

# STANDARD AIRCRAFT CHARACTERISTICS

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MODEL 725

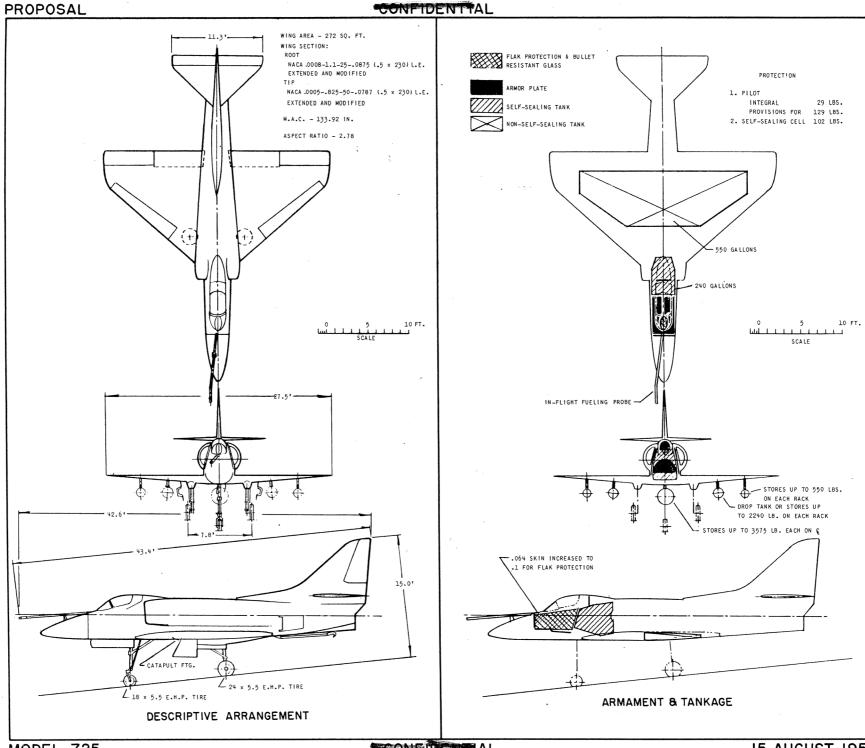
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IS ALIGHET 1957

MODEL 72



MODEL 725

CONFIDENTIAL

15 AUGUST 1957



# POWER PLANT

No & Model(1) J52-P-(JT8B) MfrPratt & Whitney
Eng.Spec.NoN-1731 (7-17-57)
TypeTurbo-Jet
ComprTwo-rotor, Multi-Stage,
Axial Flow
Length
Diameter31.5 in.
JATO (MK. 7-Mod. 1)(2)5KS 4500

# RATINGS

Sea Level Static

1	iii us v
	Lbs.
ect.)	9800

# ORDNANCE

Bombs - Mks. 81, 82, 83, 84, 91, 28, and smaller weapons.

TABLE LEG II
Firebomb - MK. 79
Flare Dispenser-Aero 5A

Guns - POD-Two 20mm Mk.11 Guns with 800 rounds.

Rockets - Expendable Package Launchers Aero 6Al

Aero 7D Aero 10D

Missiles - BULLPUP CORVUS SIDEWINDER

Miscellaneous
Practice Bor

Practice Bomb Containers Aero 8A and Aero X9A, Missile Dispenser Aero 1A, NAPAIM - Aero 1A, and In-Flight Fueling Store

# MISSION AND DESCRIPTION

The Model 725 carrier-based attack airplane is a single-place, jet-powered design. It is basically identical to the Model A4D-3 except for a new nose section and a modified cockpit. Model 725 is capable of accomplishing the low altitude close support mission described in BuAer Type Spec. No. T.S. 149. A modified long range, low altitude attack mission can be completed at 800 N.Mi. radius without refueling and a 1000 N.Mi. radius mission is available with one refueling from another Model 725 airplane.

The aerodynamic configuration is conventional with all-metal semi-monocoque structure and a three spar low aspect ratio wing. The conventional rudder, aileron and elevator flight controls, landing gear, flaps, and speed brakes are hydraulically operated by engine-driven pumps comprising a tandem hydraulic system. A wind driven, drop-out pump furnishes emergency hydraulic power. An electrically operated, fully adjustable stabilizer is used for longitudinal trim. A wind driven, drop-out generator furnishes emergency electric power. In an emergency, the landing gear is manually unlocked and lowered by gravity.

The wing is 27.5 feet in span hence, wing fold is not required. Provisions for the fourth and fifth external wing stations are included. The fuselage aft of the wing is removable for engine access. In-flight fueling and tanker provisions are included.

The nose section is enlarged over the original APG-53 equipped A4D-3 to accommodate additional electronics equipment. Two radar units are provided for the functions of search, obstacle clearance, and track. The original A4D-3 cockpit and instrument panel are modified to accommodate the new equipment in Model 725. JATO provisions are included for use in short field operations. A drag chute is installed for use in short field landings.

Model 725 is capable of conventional and special weapons attack on fixed and moving targets under all conditions of weather and visibility.

WEIGHTS			
Loadings	Lbs.	L.F.	
Empty (E)	9777		
Basic	10,061		
Flight Design	12,504	7.0	
Combat	15,553	,5.6	
Max. T.O.	22,599	3.9	
Des. Landing	13,444		
Des. Catapult	22,599		

F	UEL AND	OIL
Gal.	No. Tanks	Location
550	1 (Int.)	Wing
240		al) Fus.
400	l (Drop)	${\tt C/L}$ Wing
300	2 (Drop)	In'bd. Wing
Fuel	Grade	JP-5
Fuel	SpecMI	L-F-5624C-l
	OIL	
Capacit	y (Integral).	3.0 gal.
Oil Spe	c MI	L-L-7808C-1

# **ELECTRONICS**

CNI Pkg. (Equiv. to) AN/ASQ-19
Communications
Navigation
Identification
Radar Functions: Search
Track
Terrain Clearance
Doppler

Armament Control System:
All-weather Attack
Navigation System for Model
725 as described in DAC
Summary Report No. ES 26781

# DIMENSIONS

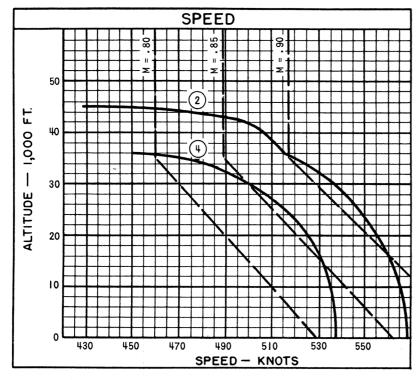
DIMENSIONS	
Wing:	
Area 272 sq.	ft.
Span 27.5	ft.
M.A.C133.9	in.
Sweepback 33.2 D	eg.
Length41.1	ft.
Height15.0	ft.
Span (no-wing fold)27.5	ft.
Tread 7.8	ft.

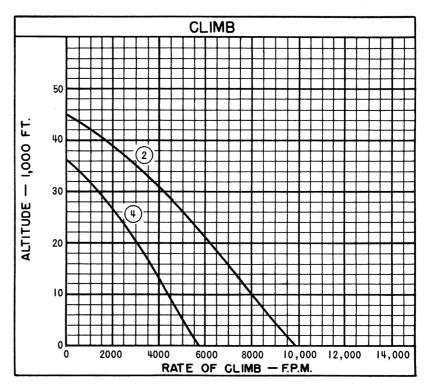
PERFORMANCE SUMMARY					
TAKE-OFF LOADING CONDITION	(1) CLOSE SUPPORT 2 1000-LB MK 83 BOMBS		(4) LONG RANGE 1 MK 28 STORE 2 300-GAL.EXT. FUEL TANKS		
TAKE-OFF WEIGHT 1b.	17.827		22,599		
Fuel (790 Gal. JP-5 @ 6.8 Lb./Gal.) lb.	5372		9452	i	
Payload lb.	2000		2250		
Wing loading lb./sq.ft.	65.5		83.1		
Stall speed - power-off km.	116		131		
Take-off run at S.L No JATO (A) ft.	1410		2495		
Take-off run at S.L With JATO (A) ft.	695 (B)	•	1660		
Take-off to clear 50 ftNo JATO (A) ft.	2600		4180		
Take-off to clear 50 ftwith JATO (A) ft.	1490 (B)		2715		
Rate of climb at S.L. (C) fpm	8250		5650		
Time: S.L. to 20,000 ft. (C) min.	2.8		4.6		
Time: S.L. to 30,000 ft. (C) min.	5.3		8.8		
Service ceiling (100 fpm) (C) ft.	41,900	· · · · · · · · · · · · · · · · · · ·	36,000		
Combat range n.mi.	1055		1812		
Average cruising speed kn.	433		432		
Cruising altitude(s) ft.	37,300-42,200		31,900-41,800		
Combat radius n.mi.	300 (D)		800 (E)		
Average cruising speed km.	433		432		
Mission Time/Cycle Time hr./hr.	2.4/2.7		3.9/4.3		
COMBAT LOADING CONDITION	(2) COMBAT 60% FUEL 2 1000-LB. MK 83 BOMB	,			
COMBAT WEIGHT 1b.	15,553				
Engine power	Military				
Fuel 1b.	3223				
Combat speed/combat altitude kn./ft.	568/S.L.				
Rate of climb/combat altitude fpm/ft.	9750/S.L.				
Combat ceiling (500 fpm) ft.	43,600	/		14	
Rate of climb at S.L. fpm					
Max. speed at S.L. kn.	568				
Max. speed/altitude kn./ft.	520/35,000				
LANDING WEIGHT (20% Fuel-No Stores) 1b.	11.404	/			
Fuel lb.	1074				
Stall speed - power-off kn.	92.8				
Stall speed - with approach power kn.	88.5				
Landing Distance-Calm, With Chute ft.	1440				

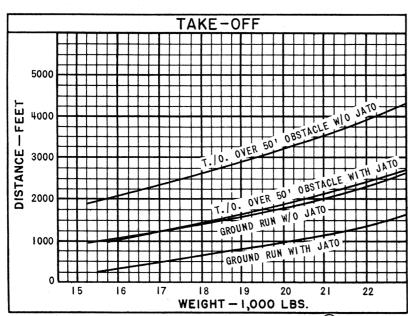
# NOTES

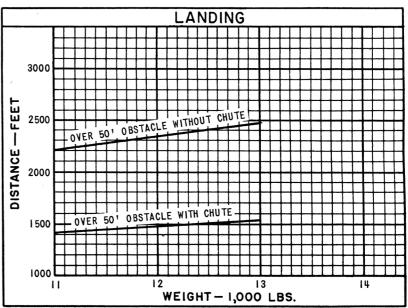
- (A) Maximum thrust with water injection.
- (B) Take-off weight with two 5KS 4500 JATO units is 18,281 lb.; JATO dropped after take-off.
- (C) Military thrust.
- (D) Close support mission defined in BuAer type specification 149 dated 19 Feb. 1957 and shown on 1st. NOTES page.
- (E) Modified long range problem. See Notes for mission profile.
- (F) PERFORMANCE BASIS: Flight test data obtained from A4D-1 and Model A4D-3 wind tunnel tests.
- (G) Combat range and radius are based on fuel consumption data from Pratt & Whitney specification N 1731 dated 7-17-57 and increased 5%.
- (H) A total of 27 airplanes can be accommodated in a landing spot 96 ft. wide by 200 ft. long.

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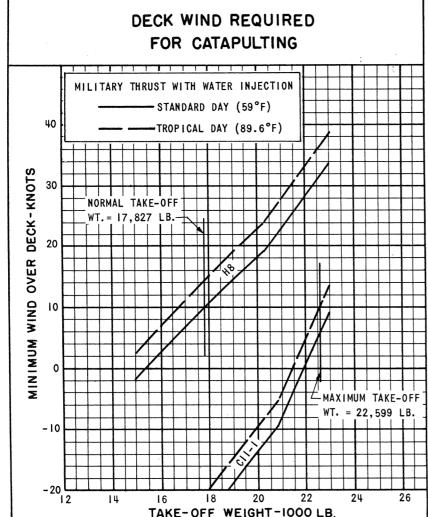


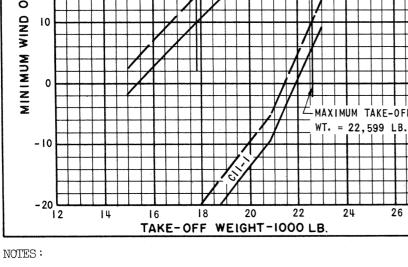




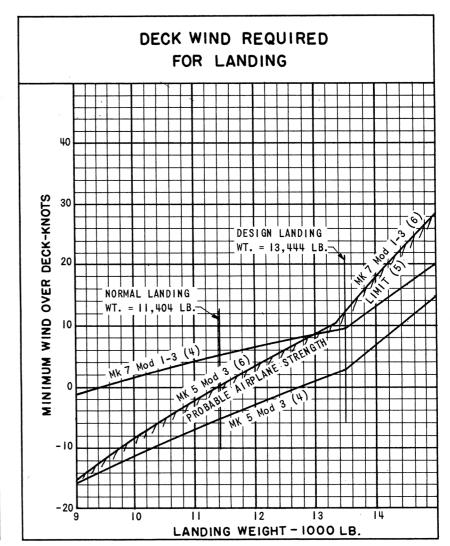


# CARRIER SUITABILITY





- (1) H8 catapult take-off speed is based on .81C  $_{L\,\,max}.$  Cl1-1 catapult take-off speed is based on NATC recommended minimum for A4D-1.
- (2) H8 catapult end speed is limited by maximum end speed at weights below 20,260 lb. and by catapult capacity above 20,260 lb. Cll-1 catapult end speed is limited by load factor of 5.86 at weights below 20,750 lb. and by horizontal hook load of 117,000 lb. above 20,750 lb.



- (3) Approach speed is based on 1.3  $\rm V_{\rm SPA}$  .
- (4) Engaging speed limited by load factor of 5.72 at weights below 13,444 lb. and by maximum hook load of 77,000 lb. above 13,444 lb.
- (5) Engaging speed is based on ultimate sinking speed and 6.25° angle between flight path and carrier deck.
- (6) Probable airplane strength limit, based on sinking speed, restricts minimum wind with MK. 5 Mod. 3 at all weights and with MK. 7 Mod. 1-3 at weights above 13,000 lb.



# **NOTES**

#### CLOSE SUPPORT (COMBAT RADIUS MISSION)

WARM-UP, TAKE-OFF AND ACCELERATE: 5 minutes at normal rated thrust at sea level.

CLIMB: On course to optimum cruise altitude with maximum rated thrust.

CRUISE OUT: At altitudes and speeds for maximum range.

DESCEND TO 5000 FT.: No fuel consumed, no credit for distance covered.

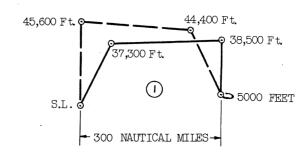
LOITER ONE HOUR: At 5000 feet at speed for maximum endurance (no credit for distance covered.)

DROP BOMBS:

CLIMB: On course to optimum cruise altitude with maximum rated thrust.

CRUISE BACK: At altitudes and speeds for maximum range.

RESERVE: 5% of initial fuel plus fuel for 20 minutes at speed for maximum endurance at sea level.



COMBAT RADIUS = CLIMB + CRUISE-OUT = CLIMB + CRUISE-BACK

MISSION TIME = TIME REQUIRED FOR CLIMB + CRUISE OUT + LOITER + CLIMB + CRUISE BACK

CYCLE TIME = MISSION TIME + 20 MINUTES RESERVE LOITER TIME

#### LONG RANGE (COMBAT RADIUS MISSION)

WARM-UP, TAKE-OFF AND ACCELERATE: 5 minutes at normal rated thrust at sea level.

 ${\tt CLIMB:}\ \ {\tt On}\ \ {\tt course}\ \ {\tt to}\ \ {\tt optimum}\ \ {\tt cruise}\ \ {\tt altitude}\ \ {\tt with}\ \ {\tt maximum}\ \ {\tt rated}\ \ \ {\tt thrust.}$ 

CRUISE OUT: At altitudes and speeds for maximum range.

DESCEND TO SEA LEVEL: When 300 N.Mi. from target (no fuel used, no credit for distance covered)

 $\ensuremath{\mathsf{CRUISE}}$  : At maximum range at sea level. Drop external fuel tanks when empty.

RUN-IN: 3 minutes to target at military power.

DROP BOMB:

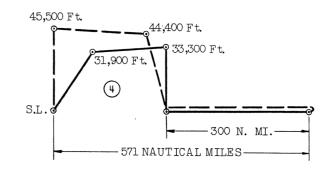
RUN-OUT: 2 minutes from target at military power at sea level.

CRUISE: At maximum range speed at sea level to a point 300 N.Mi. from target.

 ${\tt CLIMB:}\ \ {\tt On\ course}\ \ {\tt to\ optimum\ cruise}\ \ {\tt altitude\ with\ maximum\ rated}\ \ {\tt thrust.}$ 

CRUISE BACK: At altitudes and speeds for maximum range.

RESERVE: 5% of internal fuel capacity plus fuel for 20 minutes at maximum endurance speed at S.L.



OLOADING CONDITION COLUMN NUMBER

# NOTES

#### MODIFIED LONG RANGE (COMBAT RADIUS MISSION)

WARM-UP, TAKE-OFF AND ACCELERATE: 5 minutes at normal rated thrust at sea level.

CLIMB: On course to optimum cruise altitude with maximum rated thrust.

CRUISE-OUT: At altitude and speeds for maximum range.

DESCEND TO SEA LEVEL: When 152 N.Mi. from target (no fuel used, no credit for distance covered).

CRUISE: At maximum range at sea level. Drop external fuel tanks

RUN-IN: 3 minutes to target at military power.

DROP BOMB:

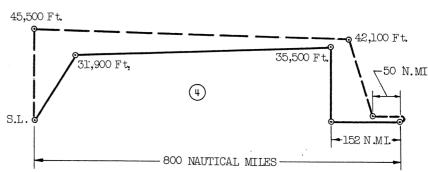
RUN-OUT: 2 minutes from target at military power at sea level.

CRUISE: At maximum range speed at sea level to a point 50 N.Mi. from target.

CLIMB: On course to optimum cruise altitude with maximum rated thrust.

CRUISE BACK: At altitudes and speeds for maximum range.

RESERVE: 5% of internal fuel capacity plus fuel for 20 minutes at maximum endurance speed at S.L.



# MODIFIED LONG RANCE (COMBAT RADIUS MISSION) WITH ONE IN-FLIGHT REFUELING

45,500 Ft.

31,900 Ft.

(4)

400 N.MI.-

34,500 FT

WARM-UP, TAKE-OFF AND ACCELERATE: 5 minutes at normal rated thrust at sea level.

CLIMB: On course to optimum cruise altitude with maximum rated thrust.

CRUISE-OUT: At altitude and speeds for maximum range to 400 N.MI.

REFUEL: From Buddy A3D, A4D, or Model 725 Tanker.

CRUISE OUT: At altitude and speeds for maximum range.

DESCEND TO SEA LEVEL: When 300 N.MI. from target (no fuel used, no credit for distance covered)

CRUISE: At maximum range at sea level.

RUN-IN: 3 minutes to target at military power. External fuel tanks are dropped before run to target.

DROP BOMB:

RUN-OUT: 2 minutes from target at military power at sea level. S.L.

CRUISE: At maximum range speed at sea level to a point 200 N.MI. from target.

CLIMD: On course to optimum cruise altitude with maximum rated thrust.

CRUISE BACK: At altitudes and speeds for maximum range.

RESERVE: 5% of internal fuel capacity plus fuel for 20 minutes at maximum endurance speed at S.L.



-50 N.MI.

41.800 Ft.

30,000 Ft.

- 1000 N.MI.-

RE-FUEL

32,100 Ft.

200 N.MI.-

300 N.MI.-