

HANDBOOK
OF
PILOT OPERATIONAL EQUIPMENT
FOR
MANNED SPACE FLIGHT

Report No.
CD42-A/SL-997

Prepared By
POE Development Section
Crew Equipment and Design Branch
Flight Crew Integration Division



National Aeronautics and Space Administration
LYNDON B. JOHNSON SPACE CENTER
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PROJECT DOCUMENT COVER SHEET

HANDBOOK OF PILOT OPERATIONAL EQUIPMENT FOR MANNED SPACE FLIGHT	
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8.6 Data Recording Pen (SEB12100051):

The Data Recording Pen is a special ballpoint pen originally developed for use in the space environment and currently sold as a commercial item also.

8.6.1 Significant Configurations:

<u>Configuration</u>	<u>Purpose</u>
-204	Apollo and Skylab unit; blue ink and end push button retractor
-207	Current replacement for -204 unit; blue ink and side button retractor
-208	Like -207 except black ink

8.6.2 Characteristics:

- Manufactured by the Fisher Pen Co., Van Nuys, CA 91401.
- Weight - 0.05 lbs. (22.7 g.)
Envelope - 5.21 x 0.52 Dia. in. (13.2 x 1.3 Dia. cm.)
Volume - 1.1 in.³ (18.2 cm.³)
- The Data Recording Pen, commercial Fisher Model AG-7, is a retractable ballpoint pen with a pressurized ink cartridge. The cartridge design makes use in zero gravity possible.
- Cartridge contains 0.682 cm.³ of ink pressurized with nitrogen gas to 50 psig. The ink supply provides approximately 15,000 feet (4,570 meters) of writing length.
- The ink is thixotropic (semi-solid gel) and liquifies only when the revolving ball shears its polymer bonds. The ink and pen are usable throughout the temperature range of -50°F (-46°C) to 160°F (71°C).
- A small patch of Velcro hook and a standard metal clip are incorporated to facilitate attachment and stowage of the pen.
- The Data Recording Pen is qualified for use in the Apollo and Skylab vehicles and in the hard vacuum of space.



Pen



Cartridge

Figure 8.6-1 - Data Recording Pen

8.7 Pencil (SEB12100081):

The Pencil is a general purpose mechanical pencil of sturdy metal construction.

8.7.1 Significant Configurations:

<u>Configuration</u>	<u>Purpose</u>
-301	Apollo and Skylab unit.

8.7.2 Characteristics:

- Manufactured by Lew Manufacturing Co., Coventry, Rhode Island 02816.
- Weight - 0.05 lb. (22.7 g.).
Envelope - 5.07 x 0.40 Dia. in. (12.9 x 1.0 Dia. cm.).
Volume - 0.6 in.³ (10.4 cm.³).
- The Pencil, commercial model Garland 35-P, is a metal mechanical pencil.
- Pencil lead is standard commercial graphite lead 2.75 x 0.036 Dia. in. (7.0 x 0.091 Dia. cm.).
- A small patch of Velcro hook and a standard metal clip are incorporated to facilitate attachment and stowage of the pencil.
- The Pencil is qualified for use in the Apollo and Skylab vehicles.



Figure 8.7-1 - Pencil

8.8 Marker Pen (SEB12100082):

The Marker Pen is a general purpose felt-tip marking pen with metallic exterior.

8.8.1 Significant Configurations:

<u>Configuration</u>	<u>Purpose</u>
-301	Apollo and Skylab unit; black ink.

8.8.2 Characteristics:

- Manufactured by the Duro Pen Co., Brooklyn, New York 11237.
- Weight - 0.05 lb. (22.7 g.).
Envelope - 5.20 x 0.55 Dia. in. (13.2 x 1.4 Dia. cm.).
Volume - 1.2 in.³ (20.6 cm.³).
- The Marker Pen, trade name "Rocket", is a felt-tip marking pen with a metal exterior.
- The marking ink capacity provides approximately 1,515 feet (462 meters) writing length and is usable to a maximum temperature of 160^o F. (71^o C.).
- A small patch of Velcro hook and a standard metal clip are incorporated to facilitate attachment and stowage of the pen.
- The Marker Pen is qualified for use in the Apollo and Skylab vehicles.

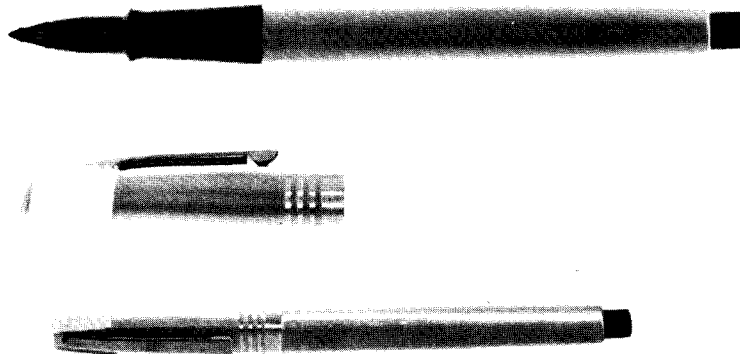


Figure 8.8-1 - Marker Pen