



Deton Engineering – Risk Assessment

Snatch Block & Cross Rig Pulley



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1. Introduction to the Deton Group of Companies

Deton Engineering (Pty) Ltd., was established in 1973 by Hercules du Preez, the first product being the Hercules Jack for mining applications.

From this date, Deton Engineering has specialised in the production of products with safety and efficiency in mind, especially for applications in the Mining and Industrial industries. The Deton Group is continuously focussed on the monitoring and improvement of production, reduced downtime, improved safety, and the servicing and support of our products which has made Deton a leader in its field.

Within the Deton Group of Companies are the following companies whose processes are incorporated in our Quality Management System –

Deton Engineering (Pty) Ltd. – Deton Engineering manufactures Jacks, Rail Benders, Snatch Blocks, Pulleys, Hercules Jack and related products for the Mining and Industrial markets.

Wearresist SA (Pty) Ltd. – Wearresist manufactures, sells and applies a range of wear-resistant coatings, based upon a resin matrix with a 90% alumina content, targeted at the Mining and Industrial markets.

Ceramic Linings (Pty) Ltd. – Ceramic Linings manufacture and market alumina ceramic tiles for high abrasion, high impact and high temperature applications. The products compliment the Wearresist products and can be used in conjunction in such environments.

Cutlass Products (Pty) Ltd. – Cutlass manufacture and market a range of corrosion and abrasion resistant products, aimed at the general Industrial market.

Densit S.A. (Pty) Ltd. – Densit supplies and applies a range of branded wear-resistant products to the general industrial markets, under license from Densit Norway.





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2. Details of Deton Engineering

This Risk Assessment refers to our Alberton based Head Office and Workshops, the details of which are -

6 Barium Street
Alrode Ext. 7
Alberton

P.O. Box 123920
Alrode
1450

Telephone: (011) 908-1922 Facsimile: (011) 864-5386

E-mail: info@deton.co.za

Website: www.deton.co.za

3. Scope of Quality Management System (SABS ISO 9001:2008)

The manufacture and repair of Hercules Jacks, Snatch Blocks, Snatch Block & Cross Rig Pulleys, mining equipment, rail benders, pipe splitters, railway rolling stock and re-railing equipment for mining, agriculture, postal and transport industries, the manufacture of corrosion-coating resins and wear-resistant linings, including the Cutlass range of epoxy products.

4. Risk Assessment Team

As a result of Deton Engineering's commitment to our customers, this Risk Assessment was conducted in order to ensure that all potential health, safety and related hazards are identified, the risks evaluated and controls implemented to ensure that the products are safe and without risk to our customers, as far as is reasonably practicable.


This Risk Assessment was compiled by the following team -

HP du Preez
A du Preez
W Germishuizen
I Gasa
J Downward
S Barley

Chairman
Managing Director
Sales & Marketing
Production Foreman
Production & Operations
Quality & Risk



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5. Excerpt from Mine Safety Act (Act 29 of 1996)

Section 21 of the Mine Safety Act states the following -

21.(1) Any person who -

- (a) designs, manufactures, repairs, imports or supplies any article for use at a mine must ensure, as far as reasonably practicable -
 - (i) that the article is safe and without risk to health and safety when used properly and
 - (ii) that it complies with all requirements in terms of this Act;


21.(2) Any person who bears a duty in terms of sub-section (1) is relieved of that duty to the extent that is reasonable in the circumstances, if -

- (a) that person designs, manufactures, repairs, imports or supplies an article for or to another person; and
- (b) that person provides a written undertaking to take specified steps sufficient to ensure, as far as reasonably practicable, that the article will be safe and without risk to health and safety when used properly and that it complies with all prescribed requirements





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6. Scope of Risk Assessment

The scope of this Risk Assessment is limited to the Deton Engineering Snatch Block & Cross Rig Pulleys and their application in a mining environment.

The objective of this Risk Assessment is to, as far as is reasonably practicable -

- identify all potential health, safety and related risks that the Snatch Block & Cross Rig Pulley could pose to the end-user
- measure the level of risk of the identified risks
- to recommend controls to alleviate or minimise the risks

The aim of this Risk Assessment is to provide end-users with detailed information that will permit them to use the snatch Block & Cross Rig Pulley in a manner that is safe and provide optimal utilisation.





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7. Format of Risk Assessment

The Risk Assessments are reflected in tabular format, with the specific aspects listed under the following main headings -

Potential Hazard - what could go wrong?

Consequences & Impact - what could happen if the instance occurred?

Recommendations & Controls - what measures are in place or should be taken?

The aspects are then rated in terms of -

Likelihood (What are the chances of the incident occurring, probability?)

LIKELIHOOD

Most likely
 Highly likely
 Likely
 Unlikely
 Highly unlikely

| Index Value |
|-------------|
| 5 |
| 4 |
| 3 |
| 2 |
| 1 |

Result

Risk (What level of risk/element of danger would this incident expose you to?)

RISK

Very high risk
 High risk
 Medium risk
 Low risk
 Very low risk

| Index Value |
|-------------|
| 5 |
| 4 |
| 3 |
| 2 |
| 1 |

Result

Severity (What could the severity of this incident be in terms of injuries, damage)?

SEVERITY

Extremely severe
 Quite severe
 Severe
 Not too severe
 Negligible

| Index Value |
|-------------|
| 5 |
| 4 |
| 3 |
| 2 |
| 1 |


Result

From the above results, the "Risk Result" is tabulated as follows -

$$\text{RISK RESULT} = \text{LIKELIHOOD} \times \text{RISK} \times \text{SEVERITY}$$



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7. Format of Risk Assessment (cont.)

The figure obtained (the Risk Result) is then classified as follows -

- 61 + High risk requiring immediate corrective action
- 39 - 60 High risk requiring corrective action (identified in RED)
- 21 - 40 Substantial risk with corrective action needed
- 6 - 20 Possible risk, must be brought to people's attention
- 5 Risk tolerable

This is reflected as "RR" on the accompanying Risk Assessment Charts.





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8.1 Risk Assessment - Equipment Problems

| ITEM | POTENTIAL HAZARD | CONSEQUENCES & IMPACT | RATINGS | | | | RECOMMENDATIONS and CONTROLS |
|------|--|--|---------|---|---|----|---|
| | | | L | R | S | RR | |
| 1 | Missing, broken or bent components (e.g. split pins or shackle pins) | <ul style="list-style-type: none"> Snatch Block or Cross Rig cannot operate efficiently, Side Plates can be pulled open, Shaft Nut can shear from body - EFFICIENCY, INJURY and/or DEATH | 1 | 3 | 4 | 12 | <ul style="list-style-type: none"> Check all components and fasteners are present and in good condition Segregate any Snatch Blocks or Cross Rig Pulleys with missing or broken fasteners Supervised installation of the equipment by trained staff Send all items for repair to Deton to ensure product integrity maintained |
| 2 | Cheek plates and/or Shackles are worn | <ul style="list-style-type: none"> Snatch Block cannot operate efficiently, Scraper cables can be damaged, Shackle will eventually disintegrate due to friction, causing Snatch Block to dislodge - EFFICIENCY, INJURY and/or DEATH | 1 | 3 | 4 | 24 | <ul style="list-style-type: none"> Regularly inspect condition of Cheek Plates and Shackles Segregate any Snatch Blocks or Cross Rig Pulleys with missing or broken fasteners Send all items for repair to Deton to ensure product integrity maintained |



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| ITEM | POTENTIAL HAZARD | CONSEQUENCES & IMPACT | RATINGS | | | | RECOMMENDATIONS and CONTROLS |
|------|-----------------------------------|--|---------|---|---|----|--|
| | | | L | R | S | RR | |
| 3 | Shackle Pins deformed or missing | <ul style="list-style-type: none"> Snatch Block and/or Cross Rig Pulley cannot operate efficiently, Side Plates can pull apart and Shaft Nut can shear from from body - EFFICIENCY, INJURY and/or DEATH | 2 | 3 | 4 | 24 | <ul style="list-style-type: none"> Regularly inspect condition of Cheek Plates and Shackles Segregate any Snatch Blocks or Cross Rig Pulleys with missing or broken fasteners Do not use any item other than the supplied Latch Pin to secure the Snatch Block Send all items for repair to Deton to ensure product integrity maintained |
| 4 | Sheave Wheels are worn | <ul style="list-style-type: none"> Snatch Block cannot operate efficiently, Scraper Cable can be damaged - EFFICIENCY, INJURY | 2 | 2 | 2 | 8 | <ul style="list-style-type: none"> Regularly inspect condition of Cheek Plates and Shackles Segregate any Snatch Blocks with worn Sheave Wheels Send all items for repair to Deton to ensure product integrity maintained |
| 5 | Sheave Wheel does not turn freely | <ul style="list-style-type: none"> Bearing is damaged, friction from the Scraper Cable will render the Snatch Block inoperable - EFFICIENCY, INJURY | 2 | 2 | 2 | 8 | <ul style="list-style-type: none"> Regularly inspect Sheave Wheel for free movement Segregate any Snatch Blocks with seized or damaged Sheave Wheels Send all items for repair to Deton to ensure product integrity maintained |



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8.2 Risk Assessment - Installation Problems

| ITEM | POTENTIAL HAZARD | CONSEQUENCES & IMPACT | RATINGS | | | | RECOMMENDATIONS and CONTROLS |
|------|---|---|---------|---|---|----|--|
| | | | L | R | S | RR | |
| 1 | Anchor securing Snatch Block/Cross Rig Pulley becomes loose | <ul style="list-style-type: none"> In response to the pulling force, the Snatch Block will crash towards the Scraper Winch, with the potential for severe injury from either the Snatch Block or the Cable – EFFICIENCY, INJURY and/or DEATH | 3 | 3 | 4 | 36 | <ul style="list-style-type: none"> Holes are provided on the Shackle brace of the Deton Snatch Block for the installation of additional safety chains – ensure that they are used Always ensure that the Snatch Block/ Cross Rig Pulley is anchored by at least 3 separate eyebolts (if chain operation, chain must be anchored similarly) Always ensure that an additional Safety Chain is present Installation by trained staff Regular inspection by trained staff |
| 2 | Swivel Pin between the two Pulleys of the Cross Rig breaks | <ul style="list-style-type: none"> The Cross Rig Unit separates into two separate Snatch Blocks – EFFICIENCY, INJURY | 1 | 2 | 3 | 6 | <ul style="list-style-type: none"> Inspect the Swivel Pin regularly using trained staff Never use the separate Pulleys of the Cross Rig Unit as a Snatch Block at the return end of a Scraper Cable Installation by trained staff Regular inspection by trained staff |



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| ITEM | POTENTIAL HAZARD | CONSEQUENCES & IMPACT | RATINGS | | | | RECOMMENDATIONS and CONTROLS |
|------|---|--|---------|---|---|----|---|
| | | | L | R | S | RR | |
| 3 | Shackle is not fully locked into position | <ul style="list-style-type: none"> Snatch Block/Cross Rig Pulleys cannot operate efficiently, the Side Plates can be pulled apart and the Shaft Nut sheared from the Snatch Block body, with the potential for serious injury - EFFICIENCY, INJURY and/or DEATH | 3 | 3 | 4 | 48 | <ul style="list-style-type: none"> Segregate any Snatch Blocks or Cross Rig Pulleys with missing or broken fasteners Do not use any item other than the supplied Latch Pin to secure the Snatch Block to the Eye Bolt or Chain Send all items for repair to Deton to ensure product integrity maintained The Deton Self-Elevating Snatch Block can be fitted with a 'Boomerang' shackle which will allow the Snatch Block to slip out of the Anchor Points and fall to the ground if not properly secured Installation by trained staff Regular inspection by trained staff |

Designed by J.H. [Signature]