RAYMOND®
MECHANICAL AIR SEPARATOR

With a 130 years of experience, Raymond is a leader in the design and manufacture of industrial milling and classification equipment.

PRODUCT MATERIALS WITH HIGH FINENESS

Raymond Mechanical Air Separator: Produces material with high uniform fineness, operates in open or closed circuit and is excellent for de-dusting. It can provide drying and cooling, and features the unique single or double whizzer for faster separation of fines and more positive rejection of oversize.

Built in eleven sizes ranging from 4' to 24' in diameter, as well as a 30" unit for small capacities and test runs. Each size is available in single or double whizzer configuration.

Reliable Solutions

SINGLE WHIZZER AIR SEPARATOR

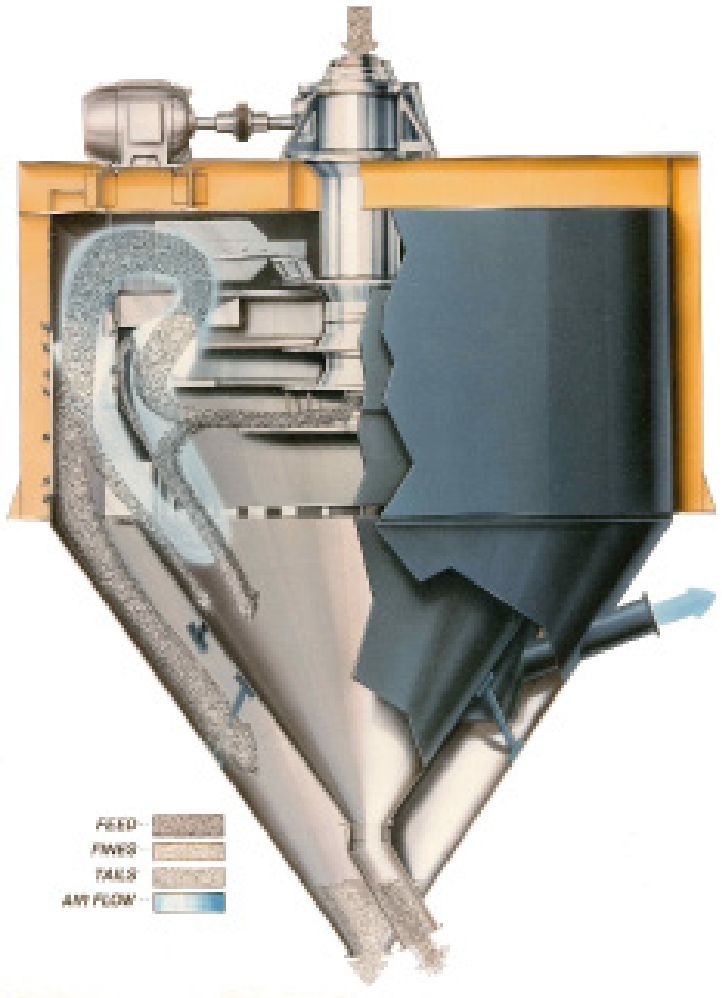
Single whizzer separators have one row or bank of whizzer blades to set up centrifugal action. This unit is ordinarily used for coarser separations up to approximately 10-15% R74 microns (85 to 90% passing 200 mesh) which is excellent for de-dusting and raw mix cement operations.

DOUBLE WHIZZER AIR SEPARATOR

Double whizzer separators have two rows or banks of whizzer blades. In normal operations they can produce finished materials up to 0.5-1% R44 microns (99 to 99.5% passing 325 mesh) and in finished cement circuits 2800 to 6000 Blaine or masonary cements.

EXPERIENCE

Raymond pulverizing and classification equipment has been setting the standards in size reduction since 1887, serving many types of mineral processing industries. Our portfolio includes not only the Raymond Mechanical Air Separator but the Raymond Jet-Stream Classifier, Raymond Turbine Classifier for Roller Mills and the Raymond Hybrid Classifier for Bowl Mills.



SINCE 1887

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Providing Full Scope of Services to Our Customers

Raymond is known for its reliable size reduction and classification equipment by customers worldwide. Our product line is supported by our engineering and field service departments to ensure the highest level of customer satisfaction, while delivering the reliability and high level of performance that today's industrial applications require.

MECHANICAL AIR SEPARATOR OPERATION CYCLE

Material enters the center feed pipe at the top of the separator and drops onto the rotating distributor plate below. The distributor plate disperses the material into the upward sweep of circulating air that is developed by the fan in the top chamber of the drum. The whizzer blades create a centrifugal motion of the air and material. This concentrates the oversize material along the surface of the upper inner cone and then out the coarse tails spout at the bottom. The airstream carrying the powdered material of required fineness moves through the fan and is delivered into the outer cone chamber where the fines are discharged as finished product. After the fines are released in the outer cone, the air returns through the deflector ports to the inner cone, setting up a continuous circuit.

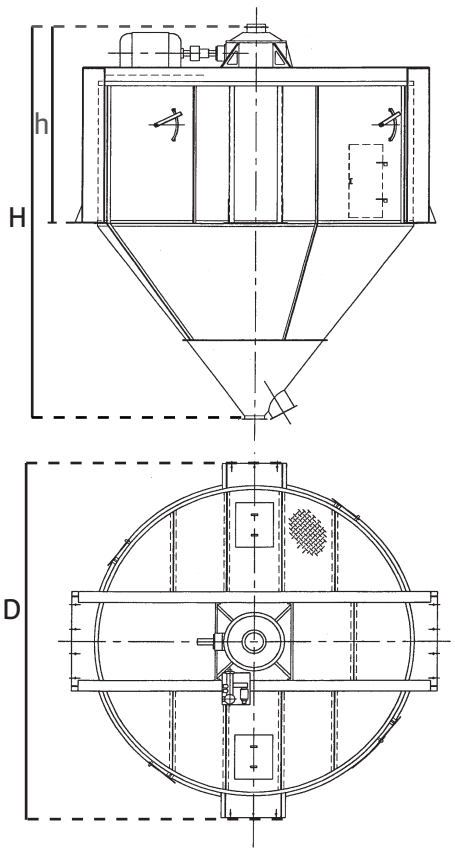
DE-DUSTING

In addition to accomplishing faster separation of the fines and more positive rejection of the oversize, the whizzer action is also useful in de-dusting operations, making granular products by removing objectionable fines.

FINENESS CONTROL

Both the single and double whizzer in 4' and 6' diameter sizes are equipped with vertical slide dampers that allow external fineness adjustment while the unit is in operation. For precise fineness control, all units 8' diameter and larger are provided with special vertical swing dampers to increase their efficiency and versatility when separating in the minus 325 mesh and sub-sieve size range. On many materials, finished products with a high percentage passing 15 to 20 microns can be obtained without difficulty.

Size	Appox. Weight		Height - H		Height - h		Diameter - D	
	lb	kg	ft	mm	ft	mm	ft	mm
30"	950	400	5.2	1,500	1.5	400	3.2	900
4'	2,000	900	8.0	2,400	4.3	1,200	5.0	1,500
6'	4,000	1,800	11.0	3,300	5.8	1,700	7.1	2,100
8'	8,000	3,600	14.3	4,300	7.7	2,300	9.7	2,900
10'	11,500	5,200	16.8	5,100	8.5	2,500	11.7	3,500
12'	22,500	10,200	19.7	5,900	9.7	2,900	14.2	4,300
14'	28,500	12,900	22.1	6,700	10.3	3,100	16.0	4,800
16'	39,300	17,800	25.5	7,700	12.1	3,600	17.8	5,400
18'	44,800	20,300	27.1	8,200	11.9	3,600	20.8	6,300
21'	69,400	31,400	29.3	8,900	14.9	4,500	24.0	7,300
24'	90,000	40,800	37.3	11,300	17.2	5,200	27.0	8,200



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CONSTRUCTION AND SPECIFICATIONS

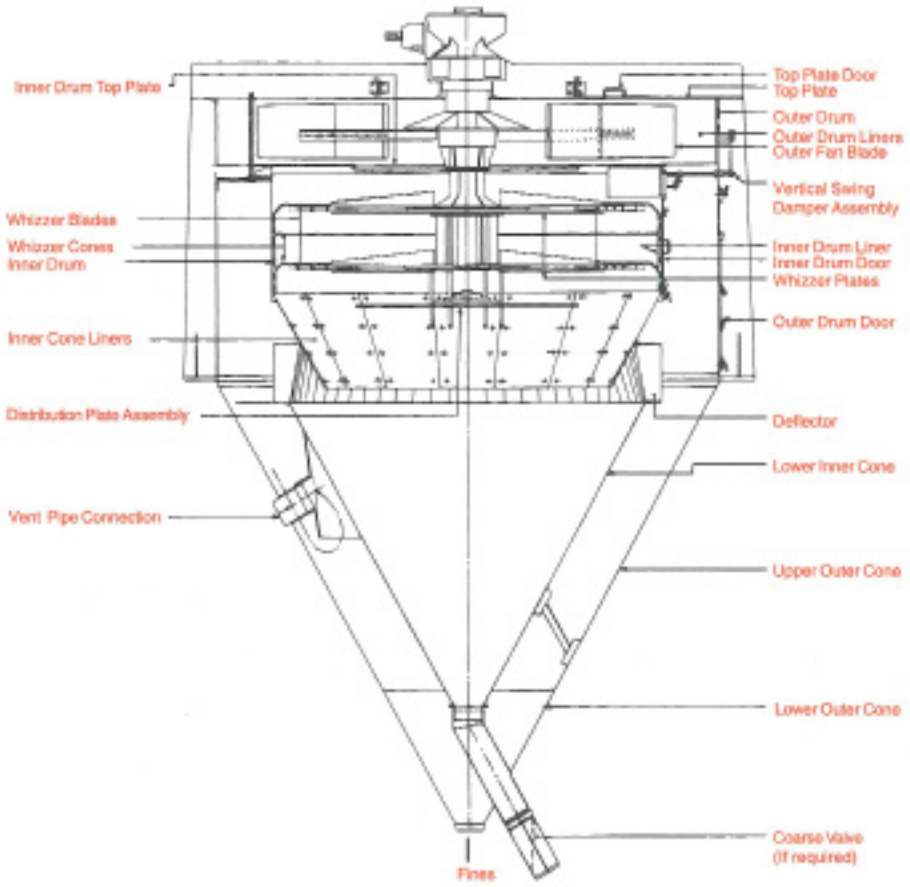
Standard construction of the Raymond mechanical air separator includes cast, abrasion resistant whizzer cones and replaceable steel plate liners on the inner cone.

The distributor plate is protected with special liners along the outer edge with a cone at the center to provide further protection and insure even flow of the incoming material off the distributor plate at the start of classification.

Separators for handling abrasive materials can be equipped with special abrasion resistant liners in all parts of the machine.

All mechanical air separators are provided with a vent connection in the cone section as standard construction for removing infiltrating air and keeping the unit under negative pressure for dust free operation.

The 4' and 6' diameter mechanical air separators are built on the same principle as the larger units but are arranged with a vertical motor drive. This eliminates the need for a gear and pinion.



TYPICAL APPLICATIONS

- Cement - for closed circuit grinding to classify and dry raw mix, and to classify and cool finish cement.
- Limestone - produces limestone sand to meet the specifications required for use in bituminous concrete, mortor, aggregate and many similar uses.
- Flour Mixes - makes fine, uniform cake mixes and for the production of protein enriched grades flour.
- Hydrated Lime - produces a high-fineness, uniformly classified hydrated lime for chemical and spray purposes.
- Food Products - classifies various food products including sugar, cocoa, milk powder, food mixtures, corn starch, wheat starch and soybean meal.
- Chemicals - makes various grades ranging from extremely fine to the granular, dust-free gradations, such as soda ash and sodium phosphate.
- Talc and Clays - upgrades the quality of such materials as talc, kaolin, clays, and phosphate rock by removing such impurities as silica, flint and other foreign materials.
- Metal and Metallurgical Powders - classifies metal powders consisting of copper, bronze, iron and various alloys. De-dusting of sea-coal for foundry facing is another typical application.

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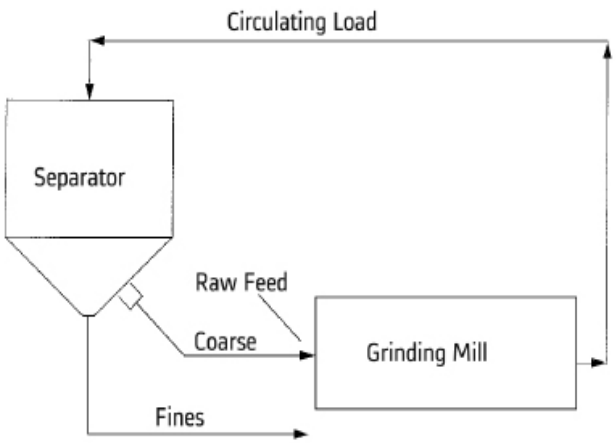
CLOSED CIRCUIT GRINDING
When operated in closed ciruit combination with a pulverizer, the separator skims off the fines as fast as they are made so the mill works only on fresh material without wasting power. The coarse tailings are discharged back to the mill for further reduction. The reground material is returned to the separator with the feed, so that a constant circulating load is set up between the mill and the separator. It saves power in the overall operation and increases the capacity of the complete unit.

The separator may be used in combination with ball mills, tube mills and compartment mills. Its function is to maintain a constant fineness in delivering the finished product.



ADVANTAGES
The advantages of using a mechanical air separator in closed circuit with the grinding mill for producing closely sized finish products include:

- Positive control of fineness and the elimination of oversize particles.
- Convenient variation of product fineness-vertical dampers permit wide range changes in fineness, externally while the separator is in operation.
- Increase in the output capacity of the grinding mill. Experience has shown increase from 25 to 75% or more.
- Lowering the temperature of the mill and product.
- Improvement in grinding efficiency, as in the case of ball mills where ball coating with fine materials can reduce grinding ball effectiveness.

INTERNAL AIR FLOW SYSTEM FOR COOLING AND DRYING
Effective drying within the separator is normally limited to those installations where the separator is used in closed circuit with a grinding unit. The oversize particles with entrained moisture, rejected in the first pass as coarse, are further reduced in the grinding mill to permit efficient drying in the second pass through the system.

Both the single and double whizzer units can be provided with cooling and drying auxiliaries which consist of up to four inlet openings in the drum section and two air outlets in the cone section. Water jackets can also be provided on the cone sections for use in cooling finished cement on sizes 18' to 24' diameter.

OPEN CIRCUIT
In some cases, it is convenient to install a separator independently from the mill to make both a fine and coarse product simultaneously.

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