

CENTRIFUGAL ELBOW LINT CLEANER

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Abstract

Continental Eagle Corporation has a new innovation called the Centrifugal Elbow Cleaner that is similar to the larger centrifugal/air type lint cleaners. Because of its small size, it can be used in applications in gins where there was previously not enough room for a centrifugal/air type cleaner.

Introduction

In the world of cotton ginning, there has been a push in the past for gentler cleaning of the ginned cotton lint. Centrifugal Lint Cleaners, or Air Type Lint cleaners as they are sometimes called, are examples of gentle lint cleaners. A centrifugal lint cleaner is typically installed behind the gin stand. Centrifugal lint cleaners work well for removing seed coat fragments and other heavy trash particles in the ginned lint. It is desirable to remove as much of the seed coat fragments and trash in the ginned lint before the lint reaches the saw type lint cleaners. This prevents breaking up the larger particles into smaller particles. The smaller particles are much more difficult to remove from the lint by using the saw type lint cleaner (Mangialardi and Anthony, 1999). Most gins that have been built in the last ten years are using some type of centrifugal air lint cleaner. Older gins that were fortunate enough to have space between the gin stand and the saw type lint cleaner have also added centrifugal lint cleaners. Those gins without the space between the gin stand and saw type lint cleaner have not been able to capitalize on centrifugal lint cleaning.

Continental Eagle Corporation has a new innovation called the Centrifugal Elbow Cleaner. This Centrifugal Elbow Cleaner replaces the elbow in the gin flue behind the gin stand. No additional space is required for the installation of the lint cleaner behind the gin stand.

Discussion

The Centrifugal Elbow Lint cleaner is a new innovation because it is compactly designed and can be installed behind the gin in the existing gin flue by simply replacing the rectangular elbow. The trash from the cleaner is conveyed to the end of the cleaner and into the gin stand trash conveyor under the gin stand flue. No foundation work is required for installation of the trash system and no additional space is required.

The Centrifugal Elbow Lint Cleaner operates on the same principle as its larger counterpart, Continental Eagle's Centrifugal Lint Cleaner. Ginned lint is pneumatically conveyed into the cleaner from the gin stand brush and the lint cleaner condenser pull fan. Cotton lint from the gin stand enters the centrifugal lint cleaner (Figure 1). After the lint enters the cleaner, rapid acceleration occurs through the reduction of cross sectional area of the throat/duct of the lint cleaner. The heavy particles of trash (seed coat fragments, motes, etc.) are ejected through the adjustable mote opening by inertial force at the outside turn of the adjustable duct. The trash is conveyed to the end of the cleaner by a built-in screw conveyor. From the end of the cleaner, the trash can be conveyed to the gin stand trash conveyor under the gin stand or to a trash barrel. There is a ½ horsepower motor that drives the built-in six-inch trash conveyor.

Adjustment of the throat of the cleaner can be made at two different points. One adjustment is for the depth and shape of the throat before the knife and the other at the point of the knife. By adjusting the shape of the throat, the velocity of the air stream can be increased or decreased. The mote opening can be increased or decreased for maximum moting. Windows are located on either end of the cleaner at the mote opening to aid visually in making adjustments.

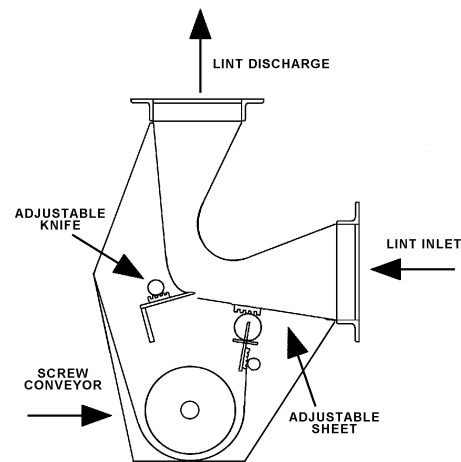


Figure 1. Centrifugal Elbow Cleaner

Initial findings when comparing the larger Centrifugal Lint Cleaner to the Centrifugal Elbow show that there is no significant difference in the moting of one versus the other. Further testing is currently in progress.

Summary

The Centrifugal Elbow Lint Cleaner is a new Continental Eagle innovation. This new cleaner offers those gin owners and operators who do not have space for a full size

centrifugal lint cleaner to utilize centrifugal lint cleaning for removing immature seed fragments and other trash before the saw lint cleaning. The centrifugal lint cleaner offers the following benefits:

- Replaces the elbow in the lint flue behind the gin stand
- Cost less than the larger centrifugal/air type lint cleaners
- Built-in windows at the mote opening allow for easy adjustments
- Less space is required behind the gin stand than any other Centrifugal/Air type lint cleaner
- Built in trash screw conveyor - requires no foundation work.

References

Mangialardi, Jr. G. J. and Anthony, W.S. 1999. A New Study of Air-Type Lint Cleaner Design. The Cotton Gin and Oil Mill Press, May 22, 1999.