Standard Aircraft Characteristics

F-101C
VOODOO
McDonnell

TWO J57-P-13
PRATT & WHITNEY
SEP 1 5 1958

CONFIDENTIAL

GREEN BOOK

5th Ed Addendum Nr 8
**POWER PLANT**

- Nr & Model: (2) J57-P-13
- Mfr: Pratt & Whitney
- Engine Spec. Nr: A-1888D
- Type: Axial
- Length: 211.0"
- Diameter: 40.3"
- Weight (Dry): 5025 lb
- Tail Pipe: Two-Position
- Augmentation: Afterburning

**ENGINE RATINGS**

- S. L. Static LB+ RPM - MIN
- Max: 15,000 - 6150/9900 - 5
- Mil: 10,200 - 6150/9900 - 30
- Nor: 8700 - 9900/9900 - Cont

a) With afterburner operating

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

**DIMENSIONS**

- Wing Span: 39.7"
- Incidence (root): 1°
- Incidence (tip): 1°
- Dihedral: 0°
- Sweepback (25% chord): 36°56'
- Length: 67.4'
- Height: 18.0'
- Tread: 19.9'

**MISSION AND DESCRIPTION**

- Navy Equivalent: None
- Mfr's Model: 36W

The principal mission of the F-101C is the delivery of special stores. Alternate missions include interceptor and bomber escort roles.

Special features of this airplane include swept-back wing and tail, hydralic power-operated irreversible flight controls, all movable stabilizer, anti-fatigue autopilot (MB-1) and in-flight refueling provisions (both the Probe-Drogue and Flying Boom method). Speed brakes are provided for rapid deceleration and a drag chute for assistance in stopping after landing.

The cockpit is provided with ejection seat, 5.0 PSI differential pressurization, pressur suit provisions and a jettisonable canopy.

The MA-7 Fire Control System includes the K-19 Sight System in conjunction with the AN/APG-37 Radar Ranging System and a radar drift computer. The bomb control system consists of the MA-2 LABS Bombing System and M-1 Toss Bomb System.

**WEIGHTS**

- Loading Lb L. F.
- Empty: 26,277 (E)
- Basic: 27,138 (E)
- Design: 37,000 6.33
- Combat: 40,429
- Max. T.O.: 51,000
- Max. Land: 44,400

(8) Estimated

† For basic mission

† Limited by landing gear strength

† Maximum design landing weight

**FUEL**

- Location Nr Tanks Gal
- Fuselage #: 5 2079
- Wing: 6 171
- Fus, ext, drop., 2 900
- Fus, aux: 1 322
- Total 3376

Grade: JP-4
Specification: MIL-F-5624A

**OIL**

- Eng, Integral: 2 (tot) 6.0
- Specification: MIL-L-7808

† Self-Sealing (430 gal sump tank only)

See fuel loading page 6

**ELECTRONICS**

- UHF Command: AN/ARC-34
- Omni-Directional: AN/ARN-14D
- Receiver: AN/ARA-25
- Direction Finder: AN/APX-6A
- Ground Position Indicator: AN/ASN-6
- Radar Warning: AN/APS-54
- Intercommunication: AN/AIC-10

**GUNS**

- Nr Type Size Rds Location ea
- 4...M-39...20mm...
- 200... Fus

**ROCKETS**

- None
### Loading and Performance—Typical Mission

<table>
<thead>
<tr>
<th>CONDITIONS</th>
<th>BASIC MISSION</th>
<th>DESIGN MISSION</th>
<th>SPECIAL STORES</th>
<th>FERRY RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
</tr>
<tr>
<td>TAKE-OFF WEIGHT</td>
<td>(lb)</td>
<td>48,908</td>
<td>48,908</td>
<td>50,996</td>
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<tr>
<td>Fuel at 6.5 lb/gal (grade JP 4)</td>
<td>(lb)</td>
<td>20,475</td>
<td>20,475</td>
<td>21,710</td>
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<tr>
<td>Payload (Ammunition)</td>
<td>(lb)</td>
<td>560</td>
<td>560</td>
<td>None</td>
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<tr>
<td>Payload (Special Store)</td>
<td>(lb)</td>
<td>None</td>
<td>None</td>
<td>1620</td>
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<tr>
<td>Wing loading</td>
<td>(lb/sq ft)</td>
<td>132.9</td>
<td>132.9</td>
<td>138.6</td>
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<tr>
<td>Stall speed (power off)</td>
<td>(kn)</td>
<td>174</td>
<td>174</td>
<td>177</td>
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<tr>
<td>Take-off ground run at SL</td>
<td>(ft)</td>
<td>3500/5850</td>
<td>3500/5850</td>
<td>3840/6410</td>
</tr>
<tr>
<td>Take-off to clear 50 ft</td>
<td>(ft)</td>
<td>4800/10,250</td>
<td>4800/10,250</td>
<td>5290/11,870</td>
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<tr>
<td>Rate of climb at SL</td>
<td>(fpm)</td>
<td>8150</td>
<td>8150</td>
<td>7060</td>
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<tr>
<td>Time: SL to 20,000 ft</td>
<td>(min)</td>
<td>3.28</td>
<td>3.28</td>
<td>3.88</td>
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<tr>
<td>Time: SL to 30,000 ft</td>
<td>(min)</td>
<td>5.60</td>
<td>5.60</td>
<td>7.10</td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft)</td>
<td>38,600</td>
<td>38,600</td>
<td>36,700</td>
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<tr>
<td>COMBAT RANGE</td>
<td>(mi)</td>
<td>571</td>
<td>709</td>
<td>709</td>
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<tr>
<td>Average cruise speed</td>
<td>(kn)</td>
<td>479</td>
<td>479</td>
<td>477</td>
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<tr>
<td>Initial cruising altitude</td>
<td>(ft)</td>
<td>33,700</td>
<td>33,700</td>
<td>33,900</td>
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<tr>
<td>Final cruising altitude</td>
<td>(ft)</td>
<td>41,600</td>
<td>41,800</td>
<td>42,100</td>
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<tr>
<td>Total mission time</td>
<td>(hr)</td>
<td>2.72</td>
<td>3.29</td>
<td>3.45</td>
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<tr>
<td>Refueling altitude</td>
<td>(ft)</td>
<td>37,000/32,100</td>
<td>37,000/32,100</td>
<td>37,000/32,100</td>
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<tr>
<td>Refuel distance from target outbound</td>
<td>(mi)</td>
<td>560</td>
<td>560</td>
<td>560</td>
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<tr>
<td>Fuel added outbound</td>
<td>(lb)</td>
<td>11,783</td>
<td>11,783</td>
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<tr>
<td>COMBAT WEIGHT</td>
<td>(lb)</td>
<td>40,429</td>
<td>39,018</td>
<td>37,936</td>
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<tr>
<td>Combat altitude</td>
<td>(ft)</td>
<td>35,600</td>
<td>43,400</td>
<td>S.L.</td>
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<tr>
<td>Combat speed</td>
<td>(kn)</td>
<td>856</td>
<td>767</td>
<td>637</td>
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<tr>
<td>Combat ceiling (500 fpm)</td>
<td>(ft)</td>
<td>11,500</td>
<td>5550</td>
<td>35,200</td>
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<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft)</td>
<td>48,700</td>
<td>45,400</td>
<td>49,900</td>
</tr>
<tr>
<td>Max rate of climb at SL</td>
<td>(ft/min)</td>
<td>43,300</td>
<td>44,000</td>
<td>44,500</td>
</tr>
<tr>
<td>Max speed at 35,000 ft</td>
<td>(kn)</td>
<td>872</td>
<td>872</td>
<td>872</td>
</tr>
<tr>
<td>Basic speed at 35,000 ft</td>
<td>(kn/min)</td>
<td>872</td>
<td>872</td>
<td>872</td>
</tr>
<tr>
<td>LANDING WEIGHT</td>
<td>(lb)</td>
<td>30,387</td>
<td>30,075</td>
<td>29,629</td>
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<tr>
<td>Ground roll at SL</td>
<td>(ft)</td>
<td>4330</td>
<td>4310</td>
<td>4240</td>
</tr>
<tr>
<td>Ground roll (auxiliary brake)</td>
<td>(ft)</td>
<td>3030</td>
<td>3000</td>
<td>2960</td>
</tr>
<tr>
<td>Total from 50 ft</td>
<td>(ft)</td>
<td>5680</td>
<td>5620</td>
<td>5540</td>
</tr>
<tr>
<td>Total from 50 ft (auxiliary brake)</td>
<td>(ft)</td>
<td>4340</td>
<td>4300</td>
<td>4240</td>
</tr>
</tbody>
</table>

**SERVICES**

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**NOTES**

1. Max power
2. Military power
4. Speed brakes extended.
5. Using 15.6 ft drag chute
7. By using afterburner for take-off
8. Minimum recommended speed

**PERFORMANCE BASIS:**

(a) Data source: Based on Phase IV flight tests.
(b) Performance is based on powers shown on page 3.
NOTES

FORMULA: RADIUS MISSION I

Take-off with military power, climb on course with military power to initial cruise altitude, cruise at cruise altitude at maximum range speeds to target, combat 20 minutes, cruise back to base at cruise altitude at maximum range speeds. Range free allowances include 5 minutes at normal power at sea level for starting engines and take-off, combat 20 minutes (15 minutes military power and 5 minutes maximum power) based on fuel flow at 35,000 feet, and a reserve of 20 minutes loiter at sea level at speeds for maximum endurance (two engines) and 5% of initial fuel load.

FORMULA: RADIUS MISSION II

Take-off with military power, climb on course with military power to initial cruise altitude, cruise at cruise altitude at maximum range speeds to target, climb with military power to cruise ceiling, combat 20 minutes, cruise back to base at cruise altitude at maximum range speeds. Range free allowances include 5 minutes at normal power at sea level for starting engines and take-off, combat 20 minutes at cruise ceiling (15 minutes military power and 5 minutes maximum power) and a reserve of 10% of initial fuel load.

FORMULA: RADIUS MISSION III

Take-off with military power, climb on course with military power to initial cruise altitude, cruise at cruise altitude at maximum range speeds to target, descend to sea level, drop special store, and combat for 5 minutes at military power, climb on course with military power to cruise altitude, cruise back to base at maximum range speed. Range free allowances include 5 minutes at normal power at sea level for starting engines and take-off, 5 minutes combat at military power at sea level and a reserve of 20 minutes loiter at sea level at speeds for maximum endurance (two engines) and 5% of initial fuel load.

FORMULA: RADIUS MISSION IV & V

Take-off with military power, climb on course with military power to initial cruise altitude, cruise at cruise altitude at maximum range speeds, climb on course with military power to reach cruise ceiling 15 minutes before bomb drop, cruise level to target on a 15 minute bomb run with normal power, drop store, combat for 2 minutes with normal power and escape for 5 minutes with normal power, cruise back to base at maximum range speed. Range free allowances include 5 minutes at normal power at sea level for starting engines and take-off 2 minutes of combat at normal power at cruise ceiling and reserve of 20 minutes loiter at sea level at speeds for maximum endurance (two engines) and 5% of initial fuel load.

FORMULA: RADIUS MISSION VI

Same as Mission IV except refuel at outbound point of no return. Fuel and distance allowances were made for period of fuel transfer.

FORMULA: RANGE MISSION VII

Take-off with military power, climb on course with military power to initial cruise altitude, cruise at cruise altitude at maximum range speeds to remote base. Range free allowances include 5 minutes at normal power at sea level for starting engines and take-off, and a reserve of 20 minutes loiter at sea level at speeds for maximum endurance (two engines) and 5% of initial fuel load.

GENERAL NOTES:

(a) 2-450 gal tank configuration: tanks are dropped simultaneously when both are empty unless otherwise specified.

PERFORMANCE REFERENCE:


REVISION BASIS: To reflect Special Stores weights.

FUEL LOADINGS - MISSIONS I, II & VII
Fuel loading includes 900 gal of external fuel (2-450 gal tanks), Internal capacity is limited by in-flight refuel boom receptacle to 2250 gal and included 171 gal of integral wing fuel. Radius is reduced approximately 53 nautical miles if integral wing fuel is not carried.

FUEL LOADINGS - MISSIONS III & IV
Fuel load includes 900 gal of external fuel (2-450 gal tanks). Internal fuel load includes 171 gal of integral wing fuel and 190 gal of fuel carried in the armament bay in lieu of guns and ammo. Armament bay fuel limited by take-off weight limit of 51,000 lb.

FUEL LOAD - MISSION V
Fuel load includes 900 gal of external fuel (2-450 gal tanks). Internal fuel load includes 171 gal of integral wing fuel and 112 gal of fuel carried in the armament bay in lieu of guns and ammo. Armament bay fuel limited by take-off weight limit of 51,000 lb. After refuel, maximum capacity weight is 50,263 lb with 900 gal of external fuel and 2250 gal of internal fuel (includes 171 gal of integral wing fuel).

FUEL LOAD - MISSION VII
Fuel load includes 900 gal of external fuel (2-450 gal tanks). Internal fuel load includes 171 gal of integral wing fuel and 112 gal of fuel carried in the armament bay in lieu of guns and ammo. Armament bay fuel limited by take-off weight limit of 51,000 lb. After refuel, maximum capacity weight is 50,263 lb with 900 gal of external fuel and 2250 gal of internal fuel (includes 171 gal of integral wing fuel).

(AUG 57)