

## Shaker Screens

### Your First Line of Defense

Shaker Screens are used during the well construction phase of every drilling project and in conjunction with the Shale Shaker is the first line of defense in solids removal from the drilling fluid system.

Using proprietary mesh technology our products deliver reliable solids removal capability combined with high fluid processing rates and outstanding operational life.



Tri-Flo International offers quality, reliability and performance in a direct replacement for OEM screen panels.

Tri-Flo replacement screen panels for OEM shale shakers combine proven mesh combinations with an innovative, precision punched patterned plate to improve separation efficiency of the shaker, while extending screen life. Tri-Flo replacement screen panels are engineered to meet the exact design specifications of the OEM shale shaker and can be installed directly on the unit using the stock tensioning system in place. Tri-Flo replacement screen panels are available in a variety of mesh combinations to best suit the needs of your drilling program. Tri-Flo is capable of supplying custom “odd size” screen panels for obsolete shakers that are still in operation.

Tri-Flo International can offer replacement screens for many brands including the following:

- Derrick Equipment Company
- NOV Brandt™
- M-I SWACO®
- Fluid Systems®
- Vortex Fluid Systems®
- National
- KEMTRON®
- Double Life®
- Harrisburg®
- Triton®
- DFE®
- RUFF®
- Weatherford®
- SCOMI®
- And many others...





## Replacement Shaker Screens and Compliance Disclosure to API RP 13C

API RP 13C and being Compliant in this testing procedure means that manufacturers test certain meshes using the spelled criteria within the test. The manufacturers then label both their screens and packaging with the results of the test and are then **API Compliant**. The procedure tests mesh performance down to a specific micron. That micron # falls into a range of microns which then correlates into the API # established for that range of microns. Tri-Flo International compliant meshes are listed below along with table 5 - pg. 40 and 41 of the testing procedure to show the break down of API #'s and the range of microns that fall within the API #.

API RP 13C Part Number Conversion Chart		
Global Wire Cloth Mesh Designation	API RP 13C Screen Number	API RP 13C d100 (micron)
DX 24	API 18	931
DX 38	API 35	544
DX 50	API 45	355
DX 70	API 60	270
GS 84	API 60	254
GS 110	API 70	225
GS 140	API 80	165
GS 175	API 100	156
GS 210	API 140	116
GS 250	API 170	98
DX 250	API 200	70
DX 270	API 230	66
DX 325	API 325	44
DX 400	API 400	35

Table 5 - found on page 40 and 41 of API RP 13C D100 Separation and API Screen Number	
D100 Separation (microns)	API Screen Number
>925,0 to 1 090,0	API 18
>780,0 to 925,0	API 20
>655,0 to 780,0	API 25
>550,0 to 655,0	API 30
>462,5 to 550,0	API 35
>390,0 to 462,5	API 40
>327,5 to 390,0	API 45
>275,0 to 327,5	API 50
>231,0 to 275,0	API 60
>196,0 to 231,0	API 70
>165,0 to 196,0	API 80
>137,5 to 165,0	API 100
>116,5 to 137,5	API 120
>98,0 to 116,5	API 140
>82,5 to 98,0	API 170
>69,0 to 82,5	API 200
>58,0 to 69,0	API 230
>49,0 to 58,0	API 270
>41,5 to 49,0	API 325
>35,0 to 41,5	API 400

ALL API RP13C test results are from an independent lab. Data is for informational purposes only. Tri-Flo International Standard Terms of Sale apply.

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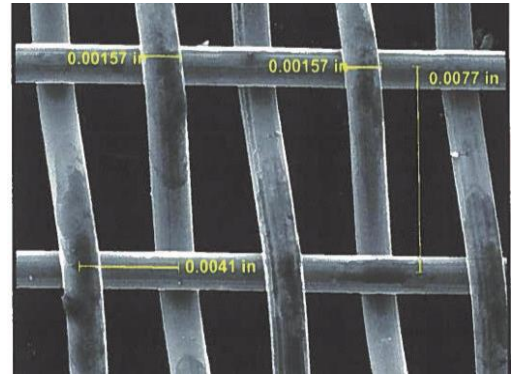
The American Petroleum Institute description is the following; "This procedure gives a method to determine the drilled solids removal efficiency by a set of drilling fluid processing equipment. The drilled solids removal efficiency refers to the fraction of drilled rock discarded compared with the volume of drilled solids generated. Shale shaker screen designations and labeling are included as a method for manufacturers to mark screens in a consistent manner. The screen identification tag describes the separation potential, the conductance, and the non-blanked area of the screen. Screen manufacturers shall use this designation to comply with this standard."



Tri-Flo is pleased to announce availability of [API RP 13C \(ISO 13501\)](#) compliant shaker screens. Compliance means Tri-Flo screens meet the American Petroleum Institute's (API) new recommended practice for shaker screen testing and labeling.

The new designation system was chosen to convey information on screen opening size distribution and the ability of non-vibrating screens to pass fluid. Information for each of the following is legibly stamped on a tag attached to the screen panel in such a way as to be visible after the screen is installed on the shale shaker:

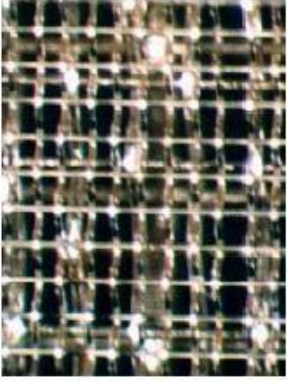


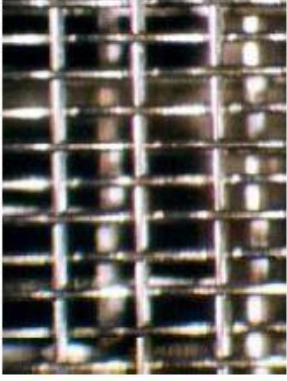
1. API Screen Designation or API number (this must be 2X larger than any other information);
2. D100 (Equivalent Aperture) in microns ( $\mu$ );
3. Conductance in kilodarcies per millimeter (kD/mm);
4. Non-blanked screen area in square meters (m<sup>2</sup>) or square feet (ft<sup>2</sup>);
5. Manufacturer's Designation and/or Part Number (although not currently required to conform to API 13C, API recommends manufacturers use the API screen designation in the part number)
6. Conforms to API 13C



Screen performance is measured by the amount of solids that pass through them (conveyance) and the specific size material they are separating (cut point). The cut point is measured in microns. In order to illustrate just how small the screen openings are, please consider these facts, knowing that 26,000 microns equals one inch - a human hair is approximately 90 microns in diameter. Talcum powder is roughly 30 microns in diameter; thus, performance of solids control equipment is measured by its ability to remove particles in these size ranges.





			
Labeled 200 mesh	Labeled 175 mesh	Labeled 200 mesh	Labeled 180 mesh
Actual: API 200 (88 microns)	Actual: API 80 (173 microns)	Actual: API 60 (234 microns)	Actual: API 80 (173 microns)

Demonstration of the Confusion Caused by 'Non-Standard' Screen Nomenclature

### Comparison between 'Non-Standard' Screen Nomenclature and Standard API Labeling.

The lack of commonly accepted screen labeling procedures and great disparity in screen designations throughout the oil and gas drilling industry led to the development of API RP 13C. The new procedure is a revision of the previous API RP 13E, which was based on optical measurements of the screen opening using a microscope and computer analysis. Under API RP 13E, screen designations were based on individual manufacturer test methods, producing inconsistent labeling.

Following a review of labeling practices under API RP 13E, the API standards committee concluded that physical testing would be preferred for screen designations. API RP 13C was then developed as an objective method of describing shaker screens. Two tests were devised: cut point and conductance.

To read more on API 13C please follow this link: [http://www.oilfieldwiki.com/wiki/API\\_RP\\_13C](http://www.oilfieldwiki.com/wiki/API_RP_13C)



### Screen Dimension Comparison Chart

SHAKER MODEL      SCREEN DIMS (INCHES)      SHAKER MODEL      SCREEN DIMS (INCHES)

Tri-Flo replacement screens							
<b>OEM SCREENS</b>	123E	24.5" x 36"			146-6L	48.5" x 36"	
	126E	24.5" x 36"			148L	48.5" x 36"	
	148E	48.5" x 36"			148-8L	48.5" x 36"	
	146L	48.5" x 36"					
<b>AVAILABLE REPLACEMENT SCREENS</b>	<b>AXIOM</b>			<b>AVAILABLE REPLACEMENT SCREENS</b>	<b>Fluid Systems</b>		
	AX-1	27" x 24"			Black Thunder	36" x 42"	
	<b>Brandt / NOV / Rigtech</b>				29x42	29" x 42.1875"	
	Cobra	25" x 49.3125"			<b>Kemtron</b>		
	King Cobra	25" x 49.3125"			KDDX	30" x 72"	
	Venom	25" x 49.3125"			KDX	28" x 48"	
	LCM 3D	25" x 49.3125"			KPT28	28.25" x 49.25"	
	ATL 1000	25" x 49.3125"			<b>M-I SWACO</b>		
	4x3	45.25" x 36"			ALS	45.25" x 47.75"	
	LCM 2D / LM3	45.25" x 36"			BEM-3	45.5" x 35.5"	
	4x5	48.5" x 59.5"			BEM-6	36" x 27.5"	
	D285P / 380	28" x 46.5"			MD-2 / MD-3	24.49" x 25.8"	
	VSM 100	25" x 36.25"			MONGOOSE / MEERKET Series	23" x 45.875"	
	VSM 300	27" x 35.5"			2x6	24.25" x 72"	
	<b>Derrick</b>				4x3	45.25" x 47.75"	
	FLC 300	33.25" x 27.75"			<b>Triton</b>		
	FLC 500	41.5" x 27.75"			Triton	48.5" x 28.5"	
	FLC 2000	41.125" x 27.5"			<b>Vortex Fluid Systems</b>		
					Orbital Vortex	46" x 31.875"	



## Replacement Screens for Tri-Flo Standard Shakers

### TFI 2 x 3 J Hook Screens

<u>Part Number</u>	<u>Description</u>
05-00-384	Screen, 2x3 - 008 M
05-00-460	Screen, 2x3 - 010 M
03-00-030	Screen, 2x3 - 020 M
03-00-031	Screen, 2x3 - 030 M
03-00-032	Screen, 2x3 - 040 M
03-00-033	Screen, 2x3 - 050 M
03-00-034	Screen, 2x3 - 060 M w/BU-2PB
05-00-449	Screen, 2x3 - 070 M w/BU-2PB
03-00-035	Screen, 2x3 - 080 M w/BU-2PB
05-00-461	Screen, 2x3 - 100 M w/BU-2PB
03-00-023	Screen, 2x3 - 120 M w/BU-2PB
05-00-457	Screen, 2x3 - 150 M w/BU-2PB
03-00-037	Screen, 2x3 - 180 M w/BU-2PB
03-00-025	Screen, 2x3 - 200 M w/BU-2PB
05-00-386	Screen, 2x3 - 250 M w/BU-2PB

### TFI 123/126 PTP Screens

<u>Part Number</u>	<u>Description</u>
12-01-185	Screen, PTP 123/126 010M
12-01-114	Screen, PTP 123/126 020M
12-00-724	Screen, PTP 123/126 030M
12-00-725	Screen, PTP 123/126 040M
12-00-726	Screen, PTP 123/126 050M
12-00-727	Screen, PTP 123/126 060M
12-00-728	Screen, PTP 123/126 080M
12-00-682	Screen, PTP 123/126 100M
12-00-729	Screen, PTP 123/126 110M
12-00-684	Screen, PTP 123/126 120M
12-00-683	Screen, PTP 123/126 145M
12-00-730	Screen, PTP 123/126 180M
12-00-814	Screen, PTP 123/126 180M
12-01-131	Screen, PTP 123/126 250M
12-01-132	Screen, PTP 123/126 325M

### TFI 4 x 3 J Hook Screens

<u>Part Number</u>	<u>Description</u>
12-00-685	Screen, 4x3 - 004 M
05-00-378	Screen, 4x3 - 010 M
03-00-013	Screen, 4x3 - 020 M
03-00-014	Screen, 4x3 - 030 M
03-00-015	Screen, 4x3 - 040 M
03-00-016	Screen, 4x3 - 050 M
05-00-419	Screen, 4x3 - 050 M w/BU-2PB
05-00-420	Screen, 4x3 - 060 M w/BU-2PB
05-00-434	Screen, 4x3 - 080 M w/BU-2PB
05-00-435	Screen, 4x3 - 100 M w/BU-2PB
05-00-436	Screen, 4x3 - 120 M w/BU-2PB
05-00-437	Screen, 4x3 - 150 M w/BU-2PB
05-00-439	Screen, 4x3 - 180 M w/BU-2PB
03-05-022	Screen, 4x3 - 200 M w/BU-2PB
05-00-550	Screen, 4x3 - 250 M w/BU-2PB
05-00-442	Screen, 4x3 - 300 M w/BU-2PB
05-00-445	Screen, 4x3 - 325 M w/BU-2PB

### TFI 146/148 PTP Screens

<u>Part Number</u>	<u>Description</u>
12-00-625	Screen, PTP 146/148 012M
12-00-491	Screen, PTP 146/148 020M
12-00-492	Screen, PTP 146/148 030M
12-00-493	Screen, PTP 146/148 038M
12-00-580	Screen, PTP 146/148 050M
12-00-581	Screen, PTP 146/148 070M
12-00-650	Screen, PTP 146/148 080M
12-00-651	Screen, PTP 146/148 100M
12-00-164	Screen, PTP 146/148 110M
12-00-582	Screen, PTP 146/148 140M
12-00-652	Screen, PTP 146/148 170M
12-00-817	Screen, PTP 146/148 210M
12-00-818	Screen, PTP 146/148 325M



## Ten Most Frequent Causes of Premature Screen Failure

1. Personnel improperly trained on handling, storage, maintenance and installation of deck (channel/crown) rubbers and screens
2. Careless storage of screen panels prior to use
3. Screen damage before use from improper handling during installation
4. Deck (channel/crown) rubbers improperly installed
5. Deck (channel/crown) rubbers dirty, worn or missing
6. Dried cuttings or drilling fluid left on screen during shutdown or shaker(s)
7. Personnel walking on screens or using the shaker as a work table
8. Tools being dropped on screens
9. Extremely high mud weights or heavy solids loading
10. Defective or improperly manufactured screens

## Operations and Maintenance for Improved Screen Life

1. Make certain that the components of the screen tensioning system, including any rubber supports, nuts, tension bolts, rails, springs, etc., are in place and in good shape.
2. Install screens according to the equipment manufacturer's recommended installation procedure.
3. Ensure the deck rubber support seals are not worn or missing.
4. Lubricate and maintain the unit according to the equipment manufacturer's instructions.
5. Check the tension of screens at 1, 3, and 8 hours after installation and hourly thereafter.
6. Check the tension of and adjust the drive belts according the equipment manufacturer's instructions.
7. Wash screens at the beginning of a trip so as not to allow fluid to dry on them.
8. Check fluid bypass valve and other places for leaks around the shaker screens.
9. Remove drilling-fluid buildup from the vibrating bed, vibrators, and motors.
10. Make certain that no hose, cables, etc., are in contact with the vibrating bed.
11. Drilling fluid should cover most of the screen. If drilling fluid covers only one fourth or one third of the screen, the screen is too coarse.
12. A screen with a hole in it should be repaired or replaced at once.
13. Shaker screen replacements should be made as quickly as possible. If possible, change the screen during a connection.