DRAGLINE

REPLACEMENT PARTS

BUCYRUS
MARION
P&H
PAGE

UDD MECHANICAL CONVERSIONS

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Hofmann Engineering Pty Ltd completely designed, manufactured and installed the mechanical drive for the UDD (Universal Dig & Dump) dragline.

Our concept provided a free-floating, alignment-free, shaft-mounted, modular gearbox that bolts to the side of the rope drum. This gearbox contains HofCarb carburised and precision ground gearing with a filtered oil recirculation system.

Being shaft-mounted and modular enables this gearbox to be pre-test run and changed out in under one shift without requiring any re-alignment.

OEM Design

Hofmann increased face width narrow gap

SWING RACK ASSEMBLIES

- ***Alloy Steel Forged*** Rack Rims Q&T to 330BHN Combined with fabricated construction.
- ***High performance racks*** with a unique heat treatment procedure that increases the hardness to 450BHN.
- ***Swing Pinions*** are full contour induction hardened.

INPUT MOTOR PINIONS

- ***Double Helical Hard Cut Narrow Gap.*** Case Carburised to 60-62HRC & finished to AGMA 12 quality.
- ***Single helical case hardened***. These are fitted with eccentric cartridges and spherical roller bearings. This assembly fits straight into the Bucyrus hoist or drag gear case bore. The eccentric cartridges enable simple mesh adjustment without having to re-bore the gear case.
- ***Quench & tempered*** to 360 BHN and cut to AGMA 10 quality as per OEM design.
- ***Carb*** Bearing Alignment Technology with Eccentric Cartridges can also be used on Bucyrus machines to give over a 200% improvement in bearing life.

Since 1969 Hofmann Engineering has provided specialist engineering services to Australia's industry leaders.

Quality Assurance accreditation by Bureau Veritas complements our total quality culture.

Our commitment to continuous quality-improvement touches every aspect of our products, services and customer support.

HOFMANN ENGINEERING PTY LTD

A.B.N 74 380 411 420
A.C.N 008 802 211
3 ALICE STREET,
BASSENDEAN, PERTH,
WESTERN AUSTRALIA 6054

Telephone: +61 8 9279 5522
Facsimile: +61 8 9279 9386
Internet: www.hofmann.net.au
Email: mail@hofmann.net.au

DRUM GEARS

- ***New Forge Fabricated*** Gears 330 to 360BHN precision cut to AGMA 10.
- ***Mechanically Re Rimmed*** Gears. Replace only the gear teeth and save time and money.
- ***Re Rimmed*** Gears. Remove old rim and weld new rim to hub with submerged arc full penetration weld.

INTERMEDIATE PINIONS

- ***Double helical zero-gap*** carburised to 60 HRC and precision ground to AGMA 12 quality.
- ***Conventional thru hardened*** to 360BHN and cut to AGMA 10 quality.
- Complete assemblies can be supplied with bearings fitted.

SELF ALIGNING PINONS

Hofmann Engineering makes a complete range of self-aligning pinions for dragline gearing. These provide 100% gear mesh contact in all modes of operation and overcomes the run out of the drum gear and gear case deflections.

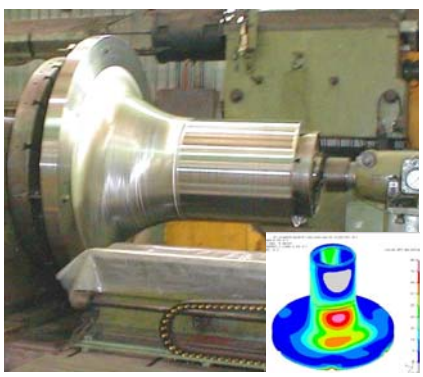
- ***Intermediate double helical zero-gap*** case hardened self-aligning pinions.

SWING & PROPEL SHAFTS

- ***New shafts*** of high alloy forged steel
- ***Repair Worn out*** splines and bearing Journals to as-new condition using a technically advanced, individual weld & Heat Treatment procedure.

SWING GEARING

- ***New Forge Fabricated*** Gears 330 to 360BHN precision cut to AGMA 10.
- ***Induction hardened*** to 56HRC and precision ground to AGMA 12 quality.
- ***Re Rimmed*** Gears. Remove old rim and weld new rim to hub with submerged arc full penetration welding.



CENTRE PINTLE

- ***Designed using FEA modeling*** to reduce magnitude of stress and reduce stress concentrations.
- ***New forged steel construction*** to overcome cast steel cracking problems.
- Forged steel centre pintle used on P&H 9020 in operation since 2002.

SHEAVES

- ***New cast steel*** full contour induction hardened to 55HRC for a case depth of 6mm.
- ***Repaired sheaves*** by full penetration submerge arc welding the worn groove and then induction hardening.

PRODUCT IMPROVEMENTS

ON REVERSE ENGINEERED PARTS.

- ***Co-Ordinate Measuring Machine*** is used to precision measure components.
- ***Metallurgical Laboratory*** to analyse chemistry, hardness & microstructure.
- ***Engineering Office*** with full CAD,CAM FEA and gear design software.

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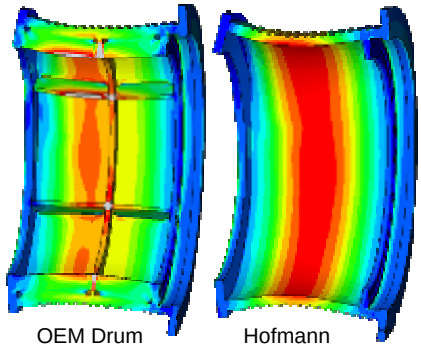
RACKS, RAILS, ROLLERS

- ***Swing Racks*** Forged fabricated design with High Alloy steel forged segment. Through hardened or induction hardened.
- ***Upper and Lower Rails*** Forged HofAlloy plate through hardened 340-360BHN and precision CNC machined.
- **Rollers** Forged through hardened 410-415BHN and precision CNC machined.



OEM Drum Hofmann Drum

1 ROPE DRUM DESIGN

- ***Finite Element Analysis*** has been conducted in order to eliminate the inherent OEM rope drum internal stiffener cracking problem.
- ***Hofmann Engineering Pty Ltd design*** removes all internal lateral stiffeners and increases the drum shell forging thickness to reduce stress.

2 ROPE DRUM MATERIAL

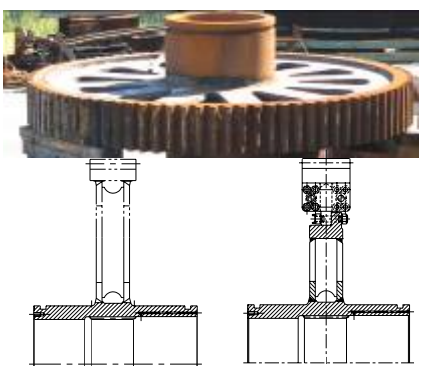
- ***Hofalloy2 Forged Plate*** has been specifically formulated by Hofmann Engineering Pty Ltd to accommodate industry requirements. The result is a Quench & Tempered high alloy steel suitable for induction hardening, machining and fabricating. Stocked quantities are maintained in order to reduce lead-times.

3 ROPE DRUM ROLLING

- The stocked Hofalloy forged plate rolled into a perfect cylinder using Hofmann Engineering Pty Ltd's, ***5000 ton Vertical Roll Press***.
- The above drum is 150mm thick 1900mm long and with an OD of 2947mm, in its rolling condition it is approx. 300 BHN.

4 ROPE DRUM MACHINING

- All Rope Drums are fully machined in house from the initial fabrication preparations right through to the cutting of the rope grooves, turning of the flanges and drill and tapping of the holes. This ensures that complete control of the project is maintained and the highest standards of quality are guaranteed.



P&H 9020 PROPEL GEAR

- ***New*** or ***Reclaimed*** hub.
- ***Reversible gear rim*** *on the same side hub* thus doubling the life of the gear.
- **Mechanically Fastened Rim** can be replaced independently of hub.
- **Gear Rim** Forge fabricated, through hardened gear 330 to 360BHN, precision cut to AGMA 10.

5 INDUCTION HARDENING

- ***New Forge Steel*** drums fully fabricated using full penetration welds and then full contour induction hardened to 55 HRC for a case depth of 6mm.
- ***Worn Drums.*** All cracks removed before building up with 30mm of submerged arc welds and then induction hardening.

6 ROPE DRUM CLAMPS

- Unique design developed by Hofmann Engineering Pty Ltd.
- Clamp is integrated into the rope drum centre flange.
- Precision machined.
- Case Hardened.
- Optimised for weight.
- Greater clamping force.

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MARION 8050/8200 HOIST ARRANGEMENT

- ***Modular Design*** allows quick and easy change out.
- ***Rigid construction*** reduces distortion and gear misalignment.
- ***Interchangeability*** between gearboxes and gearing.
- ***Self-aligning*** technology maintains 100% contact during floor deflection.

GEARBOX MODULE

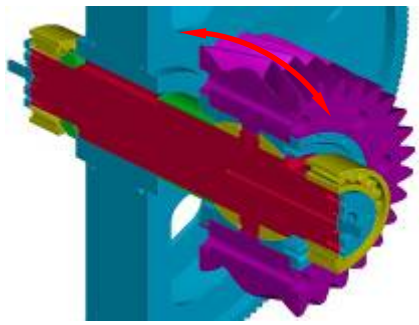
- ***Maintenance*** and testing of gearbox can be done in a clean workshop rather than inside the dragline.
- ***Installation*** requires less skill and accuracy with the self aligning pinion.

SHAFT MOUNTED GEARBOX

- ***Modular Design*** allows quick and easy change out in one shift.
- ***Rigid Construction*** reduces distortion and gear misalignment.
- ***Free Floating*** isolated from dragline floor distortion.
- ***Alignment Free*** gearbox bolts directly to the hoist drum.
- ***Gearing*** forged, HofCarb carburised to 60-62HRc, precision ground to AGMA 12.
- ***Spherical Roller Bearings*** increase life.
- ***Oil Lubrication*** ISO 320cst supplied to gear meshes and bearings.

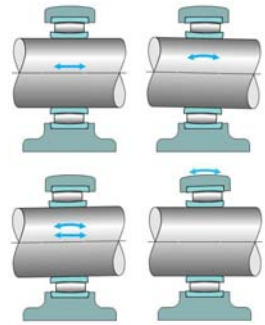
INTERMEDIATE ASSEMBLY

- ***Intermediate Gear*** Forge fabricated, staggered tooth, double helical, through hardened 330 to 360BHN, precision cut to AGMA 10 quality.
- ***Intermediate Shaft*** Forged, spline coupling carburised to 60-62HRc, Precision cut to AGMA 12 quality.
- ***CARB Bearings*** increase bearing life by up to 200%.



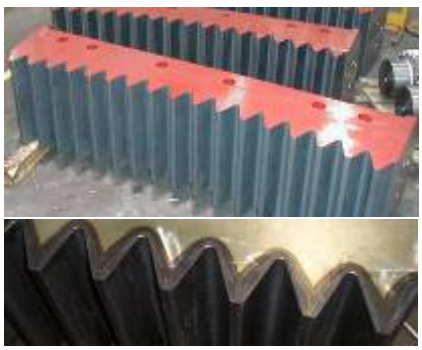
SELF-ALIGNING PINION

- ***Self-aligning Gearing*** technology maintains 100% contact in operation.
- ***Double helical zero-gap*** 19” face width, carburised to 60-62HRc and precision ground to AGMA 12 quality.
- ***Spherical Bearings*** carburised to 60-62HRc and lapped for 100% contact, oil lubricated.



CARB BEARINGS

- ***Axial Displacement*** tolerated.
- ***Angular Misalignment*** tolerated.
- Combined Axial Displacement and Angular Misalignment tolerated.
- ***Bearing Housing Distortion*** tolerated.
- ***Oil lubricated*** for increased bearing life.

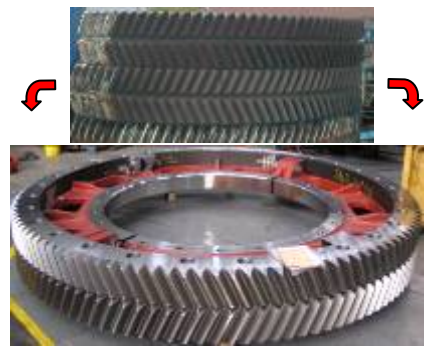


SWING RACKS

- ***Forge Fabricated*** construction with High Alloy steel forged segment.
- ***Induction Hardened*** full contour induction hardened to 45-49HRc 8mm thick case.
- ***Impact Resistant Core*** hardness of 280-310BHN.

SWING PINIONS

- ***Forged*** High Alloy steel precision ground to AGMA12.
- ***Induction Hardened*** full contour induction hardened to 54-58HRc 8mm thick case.
- ***Impact Resistant Core*** hardness of 280-310BHN.



MECHANICAL RE-RIM GEAR

- ***Spider*** Gear teeth removed from OEM Cast bullgear to form Bullgear Spider.
- **New Forged Gear Rims** 19” face width narrow gap, 330-360BHN, precision cut to AGMA 10.
- ***Mechanically Fastened*** rim to spider.
- ***Overlapping Split Lines*** increasing strength.

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