

MD-3 Triple-Deck Shale Shaker

More decks. More options. Less space.



MD3

Mi SWACO

Customer-focused, solutions-driven

Features and Benefits

- Dual modes of elliptical motion: progressive and balanced¹
- Efficiency operating mode for increased fluid recovery, discard dryness and screen life
- High-capacity operating mode for increased capacity and conveyance rate
- VIBRATORY MOTION DRIVE* in two modes (6.3 and 7.2 G's) produces a drier cuttings discharge and results in improved separation efficiency
- VIBRATORY MOTION DRIVE allows operating modes to be switched while shaker is in motion
- Fluid distribution designed to utilize all available screen area, regardless of drilling conditions
- Modular platform to accommodate a variety of features
- Footprint matches the M-I SWACO* BEM-650* shaker
- Available in common power-supply configurations to meet all applicable global electrical standards
- Deck-adjustment system capable of adjustment while processing fluid
- Unique feeder assembly that presents fluid to the scalping screens as a uniform, low-impact curtain. Feeder can be easily configured into a variety of connection points for installations with limited space.
- Fume-extraction hood reduces operator exposure to vapors associated with drilling fluids and prevents fluid splashing outside the shaker boundaries
- Heavy-gauge carbon-steel construction and 316-L stainless steel on high-wear areas reduces maintenance costs and helps to ensure long service life
- State-of-the art motion generators are oilfield proven and require minimal maintenance

- Standard spray bar assists conveyance of heavy and/or sticky solids on scalping deck during various formations
- Resists damage caused by generator voltage fluctuations

Flexibility/Customization Options

- Modular bolting provisions for installation allow flexible shaker configurations (mud cleaners, dual shaker, loss-prevention-material recovery for wellbore-strengthening applications)
- Inlet and outlet locations can be configured to exactly match the BEM-650 shaker, BEM-600* shaker and other similar-sized shakers
- Feeder can be easily configured into a variety of connection points for installations with limited space

Flow Distribution

- Three effluent ports allow processed fluid to discharge through skid rear or sides

Controls

- Remote starting and monitoring features
- Easy-to-use pneumohydraulic deck-angle adjustment¹ for reduced mud loss from screens. Fluid is a water/low-toxicity antifreeze mixture.
- M-I SWACO can design and supply customized automation systems to control and monitor multiple MD-3 shale shakers and other related equipment
- Stainless steel electrical control box is accessible from the typical operator interface and includes a remote starting interface
- The pneumatic control, mounted on the front of the shaker, provides an operator interface to control the deck-adjustment and screen-clamping systems

Environmental Protection

- Reduced carbon footprint
- Built to Health/Safety/Environment (HSE)-driven specifications

- Front controls, automation options and fume hood for highest degree of discharge regulation
- Meets highest standard of discard dryness

Screen Technology

- Composite screen technology increases effective open area, improves process capacity, and maximizes screen life
- Lightweight screens (<15 lb [$<6.8 \text{ kg}$]) for easier handling
- Integral gasket to withstand fluids at elevated temperatures
- Compatible with all drilling fluids
- Self-latching for fast and easy screen changes with no tools
- Pre-tensioned screens allow for more efficient screen changes
- Front loading for improved operator safety
- Integral drip lip for proper solids discharge without contacting shaker basket

Screen-Clamping System

- Pneumatic actuators rated for operation at 90 psi (6.2 bar) and compatible at elevated temperatures for a variety of drilling fluids
- Patent-pending screen bed with sloped bottom to prevent solids buildup and facilitate easy cleanup



¹Patent pending

When expectations are high and space is tight, this is the only shale shaker that makes sense



APPLICATIONS

Global drilling projects where more effective fluids/solids separation is required and shaker footprint must be kept to a minimum.

PROBLEMS

Even with rig space at a premium, maximum solids control is needed more than ever, particularly in deepwater where shale formations present a multitude of drilling and wellbore-stability challenges.

SOLUTIONS

The M-I SWACO MD-3 shale shaker provides three decks of automated, effective solids control in a small-footprint unit.

ECONOMICS

Solid engineering and more efficient, effective solids removal translates to lower waste volumes and higher feed rates, increasing project upside and reducing downtime for shaker repairs.

ENVIRONMENTAL

By producing drier cuttings and significantly reduced cuttings volumes, the MD-3 triple-deck shaker reduces your project's environmental footprint and the associated costs.

Changing drilling conditions require immediate, flexible solids-control solutions. Environmental requirements demand up-to-the-minute conformance with ever stricter criteria.

Rig space, especially offshore but also onshore, is at an all-time premium as more and more technology crowds the working environment.

The M-I SWACO MD-3 shale shaker lets you meet all of these challenges — small footprint, the most effective solids-control options and the ability to adapt quickly to changing drilling conditions — with a compact, high-performance solution.

A high-spec shaker for high-spec rigs

In addition to meeting the most stringent criteria for discard dryness, the MD-3 shale shaker is designed with many "standard" features that are considered special-order by other manufacturers.

We consider the shaker's flexibility to meet your project needs the key to reliability and productivity. Automation and a fume hood are standard for high-spec applications but can be removed to accommodate "basic" shaker needs. The MD-3 shaker can be configured to process high volumes of fluid or to recover Loss-Prevention Material (LPM) in wellbore-strengthening operations.

For unmatched adaptability, standard MD-3 shaker versions are available to operate with international power supplies (230, 400, 460, 575 and 690 volts) while meeting regional hazardous-area specifications (UL, CE, ATEX and NORSO).

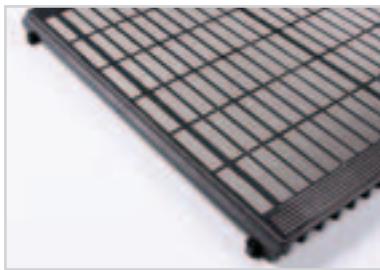
The front controls have been designed for operational ease and safety, while the low operational noise levels and minimum maintenance requirements further increase worker safety. The shaker's footprint matches the popular M-I SWACO BEM-650 shaker to simplify retrofitting into existing shaker houses.

Movement of fluid and cuttings over all three decks maximizes use of the screen area for high fluid capacity. The ability to adjust the deck angle as conditions change is just one of many other features that set the MD-3 shale shaker apart. Backing up the powerful capabilities of the M-I SWACO MD-3 shaker is a global infrastructure that helps you to get the spare parts, screens and other solids-removal and waste-handling technology you require, wherever your project is located.

Compact shaker, expanded capability, worldwide solutions

The modular, multi-deck MD-3 shaker is just one example of the M-I SWACO approach to understanding and solving your solids-control problems. Going far beyond the capabilities of an equipment supplier, we are problem solvers with a group of specialists dedicated to increasing your overall productivity.

For more information about the MD-3 shaker or any of the other products and services within our ENVIRONMENTAL SOLUTIONS* offerings, contact your M-I SWACO representative.



MD3

Composite, lightweight screen choices with self-latching mechanism and integrated seal. Compatible with all drilling fluids.

Two state-of-the-art, oilfield-proven 3.7-HP motion generators with 1,800 rpm maximum speed

Standard configuration has one scalping deck and two primary decks. Pre-tensioned, composite scalping screens have the following gross screen areas:

- Scalping deck: 25.4 ft² (2.4 m²)
- Primary decks: 50.8 ft² (4.7 m²)

Two available modes of operation with single-switch adjustment:

- 6.3 G's progressive elliptical
- 7.2 G's balanced elliptical

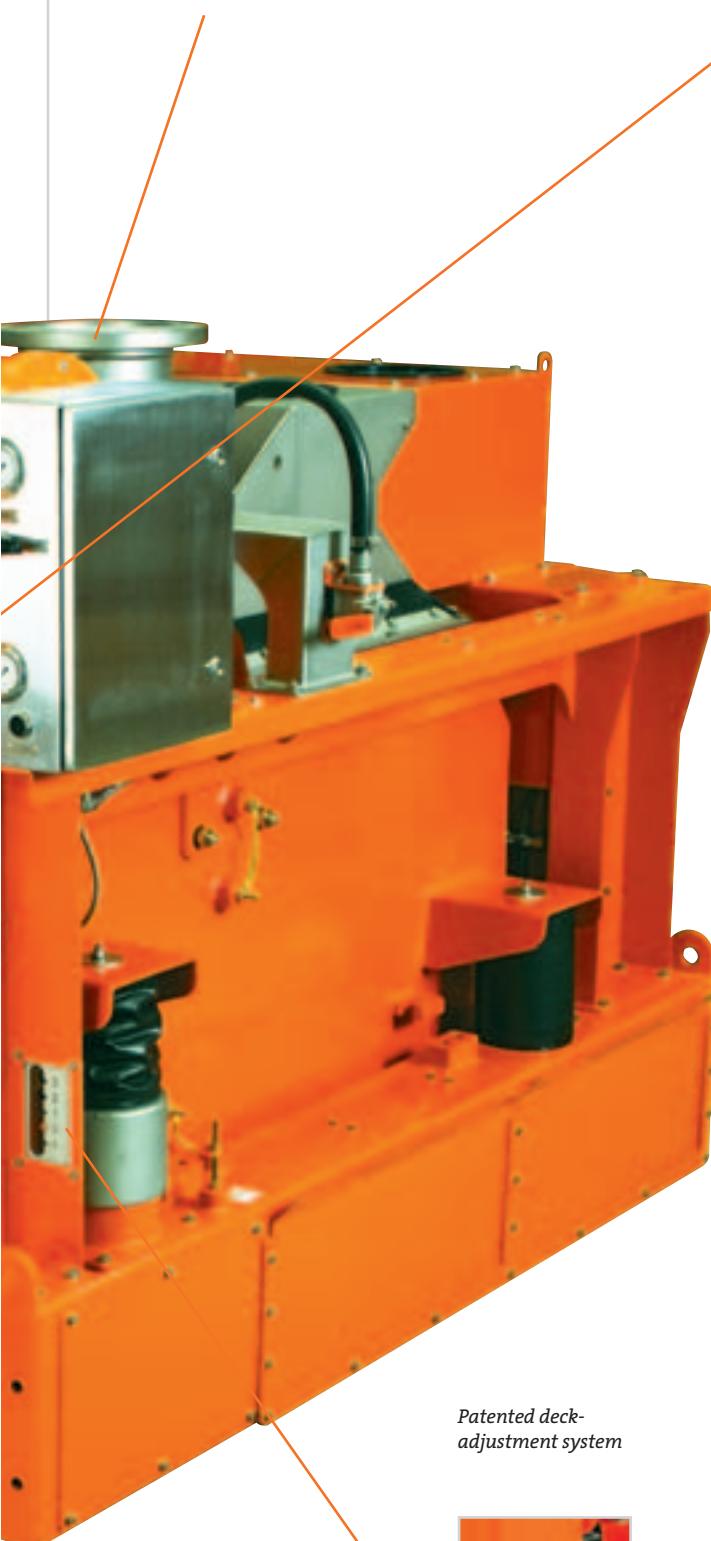
Bolting provisions for installation of multiple-shaker and mud-cleaner options

Standard unit is ATEX, CE, NORSOX and UL-rated



Fluid is split into four streams on top flowback pan and is directed to primary decks through four rear ducts

Fume-extraction system doubles as a splash-retention system



Screen-clamping actuators designed with continuous toggle to allow installation from discharge end of shaker

Patented deck-adjustment system



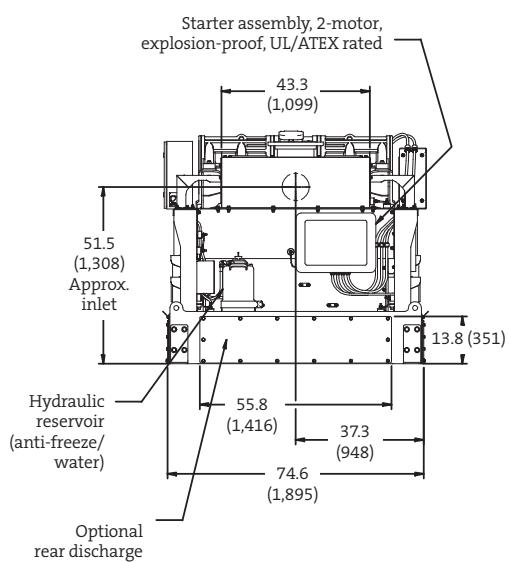
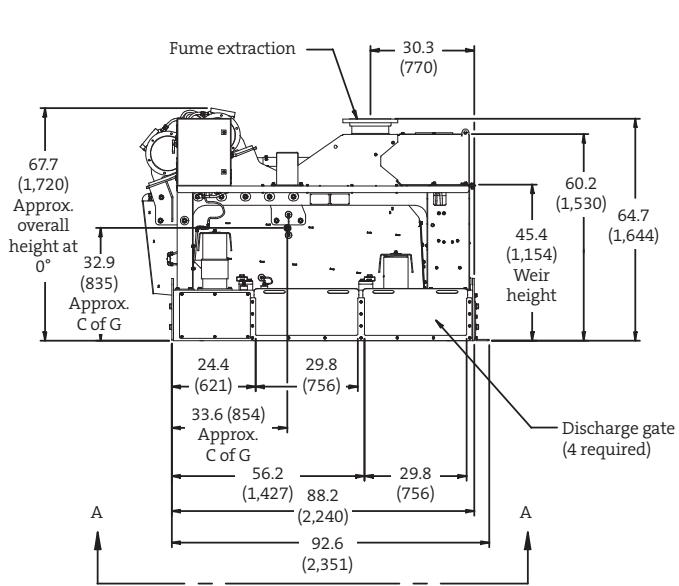
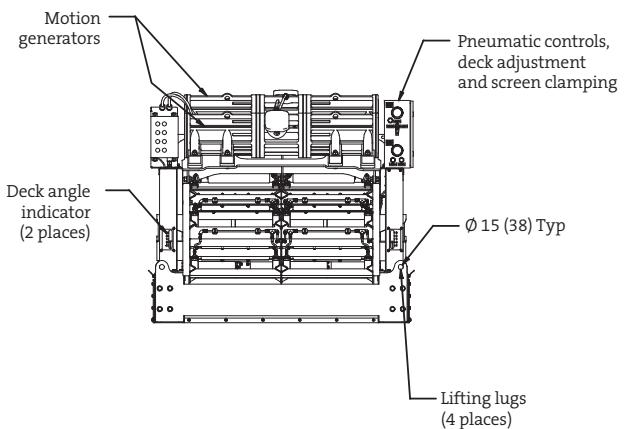
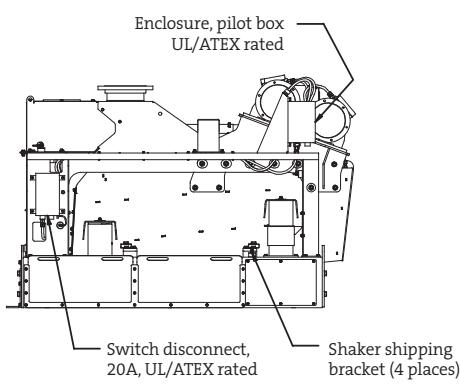
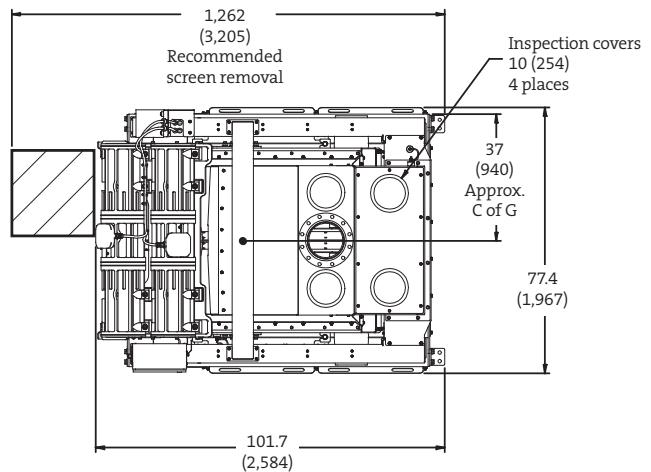
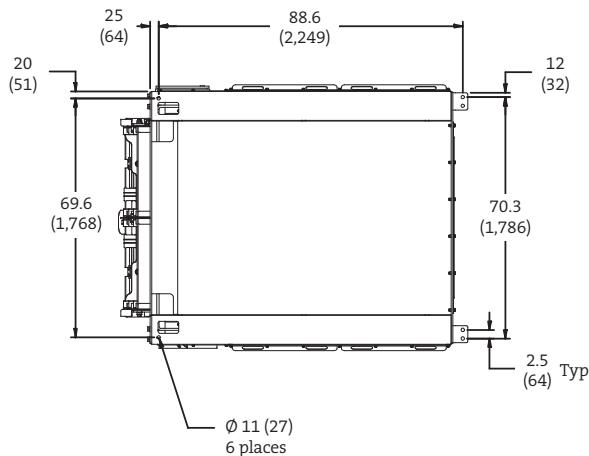
Deck angle can be adjusted while processing fluid. Adjustment range:
• Scalping deck: +3 to -1°
• Primary decks: +8 to +4°

Standard capabilities, not just options

We've designed the standard MD-3 shale shaker with the following significant enhancements, but we do offer options to enhance onsite performance:

- Dual modes of elliptical motion: progressive and balanced¹
- Efficiency operating mode for increased fluids recovery, discard dryness and screen life
- High-capacity operating mode for increased capacity and conveyance rate
- A scalping deck that can be adjusted for optimum performance and reduced installation footprint
- Highest level certifications and multiple voltage/cycle configurations
- Screen-deck angle can be adjusted while processing fluid to match changing drilling conditions
- Unique feeder assembly that presents fluid to the scalping screens as a uniform, low-impact curtain
- Screen bed with sloped bottom prevents solids buildup and cleans easily¹
- Latest lightweight composite screen design includes a latching mechanism to minimize time for full screen changeouts¹

MD-3 Shale Shaker Specifications



Dimensions

• Length	101.7 in.	(2,584 mm)
• Width	77.4 in.	(1,967 mm)
• Height	67.7 in.	(1,720 mm)
• Weight	6,450 lb	(2,926 kg)

• Screen Deck and Screens

• Gross screen area:
Scalping deck: 25.4 ft² (2.4 m²)
Primary decks: 50.8 ft² (4.7 m²)

• Net (API) surface area:
Scalping deck: 15.8 ft² (1.5 m²)
Primary decks: 31.7 ft² (2.9 m²)

• Deck-adjustment system:
Scalping deck: +3° to -1°
Primary decks: +8° to +4°

• Screen type:

Scalping deck: Pre-tensioned composite
Primary decks: Pre-tensioned composite

• Screen clamping:

Scalping deck: Pneumatic
Primary decks: Pneumatic

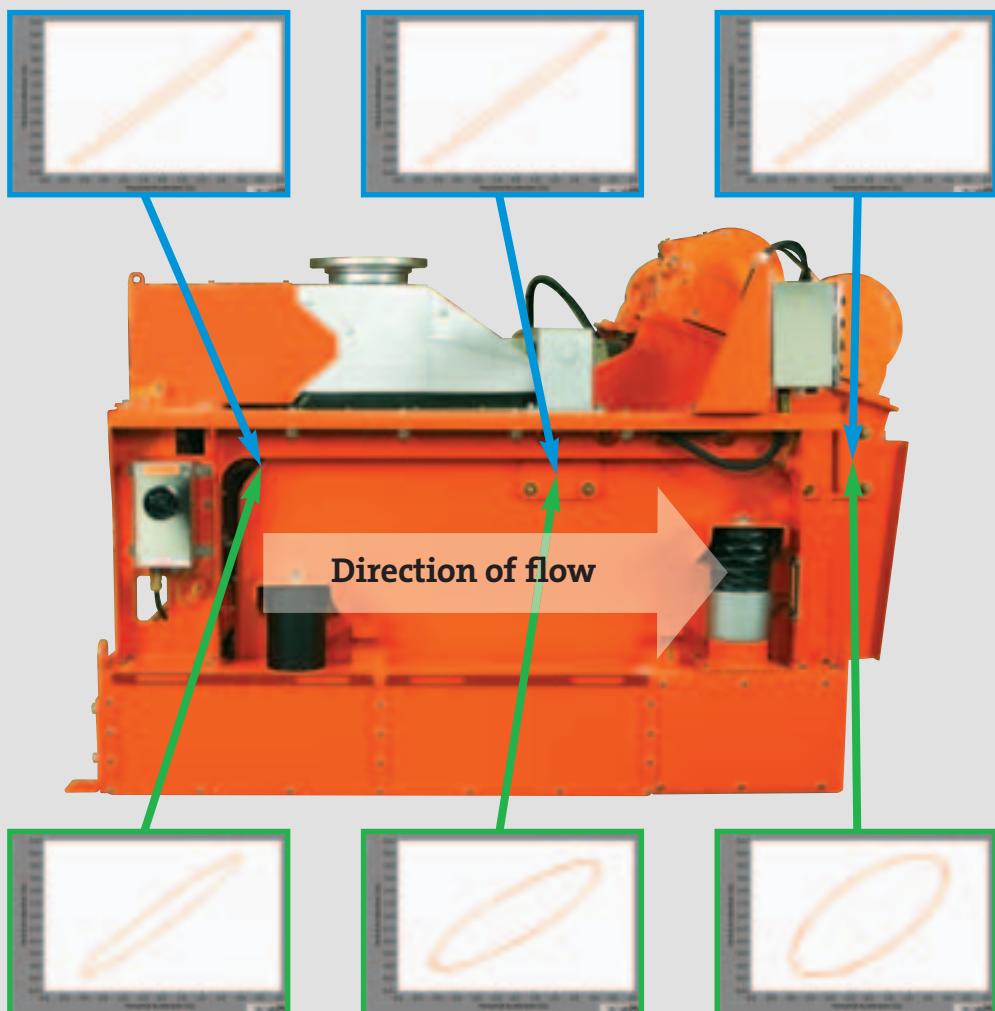
• Vibrating basket: Carbon steel

Motion Generator Specifications

- Two (2) vibrator motors
- 460V (220 to 690V available)
- ATEX, CE, NORSO and UL-rated
- Motor weight: 550 lb (249 kg) each

MD-3 Shale Shaker VIBRATORY MOTION DRIVE

Motion maps of capacity mode (7.2 G's, balanced elliptical)



Motion maps of efficiency mode (6.3 G's, progressive elliptical)



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