



# *Paper Feed Separation Rollers*

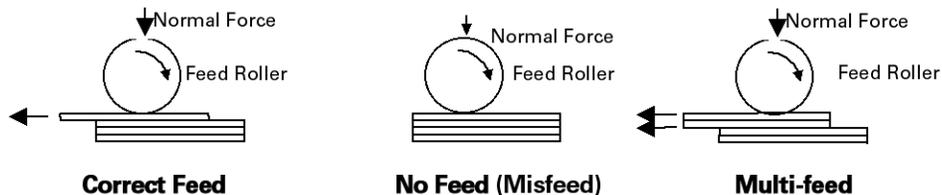
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**The Problem:**

**Multiple sheets of paper feed into a printer or copier because the feed mechanism fails to separate the paper.**

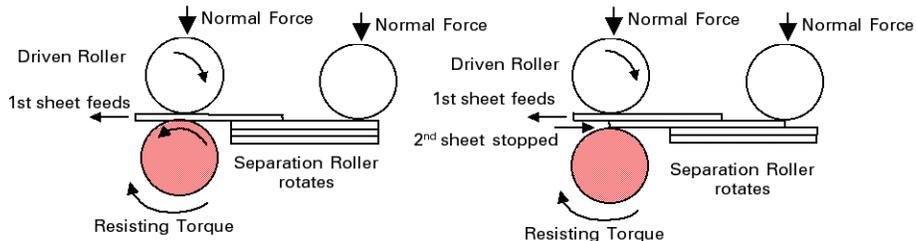
Devices used to feed cut sheets of paper in copiers and printers first apply a vertical (normal) force to one or more sheets of paper, and then move the paper horizontally (or at least at right angles to the applied force).

The problem arises when the application of the normal force needed to feed the paper is not controlled adequately so more than one sheet of paper feeds. Eliminating multiple paper feeds – called multi-feeds – requires paper separation, which adds complexity and cost to the paper feeder.



Historical solutions to paper separation include devices such as snubbers, retard pads, retard rollers, and sensor/electromechanical feedback/actuators. All depend on a delicate force balance to feed the top sheet of paper, while providing a resisting force to lower sheets. The simplest of these devices, while low cost, only separated paper reliably within a narrow range of paper types and operating conditions. More reliable devices usually were more complex and expensive.

The paper separation roller consists of a passive (not driven) roller with a high friction coating containing a frictional torque (slip) device. When used with a driven roller, the separation roller provides reliable paper separation at a low cost. As shown below, the separation roller rotates to feed a single sheet, but stops turning when more than one sheet enters the roller combination. The separation roller keeps the top sheet away from the sheets below it. Its simplicity offers a low cost, yet reliable solution to the problem of paper separation.



Reliable operation of a separation roller requires that its resisting torque be correctly specified and balanced with other forces. The frictional properties of the rollers and paper often change over time and with different operating conditions (such as humidity), so the resisting torque of the separation roller must be well controlled to ensure continued reliable paper separation.

**The REELL Separation Roller** can be designed to specific requirements for a paper feed system. Its design uses precision components and automated assembly to give exceptionally well controlled resisting torque at a low cost. The demand for new separation roller designs; sales of millions of separation rollers, and the high level of customer satisfaction demonstrate the ability of REELL Separation Roller designs to meet and maintain precision resisting torque specifications. REELL's Separation Roller products have demonstrated reliability under a wide variety of conditions including different paper types, changing environmental conditions, and shifting roller frictional characteristics.