BEM-650 Shaker
Balanced elliptical motion for better solids removal and fluid recovery with less screen wear
Features and Benefits

- Patented\(^1\), balanced elliptical motion produces a drier cuttings discharge and results in improved separation efficiency
- Stainless steel construction reduces maintenance costs as a result of low corrosion
- State-of-the-art motion generators are oilfield proven and require minimal maintenance
- Flowback pan between top and bottom decks maximizes effective screening area
- Integral scalping deck improves process capacity, reduces installation costs and improves primary deck screen life
- Gumbo slide design minimizes gumbo buildup
- Dual-angle bottom deck improves separation of water-base-mud cuttings
- Shallow header tank delivers better fluids distribution to screens with no solids settling
- Sloping sump design with left and/or right discharge minimizes settling of ultra-fines
- Meets certification requirements at highest level — ATEX, NORSOK, CE and UL-rated versions available
- Low operational noise levels ensure safety
- Extra-long drip lips
- Easy-to-install optional vapor-extraction hood reduces operator exposure to vapors associated with drilling fluids
- M-I SWACO\(^*\) design and service organization provides assistance with rig installation surveys, flow-distribution design to shakers, as well as shaker house and solids-control system design

Flow-Distribution Box

- Detachable flow-distribution box with built-in lift points allows for flexible installation
- Allows true, “cold” installation to 10-in. (254-mm) pipe flange
- No welding, torch cutting or grinding is necessary
- Two large slide gates, with reliable tab/slot locators, reduce tendency to clog with gumbo

Controls

- Control panel, with simple start/stop button is suitable for remote operation, reducing operator exposure to vapors associated with drilling fluids
- Easy-to-use pneumohydraulic deck-angle adjustment\(^2\) reduces mud losses from screens
- Bed-angle indicator aids accurate adjustment of basket angle

Screen Technology

- Composite screen technology increases effective open area, improves process capacity and maximizes screen life
- Special, lightweight screen design allows for easier screen handling
- Pre-tensioned screens (top and bottom decks) allow for quicker screen changes
- All screens front load to improve operator safety

Screen-Clamping System

- Operated by single three-way, three-position SST ball valve
- Pressure regulator permanently set to proper operating pressure
- Pneumatic quick clamping of screens\(^3\) for quick screen-changing operations
- Screen clamping and angle adjustment operated by rig air supply, lowering maintenance and utilities
- All components bolt on
- Clamp blade axles cast into part with larger shaft size
- Clamp blade receivers have tighter tolerance and increased materials depth

Two Inspection/Cleanout Ports

- Removable cover allows easy access for rear-screen inspection and maintenance
- Contains splashing and prevents fluid loss during surges
- Improves access to rear clamp blades

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\(^1\)Vibratory Screen Separator U.S. Patent No. 5,265,730
\(^2\)Patent pending
\(^3\)U.S. Patent No. 6,513,665

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Balanced elliptical motion produces a drier cuttings discharge

**APPLICATIONS**
Offshore and onshore projects where more effective fluids/solids separation is required in addition to the reduction of costs related to shaker performance.

**PROBLEMS**
Conventional shakers exhibit one or more — or all — of the following: inefficient solids handling and fluid recovery, screen blinding, premature screen wear and safety issues.

**SOLUTIONS**
The BEM-650* shaker is the third-generation balanced-elliptical-motion shale shaker from M-I SWACO. It provides better solids removal and fluid recovery with less screen wear while occupying a relatively small footprint.

**ECONOMICS**
Significantly drier cuttings, improved solids removal and fluid recovery at high feed rates, longer screen life and minimal downtime add up to significant savings.

**ENVIRONMENTAL**
More efficient fluids/solids separation results in significantly smaller disposal volumes of dryer cuttings.

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**Better solids and fluids processing, less screen wear**
The BEM-650 shaker is the third-generation balanced-elliptical-motion shale shaker from M-I SWACO. Its performance is centered on our field-proven and patented, balanced-elliptical-motion technology. Independent testing has confirmed that, compared with other shaker types, this gentle rolling motion consistently provides better solids removal and fluid recovery with less screen wear.

The BEM-650 shaker has been designed with a number of significant refinements that include:
- Smaller footprint
- Fully stainless steel design
- Dual decks (for scalping and fine solids separation)
- Automated deck-angle adjustment
- Detachable feeder
- Pneumatic screen clamping

As a result, the BEM-650 shaker routinely provides:
- A compact unit built for long life
- Improved solids removal and fluid recovery at higher feed rates
- Faster and safer screen changing

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**Balanced elliptical motion**

- **Motion system**
  - CG
  - Feed mud
  - Solids discharge
  - Liquid discharge
  - Uniform elliptical motion at all points on basket
  - 45° angle
  - Liquid discharge

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Fully stainless steel design

Multiple fine screening wire mesh choices:
- High-capacity mesh (HC) designed to produce excellent flow rates
- Long-life mesh (XR*) designed to extend time between screen changes
- Other mesh types available, including TBC* and XL

Upper deck contains two pre-tensioned, flat-panel scalping screens with a gross screen area of 13.8 ft² (1.3 m²)

Flowback pan between top and bottom decks

Lower deck contains four pre-tensioned, flat-panel primary screens with a gross screen area of 27.6 ft² (2.6 m²)

Patent-pending, deck-adjustment system

Screen-clamping system, with single-point, pneumatic control, speeds screen-changing operations

Bed-angle indicator aids accurate adjustment of basket angle

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State-of-the-art motion generators are oilfield-proven for low maintenance.

Two large slide gates reduce tendency to clog with gumbo.

Detachable flow-distribution box allows for flexible installation.

CE, ATEX, NORSOK and UL-rated versions available.

Control panel, with simple start/stop button, is suitable for remote operation.

Rear-screen inspection port, equipped with removable cover, simplifies inspection and maintenance.
Dimensions

- Length: 96.6 in. (2,454 mm)
- Width: 81 in. (2,057 mm)
- Weir Height: 41.2 in. (1,046 mm)
- Height: 66.1 in. (1,679 mm)
- Weight: 3,900 lb (1,769 kg)

Screen Deck and Screens

- Gross screen area
  - Scalping deck: 13.8 ft² (1.3 m²)
  - Primary deck: 27.6 ft² (2.6 m²)
- Net (API) screen area
  - Scalping deck: 10.8 ft² (1 m²)
  - Primary deck: 21.6 ft² (2 m²)
- Deck angle adjustable: +5°, -3°
- Screen type: Pre-tensioned composite
- Screen clamping: Pneumatic

Basket Isolation

- Coated carbon steel springs

Motor Specifications

- Two (2) vibrator motors
  - 460V/60 Hz/1,800 rpm/2 hp or
  - 400V/50 Hz/1,500 rpm/1.75 hp
- Other voltages are also available
- Explosion proof
- Class I, Groups C and D
- Class II, Groups E, F and G
- UL, CE, CSA, ATEX, NORSOK
- Motor weight: 200 lb/60 Hz (91 kg, 60 Hz)
  - 216 lb/50 Hz (98 kg, 50 Hz)
- Nominal flow capacity >600 gal/min (2,271 L/min),
  dependent upon fluid properties, solids loading,
  screen configuration, deck angle and G-force

These renderings are for information purposes only and are not actual schematics.
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