# Aircraft Engine Characteristics Summary

## Features

Supersonic fixed geometry Ram-jet with turbine-driven fuel pump, power controls, and ignition system located in the diffuser centerbody.

## Availability

<table>
<thead>
<tr>
<th>Engine Type</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Engine</td>
<td>Dec 1949</td>
</tr>
<tr>
<td>Installation Engine</td>
<td>Apr 1952</td>
</tr>
</tbody>
</table>

*Burner only

## Procurement

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Number to Be Delivered</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Contractual

<table>
<thead>
<tr>
<th>Contract</th>
<th>Funds</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC-20179</td>
<td>$800,000</td>
<td>1948</td>
</tr>
<tr>
<td>AC-20179</td>
<td>$2,256,398</td>
<td>1949</td>
</tr>
<tr>
<td>AF-9000</td>
<td>$3,349,143</td>
<td>1950</td>
</tr>
<tr>
<td>Supp. 1</td>
<td>$99,731</td>
<td></td>
</tr>
</tbody>
</table>

Prototype unit cost: Unknown

## Status

Engine under design. Components under development.

## General

- Diffuser Type: Centerbody type with single external oblique shock.
- Area Variable: No.
- Design Point Total Pressure Recovery: 62%.
- Combustion Chamber Type: Piloted swirl shroud.
- Inside Diameter at Combustion Chamber Entrance: 38 in.
- Ignition Limits: Unknown.
- Design Point Combustion Efficiency: Unknown.
- Exhaust Nozzle Type: Fixed, throat area 6.07 sq ft.
- Design Point Nozzle Efficiency: Unknown.
- Type Ignition: Electric spark.
- Type Fuel Injection: Variable area nozzles.
- Type Thrust Control: Variable F/A.
- Fuel Spec: MIL-F-5572 (Grade 100/130).

## Size & Weight

- Length (overall): 220.3 in.
- Diameter (outside): 45.0 in.
- Weight (with accessories): 1300 lb.

## Utilization

Two XRJ51-W-1 Ram-jets used to power the MX-770 missile.
Performance

ESTIMATED DESIGN POINT PERFORMANCE

Mach number ............................................ 2.85
Altitude .................................................... 72,000 ft.
Net internal thrust .................................. 4300 lb.
Specific fuel consumption ....................... 3.2 lb/lb/hr.

(SEE NOTES)

NACA STANDARD TEMPERATURE & PRESSURE
35,000 FEET ALTITUDE

NET INTERNAL THRUST — (lb)

PROBABLE LIMIT OF STABLE OPERATION

FLIGHT MACH NUMBER — Mₕ

NOTES

Performance data plotted for 83% combustion efficiency, based on temperature rise and supercritical diffuser operation. Critical diffuser operation shown by line marked "probable limit of stable operation".