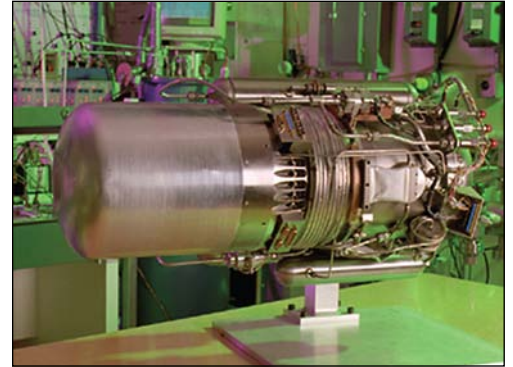


Cryogenic Compressor for Spacecraft Electronic Cooling

The space qualified cryogenic cooling system uses well proven technology to provide cold head temperatures at 65 and 120 deg Kelvin. The system features a specially designed gear pump developed by Cascon that provides bearing lubrication and pressure sealing for the compressor.

Pump Description:

The pump supplies oil to seal four pistons used in a multistage nitrogen compressor and lubrication for associated bearing surfaces. The pump contains two independent main circuits each containing an external spur gear-set, filter, and regulator valve. All housings, gearplates, and shafts are manufactured from hardened M4 tool steel. The design has eight inlet ports that draw from a zero-g fluid collection system. Three regulated output flows are provided by the pump: two high pressure ports provide flow up to 1000 psi, a medium pressure port provide flow up to 250 psi, and a low pressure port provides flow at 5 psi above ambient. Bypass flow exits through a check valve in the center of the pump shaft.



Selected Performance Data:

Fluid	PAO (mineral oil)
Operating Speed	200 rpm
Inlet Pressure	14 psia
Oil Temperature	0-200°F, 70 ± 5° nominal
HP Circuit Output	15 cc/min
HP Circuit Pressure	800 psig
LP Circuit Output	29 cc/min
LP Circuit Pressure	35 psig
Life and Duty Cycle	10 years cont., 500 start/stop cycles

