STANDARD AIRCRAFT CHARACTERISTICS

F8U-2 "CRUSADER"

CHANCE VOUGHT

30 JANUARY 1959
POWER PLANT
NO. & MODEL .................... J57-P-16
MFG. ................................ Pratt and Whitney
TYPE ............................ Axial Flow
LENGTH ................................ 270"  
DIAMETER ................................ 32.64"
AUGMENTATION ....................... Afterburner

RATINGS

ENG.  RPM  ALT
MIL. + AS  16,900  6400  S.S.L.
MIL. .............. 10,700  6300  S.S.L.
PARAM. .......... 9,100  6290  S.S.L.

Eng. Spec. No. PW6-N-17148

MISSION AND DESCRIPTION
The F8U-2 day fighter is designed to maintain air superiority in daylight fair weather during the period of task force strikes when the enemy will mount large numbers of aircraft.

The F8U-2 is an improved version of the F8U-1 airplane. The modifications which differentiate the two airplanes are: (1) an improved engine, (2) increased performance capabilities, (2) low aspect ratio wings for additional stability in the extended flight boundary region, (3) external cooling air scoops added to the engine section, (4) for increased afterburner thrust due to better airflow characteristics, and (5) APG-67 radar and EX-16 Fire Control System for improved tracking and armament capabilities. In all other respects, the F8U-2 is the same as a typical fleet operational F8U-1.

DEVELOPMENT
First Flight ......................... August 1958
Service Use (Estimated) ............. February 1959

WEIGHTS

LOADING  LBS  Lbs.
EMPTY .................... 16,483
BASIC ..................... 17,978
DESIGN ..................... 23,152
COMBAT  .............. 24,475
MAX. T.O. (Field) ........ 27,936
(Sea) .................. 27,958
MAX. LANDING (Field) ... 23,500
(Arrest) .............. 22,000

All weights are estimated.

FUEL AND OIL

GALL.  NO. PARTS  LOCATION
535  3  Main Fuselage
170  4  A.S. Fuselage
568  1  'Mag

FUEL GRADE .............. JP-8
FUEL SPEC (applicable) .... MIL-F-5624

OIL

CAPACITY (gals.) .............. 4
SPEC (applicable) .............. MIL-L-7808

ORDNANCE

NO.  DESCRIPTION  LOCATION
4  20 mm aircraft guns, NM-12
500  Rounds of 20 mm
ammunition
32  2.75 inch FFAR
Fuselage
Rockets carried centerline
internally in rocket pack
5  Sidewinder air-to-air
missiles carried
externally on pylons

DIMENSIONS

WEIGHT
AREA .......................... 375 sq. ft.
SPAN ................................ 35' - 8"
WING ................................ 1.12"
SHEARBACK 1/4 CHORD ........... 40°
LENGTH .......................... 42' - 3"
HEIGHT .......................... 15' - 9"
THROAT .......................... 9' - 8"

ELECTRONICS

INTEGRATED ELECTRONIC CONTROL ........ AN/AIS-17B
(contains functions of AN/AIS-27A, AN/AIS-43 and AN/AIS-25)
COMMUNICATIONS .............. AN/AIS-9
RADAR SET (YAGAN) .............. AN/AIS-31
Gyro Stabilized Magnetically Compass ........ AN/AVQ-3
AUTOMATIC CONTROL SYSTEM .. AN/AVQ-1
(INCLUDES AN/AIS-47, Radar Set and
EXA-15, Aircraft Fire Control System)
## PERFORMANCE SUMMARY

<table>
<thead>
<tr>
<th>TAKE-OFF LOADING CONDITION</th>
<th>(2) BASIC FIGHTER GUNS AND 32 - 2.75&quot; FFAR ROCKETS</th>
<th>(4) BASIC FIGHTER GUNS + 2 EXTERNAL SIDEBINDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKE-OFF WEIGHT</td>
<td>27,938</td>
<td>27,810</td>
</tr>
<tr>
<td>Fuel (JP-5)</td>
<td>8,657</td>
<td>8,657</td>
</tr>
<tr>
<td>Wing loading</td>
<td>934</td>
<td>682</td>
</tr>
<tr>
<td>Stall speed - power-off</td>
<td>127.5</td>
<td>127.3</td>
</tr>
<tr>
<td>Take-off run at S.L. - calm</td>
<td>5,720</td>
<td>5,660</td>
</tr>
<tr>
<td>Take-off run at S.L. 25 kn. wind</td>
<td>4,130</td>
<td>4,080</td>
</tr>
<tr>
<td>Take-off to clear 50 ft. - calm</td>
<td>7,960</td>
<td>7,880</td>
</tr>
<tr>
<td>Max. speed/altitude</td>
<td>583/941</td>
<td>570/3,000</td>
</tr>
<tr>
<td>Rate of climb at S.L.</td>
<td>5,400</td>
<td>4,090</td>
</tr>
<tr>
<td>Time: S.L. to 20,000 ft.</td>
<td>4.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Time: S.L. to 30,000 ft.</td>
<td>4.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Service ceiling (100 fps)</td>
<td>41,700</td>
<td>40,800</td>
</tr>
<tr>
<td>Combat range</td>
<td>1,295</td>
<td>1,192</td>
</tr>
<tr>
<td>Average cruising speed</td>
<td>495</td>
<td>495</td>
</tr>
<tr>
<td>Cruising altitude</td>
<td>61,600</td>
<td>61,800</td>
</tr>
<tr>
<td>Combat radius/MISSION TIME</td>
<td>590/5,560</td>
<td>590/5,560</td>
</tr>
<tr>
<td>Average cruising speed</td>
<td>495</td>
<td>495</td>
</tr>
<tr>
<td>CAP Rate/MISSION TIME</td>
<td>730/3,36</td>
<td>730/3,36</td>
</tr>
</tbody>
</table>

## COMBAT LOADING CONDITION

<table>
<thead>
<tr>
<th>(2) ROCKETS RETAINED</th>
<th>(3) ROCKETS RETAINED</th>
<th>(5) SIDEBINDERS RETAINED</th>
<th>(6) SIDEBINDERS RETAINED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

## NOTES

- **(A) Military Power**
- **(B) Combat Air Patrol - 150 n.m. Radius**
- **(C) IFR FLIGHT SPEEDING: Outbound only. Transfer 4400 lbs at 520 n.m. out. Radius is reduced 15 n.m. and fuel allowance is increased 5 minutes for each additional aircraft up to a total of 4 aircraft.**
- **PERFORMANCE BASIS:** Flight test of the FBU-1 plus wind tunnel drag for the sidewinders and calculations.
- **RANGE and RADIUS:** Range and radius are based on engine specification fuel consumption increased 5%.
- **SPOUTING:** A total of 61 aircraft can be accommodated on the flight and hangar decks of a QVA-19 class angled deck carrier (Flight 43; hangar 38 airplanes)

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**FBU-2 CONFIDENTIAL**

**30 JANUARY 1959**
**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.

**RESERVE:** 20 minutes at speed for maximum endurance at sea level plus 5 per cent of initial fuel load.

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**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-OUT:** At point 100 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.

**COMPAT 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.

**RESERVE:** 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.

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**GENERAL PURPOSE FIGHTER WITH IN-FLIGHT REFUELING**

**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.

**DESENSITIZED TO 35,000 FT., REFUELING ALTITUDE:** No fuel used, no distance gained.

**ALLOWANCE FOR RESENSITIVITY, HOOD-UP, AND FLIGHT CONTINUANCY:** 10 minutes at maximum endurance airspeeds. (Assume no fuel used, no distance gained during transfer of fuel.)

**SERVICE 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, except for the loading condition column number (1).

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**If JP-4 fuel is used, these decrements in performance are applicable:**

1. General Purpose Fighter; guns and rockets
   
   **△ WEIGHT:** -382 lbs.
   
   **△ RANGE:** -82 n. mi.
   
   **△ MISSION TIME:** -17 hrs.

2. In-flight Refueling; guns and rockets
   
   **△ WEIGHT:** -582 lbs.
   
   **△ RANGE:** -128 n. mi.
   
   **△ MISSION TIME:** -26 hrs.

3. General Purpose Fighter; guns and 2 external sidewinders
   
   **△ WEIGHT:** -382 lbs.
   
   **△ RANGE:** -79 n. mi.
   
   **△ MISSION TIME:** -16 hrs.

4. In-flight Refueling; guns and 2 external sidewinders
   
   **△ WEIGHT:** -582 lbs.
   
   **△ RANGE:** -120 n. mi.
   
   **△ MISSION TIME:** -24 hrs.