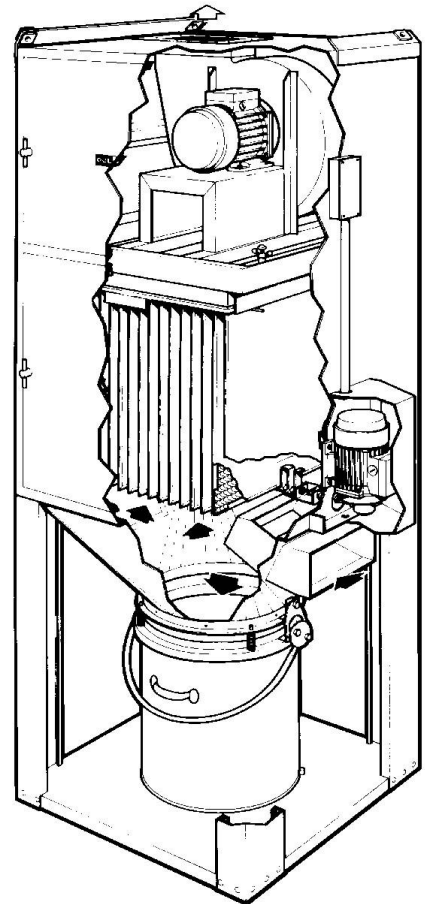


Unimaster® Dust Collectors

Product Overview

The Unimaster dust control unit is a compact, completely self-contained fabric filter designed for intermittent duty, with filter cleaning automatically activated when the dust unit is turned off. The Unimaster is based on seven fabric areas between 43 ft² (4 m²) and 753 ft² (70 m²) with a range of standard components and accessories which can be assembled in over 500 different combinations.

There are five standard Unimaster configuration series—UMA, UMA H, UMA STU, UMA V, and UMA V with dust container. The Series UMA is a standard integral dust control unit complete with fan, easy-access filter assembly, triple-inlet hopper and dust container with quick-release sealer gear. The Series UMA H is a control unit with fan and filter assembly only, the housing has a flanged open bottom and can be bolted directly onto a purpose made dust container or hopper. The Series UMA STU is for use in sack tipping operations and is a dust control unit with fan, filter assembly and material discharge hopper incorporating a quick release tipping door. The Series UMA V is a filter assembly only, in flanged housing, specifically designed for venting silos and other storage vessels or process machinery which are under positive pressure. The Series UMA V with dust container is a dust control unit UMA V supplied with hopper and dust container when located away from the dust source.



There are numerous accessories available on the Unimaster including acoustic diffusers, secondary filters, bin balance, explosion relief panels, static grounding, weather cowls (covers), left-hand shaker, and casters.

The model number designates the collector, size, dust container, and other options. For example, a UMA 73V is a Unimaster with 70 ft² (3.7 m²) of filter area, a 3 ft³ (80 L) bin, and a venting type. As another example, a UMA 458 K11 SF is a Unimaster with 450 ft² (42 m²) of filter area, with two 4 ft³ (110 L) bins, K11 fan, and secondary filter.

Operation Explanation

Normal Operation - UMA and UMA H: Contaminated air from the dust generation source is drawn through the inlet to the unit by the fan. Initially some pre-separation takes place as heavier dust particles lose momentum and fall into the collection bin or hopper. Finer dusts are carried up to the filter elements where they are retained on the outer surface of the filter fabric. The cleaned air is then passed through the filter fabric into the fan chamber and discharged. When the fan is switched off, the filter fabric cleaning cycle is automatically activated. The collected dust is then dislodged from the filter elements and falls into the collection bin below. On most applications the optimum interval between cleaning cycles will be four hours.

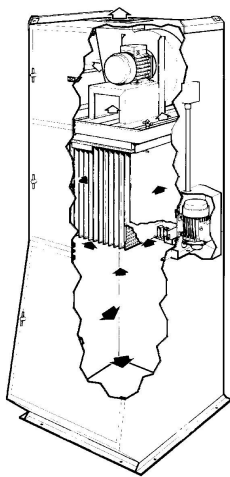
Normal Operation - UMA STU: When the quick-release sack tipping door is removed from the hopper, the unit fan can be switched on. Air is entrained through the hatch preventing dust escaping while sacks are being emptied. Airborne dust is carried up and retained on the filter fabric. On completion of the sack tipping, the fan may then be switched off and the door replaced. The cleaning cycle mechanism will then automatically be activated – depositing the collected dust directly into a hopper chute or conveyor beneath. Units fitted with explosion relief are fitted with a swing door that does not require removal.

Normal Operation - UMA V: The series UMA V operates above atmospheric pressure. No fan is supplied as the airflow is provided by the blower or fan associated with the system. The product laden air should enter the silo bin or pressure vessel in a way that allows pre-separation of the bulk product from the conveying air before it reaches the filter. Dust is collected on the filter fabric as previously described. On completion of the delivery operation, the blower or fan must be allowed to run down before the cleaning mechanism is operated. Collected dust is deposited directly into the silo or dust container. For series UMA V with dust container, the dust will be deposited in the dust container for disposal later.

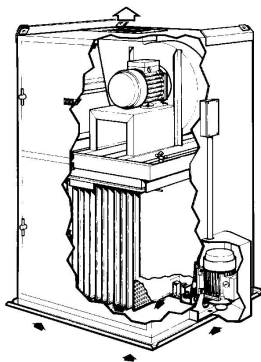
Filter Cleaning: Approximately every four hours or when operating pressure reaches 4 to 6 “wg (100-150 mm wg), depending on dust type and volume, the filter assembly should be cleaned.

On all units, fans or blowers should be allowed to run down before cleaning mechanism operation, otherwise dust penetration of the filter cloth can occur, necessitating filter removal and special cleaning by hand. The DCE controller for UMA, UMA H, and UMA STU units have an automatic time delay after the cleaning cycle has been initiated. The controllers on the UMA V do not have this facility due to their functional requirements. Thus, it is the customer’s responsibility to ensure that sufficient time is allowed for the airflow to have ceased before cleaning is initiated, fitting interlocks if necessary.

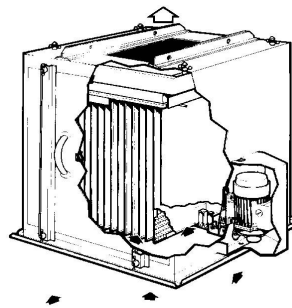
Before starting the unit, the dust container, if fitted, should be checked for dust quantity and emptied if necessary.



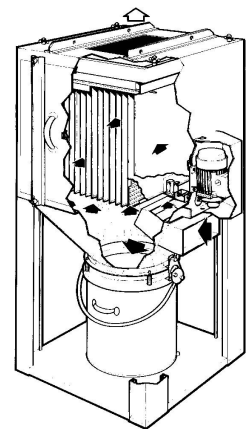
UMA STU



UMA H



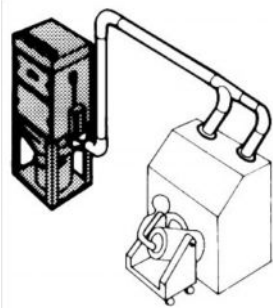
UMA V



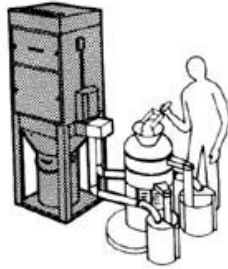
UMA V with
dust collector

Application Summary

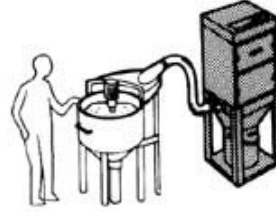
The Unimaster is an ideal dust collector for intermittent operations in plant processes. Several small self-contained Unimaster units can be placed at the points of dust generation. This approach results in total dust capture and flexibility of operation. Example applications include blending/mixing, cleaning, cutting, drilling, grinding, milling, packing, polishing, sanding, sawing, sewing, shot blasting, tableting, and turning.



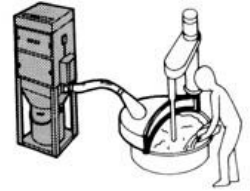
Blending



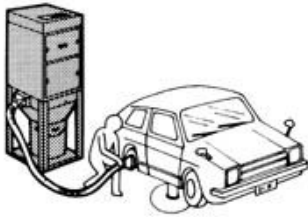
Blending/mixing



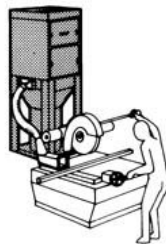
Mixing



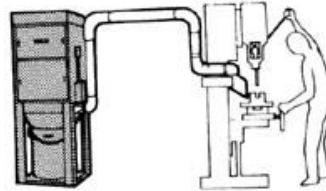
Mixing



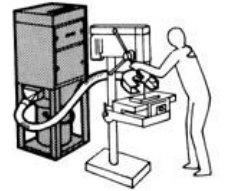
Cleaning



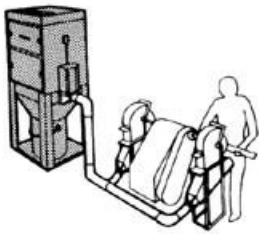
Cutting



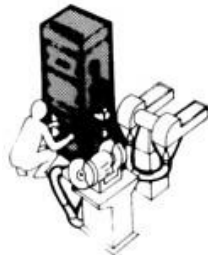
Drilling



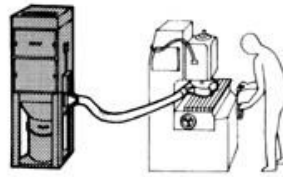
Drilling



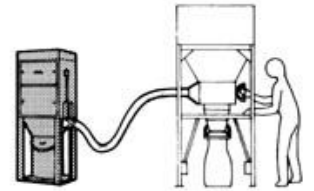
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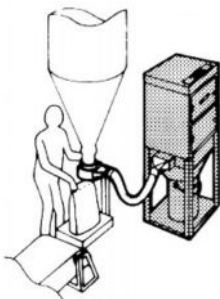
Grinding



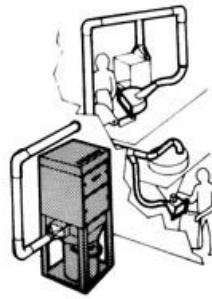
Milling



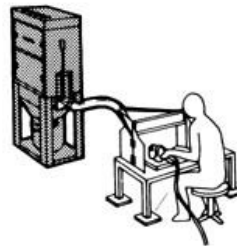
Packing



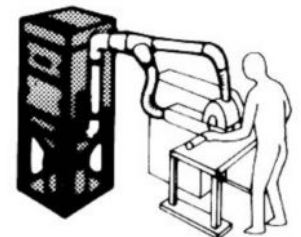
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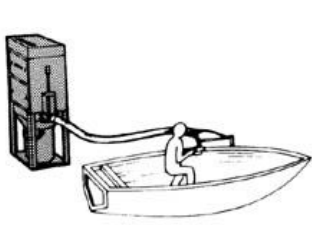
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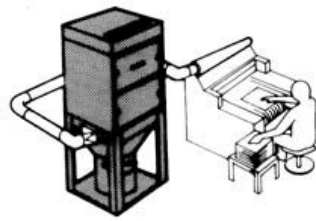
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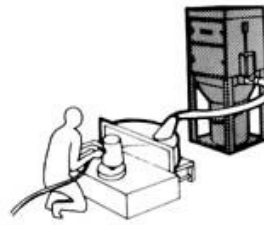
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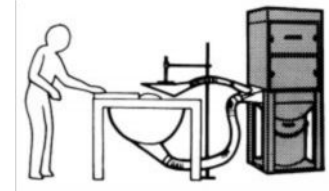
Sanding



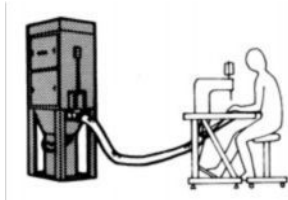
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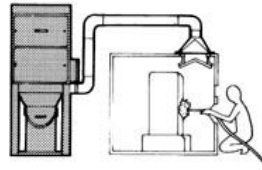
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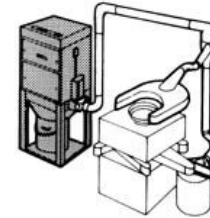
Sawing



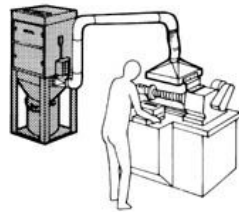
Sewing



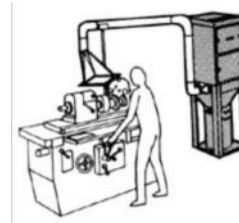
Shot Blasting



Tableting



Turning



Turning

Woven media

The standard media for the Unimaster is an 7.5 oz/yd woven polyester with a sateen finish. The polyester offers excellent resistance to chemicals and moisture at an economical cost. Typical emission levels are less than 10 mg/m³.

Alternate medias include polypropylene and anti-static polypropylene. Polypropylene offers excellent abrasion resistance and does not absorb moisture into the filament. For this reason it is selected for abrasive applications or applications with high humidity levels or hygroscopic dusts. Anti-static media is a woven polypropylene with 5 percent stainless fibers included. Anti-static media should be offered on all explosive dust or dust that readily accept an electrical charge.

Both polyester and polypropylene have operating temperature limits beyond the 140°F (60°C) limitation of the Unimaster filter body and seals.

Although Unimaster media can be washed in cold water and air dried, it is usually better to replace it rather than wash it. Washing in hot water or hot air drying will shrink the media and refitting may be extremely difficult.

Sizing and Selecting Criteria

Unimaster units are intermittent-duty dust collectors and are sized according to the Published Air-To-Media Ratio Guidelines. To determine what size of Unimaster is required for a particular application, calculate the filter area required according to the following formula: Required Filter Area = acfm ÷ Air-to-Media Ratio. Then select the appropriate Unimaster unit that has sufficient filter area and is available with a fan capable of the required airflow and static pressure. Fan performance curves and fan selection procedures are included in the Unimaster Data Sheets.

When using an Unimaster unit, remember that, as with all intermittent-duty collectors, the Unimaster requires shutdown of the unit for off-line cleaning. The airflow through the filter must be stopped before shaking of the filter begins in order to avoid dust migrating through the fabric during cleaning. The cleaning frequency will depend on application. If time between cleanings is critical, select the next larger size collector.

Features and Benefits

Features	Benefits
Motorized filter cleaner with fully electronic controller	<ul style="list-style-type: none"> • Superior filter cleaning action
Integral unit assembly	<ul style="list-style-type: none"> • Lower capital cost • Lower operating and energy costs • Ease of installation • Minimum floor space requirements
Three inlet positions available with transitions	<ul style="list-style-type: none"> • Serviceability • Ease of installation • Flexibility
Three collection bin sizes	<ul style="list-style-type: none"> • Provides easy maintenance
High quality filter media <ul style="list-style-type: none"> • Standard 7.5 oz/yd² polyester • Polypropylene and laminate membrane on polyester • Anti-static media 	<ul style="list-style-type: none"> • Excellent filtration properties • Flexibility • Minimizes safety hazards
One-piece filter assembly	<ul style="list-style-type: none"> • Simplified maintenance
Safe operation options available <ul style="list-style-type: none"> • Explosion proof motors and controls • Spark-resistant fans • Rear explosion vent 	<ul style="list-style-type: none"> • Minimizes safety hazards • Meets NFPA standards for venting of deflagrations
Inlet baffle	<ul style="list-style-type: none"> • Provides longer filter life
High quality paint finish	<ul style="list-style-type: none"> • Electrostatically applied powder paint • Two-part epoxy overspray
Numerous options <ul style="list-style-type: none"> • Stainless steel • Afterfilters • Acoustic diffusers • Casters • Matching color overspray • Alternate shaker locations • Bin balance 	<ul style="list-style-type: none"> • Application flexibility • Filtered air can be recirculated • Quiet operation • Portable • Pleasing system aesthetics • Maximum installation flexibility • Ease of maintenance