Standard Aircraft Characteristics

B-52D
STRATOFORTRESS
Boeing

EIGHT J57-P-19W
PRATT & WHITNEY

5 OCT 54

SECRET
**POWER PLANT**

- No. & Model: (8) J57-P-19W
- Mfr: Pratt & Whitney
- Engine Spec No.: A-1649D
- Type: Axial
- Diameter: 40.5\(^{\circ}\)
- Weight (dry): 4035 lb
- Tail Pipe: Fixed Area Augmentation
- Note: At present there are no requirements for ATO

**ENGINE RATINGS**

- S. L. Static LB- **RPM - MIN**
- Max: 112,000-6450/9000-3
- Mil: 10,000-6150/9000-30
- Nor: 9000-5900/9650-Cont
- *Wet

**DIMENSIONS**

- Wing Span: 185.0\(^{\circ}\)
- Dihedral (chord plane): 2\(^{\circ}\)30\(^{\circ}\)
- Incidence (root): 6\(^{\circ}\)
- Sweepback (LE): 36\(^{\circ}\)58\(^{\circ}\)
- Length: 156.6\(^{\circ}\)
- Height (overall): 48.3\(^{\circ}\)
- Height (fin folded): 20.8\(^{\circ}\)
- Tread (outtrigger): 148.4\(^{\circ}\)
- Tread (main gear): 11.4\(^{\circ}\)

**MISSION AND DESCRIPTION**

- Navy Equivalent: None
- Mfr's Model: 484-201-6

- The principal mission of the B-52D is the destruction of surface objects.
- The normal crew of six consists of pilot, co-pilot, (2) bombardiers, (1) navigator, ECM operator and tail gunner.
- Automatic cabin pressurization, heating and ventilation are provided for crew comfort during normal and combat operation.
- Ejection seats for emergency escape are afforded the crew except for the tail gunner who bails out after jettisoning the tail section containing the gun turret.
- Flight control, throughout the speed range from limit dive speed to landing speed is accomplished by use of spoilers, ailerons on the wing, elevators on an all-moving horizontal tail and a rudder on a fixed vertical tail surface. The spoilers also function as air brakes used in landing.
- The anti-icing of wing and tail surface leading edges is accomplished by air being bled off the engines.
- Other features are single-point ground and aerial refueling, braking parachute for decreasing landing roll distance, and a steerable landing gear to aid in cross wind take-off and landing. The airplane utilizes the A-14 auto-pilot and the N-1 compass.
- The RB-52C (Bomber Version) becomes a RB-52C when the capsule containing photographic equipment is placed in the bomb bay.
- Major differences from the RB-52B (Bomber Version) are the installation of J57-P-19W engines in place of J57-P-1W engines and an increase in fuel tank capacities.

**DEVELOPMENT**

The B-52D airplane is same as RB-52C (Bomber Version) except that it does not have the bomb bay (Capsule) convertibility to a reconnaissance characteristic.

Delivery: Five B-52D airplanes are scheduled for delivery Dec 56 (est)

---

**FUEL**

- Location No. Tanks Gal
- Wg. outbd: 2 . . . . 4670
- Wg. ctr: 1 . . . . 5700
- Wg, inbd*: 4 . . . . 10,370
- Fus. fwd*: 2 . . . . 4340
- Fus. aft*: 1 . . . . 5130
- Fus. aft*: 1 . . . . 5000
- Wg. drop: 2 . . . . 6000
- Self-Sealing: Total 42,110
- Grade: JP-4
- Specification: MIL-F-5624A

---

**OIL**

- Nacelle: 8 . . . . (tot) 134
- Grade: MIL-L-7808A
- Specification: WATER
- Spec.

---

**ELECTRONICS**

- UHF Command Set: AN/ARC-34
- AN/APC-6
- IFF: AN/APC-6
- Radar Beacon: AN/APN-76A
- ECM Trans (2): AN/APD-10
- ECM Trans (1): AN/APD-9
- ECM Trans (1): AN/APD-16A
- ECM Recv'r (1): AN/APR-14
- Interphone: AN/AIC-10
- NM: AN/AR-9
- Nav. Recv'r: AN/AR-9
- Fire Control Sys: AN/A-3A
- ECM Recv'r (1): AN/AR-9

---

**GUNS**

- No. Type Size Rds ea Loc
- 4 M-3 50 600 Tril tur

---

**CAMERAS**

- No. Type Lens
- 1 K-38 36\(^{\circ}\)
- 1 K-22 6\(^{\circ}\)
- or
- 1 K-17C 6\(^{\circ}\)
- 1 0-15 Radar Recording

---

**WEIGHTS**

- Loading Lb
- Empty: 165,110 (C)
- Basic: 167,685
- Combat: 379,900
- Max T.O. #: 450,000
- Max Land: 270,000
- (C) Calculated
- * For Basic Mission
- ** Limited by structure; w/o ATO

---

**B-52D**

5 OCT 54
## Loading and Performance—Typical Mission

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Basic Mission</th>
<th>Design Mission</th>
<th>Max Bomb Mission</th>
<th>Ferry Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Take-off Weight</strong> (lb)</td>
<td>450,000</td>
<td>450,000</td>
<td>450,000</td>
<td>447,500</td>
</tr>
<tr>
<td><strong>Fuel at 8.5 lb/gal (grade JP-4)</strong> (lb)</td>
<td>266,215</td>
<td>267,615</td>
<td>232,905</td>
<td>273,715</td>
</tr>
<tr>
<td><strong>Payload (Bombs)</strong> (lb)</td>
<td>10,000</td>
<td>8600</td>
<td>43,000</td>
<td>None</td>
</tr>
<tr>
<td><strong>Wing loading</strong> (lb/sq ft)</td>
<td>112.5</td>
<td>112.5</td>
<td>112.5</td>
<td>111.9</td>
</tr>
<tr>
<td><strong>Stall speed (power off)</strong> (kn)</td>
<td>136</td>
<td>136</td>
<td>136</td>
<td>136</td>
</tr>
<tr>
<td><strong>Take-off ground run at SL</strong> (ft)</td>
<td>8350</td>
<td>8350</td>
<td>8350</td>
<td>8300</td>
</tr>
<tr>
<td><strong>Take-off to clear 50 ft</strong> (ft)</td>
<td>10,850</td>
<td>10,650</td>
<td>10,650</td>
<td>10,600</td>
</tr>
<tr>
<td><strong>Rate of climb at SL</strong> (fpm)</td>
<td>2240</td>
<td>2400</td>
<td>2240</td>
<td>2260</td>
</tr>
<tr>
<td><strong>Rate of climb at SL (one eng. out)</strong> (fpm)</td>
<td>2450</td>
<td>2450</td>
<td>2450</td>
<td>2460</td>
</tr>
<tr>
<td><strong>Time: SL to 20,000 ft</strong> (min)</td>
<td>11.1</td>
<td>11.1</td>
<td>11.1</td>
<td>11.0</td>
</tr>
<tr>
<td><strong>Time: SL to 30,000 ft</strong> (min)</td>
<td>18.8</td>
<td>18.8</td>
<td>18.8</td>
<td>18.8</td>
</tr>
<tr>
<td><strong>Service ceiling (100 fpm)</strong> (ft)</td>
<td>38,050</td>
<td>38,050</td>
<td>38,050</td>
<td>38,150</td>
</tr>
<tr>
<td><strong>Service ceiling (one eng. out)</strong> (ft)</td>
<td>37,550</td>
<td>37,550</td>
<td>37,550</td>
<td>37,650</td>
</tr>
<tr>
<td><strong>COMBAT RANGE</strong> (n. mi)</td>
<td>3625</td>
<td>3645</td>
<td>3115</td>
<td>7260</td>
</tr>
<tr>
<td><strong>Average cruise speed</strong> (kn)</td>
<td>457</td>
<td>457</td>
<td>457</td>
<td>457</td>
</tr>
<tr>
<td><strong>Initial cruising altitude</strong> (ft)</td>
<td>34,750</td>
<td>34,750</td>
<td>34,750</td>
<td>34,850</td>
</tr>
<tr>
<td><strong>Target speed</strong> (kn)</td>
<td>472</td>
<td>472</td>
<td>472</td>
<td>472</td>
</tr>
<tr>
<td><strong>Target altitude</strong> (ft)</td>
<td>46,150</td>
<td>46,200</td>
<td>45,050</td>
<td>45,050</td>
</tr>
<tr>
<td><strong>Final cruising altitude</strong> (ft)</td>
<td>51,950</td>
<td>51,950</td>
<td>52,000</td>
<td>51,550</td>
</tr>
<tr>
<td><strong>Total mission time</strong> (hr)</td>
<td>15.93</td>
<td>16.03</td>
<td>13.68</td>
<td>15.93</td>
</tr>
</tbody>
</table>

### COMBAT WEIGHT

<table>
<thead>
<tr>
<th>Conditions</th>
<th>lb</th>
<th>lb</th>
<th>lb</th>
<th>lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combat altitude</td>
<td>46,150</td>
<td>46,200</td>
<td>45,050</td>
<td>51,550</td>
</tr>
<tr>
<td>Combat speed</td>
<td>489</td>
<td>489</td>
<td>501</td>
<td>501</td>
</tr>
<tr>
<td>Combat climb</td>
<td>700</td>
<td>690</td>
<td>1110</td>
<td>1010</td>
</tr>
<tr>
<td>Combat ceiling (500 fpm)</td>
<td>47,350</td>
<td>47,300</td>
<td>48,800</td>
<td>54,500</td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>48,100</td>
<td>48,000</td>
<td>49,400</td>
<td>55,300</td>
</tr>
<tr>
<td>Service ceiling (one eng. out)</td>
<td>46,000</td>
<td>45,900</td>
<td>47,300</td>
<td>53,200</td>
</tr>
<tr>
<td>Max rate of climb at SL (fpm)</td>
<td>5430</td>
<td>5420</td>
<td>5850</td>
<td>7900</td>
</tr>
<tr>
<td>Max speed at 20,000 ft (kn)</td>
<td>546</td>
<td>546</td>
<td>546</td>
<td>546</td>
</tr>
<tr>
<td>Basic speed at 35,000 ft (kn)</td>
<td>518</td>
<td>518</td>
<td>519</td>
<td>521</td>
</tr>
</tbody>
</table>

### LANDING WEIGHT

<table>
<thead>
<tr>
<th>Conditions</th>
<th>lb</th>
<th>lb</th>
<th>lb</th>
<th>lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground roll at SL</td>
<td>2630</td>
<td>2630</td>
<td>2600</td>
<td>2670</td>
</tr>
<tr>
<td>Ground roll (auxiliary brake)</td>
<td>2260</td>
<td>2260</td>
<td>2250</td>
<td>2290</td>
</tr>
<tr>
<td>Total from 50 ft</td>
<td>3430</td>
<td>3430</td>
<td>3400</td>
<td>3470</td>
</tr>
<tr>
<td>Total from 50 ft (auxiliary brake)</td>
<td>3060</td>
<td>3060</td>
<td>3050</td>
<td>3090</td>
</tr>
</tbody>
</table>

### NOTES

1. T.O. power
2. Max power
3. Normal power
4. Detailed descriptions of Radius and Range
5. Limited by structure
6. With drag chute
7. Tanks carried all the way

Performance Basis:
(a) Data source: Flight tests on XB-52 and YB-52
(b) Performance based on data referenced on page 6.
FORMULA: RADIUS MISSIONS I, II & III

Take-off and climb on course to optimum cruise altitude at normal power. Cruise out at long range speeds increasing altitude with decreasing airplane weight, external tanks are dropped, when empty. Climb so as to reach cruise ceiling fifteen (15) minutes from target. Run into target at normal power, drop bombs, conduct two (2) minutes evasive action and eight (8) minutes escape from target at normal power. Cruise back to home base at long range speeds increasing altitude with decreasing airplane weight. Range free allowances include five (5) minutes normal power fuel consumption for starting engines and take-off and two (2) minutes normal power fuel consumption at combat altitude for evasive action and thirty (30) minutes of maximum endurance (four engine) fuel consumption at sea level plus 5% of initial fuel load for landing reserve.

FORMULA: RANGE MISSION IV

Take-off and climb on course to optimum cruise altitude at normal power. Cruise out at long range speeds increasing altitude with decreasing airplane weight until all usable fuel is consumed. External tanks are carried to the end of the mission. Range free allowances include five (5) minutes normal power fuel consumption for starting engines and take-off and thirty (30) minutes of maximum endurance (four engines) fuel consumption at sea level plus 5% of initial fuel load for landing reserve.

GENERAL DATA:

(a) The prescribed fuel reserve for basic mission is equivalent to 910 nautical miles at best range conditions.

(b) Per design criteria the minimum take-off distances for 450,000 lb are as follows: 7800 ft ground run and 10,000 ft over 50 ft obstacle.

PERFORMANCE REFERENCE:


REVISION BASIS:

To reflect latest performance and characteristics data.

The following Electronic equipment is supplemental to that shown under Electronics on Page 3:

Glide Path Receiver (1) ... AN/ARN-18
Direction Finder (1) ... AN/ARA-25
Marker Beacon (1) ... AN/ARN-12
Early Warning (1) ... AN/APS-54
Chaff (2) ... AN/ALE-1
This chart shows alternate 10,000 pound bomb missions available by refueling either before bomb drop, after bomb drop, or by taking off at reduced weights. Aerial refueling with the KC-97G Tanker is accomplished at 25,000 feet altitude with fuel allowance for rendezvous and transfer. No range credit is allowed for descent to 25,000 feet; climb back to cruise altitude is accounted for in range and fuel consumption.