

# THE GLOBAL LEADER IN SCREENING TECHNOLOGY

In 1977, Derrick Corporation expanded into the oilfield, establishing Derrick Equipment Company to serve this market. Derrick® has been fully committed to furthering solids control technology through extensive research and development (R&D). Satisfying the ever-changing needs of the oil and gas industry for over forty years, Derrick combines several time proven products with new innovations to offer the most comprehensive and cost effective solids control system in the industry.

Continuing to set the standard in solids control, Derrick Equipment Company is leading the way with their API RP 13C (ISO 13501) screen, an industry-standard for physical testing and labeling of shaker screens.

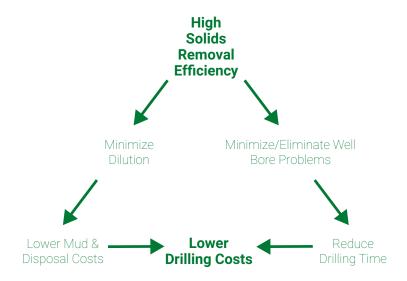
Until API RP 13C, no common standard existed for testing and labeling of screens. All Derrick screens offer cut point integrity and are API RP 13C (ISO 13501) compliant. Utilizing the most advanced and innovative R&D program, Derrick maintains its lead as a provider of fine screening technology.

To meet API RP 13C compliance two tests are required: cut point and conductance. API RP 13C allows the end user to compare by cut point, conductance (fluid flow), and non-blanked open area. The cut point test is based on a time-proven testing method used by ASTM to classify particles by size. The shaker screen designation is identified by matching the screen's cut point to the closest ASTM sieve cut point.

The D100 separation is used for assigning screen designations. The conductance test measures the ability of a fluid to pass through the screen. The non-blanked open area of a screen describes the net unblocked area (in square meters or square feet) available to permit the passage of fluid. After identifying the cut point and conductance, API RP 13C requires application of a permanent tag or label to the screen that is visible and legible. Both cut point, expressed as an API number, and conductance shown in kD/mm are required on the screen label.

### Increased Solids Removal Results in Lower Drilling Costs

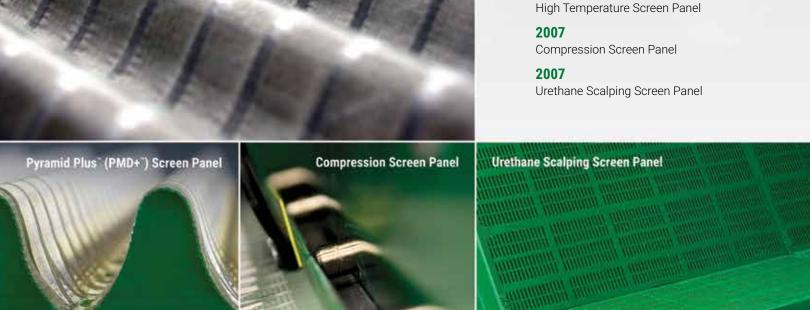
Derrick screens are designed to maximize solids removal capabilities while significantly reducing costs associated with drilling fluid and disposal. The utilization of Derrick screens lowers the percentage of drilled solids in the mud system. Less dilution is required, decreasing total drilling fluid requirements and disposal costs. Cleaner drilling fluid will decrease down hole problems which can adversely affect drilling time. All the benefits of clean drilling fluid lead to one end result: Lower Drilling Costs.





API RP 13C Compliant Screens

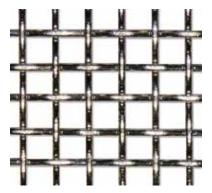
#### 2006



### **SCREEN CLOTH**









#### Extra Fine (DX<sup>™</sup>) Cloth

The Derrick Extra Fine (DX) cloth series is used on the first multiple layer (Sandwich) screens. The DX cloth is designed to maximize capacity, maintain cut point integrity, and minimize nearsize particle blinding.

#### Fine (DF<sup>™</sup>) Cloth

The Derrick Fine (DF<sup>™</sup>) cloth series has a slightly larger wire diameter than the DX cloth, but is thinner than market grade and tensile bolting cloth. The DF cloth is designed to maximize screen life, maintain cut point integrity, and minimize nearsize particle blinding.

#### High Performance (HP<sup>™</sup>) Cloth

The Derrick High Performance (HP) cloth series was developed to increase fluid capacity by utilizing slotted openings. Its slotted openings allow for higher flow rates to be processed without sacrificing cut point integrity.

### **SCREEN PANEL CONSTRUCTION**

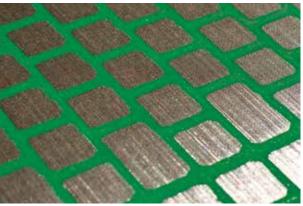
#### Perforated Wear Plate Screen Panel (PWP™)

The Derrick PWP screens are constructed of multiple screen layers bonded to a perforated metal plate for added support and facilitation of repair. Bonding squares help maintain cut point integrity by stabilizing the Sandwich Screen, increasing durability by reducing screen flutter, and isolating any screen failures. Screens for particular shakers may be repaired using the stainless steel plugs supplied with the panel.

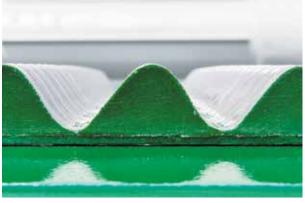
### Pyramid® and Pyramid Plus™ Screens (PMD® and PMD+™)

Derrick has revolutionized screening technology with the patented Pyramid (PMD) and Pyramid Plus (PMD+) screens. These revolutionary three-dimensional screens offer the benefits of traditional flat multi-layered screens while adding a significant increase in usable screen area. The result is a screen that increases fluid handling capacity. Pyramid and Pyramid Plus screens provide an easy, cost effective increase in shaker performance. Designed with the latest technology, Pyramid screens allow rigs to screen finer earlier in the drilling process, thus significantly reducing mud and disposal costs. All Derrick screens are API RP 13C compliant.

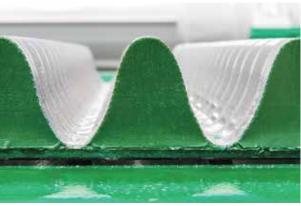
TECHNOLOGY, PYRAMID SCREENS ALLOW RIGS TO SCREEN FINER EARLIER IN THE DRILLING PROCESS, THUS SIGNIFICANTLY REDUCING MUD AND DISPOSAL COSTS. ALL DERRICK SCREENS ARE API RP 13C COMPLIANT.



ם אום



PMD



PMD+

### **EXCLUSIVE BENEFITS**



#### **Increased Shaker Capacity**

Compared to the PWP, Pyramid and Pyramid Plus screens increase the total amount of usable API non-blanked screen area by 105% and 184% on a Derrick FLC 514 shaker. Fluid-handling capacity is increased up to 125%.

#### **Makes Fine Separations**

Pyramid and Pyramid Plus screens are capable of making separations as fine as 40 microns.

#### **Fits Existing Shakers**

Pyramid screens fit all Derrick shakers, thus allowing for the most efficient use of existing equipment. There is no need to modify or replace the existing shaker.

#### **Screen Finer Faster**

Utilizing Pyramid or Pyramid Plus screens enable shakers to screen 1 to 2 API sizes finer than traditional perforated plate flat screen panels. This maximizes the solids removal efficiency of the shaker.

#### **Drier Cuttings**

Pyramid screens minimize fluid loss by dispersing thinner layers of fluid over an increased screen area, resulting in a more effective and faster drying capability.

### **SCREEN SHAPE AND CONDUCTANCE**

#### **Enhanced Permeability**

Gravity and vibration force the solids into the corrugated screen's troughs, thus allowing more fluid to pass through the top of the screen.



Corrugated Pyramid Screen Enhanced Permeability



Conventional Flat Screen Solids Impede Fluid Flow



### REPLACEMENT SCREEN PANELS

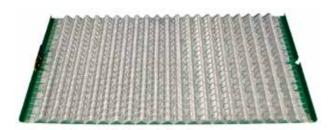
FOR DERRICK SHAKERS



Dilution and disposal costs are minimized with Derrick state-of-the-art screen surface technology. Combining high G shakers with Derrick's exclusive Pyramid Screen technology significantly improves solids separation. Integrating the industry's latest advancements in screen surface design – higher capacity, longer screen life, and optimal solids removal efficiency – Derrick screens can dramatically reduce operating costs.

#### Hyperpool® Series for Derrick Hyperpool Shakers

Derrick's Hyperpool® performance is optimized through the installation of Pyramid screens, permitting the use of finer mesh sizes at higher capacities. The Hyperpool's innovative screen compression system drives the center of the screen panel downward, firmly sealing the screen panel to the screen frame. Compression benefits include extended screen life, improved conveyance, elimination of ultra fine solids bypassing under screen panels, and faster and more user-friendly screen changes than any other shaker in the Derrick product line.



Hyperpool Series Screen

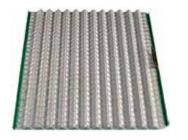
API RP 13C (ISO 13501) Non-Blanked Open Screen Area

	PMD	PMD+
Hyperpool	22.64 sq. ft.	30.76 sq. ft.

#### **COMPRESSION SYSTEM**

#### 600 Series for Derrick Dual Pool® 600 Shakers

Derrick's 600 Series screens, available in Pyramid and Pyramid Plus panels, are used on all Dual Pool® 600 series shakers. The DP 600's innovative actuated screen compression system drives the center of the screen panel downward, firmly sealing the screen panel to the screen frame. Compression benefits include extended screen life, improved conveyance, elimination of ultra fine solids bypassing under screen panels, and fast, user-friendly screen changes. Derrick's long-life urethane panels are used on models equipped with the scalping deck option.





Pyramid (PMD) 600 Series Screen & Scalping Deck 600 Series Urethane Screen

#### API RP 13C (ISO 13501) Non-Blanked Open Screen Area

	PMD	PMD+	Urethane
DP 616	24.60 sq. ft.	32.64 sq. ft.	-
DP 626	24.60 sq. ft.	32.64 sq. ft.	12.00 sq. ft.
DP 618	32.80 sq. ft.	43.52 sq. ft.	-
DP 628	32.80 sq. ft.	43.52 sq. ft.	16.00 sq. ft.

#### **COMPRESSION SYSTEM**

#### 500 Series for Derrick Flo-Line Cleaner™ 500 Shakers

Derrick's 500 Series screens, available in Pyramid, Pyramid Plus, and PWP panels are used on all FLC 500 series shale shakers. The FLC 500's innovative single-side tensioning system reduces screen panel replacement time to less than one minute per panel on average. This faster, easier, and more reliable screen panel tensioning is provided by tensioning fingers and two Quick-Lok 1/2-turn tensioning bolts on each screen panel.



Pyramid (PMD) 500 Series Screen

API RP 13C (ISO 13501) Non-Blanked Open Screen Area

	PWP	PMD	PMD+
FLC 513	12.15 sq. ft.	21.27 sq. ft.	29.40 sq. ft.
FLC 514	16.20 sq. ft.	28.36 sq. ft.	39.20 sq. ft.

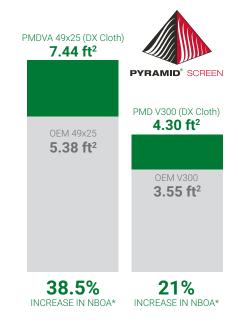
#### **TENSIONING SCREEN SYSTEM**

### REPLACEMENT SCREEN PANELS

FOR NON-DERRICK SHAKERS

#### **More Screen Area with Pyramid Screens**

Derrick makes replacement screens to fit non-Derrick shale shakers. Continuing with its commitment to remain the leading technology provider of fine screens, Derrick's Research and Development department has developed a pretensioned screen for the BRANDT® COBRA® Series, LCM-3D, and VSM 300® shakers. Utilizing Derrick's PMD and PWP technology, the 49x25 and V300 replacement screens are API RP 13C (ISO 13501) compliant to ensure accurate cut point designation.



\*NBOA = Non-Blanked Open Area

DERRICK PYRAMID SCREENS
ARE THE MOST COST EFFECTIVE
FOR DRILLING HIGH DENSITY
SBM SYSTEMS BY A LARGE
MARGIN...THE RESULTS OF THE
TRIAL WERE OVERWHELMINGLY
IN FAVOR OF DERRICK PYRAMID
SCREENS.



-OPERATOR DRILLING FLUIDS SPECIALIST

#### 49x25 for BRANDT® COBRA™ Series and LCM-3D Shakers

The PMDVA 49x25 is a superior pre-tensioned (VENOM™ style) replacement screen for the COBRA series and LCM-3D shale shakers. The exclusive Derrick Pyramid technology offers up to 38.5% greater non-blanked open area, increasing capacity of the existing shaker package. The PTCV 49x25 (PWP) flat screen is also available and comes with a stainless steel screen repair plug.



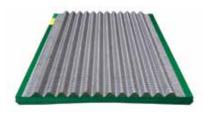
PMDVA 49x25 Screen

#### API RP 13C (ISO 13501) Non-Blanked Open Screen Area Using DX Series Cloth

	PWP	PMD
COBRA	15.00 sq. ft.	22.32 sq. ft.
KING COBRA™	20.00 sq. ft.	29.76 sq. ft.
LCM-3D	20.00 sq. ft.	29.76 sq. ft.

#### V300 for BRANDT VSM 300" Shakers

A pre-tensioned Pyramid screen is available for the VSM 300 shale shakers. The V300 screens ensure longer screen life and accurate cut point designation in compliance with API RP 13C. The exclusive Derrick Pyramid technology offers up to 21% greater non-blanked open area, increasing capacity of the existing shaker package. The V300 (PWP) flat screen is also available.



V300 PMD Screen

API RP 13C (ISO 13501) Non-Blanked Open Screen Area Using DX Series Cloth

	PWP	PMD
VSM 300	13.16 sq. ft.	17.20 sq. ft.

### **SCREEN PANEL CHART**

### FOR DERRICK SHAKERS

								API RP 13C	NON-BLAN	IKED OPEN AR	EA (SQ. FT.)		
								48x30	36x30	60x30	500 Series	600 Series	Hyperpool®
								5.30	4.26	7.27	4.05	-	-
								6.85	5.76	10.03	7.09	4.10	5.66
	= PWP	J™ =	PMD®	<b>A</b> =	PMD+ <sup>™</sup>		= HT	9.47	7.78	-	9.80	5.44	7.69
	API RP	13C DESIGNAT	ION	С	ONDUCTANC	Е NUMBE	R		A\	VAILABLE (	CONSTRUCTION	ON	
	Screen Designation	API RP 13C Designation	API D100 Cut Point	PWP 500	PWP 48x30, 36x30, 60x30	PMD	PMD+	48x30 <sup>1,5</sup>	36x30 <sup>6</sup>	60x30 <sup>7</sup>	500 Series <sup>2,5</sup>	600 Series <sup>3</sup>	Hyperpool®4
	DX-A200	API 200	73.30	0.94	0.73	0.95	1.46					<b>A A</b>	<b>A A</b>
	DX-A170	API 170	85.40	1.20	0.85	1.36	1.61					<b>A A</b>	<b>A A</b>
	DX-A140	API 140	104.00	1.61	1.43	1.92	2.42					<b>A A</b>	<b>A A</b>
	DX-A120	API 120	117.80	1.64	1.46	1.92	2.46					<b>A A</b>	<b>A A</b>
S	DX-A100	API 100	142.00	2.18	1.80	2.33	3.20					<b>A A</b>	<b>A A</b>
DX SERIES	DX-A80	API 80	170.40	2.50	2.48	3.09	4.14					<b>A A</b>	<b>A A</b>
×SE	DX-A70	API 70	202.70	2.55	2.67	3.80	5.00					<b>A A</b>	<b>A A</b>
Δ	DX-A60	API 60	243.70	3.85	3.56	4.68	5.66					<b>A A</b>	<b>A A</b>
	DX-A50	API 50	288.50	4.59	4.19	5.50	6.21					<b>A A</b>	<b>A A</b>
	DX-A45	API 45	341.10	7.30	6.05	5.84	7.06					<b>A A</b>	<b>A A</b>
	DX-A40	API 40	411.70	8.16	6.77	6.59	7.39					<b>A A</b>	<b>A A</b>
	DX-A35	API 35	477.50	11.80	7.24	7.06	11.59					<b>A A</b>	<b>A A</b>
	HP-A325	API 325	44.50	0.43	0.48	0.65	0.95						
	HP-A270	API 270	52.50	0.50	0.47	0.55	0.96						
	HP-A230	API 230	61.00	0.56	0.48	0.60	0.99						
	HP-A200	API 200	71.70	0.86	0.70	1.10	1.51						
	HP-A170	API 170	88.40	1.04	0.81	1.35	2.16						
(0	HP-A140	API 140	100.60	1.59	1.56	2.08	2.99						
RIE	HP-A120	API 120	117.80	2.01	1.88	2.50	4.13					Not	Not
HP SERIES	HP-A100	API 100	142.70	2.42	2.43	3.17	4.83					Available	Available
Ξ	HP-A80	API 80	166.60	2.85	2.80	3.71	5.10						
	HP-A70	API 70	197.70	4.00	3.98	4.64	5.86						
	HP-A60	API 60	238.40	4.90	4.98	5.31	6.59						
	HP-A50	API 50	276.00	5.57	5.74	5.52	7.40						
	HP-A45	API 45	331.40	6.00	6.94	6.14	7.80						
	HP-A40	API 40	445.10	7.20	7.80	7.42	11.75						
	DF-A325	API 325	41.50	0.35	0.29	0.38	0.61					<b>A A</b>	<b>A A</b>
ES	DF-A270	API 270	49.20	0.39	0.31	0.44	0.65					<b>A A</b>	<b>A A</b>
DF SERIES	DF-A230	API 230	59.80	0.52	0.59	0.71	1.00					<b>A A</b>	<b>A A</b>
DF	DF-A200	API 200	72.20	n/a	n/a	0.93	1.37			Not Available	e		<b>A A</b>
	DF-A20	API 20	783.80	15.96	14.35	10.57	13.69					<b>A A</b>	<b>A A</b>

<sup>1</sup>Fits Derrick FLC 2000" 3 and 4-Panel, FLC with AWD, FLC Plus", HI-G® Dryer, Cascade 2000 <sup>2</sup>Fits Derrick FLC 500 Series

<sup>3</sup>Fits Derrick Dual Pool<sup>®</sup> 600 Series <sup>4</sup>Fits Derrick Hyperpool <sup>5</sup>HT option is available for PMD screens only. PWP screens are inherently HT <sup>6</sup>Fits Derrick Fluid Cleaner 313 <sup>7</sup>Fits Derrick FLC 58

All photographs and specifications in this publication are for general information only and are based on the latest product information available at the time of initial publication. Derrick Corporation reserves the right to change its product offering at any time without prior notice. Any reliance on any information on this publication shall be at user's own risk. For additional information, please contact the Derrick Houston Engineering Department.

## **SCREEN PANEL CHART**

### FOR NON-DERRICK SHAKERS

							API RP 13C NO OPEN ARE	
							VA 49x25	V300
	□ = PWP		- DMD				5.00	3.29
	= PWP		= PMD				7.44	4.30
	API RP	13C DESIGNAT	ION	CONDUC	CTANCE N	IUMBER	AVAILABLE CO	NSTRUCTION
	Screen Designation	API RP 13C Designation	API D100 Cut Point	PT (PWP) VA 49x25	PWP V300	PMD	VA 49x25 <sup>8</sup>	V300°
	DX-A200	API 200	73.30	0.81	0.90	0.95		
	DX-A170	API 170	85.40	1.14	1.02	1.36		
	DX-A140	API 140	104.00	1.28	1.20	1.92		
	DX-A120	API 120	117.80	1.40	1.16	1.92		
S	DX-A100	API 100	142.00	1.99	1.75	2.33		
DX SERIES	DX-A80	API 80	170.40	2.15	2.17	3.09		
X SE	DX-A70	API 70	202.70	2.96	2.68	3.80		
	DX-A60	API 60	243.70	3.65	3.16	4.68		
	DX-A50	API 50	288.50	4.72	4.13	5.50		
	DX-A45	API 45	341.10	7.63	6.74	5.84		
	DX-A40	API 40	411.70	9.11	8.19	6.59		
	DX-A35	API 35	477.50	11.13	8.70	7.06		
S	DF-A325	API 325	41.5	0.26	0.24	0.38		
SERIES	DF-A270	API 270	49.20	0.37	0.36	0.44		
DF SE	DF-A230	API 230	59.80	0.53	0.48	0.71		
	DF-A20	API 20	783.80	12.43	13.30	10.57		

<sup>8</sup>Fits BRANDT™ COBRA™ Series and LCM-3D Shakers <sup>9</sup>Fits BRANDT VSM 300™ Shakers

### **WEIGHT COMPARISON CHART**

FOR NON-DERRICK SHAKERS

SHAKER TYPE	ОЕМ	DESCRIPTION	WEIGHT (LBS)
	DECO	PMDVA49X25	29
BRANDT COBRA	DECO	PTVA49X25	28
Series & LCM-3D	BRANDT	VENOM™ PXL and RHD Series Screens	35
	M-I SWACO*	DURAFLO* Composite Screens (XR, XL, HC, and MG)	34
	DECO	PMDV300	24
	DECO	PWPV300	25
BRANDT VSM 300	BRANDT	VENOM PXL and RHD Series Screens	21
	BRANDT	300PLUS (Axiom)	14*
	M-I SWACO	DURAFLO Composite Screens (XR, XL, HC, and MG)	18

\*The 300PLUS (Axiom) utilizes six screens (three per side) to screen up a VSM 300, vice the usual four (two per side)

## API RP 13C (ISO 13501) COMPLIANT SCREEN PANELS

#### What is API RP 13C (ISO 13501)?

A physical testing and labeling procedure for shaker screens. To be API RP 13C compliant, a screen must be tested and labeled in accordance with this recommended practice. Internationally, API RP 13C is known as ISO 13501.

#### API RP 13C (ISO 13501) Compliance Tests

To meet API RP 13C compliance two tests are required: cut point and conductance. API RP 13C allows the end user to compare by cut point, conductance (fluid flow), and non-blanked open area. The cut point test is based on a time-proven testing method used by ASTM to classify particles by size. The shaker screen designation is identified by matching the screen's cut point to the closest ASTM sieve cut point. The D100 separation is used for assigning screen designations (Fig. 1). D100 means that 100 percent of the particles larger than the test screen will be retained, and all finer particles will pass through. The conductance test measures the ability of a fluid to pass through the screen. The non-blanked open area of a screen describes the net unblocked area (in square meters or square feet) available to permit the passage of fluid.

After identifying the cut point and conductance, API RP 13C requires application of a permanent tag or label to the screen that is visible and legible (Fig. 2). Both cut point, expressed as an API number, and conductance shown in kD/mm are required on the screen label.

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 which produced inconsistent labeling.

Fig. 1 D100 Separation & API Screen Number

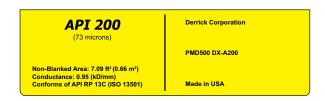
#### API RP 13C (ISO 13501) CUT POINT NUMBERS

D100 Separation (Microns)	API Screen Number
>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
>28,5 to 35,0	API 450
>22,5 to 28,5	API 500
>18,5 to 22,5	API 635

Table 5 (found on page 40 and 41 of API RP 13C)

Fig. 2 Required Screen Tag Information









The Derrick Family is a community comprised of thousands of individuals in countries around the globe. We share a collective interest in Community Enrichment through our avid support of industry associations and charitable organizations. Aware of our worldwide impact, we support the recovery of natural resources in the most energy-efficient manner, placing vital importance on Global Sustainability. Our Award-Winning Service department works around-the-clock to provide unparalleled support to customers around the world.

Our pioneering spirit is best demonstrated by our long-term commitment to **Continuous Innovation** which drives manufacturing of our **Leading-Edge Solutions**. Clients partner with us to overcome their most difficult fine-separation challenges and we deliver with our team of **World-Class Technologists**, many of whom have been with us for well over two decades. Our vertically integrated approach ensures product dependability and reinforces our **Quality Commitment**.

We are a Global Family® focused on Pioneering Technology®.



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