## Aircraft Engine Characteristics Summary

**Turbo-Prop**

### FEATURES

The YT-47-W-1 is a twin-spool turbo-prop engine incorporating an annular combustion chamber, fixed area jet nozzles and anti-icing provisions. Low strategic material content.

### AVAILABILITY

- Engine Mock-up Inspection: Jul 1954
- Experimental Engine: Dec 1954
- Mock-up for Airplane: Sep 1954
- Installation Engine: May 1955
- 50 Hr. Preliminary Rating Test: May 1955
- 150 Hr. Qualification Test: May 1956

### PROCUREMENT

NUMBER TO BE DELIVERED DURING FISCAL YEAR

### CONTRACTUAL

Letter Contract AF-18488 covers initial engineering and development of YT47-W-1 and YT49-W-1 engines with the ultimate aim a production version turbo-prop engine which incorporates the desirable features of the J65-W-1.

### STATUS

Experimental, design phase nearing completion.

### GENERAL

- Compressor: Axial, twin-spool, (One low pressure, 10-stage; one high pressure, 5-stage)
- Max Design Pressure Ratio/SLS: 12:1
- Combustion Chamber: Single annular with vaporizer burners
- Turbine: (2) Axial, one three-stage drives low pressure compressor; one single-stage drives high press. compressor
- Exhaust Nozzle: Fixed area
- T.O. Rated Power Turb. Inlet Temp: 650°F
- Fuel: JP-4
- Oil: Synthetic
- Ignition: Bendix-Scintilla igniter plugs
- Power Control: Hamilton Standard
- T.O. Rated Power Airflow: 120 lb/sec
- Red. Gear Ratio: 0.143
- Prop. Shaft Size: SAE-80 (CW rotation)

### SIZE & WEIGHT

- Length: 166.8 in.
- Diameter: 42.0 in.
- Weight (dry): 4859 lb

### UTILIZATION

Planned as possible installation in B-47 type aircraft.

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15 December 1952

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YT47-W-1

57 WC 4986
### Performance

**Guaranteed Ratings at Standard Sea Level Static Conditions**

<table>
<thead>
<tr>
<th>Rating</th>
<th>RPM</th>
<th>SHP</th>
<th>Jet Thrust (lb)</th>
<th>Fuel Cons. (lb/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take-off (5 min)</td>
<td>7700</td>
<td>11,400</td>
<td>3050</td>
<td>6350</td>
</tr>
<tr>
<td>Military (30 min)</td>
<td>7700</td>
<td>11,400</td>
<td>3050</td>
<td>6350</td>
</tr>
<tr>
<td>Normal (cont)</td>
<td>7500</td>
<td>10,000</td>
<td>2750</td>
<td>5750</td>
</tr>
<tr>
<td>Cruise (80% nor SHP)</td>
<td>7200</td>
<td>8000</td>
<td>2330</td>
<td>4900</td>
</tr>
<tr>
<td>Cruise (60% nor SHP)</td>
<td>6800</td>
<td>6000</td>
<td>1900</td>
<td>4010</td>
</tr>
</tbody>
</table>

**Guaranteed Operating Limits**

- Maximum Altitude: 55,000 ft
- Max Starting Altitude: 30,000 ft
- Military Ram Power Rating: 14,000 shp
- Normal Ram Power Rating: 13,636 shp

### Est. Performance at 35,000 ft 100% Ram Eff - 80% Prop Efficiency

<table>
<thead>
<tr>
<th>Rating</th>
<th>Airspeed 450 KN</th>
<th>Max Airspeed</th>
<th>SFC (lb/shp/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military (30 min)</td>
<td>7100</td>
<td>0.420</td>
<td>SFC (lb/shp/hr)</td>
</tr>
<tr>
<td>Normal (cont)</td>
<td>6560</td>
<td>0.405</td>
<td>SFC (lb/shp/hr)</td>
</tr>
</tbody>
</table>

**NACA Standard Temp. & Press. 100% Ram Eff - 80% Prop. Eff**

- **Static ESHP = SHP + Thrust / 2**
- **Flight ESHP = SHP + (173 x Net thrust at 450 kn)**

### Notes

YT 47-W-1

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