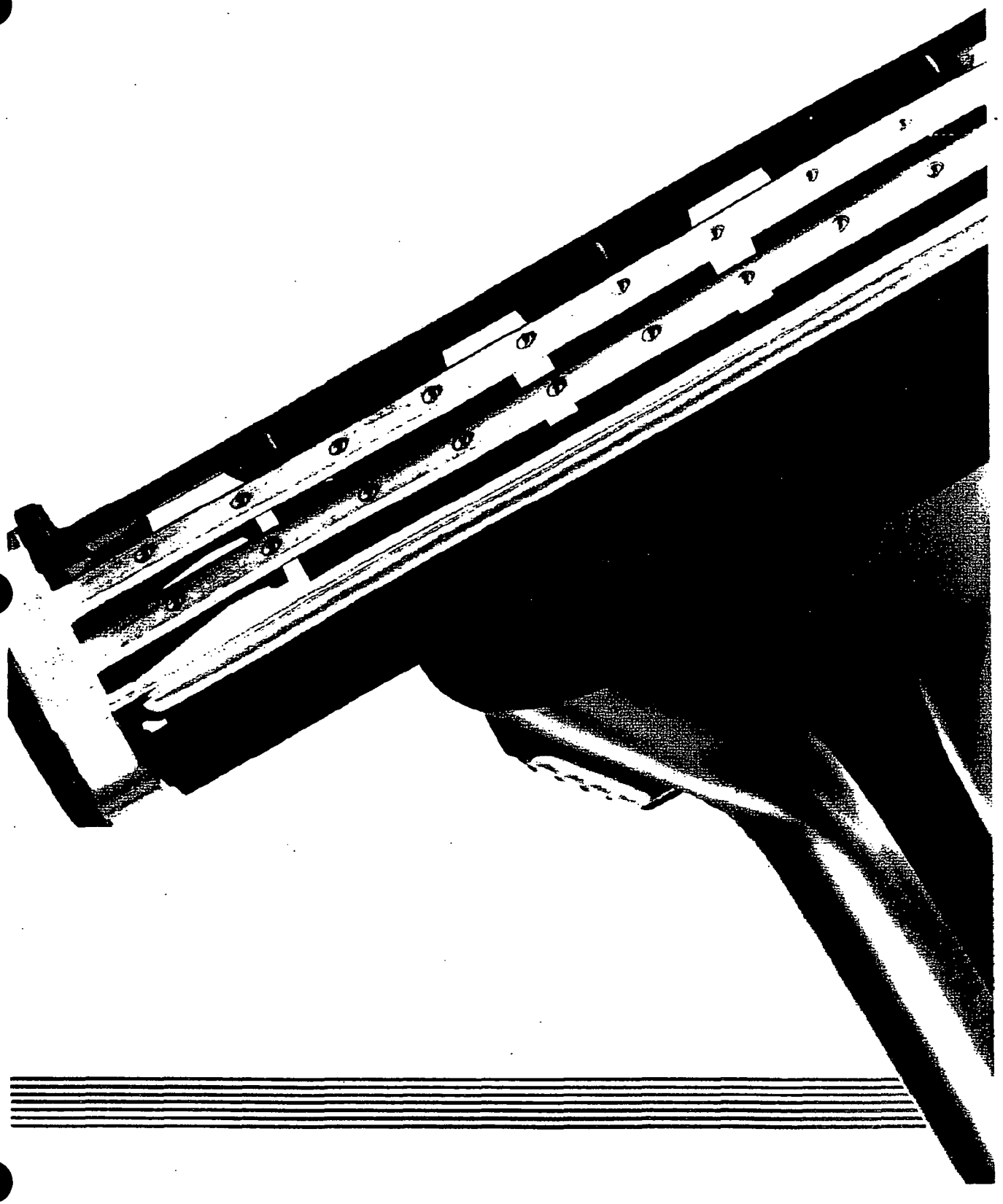
We'll Weld 75 Razor Blades Faster Than You Can Turn This Page.



Gillette had an idea. Our lasers helped make it work.

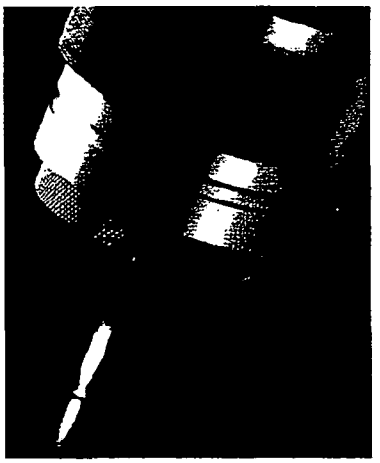
Two years ago Gillette came to Lumonics with a problem: how could they weld narrow, high strength, state-of-the-art razor blades fast, for a marketable price. The solution not only resulted in the creation of the new Gillette Sensor® cartridge. It resulted in the largest single purchase of industrial lasers ever. Thirty Lumonics Nd:YAG lasers with fiber-optic beam delivery.

Making 13 pinpoint welds on every blade. At a rate of 3,000,000 welds per hour. Delivered by a pulse of energy so consistent, every weld is dependably accurate. Laser processing that simultaneously monitors itself for quality control.

Extraordinary?

Not at Lumonics. We're developing new applications for lasers every day. Call us at 1-800-423-1542 with your next bold idea. And, don't be surprised when we make it work for you.

Lumonics Laser Systems Group
12163 Globe Road
Livonia, Michigan 48150
Phone: 313-591-0101 Fax: 313-591-0045



LUMONICS

Laser tools that work for you

Lumonics' JK702 Pulsed Nd:YAG Laser ... the ultimate solution for Gillette, can be a versatile cutting, drilling, and welding tool for you.

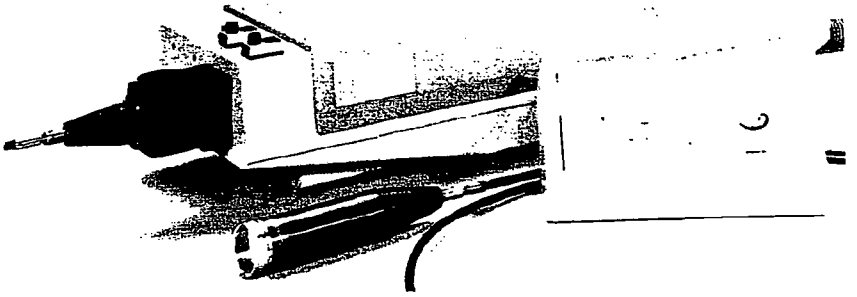
The revolutionary new Sensor® shaving system from Gillette represents a major triumph by their product-development engineers. The Sensor design not only had to glide through tough beards like no razor ever did before, but it had to get over some very tough manufacturing hurdles, as well.

The new pivoting, twin-blade Sensor cartridge would feature shaving edges that "floated" on spring mounts, continuously adjusting to the user's facial contours. Such a responsive blade had to be extremely lightweight and thin—about as thin as a piece of paper! Yet, it had to remain rigid while supported only by the springs at each end.

Gillette engineers solved the problem by putting the sharp edge on a tiny strip of expensive, platinum-hardened, stainless steel, which would be joined to a less-costly, formed-steel, support bar. But, how to manufacture such a device at an acceptable level of cost, at high speeds required, and with the unfailing repeatability and quality control required for a shaving product?

They examined the merits of every kind of joining technology, adhesives, lasers, and traditional welding methods among them. They all posed difficult problems of unacceptably slow process speeds and questionable reliability—except for laser welding. But, could lasers be cost-effective?

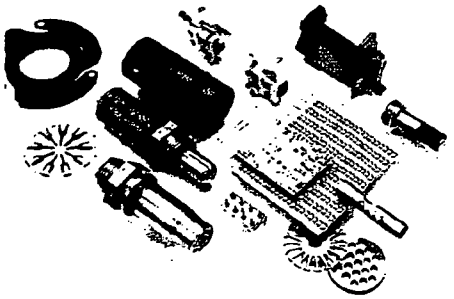
Lumonics delivered a standard, 400-watt, JK701 pulsed Nd:YAG laser in mid-1987, which Gillette had ordered to be evaluated in a prototype production line. When Gillette called in Lumonics engineers to help later in 1987, revealing additional details of the application and welding specification, they immediately suggested that the laser best suited to the task was a Model JK702—a 250-watt unit, especially engineered for microwelding, and capable of producing the higher brightness beam needed to meet the Gillette specification for small spot diameter.



In early 1988, Lumonics also suggested laser-beam delivery through a fiber optic, instead of directly via orthogonal bending mirrors. Besides offering greater convenience and flexibility in production-machine design, fiber-optic transmission tends to "homogenize" many of the start-up changes in energy distribution characteristic of a pulsing, solid-state laser. The addition of fibers, along with changes in machine design and software, resulted in *total* pulse-to-pulse, process repeatability—key to the integrity essential in such a product.

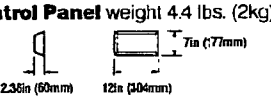
While the JK702 laser is ideal for a wide range of applications, it is particularly suited to microwelding, fine cutting and drilling, and to high-speed precision spot-welding solutions like Gillette's.

The JK702 is one in a series of Lumonics pulsed Nd:YAG lasers that are setting higher standards for precision, speed, and reliability in laser processing. They can provide manufacturing solutions for you, too. Let us show you how.

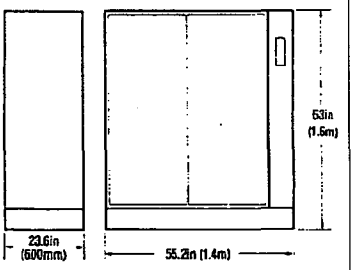


Laser weight 88 lbs. (40kg)

Control Panel weight 4.4 lbs. (2kg)



Power Supply weight 1,320 lbs. (600kg)



Maximum mean power: 250W.
Maximum pulse energy: 35j.
Maximum peak power: 3.5kW.
Pulse width range: 0.5 msec to cw.
Repetition rate: 0.2 to 500 Hz.
Three-phase, three-wire power supply required with ±6% voltage tolerance. A range of voltages available.
Supply rating: 18kVA.
Maximum power consumption: 14kW.
Water required: 5.3 gals. (20 liters)/min. at 68°F (20°C), 2 bar min. differential pressure. Six bar max. inlet pressure.
Ambient oper. temp.: 40-95°F (5-35°C)
Humidity: 95% at 60°F (15°C) derated to 32% at 95°F (35°C).

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