A1
B-52F/char

Standard Aircraft Characteristics

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

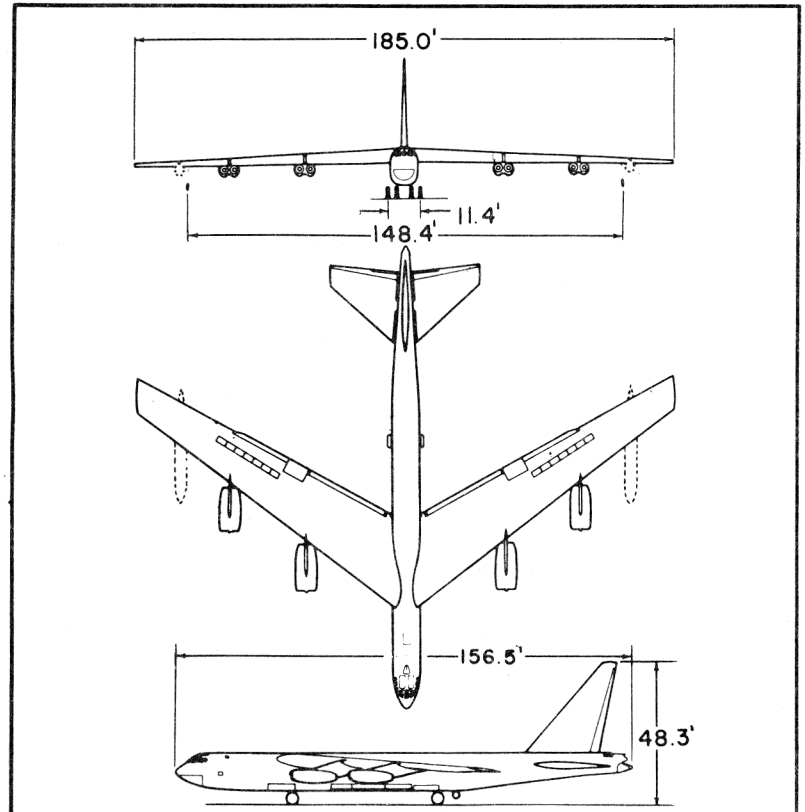
B-52F

STRATOFORTRESS

Boeing

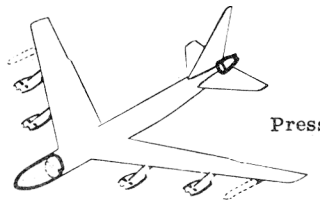
EIGHT J57-P-43WA

PRATT & WHITNEY

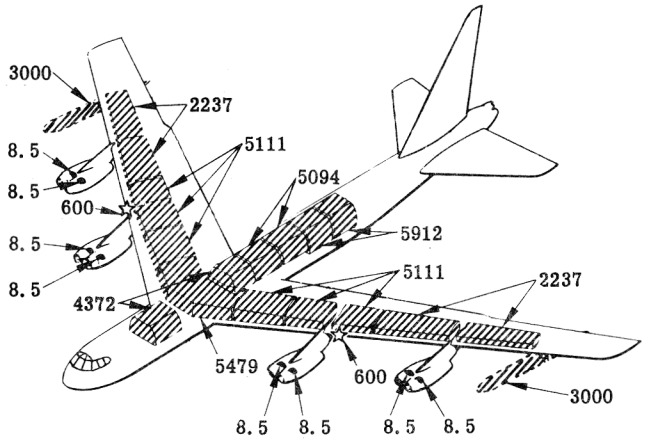


Wing Area . . . . . 4000 sq ft
Aspect Ratio 8.55

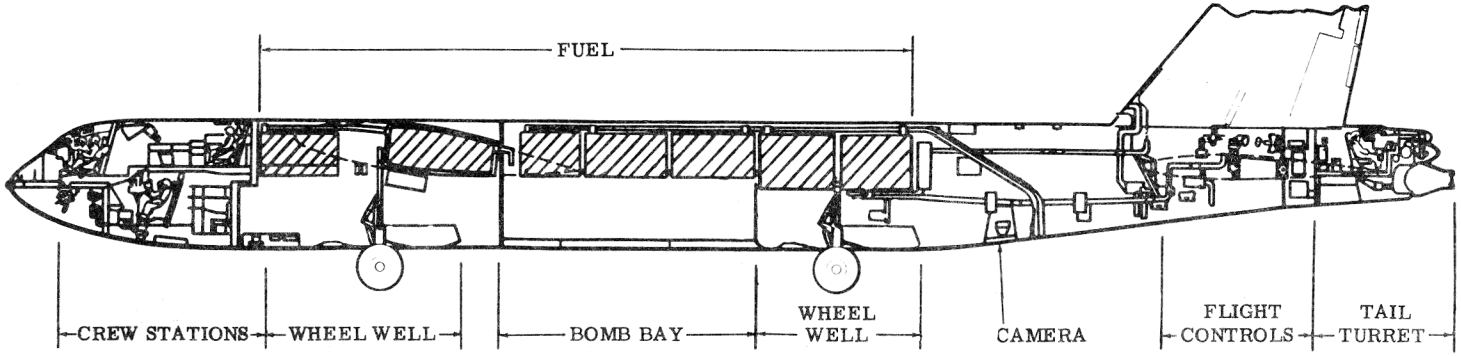
Wing Section (root) BAC 233 29.31
(tip) BAC 236 9.56
MAC . . . . . 275.5"



Pressurized Area



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



POWER PLANT

Nr & Model	(8) *J57-P-43WA
Mfr	Pratt & Whitney
Engine Spec Nr	A1704E
Type	Axial
Length	167.3"
Diameter	38.9"
Weight (dry)	3870 lb
Tail Pipe	Fixed Area
Augmentation	Water

Note: At present there are no requirements for ATO

*Sound suppressors to be included in retrofit.

ENGINE RATINGS

S.L. Static	LB - **RPM -	MIN
Max:	*13,750 - 6900/9650 -	5
Mil:	11,200 - 6400/9650 -	30
Nor:	9500 - 6100/9350 -	Cont

* Wet

** First figure represents low pressure spool; second figure represents high pressure spool.

Mission and Description

Navy Equivalent: None Mfr's Model: 464-260

The principal mission of the B-52F aircraft is the destruction of surface objects.

The normal crew of six consists of pilot, co-pilot, (2) bombardier-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 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 and ailerons on the wing; elevators on an all-movable horizontal tail; and a rudder on a fixed vertical tail surface. The spoilers also function as air brakes used in landing.

Air is bled off the engines for thermal anti-icing of the wing and tail surface leading edges.

Other features are single-point ground and air refueling, braking parachute for decreasing landing roll distance, and a crosswind landing gear to aid in crosswind take-off and landing. The airplane utilizes the A/A42G-11 Auto Flight Control and the N-1 Compass.

Major differences of the B-52F from the B-52E are the installation of J57-P-43WA engines in place of J57-P-19W engines and of engine driven alternators.

Development

Design Initiated	Nov 54
First Flight	Mar 58
First Acceptance	May 58

WEIGHTS

Loading	Lb	L.F.
Empty	164,936 (C)	
Basic	167,363 (C)	
Design	†460,000	2.0
Combat	* 283,600	2.3
Max T.O.	** 450,000	2.0
Max In-Flight	‡450,000	2.0

Design Landing 270,000

(C) Calculated

* For Basic Mission

** Excludes 10,000 lb water

† Max taxi wt. 10,000 lb bomb

‡ Limited by structure

FUEL

Location	Nr Tanks	Gal
Wg, outbd	2	4474
Wg, ctr	1	5479
Wg, inbd	4	10,222
Fus, fwd	2	4372
Fus, ctr	1	5094
Fus, aft	1	5912
Wg, drop	2	6000
	Total	41,553

Grade: JP-4

Specification: MIL-F-5624A

OIL

Nacelle: 8 (tot) 68

Specification: MIL-L-7808C

WATER

Wg, L.E.: 4 1200

DIMENSIONS

Wing

Span	185.0'
Dihedral (chord plane)	2°30'
Incidence (root)	6°
Sweepback (LE)	36°58'
Length	156.5'
Height (overall)	48.3'
Height (fin folded)	21.5'
Tread (outrigger)	148.4'
Tread (main gear)	11.4'

BOMBS

Nr	Class (lb)
New Series	
27..(Family of Clusters)	1000
Special Weapons	
MK-6	
MK-15	
MK-28	
MK-36	
MK-39	
MK-41	

Note: Airplane will carry 4 ADM-20 & 2 AGM-28 missiles

GUNS

Nr	Type	Size	Rds ea	Loc
4	M-3	.50	600	Tail tur

CAMERAS

Nr	Type	Lens
1	K-38	36"
1	K-17C	6"
	or	
1	K-17D	6"
1	O-32 Radar Recording	

ELECTRONICS

UHF Command	AN/ARC-34
Liaison	AN/ARC-21X
IFF	AN/APX-25
Radar Beacon	AN/APN-69
ECM Trans (5)	AN/ALT-6B
ECM Trans (4)	AN/ALT-13
ECM Receiver (1)	AN/APR-9
ECM Receiver	AN/APR-14
Interphone	AN/AIC-10A
Bombing Nav Sys	AN/ASB-4A
Nav Recv'r	AN/ARN-14
Fire Control Sys	MD-9

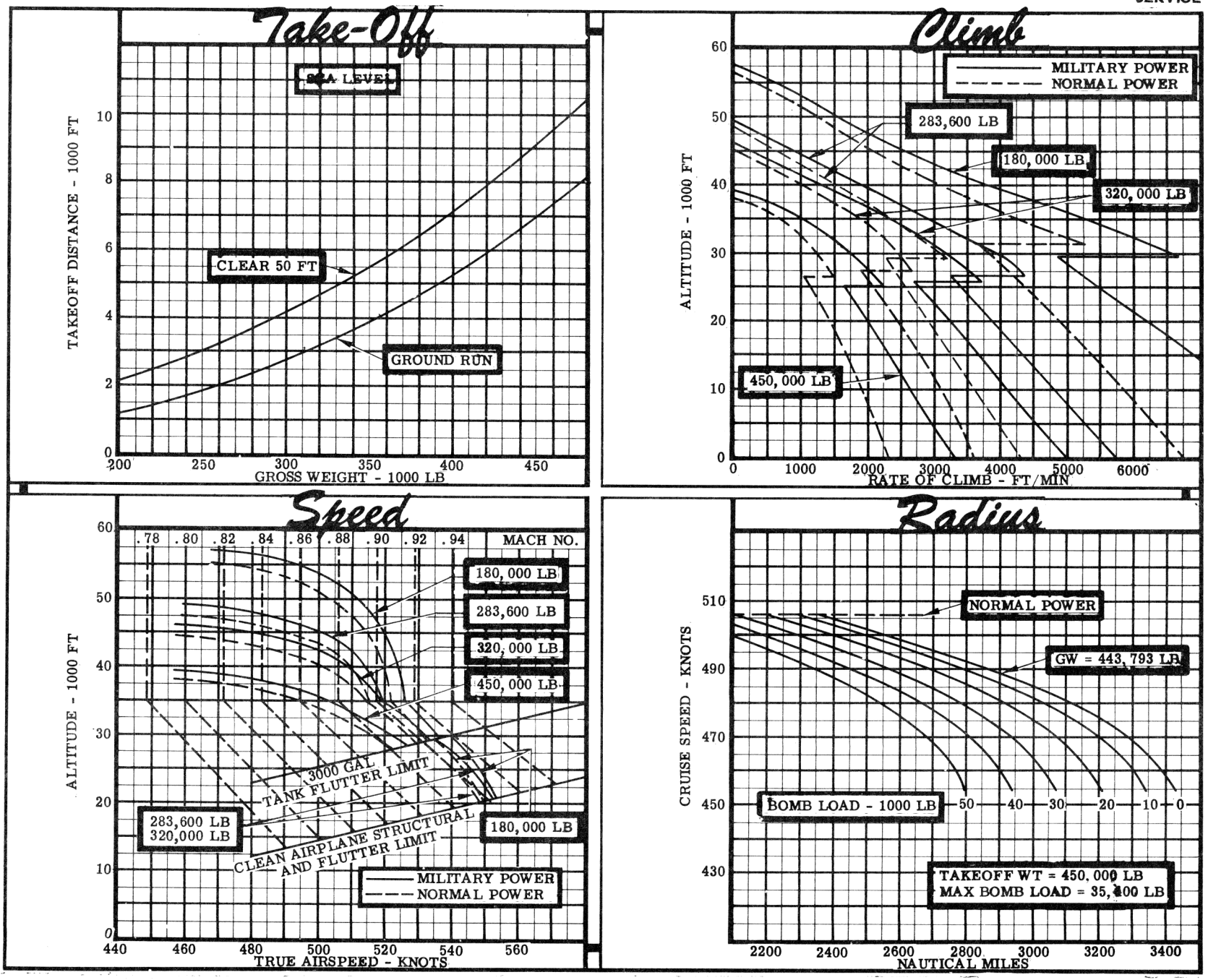
Loading and Performance—Typical Mission

CONDITIONS		BASIC MISSION I	DESIGN LOAD II	MAX BOMB LOAD III	FERRY RANGE IV	ALTERNATE LOAD V	MISSILE LOAD VI
TAKEOFF WEIGHT (7) (lb)		450,000 (5)	450,000 (5)	450,000 (5)	443,393 (8)	450,000 (5)	450,000 (5)
Fuel at 6.5 lb/gal (grade JP-4) (lb)		266,302	267,702	240,260	270,095	258,602	227,483
Payload (Bombs) (lb)		10,000	8,600	35,400	None	17,700	17,700
Payload (Chaff) (lb)		400	400	400	None	400	400
Payload (Missiles) (lb)		None	None	None	None	None	24,316 (12)
Wing Loading (lb/sq ft)		112.5	112.5	112.5	111	112.5	112.5
Stall speed (power off) (9) (kn)		147	147	147	146	147	147
Takeoff ground run at SL (1) (ft)		7,000	7,000	7,000	6,700	7,000	6,100 (10)
Takeoff to clear 50 ft (1) (ft)		9,100	9,100	9,100	8,800	9,100	8,200 (10)
Rate of climb at SL (3) (fpm)		2,300	2,300	2,300	2,345	2,300	2,540 (11)
Rate of climb at SL (one engine out) (2) (fpm)		2,660	2,660	2,660	2,720	2,660	2,900 (11)
Time: SL to 20,000 ft (3) (min)		10.2	10.2	10.2	10.0	10.2	9.08 (11)
Time: SL to 30,000 ft (3) (min)		17.4	17.4	17.4	16.9	17.4	15.5 (11)
Service ceiling (100 fpm) (3) (ft)		37,800	37,800	37,800	38,100	37,800	38,500 (11)
Service ceiling (one engine out) (2) (ft)		37,500	37,500	37,500	37,800	37,500	38,200 (11)
COMBAT RANGE (4) (n mi)					6,930		
COMBAT RADIUS (4) (n mi)		3,345	3,365	2,985		3,240	2,640 (11)
Average cruise speed (kn)		454	454	454	454	454	454
Initial cruising altitude (ft)		33,450	33,450	33,450	33,550	33,450	33,350
Target speed (3) (kn)		476	476	476		476	476
Target altitude (ft)		45,650	45,700	44,800		45,400	45,300
Final cruising altitude (ft)		50,650	50,600	50,700	50,600	50,650	50,100
Total mission time (hr)		14.81	14.89	13.23	15.28	14.20	11.62
COMBAT WEIGHT (lb)		283,600	284,290	270,910	189,002	279,360	272,210
Combat altitude (ft)		45,650	45,700	44,800	50,550	45,400	45,300
Combat speed (2) (kn)		495	494	503	508	497	501
Combat climb (2) (fpm)		630	565	1,070	1,265	780	985
Combat ceiling (500 fpm) (2) (ft)		46,600	46,550	47,550	54,550	46,950	46,900
Service ceiling (100 fpm) (3) (ft)		47,400	47,350	48,350	55,350	47,700	47,700
Service ceiling (one engine out) (3) (ft)		45,900	45,850	46,800	53,550	46,200	46,000
Max rate of climb at SL (2) (fpm)		5,680	5,630	6,030	8,610	5,810	5,680
Max speed at optimum altitude (2) (5) (kn/ft)		553/20,500	553/20,500	554/20,600	555/20,700	553/20,500	554/20,600
Basic speed at 35,000 ft (2) (kn)		521	521	522	525	521	522
LANDING WEIGHT (lb)		188,793	188,863	188,133	189,002	188,408	193,775
Ground roll at SL (ft)		2,200	2,200	2,150	2,200	2,150	2,450
Ground roll (auxiliary brake) (6) (ft)		1,950	1,950	1,900	1,950	1,900	2,200
Total from 50 ft (ft)		3,800	3,800	3,750	3,800	3,750	4,050
Total from 50 ft (auxiliary brake) (6) (ft)		3,600	3,600	3,550	3,600	3,550	3,850

NOTES

(1) Maximum power
(2) Military power
(3) Normal power
(4) Detailed descriptions of Radius and Range missions are given on page 6
(5) Limited by structure
(6) With drag chute
(7) Does not include 10,000 lb of water
(8) Limited by fuel capacity
(9) Initial buffet, flaps down, SL
(10) AGM-28's at takeoff power
(11) AGM-28's at maximum continuous power
(12) 4 ADM-20's 4,840 lb
Droppable racks 590 lb
2 AGM-28's 18,886 lb
Total 24,316 lb

PERFORMANCE BASIS:
(a) Data source: Flight Test


Take-Off
SEA LEVEL
CLEAR 50 FT
GROUND RUN
TAKEOFF DISTANCE - 1000 FT
GROSS WEIGHT - 1000 LB
Climb
MILITARY POWER
NORMAL POWER
283,600 LB
180, 000 LB
320, 000 LB
450, 000 LB
ALTITUDE - 1000 FT
RATE OF CLIMB - FT/MIN
Speed
MACH NO.
180, 000 LB
283,600 LB
320, 000 LB
450, 000 LB
3000 GAL TANK FLUTTER LIMIT
283,600 LB
320,000 LB
180,000 LB
CLEAN AIRPLANE STRUCTURAL AND FLUTTER LIMIT
MILITARY POWER
NORMAL POWER
ALTITUDE - 1000 FT
TRUE AIRSPEED - KNOTS
Radius
NORMAL POWER
GW = 443, 793 LB
BOMB LOAD - 1000 LB
TAKEOFF WT = 450, 000 LB
MAX BOMB LOAD = 35, 400 LB
CRUISE SPEED - KNOTS
NAUTICAL MILES

N O T E S

FORMULA: BOMBER RADIUS MISSIONS I, II, III & V

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. Climb so as to reach cruise ceiling 15 minutes from target. Run into target at normal power, drop bombs, conduct 2 minutes evasive action and 8 minutes escape at normal power. Cruise back to home base at long range speeds*, increasing altitude with decreasing airplane weight. Range free allowances include 5 minutes normal power fuel consumption for starting engines and takeoff, 2 minutes normal-power fuel consumption at combat altitude for evasive action, and 30 minutes of maximum endurance (four engines) fuel consumption at sea level plus 5% of initial fuel for landing reserve.

FORMULA: BOMBER 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 until all fuel is consumed; external tanks are dropped when empty. Range free allowances include 5 minutes normal-power fuel consumption for starting engines and takeoff and 30 minutes of maximum endurance (four engines) fuel consumption at sea level plus 5% of initial fuel for landing reserve.

FORMULA: BOMBER RADIUS MISSION VI

Take off and climb on course to optimum cruise altitude at normal power (AGM-28's at maximum continuous power). Cruise out at long range speed*, increasing altitude with decreasing weight. Release AGM-28's and ADM-20's at their respective ranges from target. Climb so as to reach cruise ceiling 15 minutes from target. Run into target at normal power, drop bombs, conduct 2 minutes evasive action and 8 minutes escape at normal power. Cruise back to home base at long range speeds*, increasing altitude with decreasing airplane weight. Range free allowances include 5 minutes normal power fuel consumption for starting engines and takeoff, 2 minutes normal power fuel consumption at combat altitude for evasive action, and 30 minutes of maximum endurance (four engines) fuel consumption at sea level plus 5% of initial fuel for landing reserve.

*Long range speed is maximum speed for 99% maximum miles per pound of fuel.

GENERAL DATA:

(a) The prescribed fuel reserve for the basic mission is equivalent to the following reserve range at best range conditions:

B-52F Bomber 810 nautical miles

(b) Data based on engine surge bleed valves with T.O. 2JA6-3-7-506 incorporated. For airplanes which do not have this T.O. incorporated, reduce mission radius and range numbers by 2%.

(c) The following electronic equipment is supplemental to that shown under "Electronics" on page 3.

Glide Path Receiver (1)	AN/ARN-31
Marker Beacon (1)	AN/ARN-32
Early Warning (1)	AN/APS-54
Chaff Dispenser (2)	AN/ALE-1 or AN/ALE-27
Direction Finder	AN/ARA-25
Pulse Generator	AN/ALA-7
ECM Trans (2)	AN/ALT-15H
ECM Trans (1)	AN/ALT-15L
ECM Trans (1)	AN/ALT-16
ECM Receiver (2)	AN/ALR-18
Automatic Astro Compass	MD-1
TRUE Heading Group	N1-AJA-1
Doppler RADAR	AN/APN-89A

PERFORMANCE REFERENCE:

Boeing Document D2-1551, "Substantiating Data Report - Models B-52F (J57-P-43WA engines), Standard Aircraft Characteristics Charts," revised 15 Oct 1960.

REVISION BASIS: To reflect current characteristics and performance data. Data recoordinated by OCAMA, Jul 64. Additional electronics shown.

(15 Nov 60)