

PURGING CONSIDERATIONS

By Randy Conner, President of Concor Tool & Machine

Some purging practices may be resulting in premature screw and barrel wear. These practices may be a result of material suppliers molding manuals that contain inaccurate or improper information.

In a proper processing environment, the material in process along the flighted length of the screw is responsible for centering the screw in the barrel. A general rule of thumb is that there should be about .0015" to .002" clearance per side – per inch of diameter – between the flight tops and the barrel inside diameter. In illustration, a one inch diameter will have around .004 of an inch overall clearance. That isn't very much clearance. In fact, it is about the diameter of one human hair! This illustrates what a fine line we are dealing with.

Knowing that the clearances are as such, it is easy to understand what may happen if the material along the flighted length of the screw is removed. This would cause the screw flight tops to come into direct contact with the barrel inside diameter. If this were to happen, the metal to metal contact, galling, could generate heat that could cause the flight tops to expand, thus, reducing the screw to barrel clearance and creating an extremely adverse situation. This would include barrel damage and screw flight top wear and roll over. Thus, it is easy to understand why it is not a good idea to rotate the screw in the barrel when there is an absence of material. Doing so is often times referred to as "purging dry".

When there is initial start up of a press, the barrel is void of material. At this point, the screw is in contact with the barrel and there

is nothing that can be done about it. Keep in mind that it takes many revolutions of the screw to convey the material down the flighted length of the screw so that the screw will be supported in the barrel. This is all a given. However, if this condition can be minimized to the least number of revolutions of the screw and for the shortest possible time, we can help prevent metal to metal contact. This will go a long way in the prevention of premature screw and barrel wear.

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