

TIP 0305-35

OLD NUMBER 205-71
ISSUED – 1982
REAFFIRMED – 1988
REAFFIRMED – 1994
REVISED – 1999
WITHDRAWN – 2007
REVISED AND REINSTATED – 2007
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Rotary diecutter urethane anvil maintenance

Scope

This technical information sheet presents some generally accepted suggestions, and the most common maintenance practices and selected factors affecting the durability of urethane anvil covers

Safety precautions

Equipment manufacturer's lock out/tag out procedures must be strictly followed when cleaning or servicing any piece of equipment according to schedules recommended in this TIP.

Introduction

The proper care and maintenance of urethane anvils has been a topic of concern for the converter and machine manufacturer since urethane anvils were first applied to the rotary diecutting process. Longevity, expected number of impressions, and means of prolonging usefulness are common concerns. Each plant seems to have its own preferred system for proper rotation, as well as frequency of rotations.

The above concerns are very important, and yet there probably is not *one* best way of maintaining urethane anvils. Each plant is unique as to order mix, number of sheets run through per shift, number of shifts run per day, amount of cutting area on the die, etc. This mix can even change from week to week or month to month within the same plant. It is possible only to give some general suggestions and to highlight probably the most common maintenance practices and selected factors affecting the durability of these urethane covers.

Installation

Most importantly, the instructions detailed by the manufacturer of the covers being used should be followed. In the event that T-bars are used, they must be in proper condition — not broken, bent, or equipped with the wrong size screws. When covers are installed, they must be tight. Sometimes it is claimed that covers were tight when first installed but became loose and stretched after the first rotation.

All covers are made to the same specifications each time in precision molds. Unfortunately, some of the drums on various machines may vary 0.010 in. in diameter, which in turn is approximately 0.033 in. in circumference. This affects the fit of the cover to the drum.

NOTE: mm = 25.4 x in.

When the original set is installed, there is a normal stiffness to the cover which makes it appear tight. As the covers continue to be cut, they become more flexible and upon rotation appear to be loose or to have

TIP Category: Automatically Periodically Reviewed (Ten-year review)



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stretched. If the cylinder is slightly small, a permanent shim should be placed in the slot on the cylinder to tighten the covers.

Impression

This is probably the most important factor causing excessive wear. The cutting rule must penetrate into the urethane to cut, but it does not have to go any further than the root of the teeth itself. When the cutting rule does penetrate further than this, unnecessary wear begins. The following circumstances usually contribute to this condition:

1. Using improper height cutting rule
2. Using improper scoring rule
3. Failing to rotate covers at the proper time
4. Operating with excessive die cut pressure.

Rotation

Machine manufacturers all suggest methods of rotation; however, these are only guidelines. The most important method is visual inspection: if a certain diecutting order or orders have cut the covers up before the recommended rotation period, they should be rotated anyway. If rotation is not performed at this time, when running the next order, excessive impression may be necessary to cut in certain areas.

The trend as to frequency of rotations in the average plant seems to be weekly rotation — for example, every Monday morning. This will vary slightly if the plant is in the middle of a run or if the machine load for the week seems too light to justify the change.

The rotational sequence will vary slightly to accommodate personal preference and machine mix. Although more complicated sequences have been devised, the most common practice seems to be to move the center covers to the outside and to slide everything else to the middle. Even on-machine grinding of the anvils to ensure uniform anvil height across the machine at all times has been tried with some success.

Anvil grinders

There are anvil grinders that eliminate the need for manual grinding.

Conclusion

Rotation and care of urethane anvils are excellent measures to lengthen life and reduce replacement cost. It is equally important, however, to know when to replace them because the quality of the diecut piece is suffering. Customer complaints and returned merchandise can be far more expensive than many sets of urethane covers.

Keywords

Rotary machines, Die cutters, Urethanes, Maintenance

Additional information

Effective date of issue: August 1, 2007.

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