Standard Aircraft Characteristics

B-50D
SUPERFORTRESS
Boeing

BY AUTHORITY OF
COMMANDING GENERAL
AIR MATERIEL COMMAND
U.S. AIR FORCE

FOUR R-4360-35
PRATT & WHITNEY

24 NOVEMBER 1950

REstrictED

B-50D
### Mission and Description

The B-50D is a long-range, high altitude, medium bombardment type aircraft whose tactical mission is the destruction by bombs of land or naval materiel objectives.

The normal crew consists of the pilot, co-pilot, engineer, navigator-radar operator-bombardier, bombardier-navigator-radar operator, radio-ECM operator, left side gunner, right side gunner, tail gunner, tail gunner and auxiliary crew member.

Cabin heating, ventilation and pressurization are incorporated for increased crew comfort on high altitude, long range missions.

The defensive armament consists of thirteen .50 caliber machine guns housed in five electrically-operated turrets which are remotely controlled from the sighting stations.

### Development

First flight: May 1949
First acceptance: May 1949
In production

### Bombs

- **No.**
- **Size**
- **Type**
- **Max Bomb Load:**
  - Internal: 20,000 lb
  - External: 8,000 lb

### Guns

- **No. Cal. Rds. ea Location**
  - 4: .50 500 Up, fwd
  - 2: .50 500 Lwr, fwd
  - 2: .50 500 Up, aft
  - 2: .50 500 Lwr, aft
  - 2: .50 500 Tur, tail
  - 1: .50 380 Tur, tail

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### W e i g h t s

- **Loading:** Lb
- **Empty:** 86,609 (C)
- **Basic:** 84,714 (A)
- **Design:** 120,000
- **Combat:** 123,100
- **Max T.O.:** 163,000
- **Max Land:** 160,000
- **(A) Actual**
- **(C) Calculated**

### F u e l

- **Location No. Tanks Gal:**
  - Wgs, outbd:
  - Wgs, inbd:
  - Wg, center:
  - Nac, skate:
  - Aft, bomb bay:
  - Wgs, ext:
- **Self-sealing Total** 11,685
- **Grade:** 115/145
- **Water/Alcohol**

### O i l

- **Capacity (gal):** 400
- **Grade:** S-1120, W-1100

### E l e c t r o n i c s

- **Glide Path:** AN/ARN-5A
- **VHF Command:** AN/ARC-3
- **Interphone:** USAF Combat
- **Range Recvr:** BC-435E
- **Liaison:** AN/ARC-8
- **Radio Compass:** AN/ARN-7
- **Marker Beacon:** RC-103A
- **I.F. P.:** AN/APX-6
- **Localizer:** RC-103A
- **Special Radar:** AN/APQ-24
- **Loran Radar:** AN/APN-9 or -9A
- **Auto Bomb:** AN/ARW-9 and AN/ARW-10A
- **Radio Altimeter:** SCR-718C
- **ECM:** (See page 6, note d)
- **Radar:** AN/APN-88
- **Radio Set:** AN/APN-2B
## Loading and Performance - Typical Mission

<table>
<thead>
<tr>
<th>CONDITIONS</th>
<th>BASIC MISSION</th>
<th>MAX INT BOMB MISSION</th>
<th>ZERO BOMBS MISSION</th>
<th>HIGH ALT. MISSION</th>
<th>FERRY MISSION</th>
<th>RANGE</th>
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<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td><strong>TAKE-OFF WEIGHT</strong></td>
<td>(lb)</td>
<td>173,000</td>
<td>169,642</td>
<td>163,519</td>
<td>173,000</td>
<td>163,519</td>
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<tr>
<td>Fuel at 6.0 lb/gal (grade 115/145)</td>
<td>(lb)</td>
<td>660,615</td>
<td>56,634</td>
<td>70,134</td>
<td>66,615</td>
<td>70,134</td>
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<tr>
<td>Military load (Bombs)</td>
<td>(lb)</td>
<td>10,000</td>
<td>20,000</td>
<td>None</td>
<td>10,000</td>
<td>None</td>
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<tr>
<td>Wing loading</td>
<td>(lb/sq ft)</td>
<td>100.5</td>
<td>98.5</td>
<td>95.1</td>
<td>100.5</td>
<td>95.1</td>
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<tr>
<td>Stall speed (power off, land. config.)</td>
<td>(kn)</td>
<td>119</td>
<td>118</td>
<td>116</td>
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<td>116</td>
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<tr>
<td>Take-off ground run at SL</td>
<td>(ft)</td>
<td>5050</td>
<td>4800</td>
<td>4400</td>
<td>5050</td>
<td>4400</td>
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<tr>
<td>Take-off to clear 30 ft</td>
<td>(ft)</td>
<td>7050</td>
<td>6700</td>
<td>6150</td>
<td>7050</td>
<td>6150</td>
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<tr>
<td>Rate of climb at SL</td>
<td>(fpm)</td>
<td>623</td>
<td>662</td>
<td>737</td>
<td>623</td>
<td>737</td>
</tr>
<tr>
<td>Time: SL to 10,000 ft</td>
<td>(min)</td>
<td>18</td>
<td>16.0</td>
<td>14.0</td>
<td>18.0</td>
<td>14.0</td>
</tr>
<tr>
<td>Time: SL to 20,000 ft</td>
<td>(min)</td>
<td>43</td>
<td>39.0</td>
<td>34.0</td>
<td>43.0</td>
<td>34.0</td>
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<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft)</td>
<td>24,000</td>
<td>25,450</td>
<td>28,150</td>
<td>24,000</td>
<td>28,150</td>
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<tr>
<td>COMBAT RANGE</td>
<td>(n. mi.)</td>
<td>4258</td>
<td>3338</td>
<td>4711</td>
<td>3904</td>
<td>4801</td>
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<tr>
<td>Average speed</td>
<td>(kn)</td>
<td>205</td>
<td>205</td>
<td>202</td>
<td>232</td>
<td>201</td>
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<tr>
<td>Initial cruising altitude</td>
<td>(ft)</td>
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<td>10,000</td>
<td>10,000</td>
<td>20,000</td>
<td>10,000</td>
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<tr>
<td>Final cruising altitude</td>
<td>(ft)</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>30,000</td>
<td>10,000</td>
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<tr>
<td>Total mission time</td>
<td>(hr)</td>
<td>20</td>
<td>16.44</td>
<td>23.4</td>
<td>17.04</td>
<td>24.06</td>
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<tr>
<td>COMBAT RADIUS</td>
<td>(n. mi.)</td>
<td>2246</td>
<td>1806</td>
<td>2397</td>
<td>2061</td>
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<tr>
<td>Average speed</td>
<td>(kn)</td>
<td>225</td>
<td>223</td>
<td>224</td>
<td>248</td>
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<tr>
<td>Initial cruising altitude</td>
<td>(ft)</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
<td>20,000</td>
<td></td>
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<tr>
<td>Bombing altitude</td>
<td>(ft)</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>30,000</td>
<td></td>
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<tr>
<td>Bomb run speed</td>
<td>(kn)</td>
<td>313</td>
<td>312</td>
<td>317</td>
<td>336</td>
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<tr>
<td>Final cruising altitude</td>
<td>(ft)</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>30,000</td>
<td></td>
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<tr>
<td>Total mission time</td>
<td>(hr)</td>
<td>20.22</td>
<td>16.43</td>
<td>21.60</td>
<td>16.86</td>
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<tr>
<td>COMBAT WEIGHT</td>
<td>(lb)</td>
<td>123,100</td>
<td>116,500</td>
<td>124,700</td>
<td>121,316</td>
<td>100,399</td>
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<tr>
<td>Combat altitude</td>
<td>(ft)</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>30,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Combat speed</td>
<td>(kn)</td>
<td>330</td>
<td>333</td>
<td>329</td>
<td>336</td>
<td>310</td>
</tr>
<tr>
<td>Combat climb</td>
<td>(fpm)</td>
<td>1610</td>
<td>1780</td>
<td>1570</td>
<td>1480</td>
<td>2770</td>
</tr>
<tr>
<td>Combat ceiling (500 fpm)</td>
<td>(ft)</td>
<td>35,500</td>
<td>36,350</td>
<td>35,300</td>
<td>35,700</td>
<td>38,350</td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft)</td>
<td>36,700</td>
<td>37,850</td>
<td>36,400</td>
<td>37,000</td>
<td>40,150</td>
</tr>
<tr>
<td>Service ceiling (one engine out)</td>
<td>(ft)</td>
<td>30,600</td>
<td>33,200</td>
<td>39,900</td>
<td>31,300</td>
<td></td>
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<tr>
<td>Max rate of climb at SL</td>
<td>(fpm)</td>
<td>2165</td>
<td>2335</td>
<td>2125</td>
<td>2210</td>
<td>2850</td>
</tr>
<tr>
<td>Max speed at 30,500 ft</td>
<td>(kn)</td>
<td>335</td>
<td>339</td>
<td>334</td>
<td>336</td>
<td>347</td>
</tr>
<tr>
<td>LANDING WEIGHT</td>
<td>(lb)</td>
<td>96,866</td>
<td>95,640</td>
<td>96,892</td>
<td>96,866</td>
<td>100,399</td>
</tr>
<tr>
<td>Ground roll at SL</td>
<td>(ft)</td>
<td>1300</td>
<td>1280</td>
<td>1300</td>
<td>1300</td>
<td>1370</td>
</tr>
<tr>
<td>Total from 50 ft</td>
<td>(ft)</td>
<td>2370</td>
<td>2350</td>
<td>2370</td>
<td>2370</td>
<td>2420</td>
</tr>
</tbody>
</table>

### NOTES
1. T.O. power
2. Max power
3. Normal power
4. Detailed descriptions of RADIUS
5. Detailed descriptions of RANGE
6. Missions are given on page 6

### PERFORMANCE BASIS:
(a) Data source: Flight Test
(b) Performance is based on powers shown on page 6

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**B-50D**

RESTRICTED

24 NOVEMBER 1950
NOTES

FORMULA: RADIUS MISSIONS I, II & III

Warm-up, take-off, climb on course using normal power to 10,000 feet, cruise at long range speeds to 10,000 feet to point where climb is made to arrive at 25,000 feet 30 minutes prior to target, cruise long range speeds for 15 minutes, conduct 15 minute normal power bomb run, drop bombs when carried, conduct 5 minute normal power evasive action, plus 10 minute normal power run-out from target area, cruise at 25,000 feet back to base. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off, 5 minutes normal power evasive action and 5% of initial fuel load for landing and endurance reserve.

FORMULA: RADIUS MISSION IV

Warm-up, take-off, climb on course using normal power to 20,000 feet, cruise at long range speeds to 20,000 feet to point where climb is made to arrive at 30,000 feet 30 minutes prior to reaching target, cruise long range speeds for 15 minutes, conduct 15 minute normal power bomb run, drop bombs, conduct 5 minute normal power evasive action, plus 10 minutes normal power run-out from target, cruise back to base at long range speeds at 30,000 feet. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off, 5 minutes normal power evasive action and 5% of initial fuel load for landing and endurance reserve.

FORMULA: RANGE MISSION V

Aircraft is flown to point where 90% of initial fuel has been used, and aircraft landed. Specifically: warm-up, take-off, on course using normal power to 10,000 feet, cruise at long range speeds to point where 90% of fuel has been used. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off plus 10% of initial fuel load for landing reserve.

GENERAL DATA:

(a) This airplane makes good a flight and take-off limit load factor of 2 at a gross weight of 173,000 lb, although the landing gear and supporting structure does not meet the ground handling requirements of ANC-2a as these requirements were set up subsequent to the design of this airplane. The B-50 specification maximum weight is 164,500 lb, which is the present recommended maximum due to limited side load strength of main and nose gears and supporting structure which might become critical in aborted take-off.

(b) Engine ratings shown on page 3 are guaranteed values. Power values used in performance calculations are as follows:

<table>
<thead>
<tr>
<th>R-4360-35</th>
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</thead>
<tbody>
<tr>
<td>BHP</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>T.O.</td>
</tr>
<tr>
<td>Max</td>
</tr>
<tr>
<td>Nor</td>
</tr>
<tr>
<td>Wet</td>
</tr>
</tbody>
</table>

**Level flight critical altitude

(c) For detailed planning refer to Tech Order AN 01-20ELA-1.

(d) Installation provisions for EGM equipment include the following:

AN/APT-1
AN/APR-4
AN/APT-5A
AN/APT-4
AN/ARQ-8

24 NOVEMBER 1950
The curve below presents the combat potentialities of the B-50D airplane when operating with the KB-29P tanker airplane. The right side of the curve presents combat radius versus refuel radius (start of refueling operation) while the left side presents transfer fuel requirements and capabilities versus refuel radius. For example, in order to strike a target 3500 miles from base, these curves are to be used together to present refueling radius data as follows:

The combat radius section indicates 3500 nautical miles may be made good by both refueling techniques, refueling outbound only at 2320 nautical miles or refueling outbound at 675 nautical miles and inbound at 1845 nautical miles; however, reading from the requirements section, the double refuel requires two tankers, one outbound at 675 nautical miles transferring approximately 17,500 pounds fuel and inbound at 1845 nautical miles transferring 19,350 pounds fuel.

For outbound refuel only, it is noted that the bomber requires a transfer of 43,250 pounds fuel while a single tanker can deliver only 9250 pounds fuel at 2320 nautical miles from base; thus 43,250/9250 = 4.7 so five tankers would be required.

**Formula for Radius Data Shown**

Warm-up, take-off, climb on course at normal power to 10,000 feet, cruise at long range speeds (except when refueling) to point where normal rated power climb is made to arrive at 25,000 feet 30 minutes prior to bomb drop, cruise long range speeds 15 minutes followed by 15 minute bomb run at normal power, drop bombs, conduct 5 minutes normal power evasive action plus 10 minute normal power escape. When only outbound refuel issued return to base at long range speeds at 25,000 feet; on inbound refuel return at long range speeds at 25,000 feet 10 minutes normal power consumption for warm-up and take-off, plus 5 minutes normal power evasive action and 5% of take-off fuel for landing reserve. All refueling operations allow 1 hour rendezvous per refuel at no distance credit followed by refuel at 220 (EAS) MPH at 500 gpm on course.

**NOTE:**

1. Loading for refuel mission is the same as Basic Mission.
2. Inbound refuel is assumed to be 19,350 pounds of fuel at 1845 nautical miles from base for all double refuel missions. This assumption gives best radius for receiver-tanker combination.