

Table 22-4. Performance Parameters and Mechanical Characteristics, J-2 Engine

Item	Characteristic
Oxidizer	Liquid Oxygen
Fuel	Liquid Hydrogen
Thrust (Altitude)	200,000 pounds
Specific Impulse	426 seconds
Mixture Ratio O/F	5.00
Rated Duration	250 seconds
Oxidizer Flowrate	291.30 pounds per second
Fuel Flowrate	78.26 pounds per second
Chamber Pressure, psia	682.5
Expansion Ratio	27.5:1
Diameter	80 inches
Length	116 inches
Weight, Dry	3028 pounds
Weight, Wet	3188 pounds

turbine shaft turns the inducer, forcing LH_2 through a series of seven stages.

22-37. Oxidizer Turbopump. The oxidizer turbopump, Figure 22-13, is a single stage, centrifugal pump, self-lubricated and self-cooled with direct turbine drive. Exhaust gases from the fuel turbopump drive the turbine.

22-38. Gas Generator. A gas generator supplies the hot gases that drive the turbopump turbines. The gas generator consists of a combustor, an injector, oxidizer and fuel poppets, and two spark igniters. The gas generator supplies sufficient energy to operate the fuel and oxidizer turbopumps. (Together they require 8500 horsepower.)

22-39. Propellant Utilization Valve. An electrically operated, motor driven, propellant utilization valve provides for simultaneous depletion of the propellants. During engine operation, propellant level sensing devices in the propellant containers control the position of the valve. Oxidizer modulation is accomplished by bypassing LOX back into the pump inlet.