

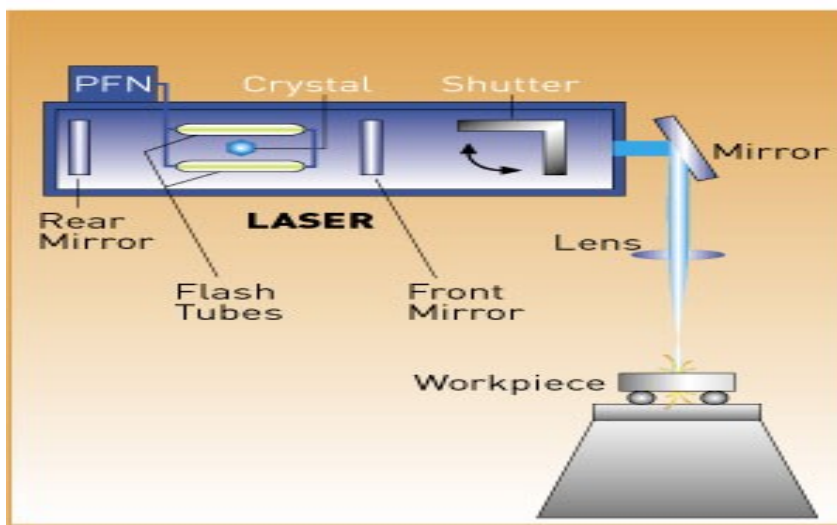
How a Laser Machine Works

The LASER, an acronym for "Light Amplification by Stimulated Emission of Radiation," is a device that produces a concentrated, coherent beam of light by stimulating molecular or electronic transitions to lower energy levels, causing the emission of photons.

The solid-state laser utilizes a single crystal rod with parallel, flat ends. Both ends have reflective surfaces. A high-intensity light source or flash tube surrounds the crystal. When power is supplied by the PFN (pulse-forming network), an intense pulse of light (photons) will be released through one end of the crystal rod. The light being released is of single wavelength, thus allowing for minimum divergence.

One hundred percent of the laser light will be reflected off the rear mirror and thirty to fifty percent will pass through the front mirror, continuing on through the shutter assembly to the angled mirror and down through the focusing lens to the work piece.

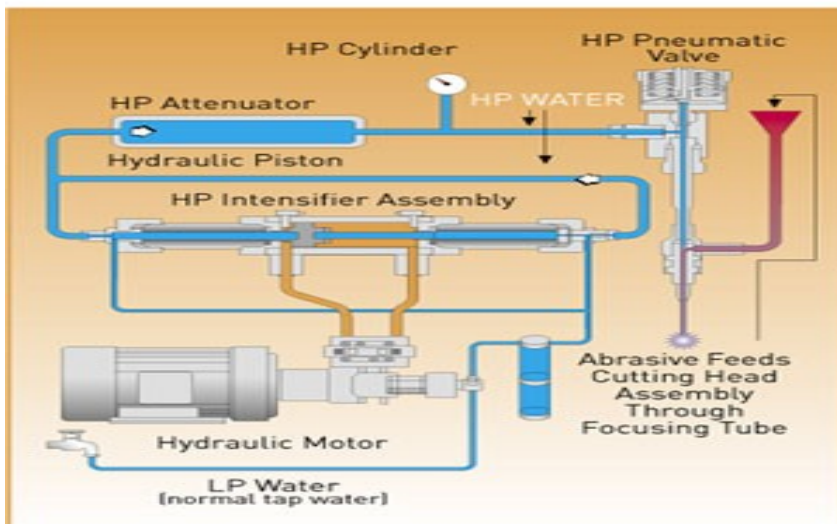
The laser light beam is coherent and has high energy content. When focused on a surface, laser light creates the heat used for cutting.



How an Abrasive Water Jet Works

The abrasive water jet operates at a maximum pressure of 60,000 psi flowing through a ceramic orifice and mixing tube. The pressures required to operate are generated through high pressure intensifiers (pumps), and high pressure attenuators (smoothing the peaks and valleys of the pumps).

The orifice finely focuses the water stream to a pin point, creating an intense water stream projection. The abrasive water jet's mixing tube facilitates the introduction of a cutting media; typically the abrasive material is garnet.



The combination of expulsion from the nozzle at speeds reaching 2.5 times the speed of sound, and the near homogenous mixture of abrasive and water creates an extremely powerful cutting device.

The abrasive water jet process is not a thermal process and therefore does not introduce recast, re-melt, or heat related distortion. This attribute creates a tremendous value for subsequent operations with little finishing needed.