

TEST CERTIFICATE : ROCPROPS MK1, MK2, MK3

TEST OF FIVE RP1820B ROCPROPS

Date of Test: 25/07/2016


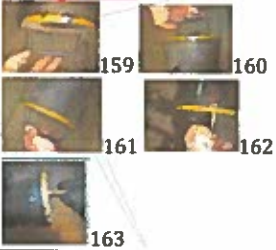
SUBMITTED TO


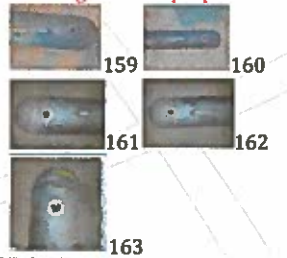
Anglo Gold Ashanti, Sibanya, Goldfields

INTRODUCTION

We have a rigorous testing program that is based on the statistical selection of products (Project number: SIM04 02 05) that are produced and tested in our testing facility. The Load Deformation graph for the test include a portion of Static behavior of each product being tested in the facility for every 10 products a standard deviation graph is included. Furthermore before the testing is done the product is taken apart and thoroughly checked according to the specifications (also listed below in document) to ensure that there are no deviations or damage to the individual components of the product.

Test Report

Photos	Description	Specification	Comment
<p>Cupseal MK1</p> 	<p>When product was taken apart, cup seals was measured to see if they were up to spec and see if while assembled they did not get damaged and that the welding on endplate is sufficient</p>	<p>Tears, Surface finish O/D top - min 140.5mm - max 142.5 O/D bottom - min 144.5mm - max 145.5mm Height - min 43.5mm - max 44.5mm</p>	<p>Everything is in spec and no damage was found</p>
<p>Flaring of MK1</p> 	<p>Flaring was then tested with a tool that measures the depth and the inside diameter of the tube. As well the wall thickness of the tube.</p>	<p>Checked with cone gauge to ensure that depth and inside diameter is correct.</p>	<p>Flaring was checked and was correct</p>

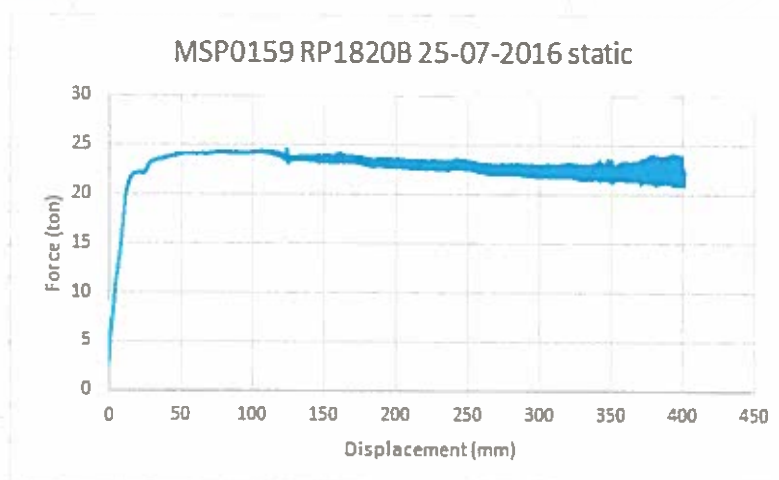
<p>Cone on MK 1 prop</p> 	<p>The cone was checked to see if it was according to specifications and if there was no deviations.</p>	<p>Correct height Wall thickness Mk1 min 9.3mm – max 9.7mm O/D & I/D of cone Mk1 – i/d min 142.5mm – max 143.5mm, o/d min 161.5mm max 162.5mm Inside teeth Teeth “v” shaped; wall thickness with teeth – min 10.5mm max 10.7mm</p>	<p>Cone was checked and was found according to spec.</p>
<p>Welding on MK1 prop</p> 	<p>The dome area, nozzle and handle was checked to see welding was correct and to check if handle and nozzle positioning is correct.</p>	<p>Welding Mk1 prop on dome, nozzle and handles are sufficient. I/D of nozzle min 16.0 max 16.1mm Lip min 6.5mm max 7.5mm</p>	<p>Welding was found to sufficient</p>

Test Results

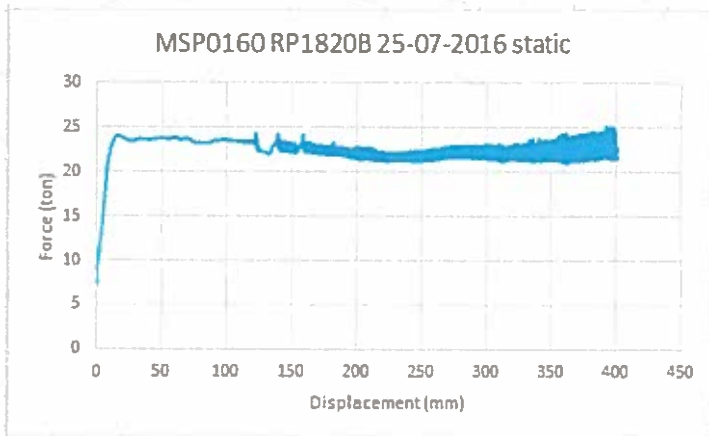
Table 1: Test number, cone sizes and steel material certificates

Specimen number	Cone specs	Certificate number	YS (MPA) 0.2%	TS (MPA)	Yield/Tensile ratio	EL 050 (mm) %
MSP0159	9.60; 10.04 9.83; 9.84	HL13255	301	438	0.69	32
MSP0160	9.98; 10.38 9.79; 9.77	HC13400	308	437	0.70	33
MSP0161	9.99; 10.08 9.82; 9.78	HC13397	309	426	0.73	33
MSP0162	9.82; 10.08 9.55; 9.85	HC13296	295	413	0.71	35
MSP0163	9.56; 9.63 9.67; 9.67	HL13255	301	413	0.71	32

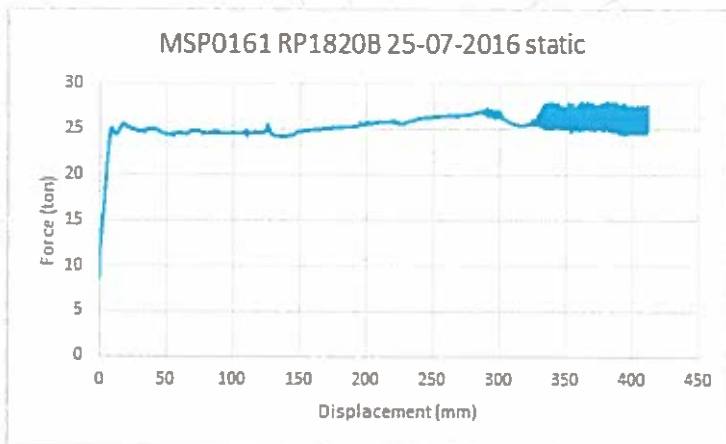
Test 1



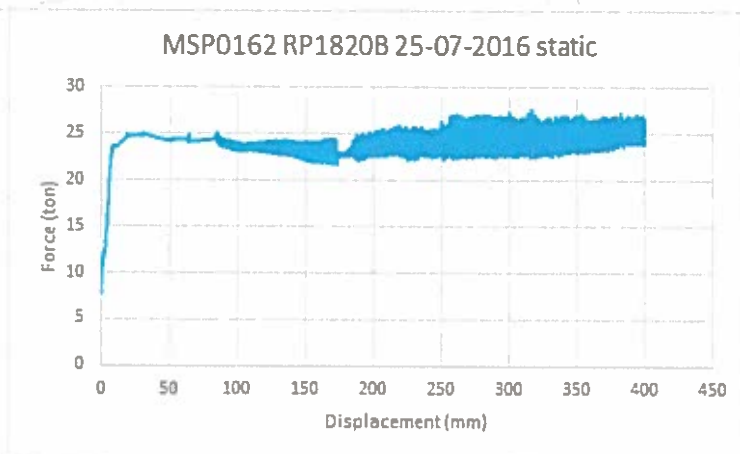
Test 2



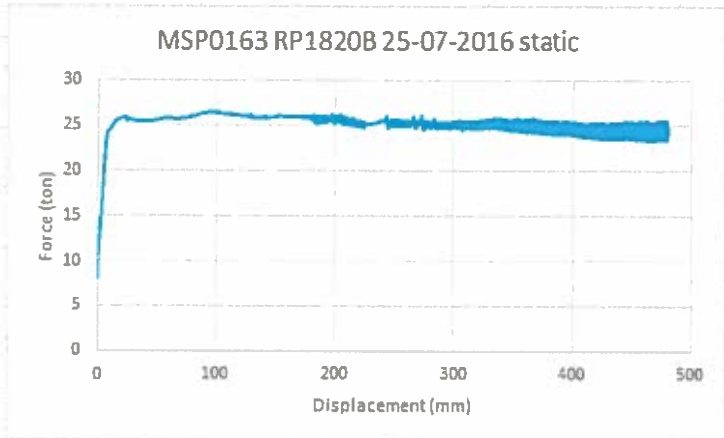
Test 3



Test 4



Test 5

**Conclusion**

As stated in above document the individual components of the product/products were measured and checked to see if they were to specifications and there's no deviations found, after the complete product was then installed into the testing machine and was tested according to testing procedures.

The products tested conformed to the original specifications as per design and deforms under load specifications in the testing procedure.

Testing Officer.....H Els

Only the original signed report must be
Regarded as the official document.

R&D Engineer.....C Nissen