


LOCTITE®

Industrial Centrifuges Rebuild and Maintenance Guide



Centrifuge Protection and Repair

 This guide has been designed to provide quick and easy assistance to the professionals who service decanter centrifuges and look for reliability, longevity and cost reduction.

Centrifuge engineers know about the importance of equipment reliability and predictability. They must keep the centrifuge running 24 hours a day, 7 days a week without downtime. Henkel offers a wide range of Loctite® and Teroson products to help service engineers keep the downtime short and find the best solution for any specific service or repair problem.

With the help of this guide, you can:

- Easily select the right Loctite® products to help you service centrifuge assemblies
- Prevent wear proactively new equipment
- Pinpoint the most suitable solution for servicing worn parts
- Determine the best product for your particular service or repair problem

Our commitment to the centrifuge manufacturing and service companies:

- Dedicated centrifuge maintenance program
- “Hands-on” product application advice and technical support
- On-site product and maintenance training
- MRO Solution guide
- National distribution network

Bowl outside surface

Decanter centrifuges have a cylindrical bowl with the liquid discharge and the cake discharge hubs flange-mounted to either end. The bowl outside is often exposed to aggressive chemical environments.

Challenge: Repair the corroded and worn outside of the centrifuge bowl after chemical attack

Solution: Abrasive blast the surface and coat with Loctite® Nordbak® 7221 Chemical Resistant Coating. Use Loctite® Nordbak® 7227 / 7228 Brushable Ceramic grades where chemical attack is combined with wear, or Loctite® Nordbak® 7234 for elevated temperatures.

Benefit: The bowl lasts longer and is protected from corrosion, helping you to ensure reliable, enhanced performance.





Bowl main bearings and headwall bearing

Most bowl main bearing and headwall bearing failures are caused by insufficient lubrication or a combination of imbalance, high speed and load.

Challenge: Prevent bearing spin, corrosion and housing or shaft damage. Repair worn cylindrical shafts.

Solution: Use medium strength Loctite® 641 Retaining Compound for easy disassembly during overhauls, or Loctite® 603 for high strength joints, or Loctite® 640 for shrink fit joints. Rebuild worn shaft with Loctite® Hysol® 3478 Superior Metal.

Benefit: Bearing movement is eliminated. Parts can be disassembled with standard tools. Assemblies are quickly restored, unitised, and ready for service.



Bowl flange

A bowl has several flanges which need to be sealed to prevent any process material from migrating out of the joint. All of these flanges are prone to leak after a period of time.

Challenge: Seal the flange surfaces to ensure close tolerance control of the assembly. In case of worn flanges, rebuild the surface to the original dimensions.

Solution: Seal with Loctite® 128068 Flange Sealant for long assembly time, or Loctite® 518 for small diameters and small flange faces.

Rebuild worn flange faces with Loctite® Hysol 3478 Superior Metal; after cure, machine to the original dimensions, then use 128068 or 518 as above.

Benefit: High shear strength for torque transmission. Better, more reliable seal.



Conveyor – complete surface

The Archimedean screw type conveyor is a key component and serves several functions. Feed zone, scrolls and flight tips are exposed to extreme wear and require optimum wear protection.

Challenge: Repair conveyor hub and flights after chemical attack and erosion. Protect the entire surface of the conveyor hub and flights. Fill the gaps between ceramic or tungsten carbide tips on the conveyor flight.

Solution: Abrasive blast and coat the conveyor outside with Loctite® Nordbak® 7227 / 7228 Brushable Ceramic Grey / White. Fill the gaps between the ceramic / tungsten tips and hub with Loctite® Nordbak® 7222 Wear Resistant Putty.

Benefit: Wear resistant coating protects against future chemical attack for extended equipment life and reduced component consumption.





Conveyor – feed zone – feed zone exit ports

The feed zone of the scroll and the exit ports of the conveyor are exposed to extreme erosion and wear. Various types of wear protection can be applied on new equipment and need to be renewed after certain service intervals.

Challenge: Bond sintered tungsten carbide cylinder into the feed zone exit ports. Protect the area of the feed zone exit ports from erosion.

Solution: Bond cylinder with Loctite® Hysol® 9492 Multi Purpose Epoxy. Protect new equipment from erosion and repair worn areas around exit ports with Loctite® Nordbak® 7219 High Impact Wearing Compound.

Benefit: Reliable wear protection at the feed zone.



Infeed pipe and feed device

The cylindrical feed tube is flange-mounted to a support extension of the main frame. The feed device is assembled onto the infeed pipe.

Challenge: Prevent loosening and corrosion of the feed device fasteners.

Solution: Apply Loctite® 243 Medium Strength Threadlocker to the feed device fasteners. Use Loctite® 2701 High Strength Threadlocker for stainless steel or plated fasteners.

Benefit: Correct clamp load is maintained and the risk of rust and seizure of components is eliminated.



Lower housing

The housing must keep the separation products apart after the centrifugation process. As a result, different parts of the housing are exposed to different (liquid / solid) discharge materials and must withstand chemical attack and erosion.

Challenge: Protect and repair the output area against chemical attack and erosion. Protect the complete housing inside and outside against corrosion.

Solution: Coat the entire housing surface with Loctite® Nordbak® 7255 Sprayable Ceramic. Apply Loctite® Nordbak® 7219 High Impact Wearing Compound for additional protection to areas exposed to extreme erosion and wear.

Benefit: The housing lasts longer and is protected from corrosion and abrasive wear.



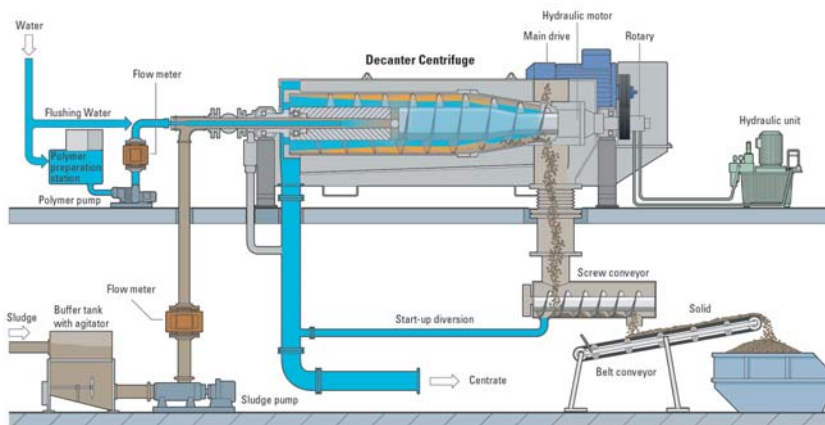
Industry Examples for Centrifuge Technologies

Decanter Centrifuges are used in a wide range of industries. Typical industry areas are:

- Environmental Industry
- Oil and Fats Processing (e. g. Biodiesel, Rapeseed)
- Starch Technology
- Foods and Beverage
- Chemicals and Pharmaceuticals
- Marine
- Oil and Fats Recovery
- Industrial Biotechnology
- Dairy Technology
- Energy (e.g. Power Plants)

Dewatering of waste industrial and municipal sludges is one of the key application areas for decanter centrifuges. Henkel has the diversity and expertise to offer products for a multitude of applications.

Environmental Industry: Water Utility Plants



Primary, secondary and digester sludges from municipal sewage treatment need extensive dewatering.

Henkel offers a wide range of solutions to rebuild, repair and protect industrial equipment used in water utility plants.

Please refer also to the Henkel "Water Utility Industry" Program.

Drilling Industries and Tunnelling

The bentonite slurries used in modern hydro-shield tunnelling must be continuously regenerated and recirculated to the tunnelling operation.

Centrifuges operating in this environment are exposed to highly abrasive materials. The right wear protection for new equipment and the best repair solution are vital for reliable service.



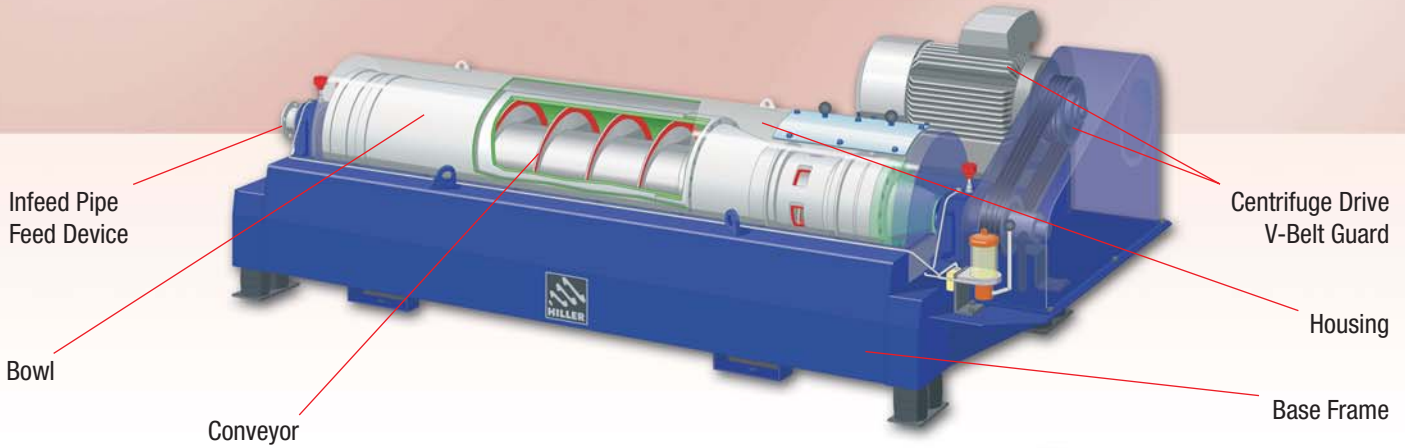
Renewable Energy

Biodiesel has excellent growth prospects in the market but needs a special refining process to achieve combustion performance comparable to conventional diesel.

Henkel adhesives and sealants provide ideal solutions for centrifuges operating in biodiesel and glycerine processing environments.



Loctite® Solutions for Centrifuge Maintenance



Bowl



Equipment / Component	Problem / Challenge:	Product / Solution
Bowl outside surface	Corrosion and chemical attack of the bowl outside surface	Coat the entire surface with: Loctite® Nordbak® 7255 Sprayable Ceramic Loctite® Nordbak® 7221 Chemical Resistant Coating
Bowl inside surface	Bond artificial turf or other attachments into the inside surface	Bonding of the artificial turf with: Loctite® Hysol® 9492 High Temperature – Multi Purpose Epoxy
Bowl wear bushing – centrifuge cake discharge	Bond the wear bushing / sintered tungsten carbide cylinder into the radial holes around the bowl	Bond the sintered tungsten carbide cylinder into the radial holes with: Loctite® Hysol® 9492 High Temperature – Multi Purpose Epoxy Loctite® Nordbak® 7228 Brushable Ceramic White
Bowl – centrifuge cake discharge hub	Protect the cake discharge hub against erosion and abrasion	Coat at areas subjected to erosion and abrasion with: Loctite® Nordbak® 7219 High Impact Wearing Compound
Bowl main bearings and headwall bearing	Prevent bearing spin Repair worn cylindrical shaft	Prevent bearing spin with: Loctite® 603 Retaining Compound (high strength, oil tolerant) Loctite® 641 Retaining Compound (medium strength, easy to dismantle) Repair worn cylindrical shaft with: Loctite® Hysol® 3478 Superior Metal
Bowl flange	Seal the flange surface of the bowl components (cylindrical and conical flange) Rebuild worn flange surface	Seal the flange surface of the bowl components with Loctite® 128068 Flange Sealant Rebuild the worn flange surface with Loctite® Hysol® 3478 Superior Metal
Bowl – complete assembly	Prevent loosening and corrosion of the bowl fasteners to ensure reliability of the gasket between the head wall, cylindrical bowl, conical bowl and bowl beach	Apply Loctite® Threadlocker to the fastener: Loctite® 243 or 248 Medium Strength Threadlocker Loctite® 2701 High Strength Threadlocker for stainless steel and plated fastener If threadlocking is not required use Loctite® Anti Seize for corrosion protection : Loctite® 8009 High Performance Anti Seize Loctite® 8023 Marine Grade Anti Seize

Conveyor



Equipment / Component	Problem / Challenge:	Product / Solution
Conveyor – complete surface	Repair corroded and worn conveyor hub and flights after chemical attack and erosion Protect the entire surface of the conveyor hub and flights	Coat the entire surface of the conveyor outside with: Loctite® Nordbak® 7227 / 7228 Brushable Ceramic White / Grey Loctite® Nordbak® 7226 Pneu Wear
Conveyor – flight and flight tips	Bond the ceramic flight tips onto the conveyor flights Fill up the gaps between the ceramic or tungsten carbide tips on the conveyor flights Fill up the gap between the conveyor tips and hub	Bond the Ceramic flight tips with: Loctite® Nordbak® Ceramic Tile Adhesive Fill up the gaps at the conveyor with: Loctite® Nordbak® 7222 Wear Resistant Putty
Conveyor – feed zone – feed zone exit ports	Bond the sintered tungsten carbide cylinder into the radial holes of the feed zone exit ports Erosion at the area of the feed zone exit ports (without sintered tungsten carbide cylinder)	Bond the sintered tungsten carbide cylinder with: Loctite® Hysol® 9492 High Temperature – Multi Purpose Epoxy Loctite® Nordbak® 7228 Brushable Ceramic White Erosion protection and repair of worn areas around the feed exit ports with: Loctite® Nordbak® 7219 High Impact Wearing Compound
Conveyor – chambers: feed – buffer – additive chamber	Seal the chambers Protect the inside of the feed chamber against erosion	Seal the chamber with: Loctite® 290 Wicking Grade Threadlocker Protect and repair the inside area of the feed chamber with: Loctite® Nordbak® 7219 High Impact Wearing Compound
Conveyor – bearing assembly and seals	Prevent bearing spin Prevent loosening and corrosion of the sleeve fastener Seal the flange between the bearing support and the seal cover	Retain the joint using Loctite® 603 (oil tolerant, high strength) or Loctite® 641 (medium strength, easy to dismantle) Retaining Compound Secure the sleeve fastener by using Loctite® Threadlocker Seal the flange between the bearing support and the seal cover with Loctite® 518 Flange Sealant



Infeed Pipe and Feed Device



Equipment / Component	Problem / Challenge	Product / Solution
Infeed pipe	Bond the infeed pipe with a shrink fit onto the flange of the centrifuge	Bond the infeed pipe with: Loctite® 640 Retaining Compound
Infeed pipe	Prevent corrosion and seizure of fasteners for infeed pipe and flange	Prevent corrosion by using: Loctite® 8023 Marine Grade Anti Seize
Infeed pipe and feed device	Seal the flange between infeed pipe and feed device	Seal the flange with: Loctite® 518 or Loctite® 128068 Flange Sealant
Infeed pipe and feed device	Prevent loosening and corrosion of the feed device fasteners	Apply Loctite® Threadlocker to the fasteners: Loctite® 243 or 248 Medium Strength Threadlocker Loctite® 2701 High Strength Threadlocker for stainless steel and plated fasteners

Base Frame



Equipment / Component	Problem / Challenge	Product / Solution
Base frame – bearing block	Repair worn bearing seat, inside of the bearing block after bearing spin	Bond the outer bearing ring into the bearing block with: Loctite® 648 or Loctite® 641 Retaining Compound depending on application and gap between the outer ring and the block
Base frame – bearing block and mounted components	Prevent loosening and corrosion of the bearing block and motor plate fasteners to ensure reliability of components mounted onto the base frame	Apply Loctite® Threadlocker to the fasteners: Loctite® 243 or 248 Medium Strength Threadlocker Loctite® 2701 High Strength Threadlocker for stainless steel and plated fasteners
Bearing frame – bearing block and mounted components	Prevent corrosion and seizure of base frame to centrifuge housing and bearing block alignment pins	Prevent corrosion by using: Loctite® 8023 Marine Grade Anti Seize Loctite® 8009 High Performance Anti Seize

Drive and V-Belt Guard



Equipment / Component	Problem / Challenge	Product / Solution
Mounting plate and drive	Prevent loosening and corrosion of the fastener for the mounting plate and drive	Apply Loctite® Threadlocker to the fasteners: Loctite® 243 or 248 Medium Strength Threadlocker Loctite® 2701 High Strength Threadlocker for stainless steel and plated fastener
V-belt pulley – drive	Ensure reliability of the parallel key at the V-belt pulley or repair worn keyways	Apply Loctite® 248 Threadlocker to eliminate any future wear of the key or keyway Rebuild and bond a parallel key into worn shaft using Loctite® 3478 Superior Metal
V-belt guard	Prevent loosening and corrosion of the V-belt guard fasteners	Apply Loctite® Threadlocker to the fasteners: Loctite® 243 or 248 Medium Strength Threadlocker Loctite® 2701 High Strength Threadlocker for stainless steel and plated fasteners

Housing



Equipment / Component	Problem / Challenge	Product / Solution
Upper and lower centrifuge housing	Seal the flange between the upper and the lower centrifuge housing	Seal the flange surface between the upper and lower centrifuge housing with: Teroson Terostat II
Upper housing and inspection covers	Seal between the inspections covers and the upper centrifuge housing	Seal the flange surface between the inspection cover and the upper housing with: Teroson Terostat II
Upper and lower centrifuge housing	Prevent loosening and corrosion of housing fasteners	Apply Loctite® Threadlocker to the fasteners: Loctite® 243 or 248 Medium Strength Threadlocker Loctite® 2701 High Strength Threadlocker for stainless steel and plated fasteners
Lower housing	Protect and repair the solid and the liquid output area of the lower housing	Coat the entire inner surface of the lower housing at the output area with: Loctite® Nordbak® 7227 / 7228 Brushable Ceramic Grey / White In case of high solid content use Loctite® Nordbak® 7219 High Impact Wearing Compound
Upper and lower centrifuge housing	Corrosion protection of the inner surface of the upper and lower centrifuge housing	Coat the entire inner housing surface with: Loctite® Nordbak® 7255 Sprayable Ceramic

Product List



	LOCTITE® SOLUTIONS	Product Detail
Polymer Composite	Loctite® Nordbak® 7218 Wearing Compound	Coarse particle, resists abrasion & corrosion
	Loctite® Nordbak® 7219 High Impact Wearing Compound	Coarse particle, resists impact & sliding abrasion
	Loctite® Nordbak® 7221 Chemical Resistant Coating	Protects against chemical attack
	Loctite® Nordbak® 7226 Pneu Wear	Fine particle, resists fine particle abrasion
	Loctite® Nordbak® 7227 Brushable Ceramic Grey	Fine particle, brushable protective coating
	Loctite® Nordbak® 7228 Brushable Ceramic White	Fine particle, brushable protective coating
	Loctite® Nordbak® 7229 High Temperature Pneu Wear	Fine particle, resists fine particle abrasion at high temperature
	Loctite® Nordbak® 7230 High Temperature Wearing Compound	Coarse particle, resists abrasion & corrosion at high temperature
	Loctite® Nordbak® 7234 High Temperature Brushable Ceramic	Fine particle, brushable protective coating at high temperatures
	Loctite® Nordbak® 7255 Sprayable Ceramic	Fine particle, sprayable protective coating for large surfaces
	Loctite® Nordbak® Ceramic Tile Adhesive	For bonding ceramic wear tiles to vertical, horizontal and overhead surfaces
Threadlocker	Loctite® 243 Threadlocker	Medium strength, liquid
	Loctite® 248 Threadlocker	Medium strength, semi solid
	Loctite® 2701 Threadlocker	High strength; liquid
	Loctite® 290 Threadlocker	Wicking grade
Pipe and Thread Sealing	Loctite® 55 Pipe Sealing Cord	Cord, post assembly adjustment
	Loctite® 542 Pipe & Thread Sealant	Fine pipe thread up to (R3/4), liquid
	Loctite® 577 Pipe & Thread Sealant	General purpose, gel
Gasketing	Loctite® 518 Flange Sealant	Formed in place;
	Loctite® 128068 Flange Sealant	Formed in place; slow curing, gel
Retaining	Loctite® 603 Retaining Compound	High strength, oil tolerant
	Loctite® 640 Retaining Compound	High strength, high temperature; slow curing
	Loctite® 641 Retaining Compound	Medium strength; allows dismantling
	Loctite® 648 Retaining Compound	High temperature, high strength
	Loctite® 660 Quick Metal Retaining Compound + Loctite® 7649 Activator	High strength; large gaps
Metal filled Epoxy	Loctite® Hysol® 3471 Metal Set S1	Steel putty
	Loctite® Hysol® 3472 Metal Set S2	Steel pourable
	Loctite® Hysol® 3478 Superior Metal	Ferro silicon filled, outstanding compression strength
Hysol Epoxy	Loctite® Hysol® 9464 Toughened Epoxy A&B	Gap filling, fast cure
	Loctite® Hysol® 9466 Toughened Epoxy A&B	Multi purpose
	Loctite® Hysol® 9492 High Temperature Epoxy A&B	Multi purpose, high temperature
Instant Bonding	Loctite® 401 Instant Adhesive	General purpose
	Loctite® 454 Instant Adhesive	General purpose, gel
	Loctite® 480 Instant Adhesive	Toughened; black
Lubrication Anti Seize	Loctite® 8009 Heavy Duty Anti Seize	Heavy duty
	Loctite® 8012 Moly Paste	Moly paste
	Loctite® 8023 Marine Grade Anti Seize	Marine grade
Maintenance Aid: Lubrication Oil	Loctite® 8040 Freeze & Release	Releases rusted, corroded and seized components; penetrating oil
	Loctite® 8201 Five Way Spray	General purpose
Cleaning	Loctite® 7063 Cleaner & Degreaser	General parts cleaner aerosol; solvent based
	Loctite® 7200 Gasket Remover	Removes cured gaskets
	Loctite® 7840 Cleaner & Degreaser	Large surface cleaner
	Loctite® 7850 Hand Cleaner	General purpose
Surface Preparation	Loctite® 7649 Activator	Activator with solvent
	Loctite® 7240 Activator	Solvent free activator; anaerobics
Sealing	Terostat-II	Permanently plastic gun-grade body sealant synthetic rubber



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The data contained herein are intended as reference only. Please contact your local Henkel Technical Support Group for assistance and recommendation on specifications for these products.