

# Sumitomo Drive Technologies

Reliable Power Transmission Drives

## Large Industrial Gearboxes



PARAMAX®



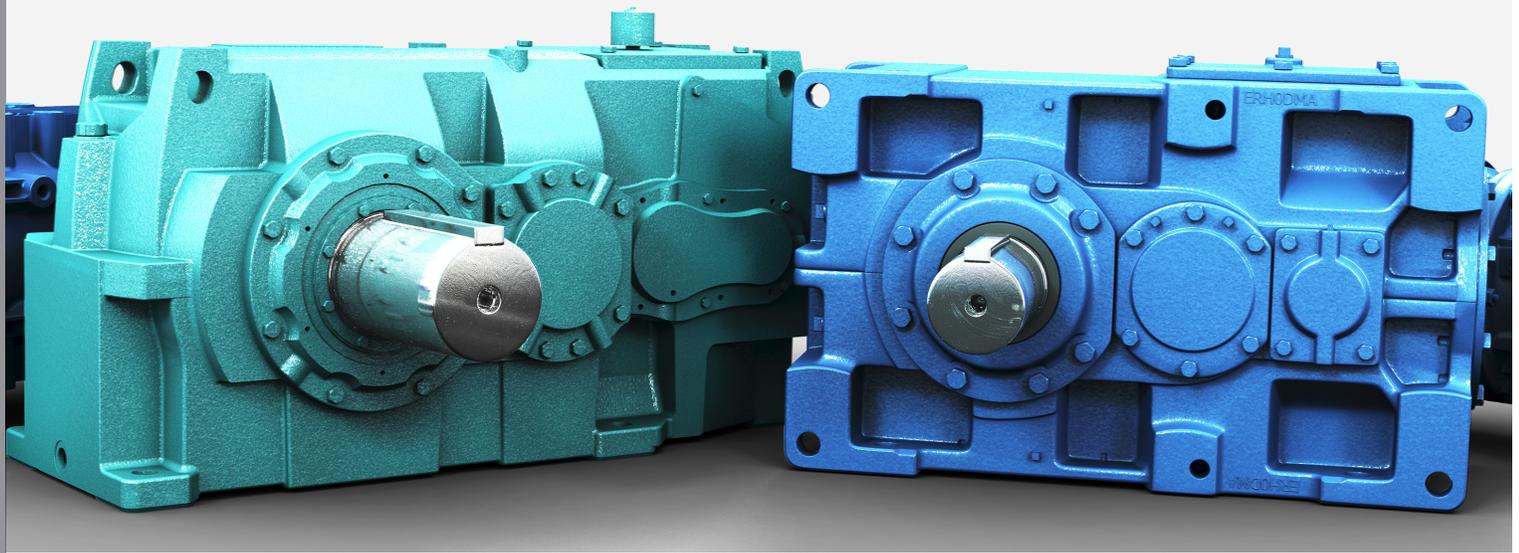
HANSEN P4



UNIMINER



SEISA



## Reliability, efficiency and unmatched life cycle costs are synonymous with Sumitomo gearboxes.

Gear reducers are used extensively throughout industry and are essential in a variety of applications. Numerous industrial processes depend on gearboxes to reduce speed and multiply torque. The need for this power transformation is particularly strong in heavy manufacturing environments, such as Cement, Mining, Chemicals, Pulp & Paper, Petroleum and Steel, where a gear's long life and high reliability are paramount, and production downtime can significantly impact a plant's bottom line profit.

All gearboxes are not alike. Sumitomo Machinery Corporation of America (SMA), part of Sumitomo Drive Technologies, understands that choosing the right gearbox for a demanding application is extremely important. We have been manufacturing gearboxes globally since 1916 as part of a company that's serviced industrial markets for over 400 years. This unmatched experience translates into Sumitomo gearboxes that are uniquely designed to:

- Increase machine reliability and reduce production downtime
- Increase product throughput
- Increase life expectancy of assets, and
- Improve safety and quality conditions

In addition to standard models, SMA offers customers the ability to customize their gearboxes to meet specific operational requirements. Product platforms are both flexible and performance-driven. SMA's Verona, Virginia Gearbox Center of Excellence (COE) is fully dedicated to gearbox production with hundreds of years of assembly experience to help ensure specifications are executed with the utmost precision.

Sumitomo Drive Technologies industrial gearbox product lines consists of the following:

**Paramax®** – A proven performer for more than two generations with hundreds of thousands of successful installations worldwide.

**Hansen P4** – specifically designed for maximum life in specific applications (Including vertical units with leak proof drywells, horizontal split line housing, and high radial and axial load carrying capabilities for cooling towers, mixers, and other similar applications)

**Hansen Uniminer** – Universal Housing design reduces the spare unit requirements, ideal for alignment free applications.

**Seisa** – Perfect for the most demanding applications that require ultra high levels of torque. Superior for extremely high input speeds and unique requirements.

# US Gearbox Center of Excellence



## North American Gearbox Production

Sumitomo gearboxes offer customers a customized experience that meets a wide breath of operational requirements. Product platforms are both flexible and performance-driven. SMA's Gearbox Center of Excellence (COE) in Verona, Virginia, fully-equipped facility combines both the products and knowledge of two world class manufacturers into one in order to service/support clients' requirements throughout North America.

The Verona COE executes engineered designed projects for both the Hansen P4 and Paramax® for a wide range of industrial applications. In addition, there is quick ship capability for standard Paramax® gear units (PX Express), to help minimize customer production downtime. Plant investment in personnel/experience from around the globe, ensures that gearbox manufacturing expertise and innovation remain core competencies of gearbox production.

# Brazil Facility

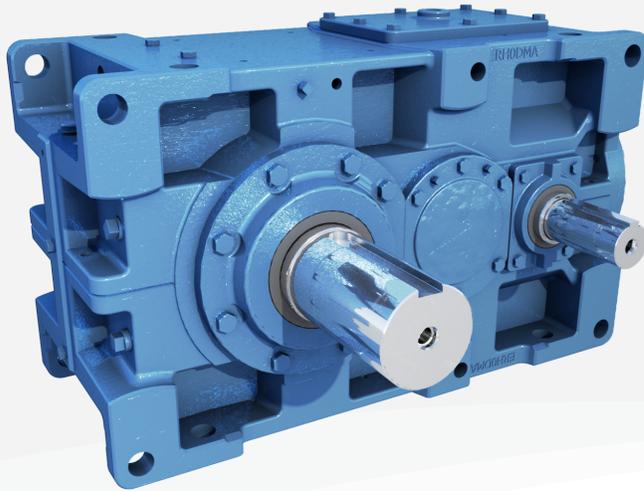


## South American Gearbox Manufacturing

Sumitomo's gearbox manufacturing facility in São Paulo, Brazil, services South American and global customers. The facility offers special, customized units to fit requested applications and drop-in units to replace competitors' units, in addition to manufacturing standard products. Unit customization, premier performance, engineered excellence, reliable quality and a global network, mark the foundation for Sumitomo South America's long held success in the gearbox arena.

# Paramax®

Premier performance and power



Paramax® drives have earned an impressive track record of success, spanning over half a century. Paramax® are recognized as benchmark gearboxes for many industries. The internal components have been standardized in order to offer both short delivery times and high quality. A sales record in excess of 400,000 units, since the launch of the series, substantiates their high reliability.

The space saving Paramax® product family has been proven to be exceptional performers. Quiet operation, unusually strong gear geometries and high thermal capabilities are all characteristics of this dependable product line.

## Specifications Summary

Torque Range	23,012 - 4,885,614 lb•in
Ratios	6.3:1 to 500:1 standard
Housing Material	Cast Iron (standard) Ductile or Fabricated Steel (optional)
Universal Housing	Horizontal, Vertical or Upright Mounting

### Anti-Dust Breather

Air breather protects from contaminants and extends operational life

### Large Inspection Port

Provides large viewing window for simple and thorough gear inspections

### Available Split Housing

Split housings are offered in larger frame sizes; or with steel housings, allow easy maintenance

### Taconite Seals

Optional taconite seals feature durable dual lip seals and a layer of grease in a sealing system that blocks contaminants

### Strong Alloy Steel Shafts

Fully heat treated and hardened shafts provide dependable service in rugged environments

## Ideal for Bucket Elevators

The Paramax® product line offers the toughest and most reliable gear drives available in the market. It features double, triple and quadruple reduction gearboxes, global standardization and 26 frame sizes. An optional auxiliary inching drive is available to allow the elevators to run at reduced speeds for belt, chain and/or bucket inspection.



### Optional Accessories

- ▶ Heavy Duty Anti-Dust or Desiccant Breather
- ▶ Taconite, Labyrinth and FKM Seals
- ▶ Integral Backstop
- ▶ Cooling Fan with Split Fan Hood
- ▶ Shaft Cover
- ▶ Immersion Oil Heater
- ▶ Motor Mounts
- ▶ Resistance Temperature Detector
- ▶ Cooling Systems
- ▶ Heavy Duty Bearings

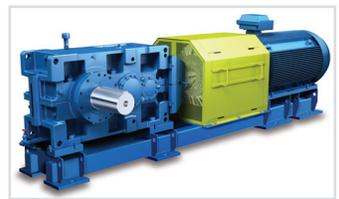


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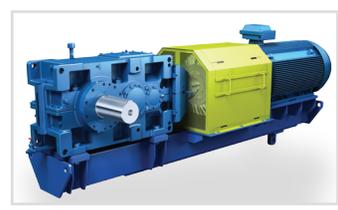


Mining

### Mounting Base Plate Options



Baseplate



Swingbase



Wastewater



Crane & Hoist

### Output Options

Solid Shaft



Keyed Hollow Shaft

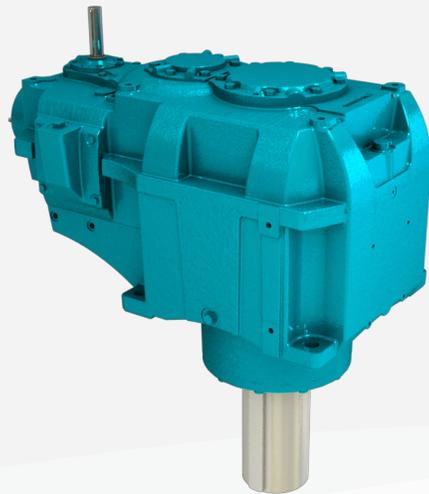


Shrink Disc



# Hansen P4

*Right-angle and vertical powerhouse*



Launched in 1993, the Hansen P4 multi-stage gear unit is market leading in quality and technology, and it excels in reliability and durability. The excellent constructional rigidity of Hansen P4, together with state-of-the-art gear technology, leads to remarkable power and performance.

Complementing the Hansen P4 line of multi-stage gear units is the Hansen single stage gearbox. Hansen single stage gear units are suitable for various applications requiring small reduction ratios, such as paper machines, pumps, compressors, etc.

Reliability, durability and serviceability—our customers' main requirements—have been combined with improved efficiency, low-noise and fitness for use.

## Specifications Summary

Torque Range	Multi-Stage: 46,000 - 9,735,825 lb•in
	Single-Stage 40,000 - 1,504,000 lb•in
	Vertical 105,000 - 7,250,000 lb•in
Ratios	Multi-Stage: 6.3:1 to 630:1
	Single-Stage :1.2:1 to 5.6:1
	Vertical: 6.3:1 to 500:1

### Horizontal Split Housing

Dedicated housings for horizontal and vertical applications

### Wide Bearing Span

Standard increased bearing span for vertical applications for stronger shaft support

### Robust Design

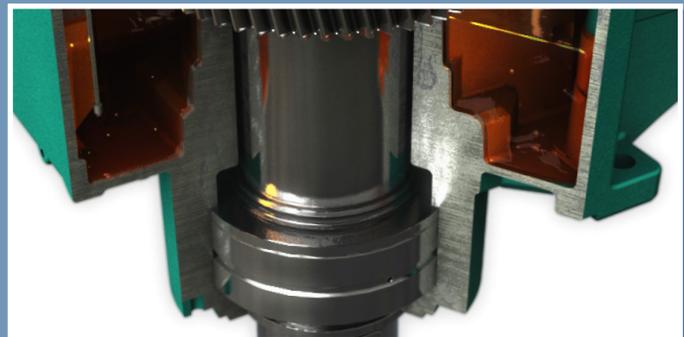
Rigid standardized pinion shafts and housings for better lateral load distribution

### Large Oil Capacity

Ensure bearings are lubricated at start up to maximize reliability and life

## P4 Mixer: Drywell & Drop Bearing

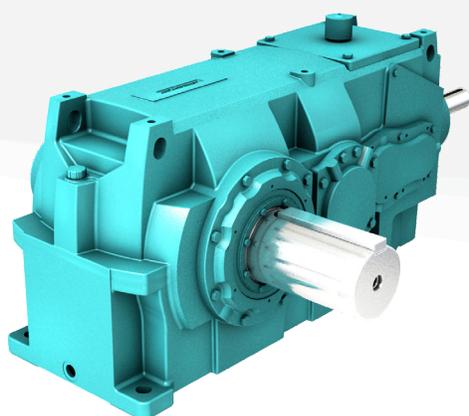
The P4 Mixer has an integral drywell\* that provides a truly leak-proof low-speed shaft. To accompany this feature an optional Drop Bearing allows the unit to handle larger overhung loads without increasing the case size, making it more cost effective than the competition



\*Cast in drywell is available on three stage units size C to H. Bolt in drywell available on all two stage units and 3 or 4 stage units for sizes J and up.

## Optional Accessories

- ▶ Motor Lantern or Scoop
- ▶ Multiple Sealing System
- ▶ Optional Torque Arm
- ▶ Integrated Heating System
- ▶ Cooling Fan/Cooling Coil
- ▶ Humidity Resistant Paint
- ▶ Dust-Proof Breather



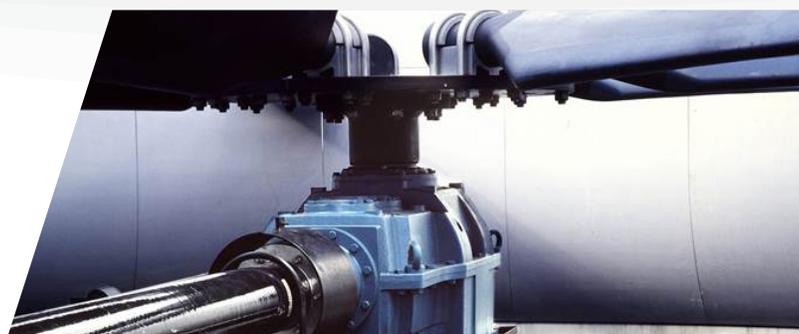
Horizontal P4



Conveyors



Mixing



Cooling Tower

## Orientations



Vertical Mixer Drive



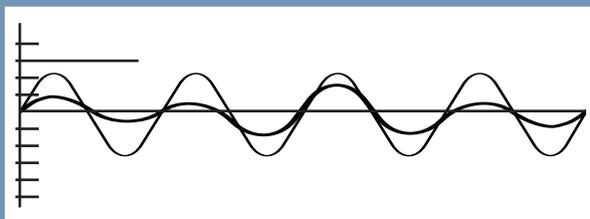
Single Stage Unit



Ground Conveyors

## Low-Noise

The Hansen P4 is designed to generate as little noise as possible, the basic design rules guarantee maximum stiffness of all gear unit components under load. Together with the most rigid pinion shafts and housings, the gear units transmit exceptionally high power and minimal noise.



# P4 UniMiner

## Flippable alignment-free drive package



The Hansen P4 UniMiner features a robust design that offers versatility for different mounting positions. With a 'flippable' housing and horizontal split line, the P4 UniMiner is the ideal alignment-free drive package. Hansen Industrial Gearboxes' P4 UniMiner gear units are compact and optimized for mining and other applications involving bulk material handling. The P4 UniMiner allows for a variety of different mounting arrangements to fit the needs of the many unique and often inconvenient configurations frequently found in mining operations. The split Hansen gear housing design also makes the unit easy to service without having to remove the equipment. The P4 UniMiner is engineered and assembled in Virginia, USA.

### Specifications Summary

Torque Range	122,000 - 998,000 lb-in
Ratios	8:1 to 71:1 standard
HP Rating	Up to 2330 Horse Power
Housing Material	Grey Cast Iron (standard) Ductile Iron(optional)

### Symmetrical, Flippable Design

A flippable, alignment-free housing design with pilot for lantern housing

### Rugged Design

Rugged steel-cased, filtered breathers are suitable for dusty environments and standard epoxy painting system withstands harsh environments

### Horizontal Split Housing

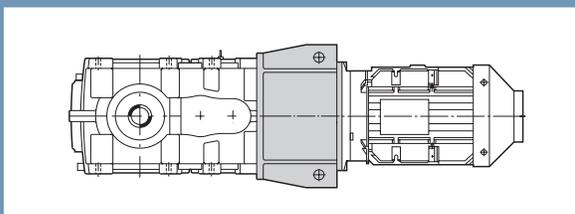
Horizontal split housing and accessible covers for service-on-the-spot inspection and maintenance

### Variety of Accessories & Packages

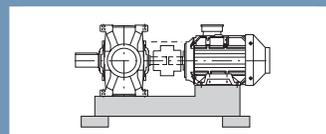
Wide variety of motor installation accessories include: lantern housings, scoop brackets, common bases, and belt drive arrangements

## Accessories

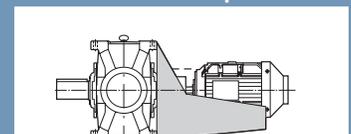
Motor Lantern



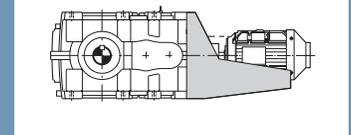
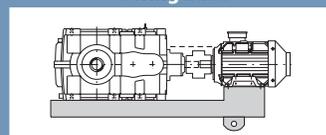
Bed Plate



Motor Scoop



Swing Base



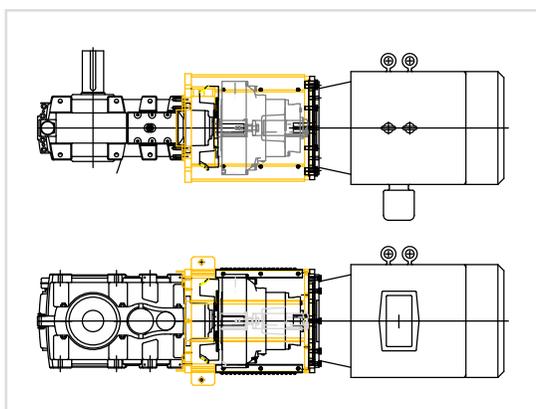
## Optional Accessories

- ▶ Couplings of any type
- ▶ Brakes
- ▶ Backstops
- ▶ V-Belts & Sheaves
- ▶ Torque Limitation Devices
- ▶ Patented High Speed Oil Guard Seals
- ▶ Single Lip Anti-Leak Seal
- ▶ Split Housing Reducer
- ▶ Dynamic Oil Slinger

## Drop-In Replacement

The Hansen P4 UniMiner is a drop-in replacement for most other alignment-free drives, including the 405, 425, 2090 and Model R.

Sumitomo provides engineered solutions for large industrial gearboxes and their accessory components, creating a packaged solution to fit your exact needs.



Cement



Mining



Coal

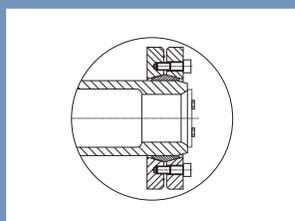


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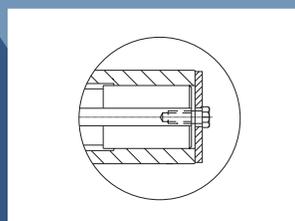
## Output Options

The P4 UniMiner offers a variety of output options, including Solid Shaft with Rigid Coupling, Keyed Hollow Bore and Hollow Bore with Shrink Disc.

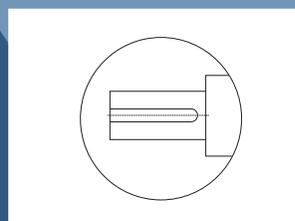
Shrink Disc



Keyed Hollow Shaft

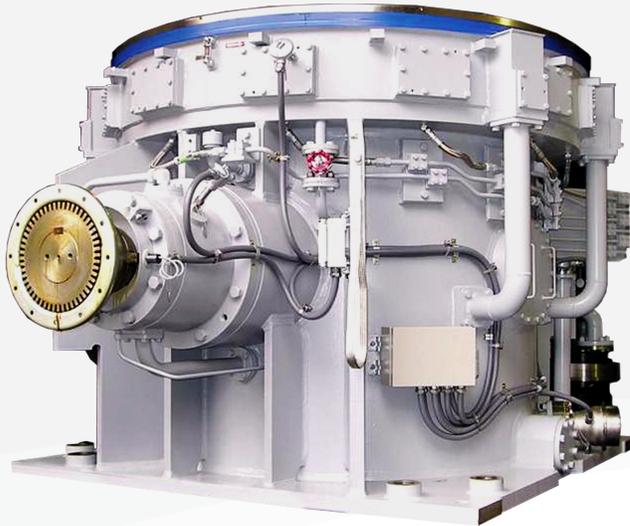


Solid (Standard)



# SEISA

## Large industrial gearboxes



SEISA Gear Ltd. was first established as a manufacturer in 1916. As an established gear manufacturer in Japan with a proven history of over 100 years, SEISA has accumulated a vast experience in high torque, high power speed applications. In this specialized field, they have achieved remarkable success

As a result of their ingenuity and World Class engineering, SEISA's high quality products are trusted and used in various fields and applications around the world.

### Specifications Summary

Torque Range	DP1000: 40,713 - 6,515,825 lb•in
	Mill Drives 7,806,362 - 42,625,212 lb•in
Ratios	5:1 to 1,400:1
	Custom ratios available upon request

### Applications

SEISA gearboxes are used in a wide range of applications, including, but not limited to:

Iron and steel production, drainage pumps, floodgates, motor vehicles, aircraft, escalators, cranes, conveyors, transport machinery, metalworking machinery, chemical machinery, textile machinery, food machinery, printing presses, construction machinery, papermaking machinery, rubber and plastic machinery, cement mills, coal mills, mining machinery, ships, dredgers, water treatment equipment, communication equipment, generators, business machines, resource development, ski lifts, gondolas, and turbomachinery.

## Manufacturing

Through the use of the highest quality hobbing machines, gear shapers, and precision measuring instruments, all products are manufactured according to high-precision standards. In order to maintain the optimum conditions for the production of SEISA's featured products, such as bevel gear units, large helical gear reducers and double helical high speed drives, the interior of the gear plant is kept at a constant temperature ( $\pm 1^{\circ}\text{C}$ ) and humidity ( $\pm 5\%$ ) during operation. This facilitates the manufacture of gears of exceedingly precise accuracy. Making use of comprehensive equipment, a large designing staff, and accumulated engineering knowledge, SEISA's manufacturing and gear plant has extensive capabilities and experience.

### Highspeed Drives



With over 100 years experience as a leading supplier, Seisa High Speed Drives are dependable, highly customizable gear boxes available in a wide variety of configurations.

American Petroleum Institute (API) compliant models are available upon request.



Roll Crusher



Vertical Mill



Bucket Wheel Drive



Steel Mill



# PSG

## Product Support Group

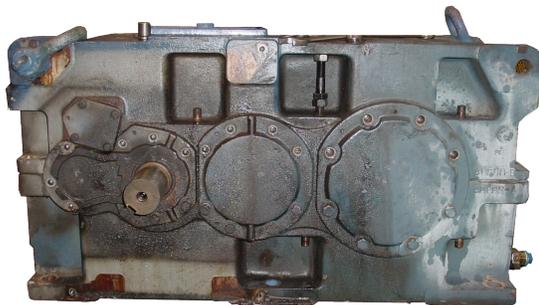


**All gearbox services are not the same and neither are service technicians.**

SMA's Service personnel are the industry's most versed gearbox problem solvers. Sumitomo's Product Support Group (PSG) provides both standard and tailored services, for maximum gearbox life and overall operational performance and product throughput. Sumitomo further realizes that gearbox maintenance programs effectively administered, can translate into longer intervals between servicing, that lead to less planned and unplanned downtime, less man-machine interaction for enhanced worker safety, reduced parts inventory and the ability to redirect manpower to other plant areas that may need greater attention.

The PSG team focuses on preventive maintenance services, troubleshooting and repairs for Paramax®, Hansen and SEISA brand gearboxes. Standard services include: Gearbox repairs—scheduled and emergency, Field Services, Root Cause Investigations, Commissioning and Start-up Services, Customized Training Programs—including onsite training availability, Inspection Reports, and Warranty Services

*Before*



*After*



## Product Support Group

**Gearbox failures can cause longer downtime per failure than most other plant equipment failures, often causing an entire manufacturing process to halt. The Product Support Group can help you with**

### REPAIRS



#### Scheduled & Emergency Repair

Sumitomo's Product Support offers scheduled repair services as a one-stop-shop for all your related gearbox needs. For emergency repairs, we offer a 24 to 72-hour turnaround. Please consult your representative for product eligibility.



### FIELD SERVICES



#### For Your Convenience

Most of the services offered at our shops can also be performed at customer locations. Additionally, customized training can be provided on-site to help reduce costs and increase productivity.



### ROOT CAUSE INVESTIGATION

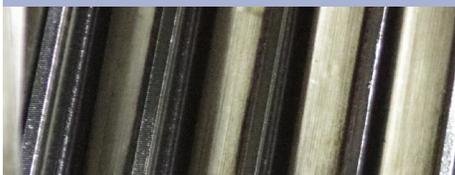


#### Product Support

Sumitomo's Product Support has the experience required to explore a wide range of approaches, tools and techniques to uncover the causes of the most challenging problems.



### INSPECTION REPORTS



#### Data

Detailed inspection reports reveal problem areas and the extent of repair required to return the gearbox back to its original design specifications.



### COMMISSIONING & START-UP SERVICES



#### The Key to a Long Product Life

Our commissioning and start-up services ensure that your gearbox is deemed ready for service.



### WHY CHOOSE SUMITOMO?



#### Products Built to Last

Sumitomo products are built to last. They are known among industry leaders as some of the best and longest lasting drives available. Your drive will be repaired to the original factory specifications and warranty using Sumitomo-manufactured parts. Extended warranty programs are available upon request.



All services are offered at competitive rates. **Please contact PSG at 757-485-3355 or Service@suminet.com.** Visit our website to learn more about our products and services at [www.sumitomodrive.com](http://www.sumitomodrive.com)

When you want the best solution, performance and a sure return on investment, reach for Sumitomo Gearboxes and Services!

## Case Study

# CASE STUDY

## Paramax® Retrofitting

### Challenge

Companies need efficient, compact equipment to operate their facilities effectively. Changes to existing designs can prove to be costly. With limited space and capital as major factors, facilities need to bring in machinery that does not disrupt the current design's integrity. When existing equipment is obsolete or in need of upgrading, one of the best solutions for companies is to retrofit new equipment into preexisting spaces.



### Solution

SMA manufactures reducers that offer optimized gear tooth geometry. Our Paramax® series reducer features a compact housing design, that can generate more torque out of a smaller package—whether it be horizontal, vertical, or an upright installation. More torque from a smaller package makes the Paramax® reducer an ideal choice for retrofitting older obsolete reducers. The ability to retrofit reducers allows facilities to keep the same footprint without having to invest in costly equipment changes. Sumitomo has a dedicated Engineering Team assigned specifically to application retrofits. We can custom design a drop-in baseplate to match the critical dimensions of your existing equipment.



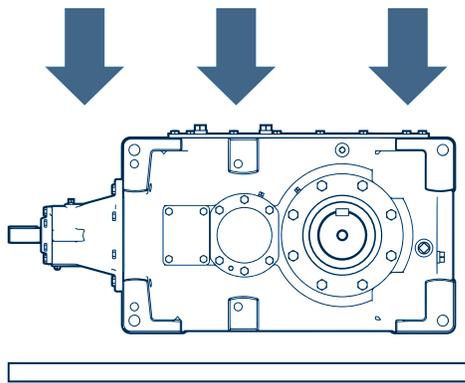
### Results

With a custom designed retrofit, facilities are able to purchase quality reducers that are designed to drop directly into existing applications. The Paramax® series is a heavyduty line of reducers which assists in Chemical, Mining, Paper Manufacturing, Plastic & Rubber, and Power Generation, saving larger industries from costly changes, while keeping equipment running smoothly.

# DROP-INS

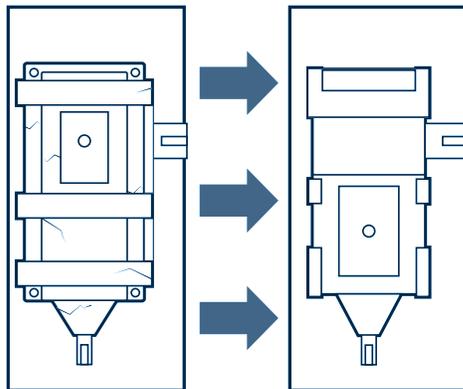
## We retrofit, you drop-in.

Sumitomo offers special customized units to fit in an array of existing applications. Additionally, Sumitomo offers drop-in gear drives to upgrade and replace competitor units. Delivering premier performance with reliability and the highest quality speed reducers. Sumitomo has exceptional engineering and factory capabilities to support you on your gearboxes needs.



### Replacement

Sumitomo will retrofit any replacement gearbox with minimal install modification needed by the end user. Simply take out the old gearbox and drop in the new one. This means less downtime and more efficient production. Sumitomo's retrofitting combines our standard gearing with our fabricated gear housings, ensuring quick and easy repair with great turn around.



### Envelope

Accuracy in design is key to any retrofit opportunity. That is why SMA's engineers carefully craft each part to ensure quick and efficient installation. Sumitomo has the in house capabilities to fabricate and machine nearly any size housing, base plate or adapter that may be required.

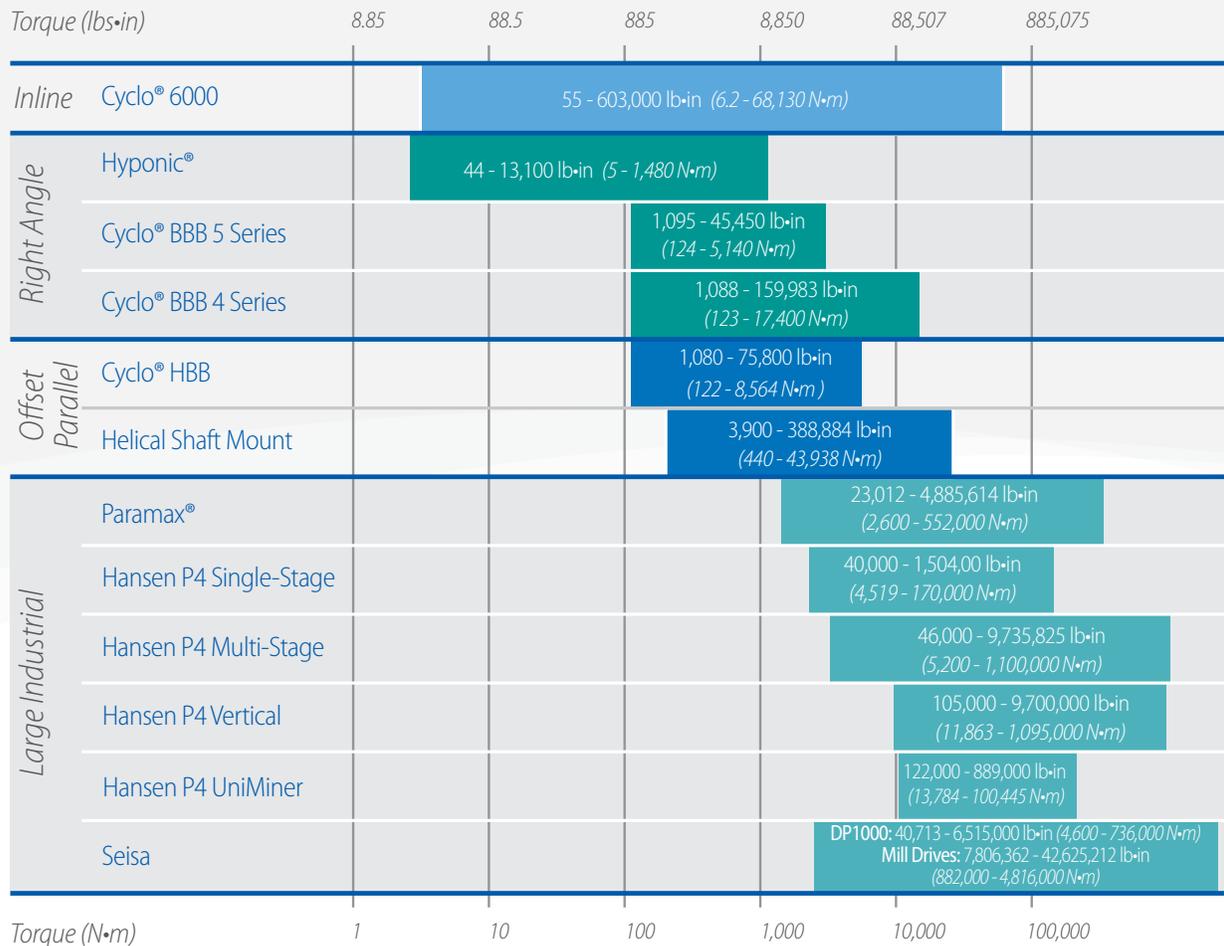
# SPECIAL UNITS

## Custom needs require custom service

For non-standard gearing and custom ratios, Sumitomo offers special customized units to fit in any application. From customer specific paint to intricate gearbox cooling systems, our team of engineers will make sure all your custom gearbox needs are met, with very few limitations. And if that's not enough, with proper drawings, our Brazil facility has the capability to custom create almost anything.

# Torque Ranges

Sumitomo offers a comprehensive lineup of premier power transmission products to keep customers' operations performing at their best. This includes the broadest range of the most reliable and highest quality speed reducers, gearmotors and large industrial gearboxes available in the industry.



[www.sumitomodrive.com](http://www.sumitomodrive.com)

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