Standard Aircraft Characteristics

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

ONE J33-A-37

ALLISON

CONFIDENTIAL

B-61A
MATADOR
MARTIN

CONFIDENTIAL

PILOTLESS AIRCRAFT
### POWER PLANT

<table>
<thead>
<tr>
<th>No. &amp; Model</th>
<th>(1) J33-A-37</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mfr</td>
<td>Allison</td>
</tr>
<tr>
<td>Engine Spec No.</td>
<td>318-C</td>
</tr>
<tr>
<td>Type</td>
<td>Axial</td>
</tr>
<tr>
<td>Diameter</td>
<td>139.5&quot;</td>
</tr>
<tr>
<td>Weight (dry)</td>
<td>1790 lb</td>
</tr>
</tbody>
</table>

**BOOSTER**

No. & Model . (1) T-50 modified  
Mfr: Picatinny Arsenal & Goodyear

### ENGINE RATINGS

<table>
<thead>
<tr>
<th>S. L. Static</th>
<th>LB</th>
<th>RPM</th>
<th>MIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max</td>
<td>4600</td>
<td>11,750</td>
<td>5</td>
</tr>
<tr>
<td>Mil</td>
<td></td>
<td>Abs</td>
<td></td>
</tr>
<tr>
<td>Nor</td>
<td>4600</td>
<td>11,750</td>
<td>Cont</td>
</tr>
</tbody>
</table>

**BOOSTER**

S. L. Static | LB | SEC |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Max</td>
<td>57,000</td>
<td>2.4</td>
</tr>
</tbody>
</table>

### MISSION AND DESCRIPTION

**Navy Equivalent:** None  
**Mfr's Model:**

The MATADOR is a turbo-jet powered subsonic pilotless aircraft equipped with a 3000 lb warhead capable of cruising a distance of 690 nautical miles at a cruising speed of at least Mach 0.8 and at a maximum altitude of 44,000 feet.

The basic design is a shoulder wing type airframe with a "T" type tail. Use of honeycomb construction has made it possible to construct thin, smooth contour wing and tail surfaces. Control is maintained by use of a movable horizontal stabilizer and spoiler type ailerons located in the upper surface of the wing.

Presently the MATADOR is limited to operation of 220 nautical miles forward of guidance base stations since guidance depends on line-of-sight microwave transmission. Immediate developmental goal for tactical utility is to increase it to 1000 feet of target. Extension of effective guidance map-matching technique and/or other guidance systems.

### DEVELOPMENT

**Project Initiated:** Aug 45  
**First Flight (XSSM-A-1):** 19 Jan 49  
**First Flight (YB-61):** 22 Dec 50  
**First Flight (B-61A):** Nov 52

Current plans are directed toward operational readiness of two Pilotless Bomber (B-61) Squadrons during FY 1954.

A program has been initiated to include the Shanghai Guidance System in the MATADOR. This configuration is the B-61C which will replace the B-61A and will contain both Shanghai and MARC. Space, weight and power provisions for Shanghai Guidance are in all B-61A's.

### GUIDANCE

**SYSTEMS**

1. **INITIAL:** Programmed air speed control
2. **MID-COURSE:** MARC (AN/APW-11 used with AN/MSQ-1)
3. **TERMINAL:** Zero lift (ballistic dive)

**CONTROL**  
Electro-Hydraulic Auto-pilot

### LAUNCHING

**METHOD**

Launched to a speed of 200 MPH from a mobile "zero length" launcher. No catapult or runway is required but a RATO booster is used for additional thrust at launch. Pilotless aircraft is supported on the launcher by two forward ball pivots and a cradle at the aft fuselage section.

**PREPARATION & LAUNCH TIME**

Assembly and check-out by squadron crews will be approximately 20 pilotless aircraft per 8 hour day. Assembled crafts may be stored for 48 hours without recheck. Ninety minutes will be required for preflight operation.

### WEIGHS

<table>
<thead>
<tr>
<th>Loading</th>
<th>Lb</th>
<th>L. F.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empty</td>
<td>5410</td>
<td></td>
</tr>
<tr>
<td>Begin Cruise</td>
<td>11,030</td>
<td></td>
</tr>
<tr>
<td>End Cruise</td>
<td>8460</td>
<td></td>
</tr>
<tr>
<td>Launch</td>
<td>12,660</td>
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</table>

**BOOSTER**

**FUEL**

<table>
<thead>
<tr>
<th>Location</th>
<th>No. Tanks</th>
<th>Gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuselage</td>
<td>3</td>
<td>400</td>
</tr>
</tbody>
</table>

**Grade:** 100/130, JP-4 or JP-1  
**Specification:** MIL-F-5572, MIL-F-5624A or MIL-F-5616

**OIL**

<table>
<thead>
<tr>
<th>Fuselage</th>
<th>(tot) 3</th>
</tr>
</thead>
</table>

**Grade:** S-1010, W-1005  
**Specification:** MIL-0-6081

### WARHEAD

**Type:** Interchangeable  
**Weight:** 3050 lb  
**Fuse:** Barometric

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**CONFIDENTIAL**

B-61A  
PILOTLESS AIRCRAFT
LAUNCHING POINT

The pilotless aircraft is launched from a zero length launcher. An automatically-ejected rocket booster to assist the launching is used. The pilotless aircraft climbs under programmed airspeed control to an indicated dynamic pressure of approximately 220 lb/sq ft.

MID-COURSE FLIGHT

The B-61A utilizes the MARC guidance system (Ground Radar Set AN/MSQ-1 and airborne Radar Set AN/APW-11) for mid-course guidance to targets up to 190 nautical miles from the MSQ-1 equipment. The MSQ-1 tracks the pilotless aircraft through the use of the airborne APW-11 beacon. Proper commands are developed either automatically or manually in the MSQ-1 equipment and sent over the radar link to the APW-11 beacon to control position of pilotless aircraft.

TERMINAL DIVE

A terminal dive system controls the pilotless aircraft from "dump" point to target along a zero lift trajectory.

NOTE

Line-of-sight limitations to microwave propagation restricts the MATADOR with present guidance to 220 nautical miles.