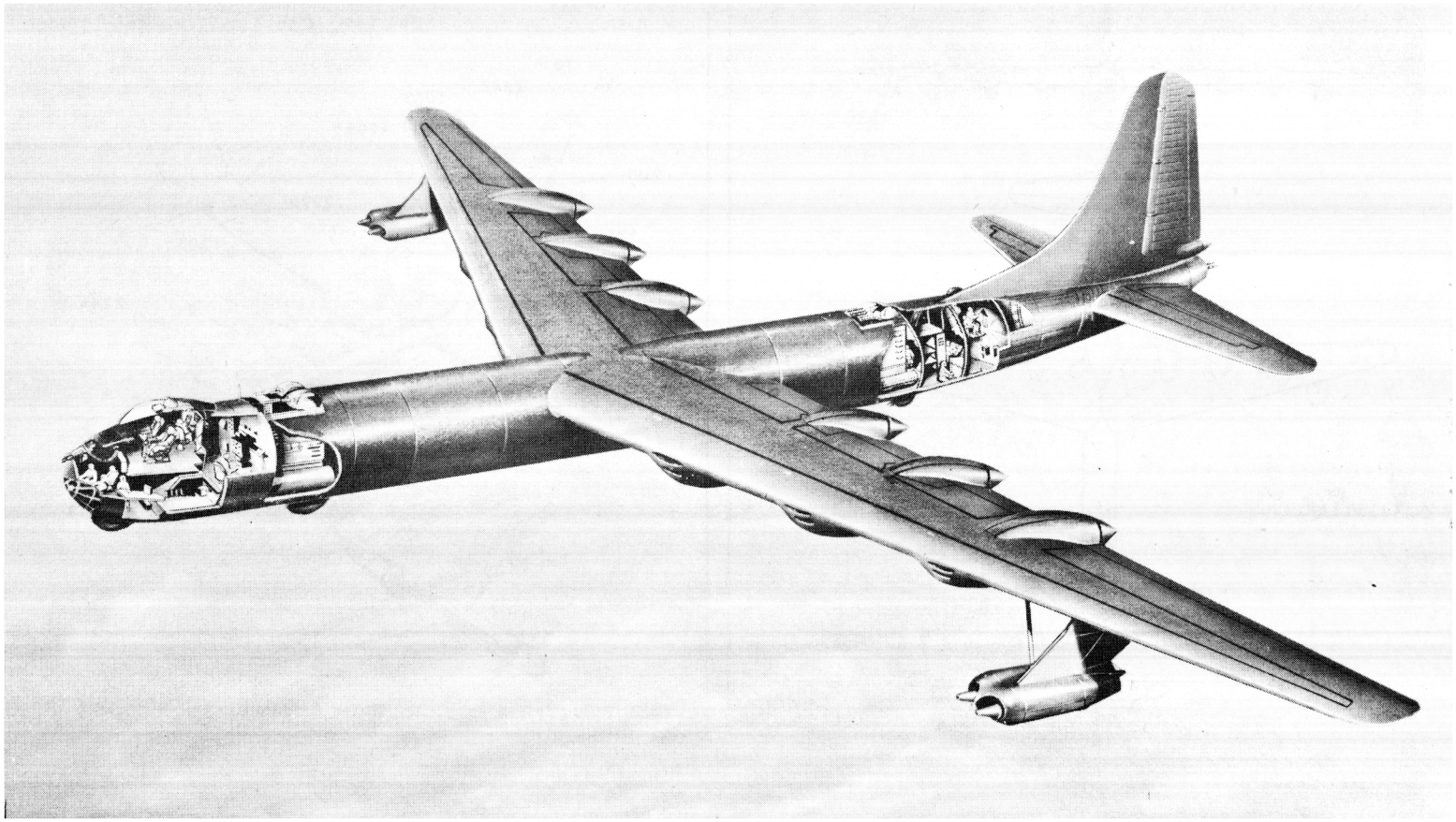
A-1
B-36F/char



SERVICE



# Standard Aircraft Characteristics

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

## B-36F

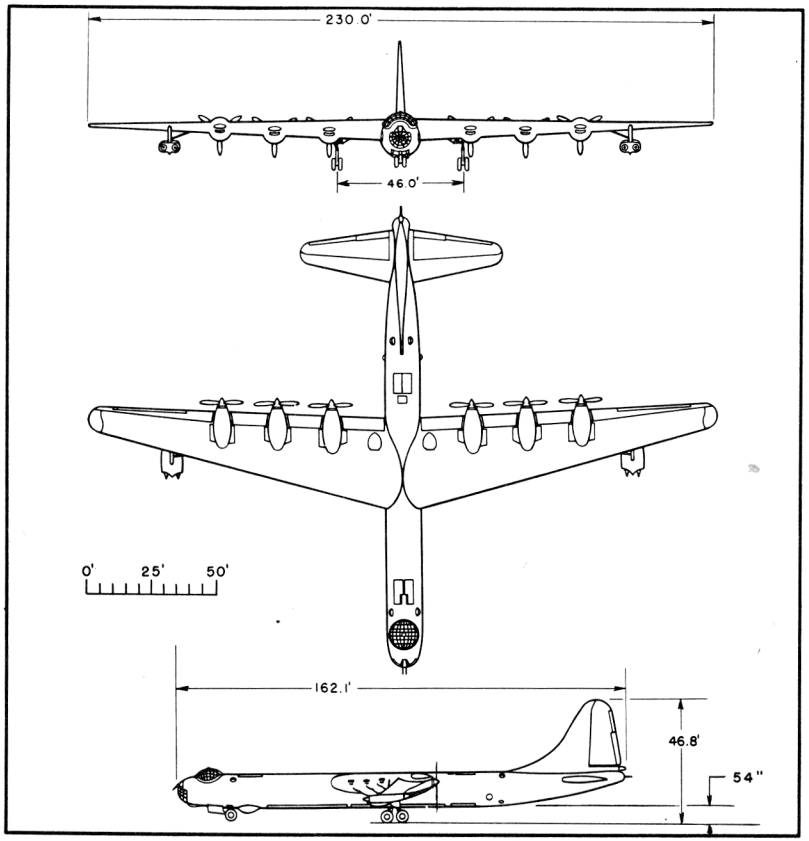
**Consolidated-Vultee**

SIX R-4360-53
PRATT & WHITNEY
FOUR J47-GE-19
GENERAL ELECTRIC



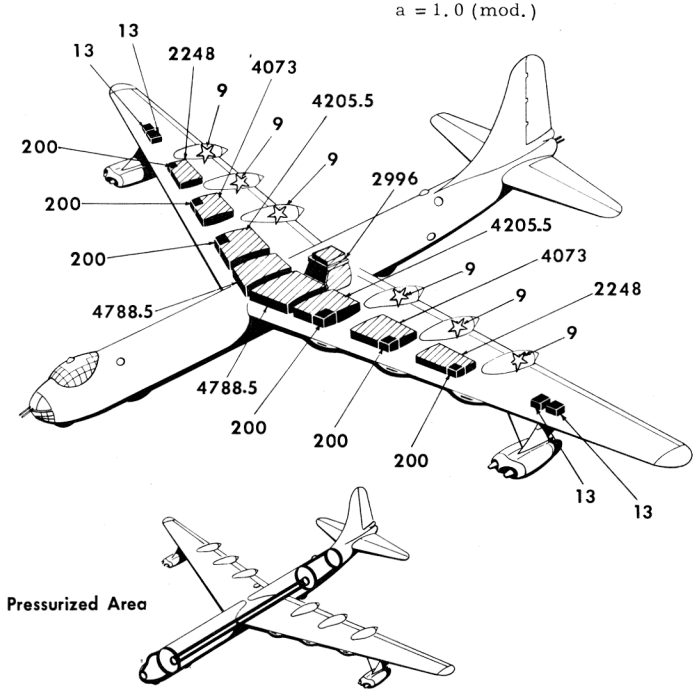


3rd Ed addn #11




Wing Area ..... 4772 sq ft
Aspect Ratio ..... 11.08
M. A. C. ..... 280.7 in

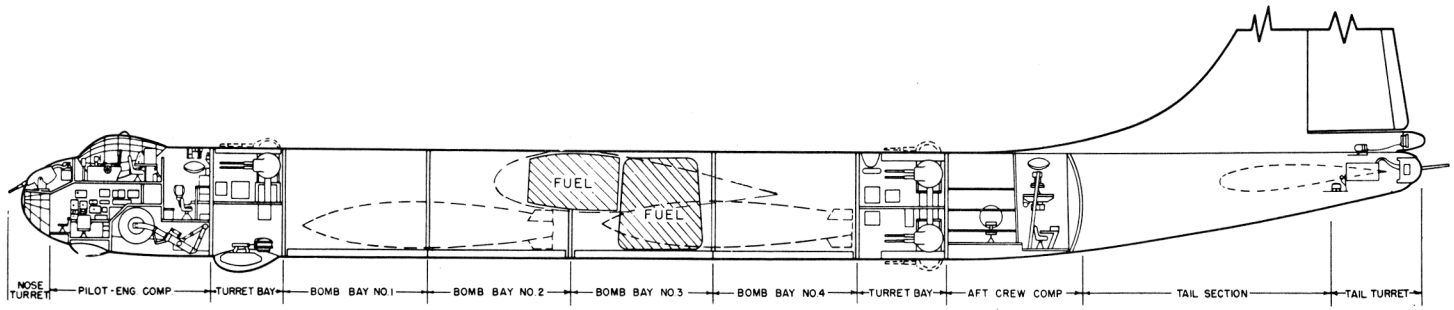
Wing Section
(root) ..... NACA 63,4-422A
(tip) ..... NACA 63,4-517A
a = 1.0 (mod.)






Pressurized Area

▨ Fuel (Gal) ☆ Water Alcohol (Gal) ■ Oil (Gal)



## POWER PLANT

| | |
|---|---|
| No. & Model | (6) R-4360-53 |
| Mfr | Pratt & Whitney |
| Engine Spec. No. | A-7076-F |
| Superch | 1 stg, 1 spd |
| Turbo Superch | (2) BH-1 |
| Turbo Mfr | General Electric |
| Red. Gear Ratio | 0.375 |
| Prop. Mfr | Curtiss |
| Blade Design No. | 1129-17C6-24 |
| Prop. Type | C.S., FF, Reverse |
| No. Blades | 3 |
| Prop. Dia | 19'0" |
| Augmentation | Water/Alcohol |
| Plus | |
| No. & Model | (4) J47-GE-19 |
| Mfr | General Electric |
| Engine Spec No. | E-589 |
| Type | Axial |
| Length | 144" |
| Diameter | 39" |
| Weight (dry) | 2495 |
| Tail Pipe | Fixed Area |

## ENGINE RATINGS

| | BHP - RPM - ALT - MIN | |
|---|---|---|
| T.O: | *3800 - 2800 - S.L.- | 5 |
| Mil: | *3800 - 2800 -Turbo- | 30 |
| | 3500 - 2800 -Turbo- | 30 |
| Nor: | 2800 - 2600 -Turbo- | Cont |

*Wet

plus

| S.L. Static | LB - RPM - | MIN |
|---|---|---|
| Max: | 5200 - 7950 - | 5 |
| Mil: | 5200 - 7950 - | 30 |
| Nor: | 4730 - 7630 - | Cont |

## DIMENSIONS

| | |
|---|---|
| Wing | |
| Span | 230.0' |
| Incidence (root) | 3° |
| (tip) | 1° |
| Dihedral | 2° |
| Sweepback (LE) | 15°5' |
| Length | 162.1' |
| Height | 46.8' |
| Tread | 46.0' |
| Prop. Grd Clearance | 54" |

# Mission and Description

Navy Equivalent: None Mfr's Model: 36

The principal mission of the B-36F is the destruction by bombs of strategic ground and naval materiel objectives.

The crew of 15 consists of aircraft commander, pilot, co-pilot, first engineer, second engineer, navigator, radar-bombardier, observer, first radio operator, second radio operator, right upper aft gunner, left upper aft gunner, right lower aft gunner, left lower aft gunner, and tail gunner.

The co-pilot serves as left upper forward gunner and the second radio operator as right upper forward gunner. The first radio operator functions as ECM operator.

Crew compartments are pressurized, heated and ventilated and provided with an oxygen system for emergency use. Compartment heating; enclosure and blister de-frosting; and propeller, wing, and tail anti-icing are accomplished by heated air obtained from heat exchangers installed in the reciprocating engine exhaust system.

The K-3A Bombing-Navigation system with a vertical Y-3A optical sight and radar equipment for blind bombing and navigation is provided. This system allows a single crew member to act as radar operator and bombardier.

The defensive armament consists of eight 20mm gun turrets, six of which are retractable. The tail turret is controlled by AN/APG-32 radar.

The airplane has a single-point fueling, manifold type fuel system.

Major difference of the B-36F from the B-36D is the installation of R-4360-53 engines in place of R-4360-41 engines.

# Development

| | |
|---|---|
| Prototype First Flight | Nov 50 |
| First Delivery | Aug 51 |
| Production Completed | Oct 51 |

## WEIGHTS

| Loading | Lb | L.F. |
|---|---|---|
| Empty | 167,646 (A) | |
| Basic | 172,302 (A) | |
| Design | 370,000 | 2.0 |
| Combat | *254,300 | |
| Max T.O. | †370,000 | 2.0 |
| Max Land | ‡357,500 | |

(A) Actual
* For Basic Mission
† see note (e), page 7
‡ Limited by structure

## FUEL

| Location | No. Tanks | Gal |
|---|---|---|
| Wg, outbd* | 2 | 4496 |
| Wg, ctr* | 2 | 8146 |
| Wg, inbd | 2 | 8411 |
| Center sec | 2 | 9577 |
| Bomb bay | 1 | 2996 |
| | Total † | 33,626 |
| Grade | | 115/145 |
| Specification | | MIL-F-5572 |

### OIL

| | | |
|---|---|---|
| Outboard(Jet) | 4 | (tot) 52 |
| Wing (Recip) | 6 | (tot) 1200 |
| Grade (Recip) | | 1100 |
| (Jet) | | 1005 |
| Specification (Recip) | | MIL-L-6082A |
| (Jet) | | MIL-L-6081A |

WATER/ALCOHOL

| | | |
|---|---|---|
| Eng Nacelle | 6 | (tot) 54 |

* Partial Self-Sealing
† Total capacity usable only for special loading when equipment has been removed from aircraft.

## BOMBS

| No. | Class (lb) |
|---|---|
| WW II (Box Fin) | |
| 12 | 4000 |
| 28 | 2000 |
| 72 | 1000 |
| 132 | 500 |
| INTERIM (Conical Fin) | |
| 22 | 2000 |
| 40 | 1000 |
| 129 | 500 |
| NEW SERIES | |
| 2 | 43,000 |
| 4 | 12,000 |
| 48 | 750 |
| Max Bomb Load | 86,000 lb |

## GUNS

| No. | Type | Size | Rds ea | Location |
|---|---|---|---|---|
| 2 | M24A1 | 20mm | 400 | Fus,nose |
| 4 | M24A1 | 20mm | 600 | Fus,up,fwd |
| 4 | M24A1 | 20mm | 600 | Fus,up,aft |
| 4 | M24A1 | 20mm | 600 | Fus,lw,aft |
| 2 | M24A1 | 20mm | 600 | Fus,tail |

## ELECTRONICS

| | |
|---|---|
| UHF Command | AN/ARC-27 |
| VHF Command | AN/ARC-3 |
| Liaison | AN/ARC-8 |
| Radio Compass | AN/ARN-6 |
| Marker Beacon | AN/ARN-12 |
| IFF | AN/APX-6 |
| Blind Approach | RC-103D or ARN-14 |
| Glide Path | AN/ARN-5B |
| Bomb-Nav. Radar | K-3A |
| Loran | AN/APN-9A |
| Gun Laying Radar | AN/APG-32 |
| Range Recv'r | BC-453B |
| Interphone | USAF Combat |
| Defensive ECM | |

# Loading and Performance—Typical Mission

| CONDITIONS | | | BASIC MISSION | MAX BOMBS | HIGH ALTITUDE | HIGH SPEED | FERRY RANGE |
|---|---|---|---|---|---|---|---|
| | | | I | II | III | IV | V |
| TAKE-OFF WEIGHT | | (lb) | 370,000 | 370,000 | 370,000 | 370,000 | 369,678 |
| Fuel at 6.0 lb/gal (grade 115/145) | | (lb) | 174,102 | 96,593 | 174,102 | 174,102 | 183,780 |
| Payload (Bombs) | | (lb) | 10,000 | 86,000 | 10,000 | 10,000 | None |
| Wing loading | | (lb/sq ft) | 77.5 | 77.5 | 77.5 | 77.5 | 77.4 |
| Stall speed (power off) | | (kn) | 107 | 107 | 107 | 107 | 107 |
| Take-off ground run at SL | (1) | (ft) | 3990 | 3990 | 3990 | 3990 | 3990 |
| Take-off to clear 50 ft | (1) | (ft) | 5110 | 5110 | 5110 | 5110 | 5110 |
| Rate of climb at SL | (3) | (fpm) | 960 | 960 | 960 | 960 | 960 |
| Rate of climb at SL (one eng. out) | (2) | (fpm) | 970 | 970 | 970 | 970 | 970 |
| Time: SL to 10,000 ft | (3) | (min) | 12 | 12 | 12 | 12 | 12 |
| Time: SL to 20,000 ft | (3) | (min) | 26 | 26 | 26 | 26 | 26 |
| Service ceiling (100 fpm) | (3) | (ft) | 33,000 | 33,000 | 33,000 | 33,000 | 33,000 |
| Service ceiling (one eng. out) | (1) | (ft) | 30,350 | 30,350 | 30,350 | 30,350 | 30,350 |
| COMBAT RANGE | (4) | (n. mi) | — | — | — | — | 6727 |
| COMBAT RADIUS | (4) | (n. mi) | 2807 | 1167 | 2570 | 1326 | — |
| Average cruise speed | | (kn) | 204 | 223 | 225 | 346 | 190 |
| Initial cruising altitude | | (ft) | 5000 | 5000 | 25,000 | 30,000 | 5000 |
| Target speed | (3) | (kn) | 349 | 336 | 352 | 349 | 349 |
| Target altitude | (3) | (ft) | 40,200 | 35,100 | 40,500 | 38,900 | 28,300 |
| Final cruising altitude | | (ft) | 28,800 | 29,200 | 25,000 | 40,000 | 28,300 |
| Total mission time | | (hr) | 26.7 | 10.1 | 22.2 | 8.0 | 35.4 |
| COMBAT WEIGHT | | (lb) | 254,300 | 216,000 | 248,200 | 261,200 | 196,457 |
| Combat altitude | | (ft) | 40,200 | 35,100 | 40,500 | 38,900 | 28,300 |
| Combat speed | (2) | (kn) | 360 | 370 | 361 | 359 | 358 |
| Combat climb | (2) | (fpm) | 570 | 1410 | 610 | 630 | 2020 |
| Combat ceiling (500 fpm) | (2) | (ft) | 40,900 | 43,900 | 41,300 | 40,400 | 45,700 |
| Service ceiling (100 fpm) | (3) | (ft) | 44,000 | 47,200 | 44,600 | 43,600 | 49,100 |
| Service ceiling (one eng. out) | (3) | (ft) | 41,400 | 44,300 | 41,600 | 40,800 | 46,300 |
| Max rate of climb at SL | (2) | (fpm) | 2110 | 2610 | 2180 | 2030 | 2940 |
| Max speed at optimum altitude | (2) | (kn/ft) | 363/37,100 | 373/38,300 | 365/37,400 | 361/36,400 | 375/39,100 |
| Basic speed at 25,000 ft | | (kn) | 346 | 350 | 346 | 344 | 352 |
| LANDING WEIGHT | | (lb) | 195,973 | 193,807 | 195,973 | 195,973 | 196,457 |
| Ground roll at SL | | (ft) | 1890 | 1870 | 1890 | 1890 | 1900 |
| Ground roll (auxiliary brake) | (5) | (ft) | 1650 | 1630 | 1650 | 1650 | 1660 |
| Total from 50 ft | | (ft) | 3340 | 3320 | 3340 | 3340 | 3350 |
| Total from 50 ft (auxiliary brake) | (5) | (ft) | 3110 | 3090 | 3110 | 3110 | 3120 |

NOTES

(1) Take-off power
(2) Max power
(3) Normal power
(4) Detailed descriptions of Radius and Range missions given on page 7
(5) Props reversed.

Performance Basis:
(a) Data source: Flight test
(b) Performance is based on powers shown on page 7.

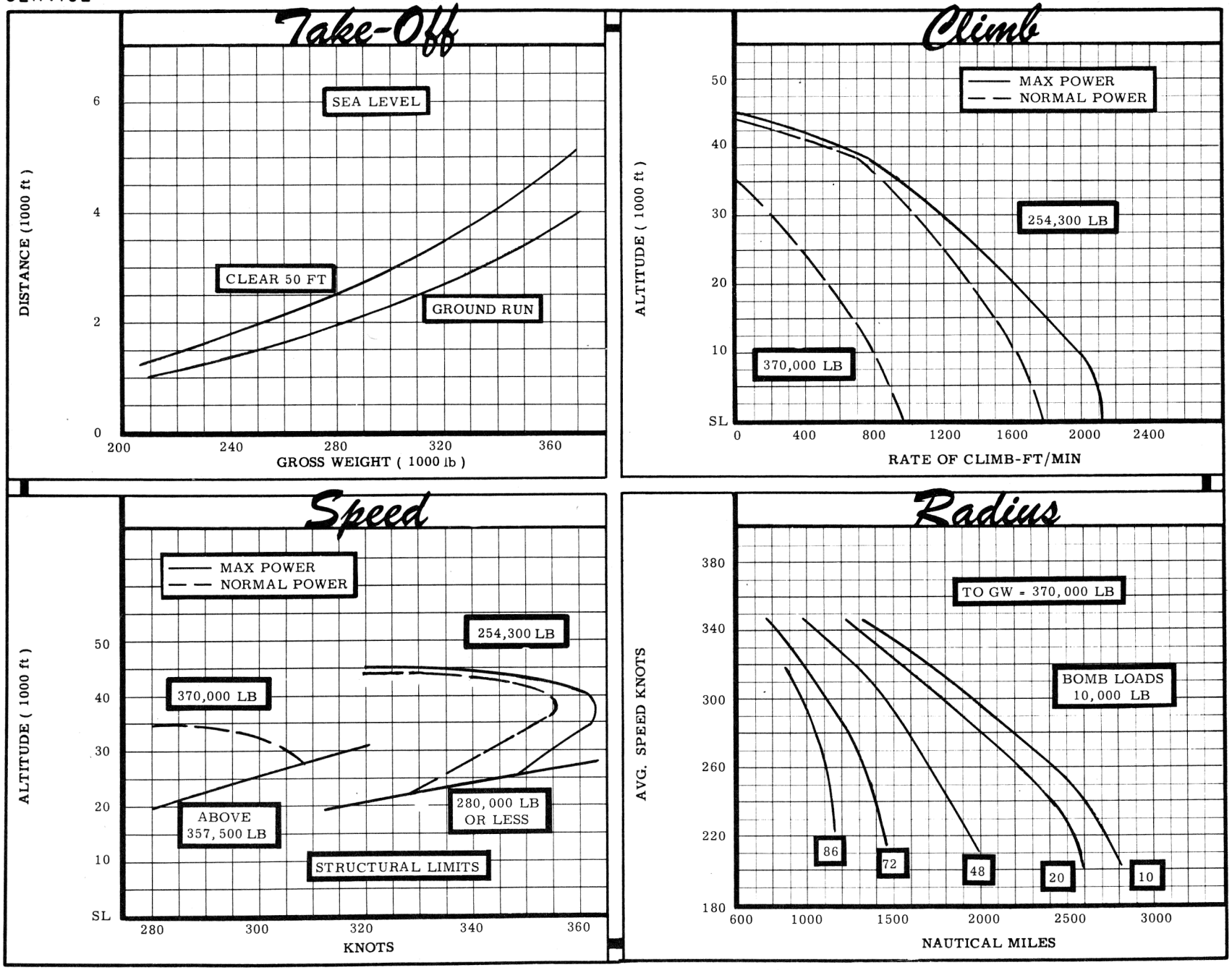
# SUPPLEMENTAL
# Loading and Performance — Typical Mission

| CONDITIONS | | | BASIC MISSION | MAX BOMBS | HIGH SPEED |
|---|---|---|---|---|---|
| TAKE-OFF WEIGHT | | (lb) | VI 357,500 | VII 357,500 | VIII 357,500 |
| Fuel at 6.0 lb/gal (grade 115/145) | | (lb) | 162,602 | 84,093 | 162,602 |
| Payload (Bombs) | | (lb) | 10,000 | 86,000 | 10,000 |
| Wing loading | | (lb/sq ft) | 74.9 | 74.9 | 74.9 |
| Stall speed (power off) | | (kn) | 105 | 105 | 105 |
| Take-off ground run at SL | (1) | (ft) | 3630 | 3630 | 3630 |
| Take-off to clear 50 ft | (1) | (ft) | 4640 | 4640 | 4640 |
| Rate of climb at SL | (3) | (fpm) | 1020 | 1020 | 1020 |
| Rate of climb at SL (one eng. out) | (2) | (fpm) | 1040 | 1040 | 1040 |
| Time: SL to 10,000 ft | (3) | (min) | 11 | 11 | 11 |
| Time: SL to 20,000 ft | (3) | (min) | 24 | 24 | 24 |
| Service ceiling (100 fpm) | (3) | (ft) | 34,800 | 34,800 | 34,800 |
| Service ceiling (one eng. out) | (1) | (ft) | 32,000 | 32,000 | 32,000 |
| COMBAT RANGE | (4) | (n. mi) | — | — | — |
| COMBAT RADIUS | (4) | (n. mi) | 2640 | 965 | 1250 |
| Average cruise speed | | (kn) | 205 | 235 | 348 |
| Initial cruising altitude | | (ft) | 5000 | 5000 | 31,700 |
| Target speed | (3) | (kn) | 350 | 338 | 349 |
| Target altitude | | (ft) | 40,500 | 35,800 | 39,500 |
| Final cruising altitude | | (ft) | 28,800 | 29,300 | 40,000 |
| Total mission time | | (hr) | 25.0 | 8.0 | 7.5 |
| COMBAT WEIGHT | | (lb) | 250,300 | 212,000 | 257,000 |
| Combat altitude | | (ft) | 40,500 | 35,800 | 39,500 |
| Combat speed | (2) | (kn) | 360 | 371 | 360 |
| Combat climb | (2) | (fpm) | 600 | 1420 | 610 |
| Combat ceiling (500 fpm) | (2) | (ft) | 41,100 | 44,300 | 40,600 |
| Service ceiling (100 fpm) | (3) | (ft) | 44,400 | 47,600 | 43,800 |
| Service ceiling (one eng. out) | (3) | (ft) | 41,700 | 44,700 | 41,300 |
| Max rate of climb at SL | (2) | (fpm) | 2160 | 2670 | 2090 |
| Max speed at optimum altitude | (2) | (kn/ft) | 364/37,400 | 373/38,500 | 363/37,200 |
| Basic speed at 25,000 ft | | (kn) | 346 | 350 | 344 |
| LANDING WEIGHT | | (lb) | 195,348 | 192,882 | 195,348 |
| Ground roll at SL | | (ft) | 1900 | 1880 | 1990 |
| Ground roll (auxiliary brake) | (5) | (ft) | 1650 | 1640 | 1650 |
| Total from 50 ft | | (ft) | 3340 | 3320 | 3340 |
| Total from 50 ft (auxiliary brake) | (5) | (ft) | 3120 | 3100 | 3120 |

NOTES

(1) Take-off power
(2) Max power
(3) Normal power
(4) Detailed descriptions of Radius and Range missions given on page 7
(5) Props reversed.

Performance Basis:
(a) Data source: Flight test
(b) Performance is based on powers shown on page 7.


Take-Off
SEA LEVEL
CLEAR 50 FT
GROUND RUN
DISTANCE (1000 ft)
0
2
4
6
200
240
280
320
360
GROSS WEIGHT ( 1000 lb )
Climb
MAX POWER
NORMAL POWER
254,300 LB
370,000 LB
ALTITUDE ( 1000 ft )
SL
10
20
30
40
50
0
400
800
1200
1600
2000
2400
RATE OF CLIMB-FT/MIN
Speed
MAX POWER
NORMAL POWER
254,300 LB
370,000 LB
ABOVE
357, 500 LB
280, 000 LB
OR LESS
STRUCTURAL LIMITS
ALTITUDE ( 1000 ft )
SL
10
20
30
40
50
280
300
320
340
360
KNOTS
Radius
TO GW = 370, 000 LB
BOMB LOADS
10, 000 LB
86
72
48
20
10
AVG. SPEED KNOTS
180
220
260
300
340
380
600
1000
1500
2000
2500
3000
NAUTICAL MILES

# NOTES

FORMULA: RADIUS MISSIONS I, II, VI & VII

Warm-up, take-off and climb on course to 5000 ft at normal power; cruise out at long range speeds to point of cruise-climb operation. Begin climb to combat altitude, using long range climb powers, to arrive at cruise ceiling 500 nautical miles from target. Cruise at long range speeds at combat altitude, using best engine (reciprocating-jet) combinations; 15 minutes from target, conduct 10 engine normal power bomb run, drop bombs and chaff, and conduct 2 minutes evasive action and 8 minutes escape from target at normal power. After leaving target area, cruise back at long range speeds, using best engine combinations, until 500 nautical miles from target. Descend to optimum cruise altitude and cruise-climb back to base. Range free allowances include 10 minutes normal power fuel consumption for reciprocating engines and 5 minutes normal power fuel consumption for jet engines for starting and take-off, 2 minutes normal power fuel consumption at combat altitude for evasive action, 30 minutes of fuel consumption for long range speeds at sea level (reciprocating engines only) plus 5% of initial fuel load for landing and endurance reserves.

FORMULA: RADIUS MISSION III

Warm-up, take-off and climb on course to 25,000 ft using long range climb powers; cruise out at long range speeds, using best engine combinations (reciprocating-jet) to point of climb. Climb, using long range climb powers, to combat altitude so as to arrive at this altitude 500 nautical miles from target. Conduct mission within 500 nautical mile zone the same as for Radius Missions I and II. Descend to 25,000 ft and cruise back to base at long range speeds, using best engine combinations. Range free allowances are the same as for Radius Missions I and II.

FORMULA: RADIUS MISSIONS IV & VIII

Entire mission is flown at normal power. Warm-up, take-off, and climb on course to cruising altitude. Cruise at optimum altitudes to combat altitude. Begin climb so as to arrive at this altitude 500 nautical miles from target. Cruise into target, drop bombs and chaff and conduct 2 minutes evasive action. Climb to best altitude for normal power cruise. Cruise-climb to base. Range free allowances are the same as for Radius Missions I and II.

FORMULA: FERRY RANGE MISSION V

Warm-up, take-off and climb on course to 5000 ft at normal power; cruise climb at long range speeds until all but reserve fuel is consumed. Range free allowances are the same as for Radius Missions I and II, except no fuel allowed for evasive action.

GENERAL DATA:

(a) All ceilings and rate of climb data are instantaneous values.

(b) Total fuel capacity is usable only for special loadings with equipment removed from the aircraft.

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

| (6) R-4360-53 | | | | (4) J47-GE-19 | | | |
|---|---|---|---|---|---|---|---|
| | BHP | RPM | ALT - MIN | S. L. S. | LB | RPM | MIN |
| T.O: | *3800 | 2800 | SL - 5 | T.O: | 5010 | 7950 | 5 |
| | 3500 | 2800 | SL - 5 | | | | |
| Max: | 3500 | 2800 | †Up to 35,000 - 30 | Max: | 5010 | 7950 | 30 |
| Nor: | 2800 | 2600 | †Up to 35,000 - Cont | Nor: | 4700 | 7630 | Cont |

* Wet
† Turbo supercharger limitation

(d) For detailed planning refer to Technical Order 1B-36F-1 and other applicable technical orders.

(e) Take-off at 370,000 lb gross weight is authorized only for airplanes on which structural modifications to the main landing gear have been accomplished in accordance with ECP 1890B and ECP 1890L.

PERFORMANCE REFERENCE:

FZA-36-278 & FZA-36-276.

REVISION BASIS:

To reflect performance based on higher gross weights.