

Newsletter

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Master Tool

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Cylinder boring on engine blocks is one of the most critical stations on a block transfer line.

Back in 1991, Master Tool was presented with a unique problem at Ford in Cleveland, Ohio. Ford was buying a transfer line to produce two (2) separate V-6 aluminum blocks (2.5 Liter & 3.0 Liter) on the same transfer line. Change over time from one block size to the other was critical to meet the projected production rates. Ford determined that a change over of one hour or less was needed

The one area that produced their biggest concern was the finish cylinder bore station. Traditional flange mounted cylinder bore tools would take four to six hours to change over to another size. Master Tool was named as their tooling partner and was asked to provide a solution.

This led to the development of Master Tool's unique cylinder boring system. The system provides for the traditional semi-finish on the in-stroke and finishing on the out-stroke by a draw bar pull, but with some unique differences.

Master Tool used their already proven helical spline feed-out mechanism in the flange mounted adapter to produce the movement required to position the finishing cartridge. The helical spline eliminates any possibility of backlash in the cut, producing excellent size control.

Master Tool also designed a connection system to permit the use of a quick change nose piece to provide off-line presetting of the tool and the ability to change heads for each block size without removing the flange mounted adapter.

Not only was Ford able to make block size change overs in less than one hour, they were also able to preset the heads off-line and get "First Part --- Good Part".

Because of the rigidity of the system and the no-backlash helical spline Ford has consistently produced over 2.5 CPK's and have averaged over 4000 hits on the CBN (Cubic Boron Nitride) tipped inserts.

Master Tool currently has over nine different cylinder boring installations using this tool design all successful with CPK's of well over 2.5.