Standard Aircraft Characteristics

B-52B

STRATOFORTRESS

Boeing

EIGHT J57-P-19W, 29W, or 29WA

PRATT & WHITNEY

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

1 OCT 58

UNCLASSIFIED
**POWER PLANT**

- **Nr & Model**
  - 4757-P-19W, or -20W, -29WA
- **Mfr**
  - Pratt & Whitney
- **Engine Spn No.**
  - 1649G
- **Type**
  - Axial
- **Length**
  - 157.3" (3.99 m)
- **Diameter**
  - 40.5" (1.03 m)
- **Weight (dry)**
  - 575-P-19W = 9970 lb
- **Tail Pipe**
  - Fixed Area Augmentation
- **Wtr**
  - At present there are no requirements for ATO.

**ENGINE RATINGS**

- S. L. Static Lb  **-** RPM  **-** MIN
- Max: 12, 100 - 6450/9800 = 5
- Mil: 10, 500 - 6150/9800 = 30
- Nor: 9800 - 5900/9600 = Cont
  - * Wet
  - ** Weight represents low pressure spool; second figure represents high pressure spool.

**DIMENSIONS**

- **Wing**
  - Span: 185, 0°
- **Dihedral (chord plane)**
  - 29°
- **Incidence (root)**
  - 6°
- **Sweepback (LE)**
  - 30°
- **Length**
  - 156.6'
- **Height**
  - 48.3'
- **Height (in folded)**
  - 20.8'
- **Tread (outrigger)**
  - 148.4' (main gear)

**MISSION AND DESCRIPTION**

- **Navy Equivalent:** None
- **Mfr's Model:** 464-201-3
- **The principal mission of the B-52B aircraft is the destruction of surface objects.**
- **The normal crew of six consists of a pilot, co-pilot, 2 (2) bombadiers, navigators, 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 boards 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 and 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.**
- **Air is bled off the engines for thermal anti-icing of the wings and tail surface leading edges.**
- **Other features are single-point ground and air refueling, braking parachute for decreasing landing roll distance, and a cross-wind landing gear to aid in cross-wind take-off and landing.**
- **The B-52B has provisions for the installation of the reconnaissance capsule in the bomb bay.**
- **Characteristics and performance are shown for B-52B's contained within the A.F. Serial Nos. 53-377 thru 53-398 with the 19W engines; B-52B's, Serial Nos. 53-204 thru 53-376 have 1W engines. See note (2) page 6.**

**DEVELOPMENT**

- **Design Initiated**
  - Feb 51
- **First Flight**
  - Dec 54
- **First delivery to SAC**
  - Oct 55

**BOMBS**

- **Nr**
  - New Series
- **Class (lb)**
  - 27 (Family of Clusters) 1000
- **Special Weapons**
  - 2
  - **MK-21**
  - 1
  - **MK-6**
- **Max Bomb Load (1) 43,000 lb**
- **Note:** Structural provisions for 50,000 lb bomb; space and structural provisions for GAM-63

**GUNS**

- **Nr**
  - Type Size Rds ea Location
  - 4, M-31, 50, 600 Tail, tur or
  - 2, M34A1, 20mm, 400, Tail, tur

**CAMERAS**

- **Nr**
  - Type Lens
  - 1, K-38 36" or
  - 1, K-17C 6" or
  - 1, K-22 6" or
  - 1, O-15A Radar Recording

**ELECTRONICS**

- **UHF Command**
  - AN/ARC-34
- **Liaison**
  - AN/ARC-21X
- **IFF**
  - AN/APX-25
- **Radar Beacon**
  - AN/APN-76
- **ECM Trans (2)**
  - AN/AFT-8
- **ECM Trans (1)**
  - AN/APR-14
- **ECM Receiver (1)**
  - AN/APR-1
- **Interphone**
  - AN/AIC-10
- **Bombing Sys**
  - K-3A
- **Nav. Receiver**
  - AN/AR-14
- **Fire Control Sys.**
  - A-5A or MD-5
- **ECM Receiver (1)**
  - AN/APR-9

See page 6 for additional equipment.

**WEIGHTS**

- **Loading Lb**
  - Empty 164, 081(C)
  - Basic 167, 210(C)
- **Design**
  - 1430, 000 2.0
- **Combat**
  - 272, 000 2.5
- **Max T.O.**
  - 420, 000 2.0
- **Max In-Flight**
  - 1415, 000 2.0
- **Max Land**
  - 270, 000

(C) Calculated
* For Basic Mission
** Excludes 3000 lb water
† Max taxi wt. 10, 000 lb bomb
‡ Limited by structure

**FUEL**

- **Location**
  - #2 tanks Gal
- **Wg, outbd**
  - 2 4480
- **Wg, cir**
  - 1 4940
- **Wg, inbd**
  - 4 10, 220
- ** Fus, fwd**
  - 2 4370
- **Fus, cnt**
  - 1 3090
- **Fus, aft**
  - 1 5910
- **Wg, drop**
  - 2 2000
- **Total**
  - 37, 550
- **Grade**
  - JP-4
- **Specification**
  - MIL-F-5624

**OIL**

- **Nacelle**
  - 8 (tot) 130
- **Specification**
  - MIL-L-7808A

**WATER**

- **Fus, aft**
  - 1 360
- **Self-sealing**

**B-52B**
# 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>I</td>
<td></td>
<td>I</td>
<td>II</td>
<td>IV</td>
</tr>
<tr>
<td>TAKE-OFF WEIGHT</td>
<td>(lb)</td>
<td>420,000</td>
<td>420,000</td>
<td>420,000</td>
</tr>
<tr>
<td>Fuel at 6.5 lb/gal (grade JP-4)</td>
<td>(lb)</td>
<td>239,265</td>
<td>240,665</td>
<td>205,440</td>
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<tr>
<td>Payload (Bombs)</td>
<td>(lb)</td>
<td>10,000</td>
<td>8600</td>
<td>43,000</td>
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<tr>
<td>Wing loading (lb/sq ft)</td>
<td>103.8</td>
<td>103.8</td>
<td>103.8</td>
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</tr>
<tr>
<td>Stall speed (power off) (kn)</td>
<td>141</td>
<td>141</td>
<td>141</td>
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<tr>
<td>Take-off ground run at SL (ft)</td>
<td>6600</td>
<td>6600</td>
<td>6600</td>
<td>6600</td>
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<tr>
<td>Take-off to clear 50 ft (ft)</td>
<td>8680</td>
<td>8680</td>
<td>8680</td>
<td>8680</td>
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<tr>
<td>Rate of climb at SL (fpm)</td>
<td>2520</td>
<td>2520</td>
<td>2520</td>
<td>2520</td>
</tr>
<tr>
<td>Rate of climb at SL (one engine out) (fpm)</td>
<td>2750</td>
<td>2750</td>
<td>2750</td>
<td>2760</td>
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<tr>
<td>Time: SL to 20,000 ft (min)</td>
<td>9.6</td>
<td>9.6</td>
<td>9.6</td>
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</tr>
<tr>
<td>Time: SL to 30,000 ft (min)</td>
<td>15.9</td>
<td>15.9</td>
<td>15.9</td>
<td>15.9</td>
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<tr>
<td>Service ceiling (100 fpm) (ft)</td>
<td>39,350</td>
<td>39,350</td>
<td>39,350</td>
<td>39,350</td>
</tr>
<tr>
<td>Service ceiling (one engine out) (ft)</td>
<td>38,900</td>
<td>38,900</td>
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<td>38,900</td>
</tr>
</tbody>
</table>

**COMBAT RANGE**

<table>
<thead>
<tr>
<th>COMBAT RADIUS</th>
<th>(n, mi)</th>
<th>—</th>
<th>—</th>
<th>6380</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average cruise speed (kn)</td>
<td>453</td>
<td>453</td>
<td>453</td>
<td>453</td>
</tr>
<tr>
<td>Initial cruising altitude (ft)</td>
<td>34,950</td>
<td>34,950</td>
<td>34,950</td>
<td>35,200</td>
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<tr>
<td>Target speed (kn)</td>
<td>476</td>
<td>476</td>
<td>476</td>
<td>476</td>
</tr>
<tr>
<td>Target altitude (ft)</td>
<td>45,750</td>
<td>45,800</td>
<td>44,700</td>
<td>44,700</td>
</tr>
<tr>
<td>Final cruising altitude (ft)</td>
<td>51,000</td>
<td>51,000</td>
<td>51,000</td>
<td>51,000</td>
</tr>
<tr>
<td>Total mission time (hr)</td>
<td>13.56</td>
<td>13.69</td>
<td>11.43</td>
<td>14.15</td>
</tr>
</tbody>
</table>

**COMBAT WEIGHT**

| Combat weight (lb) | 272,000 | 272,700 | 254,000 | 186,400 |
| Combat altitude (ft) | 45,750 | 45,800 | 44,700 | 51,000 |
| Combat speed (kn) | 406 | 406 | 506 | 507 |
| Combat climb (fpm) | 790 | 770 | 1250 | 1210 |
| Combat ceiling (500 fpm) (ft) | 47,700 | 47,850 | 48,950 | 55,700 |
| Service ceiling (100 fpm) (ft) | 46,050 | 46,000 | 47,300 | 53,750 |
| Max rate of climb at SL (fpm) | 5560 | 5540 | 6000 | 8350 |
| Max speed at optimum alt (kn/ft) | — | — | — | — |
| Basic speed at 35,000 ft (kn) | 520 | 520 | 522 | 525 |

**LANDING WEIGHT**

| Ground roll at SL (ft) | 186,200 | 186,300 | 185,300 | 186,400 |
| Ground roll (auxiliary brake) (ft) | 2230 | 2230 | 2210 | 2230 |
| Total from 50 ft (ft) | 4210 | 4220 | 4180 | 4230 |
| Total from 50 ft (auxiliary brake) (ft) | 4000 | 4010 | 3980 | 4020 |

**NOTES**

1. Take-off power
2. Military power
3. Normal power
5. Limited by structure
6. With drag chute
7. Excludes 3000 lb water
8. Limited by fuel capacity
9. Initial buffet, flaps down, S.L.
10. In-flight weight limited to 415,000 lb.
11. Braking force limited to 40,000 lb.

**PERFORMANCE BASIS:**

(a) Data source: Flight tests
(b) Performance is based on powers shown on page 3.
NOTES

FORMULA: RADIUS MISSIONS I, II & III

Take-off and climb on course to optimum cruise altitude at normal power. Cruise out at long range speed, increasing altitudes with decreasing weight; external tanks are dropped when empty. Climb so as to reach cruise ceiling 15 minutes from target. Run-in to target at normal power, drop bombs, conduct 2 minutes evasive action and 8 minutes escape at normal power. Cruise back to base at long range speed and optimum altitudes; as an alternate, a 45,000 foot ceiling may be maintained on the return leg with no radius penalty. Range-free allowances are fuel for 5 minutes at normal power for take-off allowance, fuel for 2 minutes at normal power for evasive action, and fuel for 30 minutes maximum endurance at sea level plus 5% of the 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 speed, increasing altitude with decreasing weight; external tanks are dropped when empty. Land at remote base with only reserve fuel remaining. Range-free allowances are fuel for 5 minutes at normal power for take-off allowance and fuel for 30 minutes maximum endurance at sea level plus 5% of the initial fuel load for landing reserve.

GENERAL DATA:

(a) The landing reserve for the Basic Mission is equivalent to 750 nautical miles range at optimum speed and altitude.

(b) In-flight weight of 415,000 lb is pending approval by WADC.

(c) The following electronic equipment is supplemental to that shown under "Electronics" on page 3:
   - Glide Path Receiver . . . . . . (1) AN/ARN-18
   - Marker Beacon . . . . . . (1) AN/ARN-12
   - Early Warning . . . . . . (1) AN/APS-54
   - Chaff Dispenser . . . . . (1) AN/ALE-1

(d) O.W.E. increases approximately 2000 lb on B52 airplanes utilizing J57-P-29, -29WA engines resulting in a minor range decrease for a given T.O. weight.

PERFORMANCE REFERENCE


REVISION BASIS:

To reflect change in security classification.