

# CUSTOM SOLUTION CASE STUDY

## Drop-In Cylinder for Carpet Tufting



### APPLICATION:

#### *Carpet Tufting*

Pneumatic cylinders are used in carpet-tufting machines in the production of carpeting and rugs.

### CHALLENGE:

#### *Double-Acting Cylinder with Side Loads Caused Limited Machine Speed, Seal Failure, and Rod Breakage*

A customer in the carpet mill industry was using a competitor's double-acting cylinder, which limited the speed at which the carpet tufting machine was capable of running. Also, the application caused side load on the cylinder, resulting in cylinder seal failure and rod breakage. The machine speed and short cylinder life were both pain points that the customer needed to correct.

### SOLUTION:

#### *A Drop-In Cylinder to Increase Production Rate and Increase Cylinder Life*

PHD's Custom Solutions Engineers collaborated with the carpet tufting customer to resolve the identified issues. PHD designed a custom miniature single-acting, spring-return cylinder that succeeded in increasing the operating speed of the machine. Additionally, PHD's more robust design was better able to handle the side load in the application, leading to longer cylinder life.

### RESULTS:

#### *Increased Machine Speed and Uptime*

PHD's customer has been able to increase the speed of the machine by 75%, vastly improving production rates. Also, because of the longer cylinder life, the customer's production uptime has increased.

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