PORTABLE ABRASIVE VACUUM AND RECOVERY SYSTEMS

munkebo by CLEMCO

Transform Abrasive Recovery from a Pain to Profit

CLEMCO®
INDUSTRIES CORP.

Clemco Industries Corp.

nkebo ystems

6 models

Clemco's Portable Vacuum and Recovery Equipment

MUNKEBO MB-3000 SYSTEM WITH A CYCLONE PRECLEANER

You've finished an abrasive blasting job . . .

. . . but now you need to remove spent abrasive for disposal or recycling—**and it's a pain!** And when it takes too long, it eats away your time and profits. In fact, **cleanup after a blasting job can run up to 40% of a project's total cost.** Munkebo Portable Abrasive Vacuum and Recovery Systems make recovering spent abrasive quick and easy, saving you time and money.

- Munkebo Systems are perfect for job sites with difficult access or limited workspace.
- Their modular designs and compact footprints mean Munkebo Systems can be arranged as needed depending upon the space restrictions of a job site.
- Munkebo Systems can recover expendable and recyclable abrasives, as well as steel grit and other low-dust abrasives.
- All steel construction, along with rugged hoses and components, all are designed for low wear, infrequent parts replacement, and little routine maintenance.

You deserve equipment that provides a quick return on your investment and low total cost of ownership. You deserve a Munkebo Portable Abrasive Vacuum and Recovery System.

Complete, Portable Systems

MUNKEBO MB-3000 SYSTEM WITH A CYCLONE PRECLEANER

Optional
Cyclone Precleaner

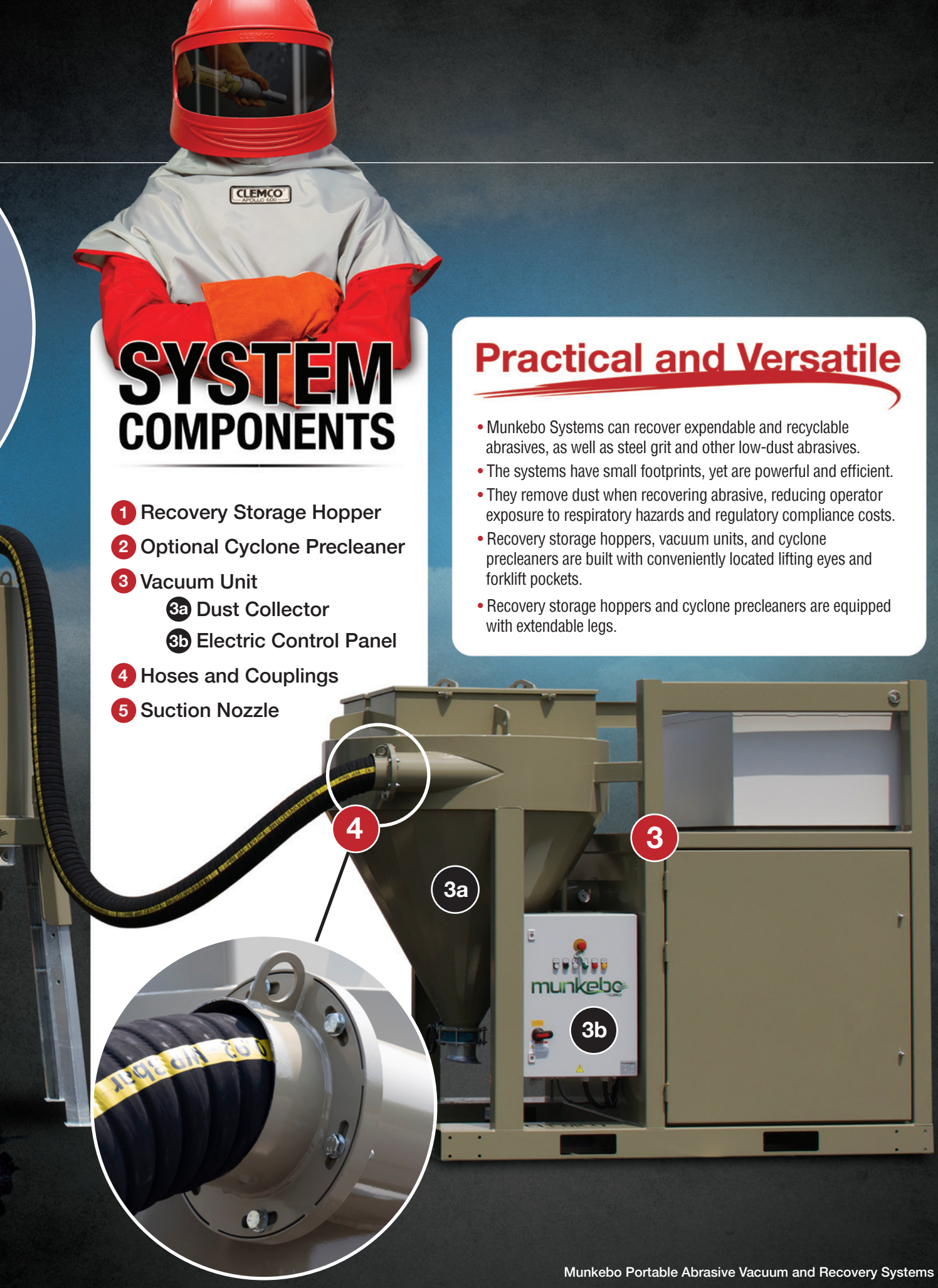
- Recommended when recovering expendable and recyclable abrasives that produce a high level of fines.
- Removes additional dust before air flows into the dust collector.
- By removing additional dust and providing extra storage for dust carryover, the cyclone precleaner prolongs the service lives of the vacuum pump and dust-collector filter cartridges.

SYSTEM COMPONENTS

1. Recovery Storage Hopper
2. Optional Cyclone Precleaner
3. Vacuum Unit
   - 3a Dust Collector
   - 3b Electric Control Panel
4. Hoses and Couplings
5. Suction Nozzle

Practical and Versatile

- Munkebo Systems can recover expendable and recyclable abrasives, as well as steel grit and other low-dust abrasives.
- The systems have small footprints, yet are powerful and efficient.
- They remove dust when recovering abrasive, reducing operator exposure to respiratory hazards and regulatory compliance costs.
- Recovery storage hoppers, vacuum units, and cyclone precleaners are built with conveniently located lifting eyes and forklift pockets.
- Recovery storage hoppers and cyclone precleaners are equipped with extendable legs.



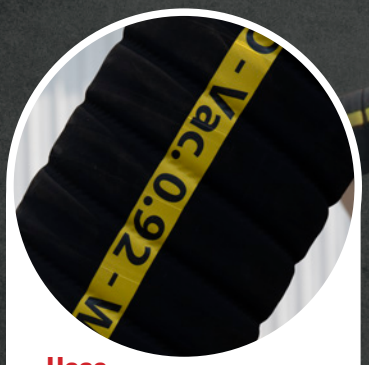
Munkebo Portable Abrasive Vacuum and Recovery Systems

Reliable, Durable, and Easy to Operate

Hose Couplings
- Hoses connect inside inlets.
- This significantly reduces coupling wear.

Integral Dust Collector
- Filter cartridges are auto-pulse cleaned by an air jet every minute.
- Auto-pulse cleaning increases cartridge life and effectiveness.

VACUUM UNIT

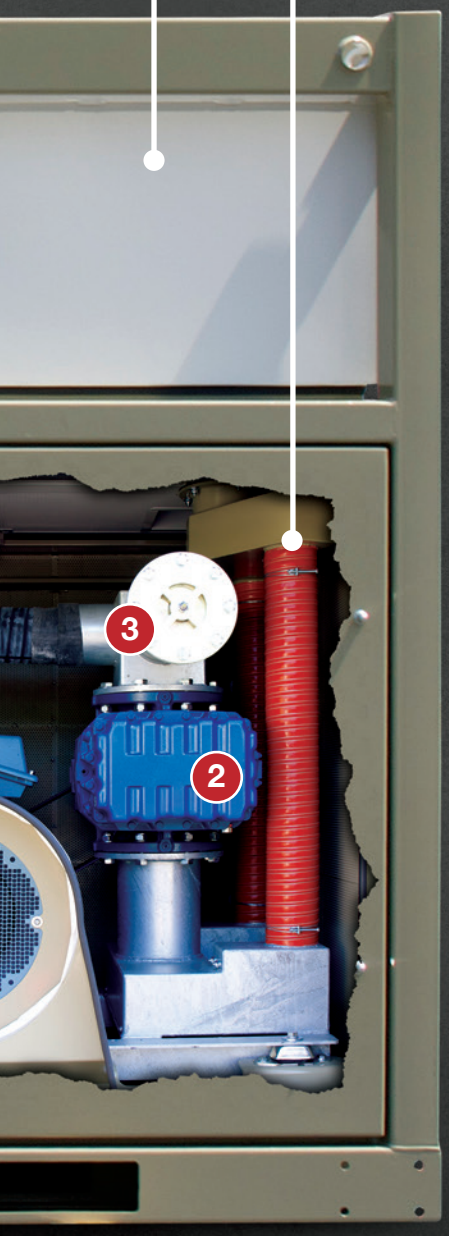


Hose
- Durable, flexible hose that can withstand extreme vacuum pressure.
- Reinforced with polyester and antistatic copper wiring.

Electric Control Panel
- Indicator Lights—Power On/Off, system failure, and butterfly-valve open.
- Buttons—Start, stop, and emergency stop.
- Circuit breaker.
- Soft Starter—Generates a gradual increase to full speed at startup, which reduces stress on the vacuum-unit motor.

Equipment that Lasts

Exhaust Silencer
- Helps keeps noise levels at or below 85 dBa at 3.3 ft, which is below the OSHA standard.

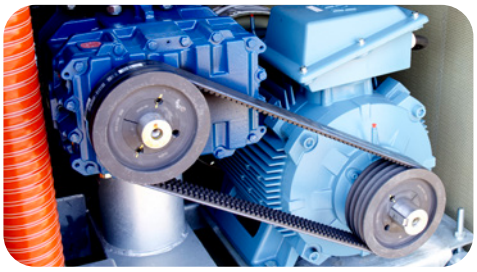


MOTOR AND PUMP

1. Motor
- Munkebo electric motors weigh less and have smaller footprints than diesel engines, which allow for the equipment's compact, modular design.
- Their electric motors are more efficient and cost less to run. For example, **the 75 kW electric motor in Munkebo's MB-3000 System produces as much power an a 110 kW diesel engine**.
- Electric motors have few moving parts, which reduces the number of wear components and maintenance costs.
- They are quiet, and because they are oil and diesel free, they run cleaner and emit no exhaust.

2. Pump
- 3-lobe, positive displacement technology is quieter and has fewer vibrations than 2-lobe systems.
- Belt driven.

3. Safety Relief Valve
- Releases excessive vacuum pressure.
- Helps keep the vacuum pump from overheating.



Munkebo Systems use gravity and pneumatic conveyance to transport abrasive through their equipment. This design reduces the number of mechanical wear parts, which in turn reduces repairs and maintenance, lowers total cost of ownership, and quickens the return on your investment.

Munkebo Systems Go Where You Need Them to Go

For over a half-century, Munkebo Systems have helped abrasive blasting crews around the world stay under budget and win more jobs.

Small Footprints and Modular Designs

MUNKEBO MB-3000 SYSTEM WITHOUT A CYCLONE PRECLEANER

- The modular designs and small footprints of Munkebo Systems simplifies loading and unloading the equipment on over-the-road trailers.
- Conveniently located lifting eyes and forklift pockets provide flexibility when moving and staging equipment.
- Does your job site have limited space? Is access to it difficult or obstructed? The components of a Munkebo System can be arranged as needed depending upon a job site's space restrictions.
- Depending on the system, equipment can be placed as far as 80 ft to 1,300 ft from spent abrasive.

Munkebo Systems: Application Versatility

Oil and Gas
- Offshore and onshore equipment
- Oil storage tanks, including tank farms
- Refineries and pipelines

Energy and Utilities
- Electric grid and power generation maintenance
- Windmill monopiles and jackets
- Nuclear decommissioning and equipment maintenance

Transportation
- Aerospace, automotive, and marine
- Shipyards, including shipping containers
- Rail yards, including rail cars
- Over-the-road trailers

Infrastructure Maintenance
- Bridges and highway overpasses
- Tunnels and pipelines
- Buildings
- Dams

Mining
- Dump trucks and trailers
- Flare towers and storage tanks
- Structural steel

General Industry
- OEM manufacturing
- Steel fabrication
- Foundries
- Numerous other applications that need abrasive recovery

Munkebo Portable Abrasive Vacuum and Recovery Systems

SPECIFICATIONS: 6 Munkebo Systems

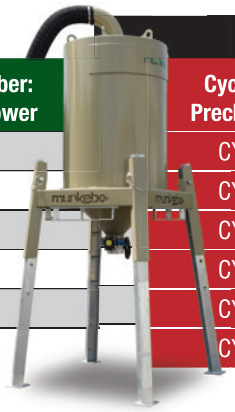
Complete Systems: Components and Stock Numbers

Complete Systems: Breakdown of Standard Components

System	Vacuum Unit	Recovery Storage Hopper	Connection Hose in Inches	Suction Hose in Inches	OPTIONAL Cyclone Precleaner
MB-750	MB-750	MB-S1300	3	3	CY-3
MB-1600	MB-16000	MB-S1700	5	4	CY-5
MB-2000	MB-2000	MB-S3000	5	5	CY-5
MB-3000	MB-3000	MB-S5000	6	5	CY-6
MB-4000	MB-4000	MB-S10000	6	6	CY-6
MB-5000	MB-5000	MB-S10000	6	6	CY-6

Complete Systems Stock Numbers (without cyclone precleaner)

Vacuum System	Stock Number: 230/3/60 Power	Stock Number: 460/3/60 Power	Stock Number: 575/3/60 Power	OPTIONAL Cyclone Precleaner	Stock Number
MB-750	30660	30661	30662	CY-3	30719
MB-1600	30663	30664	30665	CY-5	30721
MB-2000	30666	30667	30668	CY-5	30721
MB-3000	30669	30670	30771	CY-6	30722
MB-4000	30672	30673	30674	CY-6	30722
MB-5000	30675	30676	30677	CY-6	30722



Recovery Storage Hoppers: Dimensions and Capacity

Recovery Storage Hoppers: Dimensions

Recovery Storage Hopper	Length in Inches	Width in Inches	Height in Inches	Weight in Pounds
MB-S1300	59.9	80.7	114.1	1102
MB-S1700	59.9	80.7	153.9	1102
MB-S3000	69.6	92.5	164.4	2260
MB-S5000	77.3	103.4	195.9	2810
MB-S10.000	92,3	122,6	212	4299

Recovery Storage Hoppers: System Capacity

Vacuum Unit	Recovery Storage Hopper	Capacity in Feet^3	Actual Load Size in Feet^3
MB-750 E4	MB-S1300	45	30
MB-1600 E5	MB-S1700	60	40
MB-2000 E5	MB-S3000	106	71
MB-3000 E5	MB-S5000	176	117
MB-4000 E5M	MB-S10000	353	235
MB-5000 E5M	MB-S10000	353	235

Vacuum Units: Dimensions, Performance, Dust-Collector Cartridges, and Power Requirements

Vacuum Units: Dimensions

Vacuum Unit*	Length in Inches	Width in Inches	Height in Inches	Weight in Pounds
MB-750	68.3	35.4	84.6	1,764
MB-1600	91.9	59.1	92.3	4,409
MB-2000	91.9	59.1	92.3	4,409
MB-3000	114.6	59.1	92.9	6,393
MB-4000	117.8	96	102	10,582
MB-5000	117.8	96	102	10,582

Estimated Recovery Rates*

**Hose dimensions affects recovery speed. Larger vacuum units need larger dimension hoses. The chart's recovery rates are based on optimal conditions.*

Vacuum Unit	Maximum Recommended Hose Length in Feet	Recovery per Hour in Tons	Minimum Recommended Hose Length in Feet	Recovery per Hour in Tons
MB-750	80	2-3	35	3
MB-1600	250	1-3	35	7
MB-2000	500	1-2	35	9
MB-3000	825	1-2	35	14
MB-4000	1000	1-2	35	18
MB-5000	1300	4	35	20

Dust-Collector Filter Cartridge: Cartridges per Vacuum Unit

	MB-750	MB-1600	MB-2000	MB-3000	MB-4000	MB-5000
Quantity of Cartridges	1	2	2	4	4	4
Filter Area in Feet^2	68.8	215	215	430	430	430

Electric Power and Air Supply: Requirements per Vacuum Unit

Requirements	MB-750	MB-1600	MB-2000	MB-3000	MB-4000	MB-5000
Ampere Use When Running Unit	26	51	70	120	138	160
Ampere Required to Start Unit/Soft Starter	63	80	125	160	250	250
Air Required in Cubic Feet per Minute (CFM)	7	7	7	14	14	14

If Using a Diesel Generator: Power Requirements per Vacuum Unit

Requirements	MB-750	MB-1600	MB-2000	MB-3000	MB-4000	MB-5000
Generator Power Minimum in Kilowatts (kW)	53	105	158	263	203	385

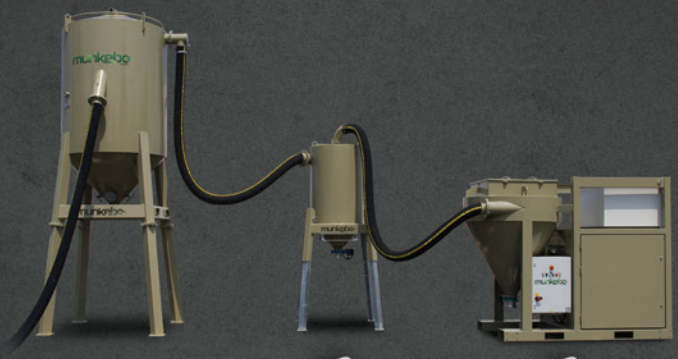
Optional Cyclone Precleaner: Dimensions and System Compatibility

Cyclone Precleaners: Dimensions

Cyclone	Length Inches	Width Inches	Height w/ Legs	Height w/o Legs	Weight Pounds
MB—CY-3	56.4	50.9	122.7	83.7	992
MB—CY-5	63.3	57.8	131.3	92.3	1587
MB—CY-6	63.3	57.8	133.1	94.2	1587

Cyclone Precleaners: System Compatibility

Cyclone Precleaner	System Fit
CY-3	MB-750
CY-5	MB-1600 and MB-2000
CY-6	MB-3000, MB-4000, and MB-5000



munkebo® by CLEMCO

Designed for Job Sites with Difficult Access or
Limited Workspace • Simple to Use • Easy to Maintain
Durable and Reliable • Quick Return on Investment

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