

Evaluation of Three Piece Shear Steel Designs

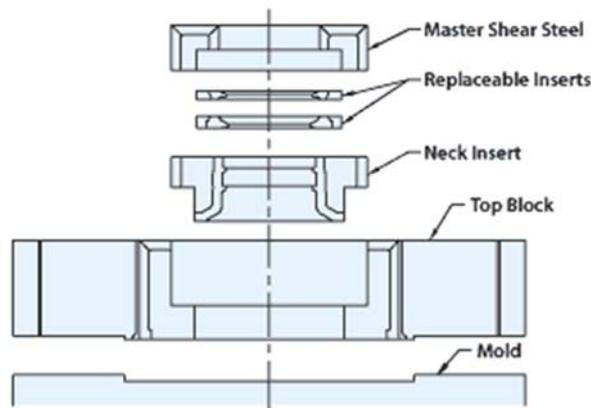
Our company has received a number of inquiries as to why we recommend and produce one and two piece shear steel designs and not three piece shear steel designs.

As a company policy Uniloy Milacron does not support any of the three piece shear steel designs currently available in the aftermarket parts market for use in Uniloy Reciprocating Screw machine lines with a pull-up style pre-finish.

In practice we find production blowmolding operations that use three piece shear steels tend to put multiple sizes of shims between the shear steel masters and the top block counterbores. This is necessary to achieve the appropriate gap between the shear steel insert and the blow pin head, required for a clean inside diameter trim on the bottle. The use of shims is an unacceptable practice for any new or refurbished Uniloy Milacron blow mold.



For the purposes of this discussion, the definition of three-piece shear steel will be a master shear steel piece with two replaceable inserts that fit inside of it. Our reasons for this position are as follows.



The commonly accepted industry standard for tolerances of inside to outside diameter fitments is 0.0005" (five/one hundred thousandths of an inch) per surface. This means that for every outside part diameter that needs to fit inside a part counterbore, there can be from 0.0000" to 0.0010" tolerance variance. When you add up the tolerances of the fit between the shear steel insert and the shear steel master, the shear steel master and the top block of the mold, and the top block pilot diameter and the pilot counterbore in the top of the mold, you can have a tolerance build up of 0.003" per set of molds.

Which means that the parting line pinch-offs on a three piece shear steel could be as much as 0.0015" below the parting surface of each half of the mold body and have as much as a 0.003" gap at

the parting line between the two halves of the shear steel. This condition would be considered out of tolerance and unacceptable for any new or refurbished Uniloy Milacron blow mold.

For the above stated reasons we believe that the one or two piece shear steel designs are the only acceptable options for replaceable type shear steels used in blow mold applications. Furthermore, we believe the two piece shear steel is the superior choice for both quality and value.

