



Powder Recovery Cyclones

High efficiency, filter-less cyclone technology for the capture of excess dust from powder processes. Specifically designed for sanitary applications in the pharmaceutical, food and related industries.

When a tablet or capsule is formed, small amounts of excess powder spill onto the die table; this excess powder is usually extracted to a central extraction system.

Using a cyclone on the extraction line facilitates interception of this powder before it ever leaves the process room, enabling high integrity batch reconciliation and minimising filter replacement.



Product Overview

Typically in powder processing, waste material is extracted to a central filter system or using a vacuum cleaner. These conventional methods cause the blockage and subsequent replacement of filters, loss of suction during blinding and inaccurate or non-existent batch reconciliation. Cyclone technology can address these challenges by localizing dust capture, preventing filter blockage and even allowing pharmaceutical manufacturers to recover lost powder.

The Hanningfield Uni-Dust cyclone is specifically designed for the recovery of waste powder from pharmaceutical OSD processes such as compression and encapsulation, typically capturing between 90 – 99.9% of waste powder. We have successfully installed our cyclone to Fette, Manesty, Korsch, Zanasi, Bosch, Kilian and numerous other process machines.

The Uni-Dust cyclone is proven to be equally effective in numerous other applications including sachet filling, spray drying, inhalation and any other process where excess dust is extracted. The unit is designed to be mounted inside the process room for maximum batch reconciliation integrity (or even reintroduced to the process where protocol permits).

To perform particle capture, cyclones use vortex separation causing the solid particles to hit the outside wall of the cyclone, de-accelerate and fall to the catchpot at the base of the cyclone. This allows 'clean' air to pass downstream (to the dust extraction source) and prevents a build-up of material in the filters, which can be time consuming and expensive to replace. For additional security, a HEPA filter can be integrated after the cyclone. The cyclone can be retrofitted to your existing dust extraction line, or can be supplied with a dedicated vacuum source.

With no filters and no moving parts, the Uni-Dust features a sanitary GMP stainless steel construction, assembled using only Tri-Clamps for fast and easy dismantling.

For greater control over your process, the Uni-Dust cyclone can be modified to include various optional upgrade features including safe-change, level control or sightglass (in catchpot), isolation valve and air balancing valves. All equipment can be supplied with full validation documentation (FS/DS, FAT, SAT, IQ/OQ) and 3.1 mill certificates.

Features:

- Specifically designed to be compatible with the standard airflows of compression and encapsulation machines
- GMP stainless steel construction
- Designed to be mounted inside the process room for guaranteeing integrity of captured material
- Cyclone can be retro-fitted to existing processes

Benefits:

- Prevents blinding and replacement of expensive filters in central dust extraction system or vacuum cleaner, with associated environmental benefits
- High efficiency design, typically capturing 90 - 99.9%
- Almost zero maintenance costs, as cyclone has no moving parts and no filters
- Helps pharmaceutical manufactures comply with FDA guidelines on batch reconciliation and yields
- Where protocol permits, recovered powder can be re-worked and re-introduced, minimising material loss

Models

Uni-Dust Type 5

The Hanningfield Uni-Dust Type 5 cyclone is designed to accommodate an airflow of 100 – 150 m³/hr (59 – 88 CFM). The Type 5 features a 2.0" (50.8mm) inlet and outlet, with a 4.0" (101.6mm) body diameter. For each model size, the catchpot can be customised to suit application product loss, typically to hold a capacity of 3 - 50 litres.

Uni-Dust Type 10

The Hanningfield Uni-Dust Type 10 cyclone is designed to accommodate an airflow of 150 – 250 m³/hr (88 – 147 CFM). The Type 10 features a 2.5" (63.5mm) inlet and outlet, with a 5.5" (139.7mm) body diameter.

Uni-Dust Type 20

The Hanningfield Uni-Dust Type 20 cyclone is designed to accommodate an airflow of 250 – 300 m³/hr (147 – 177 CFM). The Type 20 features a 2.5" (63.5mm) inlet and outlet, with a 6.0" (152.4mm) body diameter.

Uni-Dust Type 30

The Hanningfield Uni-Dust Type 30 cyclone is designed to accommodate an airflow of 300 – 400 m³/hr (177 – 235 CFM). The Type 30 cyclone separator features a 3.0" (76.2mm) inlet and outlet, with a 6 5/8" (168.2mm) body diameter.

Uni-Dust Type 40

The Hanningfield Uni-Dust Type 40 cyclone is designed to accommodate an airflow of 400 – 600 m³/hr (235 – 350 CFM). The Type 40 features a 4.0" (101.6mm) inlet and outlet, with an 8.0" (203.2mm) body diameter.

Uni-Dust Type 50

The Hanningfield Uni-Dust Type 50 cyclone is designed to accommodate an airflow of 600 – 800 m³/hr (350 – 470 CFM). The Type 50 features a 5.0" (127.0mm) inlet and outlet, with an 10.0" (254.0mm) body diameter.

Uni-Dust Type 60

The Hanningfield Uni-Dust Type 60 is designed to accommodate an airflow of 800 – 1200 m³/hr (470 – 700 CFM). The Type 60 features a 5.5" (139.7mm) inlet and outlet, with an 12.0" (304.8mm) body diameter.

Custom Models

For processes where a standard model is not suitable, Hanningfield can design custom units for lower or higher airflow applications.

Data Table

Criteria	Unit	Type 5	Type 10	Type 20	Type 30	Type 40	Type 50	Type 60
Airflow Range	m ³ /hr	100 – 150	150 – 250	250 – 300	300 – 400	400 – 600	600 – 800	800 – 1200
	CFM	59 – 88	88 – 147	147 – 177	177 – 235	235 – 350	350 – 470	470 – 700
Cyclone Body Dia.	mm	101.6	139.7	152.4	168.2	203.2	254	304.8
	in	4" T/C	5½" T/C	6" T/C	65/8" T/C	8" T/C	10" T/C	12" T/C
Inlet / Outlet Pipe Dia.	mm	50.8	63.5	63.5	76.2	101.6	127	139.7
	in	2" T/C	2½" T/C	2½" T/C	3" T/C	4" T/C	5" T/C	5½" T/C
Product Discharge Dia.	mm	63.5	101.6	101.6	101.6	139.7	168.2	203.2
	in	2½" T/C	4" T/C	4" T/C	4" T/C	5½" T/C	65/8" T/C	8" T/C
Approximate Weight	kgs	12	18	22	34	40	52	68
	lbs	26	40	50	75	90	115	150
Typical Pressure Drop	mbar	< 25mbar						
Typical Noise Level	dB	0 dB (no moving parts / no mechanical noise generated)						
Contact Parts	AISI 316L stainless steel (1.4404)							
Non-Contact Parts	AISI 304 stainless steel (1.4301)							
Country of Design	United Kingdom							
Country of Manufacture	United Kingdom							

Trial Facility

For peace of mind we invite customers to undertake trial capture of their material free of charge at our UK test facility (with optional customer attendance). Trials can replicate site airflows to help determine correct model size for an application and give indicative cyclone efficiency performance (with capture % rates).

Typical Applications

Dust Collection from Tablet Press

The Uni-Dust cyclone is designed to be connected to the extraction line of a tablet press, intercepting waste powder before it reaches the central extraction system.



Dust Collection from Capsule Filling Machine

The cyclone can alternatively be connected to the extraction line of a capsule filling machine, intercepting waste powder before it reaches the central extraction system.

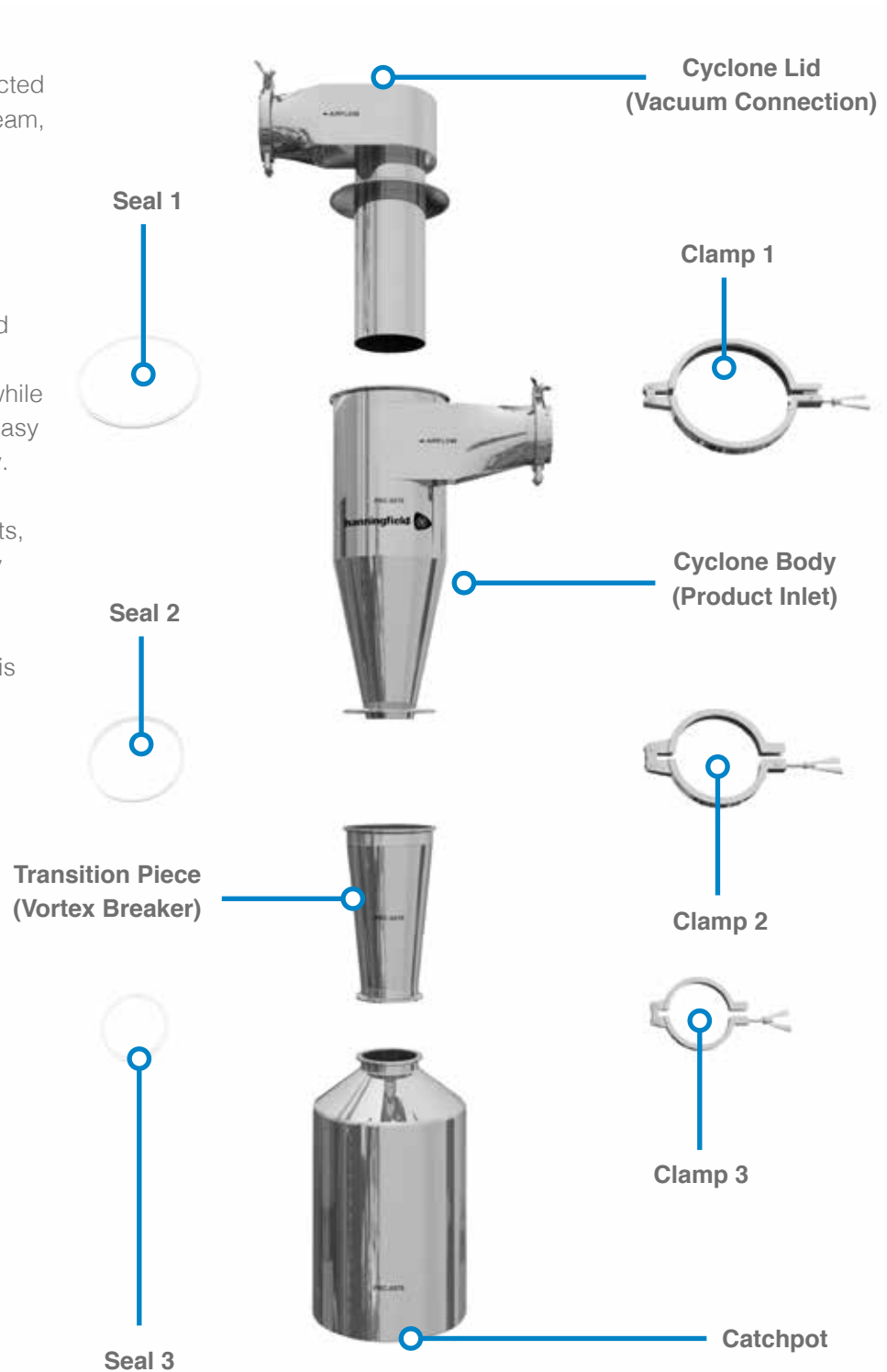


No Filters and No Moving Parts

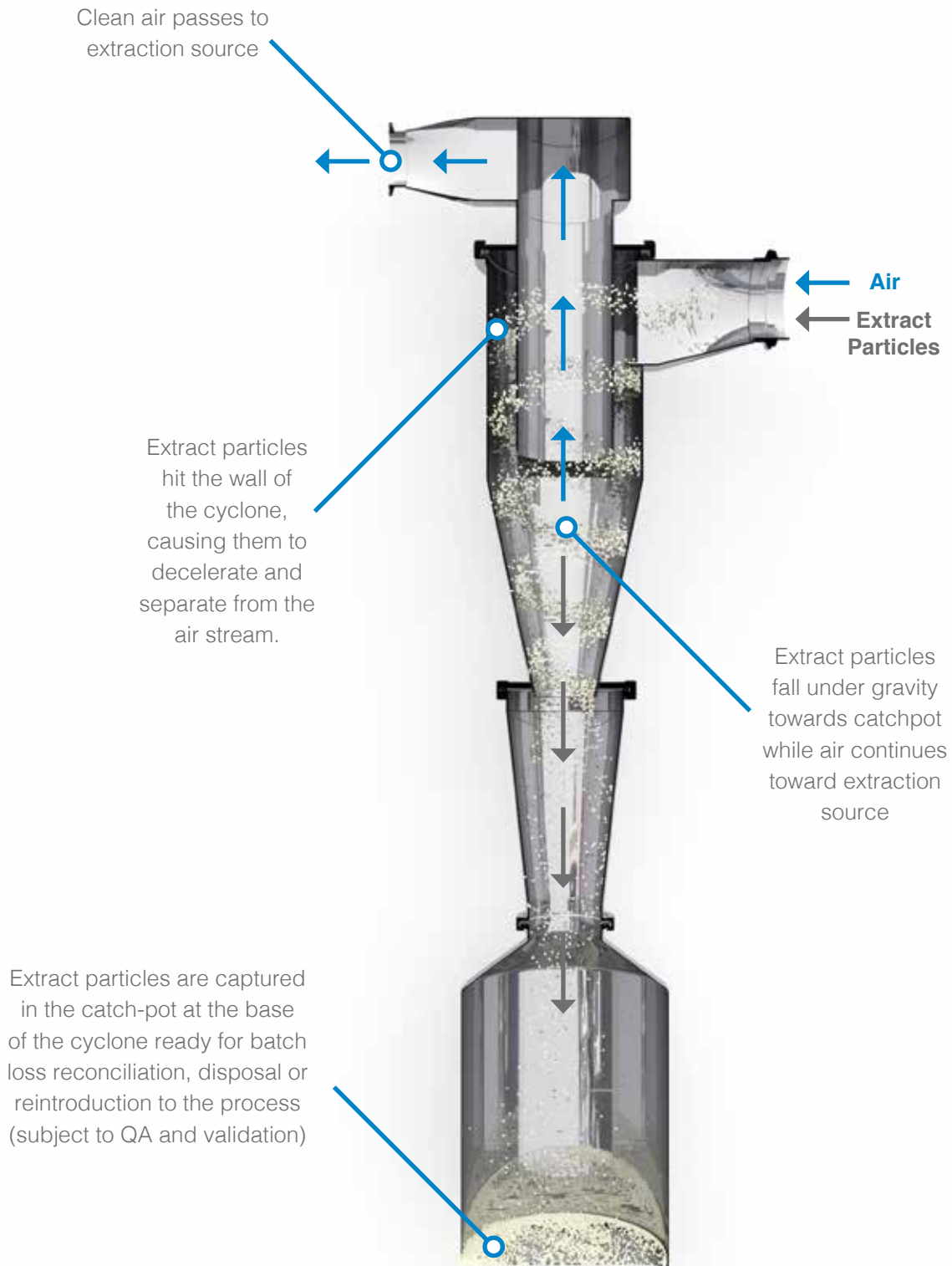
Instead the cyclone uses its geometry to separate the solid extracted particles from the airstream, enabling filterless particle separation.

The cyclone features an all stainless steel construction, assembled using Tri-Clamp's for hygienic construction, while allowing for quick and easy assembly / disassembly.

With no mechanical parts, the cyclone has virtually no consumable items or conceivable faults. Once installed, the unit is maintenance-free and cost-free, making return on investment high and ever-increasing.



Inside the Cyclone





Optional Upgrade Features



Sight Glass

Viewing window in catch-pot for inspecting product build-up



Level Sensor

Enables monitoring of waste material level and preventing overflow of catch-pot



Safe Change

Facilitates contained removal of catch-pot without exposing operator to product



Isolation Valve

Placed between cyclone outlet and catch-pot for changing pot without stopping dust-extract

Mounting Options



Freestanding



Wall Bracket



Mobile Frame



hanningfield



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