DERRICK®
EQUIPMENT COMPANY

Flo-Line® Cleaner 2000
Component Shaker System

Part of the Flo-Line® Cleaner Series

Powered by SUPER G®

An Integral Part of the High G Solution®

Derrick uses only the highest quality materials in the manufacturing of the FLC 2000. Super G® motors are built with high quality Derrick electrics, revered in the industry for exceptional durability. The Flo-Line Cleaner's stainless steel components are manufactured from 304 or 316 grade stainless steel, providing the structural integrity required to accommodate increased vibratory forces. A complete vibrating deck with Super G motors can be retrofitted to the substructures of most older or insufficient performing shale shakers for a cost effective performance increase.

Super G® VIBRATING MOTORS

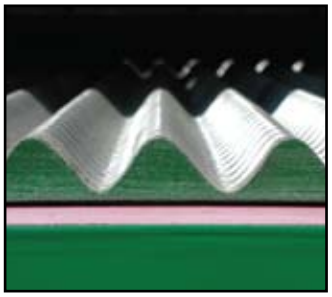
- Produces 7.0 to 7.3 G's of force
- "Greased-for-life" bearing system reduces repair and maintenance costs
- Sound output is 81 dBA

DECK ANGLE ADJUSTMENT

- Quick raising and lowering of the screen basket from -1° to +5° on the 3-panel and -1° to +8° on the 4-panel
- Optimization of shaker performance without operation interruption

PYRAMID™ SCREENS

- Offers 57% to 101% more screen area
- Fluid handling capacity up to 125%
- 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
- Separation made between 40 and 100 microns

DESILTERS

- Round desilter manifold holds up to twenty cones and accepts 3” or 4” hydrocyclones
- Each 4” cone can process 80 GPM
- Separation made between 12 and 74 microns
- The 4” hydrocyclone can be manufactured with a ceramic liner in the lower cone section for increased wear tolerance
- Cones contain separate ball valves that can be individually shut-off during operation allowing for increased control of flow capacities and ease of maintenance

Derrick FLC 2000 4-panel with Optional Mud Cleaner Package

FEEDERS

- Traditional 40.9 gallon back tank with weir feed
- Weir feed with 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 eliminating excess mud volume

Top Feed

Weir Feed

SCREEN UNDERFLOW SUMP

- High volume sumps have a slanted floor to the optional Victaulic nipples for easy clean out
- 3-panel has a 7-barrel capacity and the 4-panel has a 10-barrel capacity

Three Options for Attaining High G'S

Derrick has proven conclusively that increasing shaker G force results in improved solids conveyance and reduced costs for equipment, screens, and maintenance. A High G Solution® is attainable via any of the following packages:

- ***Complete Machine*** – For new rigs and older rigs with excessive worn machines, a new FLC 2000 installation will prove to be a sound investment and an indispensable asset.
- ***Upgrade Kit*** – For enhanced performance of older Derrick shakers such as the Plus and older FLC 2000 units, the FLC 2000 conversion kit allows for an easy upgrade to higher G's. The FLC 2000 upgrade kit successfully increases G's with minimal rig work or modification to the existing Derrick shaker skids. Each upgrade kit includes two Super G motors, one 3-panel screen frame, new float mounts to isolate the increased vibration from higher G's, and all required bed material. The investment in such kits is recouped in as few as thirteen hours due to more effective processing of expensive synthetic drilling fluids.
- ***Conversion Kit*** – The FLC 2000 conversion kits are designed to significantly improve the performance of most non-Derrick shakers with minimal installation time. These conversions enable the use of Derrick's patented Pyramid screens. Derrick engineers have designed several kits allowing the FLC 2000 to fit into the existing shaker space. The new High G shaker can be relocated onto the mud tank without making changes to the rig's existing configuration. Included in each FLC 2000 conversion kit are two Super G motors, one AWD deck angle adjustment system, one weir feeder, all required bed material, and one 3 or 4-panel screen frame.

Uses of the Flo-Line Cleaner 2000

The FLC 2000 can be configured for use as a main shaker, high performance (1,600 GPM) mud cleaner, or a secondary drilled cuttings dryer. The FLC 2000 allows the user to configure the shaker and its interchangeable components to fit specific applications, sizes, and capacities. The FLC 2000 can be used:

- ***As a main shaker.*** Two FLC 2000'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 2000's can replace three or four stacked or cascade shakers.
- ***As a mud cleaner to dry the underflow from desanders and desilters.*** The FLC 2000 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 allows hydrocyclones to be part of a "closed-loop" system.
- ***As a cuttings dryer to recover NAF drilling fluid from drilled cuttings.*** When utilized for secondary drilled cuttings drying, the FLC 2000 reduces the oil on cuttings to below 10% by weight.

The Results

The Derrick Flo-Line Cleaner 2000 is powered by two Super G vibrating motors for superior performance. While conventional shakers operate in the 3 to 5 G force range, the Derrick Super G motors produce 7.0 G's on the FLC 2000 3-panel and 7.3 G's on the FLC 2000 4-panel.

The higher G force generated by the Super G motors combined with Derrick's patented Pyramid screen technology has proven to be effective in liquid/solids separation due to superior conveyance characteristics and maximized available screening area. The FLC 2000 3-panel shakers can process an excess of 560 GPM with a 17.8 PPG mud over Pyramid DX-A140* screens. The FLC 2000 4-panel shakers with Pyramid DX-A140* screens can process upwards of 900 GPM with 9.1 PPG mud and.

DX-A140 replaces DX175 and DX210

The High G shaker system, consisting of FLC 2000 series shakers, enables a drilling rig to use fewer shakers or to screen finer with the same number of shakers. Overall the High G shaker system produces significant savings in drilling fluid and disposal costs. Its proven performance and durability are an asset for any drilling program.

Flo-Line Cleaner 2000

Component Shaker System

Super G Vibrating Motors

Super G motors operate at 1,750 RPM, continuously producing 7.0 to 7.3 G's of force for optimum shaker performance. The "greased-for-life" bearing system eliminates the need for any external lubrication, which reduces maintenance and repair costs. Two Super G motors are standard equipment for the FLC 2000. Sound output of the machine is approximately 81 dBA.

Pyramid and Pyramid Plus "Three-Dimensional" Screens

Derrick's patented Pyramid (PMD™) screen consists of a standard sandwich construction featuring two fine mesh cloths layered with a coarse backing cloth. The three layers are bonded together, corrugated, and then bonded to a metal perforated plate. The resulting corrugations are 0.8" high on the Pyramid screen and 1.5" high on the Pyramid Plus (PMD+™), adding 57% to 101% more usable screen area than a standard flat, perforated plate panel. The three-dimensional Pyramid screens exceed all expectations increasing the fluid handling capacity up to 125%. Installation of Pyramid screens permit the use of finer mesh sizes at higher capacities, further optimizing 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 2000 has the following area available for screening per API RP 13 C (ISO 13501):

- ***3-Panel**: 24.9 sq. ft. with the Pyramid screens and 31.95 sq. ft. with the Pyramid Plus screens*
- ***4-Panel:** 33.2 sq. ft. with the Pyramid screens and 42.6 sq. ft. with the Pyramid Plus screens*

Adjustable While Drilling (AWD)

Derrick's AWD is manually operated by a hydraulic jack that enables one person to quickly and easily raise or lower the screen basket from -1° to +5° on the FLC 2000 3-panel, and -1° to +8° on the FLC 2000 4-panel. As drilling rates, formation, and 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 with the ability to hold up to twenty 3" or 4" hydrocyclones mounted over the vibrating deck. This allows the FLC 2000 to be used as a high performance mud cleaner or as a means to reclaim the liquid discharge in the cone underflow. Each 4" hydrocyclone processes 80 GPM at 75 feet of head at maximum capacity of 1,600 GPM. The cone underflow caught in the pan mounted over the vibrating basket can be directed to the vibrating basket or discarded. Derrick's uni-body 4" hydrocyclone can be manufactured with a 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 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 weir feed with bypass, or a top feed. The weir feed consists of a 40.9 gallon tank where the mud flows over a weir and onto the shaker basket. The weir feed with bypass offers a quick opening gate that allows fluid to bypass the shakers. The top feed eliminates the settling of solids while minimizing foot print area. The top feed is designed to spread the flow of mud across the shaker basket while eliminating the excess mud volume that is normally held in traditional back tanks. Any of the feed systems can be used in conjunction with the Derrick Flo-Divider, a flow distribution device used at the flow line with the FLC 2000 series.

Sumps

Choose from Derrick's standard sump, which has rectangular gate discharges located on each side, or high volume sumps with optional 10" Victaulic nipples on each side. The high volume sumps have a slanted floor to the Victaulic nipples for easy clean out. The high volume sump for the 4-panel model has a 10-barrel capacity while the 3-panel version has a 7-barrel capacity. A minimal weir height can be attained by eliminating the sump and mounting the FLC 2000 directly over the mud compartment.

FLC 2000 3-panel and 4-panel Dimensions

FLC 2000 with standard sump

OPTIONS	MODEL	DIMENSIONS (IN / MM)				(LBS / KG)
		Width	Length	Height	Weir Height	Weight
WEIR FEEDER (BACK TANK)	3-Panel	74 3/16 / 1884	112 1/4 / 2851	63 3/16 / 1605	39 3/4 / 1010	4300 / 1950
	4-Panel	74 3/16 / 1884	140 3/16 / 3561	74 5/8 / 1895	42 / 1067	5250 / 2381
BOX FEEDER	3-Panel	74 3/16 / 1884	95 1/8 / 2416	63 3/16 / 1605	40 1/2 / 1029	4300 / 1950
	4-Panel	74 3/16 / 1884	123 1/16 / 3126	74 5/8 / 1895	42 3/4 / 1086	5250 / 2381

FLC 2000 with standard sump, weir feeder, & pan with hydrocyclone package

OPTIONS	MODEL	DIMENSIONS (IN / MM)				(LBS / KG)
		Width	Length	Height	Weir Height	Weight
(20) 4" DESILTER CONES	3-Panel	80 / 2032	114 13/16 / 2916	98 9/16 / 2503	39 3/4 / 1010	6950 / 3153
	4-Panel	80 / 2032	142 13/16 / 3627	100 1/2 / 2553	42 3/4 / 1086	7950 / 3606
(3) 10" DESANDER CONES & (20) 4" DESILTER CONES	3-Panel	80 / 2032	125 / 3175	104 7/16 / 2653	39 3/4 / 1010	7900 / 3583
	4-Panel	80 / 2032	142 13/16 / 3627	106 3/8 / 2702	42 3/4 / 1086	9000 / 4082

***All weights and dimensions are approximate.**

Derrick FLC 2000 3-panel

SUPER G®

Two-Year Warranty

SUPER G MOTOR CERTIFICATIONS:

10001171 UL REGISTERED FIRM ISO 9001:2008

DERRICK CORPORATION

PYRAMID™ SCREEN

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