

NAVAIR 00-110AF8-1

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Standard Aircraft Characteristics

NAVY MODEL

F-8A (F8U-1)

AIRCRAFT

(TITLE UNCLASSIFIED)

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1 MAY 1955 IN PART AND ALL ADDENDA THERETO

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PUBLISHED BY DIRECTION OF THE
COMMANDER OF THE NAVAL AIR SYSTEMS COMMAND

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1 JULY 1967

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STANDARD AIRCRAFT CHARACTERISTICS F-8A CRUSADER

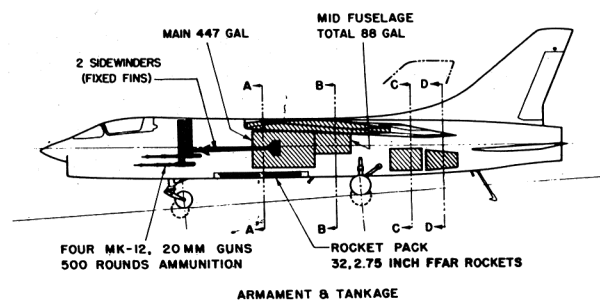
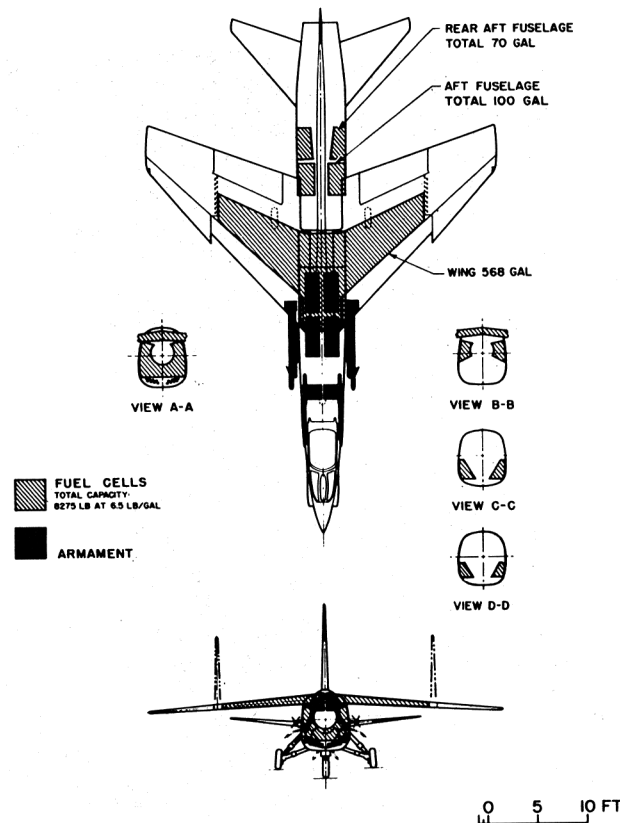
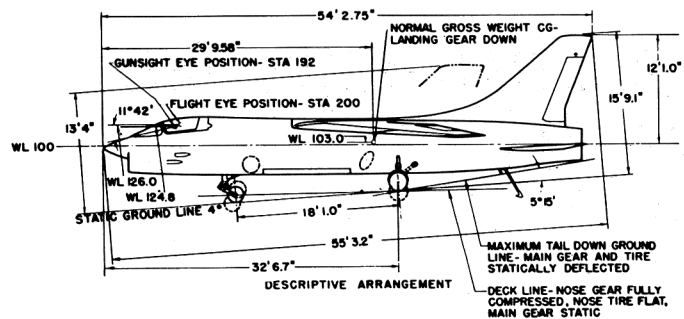
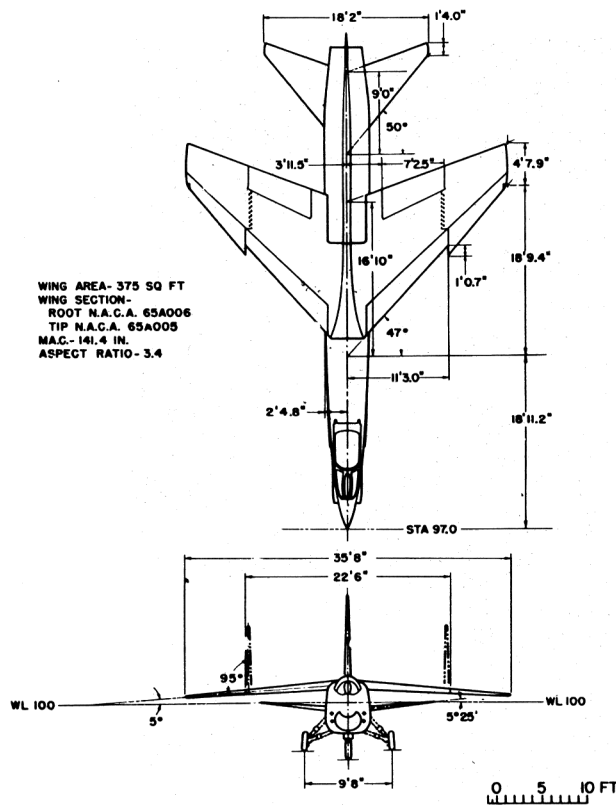
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POWER PLANT

NO & MODEL(1) J-57-P-4
 MFR.....Pratt & Whitney
 TYPE.....Axial Flow
 LENGTH.....250"
 DIAMETER.....41"
 AUGMENTATION.....Afterburner

RATINGS

THRUST
 LBS. ALT.

MIL + A.B.16,000.....S.S.L.
 MIL.....10,200.....S.S.L.
 NORM.....8,700.....S.S.L.

SPEC. NO. P&W N-1669-C

MISSION AND DESCRIPTION

The F8U-1 Dayfighter is designed to maintain air superiority in daylight fair weather. It is a single-place, swept-wing airplane having a high variable incidence wing and a low unit horizontal tail. The wing and tail arrangement permits use of a very short landing gear and results in a relatively level fuselage attitude for take-off and landing. The high wing position makes the wing readily adaptable to carrying missiles and other stores on the wing and for possible future flexible deck operations. The wing incorporates full span leading-edge droop and ailerons that are drooped as flaps when the wing is in the take-off and landing position.

DEVELOPMENT

First Flight March 1955
 Service Use March 1957

WEIGHTS

LOADINGS	LBS.	L.F.
EMPTY.....	15,513.....	
BASIC.....	16,171.....	
DESIGN.....	21,442.....	6.4
COMBAT.....	20,995.....	
MAX. T.O. (Field).....	27,500 Approx.....	
(Cat.).....	27,500.....	
MAX. LAND (Field).....	23,500.....	
(Arrest).....	20,000.....	

All weights are calculated.

FUEL AND OIL

NO. TANKS	TOTAL GAL.	LOCATION
3.....	514.....	Main Fuselage
2.....	170.....	Aft Fuselage
1.....	589.....	Wing

FUEL GRADEJP-4
 FUEL SPEC. applicable.....MIL-F-5624a

OIL

CAPACITY (gals).....5.5
 SPEC. applicable.....MIL-L-7808

ORDNANCE

NO.	DESCRIPTION	LOCATION	RDS.
4	20mm aircraft Guns Mk.12	Fuselage	500
32	2.75 in. FFAR Rockets	Fuselage Cl. (Internal)	
2	Sidewinder Missiles	Wing (External)	

DIMENSIONS

WING
 AREA.....375 sq. ft.
 SPAN.....35' -8"
 MAC.....141"
 SWEEPBACK ($\frac{1}{4}$ Chord).....42°
 LENGTH.....54' -3"
 HEIGHT.....15' -9"
 TREAD.....9' -8"

ELECTRONICS

UHF TRANSMITTER REC.....AN/ARC-27A
 UHF DIRECTION FINDER.....AN/ARA-25
 VHF NAVIGATION REC.....AN/ARN-14E
 (AN/ARN-21 ALTERNATE)
 IFF TRANSPONDER.....AN/APX-6B
 RADAR.....AN/APG-30A
 CODER.....AN/APA-89

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PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION		(1) BASIC FIGHTER 4 - 20mm GUNS 32 - 2.75" FFAR		(4) BASIC FIGHTER 4 - 20mm GUNS 32 - 2.75" FFAR 2 Sidewinders	
TAKE-OFF WEIGHT	lb.	26,969		27,468	
Fuel JP-4	lb.	8,275		8,275	
Payload	lb.	934		1,262	
Wing loading	lb./sq.ft.	71.9		73.3	
Stall speed - power-off	kn.	134.8		136.8	
Take-off run at S.L. - calm (A)	ft.	5,200		5,650	
Take-off run at S.L. 25 kn. wind (A)	ft.	3,920		4,220	
Take-off to clear 50 ft. - calm (A)	ft.	6,120		6,510	
Max. speed/altitude (A)	kn./ft.	590/2,000		570/15,000	
Rate of climb at S.L. (A)	fpm.	5,380		3,950	
Time: S.L. to 20,000 ft. (A)	min.	4.2		5.0	
Time: S.L. to 30,000 ft. (A)	min.	6.8		8.2	
Service ceiling (100 fpm) (A)	ft.	42,300		41,100	
Combat range	n.mi.	1,280		1,150	
Average cruising speed	kn.	494		494	
Cruising altitude(s)	ft.	42,025		42,100	
Combat radius/Mission Time	n.mi./hr.	345/1.73		310/1.6	
Average cruising speed	kn.	494		494	
CAP loiter at 40,000 ft./Mission Time (B)	hr./hr.	.77/1.72		.65/1.59	
IFR - radius/Mission Time	n.mi./hr.	800/3.5		730/3.2(C)	
COMBAT LOADING CONDITION		(2) Rockets, Guns Retained	(3) Rockets, Guns Retained	(5) Rockets, Guns, Sidewinders Retained	(6) Rockets, Guns Retained
COMBAT WEIGHT	lb.	23,659	23,659	24,185	23,929
Engine power		Maximum	Military	Maximum	Maximum
Fuel	lb.	4,960	4,960	4,960	4,960
Combat speed/combat altitude	kn./ft.	880/35,000	552/35,000	813/35,000	879/35,000
Rate of climb/combat altitude	fpm/ft.	10,760/35,000	3,020/35,000	9,800/35,000	2,500/35,000
Combat ceiling (500 fpm)	ft.	51,500	43,550	50,750	42,300
Rate of climb at S.L.	fpm.	20,000	6,300	15,750	4,800
Max. speed at S.L.	kn.	637	579	629	560
Max. speed/altitude	kn./ft.	880/35,000	588/2,000	813/35,000	571/10,000
LANDING WEIGHT					
Fuel	lb.	18,976		19,120	
	lb.	1,189		1,189	
Stall speed - power-off	kn.	111.5		112.0	
Stall speed - with approach power	kn.	108.2		108.9	

NOTES

(A) Military Thrust

(B) Combat Air Patrol - 150 n. mi. Radius

(C) Inflight Refueling - outbound only. Transfer 4,600 lbs. at 540 n. mi. out. Radius is reduced 16 n. mi. and refuel allowance is increased by 5 minutes for each additional aircraft up to a total of 4 aircraft.

PERFORMANCE BASIS: Flight test data plus wind tunnel drag for the 2 external Sidewinders.

RANGE AND RADIUS: Range and radius are based on engine specification fuel consumption increased 5%.

SPOTTING: A total of 81 aircraft can be accommodated in a landing spot on the flight and hangar decks of a CVA-19 class angled deck carrier (flight 43; hangar 38 airplanes)

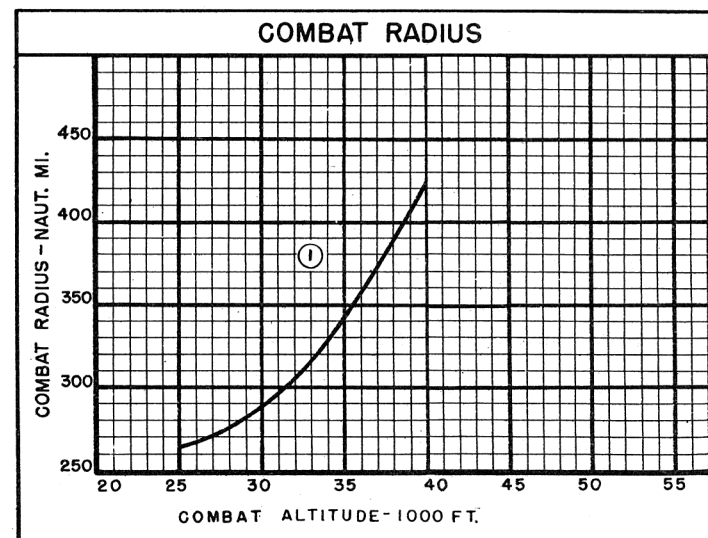
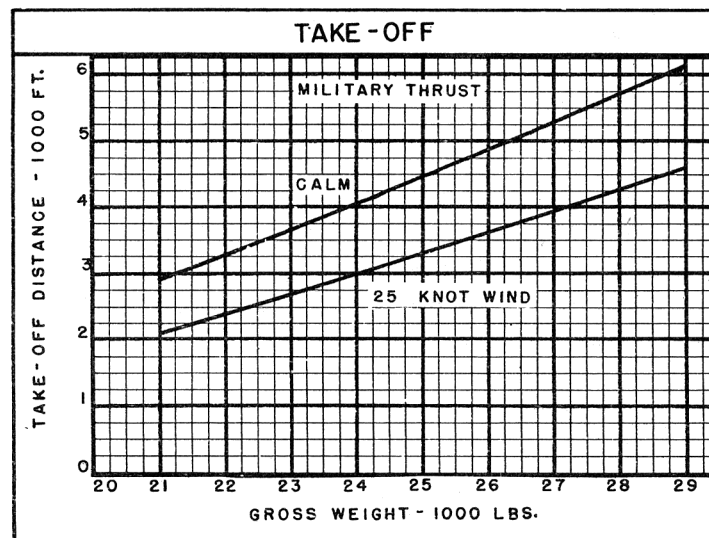
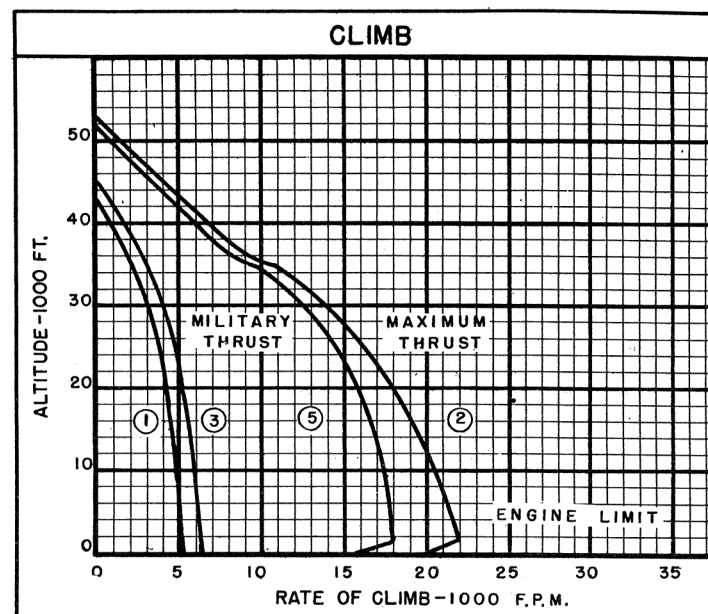
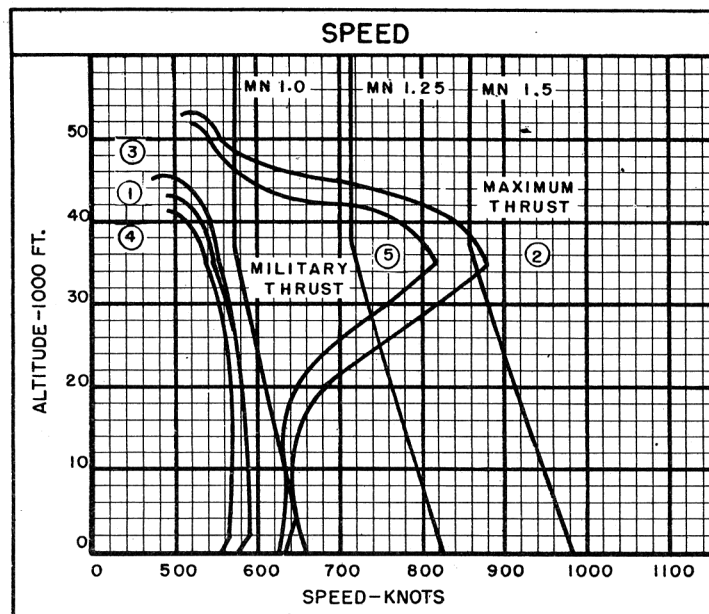
REASON FOR REISSUE: Current loadings and more complete flight test data.

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○ LOADING CONDITION COLUMN NUMBER

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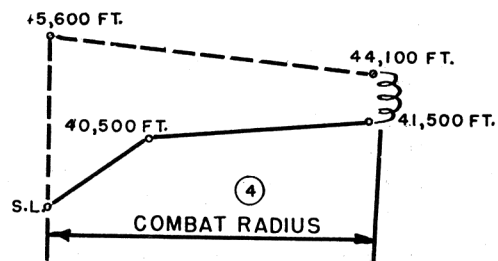
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NOTES

GENERAL PURPOSE AND ESCORT FIGHTER

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes with normal thrust at sea level.
 CLIMB: On course to cruise altitude with military rated thrust.
 CRUISE-OUT: At altitudes and speeds for maximum range.
 COMBAT FUEL ALLOWANCE: At 35,000 ft. for 5 minutes at maximum thrust at a velocity mid-way between V_{max} with maximum thrust and V_{max} with military thrust plus 15 minutes at V_{max} with military thrust.
 CRUISE-BACK: At altitudes and speeds for maximum range.
 RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5 per cent of initial fuel load.

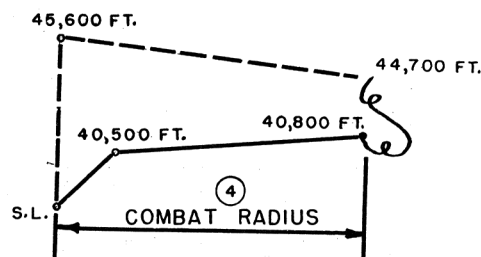


If JP-5 fuel is used, the following are applicable:

- ① General Purpose Fighter; guns and rockets
- ① Inflight Refueling; guns and rockets
- ④ General Purpose Fighter; 2 external sidewinders
- ④ Inflight Refueling; 2 external sidewinders

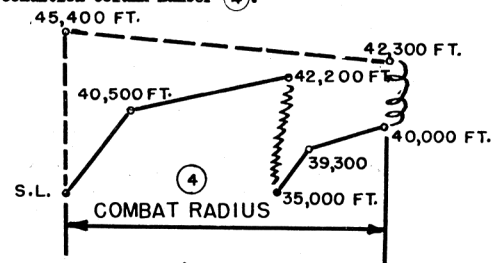
COMBAT AIR PATROL

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes with normal thrust at sea level.
 CLIMB: On course to cruise altitude with military rated thrust.
 CRUISE: To a point 150 nautical miles from base at altitudes and speeds for maximum range.
 LOITER: On station at speed for maximum endurance at approximate final cruise-out altitude.
 COMBAT FUEL ALLOWANCE: At 35,000 ft. for 5 minutes at maximum thrust at a velocity mid-way between V_{max} with maximum thrust and V_{max} with military thrust plus 15 minutes at V_{max} with military thrust.
 CRUISE-BACK: 150 nautical miles to base at altitudes and speeds for maximum range.
 RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5 per cent of initial fuel load.

GENERAL PURPOSE FIGHTER WITH INFLIGHT REFUELING (A3D-2 TANKER)

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes with normal thrust at sea level.
 CLIMB: On course to cruise altitude with military rated thrust.
 CRUISE-OUT: At altitudes and speeds for maximum range.
 DESCEND TO 35,000 FT. REFUELING ALTITUDE: No fuel used, no distance gained.
 ALLOWANCE FOR RENDEZVOUS, HOOK-UP, AND FLIGHT CONTINGENCIES: 15 minutes at maximum endurance airspeeds. (Assume no fuel used, no distance gained during transfer of fuel.)
 REFUEL POINT: Limited to return of aircraft to base with normal reserve if contact for refueling is not made.
 CLIMB: On course to cruise altitude with military rated thrust.
 CRUISE: Continue cruise-out at altitudes and speeds for maximum range.

The remainder of the problem is the same as the General Purpose Fighter Problem of loading condition column number ④.



	△ WEIGHT	△ RANGE	△ RADIUS	△ MISSION TIME
①	382 lb.	84 n.mi.	42 n.mi.	.17 hr.
①	596 lb.	124 n.mi.	62 n.mi.	.25 hr.
④	382 lb.	76 n.mi.	38 n.mi.	.15 hr.
④	596 lb.	112 n.mi.	56 n.mi.	.23 hr.

○ LOADING CONDITION COLUMN NUMBER

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