

F-106A TECHNICAL DATA

Mission and Description

Navy Equivalent: None Mfr's Model: 8-24

The principal mission of the F-106A is the interception and destruction of attacking enemy aircraft and airborne missiles, having all weather and day or night characteristics.

This airplane incorporates a delta wing with a cambered leading edge extending from wing root to wing tip and swept tail surface. Control surfaces are power operated.

The fuel system is pressurized, air is bled from the engine compressor section and is used to pressurize the fuel tanks to reduce fuel evaporation and to provide for fuel transfer and CG control inflight.

The airplane has the capability for air refueling from flying boom equipped tankers.

Armament consists of four AIM missiles and an AIR-2 rocket or, on some airplanes, a gun system replaces the AIR-2 rocket. All armament is contained in a missile bay in the bottom portion of the fuselage. Firing of the armament is either manual or automatic. The components of the MA-1 Aircraft and Weapons Control System provides automatic radar searching and tracking, directs the airplane on a lead-collision attack and automatically fires the armament.

External fuel tanks can be added to increase range. The tanks can be refueled in flight and need not be jettisoned for combat since they do not restrict airplane speed or load factor when empty.

Development

Similar to the F-102A except for the J75 engine in lieu of the J57, redesigned tail, addition of fuselage fuel tanks, armament changes, and completely new electronic system.

Previously designated F-102B.

First Flight (Prototype) Dec 56
 First Acceptance Oct 58
 Production Status Completed

ROCKETS

Nr	Type	Location
1	AIR-2A PLUS	Fuselage
4	AIM-4F OR	Fuselage
4	AIM-4G OR	Fuselage
2	AIM-4F	Fuselage
2	AIM-4G	Fuselage

GUNS

No.	Type	Size	Rds ea	Location
*1	M61A1	20mm.	.625	Missile bay

* Installed in some aircraft; replaces AIR-2A rocket in center aft missile bay.

Courtesy of the U.S.A.F.

F U E L

Location	Nr Tanks	Gal
Fuselage	1	240
Wg. Internal	4	1034
Transfer	2	210
Transfer Lines		30
External Tanks	2	716
		Total 2230
Grade		JP-4
Specification		MIL-T-5624

OIL

Engine	1	(tot) 4.5
Specification		MIL-L-7808

WEIGHTS

Loading	Lb	L. F.
Empty	24,861(A)	-
Basic	25,130(A)	-
Design	34,522	7.0
Combat	*33,570	7.0
Max T. O.	† 41,831	5.0
Max Land	‡ 36,114	2.0

(A) Actual
 * For basic mission
 † Limited by space
 ‡ Limited by design

ELECTRONICS

Interceptor System, Aircraft and Weapons Control, Type MA-1 (Hughes Aircraft Corp.)
 For detailed breakdown of MA-1 components, reference Convair Report ZM-8-452.

POWER PLANT

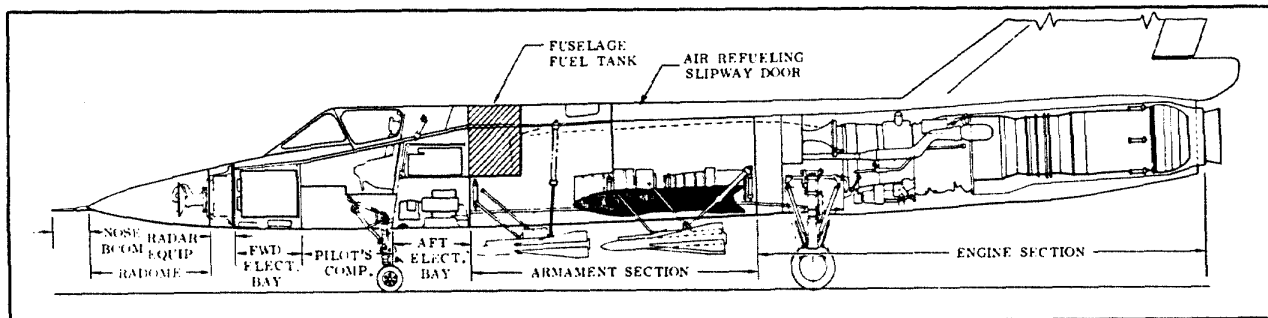
Nr & Model	(1) J75-P17
Mfr	Pratt & Whitney
Engine Spec Nr	A-2625
Type	Axial
Length	237.6
Diameter	41.25
Weight (dry)	5875 lb
Tail Pipe	Auto, Two-Position
Augmentation	Afterburning

ENGINE RATINGS

S. L. Static	LB	† RPM	- MIN
Max:	*24,500	6440/8940	5
Mil:	16,100	6440/8940	30
Nor:	14,300	6080/8700	- Cont

* With afterburner operating

† First figure represents the RPM of low pressure spool while the second is that of the high pressure spool.



F-106B TECHNICAL DATA

Mission and Description

Navy Equivalent: None

Mfr's Model: 8-27

The principal mission of the F-106B is to function as a pilot proficiency training while maintaining full tactical capabilities for the interception and destruction of hostile aircraft and missiles. The F-106B has all-weather and day or night characteristics.

This airplane incorporates a delta wing with a cambered leading edge extending from wing root to wing tip and swept tail surface. Control surfaces are power operated.

The fuel system is pressurized, air is bled from the engine compressor section and is used to pressurize the fuel tanks to reduce fuel evaporation.

The airplane has the capability for air refueling from flying boom equipped tankers.

The armament is located in a bay in the bottom of the fuselage. The AIM missiles are extended below this section for firing and the AIR-2A rocket is ejected from the bay by an explosive charge. Firing of the armament is either manual or automatic. The components of the AN/ASQ-25 (MA-1 equivalent) Aircraft and Weapons Control System provides automatic radar searching and tracking, directs the airplane on a lead-collision attack and automatically fires the armament.

External fuel tanks can be added to increase range. The tanks can be refueled in flight and need not be jettisoned for combat since they do not restrict airplane speed or load factor when empty.

Development

Basically the same as the F-106A except for redesign of the cockpit to accommodate two pilots, redesign of the fuselage fuel tank area and installation of a comparable electronic system.

First flight (prototype) Apr 58
 First flight (production) Oct 58
 Production status Production Completed

ELECTRONICS

Interceptor System, Aircraft and Weapons Control, AN/ASQ-25

(Hughes Aircraft Corp)

ROCKETS

Nr	Type	Location
1	AIR-2A	Fuselage
4	AIM-4F	Fuselage
4	AIM-4G	Fuselage
2	AIM-4F	Fuselage
2	AIM-4G	Fuselage

WEIGHTS

Loading	Lb	L. F.
Empty	25,696(A)	
Basic	26,200(A)	
Design	34,937	6.0
Combat	*34,482	6.0
Max T. O.	†42,720	3.9
Max Land	‡36,834	2.0

(A) Actual
 * For basic mission
 † Limited by space
 ‡ Limited by design

POWER PLANT

Nr & Model	(1) J75-P-17
Mfr	Pratt & Whitney
Engine Spec Nr	A-2625
Type	Axial
Length	237.6"
Diameter	44.25"
Weight (dry)	5875 lb
Tail Pipe	Auto, Two-Position
Augmentation	Afterburning

ENGINE RATINGS

S, L, Static	LB	† RPM	MIN
Max:	*24,500	- 6440/8940	- 5
Mil:	16,100	- 6440/8940	- 15
Nor:	13,700	- 6080/8700	- Cont

* With afterburner operating

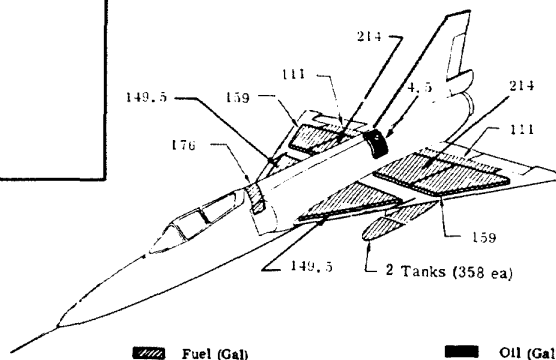
† First figure represents RPM of low pressure spool while the second that of the high pressure spool.

F U E L

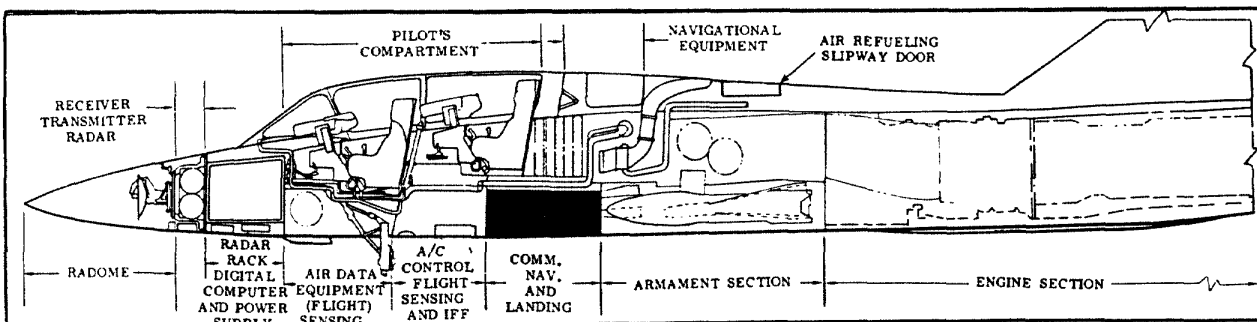
Location	Nr Tanks	Gal
Fuselage	1	176
Wg, internal	8	1267
Wg, ext, drop	2	716
Transfer lines		7
	Total	2166
Grade		JP-4
Specification		MIL-T-5624

OIL

Engine	(tot) 4.5
Specification	MIL-L-7808



Courtesy of the U.S.A.F.



Loading and Performance—Typical Mission

C O N D I T I O N S		MAXIMUM INTERNAL FUEL MISSION			EXTERNAL FUEL MISSION	
		POINT INTERCEPT I	AREA INTERCEPT II	FERRY RANGE III	AREA INTERCEPT IV	FERRY RANGE V
TAKEOFF WEIGHT (lb)		36,663	36,663	35,240	41,831	40,408
Fuel at 6.5 lb/gal (grade JP-4)		(lb) 9841	(lb) 9841	(lb) 9841	(lb) 14,495 (4)	(lb) 14,495 (4)
Military load (missiles) (5)		(lb) 594	(lb) 594	(lb) —	(lb) 594	(lb) —
Military load (rockets) (6)		(lb) 829	(lb) 829	(lb) —	(lb) 829	(lb) —
Wing loading (lb/sq ft)		52.8	52.8	50.7	60.2	58.1
Minimum speed (power off) (9)		(kn) 150	(kn) 150	(kn) 150	(kn) 150	(kn) 150
Takeoff ground run (1)		(ft) 3300	(ft) 3300	(ft) 3060	(ft) 4100	(ft) 3875
Takeoff to clear 50 ft (1)		(ft) 5100	(ft) 5100	(ft) 4850	(ft) 6000	(ft) 5750
Rate of climb at SL (ft/min)		39,000 (1) (8)	8850 (2) (8)	8950 (2)	7100 (2) (8)	7200 (2)
Time: SL to 40,000 ft (8)		(min) 3.2 (1) (7)	(min) 7.9 (2) (8)	(min) 7.5 (2)	(min) 12.8 (2) (8)	(min) 11.5 (2)
Time: SL to 50,000 ft (8)		(min) 6.0 (1) (7)	(min) 15.8 (2) (1)	(min) 15.6 (2) (1)	(min) 18.1 (2) (1)	(min) 17.7 (2) (1)
Service ceiling (100 ft/min) (ft)		51,400 (1) (8)	44,200 (2) (8)	43,500 (2)	41,300 (2) (8)	40,200 (2)
COMBAT RANGE (n mi)		—	—	1108	—	1718
COMBAT RADIUS (n mi)		—	417	—	725	—
Average cruise speed (kn)		—	516	516	516	516
Initial cruising altitude (ft)		—	38,700	39,600	36,300	37,800
Final cruising altitude (ft)		—	41,600	42,300	41,600	42,000
Total mission time (hr)		—	1.70	2.15	2.89	3.65
TOTAL MISSION TIME (7) (hr)		1.87	—	—	—	—
Intercept altitude (ft)		50,650	—	—	—	—
COMBAT WEIGHT (lb)		33,570	31,770	26,987	33,760	27,728
Combat altitude (ft)		50,650	51,600	42,300	50,600	42,000
Combat speed (1) (kn)		588	588	—	585	—
Combat climb (1) (ft/min)		500	500	9750	500	9750
Combat ceiling (500 ft/min) (1) (ft)		50,650	51,600	54,400	50,600	53,400
Service ceiling (100 ft/min) (2) (ft)		51,100 (1)	45,200	47,800	44,300	46,700
Maximum rate of climb at SL (1) (ft/min)		41,200	43,500	50,200	40,800	45,500
Maximum speed at 35,000 ft (1) (10) (kn)		1153	1153	1153	1153	1153
Basic speed at 50,000 ft (1) (kn)		1118	1135	1135	1116	1135
LANDING WEIGHT (lb)		27,952	28,438	26,987	28,675	27,728
Ground roll at SL (ft)		4200	4260	4090	4280	4250
Ground roll (auxiliary brake) (12) (ft)		2840	2920	2730	2940	2820
Total from 50 ft (ft)		5620	5680	5510	5700	5590
Total from 50 ft (auxiliary brake) (12) (ft)		4300	4360	4170	4380	4250

F-106A PERFORMANCE DATA

N O T E S	(1) Maximum thrust (2) Military thrust (3) Deleted (4) With 716 gallons external fuel	(5) Four AIM-4F or 4G missiles (6) One AIR-2A (7) Includes time for take-off and acceleration to climb speed. (8) Considers weight reduction due to fuel used.	(9) Onset of heavy buffet (10) Design speed limit (M = 2.0) (11) Time to service ceiling (12) 14.5 ft (flat diameter drag chute plus speed brakes).
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PERFORMANCE BASIS:
 (a) Data source: Flight Test Service aircraft.
 (b) Performance is based on powers shown on page 3.

Loading and Performance - Typical Mission

C O N D I T I O N S		MAXIMUM INTERNAL FUEL MISSION			EXTERNAL FUEL MISSION	
		POINT INTERCEPT I	AREA INTERCEPT II	FERRY RANGE III	AREA INTERCEPT IV	FERRY RANGE V
TAKEOFF WEIGHT	(lb)	37,552	37,552	36,129	42,720	41,297
Fuel at 6.5 lb/gal (grade JP-4)	(lb)	9425	9425	9425	14,079	14,079
Military load (missiles)	(lb)	594	594	—	594	—
Military load (rockets)	(lb)	829	829	—	829	—
Wing loading	(lb/sq ft)	54	54	52	61.5	59.4
Minimum speed (power off)	(kn)	150	150	150	150	150
Takeoff ground run	(ft)	3650	3650	3350	4650	4350
Takeoff to clear 50 ft	(ft)	5400	5400	5100	6600	6250
Rate of climb at SL	(ft/min)	38,000 ① ⑧	8600 ② ⑧	8700 ②	6800 ② ⑧	6875 ②
Time: SL to 40,000 ft	(min)	3.4 ① ⑦	8.2 ②	7.6 ②	15.5 ② ⑧	13.6 ②
Time: SL to 50,000 ft	(min)	6.3 ① ⑦	16.4 ② ⑪	15.8 ② ⑪	19.0 ② ⑪	18.7 ② ⑪
Service ceiling (100 ft/min)	(ft)	51,200 ① ⑧	44,100 ② ⑧	43,200 ②	41,200 ② ⑧	39,800 ②
COMBAT RANGE	(n. mi.)	—	—	977	—	1600
COMBAT RADIUS	(n. mi.)	—	377	—	563	—
Average cruise speed	(kn)	—	516	516	516	516
Initial cruising altitude	(ft)	—	38,200	39,000	36,000	36,800
Final cruising altitude	(ft)	—	41,000	41,700	40,600	41,300
Total mission time	(hr)	—	1.54	1.82	2.26	3.38
TOTAL MISSION TIME	(hr)	⑦ 1.79	—	—	—	—
Intercept altitude	(ft)	50,600	—	—	—	—
COMBAT WEIGHT	(lb)	34,482	32,822	28,286	35,297	29,033
Combat altitude	(ft)	50,600	51,450	41,700	50,000	41,300
Combat speed	(kn)	588	588	—	588	—
Combat climb	(ft/min)	500	500	9500	500	9500
Combat ceiling (500 ft/min)	(ft)	50,600	51,450	53,200	50,000	53,000
Service ceiling (100 ft/min)	(ft)	51,100 ①	45,300	46,700	43,800	46,400
Maximum rate of climb at SL	(ft)	40,000	42,000	48,500	39,100	47,500
Maximum speed at 35,000 ft	(kn)	1153	1153	1153	1153	1153
Basic speed at 50,000 ft	(kn)	1061	1089	1100	1055	1054
LANDING WEIGHT	(lb)	29,377	29,709	28,286	30,456	29,033
Ground roll at SL	(ft)	4940	5000	4770	5100	4890
Ground roll (auxiliary brake)	(ft)	3620	3670	3440	3770	3550
Total from 50 ft	(ft)	6370	6420	6200	6520	6310
Total from 50 ft (auxiliary brake)	(ft)	5050	5100	4870	5200	5000

Courtesy of the U.S.A.F.

F-106B PERFORMANCE DATA

N O T E S	① Maximum thrust	⑤ Four AIM-4F or 4G missiles	⑨ Onset of heavy buffet	PERFORMANCE Data source: Flight Test.
	② Military thrust	⑥ One AIR-2A rocket	⑩ Design speed limit (M = 2.0)	
	③ Deleted	⑦ Includes time for takeoff and acceleration to climb speed	⑪ Time to service ceiling	
	④ With 716 gallons external fuel	⑧ Considers weight reduction due to fuel used.	⑫ 14.5 ft (flat diameter) drag chute plus speed brakes.	