Composite OEM and Replacement Screens

Higher throughput. Longer life.
Fewer replacements. Lower cost.

MiSWACO

Customer-focused, solutions-driven

ENVIRONMENTAL SOLUTIONS

Features and Benefits

- Available for M-I SWACO BEM-600, BEM-650 and MONGOOSE PT, MEERKAT PT and MD-3 shale shakers and NOV Brandt VSM 300 brand shakers
- Patented, composite frame design
- Smaller, more numerous panels
- More open area than metal-frame screens
- Less weight than metal-frame screens
- SNAP-LOK plug-repair system for the BEM-650 and NOV Brandt VSM 300 shakers
- Screen is resistant to fluids that shorten metal-frame-screen life
- Consistently manufactured, rugged construction
- Increased operational life
- Lower screen replacement costs
- Quick and easy to repair
- Less downtime
- Does not rust or delaminate
- Improved QHSE considerations

Mesh Designation	d_{100} (micron)†	API Designation (equiv sieve)†
XL014	1329	API 14
XL024	779	API 20
XL038	530	API 35
XL050	302	API 50
XL070	264	API 60
XL084	219	API 70
XL105	168	API 80
XL120	140	API 100
XL165	111	API 140
XL200	103	API 140
XL230	80	API 200
XL270	74	API 200
XL325	58	API 230
XL400	43	API 325
XR084	274	API 50
XR105	203	API 70
XR120	174	API 80
XR165	147	API 100
XR200	118	API 120
XR230	110	API 140
XR270	86	API 170
XR325	71	API 200
XR400	44	API 325
HC084	270	API 60
HC105	238	API 60
HC120	201	API 70
HC165	146	API 100
HC200	142	API 100
HC230	120	API 120
HC270	72	API 200
HC325	61	API 230
MG008	2425	API 8
MG010	2050	API 10
MG014	1441	API 14
MG016	1127	API 16
MG020	938	API 18
MG030	545	API 35
MG040	385	API 45

†Results obtained testing screens for the MONGOOSE PT shaker.

DURAFLO screens: The latest in an evolution begun by M-I SWACO

APPLICATIONS

Offshore and land rigs running M-I SWACO* BEM-600,* BEM-650,* MONGOOSE* PT, MEERKAT* PT and MD-3 shale shakers, and NOV Brandt^ VSM 300^ brand shakers.

PROBLEMS

Metal shaker screens have inherent problems: rusting, delamination, weight and reduced processing area.

SOLUTIONS

DURAFLO* OEM screens for the M-I SWACO BEM-600, BEM-650, MONGOOSE PT, MEERKAT PT and MD-3 shale shakers and replacement screens for NOV Brandt VSM 300 brand shakers offer higher throughput rates than metal screens as well as longer life, lower weight, and fast, easy repair.

ECONOMICS

Higher throughput rates reduce operating costs by optimizing shaker performance, while longer frame life translates into lower screen-replacement costs.

ENVIRONMENTAL

The variety of mesh sizes and types on the DURAFLO screen lets operators match separation efficiency to the formation, for better separation and lower drilling waste volumes.

Because you have to drill different types of formations, you have to make choices in your shaker screens. Quite often, this choice involves a trade-off of using a mesh that is efficient but is mounted on a frame that leaves a lot to be desired. With drilling costs on the rise, you need to be choosing among positive options, not trade-offs.

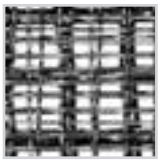
DURAFLO composite screens

With more than 30 years' experience in solids control and drilling waste management, it was only natural that M-I SWACO would invent the composite-frame shaker screen. The evolution began with the patented HIFLO* screen, which was the first to use a grid made from a composite of high-strength plastic and glass, reinforced with high-tensile-strength steel rods. Today's patented DURAFLO screens are the next evolutionary step, delivering even longer screen life and greater ease in making repairs than either HIFLO or metal-frame screens. The DURAFLO screen is available with HC, XL and XR MESH*, giving operators screening flexibility in addition to an overall-improved product.

Easy to repair. The patented[1] SNAP-LOK* plug-repair system, available on DURAFLO screens for the M-I SWACO BEM-650 shaker and NOV Brandt VSM 300 shaker, reduces repair time to less than two minutes. Simply remove the screen from the shaker and snap in a factory-made plug. This system eliminates the need for removing the damaged mesh and requires no cutting, gluing or bonding time.

Three different screen meshes

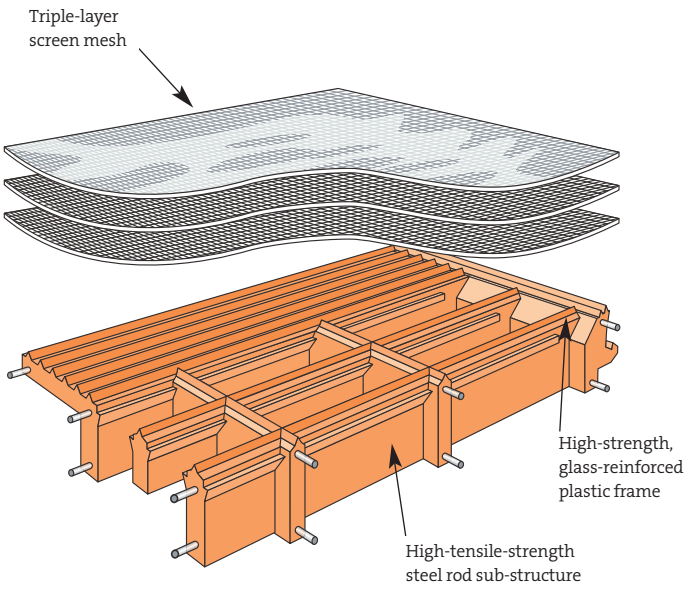
With the DURAFLO frame as a solid base, M-I SWACO offers three different meshes that let you choose the right mesh for the job without sacrificing long life, throughput capacity or any of the other DURAFLO advantages.



XR MESH for unmatched screen life and exceptional capacity. Larger-diameter wire gives XR MESH screens the longest life in the industry today. Combining XR MESH screens with the DURAFLO composite frame technology allows for exceptionally high fluid-handling capacity. The high conductance also results in reduced mesh loading in comparison to standard mesh types, further ensuring unmatched screen life.

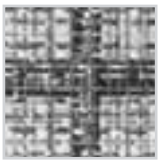
Ultra-Fine mesh for sandstone. The Ultra-Fine (XL) screen has been specifically designed to cope with drilling sandstone formations, which can typically present blinding problems when using standard screen meshes.

The anatomy of the three-layer DURAFLO screen



DURAFLO screen frames consist of a grid made from a composite of high-strength plastic and glass, reinforced with high-tensile-strength steel rods. Because these frames balance durability with strength, they are more efficient transport mechanisms than steel frames in several ways. DURAFLO screens have higher throughput capacities and significantly longer operational lives. They do not rust or delaminate, so they can be used, stored and reused. Model for model, composite frames weigh less than all-steel frames. And they have an increased usable area, providing a higher fluid-handling capacity.

Patented[2] DURAFLO Composite Frame technology, combined with three different screen meshes, lets you choose the right mesh for the job without sacrificing long life, throughput capacity or any of the other composite screen advantages.



HC. HC (high-capacity) mesh is another layered rectangular mesh that M-I SWACO manufactures, although it is not patented. The diameter of the wire used to make HC mesh is smaller than the wire used to make XR MESH, and the mesh is not calendared. Compared to XR MESH, HC mesh has more open area and therefore more capacity, but it has a shorter screen life and lower separation efficiency.

Screen performance

As the leader in the solids-control industry, M-I SWACO is committed to providing the highest-quality products and services to our customers. Our screens have been tested by an independent third party for separation and conductance, and the results are clearly labeled on each screen and screen box. This testing and labeling is done in full compliance with API RP 13C, the American Petroleum Institute recommended practice for labeling shale shaker screens.

In API RP 13C, the separation of a screen is compared with the separation of standard U.S. test sieves. The separation test involves screening dry aluminum oxide particles for 10 min on a Ro-Tap^ sieve shaker. The results of this test are the API designation, also called the "API U.S. Sieve Number Equivalent," and the d_{100} separation, given in microns. If a screen is labeled as API 200 (76-micron), it means that the screen separates aluminum oxide similar to that of a U.S. 200 test sieve and that 100% of particles larger than 76 micron are retained on the screen.

Screen efficiency testing

In the real world, the solids our customers must process are wet; they differ in size, shape and other properties from well to well. These actual operating conditions are very different from the API test method of sifting dry aluminum oxide for 10 min. Therefore the API RP 13C results are not an indication of screen performance. They are simply a way of characterizing the openings of the screen.

To further establish the separation of our screens, M-I SWACO has conducted solids-separation efficiency tests based on a procedure from the ASME Drilling Fluids Processing Handbook which provides very good information about the performance of a screen. Although we do not label screens or boxes with this information, we have this information available for use. Where the API procedure uses dry aluminum oxide with a 10-min residence time on a Ro-Tap sieve shaker, the screen-efficiency test data is derived through the use of a MONGOOSE PT shaker with full-size screens and water-base drilling fluid. Sand is the solid used in these tests, and the result is a d_{50} separation.

Conductance

Conductance testing under API RP 13C is determined by measuring the flow rate of oil through a section of screen. There is a direct relationship between the conductance and the fluid-handling capacity of a screen with minimal solids loading.

In general, HC Mesh has the highest conductance, and therefore the highest fluid-handling capacity for a given designation, followed by XR MESH, then XL Mesh.

Labeling system

The labeling system on both DURAFLO screens and boxes makes screen identification trouble-free. The labels have been laminated with a heat- and oil-resistant coating, making it easy to identify screen size, mesh size and API data, even after prolonged use.

API RP 13C Screen Number Definitions

API RP 13C Screen Number	API RP 13C d_{100} Separation (micron)
40	> 390.0 to 462.5
45	> 327.5 to 390.0
50	> 275.0 to 327.5
60	> 231.0 to 275.0
70	> 196.0 to 231.0
80	> 165.0 to 196.0
100	> 137.5 to 165.0
120	> 116.5 to 137.5
140	> 98.0 to 116.5
170	> 82.5 to 98.0
200	> 69.0 to 82.5
230	> 58.0 to 69.0
270	> 49.0 to 58.0
325	> 41.5 to 49.0

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