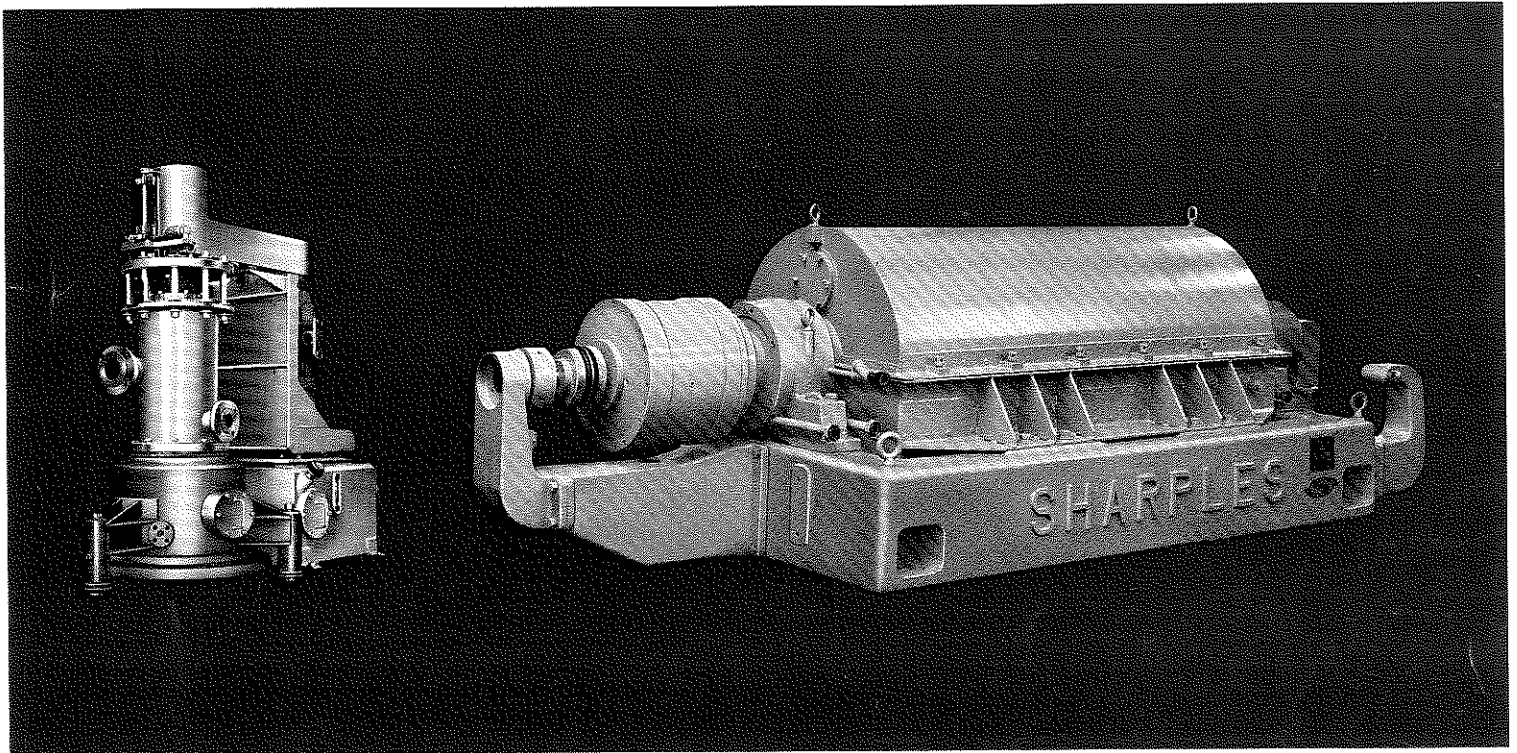


SHARPLES[®] SUPER-D-CANTER[®] CONTINUOUS SOLID BOWL CENTRIFUGES

for clarifying • dewatering • concentrating • classifying • washing

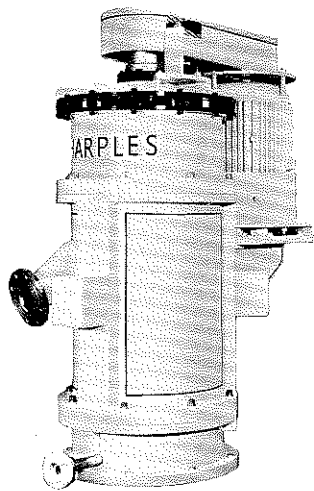


- High capacity, continuous operation
- High efficiency solids handling capacity
- Long life, low maintenance, easy cleaning
- Simple, rugged design for prolonged operation
- Excellent processing of corrosive and abrasive materials

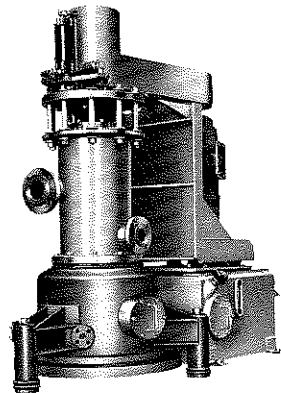


Sharples—Equipment Division
Pencast Chemicals Corporation
P. O. Box 100, 955 Adams Road
Ridgeway, Pa. 15074

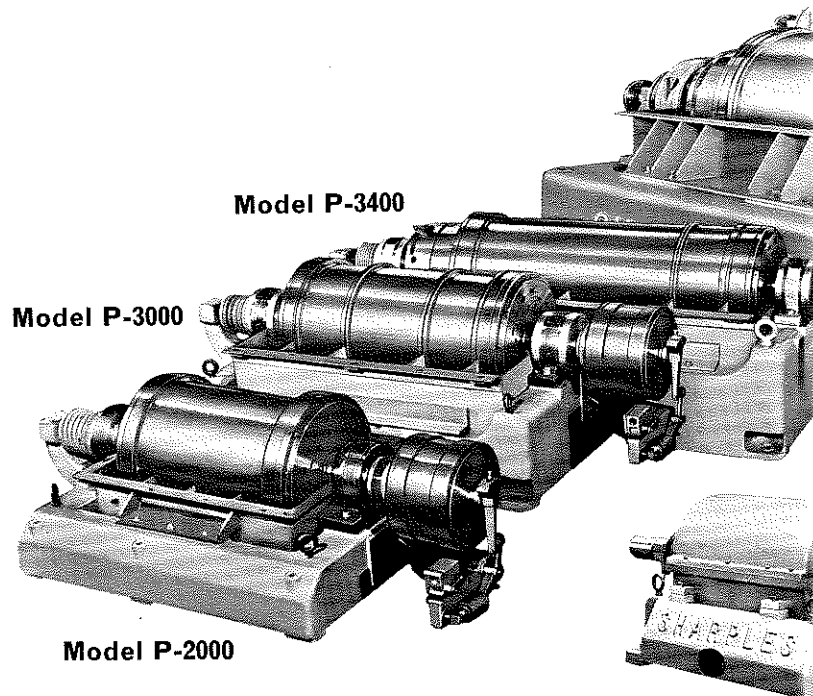
THE MOST ADVANCED SOLID BOWL CENTRIFUGES IN THE WORLD



Model P-4000



Model P-850



Model P-3000

Model P-3400

Model P-2000

Unique combination of high efficiency, high capacity and exceptional reliability . . . bringing maximum performance to every application

One of the most important and most difficult problems of modern industry is to increase the production capacity of centrifugal separation processes without sacrificing process efficiency and economy. The operations in which this problem is especially critical include clarification, dewatering and wet classification—applications in which the solid bowl type of centrifuge has proved valuable.

It is relatively simple to build *larger* centrifuges of this type. *Duplicating the high performance provided by the smaller solid bowl centrifuges, however, is quite another matter.* Yet this performance must be maintained if higher processing costs are not to be incurred in order to meet end-product specifications.

Complicating the problem is the need for solid bowl centrifuges that withstand higher operating temperatures and pressures, and that handle an ever-increasing variety of corrosive and abrasive materials.

To solve this problem, a unique combination of design, materials selection and construction skills has been brought together in the Sharples® Super-D-Canter® centrifuge line. As a result, this line offers the processor the highest performance and reliability per dollar, in a range of sizes for every throughput requirement.

"NO-COMPROMISE" DESIGN

The design and specifications of Super-D-Canter centrifuges have been determined primarily by the

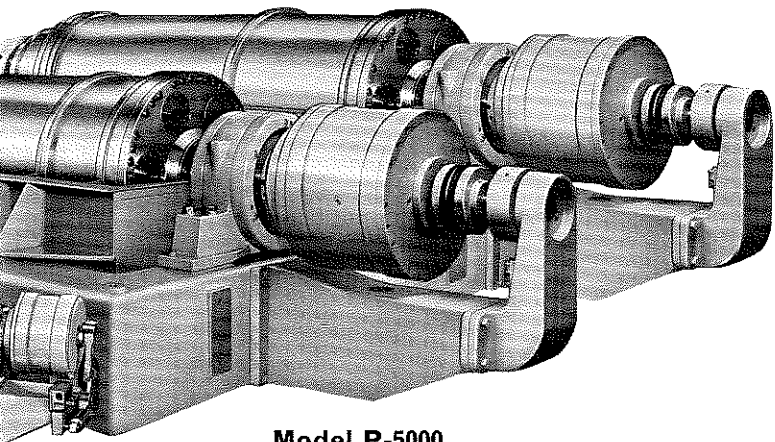
performance required and the properties of the products handled—not by what is most convenient to build and offer for sale.

A solid bowl centrifuge is expected to produce an effluent of specified clarity or solids of specified purity and dryness, or to classify solids with specified accuracy, at a given rate of production. In other words, solid particles of certain sizes must be separated from a stream of liquid moving at a certain velocity, and in some cases the solids must be washed and/or dried before being discharged.

If these solid particles are to be separated as desired, they must be made to "settle" out of the liquid stream before they can travel through the centrifuge and be swept out with the effluent. The ratio between travel time and settling time determines the maximum throughput at which a centrifuge will do a given job.

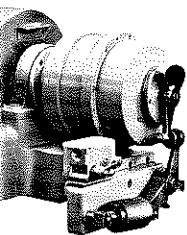
Settling time is influenced by two factors—settling velocity and settling distance (pond depth). The settling velocity of given solid particles is determined by the separating force (G force) applied to them. The higher the G force, the shorter the settling time.

Settling time may also be reduced by reducing pond depth. However, the optimum pond depth for each application is determined by a number of factors. The availability of high centrifugal force makes it possible to achieve low settling time without sacrificing any needed pond depth.



Model P-5000

Model P-5400



Model P-660

When a high degree of solids dryness is required, centrifugal force again plays a major role, since higher forces enable more liquid to be removed from the solids before they leave the centrifuge.

Travel time of material through the centrifuge can, of course, be reduced by lowering the feed rate. However, if the feed rate is determined by the desired throughput, as it should be, travel time will be proportional to the length of the centrifugal bowl.

KEYS TO EFFECTIVE CAPACITY

It will be seen from the above that the two factors that are most significant in determining effective throughput are (1) centrifugal force, and (2) bowl length.

Keeping this in mind helps avoid the "big machine fallacy." It is evident, for example, that a large machine that provides low centrifugal force may actually deliver less production capacity than a smaller, "high-G" machine.

To put this another way, "high-G" centrifuges can deliver higher production capacity, size for size, than "low-G" machines. Where special materials of construction are required, or where plant space is at a premium, it is even more important to provide the highest possible ratio of effective capacity to machine size.

Of course, the ideal centrifugal force for each application is determined by many factors. The highest forces available from Super-D-Canter centrifuges are not required in every case—lower forces are sometimes effectively used. *However, the availability of these high forces provides the flexibility to operate at any*

level that may be best for the application. Limited G force, on the other hand, restricts this opportunity.

These are the reasons that the Sharples Super-D-Canter centrifuge line is designed to provide a *combination* of high centrifugal forces, correct pond depths, long bowls, and a wide range of volumetric capacities. Only through this combination can desired performance be wedded to desired production capacity.

SPECIALIZED SKILLS COMBINE PERFORMANCE WITH ECONOMY

These design concepts would mean little if they were not embodied in machines that are reliable, long-wearing and economical. To accomplish this task, the Sharples Research and Development, Engineering, and Metallurgical Departments work together from the very beginning in the development of new models.

A performance-cost approach is applied to the design of *each and every part* of the centrifuge. The optimum relationship is determined between the configuration of the part, its mechanical strength, its susceptibility to wear, its material of construction, and the techniques by which it is manufactured.

The successful application of this approach has been made possible by a special Sharples program for the continuous investigation and study of centrifuge wear situations, and by a materials research and testing program unique in the industry. This program has resulted first in a systematic, analytical approach to wear that has often enabled Sharples engineers to eliminate or greatly reduce wear problems by making economical modifications in the centrifuge or other process equipment. It has also provided the most complete and up-to-date selection of corrosion- and abrasion-resistant materials available to centrifuge users. For further details on these materials, see pages 14 and 15.

HIGHEST PERFORMANCE/COST RATIO FOR EVERY APPLICATION

Finally, a wide range of sizes, in both pressurized and non-pressurized models, with a complete selection of optional features, is provided by the Super-D-Canter line. New models are continually made available to meet new needs. Unsurpassed Sharples application experience and Customer Demonstration Laboratory facilities assure each customer skilled assistance in determining the model that best fits all his requirements.



OUTSTANDING FEATURES FOR EFFICIENCY AND ECONOMY

THREE CONTINUOUS ACTIONS

First, solids are continuously separated from the liquid by the application of high centrifugal force.

The slurry is introduced into the revolving bowl of the Super-D-Canter through a stationary feed tube at the center of rotation. It is then acted upon by tremendous centrifugal separating forces ranging to well beyond 3,000 times the force of gravity. The solids are thrown against the wall of the bowl. The liquid, being of lesser density, forms a concentric inner layer in the bowl. This action takes place regardless of the axis of rotation—horizontal or vertical—as shown here and on the opposite page.

Second, solids are continuously removed by screw conveyor action.

Inside the rotating bowl is a helical screw conveyor which rotates in the same direction, but at a slightly different speed, than that of the bowl. This conveyor is designed so that the solids deposited against the bowl wall are moved to one end of the bowl, where they are "plowed" up the beach and out of the liquid layer. (The angle and length of the beach have an important effect on performance for individual applications.) The solids are then discharged from the bowl through suit-

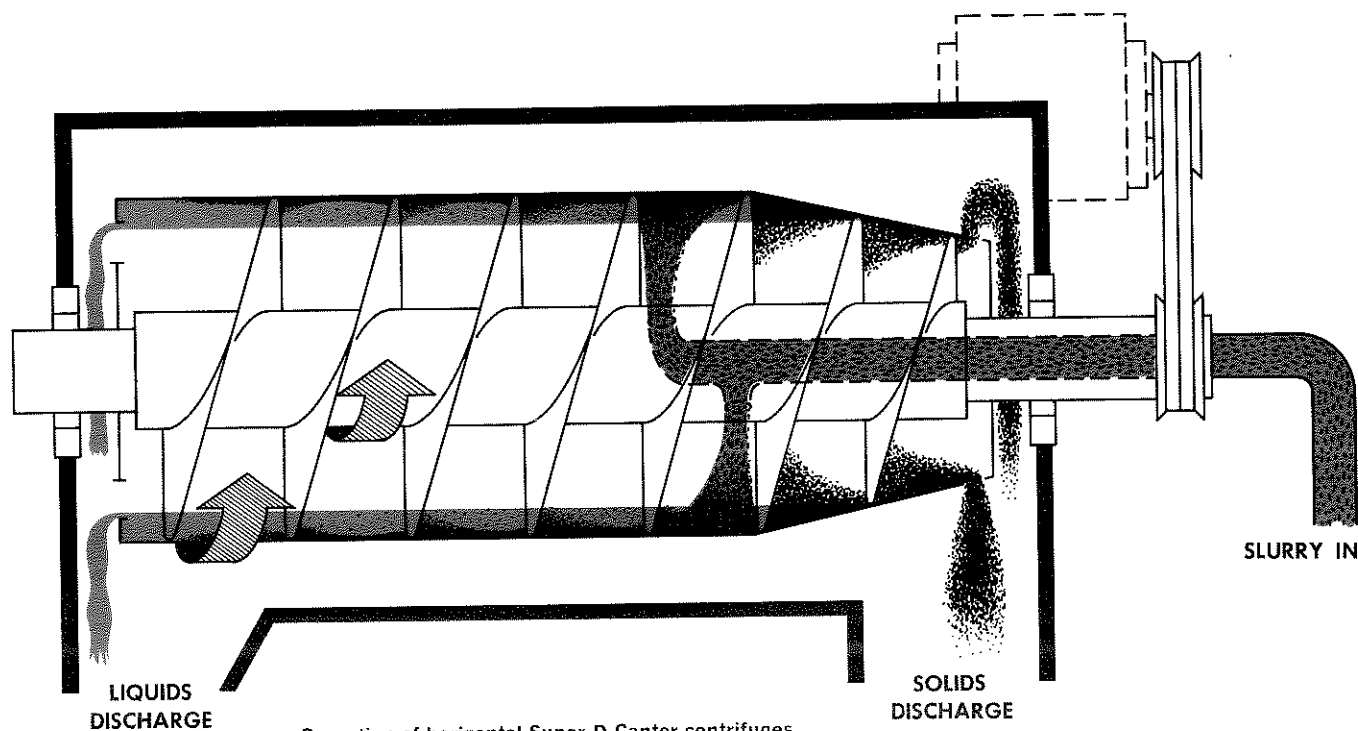
ably located ports, into covers which lead them to the desired receiving container.

Third, the clarified liquid is continuously removed as it overflows adjustable weirs at the liquid discharge end of the bowl.

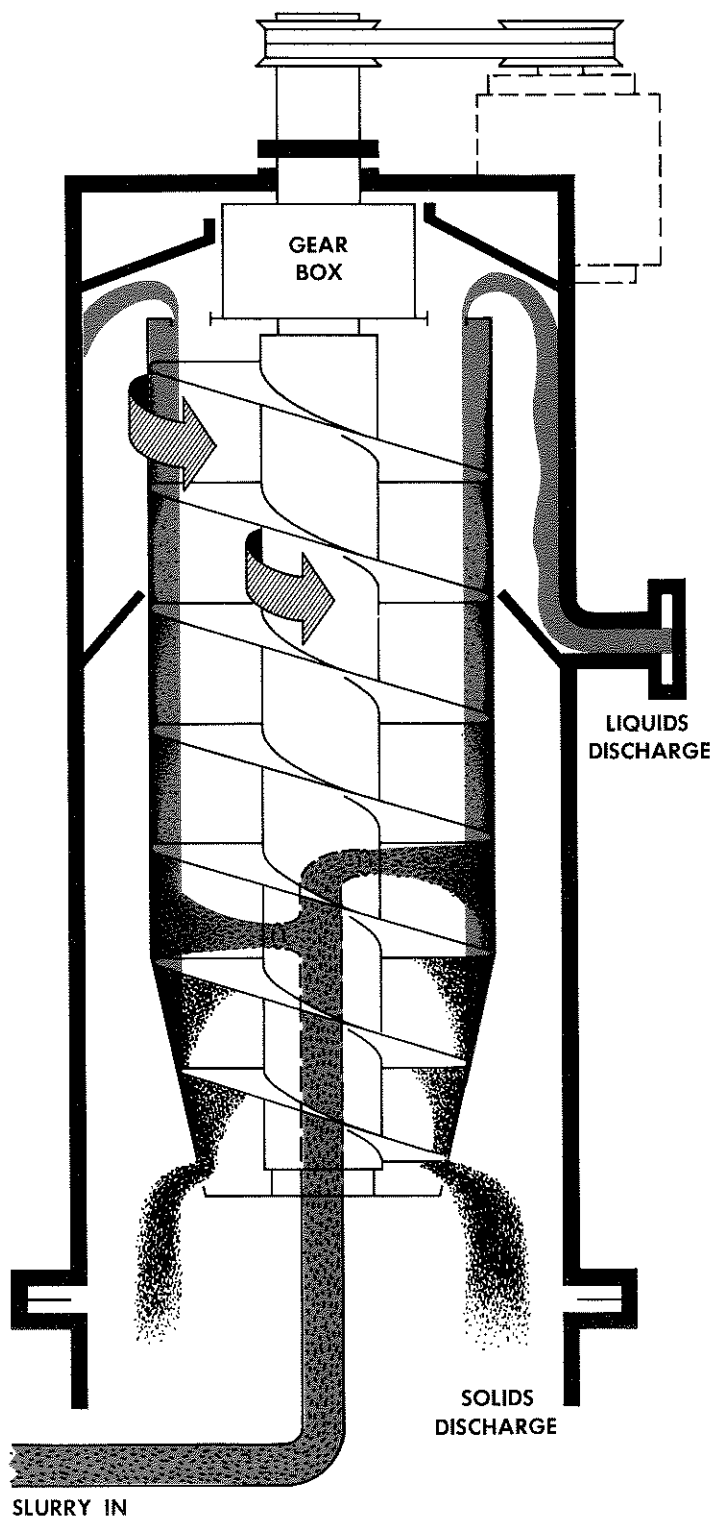
A suitable discharge cover leads the liquid away and keeps it separate from the solids.

INTERNAL CONFIGURATIONS FOR ALL APPLICATIONS

Super-D-Canter centrifuges are designed for the continuous, controlled removal of solids from slurries and suspensions under many different conditions. To handle this wide range of applications, the functions of sedimentation, separation and draining of the solids are combined to various degrees. Internal configurations have been perfected to suit virtually every requirement. Experience with hundreds of different process feeds and end-product specifications enables Sharples engineers to provide expert recommendations on the beach angle, beach length, pond depth, conveyor design and speed, and other factors that influence performance in a given case.



Operation of horizontal Super-D-Canter centrifuges



Operation of vertical Super-D-Canter centrifuges

WIDE VARIETY OF SLURRIES PROCESSED

Slurries having solid contents of from ½% to 50% can be successfully handled with a Super-D-Canter. In addition, the high sedimenting efficiency and high torque capacity of these machines enable them to absorb feed variations more effectively than any other centrifuges or separating equipment.

HANDLES COARSE OR FINE SOLIDS

Super-D-Canter centrifuges are designed so that they will handle solid particles of many types, ranging from ¼ inch to a few microns in diameter, with equal effectiveness. Even thixotropic materials have been successfully processed with these machines. The only requirement is that the solids, when subjected to appropriate centrifugal force, pack to a consistency that enables them to be moved by the helical conveyor.

HIGH SOLIDS PURITY

High washing efficiency and solids purity can be provided by Super-D-Canter centrifuges. All models can be equipped to rinse the solids on the beach with water or solvent as they are conveyed through the draining area. In addition, Sharples Multi-Angle bowls can be provided for producing materials (such as polystyrene) that require an unusually high degree of purity.

SANITARY MODELS CLEANED WITHOUT DISASSEMBLY

Special study of the problems of customers who must operate solid bowl centrifuges under rigorous sanitation requirements, as in the food industry, has resulted in Super-D-Canter models that can be cleaned without disassembly in many cases (depending upon applicable regulations). The great saving in time provided by these centrifuges has opened new opportunities for many processes previously considered unprofitable.

HIGH CAPACITY PER UNIT OF FLOOR SPACE

Both the horizontal and vertical Super-D-Canter are compact machines, the vertical models especially so. Most important, however, their *capacity per unit of area* is far higher than that of large and bulky filters, screens, settling tanks and centrifuges providing lower centrifugal forces.





Highest capacity "small" solid bowl centrifuges available anywhere today are the Super-D-Canter Model P-660, shown here, and its counterpart for pressurized operation, the Model P-850. These centrifuges offer great versatility for development and pilot plant work, as well as for smaller scale production. At the same time, they incorporate all the mechanical features and design advantages of the larger Super-D-Canter models.

WIDE SELECTION OF SIZES FOR NON-PRESSURE APPLICATIONS

Practically any combination of separating efficiency and throughput can be obtained with the variety of Super-D-Canter centrifuges available today. Present horizontal models represent a line that has been expanded continuously for two decades in response to the changing process needs of industry. The wide range of bowl sizes is shown on Page 13.

The recent trend toward larger, high-production centrifuges is exemplified in models such as the P-5000 and P-5400. The need for smaller machines that provide all the mechanical features of the larger units, and at the same time offer greater flexibility for development, pilot plant or production, is reflected in models such as the P-660.

Centrifuge capacity ratings, while useful, can be misleading. The quantity of discharged solids and the clarity of the effluent liquid, for example, are not related in the same way in all applications. Generally, however, the solids handling capacity of horizontal Super-D-Canters ranges from as little as a few pounds per hour

to beyond 30,000 pounds per hour. Liquid handling capacity ranges from a few gallons per hour to over 30,000 gallons per hour. The throughput of various models for specific applications can be determined by process specialists in the Sharples Customer Demonstration Laboratory.

HIGH PERFORMANCE COMBINED WITH LOW MAINTENANCE

The large number of design and construction features illustrated on pages 8 and 9 reveal the great care that has been taken to provide solid bowl centrifuges that are durable and reliable above all else. For example, anti-friction bearings and special seals, instead of the more conventional bronze bushings, are used for the conveyor bearings. This is one of the many ways that Sharples makes it possible to take advantage of the separating ability of high centrifugal force *without increased maintenance*.

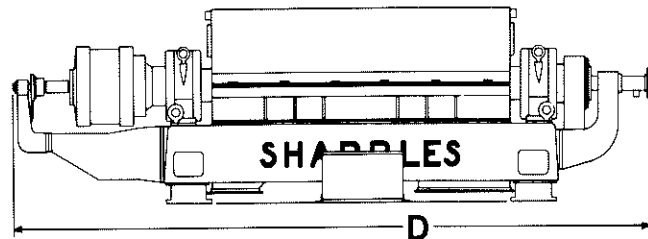
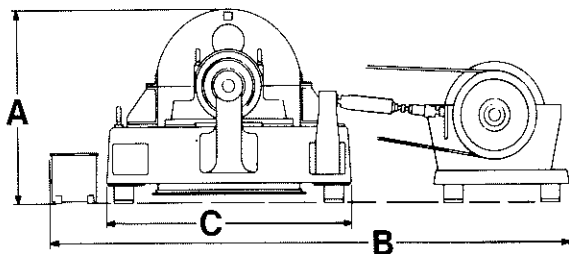
Also significant in reducing maintenance costs and downtime to a new low is the care taken to employ

common parts. Models P-2000, P-3000 and P-3400, for example, use common bearings, seals, gear boxes and other parts. Many common parts are also shared by Models P-5000 and P-5400. This makes it unnecessary to purchase a larger machine than the application requires in order to gain the considerable benefits of interchangeable parts.

Most wearing parts of Super-D-Canter centrifuges can

be easily replaced in the field. This includes the conveyor feed zone liner, the solids discharge ports and the effluent discharge ports. Hard surfacing on conveyor flights can be renewed in the field if proper equipment and techniques are available.

The combined result of these features is a line of solid bowl centrifuges that can be relied upon for long, trouble-free service, as well as high performance.



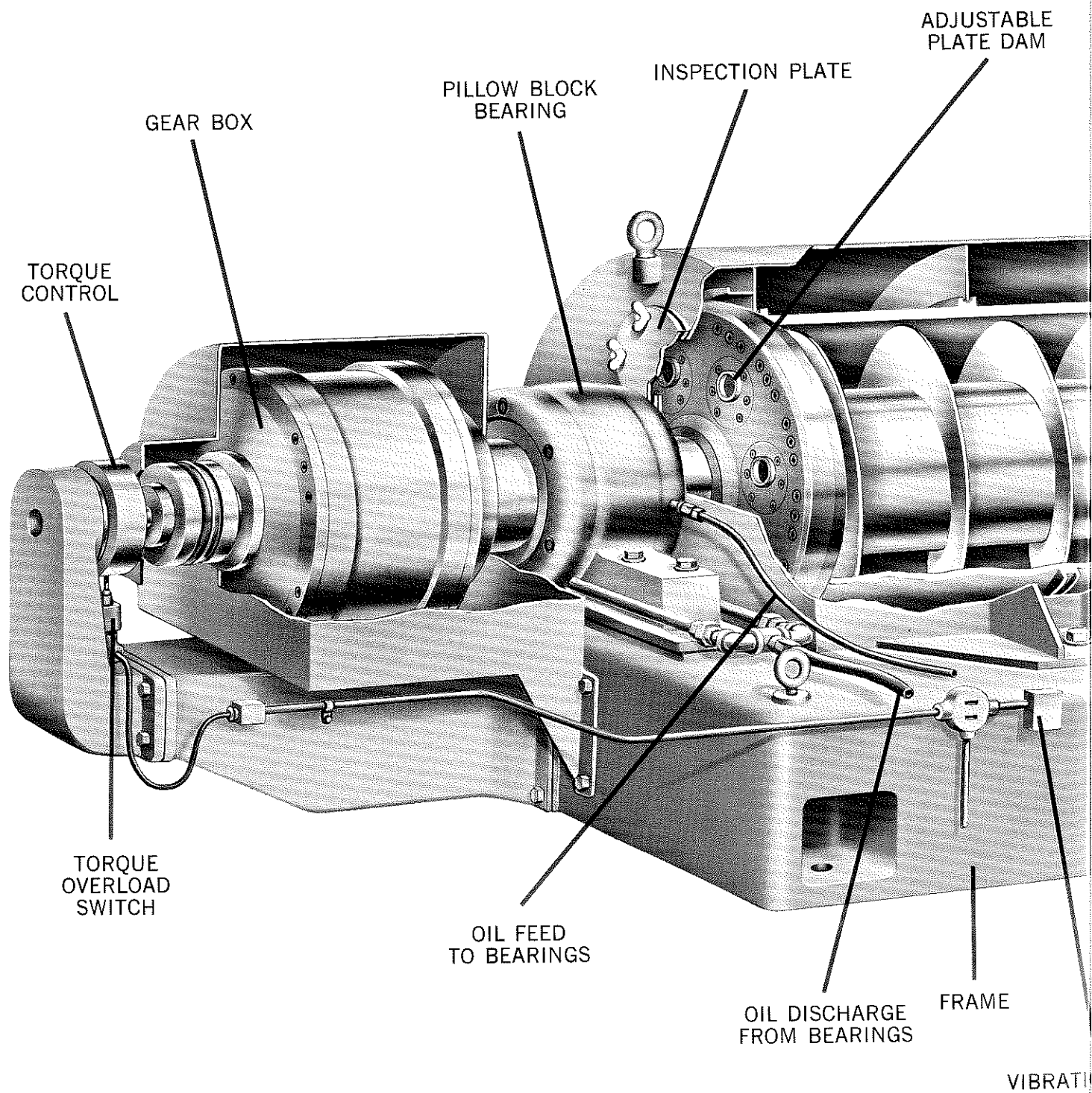
Specifications for Horizontal Super-D-Canter Models

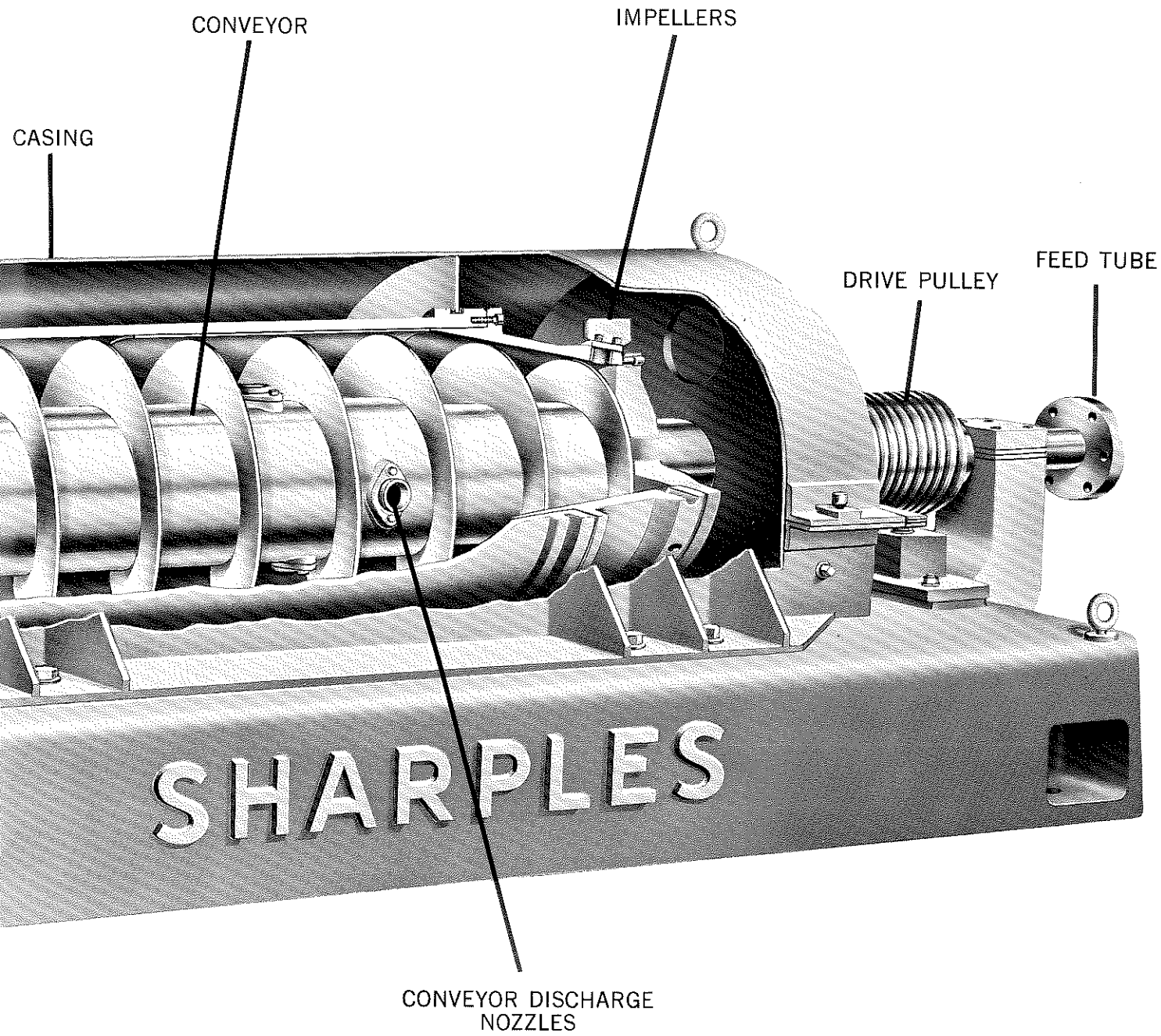
MODEL NO.	MAXIMUM GRAVITY	AT RPM	MOTOR H.P.	(A) OVERALL HEIGHT	(B) MAX. WIDTH INCL. MOTOR	(C) FRAME WIDTH	(D) OVERALL LENGTH	SHIPPING WEIGHT #	
								NET WT. # (Less Motors)	
P-660	3070 x G	6000	Up to 10	15½"	43"	17½"	42"	950	1,095
P-1000	3180 x G	4000	Up to 15	28"	68"	33½"	64"	1,500	1,950
P-2000	3180 x G	4000	Up to 25	28"	68"	33½"	64"	1,600	2,050
P-3000	3180 x G	4000	Up to 40	28"	68½"	33½"	73"	1,950	2,400
P-3400	3180 x G	4000	Up to 40	28"	68½"	33½"	96¾"	2,500	3,790
P-5000	3190 x G	3000	Up to 300	47½"	119"	63"	180"	10,500	13,000
P-5400	3190 x G	3000	Up to 300	47½"	119"	63"	202"	12,400	16,000



HORIZONTAL SUPER-D-CANTERS (Continued)

Cutaway view of Model P-5400 illustrating typical features of horizontal models





SWITCH



For reliable, economical operation under pressure or vacuum, and highest clarifying efficiency in non-pressure applications.

Since their pioneering introduction in 1957, Sharples vertical Super-D-Canters have been proved by their successful performance in a wide variety of applications throughout the world. Available today in a greater range of capacities than ever before, these machines set the standard for processes requiring operation under pressures to 150 psig or vacuums to 28 inches Hg., and where an extremely high ratio of bowl length to pond depth provides the answer to an unusually critical or difficult clarifying problem.

WHY VERTICAL DESIGN?

To contain pressure in any horizontal solid bowl centrifuge, the entire casing must first be sealed—a difficult task to accomplish with any degree of reliability in view of the construction and configuration of such casings. Then, high-speed seals are required at both ends of the shaft to seal the bowl against the casing, and a third critical seal is required to seal the fixed feed tube against the rotating bowl. When these seals are added, the slight imbalance that may occur in normal operation with a solid bowl centrifuge assumes a new and greater significance.

In a horizontal Super-D-Canter operating under atmospheric conditions, this imbalance causes no problem, since the load is carried by special heavy-duty bearings at each end of the bowl. However, it does introduce major problems in pressure operation, especially when the failure of any one of the three seals would cause loss of pressure or vacuum.

The normal imbalance may also be accentuated from time to time by variations in the feed or other factors. Under these conditions, it is extremely difficult to keep the faces of the seals in alignment, because there is no means by which the bowl can either overcome or compensate for this imbalance—the relationship between bowl, bearings and centrifuge frame being fixed.

Even more important, it is impossible to isolate the two shaft-casing seals from the process materials in a horizontal solid bowl machine. Contamination and erosion of the seals can quickly render them inoperative.

When a labyrinth seal with gas purge is used, a horizontal machine requires a purge at each end of the casing and one at the feed tube. Loss of purge gas, especially with larger centrifuges, is a significant economic factor.

The horizontal design is thus unsuited to pressure applications by virtue of its higher initial cost for seals, higher operating cost, higher maintenance cost, and, most important, the increased possibility of shutdowns caused by seal failure.

PERFORMANCE PLUS ECONOMY

Super-D-Canter centrifuges solve all of these problems with bowls that rotate on a vertical axis. The bowls of vertical Super-D-Canters are belt-driven from above, through the spindle and the gear box that controls the relative speed of the helical conveyor (see illustration).

This Sharples "Plumb Bob" Suspension enables the bowl to seek and rotate about its own center of mass continuously during operation. Load imbalances are automatically absorbed and compensated for by this smooth shift in the bowl's axis of rotation. Vibration is minimized, and is isolated by special mountings from the frame and primary structure of the centrifuge.

This design requires only a relatively small spindle assembly to follow the movement of the bowl. The forces on the bearings are greatly reduced, and bearing reliability and service life increased.

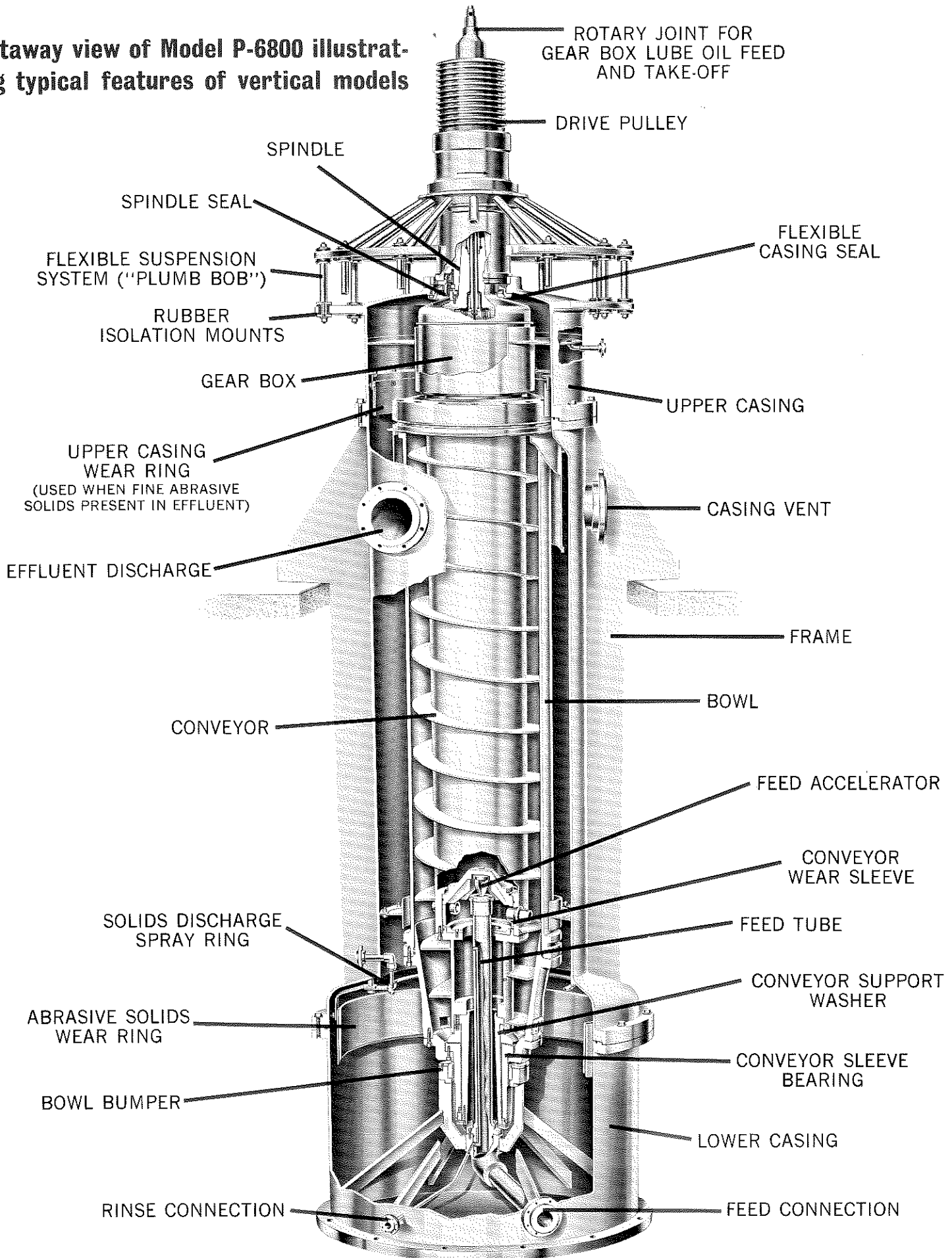
ONLY ONE PRESSURE SEAL— OUTSIDE THE PROCESS AREA

Sharples vertical Super-D-Canters require sealing at only one point instead of three . . . and this single sealing point is completely separated from the process area by the gear box and internal baffling, as shown here . . . not exposed to damaging contact by either the liquid or solids being processed. The results—greater reliability, higher economy and reduced maintenance.

In addition, this single sealing point is normally liquid-cooled, and any seal leakage is completely isolated and removed so that it cannot contaminate the product. This enables a far wider choice of coolants than is possible with horizontal pressurized machines. Oil or water, for example, are commonly used as seal coolants for vertical Super-D-Canters. The necessity of using a solvent or other liquid that will not contaminate or harm the product is completely eliminated.

When it is necessary to use a labyrinth seal with gas purge, vertical Super-D-Canter centrifuges use less than half as much purge gas as horizontal solid bowl machines of similar capacity.

Cutaway view of Model P-6800 illustrating typical features of vertical models



VERTICAL SUPER-D-CANTERS (Continued)

INSTALLATION AND MAINTENANCE GREATLY SIMPLIFIED

Massive concrete foundations are not required for installing Sharples vertical Super-D-Canters. The large Model P-6800, for example, can be mounted on properly-designed structural steel supports. There is no need for the extensive concrete foundations usually required for this type of equipment.

All process connections can be permanent and rigid, and vertical Super-D-Canters can easily be disassembled without disturbing process piping. The need for large, expensive flexible connections—required on horizontal solid bowl machines as a result of the vibration problem—is eliminated. Disassembly time is reduced because all drive and gear box components are located at one end of the bowl.

Special care has been taken to make the larger models easy to work with. The spindle assembly on these models is a complete, replaceable unit and can be quickly changed without disturbing the bowl and gear box assembly. The seal is compactly mounted in the spindle housing and is not affected by any disassembly of the centrifuge. At the same time, it is unnecessary to remove large, cumbersome objects, such as the gear box, pillow blocks, bearings or drive pulley, to gain access to the seal.

There are *no* manually-lubricated gears or bearings on the model P-4000 and all larger vertical models. The gear box and the bearings are lubricated and cooled by continuous flow systems. In addition, all

bearings are completely removed from the process area. They are never touched by liquid or solid product, and remain free of contamination or corrosion from this source.

The conveyor feed zone liner, the solids discharge ports, the effluent discharge ports, and most other wearing parts on all vertical Super-D-Canter models are easily replaced in the field. Hard surfacing on conveyor flights can be renewed in the field if proper equipment and techniques are available. Maintenance, including moderate re-surfacing, is simplified because the final balance of the conveyor is not as critical as it is in horizontal machines.

HIGHEST PERFORMANCE PER UNIT OF FLOOR AREA

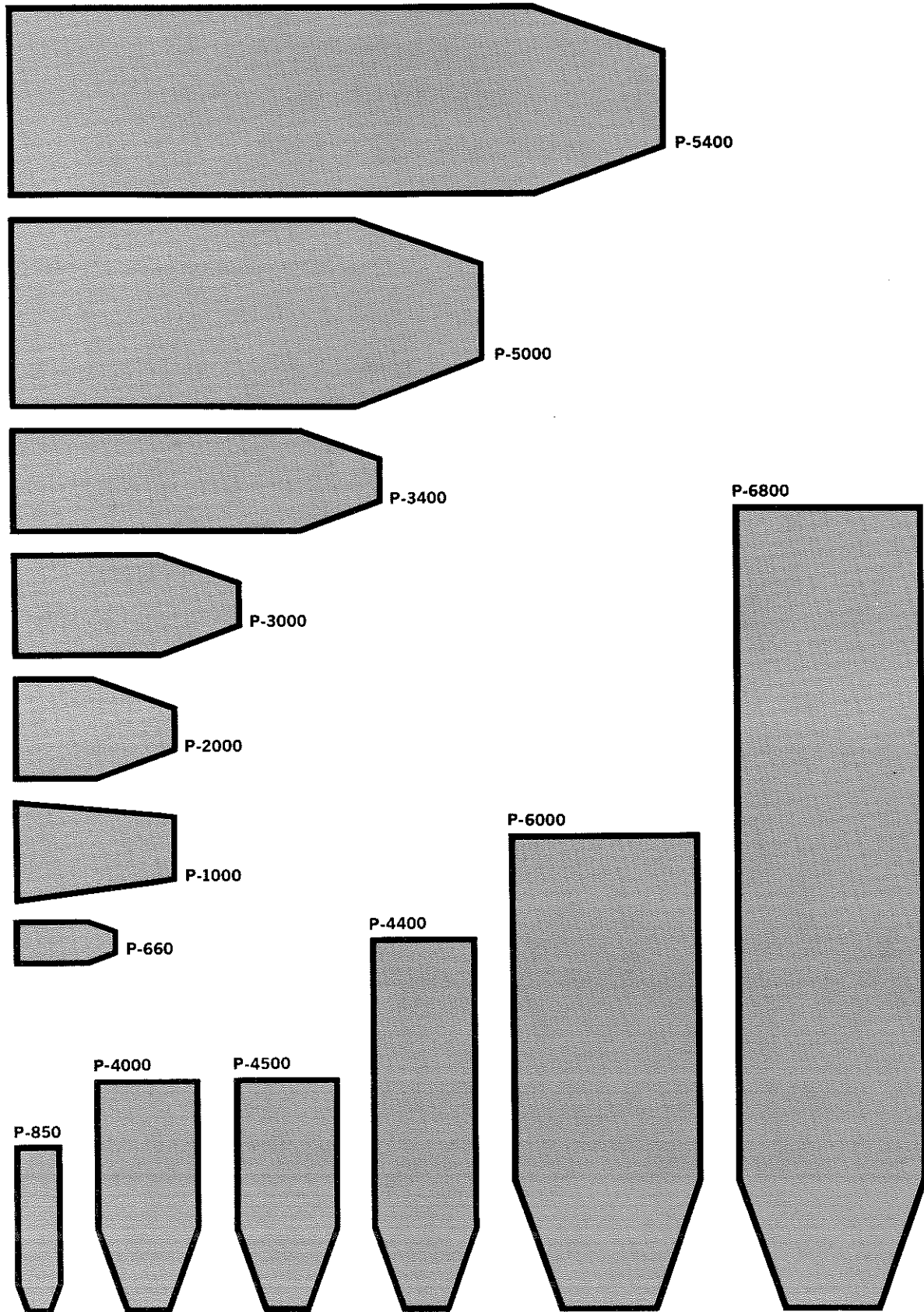
Sharples vertical Super-D-Canters require far less floor space than horizontal designs of the same capacities. The vertical design also enables Sharples centrifuges to provide longer machines than are practical in horizontal machines of the same diameter—an important advantage for non-pressure as well as pressure applications. This offers opportunities to obtain higher capacity at a given clarity, or to obtain a higher degree of clarification at a given capacity.

These and many other significant advantages enable Sharples vertical Super-D-Canters to offer the highest ratio of performance to cost in each application.

Specifications for Vertical Super-D-Canter Models

MODEL NO.	MAXIMUM GRAVITY	AT RPM	MOTOR H.P.	OVERALL HEIGHT	MAX. WIDTH INCL. MOTOR	FRAME WIDTH	SHIPPING WEIGHT #	
							NET WT. #	(Less Motors)
P-850	5450 x G	8000	Up to 30	60"	60½"	30½"	1,435	2,145
P-4000	3180 x G	4000	Up to 50	79½"	62"	27"	3,600	5,010
P-4400	3180 x G	4000	Up to 50	98"	62"	27"	3,600	5,010
P-4500	3180 x G	4000	Up to 50	62"	75½"	27"	3,600	5,010
P-6000	3190 x G	3000	Up to 300	170"	119"	62½"	17,000	21,400
P-6800	3190 x G	3000	Up to 300	217⅞"	119"	62½"	20,000	25,000

RELATIVE BOWL SIZES OF SUPER-D-CANTER CENTRIFUGES



Long life and economy assured by combination of design, materials, manufacturing techniques and testing

The high ratio of performance to cost made possible by Sharples centrifuges is the result of the coordinated efforts of the Sharples Research and Development, Engineering and Metallurgical Departments, working together from the conceptual stage. An unprecedented program of investigation and testing has been established to support the design and production of new centrifuge types and models. This program includes:

DEVELOPMENT OF NEW DESIGN CONCEPTS

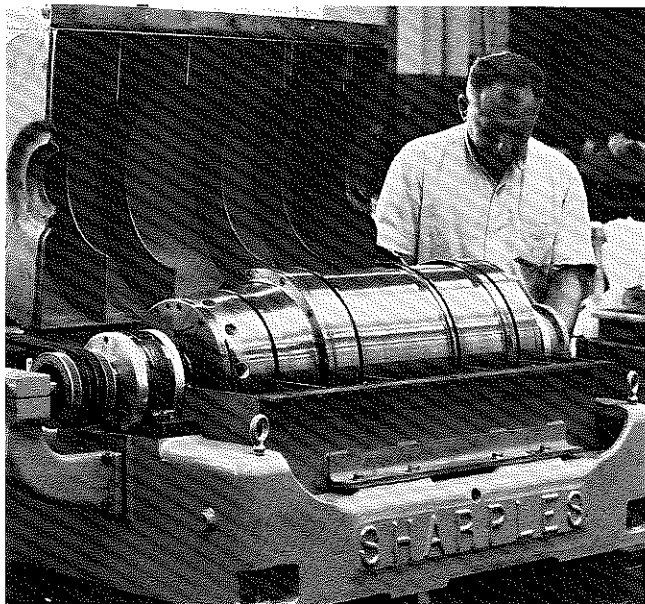
The specialized nature of high-efficiency centrifuges makes it impossible to accept common design concepts and still be sure of attaining both maximum performance and maximum customer value. Advanced Sharples design groups concerned with stress analysis and basic centrifuge studies determine the design parameters dictated by the behavior of particles being processed and by the stress levels that will be allowed to exist in every part of the machine. The resultant data provides the necessary starting point for further

work, which is devoted from the beginning to the design of machines that offer mechanical strength and durability well *beyond* the established requirements.

The reliability of completed Super-D-Canter centrifuges is verified by testing under stress considerably *higher* than they will encounter in actual operation.

BASIC RESEARCH IN CENTRIFUGE WEAR

Wear must be thoroughly understood to be overcome. The mechanics of low stress scratching abrasion, or erosion, are different from those of high stress grinding abrasion, and both of these differ in turn from gouging abrasion. One problem is to develop test techniques that will duplicate these types of wear in the laboratory, so that various materials of construction can be accurately evaluated. Another problem, complicated by the fact that these types are seldom encountered in simple form, is that of recognizing the true nature and cause of wear in a specific application.



800 pounds of titanium were used in this model P-3000 Super-D-Canter, one of two that solved a difficult dewatering problem in the production of a highly corrosive chemical. Special welding methods developed by Sharples metallurgists significantly reduced production costs of the centrifuges, which are among the largest ever built with the lightweight, corrosion-resistant metal.



Abrasive materials can be handled economically if the wear problem is systematically analyzed to find the best solution. If abrasion-resistant materials are required, Sharples centrifuges provide an unequalled selection. (See table on opposite page.) Super-D-Canter conveyor flights are shown here being hard-surfaced by one of many special techniques that are employed.

Sharples research has resulted in outstanding advances toward the solution of these problems. Methods have been developed to identify the type of wear encountered and to test materials under a wide range of conditions, including both corrosion and abrasion. Continuing work in this area provides an essential foundation for reliable design.

SYSTEMATIC APPROACH TO WEAR PREVENTION

Sharples engineers have developed and implemented a systematic, comprehensive approach to wear problems that assures the customer the most effective and economical solution. Investigation is first focused on the possibility of eliminating the cause of the wear. If this cannot be done, the part that is wearing is analyzed to determine if it can be eliminated, redesigned or streamlined. Should this not be feasible, the possibility of providing a low-cost, easily-replaceable part is studied. If the problem is not yet solved, a special material of construction or a hard surfacing system is considered.

While greatly simplified here, this has proved to be a reliable method of attack. As a result of such analysis, for example, *many wear areas have actually been "designed out" of Sharples Super-D-Canter centrifuges.*

CONSTANT DEVELOPMENT AND RE-EVALUATION OF MATERIALS AND TECHNIQUES

Should a special material of construction or a hard surfacing system be required, Sharples centrifuges offer a selection that is unequalled. More materials and techniques of construction have been employed to produce Sharples centrifuges than have been used by any other centrifuge manufacturer.

Some basic materials are listed below. Key to the successful use of many of these materials, as well as newer ones now under development, lies in the perfection of fabrication techniques. This is another specialized area of Sharples investigation, many times carried out in cooperation with the firms developing the material.

CLOSE COOPERATION WITH CUSTOMER

The need for close and constant cooperation with the customer is fully understood at Sharples. We will be happy to show you how the solution to your process needs can be determined economically, even where corrosive or abrasive conditions are severe. Discuss your application with your Sharples Centrifuge Representative.

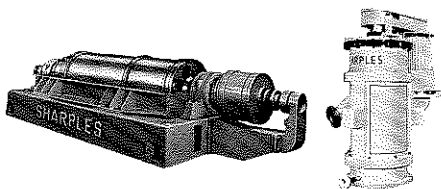
Some Basic Materials of Construction Used in Sharples Centrifuges

METALS	ABRASION RESISTANT MATERIALS	CORROSION RESISTANT COATINGS
Steel Stainless 431 Stainless 304, 316, 317, 329 Stainless 17-4PH Stainless CD-4MCu Monel Inconel Nionel Bronze Titanium Hastelloy B, C Nickel Carpenter 20	Solid Ceramic Sprayed Alumina Solid and Fused Tungsten Carbide Cobalt-Chrome-Tungsten (Stellite) Nickel-Chrome-Boron (Colmonoy) Tungsten Carbide Composites A. WC + Steel Matrix B. WC + Hastelloy Matrix C. WC + Ni-Cr-B Matrix D. WC + Stainless Matrix Rokide Alphasized Tool Steel Hard Chromium Carbon-Chrome-Vanadium Tool Steel	Hard Rubber Neoprene Kynar® TFE Penton Emralon Vinyl Plastisol Phenolic Epoxy Tin Galvanized



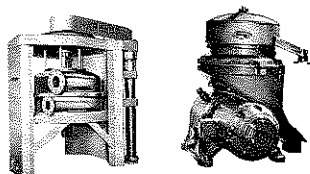
THE COMPLETE LINE OF SHARPLES® HIGH-PERFORMANCE CENTRIFUGES OF ALL TYPES FOR EVERY SEPARATION APPLICATION

**SOLID
BOWL
TYPE**



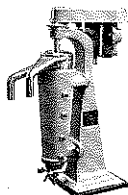
SHARPLES SUPER-D-CANTER® CENTRIFUGES . . . for continuous dewatering of crystalline materials and plastics; dewatering fibrous and amorphous materials; solids concentration and liquid clarification; wet classification.

**DISC
TYPE**



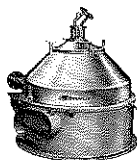
SHARPLES NOZJECTOR®, AUTOJECTOR® AND DD AND DF CENTRIFUGES . . . for continuous solids concentration and liquid clarification; separating immiscible liquids; wet classification. Solids discharged continuously or intermittently, or manually removed.

**TUBULAR
BOWL
TYPE**



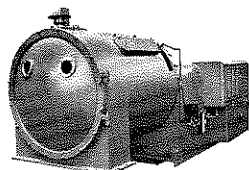
SHARPLES SUPER CENTRIFUGES® . . . for solids concentration and liquid clarification; separating immiscible liquids; wet classification.

**CONTINUOUS
SCREENING
TYPE**



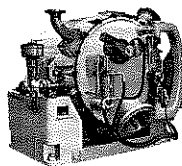
SHARPLES CONEJECTOR® AND CAB (CONSTANT ANGLE BOWL) CENTRIFUGES . . . for continuous dewatering of crystalline materials and plastics; dewatering fibrous and amorphous materials.

**CONTINUOUS
SCREENING
"PUSHER"
TYPE**



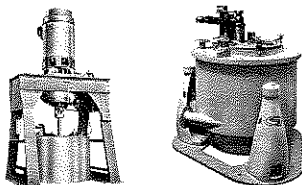
SHARPLES MODEL CD CONTINUOUS D-HYDRATOR* CENTRIFUGES . . . for continuous dewatering of crystalline materials and plastics; dewatering fibrous and amorphous materials.

**CONSTANT
SPEED
HORIZONTAL
BASKET
TYPE**



SHARPLES SUPER D-HYDRATOR® CENTRIFUGES . . . for automatic batch dewatering of crystalline materials and plastics.

**VARI-SPEED
VERTICAL
BASKET
TYPE**



SHARPLES FLETCHER® CENTRIFUGES . . . for automatic batch dewatering of crystalline materials and plastics; dewatering fibrous and amorphous materials; solids concentration and liquid clarification; wet classification.

SHARPLES—EQUIPMENT DIVISION
PENNSALT CHEMICALS CORPORATION
P.O. BOX 100, 955 MEARNS ROAD
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