

# A Scientific Approach to Servo-Feed Setup

Apply servo feeds to significantly boost production. But also be sure to train operators on the proper use and programming of the feeds to ensure successful results.

BY TODD WENZEL

Stampers continue to rely on new technology and equipment to help them optimize pressroom performance. One prime example: servo feeds, which can significantly boost production. Understanding how to properly use and program servo feeds is critical to achieving successful results. Operators must be trained in a scientific approach that provides a systematic method for servo-feed setup. This systematic method must be structured in a manner that permits the operator to work with just one variable at a time. Also, the operator must gain a basic understanding of those variables that can be controlled and will most certainly appear on the checklist for servo-feed setups.

Knowing which variables can be controlled, combined with a systematic method for testing each of them, will help ensure optimum performance. Variables that can be controlled include:

- Alignment of the tool in the press;
- Pressure applied to the material by the upper roll;
- Programming proper feed-length value into the feed control;
- Time (a combination of feed angle

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**Beginning a servo-feed setup, proper alignment starts with the die, which should be squared to the centerline of the bolster. Next, the feedline must sit square to, and be centered on, the bolster centerline.**

and stroke rate) available to feed the material;

- Pilot timing;
- Speed settings;
- Acceleration settings.

Proper alignment creates the foundation stampers need to build on when beginning a servo-feed setup. It starts with the die, which should be squared to the centerline of the bolster. Next, the operator needs to position the material path in the die on the bolster centerline. When installed, the feedline must sit square to, and be centered on, the bolster centerline. Be aware that over

time, misalignment can occur.

When shops move feedlines from press to press, they must take care to return the lines to an aligned position. Also, bolsters sometimes are removed from the press. It's important to establish a process that allows the bolster to be returned to the exact location on the press bed to maintain proper alignment between it and the feedline.

Alignment of dereelers also can be lost, due to impact during coil loading. And, stampers must ensure that operators position coils on the payoffs exactly on centerline. Without proper align-

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ment, serious problems will arise during subsequent setup steps.

## A Troubleshooting Checklist

In most pressrooms, the term “setup” really means troubleshooting. Operators trained to understand the difference between a symptom and a problem can bring an enhanced perspective to the setup process. For example, if an operator experiences a short feed progression, most would identify this as the problem, when in reality it is a symptom of a problem that may have more than one cause.

The ability to isolate each variable during testing is critical to identifying the cause of an issue such as short feed progression, and defines the troubleshooting skill an operator needs to cultivate. Working with each variable in isolation allows the operator to easily identify the problem and make the proper adjustments.

The following examples illustrate how a stamper can create a standard

setup checklist for operators.

With the variable **pressure applied to the material by the upper roll**, the goal is to identify how high the operator can set the roll pressure without damaging the material. To determine this, he threads the material into the feeder, advances the material and examines it for damage. If he does not observe any damage, he increases air pressure and continues to repeat these steps until the material shows visible damage. Once damage occurs, the operator knows to use the prior pressure setting.

To program **proper feed-length value** the operator strives to determine the feed length that will provide accurate progression with no help from the pilot punches. It’s important to note, however, that programmed length and actual length of the progression may differ slightly. For example, if an operator wants to achieve a 20-in. progression, he may actually need to program 20.010 in. on the feed control. This variance results

from several factors, such as the method used to tune the servo drive and the use of rounded values to determine feed-roll circumference.

Determining the proper feed-length value can be as simple as setting up the die, running the press in single-stroke or inch mode, selecting the servo feed’s manual mode (if it has a feature that allows the operator to jog one programmed feed length) and advancing material at the slowest possible feed speed through all stations. The steps—stroke, jog, check feed length—should be repeated for at least 10 consecutive progressions to allow very small errors to accumulate and become visible to the operator. Stampers need to run this test with the pilot-pin release function on the feed switched off to allow completion of continuous progressions without the pilot punches correcting any errors that may occur.

During the procedure, advancing the material at a very low speed will help the operator eliminate another possible



**This feed has a special scale. The vertical guides have pointers that the operator aligns on each side to the material width. This scale aids in aligning the material square to the die and on the centerline of the press bolster.**

variable—slippage—and ensure that he only tests the feed-value variable. As the material progresses through the stations, the operator can check the feed progression using a variety of methods—visual, hand-held pilot, progression sensor, or measurement of part length. Any adjustments required for accurate feed length should be made to

the programmed length and then recorded for future jobs using the same servo feed.

### **A Case Study**

As illustrated with these examples, stampers should establish a systematic setup process for their servo feeds with a careful eye toward creating a step-by-

step checklist designed to isolate each setup variable. Equally beneficial is an established checklist of common symptoms and their causes.

One stamper that has done so is Norlen, Inc., Schofield, WI. “When we hired a new operator to run our coil-fed presses,” shares Norlen’s Jeff Brillhart, “instead of using traditional on-the-job training methods, we upgraded and formalized our setup training. The new systematic approach we institutionalized dramatically reduced the operator’s learning curve in order to perform effective setups. We also found that even our more experienced operators were able to perform more efficiently when they used these techniques. As a result, our cycle rates increased across the board, some by as much 50 percent.”

Stampers that train their operators to use a systematic setup method that deals with only one variable at a time will enjoy faster production speeds, enhanced part quality and optimum pressroom output. **MF**