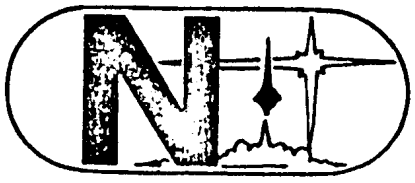


NOVA RESEARCH ASSOCIATES

INFORMATION SHEET

AND

MINI-CATALOG

IMC-79

NOVA RESEARCH ASSOCIATES

P.O. BOX 305
LAKELAND, MINNESOTA 55043
612/436 5158

Greetings!

Nova Research Associates was formed to bring a line of high quality contest oriented rocket launchers to the serious model rocketeer. Our rugged and reliable launchers are also great for sport flying. Launcher prototypes have been entered in regional R & D competition with excellent results.

Our launchers are made from weather resistant, dimensionally stable redwood with high quality plated hardware. Models SC-1, SC-2 and the interchangeable launch rail assemblies are supplied as rough cut pre-assembled units to allow custom finishing. For those rocketeers who desire to build a launcher from scratch, Model T-1 provides full-size templates and building instructions.

We plan to continue research into new techniques and materials in order to bring you ground support equipment that adds excitement and realism to your model rocketry activities.

"Reach for the stars!"

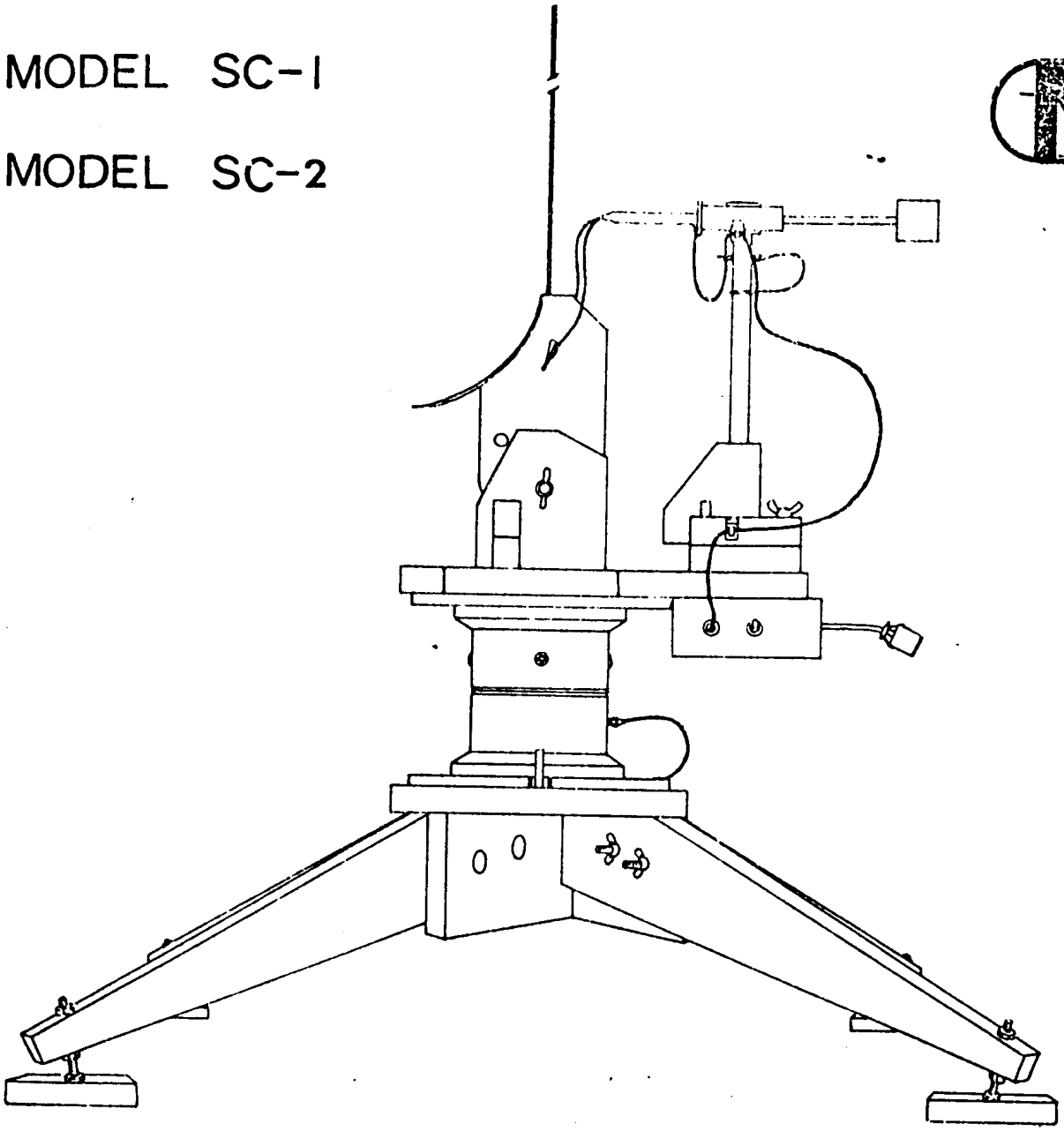
David Babulski

David Babulski

SIRIUS CLASS
model rocket launcher

MODEL SC-1

MODEL SC-2



INTRODUCING THE SIRIUS CLASS MODEL ROCKET LAUNCH SYSTEM. THE SIRIUS CLASS SYSTEM IS A FULLY STEERABLE, ULTRA STABLE, SOLID STATE CONTROLLED, SINGLE STATION LAUNCHER. A FULLY FUNCTIONAL FIRING LEAD UMBILICAL GANTRY ALLOWS THE SIRIUS CLASS LAUNCHER TO FULFILL A VARIETY OF MODEL ROCKET MISSION REQUIREMENTS.

THE SIRIUS CLASS LAUNCH SYSTEM PROVIDES THE ULTIMATE IN PERSONALIZED CUSTOM GROUND SERVICE EQUIPMENT.

Sirius Class

1.0 THE SIRIUS CLASS LAUNCH SYSTEM WILL EXHIBIT THE FOLLOWING SPECIFICATIONS:

1.1	OVERALL WEIGHT:.....	1.87 KG (5 LBS)
1.2	OVERALL HEIGHT:..... (AS MEASURED FROM GROUND LEVEL TO TOP OF GANTRY IN RETRACTED POSITION)	67.3 CM (26.5 INCHES)
1.3	HEIGHT OF BASE:..... (FROM GROUND LEVEL TO TOP OF LOWER BEARING)	30.5 CM (12 INCHES)
1.4	LAUNCHER BASE FOOTPRINT:.....	3721 SQ. CM (4 SQ. FEET)
1.5	LAUNCHER BASE LEG PAD FOOTPRINT:.....	87.7 SQ. CM (9 SQ. INCHES)
1.6	LEG PAD HEIGHT ADJUSTMENT:.....	EACH OF THE FOUR LEG PADS IS INDIVIDUALLY ADJUSTABLE BY 1 INCH (2.54 CM)
1.7	LEG PAD TILT ADJUSTMENT:.....	EACH OF THE FOUR LEG PADS IS INDIVIDUALLY GIMBALLED TO ALLOW A MAXIMUM TILT OF 10 DEGREES FROM VERTICAL
1.8	ELEVATION ADJUSTMENT:.....	VERTICAL TO +30°, CONTINUALLY ADJUSTABLE. NOTE: MECHANICAL STOPS PREVENT ELEVATION ADJUSTMENT BEYOND +30°

1.9 ELEVA[illegible]N LOCK:..... [illegible]RICTION LO[illegible]
[illegible]JUSTABLE A[illegible]
[illegible]NG NUT

1.10 AZIMUTH ADJUSTMENT:..... 360° ROTATION ON PVC BEARINGS

1.11 AZIMUTH LOCK:..... LOCKING PIN. PROVISION FOR AZIMUTH LOCK AT INTERVALS OF 90°

1.12 LAUNCHER TURNING RADIUS:.... 25.4 CM (10 INCHES)

1.13 FIRING LEAD UMBILICAL GANTRY:..... (NOMINAL SPECIFICATIONS)

1.13.1 VERTICAL ADJUSTMENT:
GANTRY EXTENDS, FROM A RETRACTED HEIGHT OF 26.6 CM, TO A MAXIMUM OF 40.6 CM. PROVISION FOR LOCKING AT INTERVALS OF 3.8 CM IS PROVIDED BY A LOCKING PIN.

1.13.2 HORIZONTAL ADJUSTMENT OF GANTRY ARM:
A MAXIMUM OF 7.6 CM LATERAL MOMEMENT OF THE FIRING LEADS IS PROVIDED BY THE GANTRY ARM.

1.13.3 HORIZONTAL ADJUSTMENT OF GANTRY HEAD:
GANTRY ARM MAY BE ROTATED 360° WHEN GANTRY IS RETRACTED. A MAXIMUM ROTATION OF 90° IS PROVIDED WHEN GANTRY IS FULLY EXTENDED.

1.13.4 REMOVAL OF UMBILICAL GANTRY:
THE GANTRY MAY BE TAKEN OFF THE LAUNCHER BY REMOVING A WING NUT ON THE AFT PORTION, UNPLUGGING FIRING LEADS AND LIFTING THE GANTRY ASSEMBLY OFF OF THE LAUNCHER.

NOTE: ADDITIONAL GANTRY ASSEMBLIES ARE

AVAILABLE TO F L A VARIETY
MISSION REQUIREMENTS

1.14 LAUNCH CONTROL:..... EXTERNAL, HAND HELD, LAUNCH CONTROL PANEL WHICH CONTROLS A POWER TRANSISTOR BIASED AS A SWITCH.
NOTE: THE LAUNCH CONTROL TRANSISTOR SWITCH IS LOCATED IN THE LAUNCH CONTROL BOX UNDER THE AFT PORTION OF THE LAUNCHER

A MASTER ARMING SWITCH IS PROVIDED TO AVOID PREMATURE IGNITION IN THE EVENT OF TRANSISTOR FAILURE.

CONTINUITY CHECK IS PROVIDED BY AN AUDIO ALARM CIRCUIT.

1.15 IGNITION VOLTAGE:.... 9 VOLTS DC - LOCATED IN THE LAUNCH CONTROL BOX UNDER THE LAUNCHER.
NOTE: LAUNCHER DESIGNED FOR USE WITH FLASHBULB IGNITION.

1.16 FIRING VOLTAGE:..... 3 VOLTS DC - PROVIDED BY 2 'AA' SIZE BATTERIES IN THE HAND HELD LAUNCH CONTROL PANEL; CONTROLS 'TURN-ON' OF THE TRANSISTOR SWITCH.

1.17 LAUNCH CONTROL PANEL: HAND HELD BOX CONNECTED TO THE LAUNCHER BY A FIFTEEN FOOT PLUGGABLE CABLE. THE CONTROL PANEL CONTAINS:

1.17.1 NORMALLY OPEN PUSH-BUTTON FIRING SWITCH

1.17.2 KEY OPERATED SAFETY SWITCH

1.18 LAUNCH CONTROL..... ..EXTERNAL, HAND HELD, LAUNCH CONTROL BOX. THE FOLLOWING LAUNCH CONTROLLERS MAY BE USED:
(MODE SC-2)

1.18.1 ESTES

SOLAR #2300
ASTRON #2212

1.18.2 CENTURI

POWR-CONTROL #5623

1.18.3 CNA SYSTEMS

MIDI-LAUNCHER-2 #MD-2B

1.18.4 AVI

LUNAR-LECTRIC

NOTE: CONNECTION TO THE UMBILICAL FIRING LEAD GANTRY IS MADE VIA FAHNESTOCK CLIPS ON LAUNCHER MAIN DECK.

1.19 LAUNCH ROD:..... 1/8 INCH DIAMETER, TWO PIECE LAUNCH ROD. 91.4 CM (36 INCHES) IN LENGTH

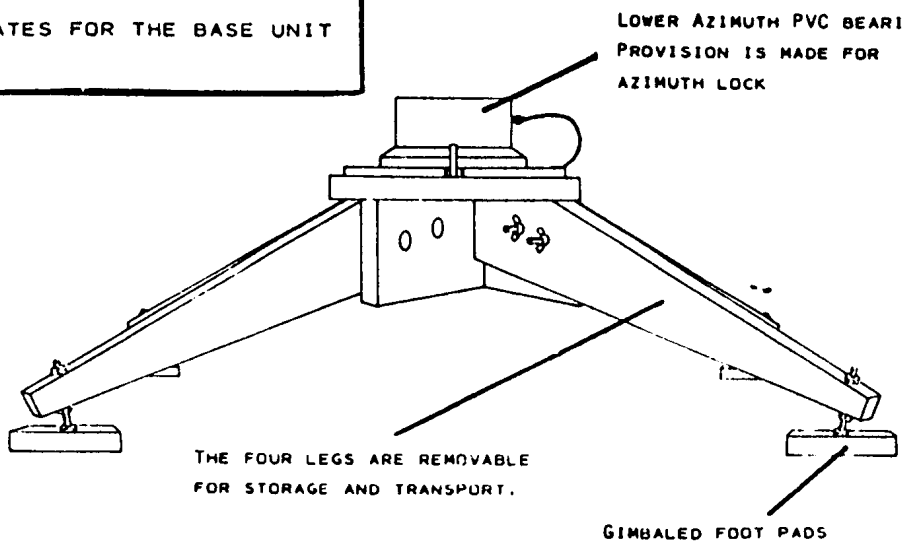
1.20 BLAST DEFLECTOR:..... SHEET STEEL, .078 CM (.031 INCHES) THICK AND 7.62 CM (3 INCHES) WIDE AND FORMED INTO A PARABOLIC CURVE.

1.21 IGNITOR CONNECTION:.... SMOOTH JAWED MICRO-GATOR CLIPS.

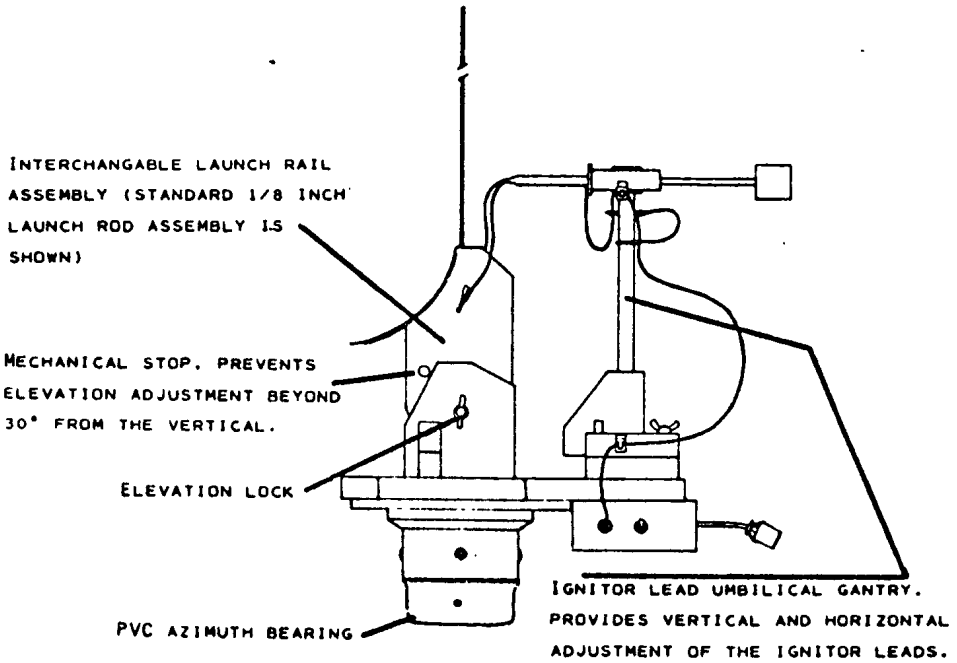
BASE UNIT

NOTE: THE BASE UNIT IS DESIGNED TO MATE WITH ALL FUTURE NOVA RESEARCH LAUNCHERS

MODEL SCB-1 .... SET OF CUTTING AND DRILLING TEMPLATES FOR THE BASE UNIT ONLY



SUPERSTRUCTURE



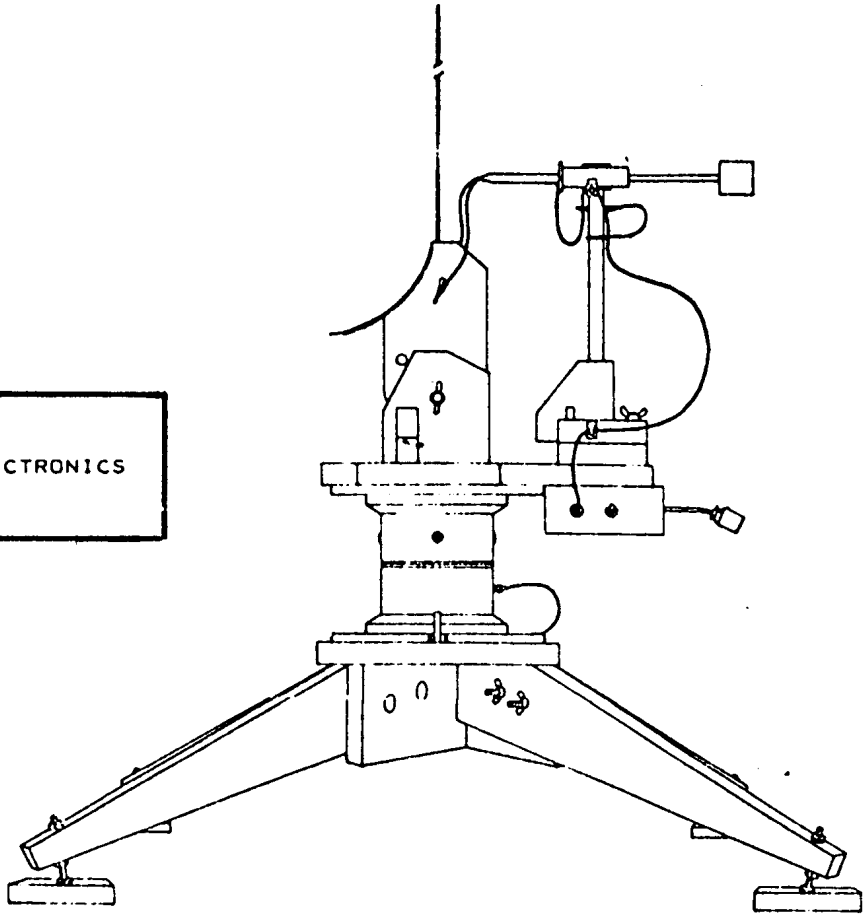
MODEL SCS-1.... SET OF CUTTING AND DRILLING TEMPLATES FOR THE SUPERSTRUCTURE ONLY.

NOTE: THE GANTRY ASSEMBLY IS REMOVABLE TO ALLOW REPLACEMENT WITH DIFFERENT SIZED GANTRIES.

MODEL T-1 ..... SET OF CUTTING AND DRILLING TEMPLATES FOR BOTH THE BASE UNIT AND THE SUPERSTRUCTURE

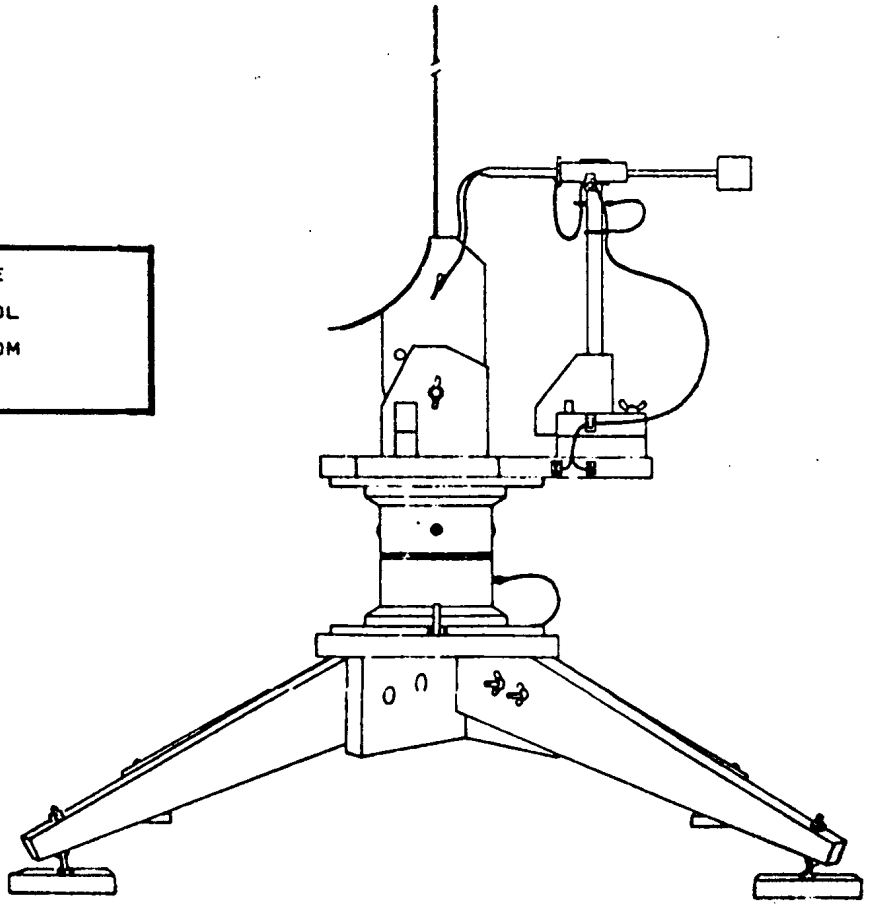
MODEL SC-1

MODEL SC-1 ..... COMPLETE LAUNCHER WITH BASE UNIT AND LAUNCH CONTROL ELECTRONICS READY FOR CUSTOM FINISHING



MODEL SC-2

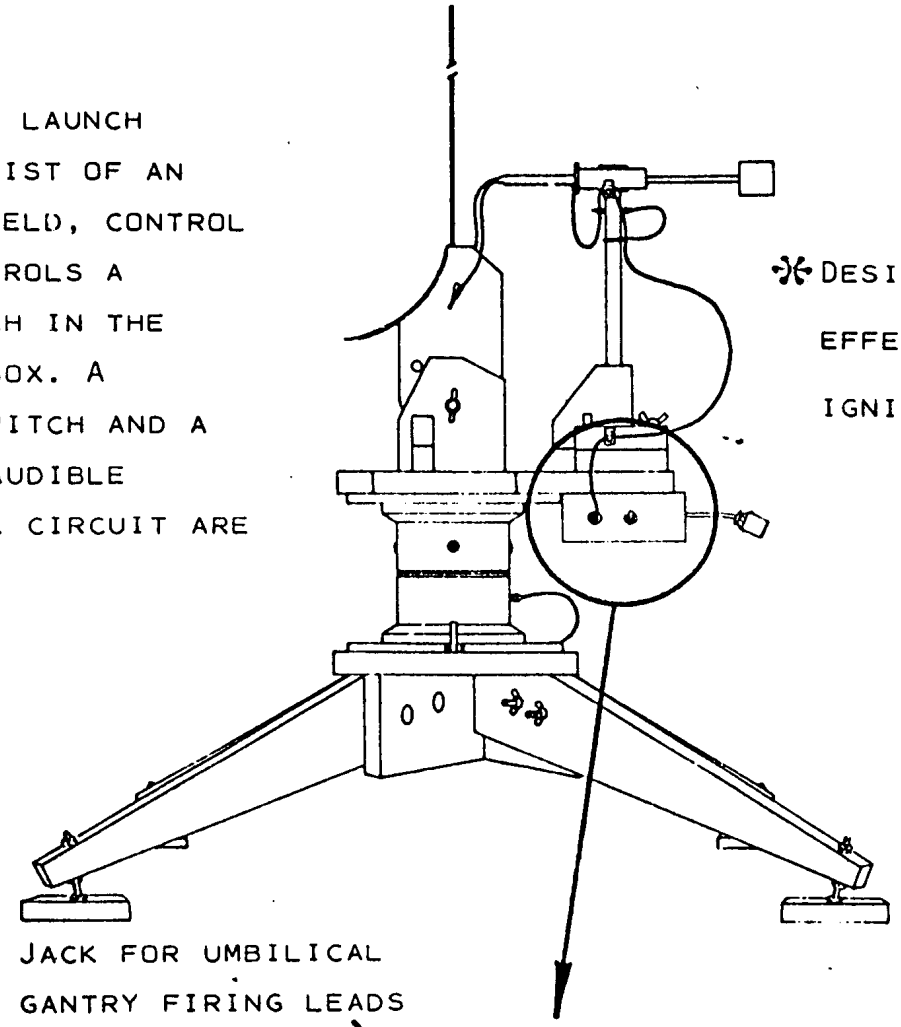
MODEL SC-2 ..... COMPLETE LAUNCHER WITH BASE UNIT, WITHOUT LAUNCH CONTROL ELECTRONICS READY FOR CUSTOM FINISHING.



LAUNCH CONTROL ELECTRONICS
model sc-1

- THE SIRIUS CLASS LAUNCH ELECTRONICS CONSIST OF AN EXTERNAL, HAND HELD, CONTROL PANEL WHICH CONTROLS A TRANSISTOR SWITCH IN THE LAUNCH CONTROL BOX. A MASTER ARMING SWITCH AND A FLASHBULB SAFE AUDIBLE CONTINUITY CHECK CIRCUIT ARE PROVIDED.

- DESIGNED FOR SAFE A
  EFFECTIVE FLASHBULB
  IGNITION



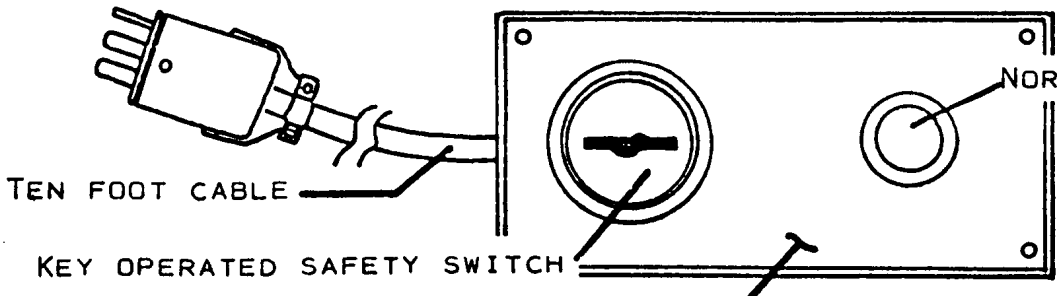
JACK FOR UMBILICAL GANTRY FIRING LEADS

BATTERY BYPASS SWITCH. ALLOWS USE OF EXTERNAL HIGH CURRENT BATTERIES.

MASTER ARMING SWITCH

AUDIBLE CONTINUITY CHECK MODULE. SOUNDS A TONE IF MASTER ARMING SWITCH AT GO AND CONTINUITY O.K.

LAUNCH CONTROL BOX... CONTAI
9 VOLTS D.C. SUPPLY AND A TRANSISTOR SWITCH.



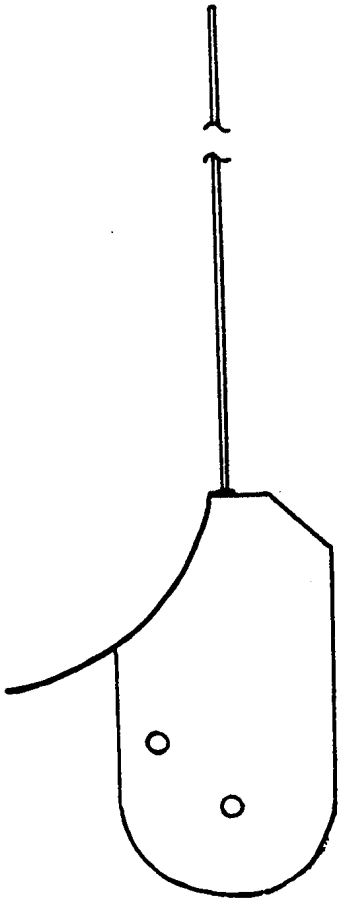
NORMALLY OPEN FIRING SWITC

TEN FOOT CABLE

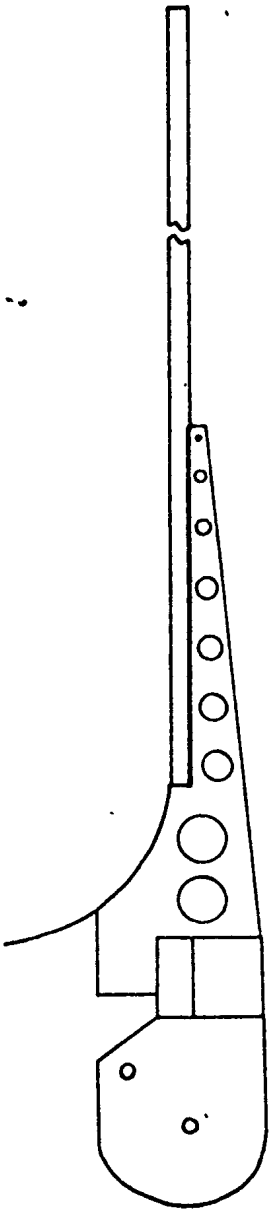
KEY OPERATED SAFETY SWITCH

HAND HELD CONTROL BOX

'NTERCHAN'GEABLE LAUNCH RAILS

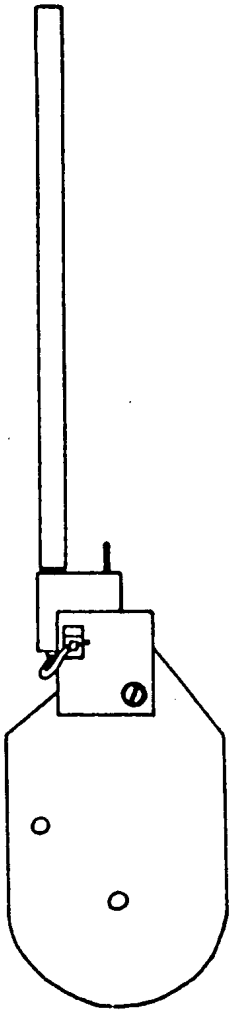


STANDARD 1/8 INCH LAUNCH ROD ASSEMBLY. SUPPLIED WITH MODELS SC-1, SC-2 AND T-1



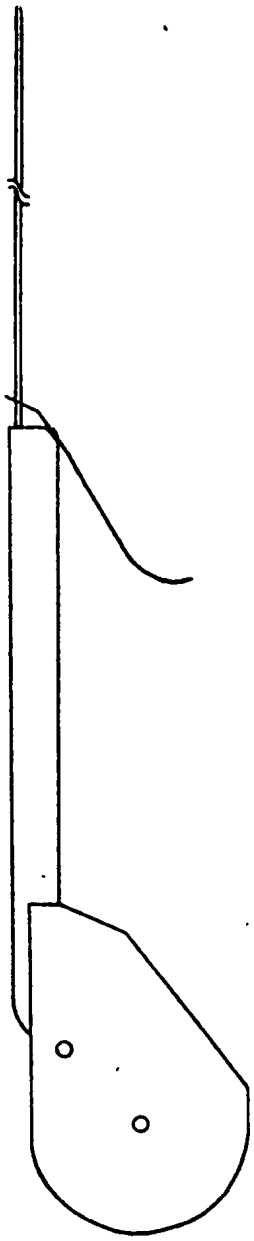
'C' RAIL ASSEMBLY

MODEL CLR-1 ..COMPLETE ASSEMBLY READY FOR CUSTOM FINISHING.



PISTON ASSEMBLY
DESIGNED FOR USE WITH
A CMR PISTON LAUNCHER

MODEL PLR-1 ,.ASSEMBLY
READY FOR CUSTOM FINISHING
(PISTON LAUNCHER NOT
INCLUDED)



BG/RG RAIL ASSEMBLY

MODEL GLR-1 ..COMPLETE
ASSEMBLY READY FOR
CUSTOM FINISHING.

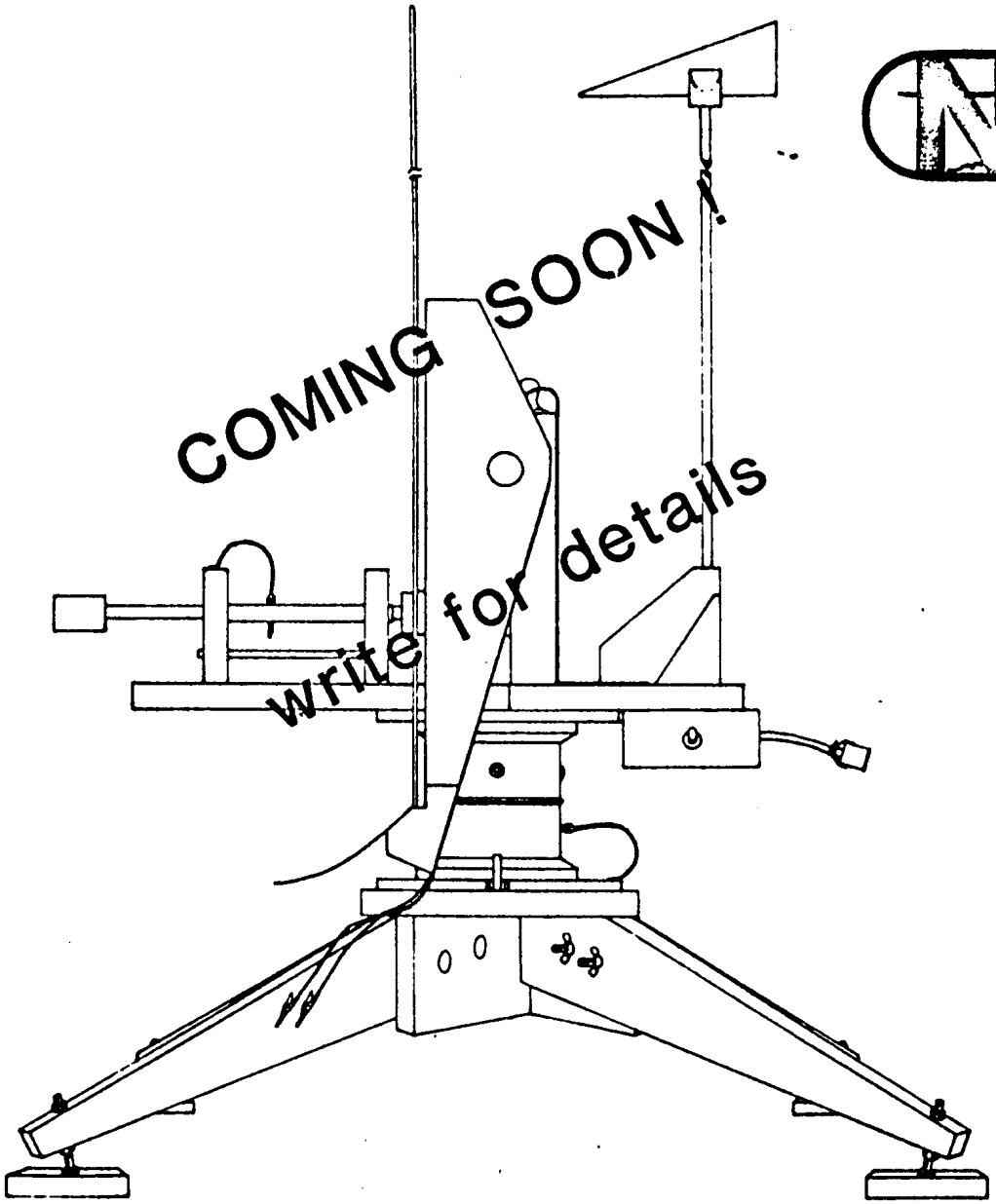
PRICE LIST

MODEL NUMBER	PRICE
SC-1	$ 34.95
SC-2	20.95
T-1	9.95
SCS-1	6.25
SCB-1	5.25
CLR-1	4.50
PLR-1	3.25
GLR-1	3.75

NOTE: ALL PRICES INCLUDE POSTAGE COSTS FOR SHIPMENTS WITHIN THE CONTINENTAL UNITED STATES. INTERNATIONAL CUSTOMERS PLEASE WRITE FOR SHIPPING INFORMATION.

PAYMENT: PLEASE DO NOT SEND CASH OR STAMPS. USE CHECKS OR MONEY ORDERS FOR FULL PAYMENT, WHICH MUST ACCOMPANY ORDER. C.O.D. REQUESTS WILL BE RETURNED WITHOUT SHIPMENT.

GEMINI CLASS
model rocket launcher



INTRODUCING THE GEMINI CLASS MODEL ROCKET LAUNCH SYSTEM. THE GEMINI CLASS SYSTEM IS A FULLY STEERABLE, ULTRA STABLE, SOLID STATE CONTROLLED, DUAL STATION LAUNCHER. THE GEMINI CLASS LAUNCHER IS PATTERNED AFTER THE U.S. NAVY TERRIER MISSILE SYSTEM. INCLUSION OF BOTH A STANDARD LAUNCH ROD AND A 'C' RAIL ALLOW THE GEMINI CLASS LAUNCHER TO FULFILL A VARIETY OF MODEL ROCKET MISSION REQUIREMENTS. A WIND VANE IS ALSO INCLUDED TO INDICATE SURFACE WIND DIRECTION.

NOTICE OF RESPONSIBILITY

OUR MODEL ROCKETRY PRODUCTS ARE INTENDED FOR EXPERIMENTAL AND EDUCATIONAL USE. YOU ARE CAUTIONED TO EXCERCIZE UTMOST CARE IN THE USE OF OUR PRODUCTS. WE DO NOT ACCEPT ANY RESPONSIBILITY FOR ACCIDENTS. USER SHALL DETERMINE THE SUITABILITY OF THE PRODUCT FOR HIS INTENDED USE, AND ASSUME ALL RISK AND LIABILITY IN CONNECTION THEREWITH.

LAUNCH CONTROL ELECTRONICS ARE WARRANTEED AGAINST DEFECTS IN PARTS AND WORKMANSHIP FOR 100 DAYS AFTER SHIPMENT. RESPONSIBILITY WILL BE TO REPAIR OR REPLACE UNIT AT OUR DISCRETION.

NOVA RESEARCH ASSOCIATES