WHAT IS LASER MARKING/ENGRAVING?

LASER is an acronym which stands for Light Amplification by Stimulated Emission of Radiation. The energy generated by the laser is in or near the optical portion of the electromagnetic spectrum. Energy is amplified to extremely intensity by an atomic process called stimulated emission. The term "radiation" is often misinterpreted because term is also used to describe radioactive materials or ionizing radiation. The use of the word in this context, however, refers to an energy transfer. Energy moves from one location to another by conduction, convection, and radiation. color of laser light is normally expressed in terms of the laser's wavelength. The most common unit used in expressing a laser's wavelength is a nanometer (nm). There are one billion nanometers in one meter.

How does it work?

A laser marking system creates marks on uncoated substances by removing material, or by producing a color change the material due to thermal effects, which will then contrast with the surrounding material. The mark is produced the rapid increase of temperature on the surface of the material. This is a combination of the transformation energy into heat energy when the work piece absorbs incident laser light, and the short laser pulses (less millionth of a second) which cause material removal or for the discoloration. Because this process happens the heat does not spread to the surrounding material.

What can be marked?

Any flat surface or moderately curved surface can be laser marked. Cylindrical surfaces can also be marked but clamping or rotational jigs are necessary.
Materials that can be marked include:

METALS: Aluminum, Tantalum, Titanium, Ferrous Metals, Silver and Bronze
PLASTICS: ABS, Mylar, Polycarbonate, Polyethylene, Polypropylene, Polystyrene, PVC
OTHER: Glass, Wood, Leather

What are the advantages of laser marking?

- It is a non-contact process - there is no tool wear
- Marks are permanent
- The process is free of contamination (Unlike ink or dye printing, or chemical etching)
- Inaccessible places can be reached
- It is usually faster than competing processes
- The process can easily be automated
- It is extremely flexible because the system is computer controlled - modifications can be achieved by clicks of a mouse button
- Excellent legibility and resolution - line thickness of 100 microns can be achieved
- Cost effective - no retooling requirements, low maintenance, low operational costs
- Easy to integrate into production systems.