Theory of Operation

The modular cylinder separator relies upon centrifugal force. The speed of the cylinder holds the particle in the indent, lifting it out of the mass until the indent is inverted to the point where gravity causes the particle to fall out of the indent. The particle dropping from the indent falls into the auger conveyed catch trough. The angle or tilt of the catch trough must be adjusted to obtain the desired “cut point” thereby catching the smaller particles as they drop out of the indents but not permit the longer particles to ride up the rising side of the cylinder and fall into the trough. To make adjustment on the “cut point” of the separation, a trough tilt adjustment is used which enables you to define the degree of separation that is required. A screw conveyor then discharges the short lifted material separate from the tall long material. The amount of product which can be length separated depends on the number of pockets coming in contact with the product.

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MODULAR UNI-FLOW ADVANTAGE

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-Modular Design: allows for greater overall flexibility to meet most application demands. Self contained vertical modules can be broken down for shipment and easily re-assembled on job site. Modular design allows reconfiguration in the field if processing needs change.

-Revolutionary Drive System:
  -Sealed pinion and gear drive.
  -Quick lock universal coupling drive shafts provide primary drive distribution to cylinders.
  -HITD cog belt cylinder drive for quiet operation and long life.

Optimum Cylinder Diameter

Our 432 mm (17”) diameter cylinder offers more performance from a given length (ours 2286 mm or 90”) than a larger diameter cylinder. This is because a cylinder’s capacity is related to the number of lifting pockets that pass the edge of the lifting trough in a given period of time. As the cylinder diameter gets larger the speed of the cylinder must be reduced to control the effect of centrifugal acceleration on the product. For example, a 900 mm diameter cylinder 3000 mm long has six times the contained volume of a 432 mm cylinder, yet it will lift only two times more product.

-Minimal Downtime:
  -Simple modular design.
  -Shell removal from either end of machine.
  -Sealed gear drives.
  -Sealed dust collection manifold.

Standard Features:

-Dynamic floating inlet seal eliminates cylinder leakage.
-Optional features:
  -Standardized dust collection manifold.
  -Cylinder inlet cleanout.

-Standard Features:
  -Dynamic floating inlet seal eliminates cylinder leakage.
  -High capacity inlet & 6” lifting auger insures maximum utilization of the cylinder separation capacity.
  -Vibration free trough controls.
  -Sampling ports on both the liftings and tailings allow easy monitoring of the separation performance.
  -Sealed selection of deep case hardened indent cylinder shells.

Nominal Spare Parts Requirements:

-Complete laboratory service is at your disposal. Carter Day’s facility enables us to test your unique product sample on our laboratory or on full size equipment to aid in determining the right machine for your application. This test equipment is also for sale. We invite you to participate in tests conducted at our facility in Minneapolis, Minnesota USA.
For more than 100 years Carter Day has been manufacturing quality processing equipment. We continue this tradition with the high capacity Modular Uni-Flow for length separations, such as removing broken from whole kernel grains. Vertical stacks comprised of 2 to 4 cylinder modules provide flexibility to meet a wide range of separation requirements in a single pass. Capacity requirements can be met by combining any number of independent vertical stacks into a single machine configuration.

In the Carter Day Modular Uni-Flow, the shorter material is always lifted by indent pockets that line the inside surface of the cylinder. The operator controls the separation by adjusting the position of the separating edge of the trough, into which the product falls. The trough control makes possible a selection of the exact degree of separation desired.

**Length Sizing Task**
The Modular Uni-Flow configuration begins with evaluating the separation you wish to achieve. Our staff can test your unique product sample in our laboratory to determine the correct size indent pockets and combination of cylinders required to produce the results you seek.

**Maximizing Efficiency**
Taking into consideration the given length separation and your facility’s height and width constraints, we will determine the optimum flow arrangement of a single Uni-Flow stack, ranging from one to four cylinder modules. This is achieved by selective use of a splitter, oat and seed cylinders. The process flow arrangements on the following pages describe configurations in the field today.

**Achieving Capacity**
Provide us with the bushels per hour you intend to process through a selected process flow. From that we will make a determination of the appropriate number of Uni-Flow stacks (from one to infinity). The Modular Uni-Flow machines may be used in parallel, series or combinations to achieve your system capacity requirements.