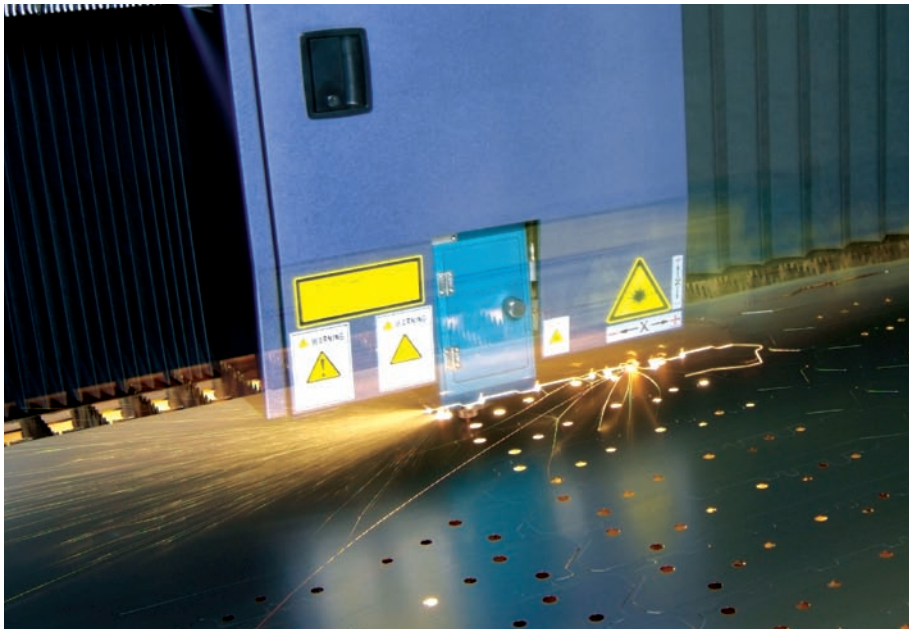
THREE STEPS TO BETTER LASER MAINTENANCE



Mitsubishi experts can help customers establish their own internal maintenance programs and provide on-site training.

PAY ATTENTION TO THE ENVIRONMENT, THE EQUIPMENT, AND THE EVER-NECESSARY CONSUMABLES

Laser machine users know it, but often ignore it. Laser manufacturers swear by it, but often don't push it. It's maintenance, and it should be the watchword of anyone who owns and operates a laser. With lead-times decreasing, margins thinning, and raw material prices always proving to be unpredictable, proper machine maintenance can save a shop plenty of headaches at crunch time.

Instead of aspirin, these three tips can help laser operators avoid pounding headaches and keep their equipment operating at top performance.

STEP 1: KNOW THE ENVIRONMENT

All Mitsubishi Laser machines are manufactured identically, with the superior level of precision and accuracy Mitsubishi is known for. But once a machine is purchased and leaves the controlled manufacturing facility, the shop environment it enters influences the laser cutting device in completely different ways. Many factors, such as ambient temperature, the type of material being cut, operator knowledge, shop cleanness, and air quality make each setting unique.

For instance, one shop's air source—perhaps a defective air dryer or an old compressor—might contaminate focal lenses faster than in the shop next door. In another example, the type of cutting, such as nitrogen-assisted cutting of aluminum or stainless steel, might require more frequent equipment maintenance checks.

Once a laser operator has studied these factors, Mitsubishi experts can help them establish their own internal maintenance programs and provide on-site training. For fabricating shops that prefer to outsource maintenance, Mitsubishi's service department can tailor a Preventative Maintenance Program specifically for your shop's specific needs. The Preventative Maintenance Program is designed to maximize machine performance and productivity with reoccurring, scheduled maintenance checks by Mitsubishi experts. Scheduling these maintenance visits will minimize unexpected downtime and allow for smoother workflow planning.

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STEP 2: KEEP AN EYE ON THINGS

Checking the alignment of inner and outer nozzles in the shop is not that difficult, but it is very important. Operators simply can look at the nozzles to see whether or not they are centered. Two nozzles that look aligned usually are. No formal measurement is needed.

If an operator chooses not to check the nozzles and runs the equipment with them misaligned, a poor-quality cut is almost guaranteed, and nozzle damage is a possibility.

Laser operators can rely on their eyes for another routine check. To check the focal lenses for cleanness, an operator only has to pull the cartridge out and hold it up to the light. A breath test can help make this judgment. By breathing on the lens, the laser operator can tell if it is clean (a frosty look) or it is dirty (a glazed or spotty look).

The type of material being cut represents just one factor that goes into planning an appropriate laser machine maintenance program.

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Checking basic laser components, such as nozzles, focus lenses, and assist gases should be as much of an operator's routine as punching in. Good communication among workers leaving from a shift and others arriving for a shift is an ideal way to keep track of regular maintenance updates throughout the day, week, or month.

Of course, there's more to a laser than the cutting torch. Other components of the laser equipment require proper attention too.

For instance, if a laser cutting machine is idle for a long weekend, the water in the chiller unit tends to build up conductivity—or, more simply stated, its ability to conduct an electrical current. This occurs because water is naturally conductive. When conductivity in the chiller is high, the machine's self-diagnostic features will prevent the resonator from starting until the level is more suitable for efficient operation. To lower the chiller's conductivity level, the operator should run the chiller unit for a few minutes before laser cutting.

New control technology in laser cutting equipment has eliminated the need for a laser operator to be cognizant of ambient temperature and its effect on the chiller. In the past, variations in operating temperatures could affect a machine's performance, such as causing optics to sweat, and lead to unscheduled downtime. Today, chiller units can be set to hold a constant temperature in any climate or region, with the laser circuit at an ambient 50 degrees F and the optics circuit at a constant 86 degrees F.

STEP 3: TAKE A LOOK AT CONSUMABLES

If consumables are even slightly out of spec according to the manufacturer's specifications, a company could be sacrificing performance. The Consumable Products Group (CPG) provides OEM performance and competitive pricing on consumables for Mitsubishi Laser equipment.

Aftermarket suppliers sometimes reverse-engineer an OEM component, which may result in a replacement part that doesn't meet factory specifications. For the two-piece torch nozzle configuration commonly used now, aftermarket nozzles sometimes have fit, beam centering, and assist gas flow problems, which can decrease accuracy and production uptime. If the outer nozzle isn't made according to the specifications, an alignment problem most likely will occur between the two nozzles.

That's why a regular maintenance program always should include a critical look at the consumables to see if they are affecting machine performance. To increase machine life and boost productivity with consumables straight from the manufacturer, choose CPG.

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The bottom line is that preventative maintenance programs lead to extended machine life, higher resale value, top productivity, and greater machine accuracies.

So now you know it, don't ignore it; and you'll learn to swear by it. Proper preventative maintenance will push your laser cutting operation to the next level.

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KEEP UP TO SPEED

Cut corners on maintenance, and you ultimately may be slowing a laser's cutting speed.

For instance, a clean machine that runs at 100 inches per minute through carbon steel may run at only 80 or 90 IPM when dirty, simply because a dusty optic or nonconcentric orifice conducts a less-than-optimal cut. Multiply that lost time by a thousand parts, and pretty soon total production time suffers.

In some cases, when the machine needs maintenance but it is neglected, a fabricating shop starts sacrificing feed rate. Before you know it, jobs are quoted at one speed, but because maintenance has been delayed, the laser cutting equipment may be cutting slower than the quoted speed.

Another way to keep up to speed is to keep replacement consumables, such as breakaway bolts on the cutting head, in stock and ready to install, minimizing downtime.

Minimum stock levels should be established. When inventory falls below that number, the part can be reordered automatically to avoid having to wait for parts from the vendor.