



# **Accu-Lube<sup>®</sup>**

**WITH MILLING  
AND  
SAWING**



The approach to cutting with Accu-Lube<sup>®</sup> is almost the opposite of coolants so we need to consider some factors in the operation with a different view. Mills and saws of all types have the cutting edge exposed somewhere in their rotation. This allows a constant re-coating of Accu-Lube<sup>®</sup> and, therefore, these are prime applications.

The first adjustment has to do with understanding the method and reason in the delivery of Accu-Lube<sup>®</sup>. As a lubricant it must be delivered to the exposed cutting edges outside the cut. If applied to the tooth face 90° or more before the cut it will stay on the tooth. It slides the chip on the face of the tool which reduces cutting forces and produces the benefits. In the photo on the heading of this paper you will notice that the nozzle is directed at the open side of the mill. You don't see the Accu-Lube<sup>®</sup> because the recommended amount is approximately one ounce per day per nozzle which is too little to see. Using these amounts instead of coolants produces clean dry chips, reduces costly coolant clean-up and disposal, and solves many environmental problems. For contour milling application, circular saw blades over 16" and band saw blades over 1", we recommend a double nozzle Accu-Lube<sup>®</sup> Applicator. On the mill the second nozzle allows the tool to be captured so that one of them reaches the tool at all times. On the saws the nozzles are both directed into the gullet, but using two assures some lubricant on the sides. Over 30" circular blades, we go to three nozzles for positive location of the delivery. The first rule is: Apply Accu-Lube<sup>®</sup> to the cutting face of the tool in minute quantities — more is not better.

Attaining the full benefits from using Accu-Lube<sup>®</sup> comes with realizing that it effectively reduces the normal generation of heat in the cut to levels much lower than with coolant. To achieve that benefit we recommend that tool speed (SFM) not exceed 15% more than the mill or the saw would run dry. An increase in feed rates will develop additional tool life and parts per day. It is common with Accu-Lube<sup>®</sup> to reduce RPM's by 50% and double feed at the same time. Face mills are repeatedly

showing a 25% drop in power draw and carbide tipped saw blades with more teeth involved in the cut are showing about 32% less. On machines with a pressure feed, such as band saws, we have observed the rate of penetration increase to a point which over-loaded the gullets in the blade — a word of caution.

Using this reduced power draw we suggest the simple rule: Reasonable RPM's and higher feed rates result in better tool life, more parts/day and more profit from the use of Accu-Lube® .

There appears to be no limiting factor regarding the materials on which Accu-Lube® is effective in milling and sawing. While aluminum alloys show the most dramatic results, Accu-Lube® has been highly effective on hastalloy, inconel, titanium, stainless steels, tool steels (A-2, D-2) and mold steels such as H-13 and P-20.

In our research we have measured 12 lineal feet of aluminum chip (6061) across a cutting edge before one coat of Accu-Lube® wore off (the power increased). The life in the cut naturally declined with tougher materials — 4340 @ 35R<sub>C</sub> was 3.5 lineal feet, 6AL4V titanium was 1.75 lineal feet. Since milling and sawing chips are not that long, we find that the correct amount continuously deposited on the exposed cutting edge gives us reason to think that Accu-Lube® is universally effective in milling and sawing. Some other tools with trapped cutting edges can have limiting factors — see sheet on taps and drills.

Finally, Accu-Lube® should have a positive effect on productivity and profits, clean up the shop environment, and solve rancidity, cleaning, and disposal problems.

### **MORE IS NOT BETTER**

Design and engineering support is available for systems installations. Please consult factory.