Alfa Laval Degermination system for starch slurry

Separation of maize germ

Introduction

The degermination cyclones separate germ from the starch slurry created by cracking the steeped corn. In this step of the process separation of the valuable maize germ component takes place, thus yielding slurry suitable for further separation. In order to obtain the required efficiency, degermination is carried out in two stages, each stage consisting of two separation passes.

Application

Corn based starch processing.

Benefits

- Efficient separation - high germ separation efficiency
- High reliability - no moving parts ensures high reliability
- Easy maintenance - quick opening couplings enable quick replacement of individual cyclones
- Compact solution - small footprint resulting in low floor space requirement.

Design

The first and second degermination stages are built as manifolded systems. Each system consists of hydrocyclones and manifolds connected by victaulic couplings.

Each pass has a common feed-, overflow-, and underflow manifold in stainless steel with a single, flanged, inlet connection. The manifold connections to each individual hydrocyclone can be equipped with shut-off valves.

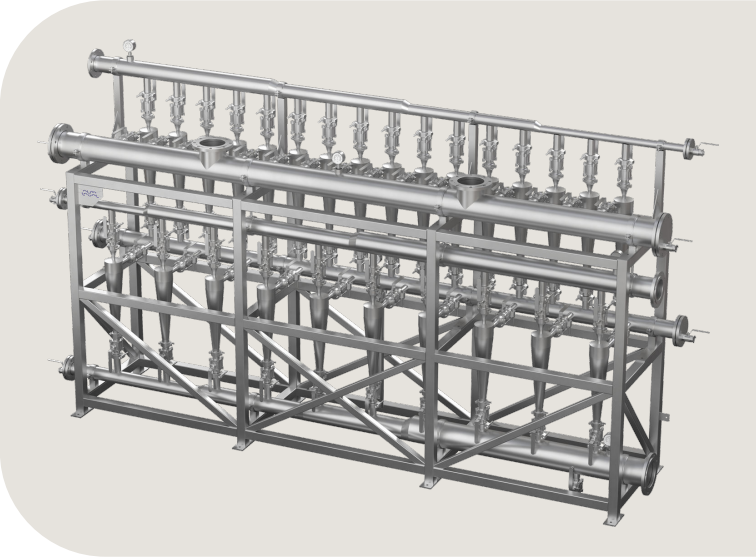
The cyclones are made of stainless steel in one part and mounted in a supporting frame made of stainless steel.

Three types of hydrocyclones are available, type GCW150 A and B, type GCW150 AX and BX and type GCW200.

Hydrocyclones	Item number	
Type	AISI 316	Duplex
GCW 150A	DC00290001	9680238634
GCW 150B	DC00300001	9680238635
GCW 150AX	9680242327	9680247996
GCW 150BX	9680242328	9680247997
GCW 200	9680114057	9680252201

Working principle

The starch slurry containing cracked steeped corn and germ is fed tangentially into the first pass cyclone with sufficient velocity to create a vortex action forcing the slurry into a spiral.



As the rapidly rotating flow spins about the axis of the cone, the lighter germ fraction is forced to spiral inwards and out through a centrally located overflow outlet. The heavier fraction (containing starch, hulls, uncracked kernels) is flung outwards against the wall of the cone by the centrifugal force, and exits through the cone apex as underflow under pressure. The underflow is fed to the second pass cyclone to recover any germ that might not have been separated in the first pass.

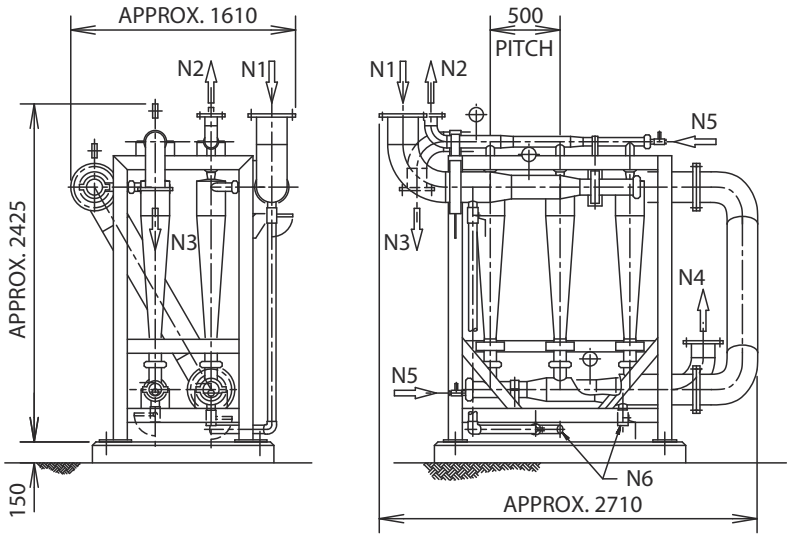
The first pass separates for optimum purity germ and the second pass increases germ recovery by capturing any germ that might have been bypassed in the first pass.

The number of cyclones in each pass is determined by the feed flow to be handled.

Degermination is repeated in a second stage after an intermediate secondary milling.

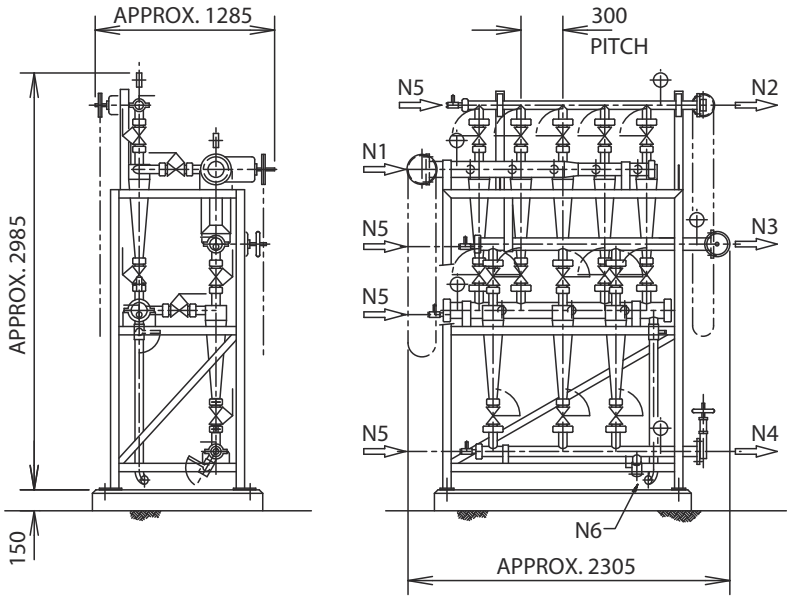
Grind rate	Types	1st pass	2nd pass	Front width mm (inches)	Net weight kg (lbs)
125	GCW150 A/B	3	2	1705 (67)	525 (1157)
250	GCW150 A/B	5	3	2305 (91)	600 (1323)
350	GCW150 A/B	7	4	2900 (114)	700 (1543)
500	GCW200	4	3	3200 (126)	1775 (3913)
600	GCW200	5	4	3700 (146)	2000 (4409)
750	GCW200	6	5	4200 (165)	2450 (5401)
1000	GCW200	7	6	4700 (185)	2900 (6393)

Dimensional drawing



NOZZLE LIST	
NOZZLE	SERVICE
N1	FEED 1st PASS
N2	OVERFLOW 1st PASS
N3	OVERFLOW 2nd PASS
N4	UNDERFLOW 2nd PASS
N5	FLUSHWATER
N6	DRAIN

EXAMPLE: 3x GCW200 + 2x GCW200
WITHOUT INDIVIDUAL SHUT-OFF VALVES



EXAMPLE: 5x GCW150A + 3x GCW150B
WITH INDIVIDUAL SHUT-OFF VALVES

How to contact Alfa Laval
Up-to-date Alfa Laval contact details for all countries are always available
on our website at www.alfalaval.com