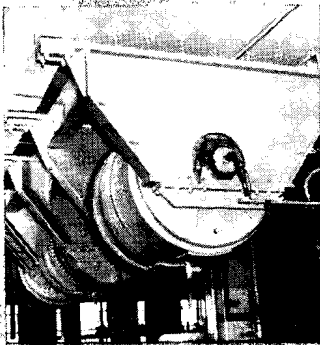


# Patterson

## STEEL BALL MILLS

- PATTERSON BALL MILLS FEATURE:**
- Roller or babitted bearings.
  - Jacket for temperature control.
  - Vent and sampling outlet.
  - Trunnion, head or door drive.
  - Dustless discharge leading to dry grinding.



**TYPICAL PATTERSON OVERHEAD MOUNTED MILLS**—Patterson engineers can help you decide whether overhead or floor mounted mills will best answer your materials handling situation.

Patterson manufactures a complete line of ball mills for every wet or dry grinding process for size reduction, and for dispersion and deflocculation in solid-liquid systems. Sizes range from 10 to 6,000-gallon capacities. In addition to outstanding performance of the machines themselves, Patterson offers experienced engineering analysis of your individual problems to help increase production at reduced costs. This analysis can be invaluable in proper mill selection and arrangement, in modernization of existing mill rooms. There is no obligation when you consult with Patterson's engineering department.

### TYPICAL STEEL BALL MILL LOADING FOR WET GRINDING

33 1/3% STEEL BALL CHARGE — MILL SPEED 50% OF CRITICAL (Nc) — Material to Void Ratio 3.5:1

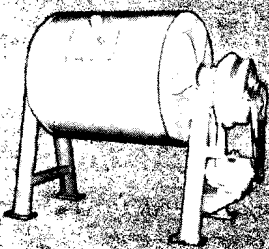
Mill Size (Dia. x Length)	MATERIAL CHARGE—GALS.						BALL CHARGE				Critical Speed (Nc)
	Paste Capacity, Typical	Optional Dilution Addition	Paste Plus Dilution	Theoretical Total Mill Volume	Steel Lbs. at 33 1/3% Volume	Depth "A" (Inches) to Top of Flange	Displacement				
							Gals. at 33 1/3% Vol.				
							Balls	Voids	Total		
15" x 21"	7	5	12	17	223	10	3	2	5	68.4	
21" x 28"	19	13	32	42	564	14	9	14	14	58.5	
2' x 3'	50	21	71	92	1,612	16	14	25	23	54.6	
2'6" x 3'6"	50	21	71	92	1,660	20	15	35	41	48.9	
3' x 4'	100	38	138	181	2,750	24	16	40	68	41.6	
3'6" x 4'0"	100	38	138	181	2,760	27	17	44	94	41.2	
4' x 5'	200	73	273	349	5,085	32	19	51	152	38.6	
5' x 6'	250	92	342	435	6,085	36	21	57	192	34.4	
6' x 8'	460	309	769	1,032	13,790	47	210	134	344	29.1	
6' x 8'	730	492	1,222	1,640	21,900	47	333	214	547	26.1	
6' x 10'	907	610	1,517	2,035	27,200	47	414	264	678	21.5	

**MATERIAL CHARGE:** The volume of paste charge is dependent upon ball loading, speed of the mill, and the ease with which gases are removed from the pigment. The above chart shows typical paste charges based on 33 1/3% ball charge and mill speed at 50% of critical (Nc). With these conditions, paste capacity can range from a low of 14% to a high of 45% of theoretical total volume.

**BALL CHARGE:** Selection is dependent upon the length of time for the dispersion, the maximum permissible temperature, the range of batch sizes to be produced and the end product quality. Above chart shows weights and volumes for a ball charge of 33 1/3% total mill volume. Patterson will gladly recommend the best combination of all factors to provide the most economical production of your particular product.

# Patterson

## PEBBLE MILLS



**TYPE TD AND TB BALL AND PEBBLE MILLS**  
For certain applications, Patterson field engineers recommend the simplicity, compactness and low maintenance features of these mills. Ring gears and pinions have been eliminated by a torque arm drive. The construction of cylinders is the same as other Patterson mills, but sizes are limited in steel ball models to 3'6" x 4' and in lined mills to 4' x 5'. The "J" in type designation stands for temperature jacketing. Your Patterson representative can give you more plate details.

Whatever the application in the grinding of solids in liquids to reduce size or to make a dispersion—and when the materials being processed cannot be contaminated by contact with iron—you will find a Patterson Pebble Mill precisely suited to your individual needs. Typical Patterson engineering refinements are in full evidence. An excellent example is Patterson's "Ceramide" Door and Frame which eliminates all iron contamination of the product resulting from grinding action on metal door and frame. The blocks have an under-cut on one edge to cover completely the metal door flange and frame. A radius at the opening prevents chipping. Sizes range from 5 to 5,000-gallon capacities, in overhead or floor mounted models. Jacketing is available for controlled temperatures from below 0°F to 500°F, as are automatic thermal controls. Linings and grinding media furnished include high density Aricite, standard density Porox, and Buhrstone.

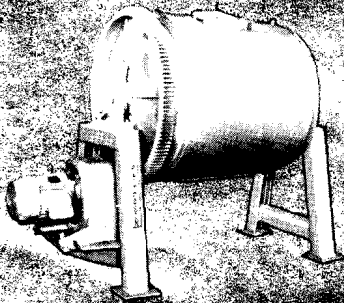
### TYPICAL LINED MILL LOADING FOR WET GRINDING

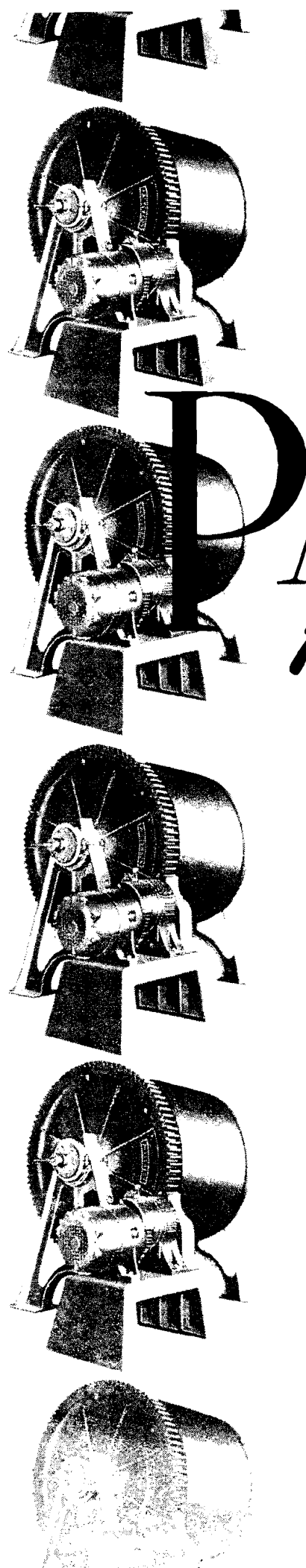
50% CERAMIC BALL CHARGE — MILL SPEED 60% OF CRITICAL (Nc) — Material to Void Ratio 1.8:1

Mill Size (Dia. x Length)	MATERIAL CHARGE—GALS.						BALL CHARGE				Critical (Nc) Speed
	Paste Capacity Typical	Optional Dilution Addition	Paste Plus Dilution	Theoretical Total Mill Volume	Aricite Lbs. at 50% Volume	Porox Lbs. at 50% Volume	Depth to Top of Flange	Displacement			
								Gal. at 50% Volume			
							Balls	Voids	Total		
15" x 21"	4	3	7	10	86	59	9	3	2	5	70.7
21" x 28"	10	7	18	28	232	170	12	9	5	14	60.0
2' x 3'	17	15	32	50	408	301	13	15	10	25	56.0
2'6" x 3'6"	33	29	62	97	797	587	16	30	18	48	49.7
3' x 4'	53	46	99	153	1,263	930	19	47	30	77	45.5
3'6" x 4'0"	74	65	139	216	1,780	1,311	22	66	42	108	42.0
4' x 5'	127	110	237	369	3,038	2,237	25	122	62	184	39.1
5' x 4'	161	141	302	469	3,867	2,847	31	143	91	234	34.8
5' x 6'	249	218	467	775	5,975	4,401	31	222	141	363	34.8
6' x 5'	303	264	567	881	7,255	5,344	38	268	172	440	31.7
6' x 8'	495	433	928	1,441	11,877	8,746	38	431	289	720	31.7
6' x 10'	625	545	1,170	1,817	14,975	11,028	38	554	345	908	31.7
8' x 6'	677	591	1,268	1,971	16,237	11,957	50	603	383	986	27.3
8' x 10'	1,154	1,007	2,161	3,357	27,661	20,370	50	1,028	651	1,679	27.3

**MATERIAL CHARGE:** The volume of paste charge is dependent upon ball loading, speed of the mill, and the ease with which gases are removed from the pigment. The above chart shows typical paste charges based on 50% ball charge and mill speed at 60% of critical (Nc). With these conditions, paste capacity can range from a low of 20% to a high of 45% of theoretical total volume.

**BALL CHARGE:** Selection is dependent upon the length of time for the dispersion, the maximum permissible temperature, the range of batch sizes to be produced and the end product quality. Above chart shows weights and volumes for a ball charge of 50% total mill volume. Patterson will gladly recommend the best combination of all factors to provide the most economical production of your particular product.

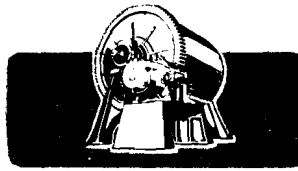




# Pebble, our



**FINER  
FOR A  
OF RA**



## PATTERSON PEBBLE, BALL AND TUBE MILLS

Patterson Pebble, Ball and Tube Mills are the most versatile of all fine grinders, and they are the most economical, for grinding efficiency is the result of the maximum grinding surface presented under the greatest pressure possible to apply. Grinding action is constant in these mills and the grinding surface of each ball or pebble is multiplied by the total number to a great effective area, thus presenting more grinding surface than is possible in any other type of grinder, the pressure applied also being greater per square inch of surface than in any other type of machine. No particle of material escapes this powerful reducing action. No other grinder can provide the complete uniformity of product at such low cost.

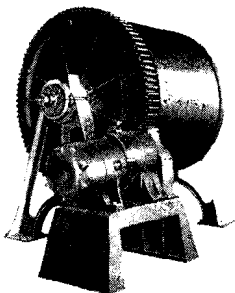
These Mills occupy less space per unit of output, use less power and require less labor than any other type of grinder. Maintenance costs are lower than with any other type of machine and the mills may be operated twenty-four hours per day for, usually little or no attention is required during the grinding operation. No adjusting or dressing of grinding surface is ever required and a uniform product is assured at all times.

In essence, Patterson Pebble, Ball and Tube Mills consist of a steel cylinder, sometimes lined with white Porox (porcelain), or with Berylite, or sometimes with buhrstone (Sillex), sometimes unlined, or supplied with metallic linings of various kinds, and partially filled with a charge of Porox (porcelain) Balls, Berylite Balls, Pebbles or Steel Balls (depending upon the inside surface of the mill). The cylinder slowly ro-

tates, each ball or pebble cascading, rolling, twisting, pressing and rubbing against its neighbor, the product passing between this grinding media. The heavy, freely moving grinding media is carried upward with the rotation of the mill, and when the highest point is reached, it tumbles and cascades down the inclined plane—thus employing the most efficient grinding principle known.

Patterson Pebble and Ball Mills are batch type machines. They are illustrated below. They are supplied in a wide range of types and sizes and are extensively used for the grinding of abrasives, chemicals, clay, drugs, enamel frit, glass, graphite, herbs, iron oxide, insect powder, oxides, paint, pigments, plastics, glaze, synthetic resins, ultramarine blue and many other products.

The Patterson Continuous Feed and Discharge Tube Mill shown below may be operated either in open circuit or in closed circuit with pneumatic or mechanical separators, screens, etc. for dry grinding, and with wet separating devices of various kinds for wet grinding. These mills are extensively used for the grinding of bauxite, barytes, carbon, chemicals, clay, colors, abrasives, feldspar, fluorspar, Fuller's earth, glass, graphite, gypsum, cement, iron oxide, minerals, mica, paper pulp, pigments, plastics, quartz, sand, sea coal, silica, slate, slag, slime, synthetic resins, whiting, calcium carbonate, foundry facings, metal powders, phosphate rock and many other materials.

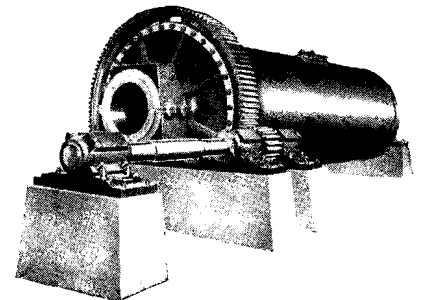


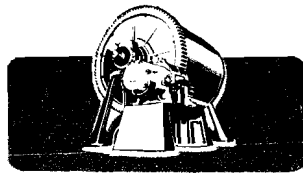
PATTERSON  
BATCH TYPE  
PEBBLE AND BALL  
MILL

See pages 5 to 25

PATTERSON  
CONTINUOUS  
FEED AND DISCHARGE  
BALL AND TUBE  
MILL

See pages 26 to 34





## PATTERSON PEBBLE AND BALL MILLS

(Batch Type)

### DRY GRINDING

Half filled with balls or pebbles, the mill is charged through the door with the material to be ground, is rotated for the necessary time, grinding door exchanged for a slotted discharge door and the mill briefly rotated again to discharge the finished product. 25% of the mill's total volume is the accepted figure for operating capacity on dry materials.

### WET GRINDING

Half filled with Porox balls or pebbles, or filled from one-third to one-half of its capacity with steel balls, the liquid is poured into the mill, used in sufficient quantity to reach the top of the ball charge, the dry materials are then added and the mill rotated for a given number of revolutions, then stopped—and the completely ground wet product is discharged through outlet valve or by means of wet discharge door. Operating capacity for wet grinding is 70% of the total volume where a 33-1/3% load of grinding media is used, or 60% where a 50% load of grinding media is used.

### INSTALLATION

While mills may be placed on first floor level, it is usually desirable, when mills are placed on first floor, to elevate them sufficiently high to facilitate easy discharge. Mills may be charged from the floor above or from a platform over the mills. Usually these procedures are more satisfactory than elevators or conveyors. Sometimes when mills are placed on upper floors they discharge to floor below.

### GRINDING OF RAW MATERIALS

Practically all metallic and non-metallic minerals may be ground in Patterson Batch type Mills. Where small quantities are to be handled, batch type mills are usually indicated. For grinding relatively small quantities of raw and calcined clay, these mills may be used economically, while they are clearly indicated for grinding ceramic bodies, glaze, frit, vitreous enamel, glass, flux, colors and chemicals.

All types of coatings for papers, oil cloth, window blinds and leather, as well as carbon paper coatings, shoe polish, pigmented goods of all kinds, whether liquid, semi-paste or heavy paste in consistency, are ground with ease and celerity.

Paint products are ground at approximately 50% of the cost of grinding on buhrstone mills and roller mills, while news, rotogravure, intaglio and job inks,

as well as show-card and typewriter ribbon inks, lithographic colors, etc. are produced in highest quality at low cost.

Aniline dyes, colors, oxides, graphite, natural and synthetic resins, pyrotechnics, abrasives, pigments, ultramarine blue, synthetic plastics, bituminous products are all ground at lowest cost.

### CHEMICAL AND SPECIAL PROCESS WORK

Patterson engineers are men of infinite resource. Innumerable are the applications they can plan for you and almost limitless is the versatility of the Patterson mill. Grinding may be accomplished during heating, cooling, under vacuum or under pressure. Other performances are mixing, drying, chemical reaction, distillation and recovery of solvents, treating with gas or with other substances and a world of other process work.

Chemicals, drugs and pharmaceutical compounds are ground, processed and prepared in Patterson mills. Emulsions, ointments, salves and creams are easily produced by the Patterson-invented-patented process. Beauty clay, face powder, rouge and even lipstick fall in this category.

Food products are among the items prepared economically in Patterson mills, and products containing albumen, sugar, chocolate, dried meats and vegetables are processed at low cost.

Synthetic plastics, together with molding compounds of all kinds, scrap materials, etc. are ground and processed at greatly reduced cost.

### MIXING

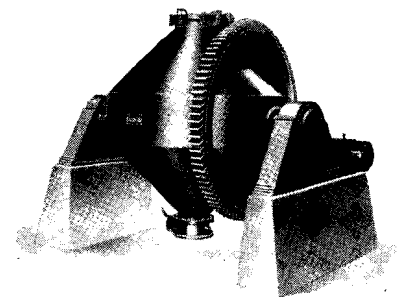
Patterson Batch type Mills may be used for mixing of many products. The Patterson Company also builds a complete line of Mixers which may be used either in connection with Patterson Mills or used individually. This line consists of Heavy Paste Mixers, Semi-paste Mixers and Liquid Mixers, as well as Blenders and other types of machines for dry mixing.

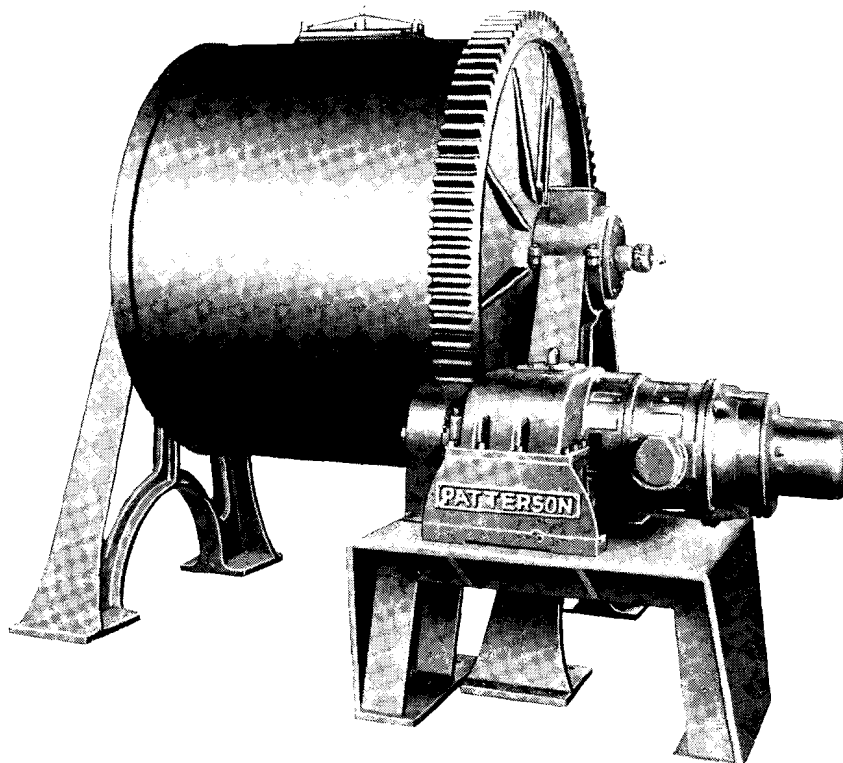
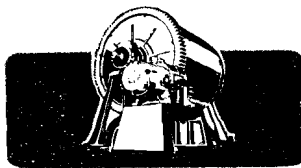
Wherever pre-mixing before grinding is necessary, or where thinning or mixing after the grinding of wet products is required or where it is desired to blend the product of a Patterson mill with other ingredients, either wet or dry, you will find a suitable Mixer illustrated in this Book. Below is shown the type of Mixer generally used for mixing and thinning semi-pastes and liquids, and the Blender usually selected for dry mixing or blending.



LIQUID AND SEMI-  
PASTE MIXERS  
(See Catalog 473)

DRY MIXERS AND  
BLENDERS  
(See Catalog 473)





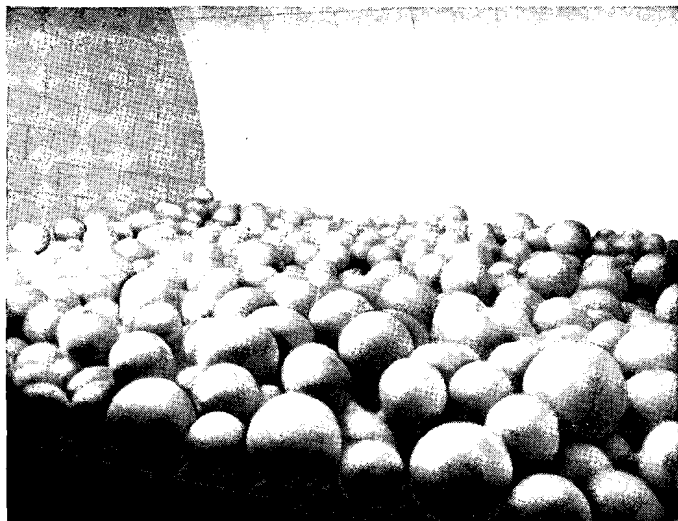
### PATTERSON TYPE "D" PEBBLE OR BALL MILL

(Batch Type)

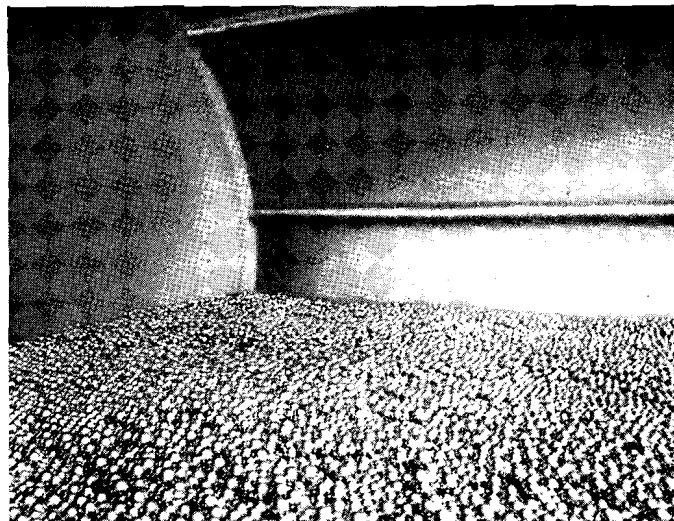
*Showing Patterson Motor Drive with magnetic brake and inching device.*

(Patented United States and Canada)

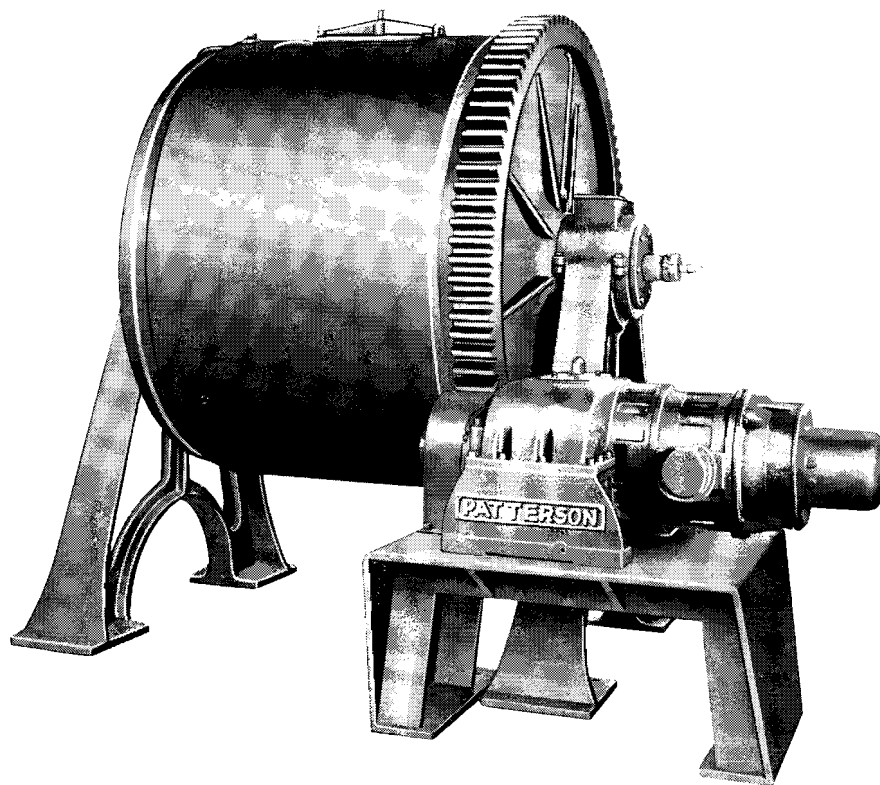
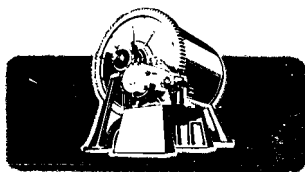
(Other Patents Pending)



Interior of Patterson Pebble or Ball Mill lined with pure white Porox and with pure white Porox Balls used as grinding media.



Interior of Patterson Ball Mill—Unlined but fitted with extra heavy alloy steel shell with streamlined enlargements which act as lifters (patented). Either polished or unpolished Balls used as grinding media.



## PATTERSON TYPE "DJ" PEBBLE OR BALL MILL (Batch Type)

*Jacketed — Thermal Controlled*

(Patented United States and Canada)

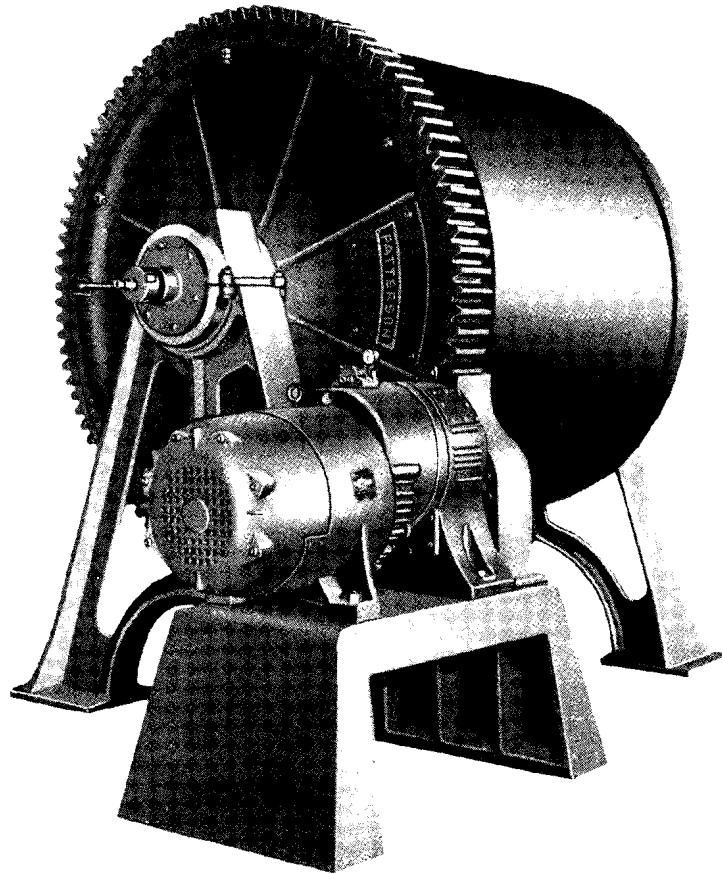
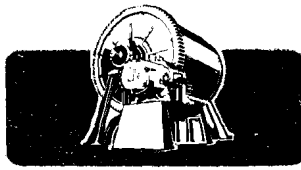
(Other Patents Pending)

Jacketed, for providing controlled temperatures ranging from below 0° to 500°F. by the circulation of brine or other refrigerants for low temperatures, or hot water, steam, Dowtherm or hot oil for high temperatures, these versatile Patterson Type "DJ" Mills make possible the grinding, at low temperature, of materials having a low softening point, which would otherwise be impractical to grind, while, by the application of controlled heat, the consistency of materials having a relatively high melting point may be neutralized and the products easily ground.

Lipstick, carbon paper coatings and other pigmented wax bases are best handled by these Mills through the use of the Patterson-patented process. The plasticizing of various products and process work of many types may be successfully carried on. With these Mills it is possible not only to heat or cool the product, but mixing, drying, chemical reaction, distillation and recovery of solvents may all

be accomplished during the grinding operation. Gas absorption, aerating and many other chemical processes are carried on in this mill under pressure or vacuum—all while the mill is in operation. With these machines it is possible to handle two or three-step processes with one machine.

Where the Type "DJ" Mill is used highly uniform viscosity is maintained throughout the grind and, through circulation of water through the jacket, temperatures sufficiently low to prevent the formation of gases are assured. Hence, there is no need for shutting down the mill for cooling and many costly troubles are thus eliminated, and it is possible to grind at lowest cost and with absolute assurance of high quality, products which must be kept cool during the grinding operation. Also, these mills when heated with hot water or oil, grind with record-breaking ease, extremely heavy pastes and other materials which solidify when cold.



## PATTERSON HIGH SPEED BERYLITE MILL

(Batch Type)

*(Patents Pending--U. S., Canada and Other Countries)*

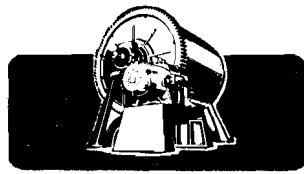
This new development in faster, fine grinding is the result of over ten years intensive research, experimentation and development. For the grinding of fine white synthetic enamels, light colored quick drying enamels and all white or light colored paint products, it marks the beginning of a new era in cost reduction in the paint and other industries. Not only does this new Mill cut grinding costs in half, but every vestige of contamination is, for the first time in high speed grinding, completely eliminated.

These new Mills are also most useful for the low cost grinding of vitreous enamels, glazes, synthetic compounds, chemicals, pharmaceuticals and other products which must be absolutely free from contamination and where fine grinding or intensive mixing or dispersion is necessary.

Examination of the history of Pebble, Ball and Tube Mills reveals that the Patterson Company has introduced all major improvements for the past fifty

years. Now, without reservation, we believe this new development to be the most outstanding contribution, in the past quarter of a century, to the field of fine grinding. Here is a mill that will grind fine refrigerator whites and other synthetic enamels, including straight Urea Resin, Urea and Melamine, Alkyd Resin, modified Bakelite types, as well as practically all types of Vinyl Resin Coatings, Quick Drying Enamels, White Interior Finishes and White House Paints at a cost heretofore unheard of. These Mills are most useful too for the grinding of delicate colors, which are normally contaminated in steel mills, and for the grinding of hard pigments which cannot be ground in either porcelain lined mills or steel mills without contamination from lining and balls.

In the reduction of grinding costs, it is not enough to make the grinding media heavier. Patterson engineers have not stopped at that, but have developed



an entirely new mill. The interior design of this machine is different from that of any other grinder ever built for the grinding of fine products without contamination.

The Berylite lining is provided with integrally formed streamlined lifter bars that are carefully ground, lapped and polished. These streamlined lifters or protuberances carry the grinding media to much greater height for cascading. Thus turbulence is increased 73% without impeding free rolling movement of the balls, and there are no abrupt projections to grind off into the product. This lining is 50% more resistant to wear than our standard Porox or than any porcelain.

The Berylite Grinding Balls have a specific gravity more than 50% greater than Porox or porcelain, and nearly 50% greater than pebbles, consequently exerting over 50% greater pressure upon the product being ground. Consequently, the viscosity of the batch must be at least twice that of the ordinary pebble mill specification. These Berylite Balls are 1" in diameter. In standard Porox or porcelain this would be too small to secure greatest grinding efficiency with products of high viscosity, but Berylite, being approximately 50% heavier than ordinary grinding media, will plow through highly viscous products and, at the same time, provide 73% greater grinding surface than a conventional mixture of 1½" and 2" balls or pebbles. In addition, the viscosity of the paste being ground is much higher than that at which it is possible to grind with either standard porcelain balls or flint pebbles. The overall result is an increase of 100% in grinding efficiency. In other words, grinding time is but half that required in either a porcelain or buhrstone lined mill with conventional lining and equipped with either porcelain balls or pebbles of conventional size.

Lining and Balls are non-metallic, white and non-contaminating. The lining has less than one-half the usual cement joints. The interior is streamlined and all joints are carefully ground and the entire interior of the mill is lapped before shipment. The balls also are all lapped and polished before shipment. This insures a product, the texture and gloss of which is

equal to that produced by three passes on a roller mill.

Actual operating data on these mills prove that the saving is so great that the production cost, per pound of paste, is less than one-half that of either a three-roll or five-roll roller mill.

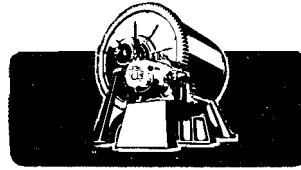
While these Mills are built in both Types "D" (un-jacketed) and "DJ" (jacketed) construction, the "DJ" Mill, providing for controlled grinding temperature is, in practically every case, the better mill to buy.

The usefulness of these Mills is not confined to the Paint Industry, but this unit will show great saving in grinding cost on many products. Its use insures products absolutely free from contamination and in the Chemical and Process Industries, process work of many types may be successfully carried on with these machines, for it is possible not only to grind at controlled temperature, by heating or cooling during the grinding operation, but mixing, drying, chemical reaction, distillation, etc., may all be accomplished during the grinding operation. Gas absorption, aerating and many other chemical processes are carried on in this mill under pressure or vacuum—all while the mill is in operation. Particularly valuable is the ability of these Mills to handle in one operation what, with almost any other machine necessitates two and sometimes three step operations.

In outward appearance the design of the Berylite Mill has been streamlined and all abrupt edges and corners, which have a tendency to catch dust, grease, etc., have been eliminated. Integral bearing sockets and stands are now provided and position of pinion has been lowered and motor drive built lower and more accessible, with all vibration eliminated. Patterson Class III motor drives, with integral magnetic brakes are used.

A new charging door with combination door bar and seal breaking device (patented) has been provided. Loosening of one nut gains access to the door and as the door bar is swung back out of the way, seal is automatically broken, providing quick access to the mill.





**SPECIFICATIONS OF PATTERSON TYPES "D" AND "DJ" PEBBLE MILLS, HIGH SPEED BERYLITE MILLS AND HIGH SPEED CHROME MANGANESE MILLS**  
**BUHRSTONE (SILEX) LINED PEBBLE MILLS**

Mill Size	Total Capacity		Wet Grinding			Mill Speed rpm	Dry Grinding		
	U.S. Gal.	cu ft.	Ball or Pebble Charge lbs.	Batch Size U.S. Gal.	Approximate Motor Horsepower		Ball or Pebble Charge lbs.	Operating Cap. Based on lbs. of Dry Sand (at 100 lbs. per cu. ft.)	Approximate Motor Horsepower
15" x 21"	38	5	253	23	1 1/2	36	253	127	3
21" x 28"	78	10	524	47	3	30	524	262	5
24" x 36"	140	19	939	84	5	26	939	469	7 1/2
2' 6" x 3' 6"	200	27	1335	120	5	25	1335	667	7 1/2
3' 0" x 4' 0"	348	46	2310	207	7 1/2	23	2310	1155	10
3' 6" x 4' 0"	302	40	2018	181	7 1/2	22	2018	1009	10
4' 0" x 5' 0"	400	53	2673	240	7 1/2	22	2673	1336	15
4' 6" x 4' 0"	442	59	2954	265	10	21	2954	1477	15
5' 0" x 4' 0"	689	92	4603	413	15	21	4603	2302	25
6' 0" x 6' 0"	839	112	5610	504	15	19	5610	2805	25
6' 0" x 8' 0"	1383	185	9248	830	20	19	9248	4624	40
6' 0" x 10' 0"	1748	234	11687	1049	25	19	11687	5843	50
8' 0" x 8' 0"	2576	344	17218	1545	40	17	17218	8609	75
8' 0" x 10' 0"	3246	434	21701	1948	50	17	21701	10851	100
8' 0" x 12' 0"	3913	523	26155	2348	60	17	26155	13078	125
9' 6" x 8' 0"	3694	493	24623	2210	60	15	24623	12311	125
9' 6" x 10' 0"	4645	621	31050	2787	90	15	31050	15525	150
9' 6" x 12' 0"	5601	749	37443	3361	100	15	37443	18722	200

**POROX LINED PEBBLE MILLS**

15" x 21"	9.8	1.3	59	6	3/4	42	59	33	1
21" x 28"	27	3.5	162	16	1 1/2	40	162	90	1 1/2
24" x 36"	43	6	261	26	1 1/2	36	261	145	3
2' 6" x 3' 6"	87	12	524	52	3	30	524	291	5
3' 0" x 4' 0"	153	20	921	92	5	26	921	512	7 1/2
3' 6" x 4' 0"	216	29	1298	129	5	25	1298	721	7 1/2
4' 0" x 5' 0"	368	49	2215	221	7 1/2	23	2215	1231	10
4' 6" x 3' 6"	323	43	1942	194	7 1/2	22	1942	1079	10
4' 6" x 4' 6"	425	57	2556	255	7 1/2	22	2556	1420	15
5' 0" x 4' 0"	469	63	2822	281	10	21	2822	1568	15
5' 0" x 6' 0"	725	97	4361	435	15	21	4361	2423	25
6' 0" x 5' 0"	880	118	5296	528	15	19	5296	2942	25
6' 0" x 8' 0"	1440	192	8666	864	20	19	8666	4815	40
6' 0" x 10' 0"	1816	243	10927	1090	25	19	10927	6071	50
8' 0" x 8' 0"	2661	356	16011	1597	40	17	16011	8895	75
8' 0" x 10' 0"	3346	447	20132	2008	50	17	20132	11184	100
8' 0" x 12' 0"	4028	538	24234	2417	60	17	24234	13463	125
9' 6" x 8' 0"	3793	507	22818	2275	60	15	22818	12677	125
9' 6" x 10' 0"	4772	638	28458	2863	90	15	28458	15948	150
9' 6" x 12' 0"	5746	768	34566	3447	100	15	34566	19204	200

**HIGH SPEED BERYLITE MILLS**

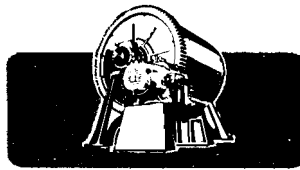
3' 0" x 4' 0"	153	20	1300	92	10	26			
4' 0" x 5' 0"	368	49	3150	221	15	23	Depends upon material being ground.	Depends upon material being ground.	Depends upon material being ground.
5' 0" x 4' 0"	469	63	4000	281	15	21			
5' 0" x 6' 0"	725	97	6300	435	20	21			
6' 0" x 5' 0"	880	118	7400	528	25	19			
6' 0" x 8' 0"	1440	192	12400	864	30	19			
6' 0" x 10' 0"	1816	243	15525	1090	40	19			
6' 0" x 12' 0"	2192	293	18650	1315	50	—			
6' 0" x 14' 0"	2568	343	21750	1540	60	—			

**HIGH SPEED CHROME MANGANESE MILLS**

Mill Size	Total Capacity		Wet Grinding			Mill Speed rpm	Charge of Steel Balls	Dry Grinding	
	U.S. Gal.	Cu. ft.	Charge of Steel Balls lb.	Batch Size U.S. Gal.	Approximate Motor Horsepower			Operating Cap. Based on lbs. of Dry Sand (at 100 lbs. per cu. ft.)	Approximate Motor Horsepower
15" x 21"	16	2	224	11	1	38			
21" x 28"	40	6	558	28	1 1/2	36	Depends upon material being ground.	Depends upon material being ground.	Depends upon material being ground.
24" x 36"	68	9	942	48	5	30			
2' 6" x 3' 6"	124	17	1712	87	5	26			
3' 0" x 4' 0"	206	28	2837	144	7 1/2	23			
3' 6" x 4' 0"	281	38	3877	197	7 1/2	22			
4' 0" x 5' 0"	455	61	6281	319	10	19			
4' 6" x 3' 6"	407	54	5610	285	10	18			
4' 6" x 4' 6"	523	70	7214	366	15	18			
5' 0" x 4' 0"	575	77	7963	403	15	17			
5' 0" x 6' 0"	863	115	11904	604	25	17			
6' 0" x 5' 0"	1032	138	14240	722	30	15			
6' 0" x 8' 0"	1639	219	22619	1147	40	15			
6' 0" x 10' 0"	2035	272	28079	1424	50	15			
8' 0" x 8' 0"	2945	394	40648	2062	125	14			
8' 0" x 10' 0"	3643	487	50273	2550	150	14			
8' 0" x 12' 0"	4371	584	60328	3060	200	14			
9' 6" x 8' 0"	4149	555	57255	2904	....	12			
9' 6" x 10' 0"	5163	690	71249	3614	....	12			
9' 6" x 12' 0"	6195	828	85499	4337	....	12			

Note: Capacities given above represent optimum operating conditions on from thin to medium semi-paste consistency. Many products are ground more economically in smaller batches of heavier paste consistency. This is particularly true of fairly heavy lacquer paste, urea, vinyl resin and other pastes. On these heavier pastes or products of higher viscosity, batch size or operating capacity is generally less.

Horsepowers specified are approximate and are based on capacities shown. Reduction in batch size, increase in consistency or a combination of both factors will, in some instances, increase horsepower. It is always best to consult with our Engineers on every specific problem to obtain most economical horsepower recommendation.



DIMENSIONAL INFORMATION

Mill Size	Floor Space Required		Height of Mill	Clearance of Shell from Bottom of Stand		Extension of Outlet Valve	Pulley		Main Bearing		
	Belt Drive	Motor Drive		D	DJ		Size	Style	Dia. Drive Shaft	Diam.	Length
15" x 21"	2'7" x 5'0"	3'0" x 4'9"	3'5"	19 1/8"	17 1/8"	...	12 x 3	T. & L.	1"	2"	4"
21" x 28"	2'11" x 5'8"	3'0" x 5'3"	4'0"	20 5/8"	19 1/4"	...	15 x 4	T. & L.	1 1/4"	2"	4"
24" x 36"	3'10" x 7'1"	3'5" x 6'0"	3'6"	10 1/2"	8 1/2"	5 3/4"	18 x 5	T. & L.	1 1/2"	4"	5"
2'6" x 3'6"	4'7" x 8'0"	4'1" x 7'0"	4'4"	14"	11 3/4"	5 3/4"	24 x 6	T. & L.	2 1/2"	6"	6"
3'0" x 4'0"	5'2" x 8'10"	4'7" x 7'6"	5'0"	14 3/4"	12 1/8"	5 3/4"	24 x 6	T. & L.	2 1/2"	8"	6"
3'6" x 4'0"	5'9" x 8'10"	4'2" x 7'6"	5'2"	11 3/4"	9 1/2"	5 3/4"	24 x 6	T. & L.	2 1/2"	8"	6"
4'0" x 5'0"	6'6" x 10'0"	6'0" x 9'5"	5'6"	10 1/4"	7 1/2"	6 3/4"	24 x 6	T. & L.	3"	10"	8"
4'6" x 3'6"	7'0" x 8'6"	6'0" x 9'0"	6'6"	15 1/4"	13 3/8"	6 3/4"	24 x 6	T. & L.	3"	10"	8"
4'6" x 4'6"	7'0" x 9'6"	6'0" x 10'0"	6'6"	15 1/4"	13 3/8"	6 3/4"	24 x 6	T. & L.	3"	10"	8"
5'0" x 4'0"	7'6" x 9'7"	6'7" x 8'9"	7'6"	21"	19 3/8"	6 3/4"	30 x 8	T. & L.	3"	12"	10"
5'0" x 6'0"	7'6" x 11'7"	6'7" x 10'9"	7'6"	21"	19 3/8"	6 3/4"	30 x 8	T. & L.	3"	12"	10"
6'0" x 5'0"	9'6" x 10'8"	8'0" x 10'6"	9'2"	27 1/2"	25 3/8"	8"	48 x 12	Plain	3 1/2"	14"	12"
6'0" x 8'0"	9'6" x 13'8"	8'0" x 13'9"	9'2"	27 1/2"	25 3/8"	8"	48 x 12	Plain	3 1/2"	14"	12"
6'0" x 10'0"	9'6" x 15'8"	8'0" x 15'7"	9'2"	27 1/2"	25 3/8"	8"	48 x 14	Plain	3 1/2"	14"	12"
8'0" x 8'0"	12'1" x 15'2"	12'6" x 18'0"	*	*	*	*	60 x 16	Plain	6"	28"	20"
8'0" x 10'0"	12'1" x 17'2"	12'6" x 20'0"	*	*	*	*	60 x 16	Plain	6"	28"	20"
8'0" x 12'0"	12'1" x 19'2"	12'6" x 22'0"	*	*	*	*	60 x 20	Plain	6"	28"	20"
9'6" x 8'0"	Motor Driven Only	13'6" x 20'0"	*	*	*	*	Motor Driven Only		8"	28"	20"
9'6" x 10'0"		13'6" x 20'0"	*	*	*	*			8"	28"	20"
9'6" x 12'0"		13'6" x 22'0"	*	*	*	*			8"	28"	20"

NOTE: \* According to piers. All dimensions given are approximate.

SHIPPING WEIGHT OF MILLS—WITH GRINDING MEDIA (LBS.)

Mill Size	Belt Drive						Motor Drive					
	Buhrstone & Porox Lined		Berylite		Chrome Manganese		Buhrstone & Porox Lined		Berylite		Chrome Manganese	
	"D"	"DJ"	"D"	"DJ"	"D"	"DJ"	"D"	"DJ"	"D"	"DJ"	"D"	"DJ"
15" x 21"	1,200	1,300			1,150	1,250	1,100	1,200			1,500	1,600
21" x 28"	1,500	1,600			1,750	1,900	1,500	1,650			2,300	2,450
24" x 36"	2,800	3,000			2,900	3,100	3,100	3,300			3,500	3,700
2'6" x 3'6"	4,600	5,000			4,450	4,950	4,800	5,300			5,000	5,500
3'0" x 4'0"	6,500	7,500	7,500	8,500	7,200	8,200	6,600	7,600	7,600	8,600	7,850	8,850
3'6" x 4'0"	9,000	9,650			9,500	10,150	9,400	10,500			10,300	10,950
4'0" x 5'0"	11,900	12,800	14,500	15,400	13,400	14,300	12,400	13,300	15,000	15,900	14,000	14,900
4'6" x 3'6"	11,600	12,300			13,600	14,200	12,000	12,600			14,400	15,000
4'6" x 4'6"	12,800	13,700			15,800	16,900	15,100	14,200			16,500	17,600
5'0" x 4'0"	15,800	17,800	18,400	20,300	18,100	20,000	16,000	17,900	18,500	20,400	19,200	21,100
5'0" x 6'0"	17,000	18,400	20,600	22,000	23,000	24,400	18,200	19,600	21,800	23,200	24,000	25,400
6'0" x 5'0"	27,500	29,000	31,500	33,000	32,000	33,500	27,500	29,000	31,500	33,000	34,000	35,500
6'0" x 8'0"	33,500	36,000	39,800	42,300	42,000	44,500	32,000	34,500	38,300	40,800	44,000	46,500
6'0" x 10'0"	37,500	41,000	45,100	48,600	48,800	52,300	36,500	40,000	44,100	46,600	50,500	54,000
6'0" x 12'0"	*	*	50,500	55,000	*	*	*	*	50,000	54,500	*	*
6'0" x 14'0"	*	*	55,800	60,000	*	*	*	*	56,000	60,200	*	*
8'0" x 8'0"	70,000	74,500			84,250	88,750	† 71,000	† 75,500			† 83,550	† 88,050
8'0" x 10'0"	75,000	79,000			95,900	99,900	† 76,000	† 80,000			† 95,200	† 99,200
8'0" x 12'0"	82,000	87,500			108,000	113,500	† 85,000	† 90,500			† 107,200	† 112,700
9'6" x 8'0"	Motor Driven Only				Motor Driven Only		† 100,000	† 105,000			† 121,000	† 126,000
9'6" x 10'0"							† 110,000	† 115,600			† 139,400	† 145,000
9'6" x 12'0"							† 121,500	† 126,500			† 157,000	† 162,000

\* Sole Plates are supplied in place of Bearing Stands.

† Arranged for Motor Drive, but not including motor or drive.

\*\* Additional information upon application.

CODE WORDS

Mill Size	Type "D"		Berylite Type "D"		Type "DJ"		Berylite Type "DJ"	
	Belt	Motor	Belt	Motor	Belt	Motor	Belt	Motor
15" x 21"	Debaf	Demaf			Dejak	Dojaj		
21" x 28"	Debag	Demag			Dejan	Dojak		
24" x 36"	Debal	Demal			Dejar	Dojar		
2'6" x 3'6"	Debam	Denam			Dejat	Dojat		
3'0" x 4'0"	Dehap	Demas	Bibap	Bimas	Dejav	Dojav	Bijav	Bijiv
3'6" x 4'0"	Debas	Demaw			Dejax	Dojax		
4'0" x 5'0"	Debbe	Demay	Bibbe	Bimay	Dejaz	Dojaz	Bijaz	Bijiz
4'6" x 3'6"	Debbo	Dembe			Dejba	Dojba		
4'6" x 4'6"	Debbo	Dembo			Dejbi	Dojbi		
5'0" x 4'0"	Debce	Dembu	Bibce	Bimbu	Dejby	Dojby	Bijby	Bijbi
5'0" x 6'0"	Debco	Demce	Bibco	Bimce	Dejci	Dojca	Bijci	Bijca
6'0" x 5'0"	Debcu	Demco	Bibcu	Bimco	Dejde	Dojci	Bijde	Bijce
6'0" x 8'0"	Debda	Demcu	Bibda	Bimcu	Dejdo	Dojdo	Bijdo	Bijdi
6'0" x 10'0"	Debdi	Demda	Bibdi	Bimda	Dejdu	Dojdu	Bijdu	Bijod
6'0" x 12'0"			Bibeb	Bimad			Bijab	Bijba
6'0" x 14'0"			Bibed	Bimod			Bijad	Bijbe
8'0" x 8'0"	Debea	Demea			Dejea	Dojea		
8'0" x 10'0"	Debeb	Demer			Dejeb	Dojeb		
8'0" x 12'0"	Debec	Demec			Dejec	Dojec		
9'6" x 8'0"	Debed	Demed			Dejed	Dojed		
9'6" x 10'0"	Debef	Demef			Dejef	Dojef		
9'6" x 12'0"	Debeg	Demeg			Dejea	Dojea		