



**ADLAM
ENGINEERING**

YOUR PARTNER IN MANUFACTURING

Drive Products

CA102 Revision 02

About Us

Our Activities and Products

- Adlam Engineering (Pty) Ltd was established for the purpose of manufacturing industrial machine components by turning, milling and welding operations. Customers include the mining sector and general industrial industries. Adlam Engineering is a rebuilder of mining equipment and engineer, design and manufacture alternative replacement parts for the surface as well as underground mining industry. We offer our customers experience and Adlam Engineering are constantly updating and investing in the latest CNC machines, tooling and software to ensure that the highest quality parts are made. We constantly strive to improve our quality in all our operations.

Our Purpose

- As a company manufacturing a wide range of machine components, we aim to provide a personal service and to satisfy customers with an excellent standard of quality manufactured products.

Our Mission

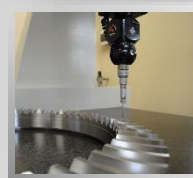
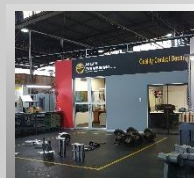
- We will endeavour to provide the highest standard of products and service to our current and potential customers.
- To the staff of our organization in terms of growth, self-assurance, health, identity, autonomy, as well as to develop an achievement of excellence in all our activities.

Our Vision

- We want to become known as a superior supplier in the field of manufacturing and to provide an unrivalled product and service to our customers in terms of product and operating environment and to expand our expertise and customer base in all available avenues.

Our Facilities

- With constant expansion the company was forced to move in 2009 to a new location in Boksburg East.
- Today Adlam Engineering, with their gear cutting division, covers more than 12,000 square meters.



About Us

Our Facilities



Quality Control



Gear Grinding



Offices & Workshop



CNC Milling



CNC Horizontal Boring Mill

Our Facilities



CNC Turing Area



CNC Turning



3D Inspection / Quality Control



Quality Control / Inspection



Large Gears Capability

Index

Adlam Design, Service and Product Range



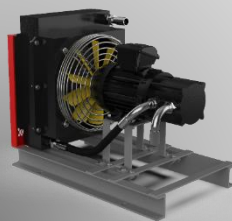
Design



Services



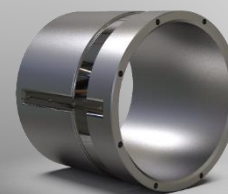
Drive Products



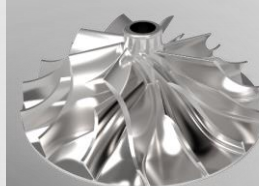
Drive Product
Options



Mill Pinions and
Large Gears



Replacement Parts



Compressor
Impellers & WHIMS

Index

Gear Design for Drives

Custom-made Gear Units

- Professionally designed industrial gear drives.
- When you are in need of a special gearbox for your specific application, installation or vessel, a custom build gearbox are sometimes the only option.
- Adlam Engineering is able to build a custom gearbox that fits exactly into your design constraints. Our highly qualified Engineers are using the latest research and development tools in all designs.
- The technical abilities and skills of our Engineering department combined with the most innovative tools and equipment results in high quality custom-made gearboxes.

Highlights

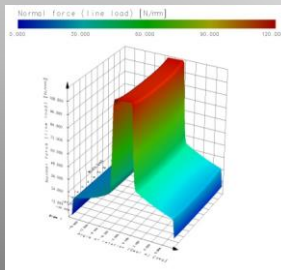
- True custom-made gearboxes with no compromises.
- No catalogue limits.
- Quick delivery times.
- Any type and size of gearbox.
- Customer interaction.

Technical Data

- Applicable AGMA, ISO and DIN standards are used through out all gear calculations.
- Complete gearbox simulations using the latest software.
- Finite Element Analysis (FEM) on gearbox housings and gears.
- Optimized gear and contact analysis of complete gear train.
- Bearing calculations to the latest industry standards.

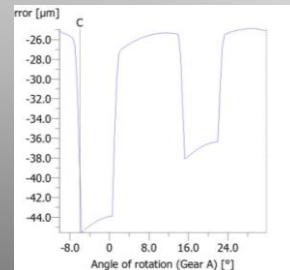


Contact Analysis



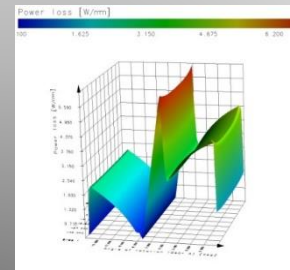
Optimized Profiles

Optimized tooth profiles for smoother meshing



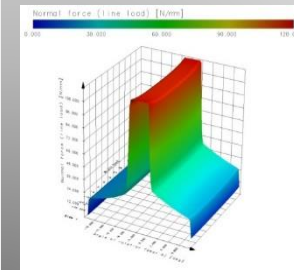
Transmission Error

Transmission errors reduced over complete drive train



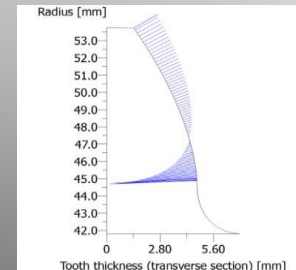
Power loss

Power loss during gear meshing analysis



Force Distribution

Normal force distribution



Specific Sliding

Specific sliding optimized to reduce gear wear on gears

Services

❑ Custom Build Gear Drives

- True custom-made gearboxes with no compromises.
- No catalogue limits.
- Quick delivery times.
- Any type and size gearbox.
- Customer interaction.

❑ Gearbox Overhauls, Upgrades and Rebuilds

- Any gearbox type, age, make or size can be upgraded or rebuild up to original OEM specifications.
- Drop-in replacements.
- Any Improvements on the gear train.
- 24 hour support.
- Fast deliveries.
- One stop shop with over 40 years experience.

❑ Consultations and Inspections

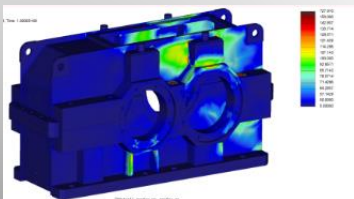
- State of the art software and equipment is used.

❑ Field Service and Gearbox Installations

- Ball Mill Installations and Services
- Gearbox installations
- Gearbox Services
- Gearbox Alignment

❑ Replacement Parts

- Any machine component can be re-designed or reverse engineered and manufactured accordingly.
- Up to (and exceeding) OEM standards.
- Flexible in-house component manufacturing capabilities.
- Over 40 years experience in manufacturing.



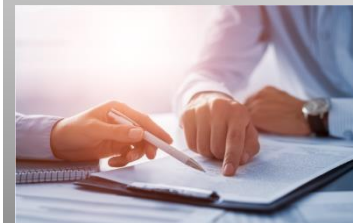
Custom Build Gear Drives



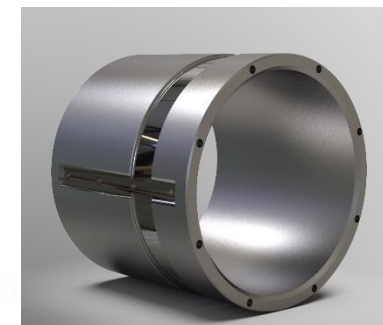
Gearbox Overhauls, Upgrades and Rebuilds



Field Service and Gearbox Installations



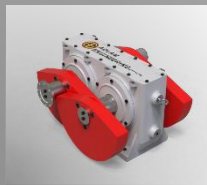
Consultations and Inspections



Replacement Parts

Drive Products

For all your Applications



Drive Products

Right Angled Drives

❑ Highlights

- High level of precision gear grinding ensures high efficiency gearing, low noise and increased load carrying capacity.
- Power upgrades, ratio changes and replacement parts available.
- Dual seal design: ensuring oil stays in and dirt out.
- Horizontal split housing for easy maintenance.
- Case hardened and ground gear teeth.
- Drop-in replacements.

❑ Technical Data

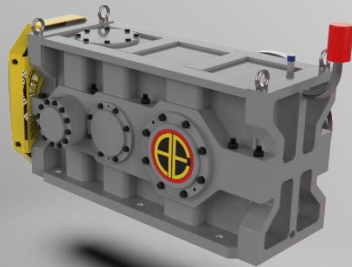
- Reduction stages 2-4
- Ratios 10:1 – 400:1
- Power rating 55kW – 4000kW
- Gear types: Helical gears and Spiral bevels

❑ Options

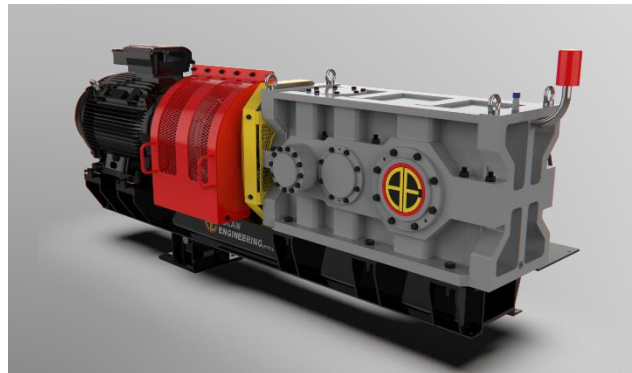
- Complete Power Pack
- Bell housings
- Hollow shaft, solid shaft or double extended shafts
- Holdback / backstop
- Disc or drum brakes
- Forces cooling with fan
- External lubrication systems
- Oil dipstick / sight glass
- Oil drain
- Oil bath temperature sensor
- Breather
- Fluid couplings

❑ Applications

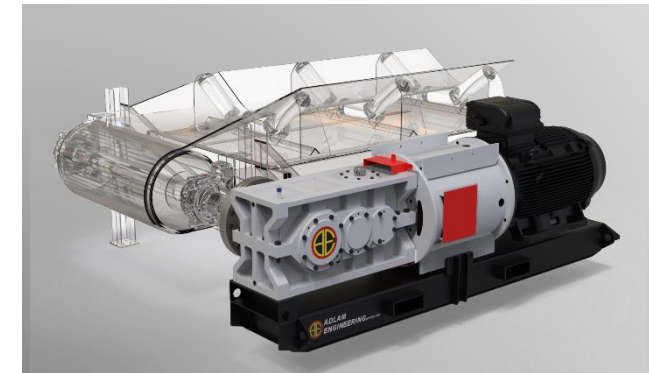
- Conveyor Systems



Right Angled Drive



Complete Power Pack



Applications

Parallel Shaft Gearbox

☐ Highlights

- High level of precision gear grinding ensures high efficiency gearing, low noise and increased load carrying capacity.
- Power upgrades, ratio changes and replacement parts available.
- Dual seal design: ensuring oil stays in and dirt out.
- Horizontal split housing for easy maintenance.
- Case hardened and ground gear teeth.
- Drop-in replacements.

☐ Technical Data

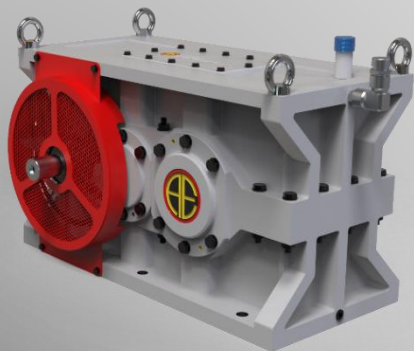
- Reduction stages 2-5
- Ratios 10:1 – 1000:1
- Power rating 22kW – 5000kW
- Gear types: Helical gears

☐ Options

- Hollow shaft, Solid shaft or Double Extended shafts
- Holdback / backstop
- Disc or drum brakes
- Forces cooling with fan
- External lubrication systems
- Oil dipstick / sight glass
- Oil drain
- Oil bath temperature sensor
- Breather
- Fluid couplings

☐ Applications

- Ball Mills
- SAG Mills
- Kiln Drives
- Cranes



Parallel Shaft Gearbox



Exploded view showing Internal Details



Applications

Stacker and Reclaimer Gearbox

❑ Highlights

- High level of precision gear grinding ensures high efficiency gearing, low noise and increased load carrying capacity.
- Power upgrades, ratio changes and replacement parts available.
- Dual seal design: ensuring oil stays in and dirt out.
- Horizontal split housing for easy maintenance.
- Case hardened and ground gear teeth.
- Drop-in replacements.

❑ Technical Data

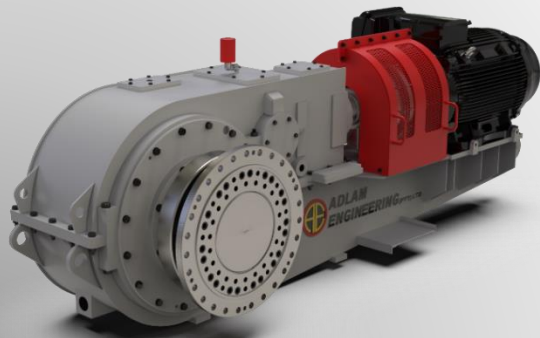
- Up to 3 stage reduction
- Various Ratios
- Various Power rating
- Gear types: Helical gears and Spiral bevels

❑ Options

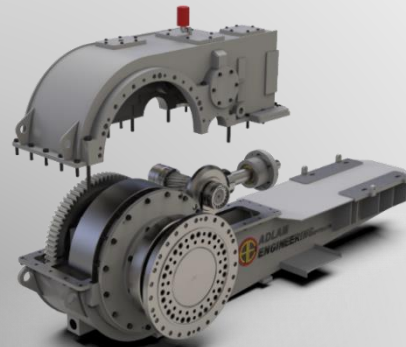
- Complete Power Pack
- Holdback / backstop
- Disc or drum brakes
- Forces cooling with fan
- External lubrication systems
- Oil dipstick / sight glass
- Oil drain
- Oil bath temperature sensor
- Breather
- Fluid couplings

❑ Applications

- Bucket Wheel Drives



Stacker and Reclaimer Gearbox



Exploded view showing Internal Details



Applications

Vertical Mill Gearbox

❑ Highlights

- High level of precision gear grinding ensures high efficiency gearing, low noise and increased load carrying capacity.
- Power upgrades, ratio changes and replacement parts available.
- Dual seal design: ensuring oil stays in and dirt out.
- Horizontal split housing for easy maintenance.
- Case hardened and ground gear teeth.
- Drop-in replacements.

❑ Technical Data

- Ratios up to 45:1
- Power rating up to 4000kW
- Gear types: Helical gears and Spiral bevels

❑ Options

- Condition Monitoring
- Forces cooling with fan
- External lubrication systems
- Oil dipstick / sight glass
- Oil drain
- Oil bath temperature sensor
- Breather

❑ Applications

- Vertical Mills
- Coal, Limestone, Slag
- Sand and Gravel



Vertical Mill Gearbox



Exploded view showing Internal Details



Applications

Worm Drive Gearbox

❑ Highlights

- High level of precision gear grinding ensures high efficiency gearing, low noise and increased load carrying capacity.
- Power upgrades, ratio changes and replacement parts available.
- Dual seal design: ensuring oil stays in and dirt out.
- Horizontal split housing for easy maintenance.
- Case hardened and ground gear teeth.
- Drop-in replacements.

❑ Technical Data

- Ratios up to 100:1
- Centre distances up to 28"
- Teeth pitch up to 1DP

❑ Options

- Forces cooling with fan
- External lubrication systems
- Oil dipstick / sight glass
- Oil drain
- Oil bath temperature sensor
- Breather

❑ Applications

- Conveyor Head Pulleys
- Speed Reducers
- Elevators and Lifts



Worm Drive Gearbox



Exploded view showing Internal Details



Applications

Double Helical Gearbox

❑ Highlights

- High level of precision gear grinding ensures high efficiency gearing, low noise and increased load carrying capacity.
- Power upgrades, ratio changes and replacement parts available.
- Dual seal design: ensuring oil stays in and dirt out.
- Horizontal split housing for easy maintenance.
- Case hardened and ground gear teeth.
- Drop-in replacements
- Double helical gears are quiet and runs smoother while being more efficient.

❑ Technical Data

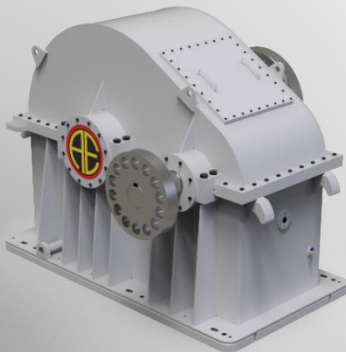
- Single reduction
- Double reduction can be designed
- Ratios up to 8:1
- Power rating up to 5000kW
- Larger helix angle provides a larger contact ratio.

❑ Options

- Forces cooling with fan
- External lubrication systems
- Oil dipstick / sight glass
- Oil drain
- Oil bath temperature sensor
- Breather
- Flexible and rigid couplings

❑ Applications

- Ball Mills



Double Helical Gearbox



Exploded view showing Internal Details



Applications

Exciter Gearbox

❑ Highlights

- High level of precision gear grinding ensures high efficiency gearing, low noise and increased load carrying capacity.
- An Exciter Gearbox is used to create linear vibrations for bulk material handling.
- Usually heavy duty gearboxes with long service life.

❑ Technical Data

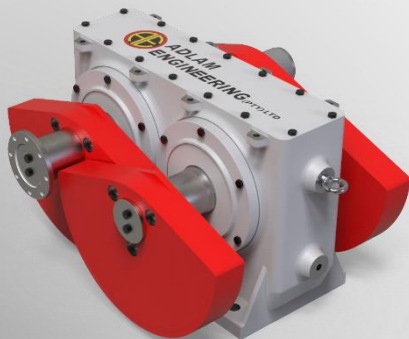
- Ratio 1:1
- Power rating 5,5kW – 30 kW
- Speed: 750RPM /1000RPM /1500RPM

❑ Options

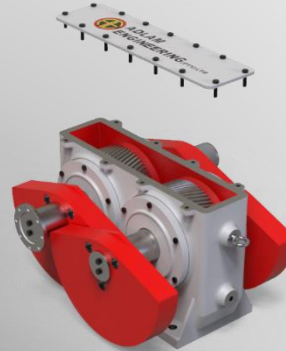
- Different counterweight sizes and exciter sizes available according to customer specifications.

❑ Applications

- Vibrating Screens
- Vibrating Feeders



Exciter Gearbox



Exploded view showing Internal Details



Applications

Planetary Drives

❑ Highlights

- Compact Planetary Stages with high transmission ratios.
- Higher load carrying capacity.
- Precision ground gears.
- Easy to maintain.
- Low noise emission.
- Modular design.

❑ Technical Data

- Ratio up to 10 000:1
- Reduction stages up to 6

❑ Options

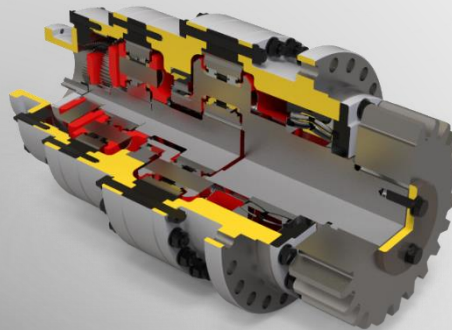
- Drop-in replacement
- Ring gears
- Brake

❑ Applications

- Wind Turbines
- Aerial Platforms
- Discharge Booms
- Apron Feeders
- Construction Equipment



Planetary Drive



Sectioned view showing Internal Details



Applications

Final Drives

☐ Highlights

- Compact Planetary Stages with high performance.
- Higher load carrying capacity.
- Precision ground gears.
- Integrated disc brake.

☐ Technical Data

- Ratio up to 1000:1
- Reduction stages 2-7

☐ Options

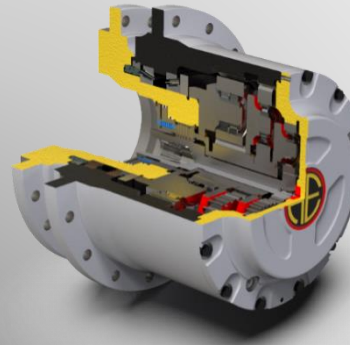
- Drop-in replacement
- Ring gears
- Brake

☐ Applications

- Excavators



Final Drive



Sectioned view showing Internal Details



Applications

Shuttle Car Wheel Drive

❑ Highlights

- Adlam Engineering has extensive knowledge and experience in the field of Wheel Drive units and is not only capable of repairing any wheel drive unit, but also design and manufacture new wheel drive units.

❑ Technical Data

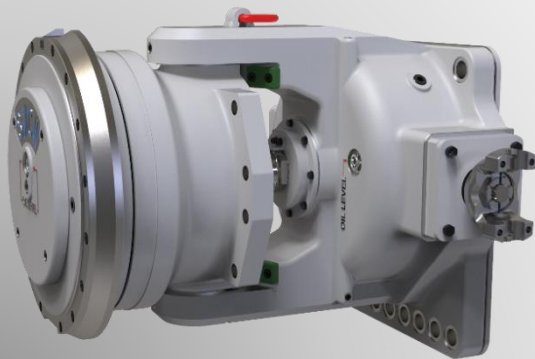
- Designed for various tonnages and shuttle car types.

❑ Options

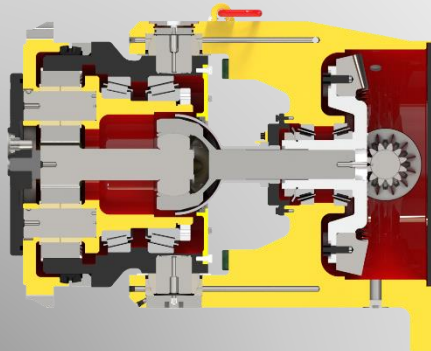
- Lubrication system.
- Lifting lug
- Yokes
- Sight glass for oil level
- Back plates

❑ Applications

- Shuttle car for underground mining applications.



Wheel Drive



Sectioned view showing Internal Details



Applications

Rotary Blast Drill Gearbox

❑ Highlights

- Adlam Engineering has extensive knowledge and experience in the field of Drill Gearboxes and is not only capable of repairing any drill gearbox, but also design and manufacture new gearboxes.
- Adlam Engineering also repairs and manufactures the side saddles and wear pads.
- Strong and rigged housing designs.

❑ Technical Data

- Rotary head torque up to 37 kNm
- Ratios up to 15:1
- Pull-down force up to 540 kN

❑ Options

- Lubrication filtration system.
- Operational 24/7 real time condition monitoring system that includes:
 - Temperature Sensor
 - Temperature Switch
 - Diagnostic unit for oil aging
 - Pressure Switch
 - Central Monitoring system
- Sliding arms / adjustable sliding arms

❑ Applications

- Rotary Blast Drill Machines



Drill Gearbox



Exploded view showing Internal Details

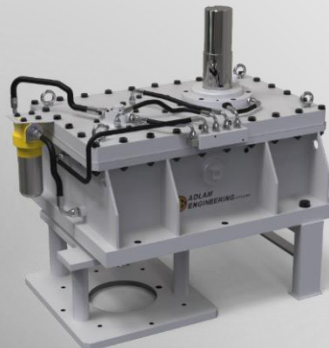


Applications

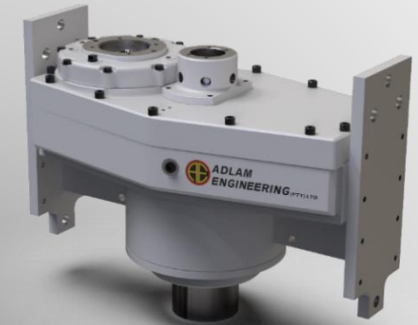
Rotary Blast Drill Gearbox



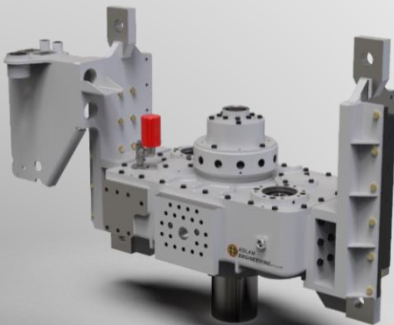
Pit Viper 351



Philadelphia Drill Gearbox



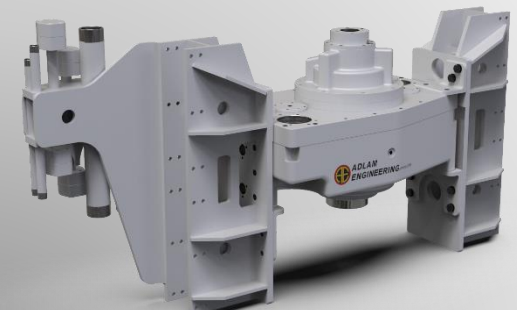
D25 Drill Gearbox



Pit Viper 275



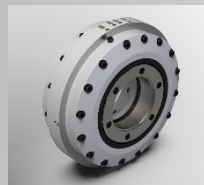
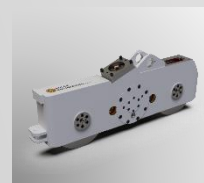
DM30 Drill Gearbox



SKL MD6540 Drill Gearbox

Custom Designed Gear Drives

For all your Applications



Custom Designed Gear Drives

Custom Designed Gear Drives

❑ Highlights

- Adlam Engineering has extensive knowledge and experience in the field of Custom Designed Gear Drives that are used in various applications and industries.

❑ Technical Data

- We can design any gear drive for any application, within the customers specification and requirements.

❑ Options

- Lubrication system.
- Operational 24/7 condition monitoring system.
- Various replacement parts for any machine and any industry.

❑ Applications

- Any Application, where there is no standard gearbox available in the market.



83R Raise Boring Drive



Hand-held Torque Wrench



Vertical Re-coiler and Un-coiler



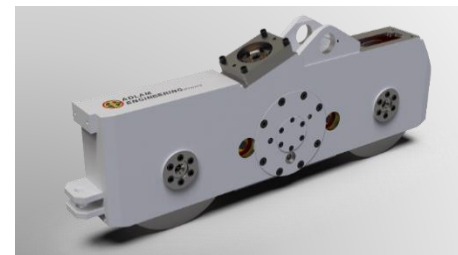
Wash Plant Conveyor Drive



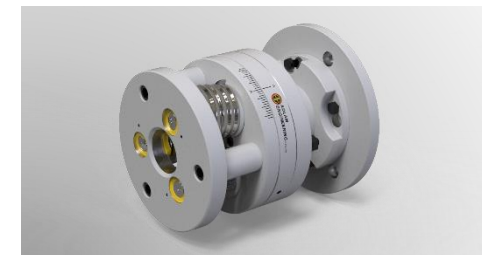
Inline Vertical Rolling Mill Drive



Manually Operated Gearbox



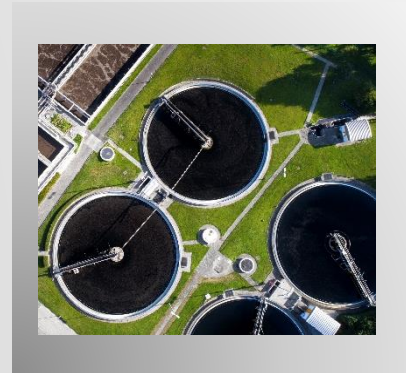
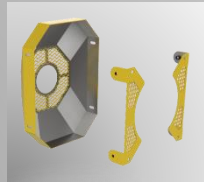
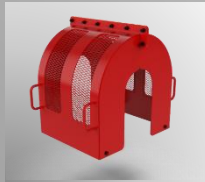
Railway Bogie Drive



Pipe Threading Device

Drive Product Options

For all your Applications



Drive Product Options

Build to your Specific Requirements

Oil Filter

- Replacement filter
- Visual Indicator

Motor

- Voltage 220-550Volt
- Any Make

Paint Protection

- Basic, Underground, surface & off-shore

Fluid Drive / Coupling

- Connecting the motor drive to the gearbox

Guards

- Fluid Drive/Coupling
- Gearbox Fan

Gearbox Cooling Fan

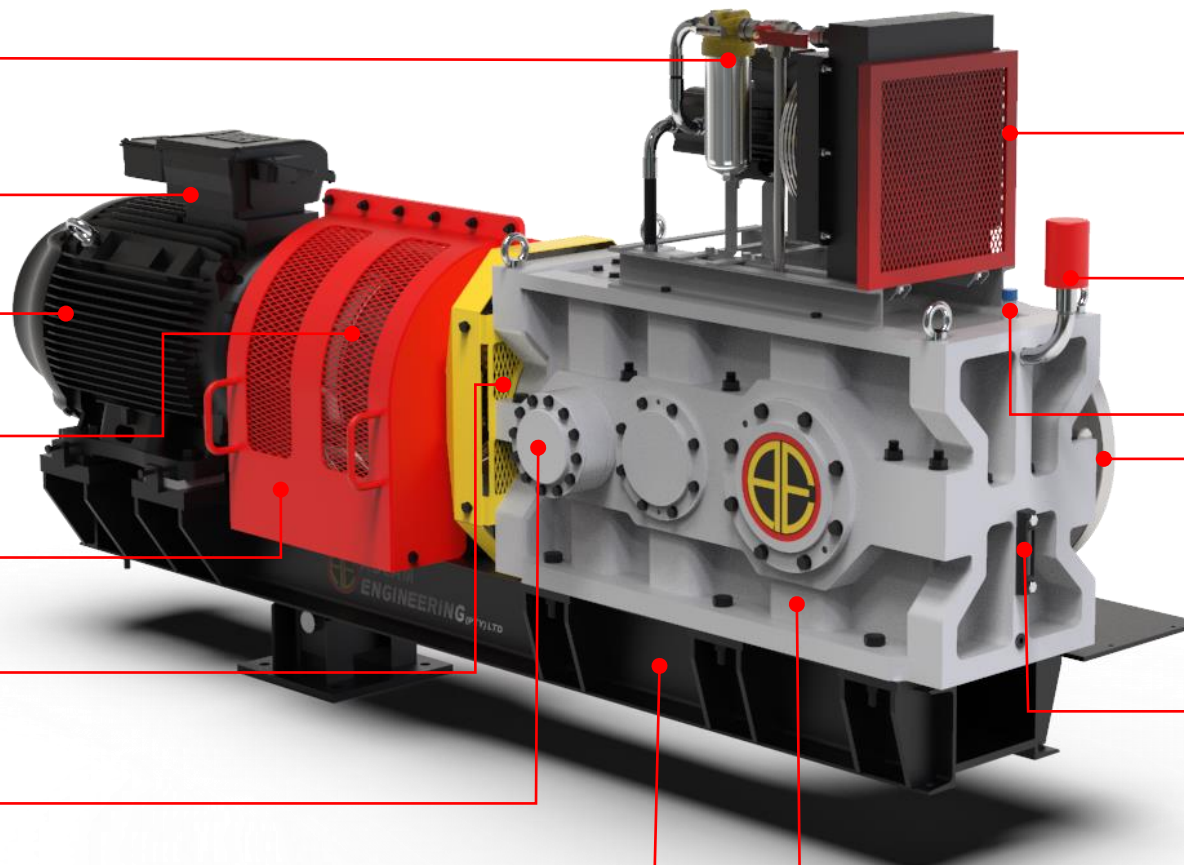
- Fitted onto input shaft

Backstop

- Consists of Outer race, inner race and cage assembly

Base Frame

- Any Configuration
- Made to fit existing platforms



Drive Products

Drive Product Options

Canopy

- Can cover complete power pack (if required)
- Can be mounted to head frame or directly to the cooling unit

Cooling Unit

- Specifically designed for each individual gearbox

Breather

- Keeps the moisture out of the gearbox.
- Provides clean air

Dipstick

- Visually inspect the gearbox oil level

Flanged Coupling

- Manufactured to suit existing mating part

Sight Glass

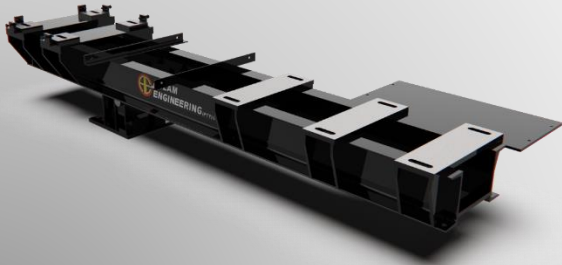
- Visually inspect the gearbox oil level

Extended Gearbox

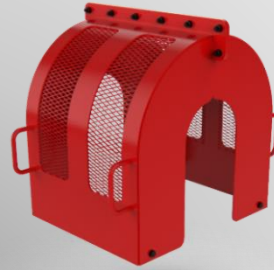
Application Factor

- Reduction stages 2-4
- Ratios 10:1 – 400:1
- Power rating 55kW – 4000kW

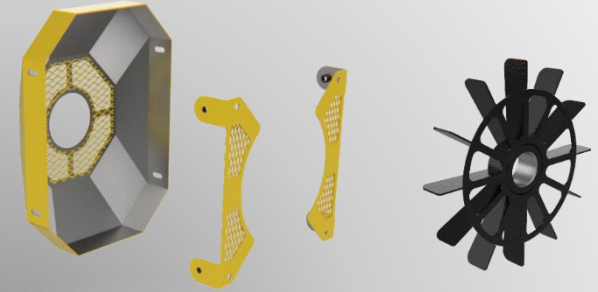
Drive Product Options



Power Pack Base Frame



Coupling Guard



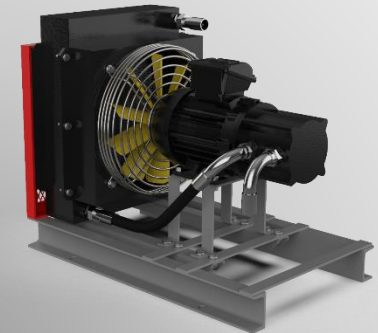
Fan Guard / Fan



Motor



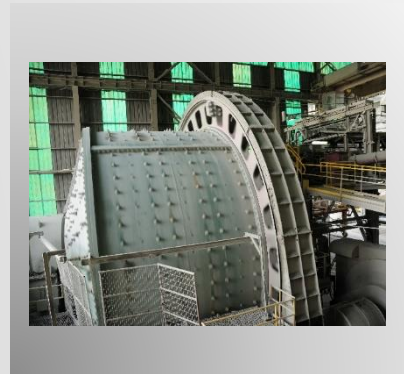
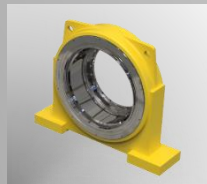
Oil Filter Unit



Oil Cooling Unit

Mill Pinions

For all your Applications



Mill Pinions

Mill Pinion

❑ Highlights

- Grounded up to 2m diameter.
- Ground teeth guarantees accuracy.
- Gear teeth quality: up to DIN quality 4.
- Pinion can be case hardened or through hardened.
- Solid or Split pinions.

❑ Technical Data

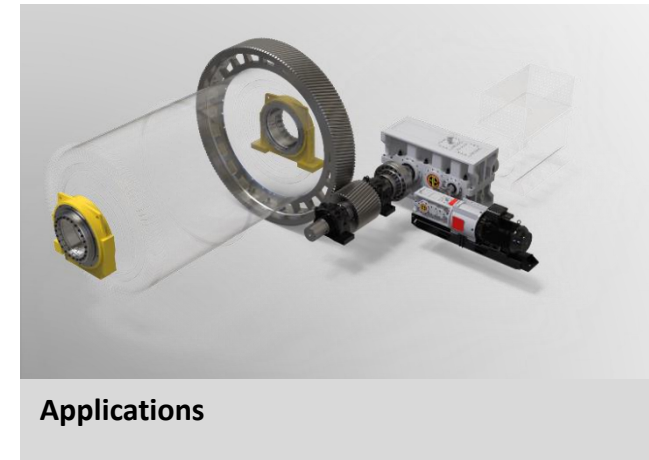
- Type of gear: Spur gear or Helical gear
- Pitch up to 40 Module
- Any Profile
- Up to 2m diameter.

❑ Options

- Pinion Gear assembled on shaft with bearing housings.
- Refurbishment of bearing housings.
- Alignment and Installation.
- New or Refurbished shafts.

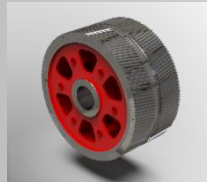
❑ Applications

- Mining – Horizontal Ball and SAG Mills
- Cement – Kiln Drives and Ball Mills



Large Gears

For all your Applications



Large Gears

Double Helical Gears

❑ Highlights

- The major advantage of double helical gears are to balance the axial forces, resulting in zero axial forces on the bearings.
- Because of the large face-width and large helix angle, more torque can be transmitted in a single reduction.
- Larger helix angle means larger torque transmitted.
- Fabricated from steel and fitted with alloy steel for teeth.

❑ Technical Data

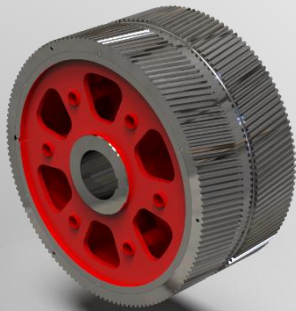
- A high reduction ratio in single stage, typical 6:1
- High helix angle: 25°, 30°, 35°
- Pitch up to 16 Module.
- Face width up to 950mm.

❑ Options

- Re-rim of teeth to re-use.
- One addendum smaller on gear with over size pinion.

❑ Applications

- Mining – Horizontal Ball and SAG Mills
- Cement – Kiln Drives and Ball Mills



Double Helical Gear



View in Typical Assembly



Applications

Bevel Gears

❑ Highlights

- This is a gear in which the teeth have tapered conical elements that have the same direction as the pitch cone base line.
- Bevel gears are manufactured straight or with a spiral angle.
- A spiral bevel gear has a helical angle of spiral teeth.

❑ Technical Data

- Type of gears: Straight bevel, Helical bevel and Spiral bevel gears.
- Diameter up to 2,4m
- Pitch up to 40 Module.
- Typically a through hardened gear with a case hardened pinion spiral bevel.
- A spiral bevel gear of 2,2m in diameter and 30 Module teeth pitch have been manufactured.

❑ Options

- Pinion can be assembled on the shaft with bearings before packaging.
- Adlam does not only manufacture smaller bevel gears for gear units, but also large bevels for bigger applications.

❑ Applications

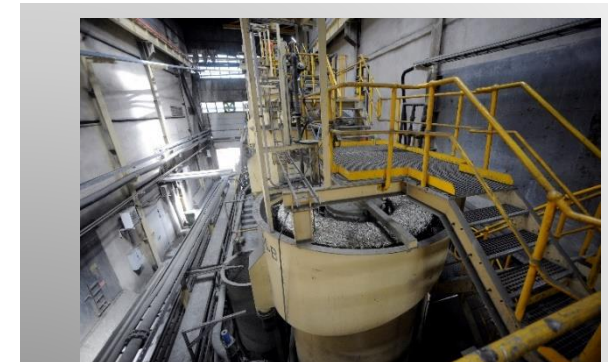
- Crushers



Bevel Gear



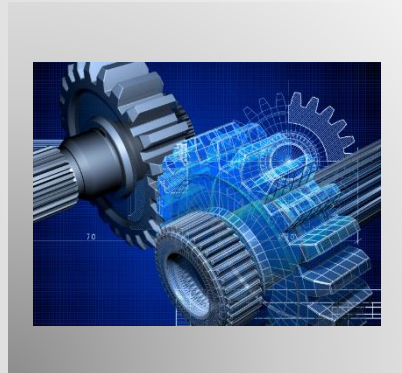
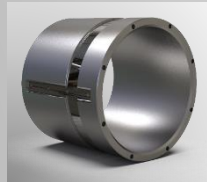
Large Bevel Gear



Applications

Replacement Parts

For all your Applications



Replacement Parts

Replacement Parts

❑ Highlights

- Customized gears can be made to the customer's specifications.
- In cases where no drawings are available, gears can be measured and reverse engineered by our Research and Development department.
- Precision ground gears.
- High quality material grades and heat treatment.
- Drawings available on request.

❑ Technical Data

- Pitch up to 40 module
- Diameter up to 2m
- Face up to 1m

❑ Options

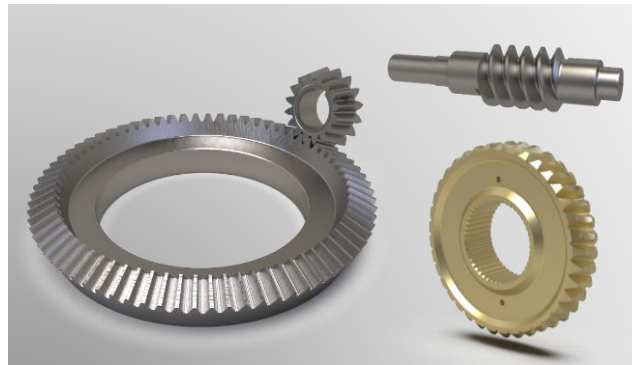
- Spur Gears
- Helical Gears
- Double Helical Gears
- Worm Gears
- Worm Shafts
- Bevel Gears
- Spiral Bevel Gears
- Hypoid Gears
- Face Gears
- Girth Gears
- Pins

❑ Applications

- Various Applications



Various Products



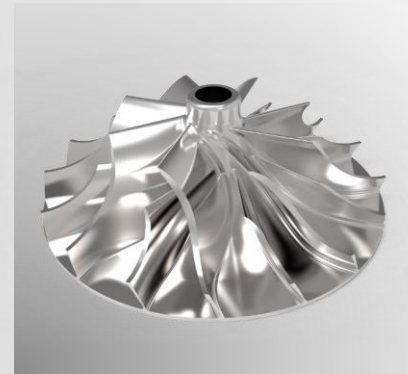
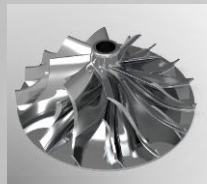
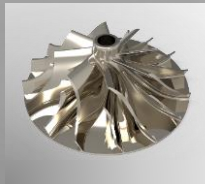
Various Products



Applications

Compressor Impellers

For all your Applications



Compressor Impellers

Compressor Impellers

❑ Highlights

- The technical abilities and skills of our Engineering Department, combined with the most innovative tools and equipment, results in high quality products
- In cases where no drawings are available or just a sample available, the units can be measured by us and reverse engineered by our Research and Development Engineers.

❑ Technical Data

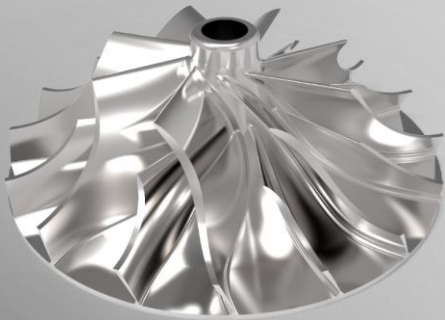
- Up to 800mm Diameter
- Various material options are available for manufacturing:
 - 17-4PH (ANSI 410)
 - ANSI 4130/4140 (EN19)
 - ANSI 4330/4340 (EN24)
- The mechanical integrity is typically evaluated by Finite Element Analysis (FEA)

❑ Options

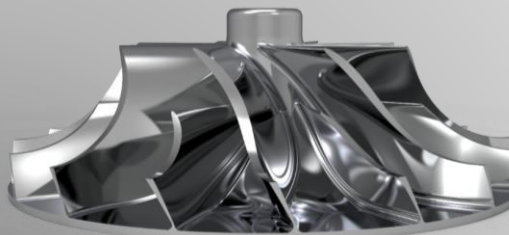
- Axial Impellers
- Centrifugal Impellers
- Radial Impellers

❑ Applications

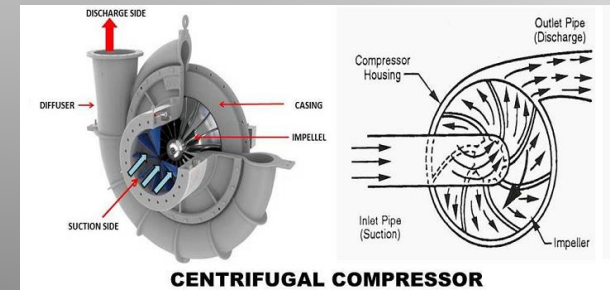
- Centrifugal Pumps
- Blowers
- Turbo Machinery
- Various other



Impeller



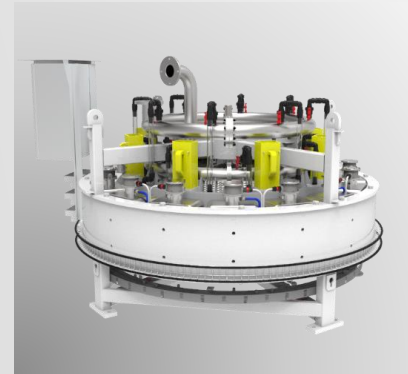
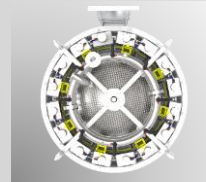
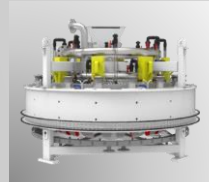
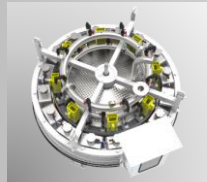
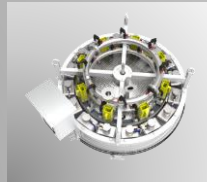
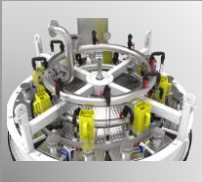
Impeller (side view)



Applications

Magnetic Separators

For all your Applications



Magnetic Separators

Wet High Intensity Magnetic Separator (WHIMS)

❑ Highlights

- Adlam Engineering confidently offers full refurbishment of a complete Wet High Intensity Magnetic Separator (WHIMS) unit
- The Technical skills of our Engineering Department, combined with the most innovative tools and equipment, results in high quality products
- Adlam Engineering offers full after-sales support which includes assembly and cold commissioning

❑ Technical Data

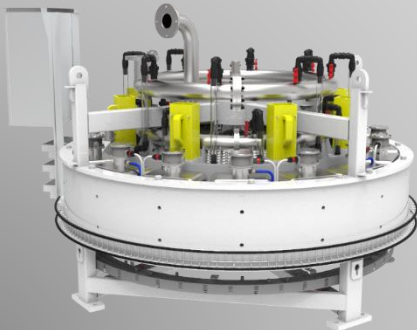
- Engineering and/or Refurbishment of all the Mechanical Components
- Replacement and/or repairs of all Pipe-work and Electrical components
- Designed in accordance with DIN standards and ISO Specifications
- Any machine component can be re-designed and manufactured
- Designed up to (and/or exceeding) OEM standards

❑ Options

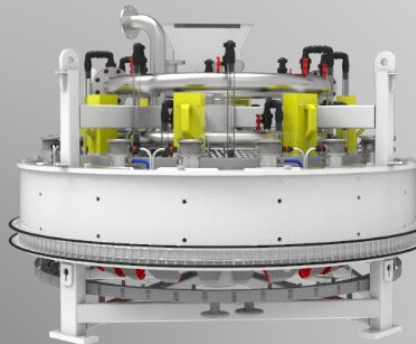
- Engineering and/or Refurbishment of the complete Structure
- Design and Fabrication of the Catcher and Nozzle Boxes
- Cooling Systems for the Coils

❑ Applications

- Mining and extraction of Hematic Iron Particles
- Mining and extraction of rare Earth Minerals
- Industrial Mineral Processing plants



WHIMS



WHIMS (side view)



Applications

Customers

Adlam Engineering (Pty) Ltd





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