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INSIDE

STREET COURSE EVENTS | GODZILLA ENGINE COMPONENTS | PISTONS & RINGS
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Even someone as self-described "old-school" as Verne Schumann of Schumann's Sales and Service in Blue Grass, Iowa, admitted (with tongue in cheek) that he "survived for 40 years in machining with my fingernail test for roughness, but that doesn't make it anymore. Now we use Mitutoyo RA technology to decipher what looks to be identical to the naked eye."

BUILD IT OURSELVES

Innovation has marked Verne Schumann's long career in performance lubrication systems, from his "paddle wheel" oil pumps and oil pressure warning lights to his latest new product, a 120% external bypass systems, for street, strip and race application, that re-engineers the factory cup valve in small block Chevrolet engines. Schumann has applied that same level of innovation to the machinery he uses in production and quality-checking his oil system products.

"The trouble with oil pump manufacturing is you can't just pick up the phone, order 10 machines, and be in business next week," he said. "All the equipment that we use in-house to check flow, pressure, volumetric, feet per second, we have to build ourselves."

Schumann contracts out what he called the "heavy manufacturing that we have done to our specification, such as foundry and three- and five-axis machining. When those parts come in to us, we do the final machining."

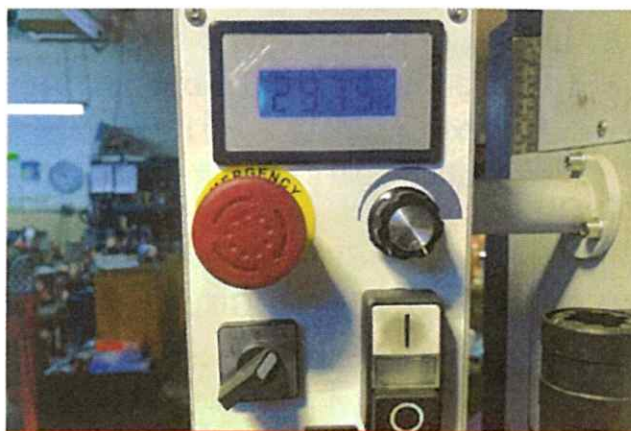
One of the newest additions to his shop is a milling machine "that we had built especially for our use," he said. "It took a year to get it the way I want it." The machine has electronic rpm control "because in some cases, when you're doing a precision bore, the same speed from top to bottom through the bore is not the answer. You want to vary it as you go deeper and increase the rpm to get the chips to come out. Once a chip doesn't come out, it grinds itself up and ruins the surface finish."

This machine also had an electronic readout that "shows the vertical feet of the milling," Schumann said. With most milling machines, "the depth of the plunge is controlled by go and no-go gauges or a mechanical micrometer you have to check and recheck. With this machine, I can see on a digital readout how much material we're removing in real time."

Schumann's inquisitive mind is open to the benefits of the latest technology unless that latest tech doesn't serve his purpose. His custom milling machine, along with a

Fowler TH550 electronic hardness tester, SP profilometer, and Mitutoyo surface roughness tester, share space with the diamond paper used to hand-lap valve or surface plates. "Hand lapping is still the most accurate way to get the proper surface finish on a flat part," he said, and his preferred procedure is accomplished by triangulation lapping. "You do three strokes, rotate the part a third, do three strokes, rotate the part a third, and so on. We have four different levels of lapping depending upon the racer's oil usage: aggressive lapping for 70 weight, very fine structured lapping for 0 weight, and points in between."

There are lapping machines, and he has owned them, but they lap in only one direction. "Then the oil follows the direction of the lapping grid and doesn't stay in place long enough to separate Parts." It is possible to rotate the part in a lapping machine, Schumann explained, but it is far more time consuming than in the hand-lapping process.



Verne Schumann spent a year working with a milling machine manufacturer to develop a one-of-a-kind mill with electronic rpm control (the display in this photo shows the spindle rpm) and a readout that indicates in real time the vertical feet of the milling.

"We try to go more and more to the newest technology if we can, but still, in some cases, the old stuff is still the only answer." **PRI**