



# Vacuum Rotary Dryers

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McGill AirPressure LLC designs and manufactures vacuum rotary dryers for drying difficult or sticky materials that can withstand agitation. Drying takes place in a cylindrical chamber with an internal agitator. 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 by means of a charge nozzle with a spring-assisted, hinged cover. The discharge valve can be designed for handwheel, air, or hydraulic operation. Parabolic charge and discharge gaskets are set in a machined dovetail groove. Large-diameter, flanged vacuum connections prevent atmospheric contamination and allow optimum conductance. Clean-out ports can be built into the dryer's end plates.

## Operation

Dryers are designed for standard operating pressures up to 10 torr. Constant-speed and variable speed drives are available in chain-and-sprocket, gear-and-pinion, or direct-drive designs with guards, fan-cooled enclosures, and torque couplings. Dryers can be equipped with self-aligning, anti-friction, pillow block-type bearings and special motor enclosures. During operation, the material being dried is mixed by a heated spiral ribbon or paddle agitator. Each agitator is durably constructed with the spiral inner and outer ribbons or paddles welded to support arms on the center shaft. For models RD-2040 and larger, the agitator shaft is heated by a rotary union and siphon pipe. The agitator shaft is sealed by stuffing box assemblies. For operating pressures below 10 torr, the shaft can be equipped with double mechanical seals.

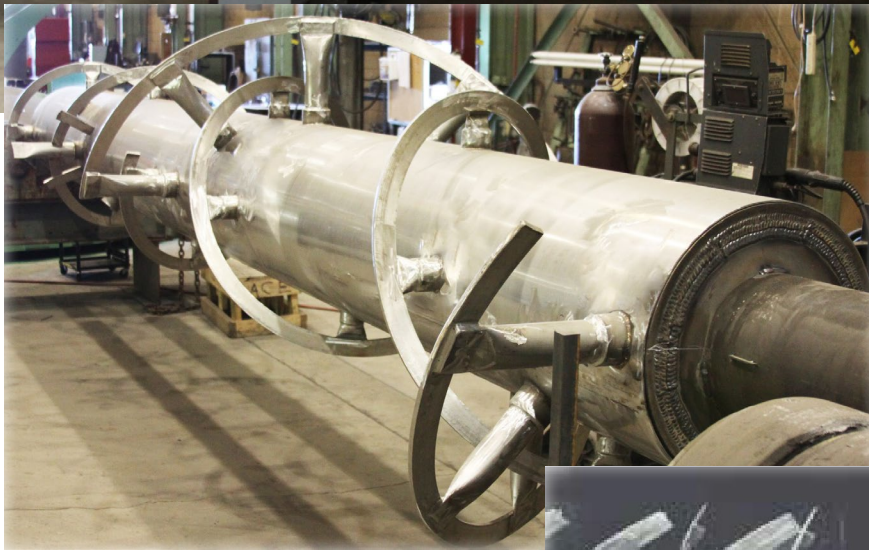
## Construction

Rotary dryers are available with all vapor-contacting parts made of carbon steel, stainless steel, or special alloys. Internal shell and external agitator welds are

ground smooth and flush. External surfaces are painted; interior surfaces can be polished. The dryer's jacket can be designed and stamped in accordance with ASME code for 25, 50, or 100 psig, coincidental with full vacuum in shell. The jacket is baffled for equal distribution of liquid heating mediums. External insulation and sheathing can be seam welded and polished or joined with sheet metal screws. Rotary dryers are equipped with a vacuum gauge, vacuum release valve, jacket pressure gauge, and jacket relief valve. A product thermocouple well is available. Standard saddle supports allow 18 inches of clearance from discharge valve face to floor. Special supports are available. Each rotary dryer is fully assembled and vacuum leak tested at McGill AirPressure's manufacturing plant.

## 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.
- Flush-type clean-out port in end plates.
- 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 stainless steel vacuum rotary dryer for a chemical processing application.*

*Left: Spiral ribbon agitator.*

*Bottom: Paddle agitator.*

# McGill AirPressure Vacuum Rotary Dryers - Standard Specifications

Model Number*	Internal Dimensions (ID x Length)	Working Capacity 60% Full (cu ft)	Diameter Discharge Opening (inches)	Diameter Charge Opening (inches)	Typical Ribbon Speed* (rpm)	Typical Motor Horsepower*	Approximate Space Occupied by Dryer			Approximate Weight (lb)
							Height	Width	Length	
VRD-1520	18" x 2'0"	2.3	4	6	25	1	4'2"	2'6"	6'0"	1,500
VRD-1740	20" x 4'0"	5	4	6	20	1	4'4"	2'9"	9'0"	2,700
VRD-2040	2'0" x 4'0"	7	6	10	20	1	4'6"	3'0"	9'0"	3,100
VRD-2060	2'0" x 4'0"	11	6	10	20	1 1/2	4'6"	3'0"	11'0"	3,500
VRD-2080	2'0" x 8'0"	14	6	10	20	2	4'6"	3'0"	13'0"	3,700
VRD-2560	2'6" x 6'0"	17	8	10	20	3	5'0"	3'6"	11'0"	4,500
VRD-2580	2'6" x 8'0"	23	8	10	15	5	5'0"	3'6"	13'0"	5,700
VRD-25100	2'6" x 10'0"	29	8	10	15	5	5'0"	3'6"	15'0"	6,900
VRD-3060	3'0" x 6'0"	24	8	12	15	5	5'6"	4'0"	11'0"	5,500
VRD-3080	3'0" x 8'0"	32	8	12	15	5	5'6"	4'0"	13'0"	6,700
VRD-30100	3'0" x 10'0"	39	8	12	15	7 1/2	5'6"	4'0"	15'0"	7,900
VRD-30120	3'0" x 12'0"	44	10	12	15	7 1/2	5'6"	4'0"	18'0"	9,100
VRD-30150	3'0" x 15'0"	55	10	12	15	10	5'6"	4'0"	21'0"	10,800
VRD-4080	4'0" x 8'0"	57	10	16	10	7 1/2	6'6"	5'0"	13'0"	10,100
VRD-40100	4'0" x 10'0"	70	10	16	10	7 1/2	6'6"	5'0"	15'0"	11,500
VRD-40120	4'0" x 12'0"	84	10	16	10	7 1/2	6'6"	5'0"	18'0"	14,100
VRD-40150	4'0" x 15'0"	100	12	16	10	15	6'6"	5'0"	21'0"	17,800
VRD-40200	4'0" x 20'0"	130	12	16	10	15	6'6"	5'0"	26'0"	24,000
VRD-50100	5'0" x 10'0"	111	12	16	7	15	7'6"	6'0"	16'0"	20,000
VRD-50150	5'0" x 15'0"	161	12	16	7	20	7'6"	6'0"	21'0"	25,500
VRD-50200	5'0" x 20'0"	209	12	16	5	20	7'6"	6'0"	26'0"	32,000
VRD-50250	5'0" x 25'0"	262	12	16	5	25	7'6"	6'0"	31'0"	40,000

\*Based on product bulk density of 50 lb/cu ft. Special sizes also available.

A rotary dryer outlet hatch.

