DERRICK®
EQUIPMENT COMPANY

FLC 503 and 504
Component Shaker System

Part of the Flo-Line® Cleaner Series

A Price Sensitive 7.0 G
Linear Motion Shale Shaker

Powered by SUPER G®

Derrick uses only the highest quality materials in the manufacturing of the Flo-Line® Cleaner 503 (3-panel) and 504 (4-panel) – the most powerful and versatile shale shaker in the world today. The single-side tensioning system shortens screen panel replacement time to less than one minute per panel and can be configured for operation on either the left or right side. All FLC 503 and 504 linear motion shale shakers are powered by two Super G® vibrating motors which enable the FLC 504™ to operate at a continuous 7.3 G's and the FLC 503™ at 7.0 G's. This increase in G's at the screen surface dramatically improves the conveyance rate of a shale shaker, enabling maximum cuttings removal efficiency.

SUPER G® VIBRATING MOTOR

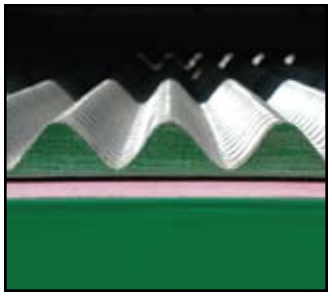
- Produces 7.0 to 7.3 G's of force.
- "Greased-for-life" bearing system reduces repair and maintenance costs.
- Sound output is 81 dBA.
- Super G^2 motors with "Continuous internal oil bath lubrication system" are optional (pictured below).

ADJUSTABLE WHILE DRILLING (AWD)

- Easily and quickly raise or lower the screen basket from -1° to +5° on the 3-panel model, and -1° to +7° on the 4-panel model.
- Offers the capability to optimize shaker performance without interrupting operation.

PYRAMID™ SCREENS

- Offers 105% (PMD) and 184% (PMD+) more screen area.
- Fluid handling capacity increases up to 125%.
- Enables the use of finer mesh sizes at higher capacities.



PYRAMID (PMD™)

PYRAMID PLUS (PMD+™)

DESANDERS

- Inline manifold holds between one and three 10” desander cones.
- Each cone can process 500 GPM.
- Makes a separation between 40 and 100 microns.

Derrick FLC 504™ with Optional Mud Cleaner Package

DESILTERS

- Round desilter manifold holds up to twenty cones and accepts 3” or 4” hydrocyclones.
- Each 4” cone can process 80 GPM.
- Makes a separation between 12 and 74 microns.
- The 4” hydrocyclone can be manufactured with a ceramic liner in the lower cone section for increased wear tolerance.
- Individual shut-off valves for each cone are available as an option.

FEEDERS

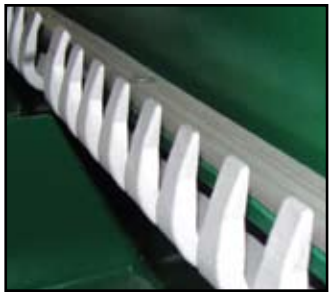
- Standard 40.9 gallon weir feed with optional bypass offers a valve that can be opened if the fluid needs to bypass the shakers.
- The top feeder evenly spreads the flow of mud across the shaker basket.
- At 25-3/8”, the low weir feed design is one of the lowest in the industry.

Weir Feed

Low Weir Feed

SINGLE-SIDE TENSIONING SYSTEM

- Effectively shortens screen panel replacement time to less than one minute per panel.
- Can be installed on either left or right side of the shale shaker for increased installation versatility.
- Utilizes tensioning fingers and two Quick-Lok, 1/2 turn tensioning bolts per screen to facilitate faster, easier and more reliable panel tensioning.



Under-Side Tensioning Fingers

Flo-Line Cleaner 503 and 504

Component Shaker System

Super G® Vibrating Motors

The FLC 503 is powered by two Super G vibrating motors producing 7.0 G's for superior performance (7.3 G's on the FLC 504). The *greased-for-life* bearing system eliminates the need for any external lubrication, which reduces maintenance requirements and repair costs. Sound output is reduced to a continuous 81 dBA. The higher G's generated by the Super G motors combined with Derrick's Pyramid screen technology have proven to be very effective in liquid/solids separation due to superior conveyance characteristics and maximized available screening area. Two Super G motors are standard equipment on the FLC 503/504 and carry a two-year warranty, Super G^2 motors are optional and carry a three-year warranty.

Pyramid and Pyramid Plus "Three-Dimensional" Screens

Derrick's patented Pyramid (PMD™) and Pyramid Plus (PMD+™) offers 105% and 184% more usable API non-blanked screen area than a standard flat, perforated plate panel. Pyramid screens exceeded all expectations when the fluid handling capacity was found to increase up to 125%. Installation of Pyramid screens permits the use of finer mesh sizes at higher flow rates, further optimizing the performance of the Derrick shaker. As with the Derrick flat, PWP™ screen series, the Pyramid screens are capable of making separations as fine as 43 microns. When fitted with Derrick's Pyramid screens, the FLC 503 and 504 has the following non-blanked area available for screening per API RP 13C (ISO 13501): *Flo-Line Cleaner 504 (4-panel) has* ***33.2 sq. ft. with the Pyramid screen*** *and* ***46.0 sq. ft. with the Pyramid Plus****. The Flo-Line Cleaner 503 (3-panel) has* ***24.9 sq. ft. with the Pyramid screen*** *and* ***34.5 sq. ft. with the Pyramid Plus.***

Single-Side Tensioning System

The single-side tensioning system shortens screen panel replacement time to less than one minute per panel and can be configured for operation on either the left or right side. A typical screen panel change requires a one-half turn of two Quick-Lok assemblies to disengage the tensioning fingers. This system provides reliable and consistent panel tensioning throughout the life of the machine.

Adjustable While Drilling (AWD)

The AWD (Adjustable While Drilling) is a manually operated jacking mechanism that enables one person to quickly and easily raise or lower the screen basket from -1° to +5° (FLC 503) and -1° to +7° (FLC 504) from one location. As drilling rates and formation or mud properties change, the angle of the screen deck can be adjusted to achieve the proper solids conveyance and fluid end point. Increased capacity, longer screen life, and optimal solids removal efficiency are the results.

Hydrocyclones

Derrick offers a round desilter manifold which ensures equal feed pressure to each hydrocyclone, mounted over the vibrating deck with the ability to hold up to twenty 3" or 4" hydrocyclones. This allows the FLC 503 and 504 to be used as either a high performance mud cleaner or as a means to reclaim the liquid discharged in the cone underflow. Each 4" hydrocyclone processes 80 GPM at 75 feet of head allowing for a maximum capacity of 1,600 GPM. The cone underflow is caught in the pan mounted over the vibrating basket and can be directed to the vibrating basket or discarded. Derrick's uni-body 4" hydrocyclone can be manufactured with an optional ceramic liner in the lower cone section for increased wear tolerance.

Derrick desanders offer the flexibility of mounting either one, two, or three 10" desander cones over a cone underflow pan. Each 10" hydrocyclone processes 500 GPM at 75 feet of head, allowing for a maximum capacity of 1,500 GPM. The underflow can either be discarded or directed onto the vibrating bed for further processing.

Feeders

Derrick's feeder designs offer the choice of a traditional weir feed, a low weir, a weir feed with bypass, or a top feed. The standard weir feed consists of a 40.9 gallon tank where the mud flows over a weir and onto the shaker basket. The low weir feed design is one of the lowest in the industry at a height of 25-3/8". The low weir feed is available with an optional Extreme Seal™, capable of withstanding temperatures from -60° F to 340° F (-51° C to 171° C). Any of the feed systems can be used in conjunction with the Derrick Flo-Divider, a flow distribution device used to divide the liquid and solids equally and automatically between all of the shakers in use.

Uses of the Flo-Line Cleaner 503 and 504

The FLC 503 and 504 can be configured for use as a main shaker, high performance (1,600 GPM) mud cleaner, or as a secondary drilled cuttings dryer. The FLC 503 and 504 allows the user to configure the shaker and its interchangeable components to fit specific needs for application, size, and capacity. The FLC 503 and 504 can be used in the following instances:

- ***As a main shaker.*** *Two FLC 503's or 504's with Super G motors can be used in place of three or four standard shale shakers due to their exceptional fluid handling capability and superior solids conveyance. When coupled with Derrick's Flo-Line Primer, two FLC 503's or 504's can replace three or four stacked or cascade shakers.*

- ***As a mud cleaner to dry the underflow from desanders and desilters.*** *The FLC 503 and 504 is a useful tool in reducing the amount of liquid being discharged from desanders and desilters. This technique is effective when using an expensive drilling fluid. It also allows hydrocyclones to be a useful part of a "closed-loop" system.*

- ***As a cuttings dryer to recover oil base mud from drilled cuttings****. When utilized for secondary drilled cuttings drying, the FLC 503 and 504 can reduce the oil on cuttings to below 10% by weight.*

The Results

While conventional shakers operate in the 3 to 5 G force range, the Derrick Super G motors produce a continuous 7.3 G's on the FLC 504 (4-panel) and 7.0 G's on the FLC 503 (3-panel).

The higher G force generated by the Super G motors combined with Derrick's patented Pyramid screen technology have proven to be very effective in liquid/solids separation due to superior conveyance characteristics and maximized non-blanked screening area. The FLC 503 shakers have processed in excess of 560 GPM with a 17.8 PPG mud over Pyramid DX-A140* screens. The FLC 504 shakers have processed upwards of 900 GPM with 9.1 PPG mud over Pyramid DX-A140* screens.

**DX-A140 replaces DX175 and DX210*

The high G shaker system consisting of FLC 503 and 504 series shakers enables a drilling rig to use fewer shakers, or to screen finer with the same number of shakers, producing significant savings in drilling fluid and disposal costs. Its proven performance and durability are an asset for any drilling program.

Derrick FLC 503
with Low Weir Feed

Derrick Dual and Triple FLC 503 and FLC 504

The Dual and Triple FLC 503/504 is a single skidded unit configured with a common back tank and center cement by-pass with gate valve. Standard features include “greased-for-life” Super G vibrating motors, single-side tensioning system, and adjustable while drilling (AWD) deck angle adjustment.

Dual FLC 504

Triple FLC 503 with Optional Cone Package and Superstructures

FLC 503 and 504 Dimensions

FLC 503/504 with standard sump

OPTIONS	MODEL	DIMENSIONS				WEIGHT	SCREEN AREA	
		Width (IN / MM)	Length (IN / MM)	Height (IN / MM)	Weir Height (IN / MM)	Actual Wt. (LBS / KG)	PMD (SQ. FT.)	PMD+ (SQ. FT.)
WEIR FEEDER (BACK TANK)	503	64 3/4 / 1645	117 15/16 / 2996	73 3/8 / 1864	39 11/16 / 1008	3380 / 1533	24.9	34.5
	504	64 3/4 / 1645	145 7/16 / 3694	82 1/2 / 2096	39 11/16 / 1008	4130 / 1873	33.2	46.0
BOX FEEDER	503	68 3/4 / 1746	102 / 2591	73 3/8 / 1864	41 7/16 / 1052	3170 / 1438	24.9	34.5
	504	68 3/4 / 1746	129 7/16 / 3288	82 1/2 / 2096	41 7/16 / 1052	3920 / 1778	33.2	46.0
LOW WEIR FEEDER	503	64 3/4 / 1645	121 3/16 / 3078	73 3/8 / 1864	25 3/8 / 645	3590 / 1628	24.9	34.5
	504	64 3/4 / 1645	148 11/16 / 3777	77 5/16 / 1964	25 3/8 / 645	4020 / 1823	33.2	46.0

FLC 503/504 with standard sump, weir feeder, & pan with hydrocyclone package

OPTIONS	MODEL	DIMENSIONS				WEIGHT	SCREEN AREA	
		Width (IN / MM)	Length (IN / MM)	Height (IN / MM)	Weir Height (IN / MM)	Actual Wt. (LBS / KG)	PMD (SQ. FT.)	PMD+ (SQ. FT.)
(20) 4" DESILTER CONES	503	80 / 2032	117 15/16 / 2996	103 1/2 / 2629	39 11/16 / 1008	6255 / 2837	24.9	34.5
	504	80 / 2032	145 7/16 / 3694	103 1/2 / 2629	39 11/16 / 1008	6955 / 3155	33.2	46.0
(3) 10" DESANDER CONES	503	75 / 1905	126 / 3200	109 / 2769	39 11/16 / 1008	5535 / 2511	24.9	34.5
	504	75 / 1905	145 7/16 / 3694	109 / 2769	39 11/16 / 1008	6235 / 2828	33.2	46.0
(3) 10" DESANDER CONES & (20) 4" DESILTER CONES	503	80 / 2032	126 / 3200	109 / 2769	39 11/16 / 1008	7650 / 3467	24.9	34.5
	504	80 / 2032	145 7/16 / 3694	109 / 2769	39 11/16 / 1008	7990 / 3624	33.2	46.0

Dual and Triple FLC 503/504

Design	MODEL	DIMENSIONS				WEIGHT	SCREEN AREA	
		Width (IN / MM)	Length (IN / MM)	Height (IN / MM)	Weir Height (IN / MM)	Actual Wt. (LBS / KG)	PMD (SQ. FT.)	PMD+ (SQ. FT.)
Dual	503	145 5/8 / 3699	115 5/16 / 2929	69 5/8 / 1768	35 7/8 / 911	8600 / 3900	49.8	69.0
	503 w/Cones	162 13/16 / 4135	129 3/16 / 3281	108 1/4 / 2750	35 7/8 / 911	14600 / 6622	49.8	69.0
	504	145 5/8 / 3699	142 11/16 / 3624	81 3/16 / 2062	37 7/8 / 962	9500 / 4309	66.4	92.0
	504 w/Cones	162 7/8 / 4137	149 1/8 / 3788	115 1/4 / 2927	37 7/8 / 962	15500 / 7031	66.4	92.0
Triple	503	242 9/16 / 6161	121 7/16 / 3085	110 1/4 / 2800	37 7/8 / 962	13700 / 6214	74.7	103.5
	503 w/Cones	242 9/16 / 6161	129 3/16 / 3281	110 1/4 / 2800	37 7/8 / 962	19500 / 8845	74.7	103.5

SUPER G® *Two-Year Warranty*

SUPER G2® *Three-Year Warranty*

SUPER G MOTOR CERTIFICATIONS:

Ex

10001171 UL® REGISTERED FIRM ISO 9001:2008

DERRICK CORPORATION

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