



DE-7200 VFD CENTRIFUGE TECHNICAL SPECIFICATION SHEET



MODEL:	DERRICK DE-7200 VFD
MACHINE TYPE:	CENTRIFUGE
DRIVE TYPE:	VARIABLE FREQUENCY DRIVE
ACCELERATION:	2750 G's MAX
MANUFACTURER:	DERRICK CORPORATION
COUNTRY OF ORIGIN:	USA
GA:	16590-00 SERIES
WS:	14394-00 SERIES

BOWL	
Material	316 Stainless Steel
Type	Contour Cylinder
Diameter	21.4" (356 mm)
Effective Length	72" (1238 mm)
Solids Discharge Ports	Replaceable wear inserts
Effluent Ports	4 Variable – Eccentric

CONVEYOR	
Design	Helical - Axial and Radial combination
Speed	1-70 RPM Differential
Flight Protection	Tungsten carbide tiles approximately 92 "A" Rockwell
Feed Nozzles	6 Replaceable wear liners
Feed Tube Connection	2 1/2" ANSI 150 Flange or DIN 65mm PN10 Flange

CONVEYOR DRIVE	
Type	Three Stage Planetary Gearbox
Position	Inboard
Ratio	48:1
Max Torque Output	1 - 45 RPM approx. 70,806 in-lbs (8,000 Nm), 70 RPM approx. 61,955 in-lbs (7,000 Nm)

CONTROL SYSTEM	
Type	Programmable Logic Control
Communications	EtherNet IP Network
Power Requirement	Refer to specific wiring schematic #14394-00 series
Cooling	Onboard Air Conditioner
Control Interface	Protected color monitor and rugged industrial mouse
Motor Controller	Heavy duty variable frequency drives

CAPACITIES	
Feed	500 GPM (1893 LPM) Maximum (theoretical hydraulic capacity: as tested with water)
G's	2750 @ 3000 RPM

WEIGHTS & DIMENSIONS – EQUIPMENT (APPROXIMATE, REFERENCE GA 16590-00-009)	
Centrifuge Rotating Assembly	Length: 155 13/16" (3958 mm) Width: 81 5/16" (2065 mm) Height (Lid Open): 64 5/8" (1641 mm) Height (Lid Closed): 45 1/8" (1146 mm) Weight: 14000 lbs(6350 kg)
Electrical Control Cabinet	Length: 69 7/16" (1763 mm) Width: 31 9/16" (802 mm) Height: 79 5/16" (2015 mm) Weight: 2010 lbs (912 kg)



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SAFETY FEATURES

Rotating Assembly/Base	Automatic Shutdown for High Vibration. Automatic Shutdown for Main Bearing High Temperature. Automatic Shutdown for Bowl Overspeed. Conveyor Gearbox Mounted Inboard of the Main Bearing, Eliminating Overhung Load. Stainless Steel Covers that surround the Rotating Assembly and Gearbox. Warning Labels advise personnel of potential hazards of moving equipment/high temperatures/High Voltage Overload Clutch Protects the Gearbox from Excessive Torque.
Electrical Circuit	Emergency Stop Switch on Control Cabinet & Rotating Assembly Base. Automatic Pump Feed Rate Reduction. Automatic Type-X Cabinet Purge System for use in Hazardous Locations. Descriptive Alarm and Fault Notification on Operating Interface Screen. Automatic Shutdown on high internal cabinet temperature protecting electronic equipment.

PRODUCT FEATURES

Rotating Assembly/Base	Up to 2750 G's of Centrifugal Force at 3000 RPM. Stainless Steel Bowl and Stainless Steel Conveyor. Replaceable Feed Nozzle Liners. Replaceable Solid Discharge Wear Inserts and Feed Accelerator. Adjustable Effluent Ports. Automatic Cleanout During Shutdown.
Electrical Circuit	Motor Drives and other Peripherals Controlled by an Environmentally Hardened PLC. Motors Powered by Pulse Width Modulated (PWM) Variable Frequency Drives (VFD's). 24 Hours of Historical Real-Time Main Bearing Temperatures & Motor Torque Trend Monitoring. Real-Time Bowl Drive & Back Drive Torque Monitoring. Alarm and Fault Monitoring as well as Historical Data Logging. Color Operator Interface Screen. Fully Automatic Startup and Shutdown. Optional Remote Operator Control and Monitoring. (On Site Only). Feed Rate GPM Display. Adjustable Conveyor Differential Speed and Flow Rates. Detailed Alarm & Fault Messages for Ease in Troubleshooting & Ensure Rapid System Recovery. Speed Sensor Feedback for Control and Overspeed Protection. Automatic or Manual Feed Pump Flow Rate Control. Automatic Load Sensing with Feed Pump Control for Various Mud Densities. Automatic or Manual Cleanout Capability.

STANDARDS FOR CONSTRUCTION

Refer to DOC#PE-S-011

WARRANTY

Refer to DOC#FI-C-003

FEED PUMP - (RECOMMENDATION)

See "PES077-Centrifuge Feed Pumps" for feed pump options and recommendations

Form 1: Standard NEC Configuration

Section 1: Supply Requirements

Table 1.1a: Standard Electrical Power Requirements

Supply Voltage	Frequency / Phase	Power Requirement
☐ 460/480 V	60 Hz / 3 ϕ	224 kVA
☐ 575/600 V		279 kVA
☐ 380/400 V	50 Hz / 3 ϕ	268 kVA

Table 1.1b: Compressed Air Requirements

Supply Pressure	Supply Volume Air Quality
65 PSI/0.44 MPa/4.48 bar Min - 115psi/0.8 MPa/8 bar Max	16 scfm Min (Rapid Purge) / 2.25 scfm MIN @ Operation, instrument quality

Section 2: Motor and Controls Package

Table 1.2: Motor and Control Systems List

Type	Bowl	Conveyor	Centrifuge Feed Pump	Control Panel
Quantity	1x	1x	1x	1x
Power	150 HP / 111 kW	60 HP / 45 kW	Up to 30 HP / 22 kW	N/A
Notes	-Motor power ratings are approximate, as several variables affect the real power usage	-Motor power ratings are approximate, as several variables affect the real power usage	-Derrick provides Electrical Control Circuit -Required but sold separately	-HMI screen with rugged industrial mouse interface -Feedback signals/control options available -Supplied external to skid

Section 3: Machinery/Electrical Conformity

Table 1.3: Machinery Conformity

***Non-Rated**

**Note: The inclusion of UL-listed, NEC, ATEX, IEC, or IECEx qualified electrics (components or parts) does not imply that the complete or partially completed equipment provided by Derrick complies with, is designed to, or is built to any international, European, ATEX, or IEC regulations, standards, requirements, or IECEx schemes. It is the equipment purchaser's responsibility to ensure that the quoted equipment satisfies the various local and national requirements in which that equipment will be operated*

Table 1.4- NEC (Division) Electrical Conformity

Classification	Division	Groups	Temperature Class
CLASS I	DIV 1	C + D	T3C

Note: Electrical components ONLY are suitable for use in specified environment

Table 1.5-NEC (Zone) Electrical Conformity, per NEC 505.20 (b)

Classification	Area	American Standard	Protection Technique	Material Group	Group (Gas)	Temp Class
Class 1	Zone 1	AEx	Flameproof (d)	Group II	Group B	T3

Note: Electrical components ONLY are suitable for use in specified environment

Table 1.6: Electrical Component Environmental Protection

Ambient Temperature Rating	NEMA Enclosure Rating	Ingress Protection	
		First #	Second #
-25°C to +40°C	4, 7, 9	Non-Rated	

NEC Division System Reference Legend

Classification	I: Gases / vapors may be present
Division	1: Likely in normal operations
Group	C- ethers / D- hydrocarbons
Temp Class	T3C: 160°C

Form 2: Standard IEC Configuration

-Due to possible prolonged lead times for European components, you **MUST** contact Derrick Engineering prior to quoting IEC equipment

Section 1: Rated Electrical Power

Table 2.1a: Standard Electrical Power Requirements

Supply Voltage	Frequency / Phase	Power Requirement
☐ 460/480 V	60 Hz / 3 ϕ	224 kVA
☐ 575/600 V		279 kVA
☐ 380/400 V	50 Hz / 3 ϕ	268 kVA

Table 2.1b: Compressed Air Requirements

Supply Pressure	Supply Volume Air Quality
65 PSI/0.44 MPa/4.48 bar Min - 115psi/0.8 MPa/8 bar Max	16 scfm Min (Rapid Purge) / 2.25 scfm MIN @ Operation, instrument quality

Section 2: Motor and Controls Package

Table 2.2: Motor and Control Systems List

Type	Bowl	Conveyor	Centrifuge Feed Pump	Control Panel
Quantity	1x	1x	1x	1x
Power	150 HP / 111 kW	60 HP / 45 kW	Up to 30 HP / 22 kW	N/A
Notes	-Motor power ratings are approximate, as several variables affect the real power usage	-Motor power ratings are approximate, as several variables affect the real power usage	-Derrick provides Electrical Control Circuit -Required but sold separately	-HMI screen with rugged industrial mouse interface -Feedback signals/control options available -Supplied external to skid

Section 3: Machinery/Electrical Conformity

Table 2.3: Machinery Conformity

***Non-Rated**

**Note: The inclusion of UL-listed, NEC, ATEX, IEC, or IECEx qualified electrics (components or parts) does not imply that the complete or partially completed equipment provided by Derrick complies with, is designed to, or is built to any international, European, ATEX, or IEC regulations, standards, requirements, or IECEx schemes. It is the equipment purchaser's responsibility to ensure that the quoted equipment satisfies the various local and national requirements in which that equipment will be operated*

Table 2.4- IEC (Zone) Electrical Conformity

Classification	Protection Technique	Gas Groups	Temperature Class	Equipment Protection
Zone 1	Flameproof (Ex d)	IIB	T3	Gb

Note: Electrical components ONLY are suitable for use in specified environment

Table 2.5: Electrical Component Environmental Protection

Ambient Temperature Rating	NEMA Enclosure Rating	Ingress Protection	
		First #	Second #
-20°C to +40°C	Non-Rated	5	5

IEC Reference Legend

Classification	Zone 1: Gases, mists, and vapors expected to be present
Protection Technique	Flame-proof: prevents transmission of explosions
Gas Groups	IIB: Hydrocarbon gases, ethers
Temperature Class	T3: 200°C
EPL	Gb: Zone 1 gas rating

Form 3: Standard ATEX Configuration

-Due to possible prolonged lead times for European components, you **MUST** contact Derrick Engineering prior to quoting ATEX equipment

Section 1: Rated Electrical Power

Table 3.1a: Standard Electrical Power Requirements

Supply Voltage	Frequency / Phase	Power Requirement
☐ 460/480 V	60 Hz / 3 ϕ	224 kVA
☐ 575/600 V		279 kVA
☐ 380/400 V	50 Hz / 3 ϕ	268 kVA

Table 3.1b: Compressed Air Requirements

Supply Pressure	Supply Volume Air Quality
65 PSI/0.44 MPa/4.48 bar Min - 115psi/0.8 MPa/8 bar Max	16 scfm Min (Rapid Purge) / 2.25 scfm MIN @ Operation, instrument quality

Section 2: Motor and Controls Package

Table 3.2: Motor and Control Systems List

Type	Bowl	Conveyor	Centrifuge Feed Pump	Control Panel
Quantity	1x	1x	1x	1x
Power	150 HP / 111 kW	60 HP / 45 kW	Up to 30 HP / 22 kW	N/A
Notes	-Motor power ratings are approximate, as several variables affect the real power usage	-Motor power ratings are approximate, as several variables affect the real power usage	-Derrick provides Electrical Control Circuit -Required but sold separately	-HMI screen with rugged industrial mouse interface -Feedback signals/control options available -Supplied external to skid

Section 3: Machinery/Electrical Conformity

Table 3.3: Machinery Conformity

***Non-Rated**

** Note: The inclusion of UL-listed, NEC, ATEX, IEC, or IECEx qualified electrics (components or parts) does not imply that the complete or partially completed equipment provided by Derrick complies with, is designed to, or is built to any international, European, ATEX, or IEC regulations, standards, requirements, or IECEx schemes. It is the equipment purchaser's responsibility to ensure that the quoted equipment satisfies the various local and national requirements in which that equipment will be operated*

Table 3.4- ATEX (Zone) Electrical Conformity

Classification	Group	Equipment Category	Protection Technique	Gas Groups	Temperature Class	Equipment Protection
Zone 1	II	2G	Flameproof (Ex d)	IIB	T3	Gb

Note: Electrical components ONLY are suitable for use in specified environment

Table 3.5: Electrical Component Environmental Protection

Ambient Temperature Rating	NEMA Enclosure Rating	Ingress Protection	
		First #	Second #
-20°C to +40°C	Non-Rated	5	5

ATEX Reference Legend

Classification	Zone 1: Gases, mists, and vapors
Group	II: Materials occasionally present
Equipment Category	2G: suitable for use in Zone 1
Protection Technique	Flame-proof: prevents transmission of explosions
Gas Groups	IIB: Hydrocarbon gases, ethers
Temperature Class	T3: < 200°C
EPL	Gb: High protection level (gas)

Form 4: Custom Electrical Rated Configuration

-Complete both the Hazardous Location Classification and Equipment Specific Options sections in order, as the hazardous location ratings define available options. Gray fields represent currently unavailable selections. Fields marked with an asterisk indicate "Standard" options. Red fields are invalid due to multiple selections in the same section. Green fields are valid selections

Section 1: Hazardous Location Classification

Table 4.1:

Machinery Rating

☐	Non-Rated
☐	CE / ATEX

Table 4.2: Electrical Component Rating

Non-Rated ☐	NEC Division ☐	NEC Zone ☐	IEC Zone ☐	ATEX Zone ☐
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Table 4.3- NEC (Division System)

Classification	Division	Group		Temperature Class			
		Gas	Dust				
☐ * CLASS I	☐ * DIV 1	☐ * C	☐ E	☐ T1	☐ T2C	☐ T3B	☐ T4A
☐ CLASS II	☐ DIV 2	☐ * D	☐ F	☐ T2	☐ T2D	☐ * T3C	☐ T5
☐ CLASS III			☐ G	☐ T2A	☐ T3	☐ T4	☐ T6
				☐ T2B	☐ T3A		

Table 4.4- NEC (Zone System)

Classification	Area	American Standard	Protection Technique	Material Group	Group (Gas)	Temperature Class
☐ * Class 1	☐ * Zone 1	☐ * AEx	☐ * Flameproof (d)	☐ Group I	☐ Group A	☐ T1
	☐ Zone 2		☐ Intrinsic Safety (ia)	☐ * Group II	☐ * Group B	☐ T2
			☐ Intrinsic Safety (ib)		☐ Group C	☐ * T3
			☐ Pressurization (p)			☐ T4
			☐ Increased Safety (e)			☐ T5
			☐ Encapsulation (m)			☐ T6

Table 4.5- IEC (Zone Scheme)

Classification	Protection Technique	Gas Groups	Temperature Class	Equipment Protection
☐ * Zone 1	☐ Increased Safety (Ex e)	☐ * IIB	☐ T1	☐ * T4
☐ Zone 2	☐ * Flameproof (Ex d)	☐ IIC	☐ T2	☐ T5
	☐ Intrinsic Safety (Ex ib)		☐ * T3	☐ T6
	☐ Pressurization (Ex px)			
	☐ Encapsulation (Ex mb)			

Table 4.6- ATEX (Zone Scheme)

Classification	Group	Equipment Category	Protection Technique	Gas Groups	Temperature Class	Equipment Protection
☐ * Zone 1	☐ * II	☐ * 2G	☐ Increased Safety (Ex e)	☐ * IIB	☐ T1	☐ * Gb
☐ Zone 2		☐ 3G	☐ * Flameproof (Ex d)	☐ IIC	☐ T2	☐ Gc
			☐ Intrinsic Safety (Ex ib)		☐ * T3	
			☐ Pressurization (Ex px)		☐ T4	
			☐ Encapsulation (Ex mb)		☐ T5	
					☐ T6	

Section 2: Equipment Specific Options

Table 4.7a: Electrical Component Power Supply Requirements

Supply Voltage	Frequency / Phase	Power Requirement
☐ * 460/480 V	60 Hz / 3 ϕ	224 kVA
☐ * 575/600 V		279 kVA
☐ * 380/400 V	50 Hz / 3 ϕ	268 kVA

Table 4.7b: Compressed Air Requirements

Supply Pressure	Supply Volume Air Quality
☐	☐
* 65 PSI / 0.44 Mpa / 4.48 bar Min - 115psi/0.8 MPa/8 bar Max	* 16 scfm Min (Rapid Purge) / 2.25 scfm MIN @ Operation, instrument quality

Table 4.8: Centrifuge Feed Pump/Drive Options

Pump Type	Electrical Supply/GPM	Derrick PN
☐ ****N/A: PUMP TO BE SUPPLIED BY CUSTOMER***		
☐ Pro Cav 7.5 HP, 380 V, 22 - 148 GPM		G0009955
☐ Pro Cav 7.5 HP, 460 V, 22 - 148 GPM		G0009956
☐ Pro Cav 7.5 HP, 575 V, 22 - 148 GPM		G0009957
☐ Pro Cav 15 HP, 380 V, 50 - 350 GPM		G0009954
☐ Pro Cav 15 HP, 460 V, 50 - 350 GPM		G0009921
☐ Pro Cav 15 HP, 575 V, 50 - 350 GPM		G0009922
☐ Pro Cav 25 HP, 380 V, 50 - 450 GPM		G0009958
☐ Pro Cav 25 HP, 460 V, 50 - 450 GPM		G0009959
☐ Pro Cav 25 HP, 575 V, 50 - 450 GPM		G0009960
☐ Customer Specified	VARIES	N/A

Table 4.9: Motor and Control Systems List

	Bowl Drive	Conveyor Drive	Pump Drive	Control System
Type	☐ * Bowl Motor	☐ * Conveyor Motor	☐ * Centrifuge Feed Pump Motor	☐ * Control Panel
Quantity	1x	1x	1x	1x
Power	150 HP / 11 kW	60 HP / 45 kW	Up to 30 HP / 22 kW	N/A
Notes	-Motor power ratings are approximate, as several variables affect the real power usage	-Motor power ratings are approximate, as several variables affect the real power usage	-Derrick provides Electrical Control Circuit -Must be supplied by customer	-HMI screen with rugged industrial mouse interface -Feedback signals/control options available -Supplied external to skid

Table 4.10: Electrical Component Environmental Protection

Ambient Temperature Rating	NEMA Enclosure Rating	Ingress Protection	
		1st # (Dust)	2nd # (Liquid)
☐ Non-Rated	☐ Non-Rated	☐ Non-Rated	
☐ * 40 °C	☐ 1	☐ 5	☐ 5
☐ 45 °C	☐ 2	☐ 6	☐ 6
☐ 50 °C	☐ 3, 3S, 3X		☐ 7
☐ 55 °C	☐ 3R		☐ 8
	☐ 4		
	☐ 4X	☐ 12, 12K	
	☐ 5	☐ 13	
	☐ 6, 6P		

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