

## Mink MM 1104 - 1142 BV

## Mink MM 1324 - 1402 AV



MM 1142 BV

### Description

The Busch MM series positive displacement vacuum pumps feature a compact rotary claw design that is air-cooled, dry-running and non-contacting.

These features, along with quality construction, result in a pump that offers extremely high reliability and a long service life.

### Features

- Non-contacting design, eliminates internal wear and parts to replace
- Air-cooled, requiring no water
- Dry-running, no sealing or lubricating oil is needed in the pumping chamber
- Minimal maintenance
- Economical, reduced power requirements
- High volumetric efficiency

### Standard Equipment

- Acoustic enclosure
- Base frame
- Vibration isolators
- TEFC motor
- Oil sight glass
- Inlet screen
- Anti-suck-back valve on inlet
- Vacuum relief valve  
(models MM 1202 AV, MM 1252 AV, MM 1322 AV, MM 1402 AV only)
- Discharge silencer
- Threaded NPT inlet/outlet connections

# Energy Savings with Busch Mink Vacuum Pumps

## Energy Savings Overview

Busch rotary claw vacuum pumps can reduce energy consumption by 25% or more,\* lowering electrical costs while also qualifying for custom energy rebates offered by many utility companies. With their unique, non-contacting, friction-free design, energy is not wasted from internal friction or drag like other pump designs. Additionally, when matched with PLC-based variable speed controls, energy efficiency is further enhanced, providing true on-demand operation.



## Operating Principle

Inside the pumping chamber, two “S” profile rotors driven by gears spin in opposite directions. As the rotors pass the inlet, a void is created and the trapped air is pushed to the exhaust side where it is first internally compressed and then discharged.

A small, fixed, gauged clearance is maintained between all moving parts. Due to this, there is no friction or wear and oil is not required in the compression chamber for lubrication, sealing or cooling.

## Vacuum Pumps

Mink series vacuum pumps are available in a variety of sizes and configurations to best suit your requirements. All pumps feature 100% oil-less compression, are air cooled, have TEFC motors and are suitable for variable speed operation.



- Pumping speed to 325 CFM
- Vacuum to 15 Torr (29.3" Hgv)

## Vacuum Systems

Busch Mink series vacuum systems are available in standard or custom configurations for industrial and laboratory applications.

Also available are a wide range of optional accessories and controls, including PLC-based variable speed controls that further enhance energy and maintenance savings.



## Vacuum Pump Comparison

Technical Data	Rotary claw dry-running	Rotary vane oil-lube	Rotary vane oil-less	Rotary screw oil-lube	Liquid-ring oil-sealed
ACFM	Very high	High	Medium-low	Medium	Medium
BHP	Low	Low	High	Medium	High
Efficiency	Very high	High	Medium-low	Medium	Medium
VFD* capability	Very high	Low	Low	Low	Low
Cost of ownership	Very low	Low	Very high	Medium-high	Medium-high

\*Variable frequency drive

## Energy Cost Comparison\*

Operating parameters	Rotary claw dry-running	Rotary vane oil-lube	Rotary vane oil-less	Rotary screw oil-lube	Liquid-ring oil-sealed
Motor HP	7.5	10	15	15	15
Run hours/year	8000	8000	8000	8000	8000
Motor efficiency	90%	90%	90%	90%	90%
\$/kWh	\$ 0.08	\$ 0.08	\$ 0.08	\$ 0.08	\$ 0.08
Total yearly cost**	\$ 3,977	\$ 5,303	\$ 7,954	\$ 7,954	\$ 7,954

\*Comparison of pump technologies to deliver 150 ACFM @ 150 Torr (24" Hgv)

\*\* Yearly cost = (HP x .7457 x kWh cost)/Motor efficiency

## Variable Frequency Drive Energy Cost Savings

For applications with varying demand conditions, the use of a VFD (variable frequency drive) on a Mink rotary claw vacuum pump will result in additional energy cost savings (compared to a non-VFD equipped pump). This example represents a Busch MM 1252 AV model pump sized for an application with a maximum load condition of 150 ACFM @ 150 Torr (24" Hgv), but with varying daily demand.

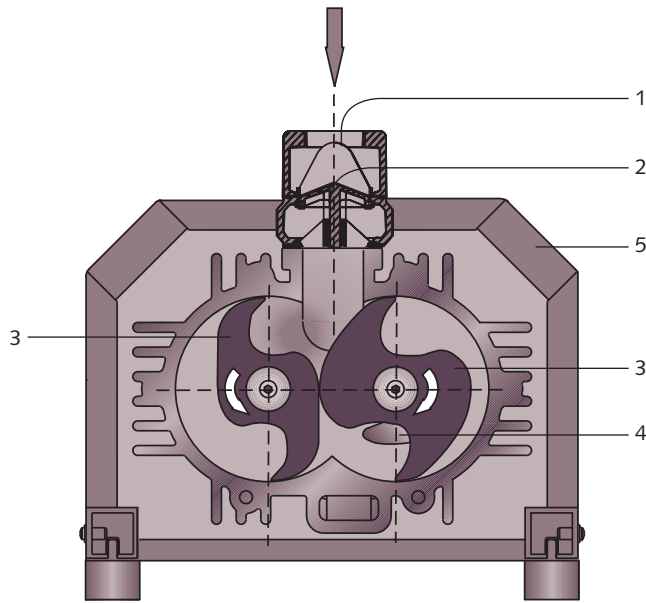
System demand	ACFM @ 150 Torr	Motor frequency	Brake horsepower	Operating hours	Yearly cost*
100%	150	58 Hz	6.8	800	\$ 361
75%	112.5	47 Hz	5.4	3200	\$ 1,145
50%	75	36 Hz	4.0	2400	\$ 636
25%	37.5	23 Hz	2.8	1600	\$ 297
Totals				8000	\$ 2,439

\*Based on \$0.08 kWh and 90% motor efficiency



# Dry rotary claw vacuum pumps

## Operating Principle



- 1 Gas inlet
- 2 Non-return valve
- 3 Claws
- 4 Gas outlet
- 5 Acoustic enclosure

## Operating Principle

Inside the pump housing, two claw-shaped rotors take in air as they rotate in opposite directions. The air is compressed by the rotors, then discharged through a silencer to atmosphere.

The non-return valve incorporated into the inlet flange prevents air from back flowing into the vacuum chamber when the pump is turned off.

Mink MM rotary claw vacuum pumps are directly driven by a flanged motor, and the two rotors are synchronized by gears.

A wide range of accessories allows optimum adaptation to many applications.

## Accessories

- Inlet filters
- Liquid separators
- Knock-out pots
- High-volume bag filters
- Control valves
- Gauges
- Switches and transmitters
- Motor starters
- Variable speed drives
- Vacuum receivers

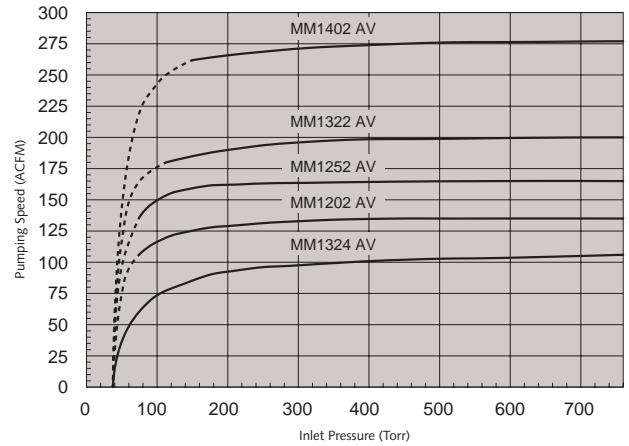
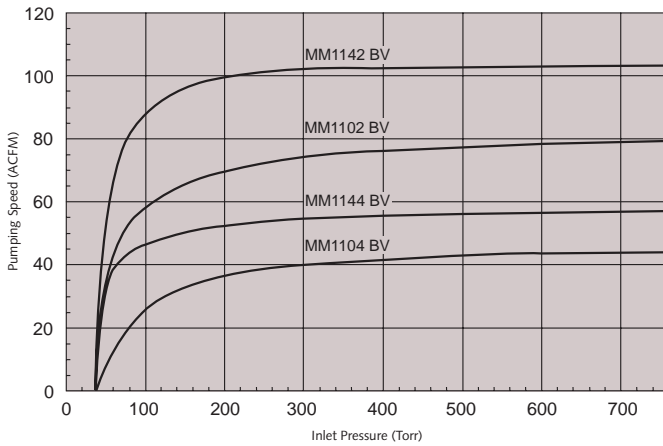
## Applications

- Food packaging
- Food processing
- Medical
- Laboratory
- Plastics
- Automation
- Packaging
- Electronics
- Pneumatic conveying
- Printing
- Environmental
- Woodworking
- Renewables
- Paper
- Central systems



Technical Data

Pumping Speed vs. Inlet Pressure



Operation duty in dashed area not allowed. Vacuum relief valve to maintain maximum continuous operating pressure included as a standard feature.

Technical Data		1104 BV	1144 BV	1102 BV	1142 BV	1324 AV	1202 AV	1252 AV	1322 AV	1402 AV
Nominal pumping speed	ACFM	44	57	79	103	106	135	165	200	277
Ultimate pressure continuous duty	Torr	37.5	37.5	37.5	37.5	37.5	75	75	112.5	150
	"HgV	28.4	28.4	28.4	28.4	28.4	27	27	25.5	24
Motor size	kW	1.7	2.4	3.4	4.8	4.2	5.2	6.8	7.6	9.5
	HP	2.3	3.2	4.6	6.4	5.6	7.0	9.1	10.2	12.7
Nominal motor speed	RPM	1800	1800	3600	3600	1800	3600	3600	3600	3600
Sound level rating*	dB(A)	70	70	79	79	74	79	79	82	83
Approximate weight	Lbs.	408	419	408	419	595	518	529	606	717

All performance data is based on ambient conditions of 14.7 PSIA and 70° F, and has a tolerance of +/- 10%.

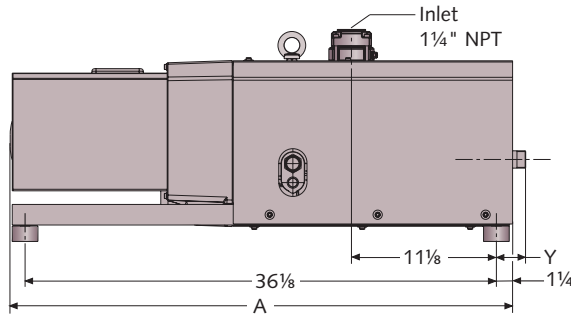
\*DIN EN ISO 2151, at 300 Torr inlet pressure

# Dry rotary claw vacuum pumps

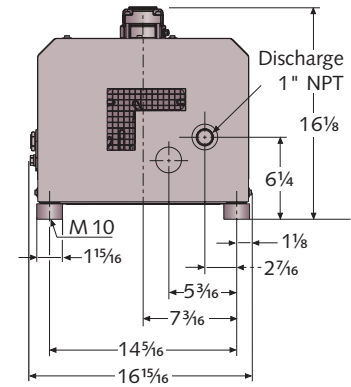


## Dimensions

MM 1104-1142 BV

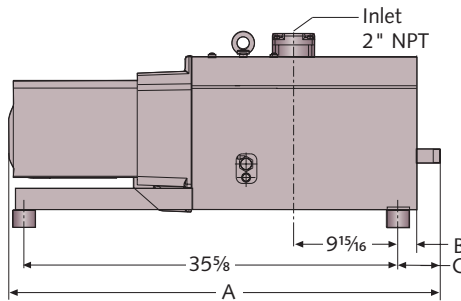


Dimensions	A	Y
MM 1104 BV	39	17 <sup>1</sup> / <sub>16</sub>
MM 1144 BV	39	2

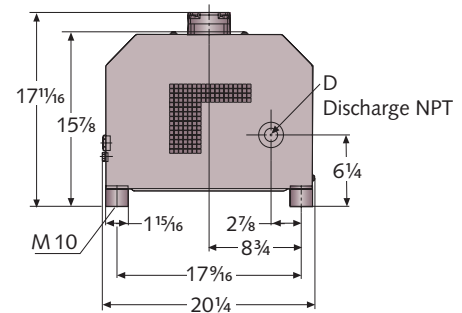


Dimensions	A	Y
MM 1102 BV	40 <sup>11</sup> / <sub>16</sub>	2 <sup>11</sup> / <sub>16</sub>
MM 1142 BV	39 <sup>1</sup> / <sub>2</sub>	3 <sup>5</sup> / <sub>16</sub>

MM 1324-1322 AV

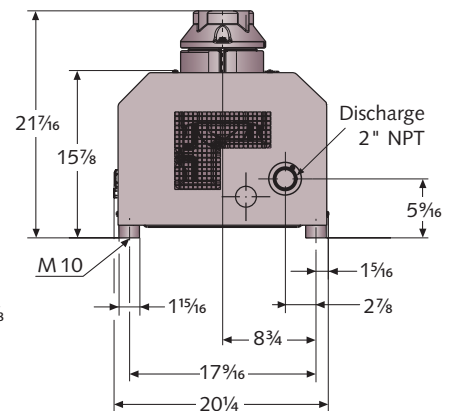
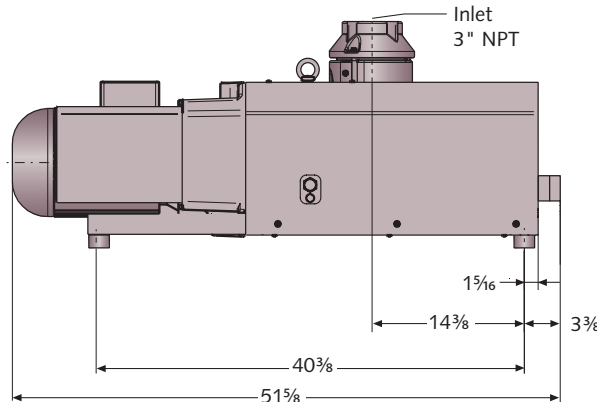


Dimensions	A	B	C	D
MM 1324 AV	43 <sup>5</sup> / <sub>16</sub>	1 <sup>13</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>2</sub>	1
MM 1202 AV	41 <sup>1</sup> / <sub>8</sub>	1 <sup>13</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	1



Dimensions	A	B	C	D
MM 1252 AV	41 <sup>5</sup> / <sub>16</sub>	1 <sup>13</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>2</sub>	1
MM 1322 AV	44 <sup>3</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	4 <sup>13</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>

MM 1402 AV



All dimensions in inches unless otherwise noted.



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Models and specifications are subject to change without notice

Mink AVBV 10/11