Standard Aircraft Characteristics

KB-29P

SUPERFORTRESS
Boeing

FOUR R-3350-57 or -57A

WRIGHT

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

8 MARCH 1951
POWER PLANT

No. & Model (4) R-3350-57 or -57A
Mfr. Wright
Spec No. 95-28266-5
Turbo. (2) B-31
Turbo Mfr. General Electric
Red. Gear Ratio 0.35
Prop Mfr. Curtiss
Blade Design No. 1016-4C4-18
Prop Type. CS, FF, Reverse
No. Blades 4
Prop Dia. 10'-8"
*Modernized

ENGINE RATINGS

BHP - RPM - ALT - MIN
T. O. 2200 - 2800 - 5
Mil. 2200 - 2600 - Turbo - 30
Nor. 2000 - 2400 - Turbo - Cont.

DIMENSIONS

Wing Span 141.2'
Incidence 4°
Dihedral 9°29'23"
Sweepback (LE) 701'26"
Length 120.1'
Height 27.8'
Tread 28.5'
Prop. Grd. Clearance 1.2'

CREW

Pilot
Co-pilot
Flight Engineer - Pumping System Operator
Navigator
Radio Operator
Radar Operator
Flying Boom Operator

REFUEL. EQUIP.

Telescopic Flying Boom
Articulated Boom Nozzle
Rudder Valves for Aerodynamic Control
Signal Amplifier
Radar equipment necessary for rendezvous with receiver.

WEIGHTS

Loading Lb
Empty 69,011 (E)
Basic 70,645 (A)
Operating 74,705
Design 135,000
Combat 84,685
Max T.O. 138,500
Max Land 135,000 2.35
(A) Actual
(E) Estimated
* For Basic Mission
+ Limited by performance
+ Limited by gear strength

FUEL

Location No. Tanks Gal
Wg. outd* 2 2800
Wg. inhd* 2 3000
Wg. ctr* 1 1400
Bomb bay, fwd* 1 2573
Bomb bay, aft* 1 2181
*Nylon cells
Total 11,354

OIL

Cap. (gal) 308
Grade S-1190; W-1100

ELECTRONICS

VHF Command AN/ARC-3
Command SCR-274N
Liaison AN/ARC-8
Interphone AN/AIC-2
Radio Compass AN/ARN-7
Marker Beacon RC-193A
IFF SCR-695A
Loran AN/APN-9
Radar AN/APQ-13A
Rendezvous Radar AN/APN-3B
and AN/APN-11

MARCH 1951

6 MARCH 1951

MISSION AND DESCRIPTION

Navy Equivalent: None
Mfr's Model: 345

The basic mission of the KB-29P is the In-Flight Refueling of other aircraft utilizing the flying boom method. It differs from the basic B-29 airplane in that all defensive armament is removed and In-Flight Refueling equipment is installed. A maneuverable, telescoping boom with an articulated nozzle, attached to the bottom of the fuselage near the tail, provides a connection and fuel transfer medium between the tanker and receiver. Hydraulic and aerodynamic controls for the boom are in the boom operator's compartment (formerly the tail gunner's compartment). The fuel system includes a manifold system for normal operations and a high capacity pump system for refueling operations. All equipment is operated electrically except the hydraulically operated brakes and boom.

During the time contact is being established the tanker is flown at a constant altitude to provide a stable platform for accurate operation of the boom and to facilitate contact position. The boom is aligned with the receiver by rudder deflector surfaces controlled by the boom operator with a conventional control stick. A signal amplifier senses contact and controls equipment according to airplane positions, rate of change of positions and refueling line fuel pressure. Exceeding any pre-set limits automatically effects an involuntary disconnect. A voluntary disconnect, initiated by the boom operator or receiver pilot, results in a fuel shut-off and boom disconnect. The tanker is adapted to supply fuel to a receiver airplane at a selectable rate up to 600 gpm. A manually controlled nitrogen system purges the boom.

DEVELOPMENT

Modified B-29 aircraft to serve as tankers utilizing the flying boom method (American system) in-flight refueling.
## Loading and Performance—Typical Mission

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Basic Mission</th>
<th>High Alt Refuel</th>
<th>Ferry Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Take-off Weight</strong></td>
<td>lb (lb)</td>
<td>lb (lb)</td>
<td>lb (lb)</td>
</tr>
<tr>
<td>Fuel at 6.0 lb/gal (grade 100/130)</td>
<td>138,500</td>
<td>138,500</td>
<td>138,500</td>
</tr>
<tr>
<td>Military load (transfer fuel)</td>
<td>lb (lb)</td>
<td>lb (lb)</td>
<td>lb (lb)</td>
</tr>
<tr>
<td>Wing loading</td>
<td>lb/sq ft</td>
<td>lb/sq ft</td>
<td>lb/sq ft</td>
</tr>
<tr>
<td>Stall speed (power off, landing configuration) (kn)</td>
<td>103</td>
<td>103</td>
<td>103</td>
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<tr>
<td>Take-off ground run at SL (ft)</td>
<td>5075</td>
<td>5075</td>
<td>5075</td>
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<tr>
<td>Take-off to clear 50 ft (ft)</td>
<td>7570</td>
<td>7570</td>
<td>7570</td>
</tr>
<tr>
<td>Rate of climb at SL (fpm)</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Time: SL to 10,000 ft (min)</td>
<td>23.8</td>
<td>23.8</td>
<td>23.8</td>
</tr>
<tr>
<td>Time: SL to 20,000 ft (min)</td>
<td>61.8</td>
<td>61.8</td>
<td>61.8</td>
</tr>
<tr>
<td>Service Ceiling (100 fpm) (ft)</td>
<td>23,500</td>
<td>23,500</td>
<td>23,500</td>
</tr>
<tr>
<td>Service Ceiling (one engine out) (ft)</td>
<td>19,000</td>
<td>19,000</td>
<td>19,000</td>
</tr>
<tr>
<td><strong>Combat Range</strong></td>
<td>(n. mi.)</td>
<td>(n. mi.)</td>
<td>(n. mi.)</td>
</tr>
<tr>
<td>Average speed (kn)</td>
<td>204</td>
<td>204</td>
<td>192</td>
</tr>
<tr>
<td>Initial cruising altitude (ft)</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Final cruising altitude (ft)</td>
<td>10,000</td>
<td>25,000</td>
<td>10,000</td>
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<tr>
<td>Total mission time (hr)</td>
<td>9.00</td>
<td>1074</td>
<td>28.13</td>
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<tr>
<td><strong>Combat Radius</strong></td>
<td>(n. mi.)</td>
<td>(n. mi.)</td>
<td>(n. mi.)</td>
</tr>
<tr>
<td>Average speed (kn)</td>
<td>190</td>
<td>211</td>
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<tr>
<td>Initial cruising altitude (ft)</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
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<tr>
<td>Refueling altitude (ft)</td>
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<td>25,000</td>
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<tr>
<td>Refueling speed (kn)</td>
<td>248</td>
<td>311</td>
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<tr>
<td>Final cruising altitude (ft)</td>
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<td>25,000</td>
<td></td>
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<tr>
<td>Total mission time (hr)</td>
<td>11.71</td>
<td>12.08</td>
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<tr>
<td><strong>Combat Weight</strong></td>
<td>lb (lb)</td>
<td>lb (lb)</td>
<td>lb (lb)</td>
</tr>
<tr>
<td>Combat altitude (ft)</td>
<td>10,000</td>
<td>25,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Combat speed (kn)</td>
<td>288</td>
<td>332</td>
<td>200</td>
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<tr>
<td>Combat climb (fpm)</td>
<td>2025</td>
<td>1735</td>
<td>2160</td>
</tr>
<tr>
<td>Combat ceiling (500 fpm) (ft)</td>
<td>39,500</td>
<td>39,200</td>
<td>40,450</td>
</tr>
<tr>
<td>Service ceiling (100 fpm) (ft)</td>
<td>42,900</td>
<td>42,500</td>
<td>43,800</td>
</tr>
<tr>
<td>Service ceiling (one engine out) (ft)</td>
<td>38,800</td>
<td>38,450</td>
<td>38,700</td>
</tr>
<tr>
<td>Max rate of climb at SL (fpm)</td>
<td>2135</td>
<td>2080</td>
<td>2275</td>
</tr>
<tr>
<td>Max speed at 30,000 ft (kn)</td>
<td>349</td>
<td>348</td>
<td>350</td>
</tr>
<tr>
<td>Max speed at 500 fpm (kn)</td>
<td>349</td>
<td>348</td>
<td>350</td>
</tr>
<tr>
<td><strong>Landing Weight</strong></td>
<td>lb (lb)</td>
<td>lb (lb)</td>
<td>lb (lb)</td>
</tr>
<tr>
<td>Ground roll at SL (ft)</td>
<td>2060</td>
<td>2075</td>
<td>2175</td>
</tr>
<tr>
<td>Total from 50 ft (ft)</td>
<td>2750</td>
<td>2750</td>
<td>2890</td>
</tr>
</tbody>
</table>

### Notes
1. Take-off power
2. Max power
3. Normal power
4. For Radius Mission if radius is shown
5. At normal rated power but not exceeding 250 MPH (EAS) as per T.O. AN 01-20EJAB-1
6. Detailed descriptions of RADIUS and RANGE missions are given on page 6.

### Performance Basis:
(a) Data source: Flight test
(b) Performance is based on powers shown on page 6.
NOTES

FORMULA: RADIUS MISSION I

Warm-up, take-off, climb on course to 10,000 ft at normal power, cruise at long range speeds to rendezvous point where boom connection is made with receiver (one hour at long range speed for rendezvous and hook-up, no distance credit), transfer fuel at rate of 600 gallons per minute while proceeding toward bomber target at normal power but not exceeding 250 mph equivalent airspeed (EAS), disengage and return to base at long range speeds. Mission is planned so that radius at end of transfer is 1000 nautical miles. Range free allowances include 10 minutes normal power at sea level for warm-up and take-off, 1 hour long range speeds for rendezvous, and 5% initial fuel for reserve.

FORMULA: RANGE MISSION I

Warm-up, take-off, climb on course to 10,000 ft at normal power, cruise at long range speeds to rendezvous point. Mission is planned so that fuel transfer ends when 90% of flight fuel has been consumed. Range free allowances include 10 minutes normal power at sea level for warm-up and take-off, 1 hour long range speed for rendezvous, and 10% initial fuel for landing reserve. Fuel transfer same as for Radius Mission I.

FORMULA: RADIUS MISSION II

Warm-up, take-off, climb on course to 10,000 ft at normal power, cruise at long range speeds to point where climb is made to arrive at 25,000 ft immediately prior to rendezvous where boom connection is made with receiver (one hour at long range speeds for rendezvous and hook-up, no distance credit), transfer fuel at rate of 600 gallons per minute while proceeding toward bomber target at normal power, disengage and return to base at long range speeds, altitude 25,000 ft. Range free allowances include 10 minutes normal power at sea level for warm-up and take-off, 1 hour long range speeds for rendezvous, and 5% initial fuel for reserve.

FORMULA: RANGE MISSION II

Warm-up, take-off, climb on course to 10,000 ft at normal power, cruise at long range speeds to point where climb is made to arrive at 25,000 ft immediately prior to rendezvous. Mission is planned so that fuel transfer ends when 90% of flight fuel has been consumed. Range free allowances include 10 minutes normal power at sea level for warm-up and take-off, 1 hour long range speeds for rendezvous, and 10% of initial fuel for landing reserve. Fuel transfer same as for Radius Mission II.

FORMULA: RANGE MISSION III

Same as Range Mission I except no rendezvous or fuel transfer is made.

Landing reserve is 10% of initial fuel.

GENERAL DATA:

(a) Fuel grade shall correspond to grade specified for use in receiver aircraft unless such grade is less than 100/130 in which case 100/130 fuel will be loaded in outer wing tanks for use by the KB-29P and fuel for the receiver loaded in bomb bay tanks and center wing tanks.

(b) In planning missions, bomb bay tanks are assumed to be carried the entire distance. These tanks are relatively light, consisting of aluminum alloy sheets with three interconnected non-self-sealing bladders. Information is not available on the structural limitation of the airplane or what unusual flight characteristics may occur when the bomb bay tanks are dropped.

(c) For detailed planning refer to Technical Order AN 01-20EJA-1.

(d) Engine ratings shown on page 3 are manufacturer's guaranteed ratings. Power values used for performance calculations are as follows:

| R-3350-57 or -57A |
|------------------|------------------|------------------|
| BHP      | RPM      | CRIT ALT* |
| T.O.    | 2200     | 2800    |
| Max.    | **2500   | 2800    | 31,400   |
| Nor.    | 2000     | 2400    | 35,600   |

*With Turbo
**As established by T. O. AN 01-20EJ-92 dated 15 June 1944.

(e) The R-3350-57 and -57A are modernized to increase engine strength and improve reliability.

RADIUS BLOCK - Page 5

This plot is for constant volumes of fuel (6.0 lb/gal) transferred at various altitudes assuming take-off at 136,500 pounds. Shaded area represents distance traveled during fuel transfer. Initial climb is to 10,000 ft with climb or descent to transfer altitude immediately prior to rendezvous. Return is at refuel altitude if higher than 10,000 ft. If altitude is lower, climb is made back to 10,000 feet cruising altitude. All allowances are as for radius missions.
This data is to supplement the data shown in the first six pages of this document and presents a plot of transfer fuel against radius for three transfer altitudes. The fuel is transferred at the rate of 600 gallons per minute with the aircraft flying at normal power but not exceeding 250 mph equivalent airspeed (EAS) during the transfer operation. The range free allowances are as follows:

(a) 10 minutes for warm-up and take-off at normal power.

(b) 1 hour at long range speeds for rendezvous and hook-up.

(c) 5% of fuel used for flight as landing and endurance reserve.

(d) Climb to refuel altitude (if necessary) is made from initial cruise altitude so as to arrive at refuel altitude immediately prior to rendezvous. Return at refuel altitude.

NOTE: Transfer radius is end point of transfer.