of Rocketry

Plan No. 105

PLAN PROGRAM FACT SHEET

Model Name ASP IV

Prototype Data: The ASP IV was designed and is made by the Cooper Development Company, a division of the Marquardt Corporation. This company also builds the ASP I shown on NAR Plan No. 101. The ASP IV is an advanced version of the ASP and is a very high performance solid-propellant sounding rocket capable of carrying up to 70 pounds of payload to an altitude of 300,000 feet. With a 20 pound payload of scientific instruments, the ASP IV reaches a speed of 6500 feet per second and an altitude of 500,000 feet. Several kinds of recovery systems can be used and a wide variety of instrumentation can be carried. The ASP IV is 6.5" in diameter; its length varies with the payload carried. With a 20-lb. payload, the ASP IV weighs 228 pounds at launch and 80 pounds at burnout. Maximum acceleration is 20 g's. The motor has a long burning time so that its energy is converted to thrust at high altitudes instead of overcoming aerodynamic drag at low altitudes. Launching is from a rail launcher.

Model Data: The ASP IV model shown on Plan 105 is 1/8th scale and shows a typical nose cone that might be carried. This scale model has the unique feature of being an excellent NAR Payload competition model as well as a scale model, since the scale nose cone can also be built to carry the standard NAR Payload (see the "pink book."). The model is shown with a regular nose cone. A cut-away section of the payload nose cone is also shown for those rocketeers who wish to use ASP IV as a Payload model.

Standard model rocket construction techniques as outlined in NAR Technical Report #9 are used throughout. The body is a hollow, thin-walled paper tube 13 1/2" long. The body tube available in a commercial kit may be cut to this length with a razor saw; the tube is also available commercially. The nose cone for the scale model is turned from hardwood. The fins are cut from 1/16" balsa. The scale fin lugs may be made from scraps of 1/32" balsa. The model was designed to be launched from a tower, but it may be rod-launched by glueing a launching lug on the side of the body tube.

The nose cone shape, the length of the model, and the size of the fins make it a good NAR Payload competition model. A cross-section of the optional Payload nose is shown. The nose cone for this is turned from balsa, cut apart, hollowed out, and glued back together to make a hollow shell. A piece of 3/4" i.d. paper body tube is cut to 1" length for the shroud and is glued to the shoulder on the base of the balsa nose cone. The base plug is cut from a piece of 3/4" dowel and drilled out as shown to remove excess weight. An eyelet is screwed into the base of the base plug for attachment of the recovery system. The base plug should be free to come out, but should fit into the shroud with a very tight friction fit. The NAR Payload is slipped in prior to flight, and the base plug holds it in place with its tight fit to the shroud. If the base plug fits loosely into the shroud, wrap it with tape until there is a tight fit. If the fit is not tight, the base plug is liable to pull out when the recovery system is actuated, the payload may separate from the model, and the flight will be disqualified.

Even as a scale model, the ASP IV is a good flier because of its fineness ratio and the wide separation of the CG and CP.

There is no standard paint pattern for the ASP IV. Paint it a bright fluorescent color for best visibility.

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