Bluechip Tooling Ltd 203 Torrington Avenue Coventry CV4 9UT Tel. 024 7647 4819 Fax. 024 7647 4820 info@bluechiptooling.co.uk

The Clamprite Gauge

The best, most economical tool for spindle drawbar force testing!

CNC Machines using pull-studs for tool retention experience a slow but progressive loss of tool holding pressure from the time the machine is new. This little known fact has a major impact on surface finishes, cutting tool life, and eventually on your productivity.

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Testing a drawbar requires a force gauge, which simulates a tool being held in the spindle. Until recently, those spindle force gauges were extremely accurate and very expensive electronic gauges. But now, the Clamprite Gauge performs this function at a much lower price. Also, the Clamprite Gauge uses a common tool holder as the interface between the gauge and machine spindle, eliminating the need for a high-priced precision adaptor for each different spindle size. Only HSK-type spindles require an adaptor.

The Clamprite Gauge was designed for accurate spindle tension testing on the machine. The actual pressure exerted by the spindle drawbar mechanism is read directly on the dial, so there is never a need for any calculations or conversions. Drawbar force checking is made easy using the Clamprite drawbar force gauge.

Drawbar testing takes less than one minute, so production time is barely effected. The simple and rugged design requires no batteries, electrical cords, or delicate electronic components to pre-set, calibrate, or burn out.

The Clamprite Gauge works on any machine using the pull-stud method of tool retention. And with the Clamprite HSK Spindle Adaptor, you can now test HSK spindle drawbar force for a fraction of the cost of other methods. ***HSK type spindles must be tested often.*** HSK drawbars have considerably higher drawbar force than other taper types of similar size, and must retain at least 75% of new spec. pressure in order to seat the arbor properly.

Finding just one drawbar problem before major damage occurs or before productivity is effected will repay the price of this tool many times. The Clamprite Gauge costs about what you would pay for just a few cutting tools. Begin testing your machine drawbars on a regularly scheduled basis. Let the Clamprite Gauge work for you.

KITS

Reference	Taper	Force lbs/Kg
CG3K30B	BT30	3000/1360
CG3K40B	BT40	3000/1360
CG5K40B	BT50	5000/2268
CG5K50B	BT50	5000/2268
CG10K50B	BT50	10000/4536
CG3K40C	CAT40	3000/1360
CG5K40C	CAT40	5000/2268
CG5K50C	CAT50	5000/2268
CG10K50C	CAT50	10000/4536

Reference	Taper	Force lbs/Kg
CG5KCHSKE25	HSK25E	5000/2268
CG5KCHSKE32	HSK32E	5000/2268
CG5KCHSKA40	HSK40A	5000/2268
CG5KCHSKA50	HSK50A	5000/2268
CG5KCHSKA63	HSK63A	5000/2268
CG10KCHSKA80	HSK80A	10000/4536
CG10KCHSKA100	HSK100A	10000/4536
CG15KCHSKA125	HSK125A	15000/6804

OPTIONAL TAPERS

Reference	Taper
CA30B	BT30
CA40B	BT40
CA50B	BT50
CA40C	CAT40
CA50C	CAT50

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Have you ever wondered what holds the tools in the spindle while machining?

Machining with low drawbar force is like machining with a loose cutter!

Drawbar mechanisms are located inside the machines spindle. Since these mechanisms are hidden from view, very few people have ever seen one. So when chatter, poor surface finishes, low cutter life, tool holder corrosion and fretting, and sporadic problems begin effecting cycle times; the programs, tools and fixtures, feeds and speeds and cutters are frequently examined. Although the drawbar may be the problem, it is seldom suspected until after much time has been spent exploring more conventional solutions.

Testing a machine drawbar requires a special instrument. So even if a drawbar is suspected as the problem, very few shops have a way to determine a drawbar's condition.

Low drawbar pressure will create some very elusive and challenging machining problems. Avoid these problems by using the Clamprite Gauge.

Shown below is a typical drawbar assembly. Most drawbars are constructed similarly, with some machines having over 140 Belleville springs.

Typical Drawbar Assembly
(located inside the spindle)
Only disc springs hold the arbors in while machining.

Drawbar tension is commonly 1800-2500 lbs (816-1134 Kg) of Force for 40 taper spindles, 3800-4800 lbs (1723-2177 Kg) for most 50 taper spindles, and higher for heavy duty machines or larger spindle tapers. Drawbar force varies considerably from machine to machine. Check the owner's manual for your machine.

Drawbars operate under heat, humidity, tension, compression, and severe vibrations. It's not surprising they wear out faster than the rest of the machine. Actually, it is amazing that they last as long as they do under such harsh conditions!

Everyone has heard about a machine losing a spindle, but you seldom hear of a machine losing a drawbar. That is because when a weak drawbar "drops" a tool it is usually during a cut with an end mill or face mill. When that happens, you will likely lose the spindle, the cutter, the part and the fixture. Worn drawbars are the number one cause of spindle damage. The drawbar gets repaired along with the rest of the mess but seldom gets the blame it deserves.

A drawbar may inexpensive to repair, but **losing the spindle** may easily cost thousands of pounds – particularly when lost productivity is added to the bill. Avoid all the trouble. Test your machine's drawbar condition with the Clamprite Gauge!