

Managing Long Breaks Across the Die Cylinder *using National Steel Rule - Bundle Breaker System*

ACROSS the Cylinder - ACROSS the Flutes (Straight Rule)

Cut to Hold Ratio: The goal is an overall hold (uncut material) of 12% - 18%. If the common knife is 100" long, the total uncut portion created from the Bundle Breaker Gaps will be 12" - 18" total. This can be achieved by incorporating varied lengths of *National Bundle Breaker Perf Rule* alternating with regular knife across the entire 100" (a full 100" length of any perf will not work). The examples below suggest the .055" Gaps created from BB Extra Heavy and BB Heavy. Larger gaps (see the heavier end of the PERFormaX line) can be substituted when determining the lengths of alternating cut and perf segments if a more rugged hold is needed.

The simplest way to determine how much Bundle Breaker Rule to apply and how much Cut to apply:

EXAMPLE 1: A common knife length of 100" with a target "hold" amount of 12%. Using National BB Extra Heavy, which has a 37% Hold Ratio means for each 10" piece of Extra Heavy Bundle Breaker I use, I will get 3.7" of uncut material. If I want 12% hold over a 100" common knife, I need 12" of uncut material or just over three 10" pieces of Extra Heavy Bundle Breaker Rule ($3 \times 3.7" = 11.1"$). The rest of the common knife will be regular cutting rule. In this case, it is suggested to use one 10" BB Extra Heavy near each end of the common knife and one at the center. *You could substitute six BB Extra heavy perf sections at just over 5" long to achieve the same hold.* In this case, spacing them equally across the common knife. NOTE: A **BARE MINIMUM** OF 5" LENGTHS IS RECOMMENDED. THE **IDEAL MINIMUM** LENGTH OF ANY BB RULE IS **8" - 12"**.

EXAMPLE 2: A common knife length of 80" with a target "hold" amount of 16%. Using National BB Heavy, which has a 33% Hold Ratio means for each 10" piece of BB Heavy Bundle Breaker I use I will get 3.3" of uncut material. If I want 16% hold over a 80" common knife I need to multiply 80" (common knife) $\times .16$ (16% of 80) which equals a target of 12.8" of uncut material. Since I get 3.3" per 10" rule segment (when I use BB Heavy), I divide 12.8 by 3.3 which gives me 3.88 pieces at 10" long. I would just round up and use four, 10" pieces.

SUMMARY: It is not a complete science to successfully bundle break across the flutes, across the cylinder but by using these guidelines you can eliminate the guesswork and build a history around the successful hold percentages for the various grades of paper in a particular work mix. The minimum gap for straight rule across the cylinder and crossing the flutes is a Bundle Breaker or PERFormaX rule with a gap of AT LEAST .055" to a MAX of .070". *The gap size must be large enough to handle the turbulence through the die cutter and up the stacker. Once the gap size requirement is met, the break force can be adjusted by increasing or decreasing the percentage.* The PERFormaX family (Bundle Breaker & Shelf Ready) provides a controlled array of gap sizes (.045, .050, .055, .066 and .070) with a specific range of hold percentages from 22.5% up to 58%. Go to www.steelrule.com and look for PERFormaX for more information.