

Hydraulic Clamp Force Gauge Fixture

"Keeping heavy investment machines running while increasing tool life to optimize production rates is the ultimate goal of today's CNC machining center operations," said a JM Performance Products, Inc. (JMPP) spokesperson. "Just because a CNC machine is clamping does not mean it is functioning properly. Often, operators will realize that they cannot run the same job on different machines, or that tool life is better on one machine than another. Whether it is a new or old machine, the answer can often be found in the diminished clamping force of the drawbar."

Drawbar force is the measure of force being applied to a toolholder to keep it in full contact with the spindle. If the clamping force is diminished, it can cause serious issues such as decreased tool life, chatter, vibration and poor finishes. In extreme cases, the tool can pull out of the spindle during the cut, causing damage to the workpiece, tools and spindle.

Ultimately, fixing the spindle can result in costly downtime ranging anywhere from two to three days or two to four weeks.

Clamp Force Gage Solution

JMPP engineered its patented hydraulic Clamp Force Gage to provide a quick and inexpensive method to regularly check and measure the clamping/pulling force of the spindle drawbar. The hydraulic gage instantly reads in ft/lbs the amount of pull force being applied to the toolholder. Once drawbar force drops below 80% of the original manufacturer's setting, it is time to schedule maintenance.

"The innovative engineering design of two main parts makes it the first universal gauge on the market, allow-

ing it to be used anywhere in the shop to check all types of V-flange spindles," said the spokesperson.

Clamp Force Gage hydraulic heads are available in 3,000, 5,000, 10,000 and 15,000 lb. configurations. It is a suitable solution for the smaller shop that is looking for a quick and inexpensive method to check drawbar force.

The hydraulic gauge head comes with a toolbox and protective packaging for easy storage. One gauge head will work in multiple size spindles with easy-change taper adapters available.

The drawbar works by using Belleville washer stacks or gas systems to generate the drawbar force. As the Belleville washers begin to collapse and gas systems begin to leak, the drawbar loses force. Because the drawbar is located out of sight and not easily accessed, it is often left unmonitored. If the Belleville washer stack is not rebuilt or the gas system recharged, the toolholder will fall out during cutting, potentially causing catastrophic damage. "Typically, operators can only tell when fatigue starts to set in, making the JMPP's Clamp Force Gage an optimal solution for frequent monitoring which is key for preventative maintenance, said the spokesperson."

According to JMPP President, John Stoneback, "If left alone, this out-of-sight/out-of-mind philosophy may result in the machine reaching zero draw force and you can lose the toolholder, workpiece and potentially damage the machine. Therefore, it is essential to implement a frequent monitoring system that operators should conduct at least once per week."

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Inverted Metallurgical Microscope

Designed for the observation and inspection of metal components, the new Olympus GX53 inverted metallurgical microscope features an LED light source for long life and low power consumption. The GX53 microscope also incorporates the latest version of OLYMPUS Stream image analysis software (v. 2.3) for improved observation and reporting capabilities.

Inverted metallurgical microscopes observe samples from underneath, enabling the user to inspect thick or heavy samples without adjusting the orientation of the sample surface. This ability makes the GX53 microscope a practical tool for viewing the microstructure of metals used in automotive and other manufactured metal components.

GX53's advanced functions:

- See fine details: MIX observation contributes to clear imaging of microstructures and other surface features
- Coded hardware: save observation settings for faster inspections and improved productivity
- True-to-life images: LED illumination with a consistent color temperature.

Observation Technology

With the incorporation of MIX observation technology—a first for the GX series—the GX53 microscope can obtain surface structure images with exceptional clarity. MIX technology produces observation images by combining darkfield with another observation method, such as brightfield, fluorescence or polarization. MIX observation enables users to view samples that are difficult to see with conventional microscopes. The circular LED illuminator used for darkfield observation has a directional function



where one or more quadrants are illuminated at a given time. This reduces a sample's halation and is useful for visualizing its surface texture.

The upgraded version of OLYMPUS Stream image analysis software uses image synthesis to provide clear images with minimal halation, even when viewing highly reflective samples.

Coded Hardware

When used with OLYMPUS Stream software, the GX53 inverted metallurgical microscope can save observation settings for easy recall. This improves user productivity and facilitates inspections by making it easy to replicate frequently used observation settings or the settings of other users.

Image Analysis Software

OLYMPUS Stream image analysis software v. 2.3 supports every step of the inspection process, from preparing the microscope to observation, analysis and reporting. The latest version includes an instant extended focal image (EFI) function to bring the entire view field into focus. The software also incorporates improvements to the system's spreadsheet-based reporting functions.

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