

New Multi-Task High Volume Production Cell

Set-ups changed over on multiple spindle CNC production machine in less than one minute

The objective of this new machine (ref., photo) was to develop a flexible standard cell that applied the productivity of multiple spindle tapping to more than one style part and could also adapt to tap additional parts at a later date. The parts are steel, automotive stampings required in fluctuating, on-demand high volumes. Three completely different style stampings are tapped in the cell. Based on the demand for any particular part, the machine is changed over by exchanging work holding fixtures and cutting tools within the multiple spindle pattern. CNC rigid tap cycles are automatically set to tap the required thread pitch of a particular part thru a fixture identification system. Changeover time is one minute for re-setting the machine to process one of the 3 different parts. Please select the video link that follows to see the changeover demonstrated. http://www.zagar.com/news/multi_task/video.html

The multiple spindle tap head has a total of 14 spindles; each with quick-change tap holders. All taps are non-cutting, form tools. The multi-head is mounted to the feed unit with a quick-disconnect coupling for systematic exchange with additional multi-spindle tooling packages.

Fixtures & changeover:

A separate fixture is supplied for each of the three different stampings. Fixtures are exchanged using a ball-lock, mounting system. No wrenches are required. The photo at right shows the blank base, ball lock locators, and multi-pin connector for the fixture I.D. system and sensors.





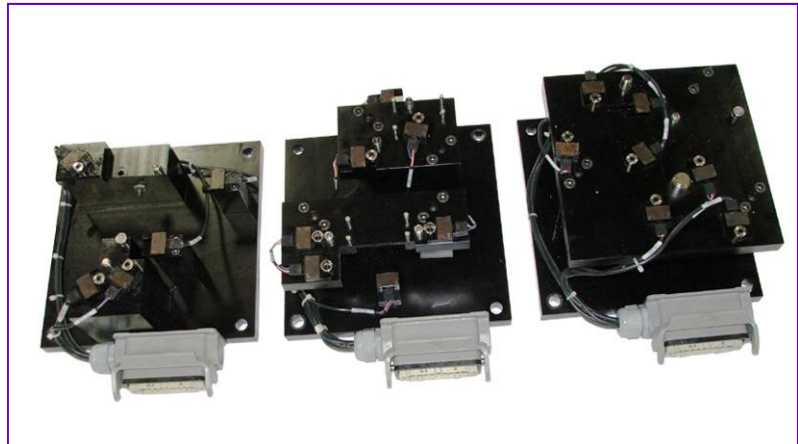
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Each of the three fixtures featured an I.D. system and tool sensors that detected the tap had passed thru each individual hole. In turn, sensors are also set to detect that the part is correctly loaded at each station. The multi-pin connection of the sensors also identified the fixture to the machine PLC which, in turn, sets the required tapping cycle automatically.

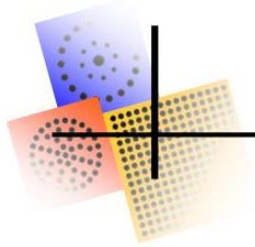


The adjacent photo shows the cell set for form tapping (6) M3 x .5 holes in a stamped base plate. No clamps are required since multiple tools are engaged in the part at the same time. A coolant disbursement system is applied that controls the amount of coolant sprayed on the tool and at what interval (every other part, etc.) Fixtures and taps are changed over and the machine set to tap one of the other style parts, in less than one minute. Tap cycle time is 7 seconds.



Two of the fixtures supplied for the set of three stampings, are multi-station. In turn, different sides of the stampings are oriented for tapping at each station. In one case, shown at right, two different size and pitch threads are tapped. The part is positioned at the left hand station for tapping (3) M6 x 1 holes and at the right hand station for (2) M3 x .5 holes. In turn, the two different tap cycles are sequential and a part is tapped at only the left or right hand station at any one time. The machine automatically changes from 1 to .5 metric pitch tapping in between the two cycles and detects which station has a part in it and that the correct handling sequence has been followed.





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The machine features a Zagar standard MQ150 ball screw unit which is shown in this photo. The feed axis AC servo motor is toward the right. The spindle axis servo is at the left. Baldor standard AC servos, amplifiers, and 2 axis, CNC motion controller are applied. The feed axis motor is 32 lb. in. cont. stall torque and the spindle motor, 126 lb. in with a max. 3:1 pulley ratio to the spindle. Zagar's larger MQ60-140 <http://www.zagar.com/products/feedunits/mq.html> ball screw units feature maximum 10HP spindle motors. The system drills, rigid taps, or drills & taps in a combined cycle (drapping) as a standard.



To contact us about guaranteed fast cycles for machining hole patterns, quick-change over, and multi-task capacity; please use our inquiry form @ <http://www.zagar.com/contact/quotes/quoterequest.html> e-mail us @ sales@zagarinc.com or call us at 216-731-0500, Mon—Fri 8AM-5PM EDST and ask to speak with the Sales Department.