Vacuum Conical Dryers

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McGill AirPressure designs and manufactures vacuum conical dryers for drying free-flowing materials that cannot stand attrition. Drying takes place in a conical chamber that rotates end over end to create a gentle folding and mixing action. Vacuum dryers remove moisture by exposing the materials to reduced pressure. Just enough heat is used to replace that lost through vaporization.

Material Handling

Material is loaded into the drying chamber through a charge valve with a spring-assisted, hinged cover. The standard discharge valve is a handwheel-operated, butterfly valve design with teflon seats and seals and a stainless steel disc. Options include an air-operated discharge valve and unloading boot.

Operation

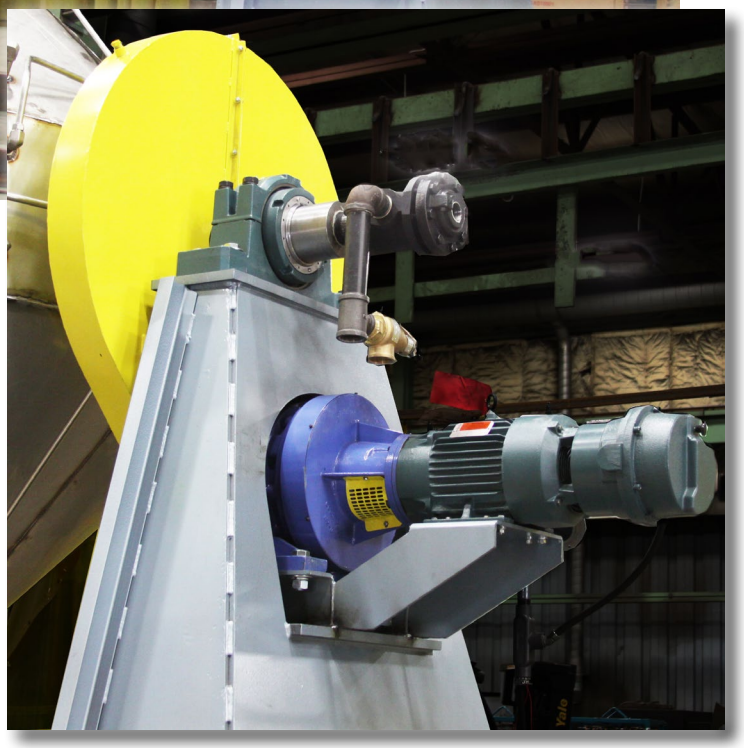
The standard operating pressure is one torr. Constant-speed and variable-speed drives are available in chain-and-sprocket, gear-and-pinion, or direct drive designs with guards. Stuffing box and single mechanical seals are available, with an internal liptype shaft seal on the vacuum line. A double mechanical seal can be used on the vacuum line for operation to 50 microns. Dryers are equipped with self-aligning, anti-friction bearings on both trunnions. An oversized rotary joint and jacket connections for the liquid heating medium are available. An internal thermocouple can be supplied for measuring product temperature.

Construction

Conical dryers are available with all vapor-contacting parts made of carbon steel, stainless steel, or special alloys. Internal welds are ground smooth, and internal surfaces can be finished with a 30-50 micro-inch polish. External surfaces can be painted or insulated with a polished stainless steel cover. The dryer jacket is designed and stamped in accordance with ASME code for 25, 50, or 100 psig, coincidental with full vacuum in dryer. The jacket is baffled for equal distribution of the liquid heating medium. Special bronze bearings provide internal support of the vacuum line, which is equipped with an intake filter formed of multiple layers of stainless steel mesh (special vacuum line filters are available). Conical dryers are equipped with a vacuum gauge, vacuum release valve, jacket pressure gauge, and jacket relief valve. A bronze double rotary joint is provided for steam and condensate connections. Floor stands and stub stands are available.

Auxiliary Equipment Options

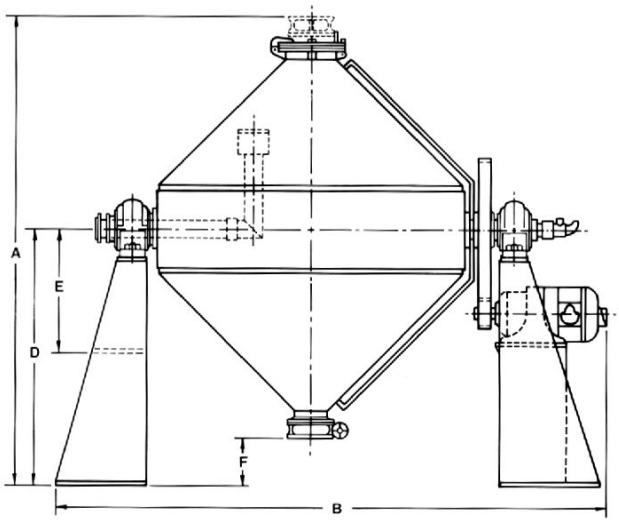
- Vertical shell and tube surface condensers.
- Refrigerated or dry-ice traps.
- Vacuum pumping systems: mechanical, water-sealed, or steam jet.
- Heating systems: steam, water, oil, or other fluid.
- Cooling systems: direct or indirect.
- Bag-type vacuum dust collectors with controls for intermittent shaking or pulsing of material back into the dryer.
- Dust-tight discharge hoppers and valves for filling containers.
- Instrumentation for process control and documentation: fully wired control panels or field-mounted individual instruments for sensing, indicating, or recording temperature, pressure, and other variables.
- Complete systems with components assembled on a common baseplate.

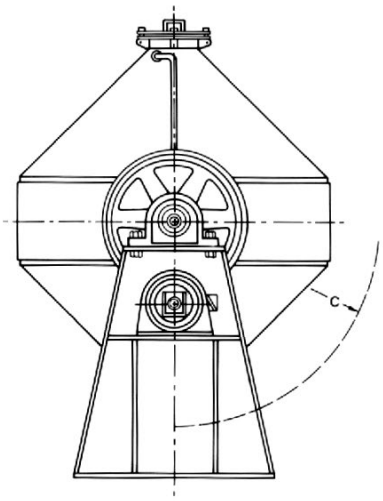


Above: A vacuum conical dryer designed for processing powdered metals.

Right: An externally insulated, gear-and-pinion drive for a vacuum conical dryer.

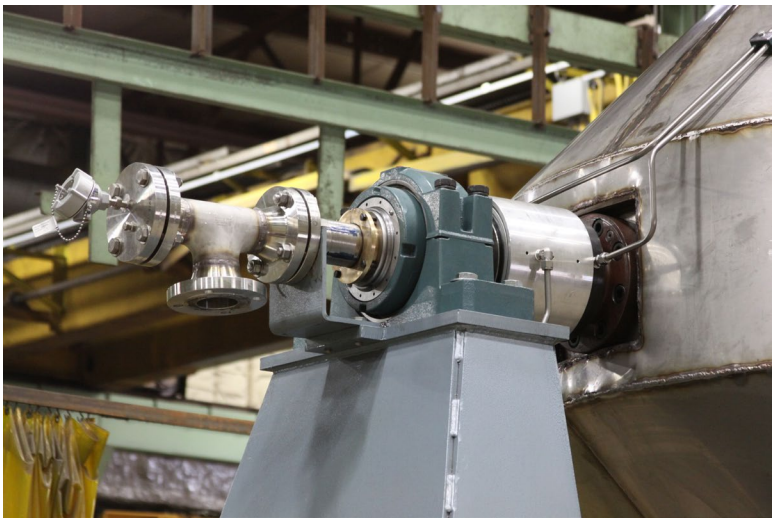
McGill AirPressure Vacuum Conical Dryers - Standard Specifications





Model Number	Working Capacity 70% Full (cu ft)	Diameter of Charge Opening (inches)	Diameter Discharge Opening (inches)	Dryer Revolutions per Minute	Motor Horse-power	Maximum Apparent Density (lb/cu ft)	Vacuum Line Size (inches)	Approximate Floor Space	Overall Height A (inches)	Overall Length B (inches)	Swing Radius C (inches)	Floor Stands D (inches)	Stub Stands E (inches)	Valve Clearance F (inches)
VCD-15	1.1	6 Combination		12	1/4	150	1	2′6″ x 4′0″	46	627/8	14	32	—	18
VCD-20	2.9	6 Combination		11	1/4	150	11/2	3′0″ x 5′6″	56	763/4	19	37	—	18
VCD-25	5.1	8	6	10	1/3	100	11/2	3′9″ x 6′0″	617/8	833/8	233/4	381/8	—	18
VCD-30	8.6	8	6	9	1/2	100	2	4′6″ X 7′0″	707/8	913/8	281/4	425/8	—	18
VCD-35	14.3	16	8	8.5	3/4	90	2	5′0″ x 7′6″	821/4	987/8	351/4	47	—	18
VCD-40	20.3	16	8	8	1	75	3	5′6″ x 8′0″	881/4	1031/4	381/4	50	—	18
VCD-45	29.0	16	8	7.5	11/2	75	3	6′0″ x 9′0″	96	1183/8	421/4	533/4	—	18
VCD-50	39.8	16	10	7	2	70	3	6′6″ x 10′0″	1021/4	1251/4	451/4	57	—	18
VCD-60	72.2	16	10	6.5	3	55	31/2	7′9″ x 11′6″	—	1395/8	533/4	—	18	—
VCD-70	109.9	16	10	6	5	50	31/2	9′0″ x 12′6″	—	1477/8	601/4	—	18	—
VCD-80	163.9	16	10	5.5	71/2	50	6	10′9″ x 13′6″	—	1661/8	673/4	—	36	—
VCD-90	233.3	18	12	4.5	10	50	6	14′0″ x 18′0″	—	1837/8	743/4	—	36	—
VCD-105	347.9	18	12	3.75	15	50	6	16′0″ x 22′0″	—	2041/4	833/4	—	36	—

*Custom sizes also available upon request.



A dryer's vacuum pipe assembly.