

# TOOLS: THE MEASURE OF SUCCESS

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Man has turned to some form of tool for measurement for thousands of years. Early records show that man measured length by using such rudimentary tools as his forearm, hand or finger. And time was often measured by the sun or moon. To measure volume, gourds were filled with seeds and then counted and compared to another one.

The French created a measurement system in 1790 called the metric system. While the U.S. has never managed to switch over to it completely, as we were supposed to in the latter half of the 20th century, most automotive techs are familiar with it today because of the fasteners and components on late model vehicles.

Building engines requires the mastery of many measurement techniques. You must understand volume, length, time and more. One tooling supplier said that engine builders used to measure in thousandths, but today tolerances are such that in many cases that isn't good enough and you need to measure in the ten thousandths or more.

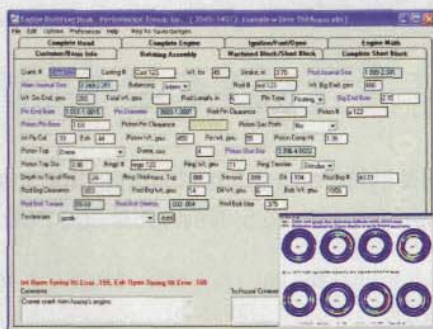
We talked to some tooling suppliers to see what the latest tools they had to offer engine builders to help them stay on top of the measurement game. The tools that are most needed today are really about measuring any and all components to ensure the integrity of the engines you're building. One tooling expert said that all engine builders need a quality set of micrometers, dial bore gauges, spring testers, surface roughness testers and vacuum testers as well. But that is just a start.

## Performance Trends

Running a successful machine shop today requires more than a good set of micrometers, you must also keep very accurate records of the engines you build. Kevin Gertgen of Performance Trends offers various software for engine builders including

the Engine Build Log Book. He says it is a "must have" for any professional engine building shop. Not only can you record all your engine information, you can have the program do calculations and checks, like estimating piston to valve clearance, valve spring bind clearance, cranking compression pressure and more.

Gertgen says you can supply your customers with professional, organized printouts, and even the actual data files which they can review and print with our free demo version. The program has 7 levels of an engine build you can choose from, from a simple Machined Short Block Only, to a



## Performance Trend's Engine Log Book

Complete Short Block or Complete Head, or all the way to a Complete Engine with Dyno Results.

You can customize the program to match how your shop does things. For example, you can tell the program your own preference for checks, like to flag out clearances that are higher or lower than your limits. You can also eliminate inputs you do not use. You can choose to enter multiple inputs for selected inputs, like cranking compression, leakdown, or just one nominal number.

Gertgen says that Performance Trends also offers an electronic measurement equipment such as its Valve Spring Tester that uses electronics to measure spring force and height to accurately measure spring

rate, spring force at seated and open heights, coil bind and more. You can test springs up to 4" tall and 2,500 lbs, or as low as 100 lbs. and less than 2" tall. The system is available in either a manual or automatic (pneumatic) package, or as an affordable retro-fit kit for other types of testers.

## Sunnen Products

Sunnen offers a few tools that engine builders would find hard to live without. They are the creators of the dial bore gauge for checking cylinders before and after honing, as well as rod dial bore indicators. These gauges have been a staple in shops for years, but now they offer a new twist on an old favorite: an electronic dial bore gauge.

Sunnen's Phil Hanna says that their dial bore gauges are now available with optional large LCD indicators. Simple design and quick setup make fast go/no go judgments a snap. The optional, large-readout electronic indicator is available on its entire range of dial bore gauges. Highly visible in the shop environment and a quick reference for multi-tasking operators, the new electronic gauges feature precision indicators with 6 digit LCD readouts, 11 mm character height and three large buttons for easy operation.

Capable of checking bore sizes from .054" (1.37 mm) to 12" (300 mm) and bore lengths up to 24" (600 mm), Sunnen's elec-



King Electronic's D16-T distributor machine.