

# TEST CERTIFICATE : ROCPROPS MK1, MK2, MK3

## TEST OF FOUR MK3 RP2520C ROCPROPS

Date of Test: 01/08/2016



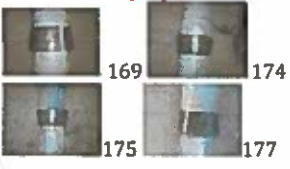
### SUBMITTED TO

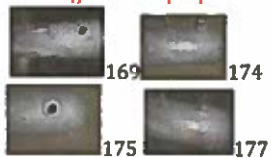
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### INTRODUCTION

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><b>Cupseal MK3</b></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><b>Tears, Surface finish</b>  <b>O/D top – 129.9mm (+2/-1)</b>  <b>Height 44mm (+/-0.5)</b></p>	Everything is in spec and no damage was found
<p><b>Flaring of MK3</b></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.	Checked with cone gauge to ensure that depth and inside diameter is correct.	Flaring was checked and was correct
<p><b>Cone on MK3 prop</b></p> 	The cone was checked to see if it was according to specifications and if there was no deviations.	<p><b>Correct height</b>  <b>Wall thickness 10.5mm (+0.2/-0)</b>  <b>O/D &amp; I/D of cone Mk2 – 131mm (+/-0.5)</b>  <b>Inside teeth: Teeth "v" shaped; wall thickness with teeth – 11.5mm</b>  <b>Gap- 12mm (+2/-1)</b></p>	Cone was found to be in spec.

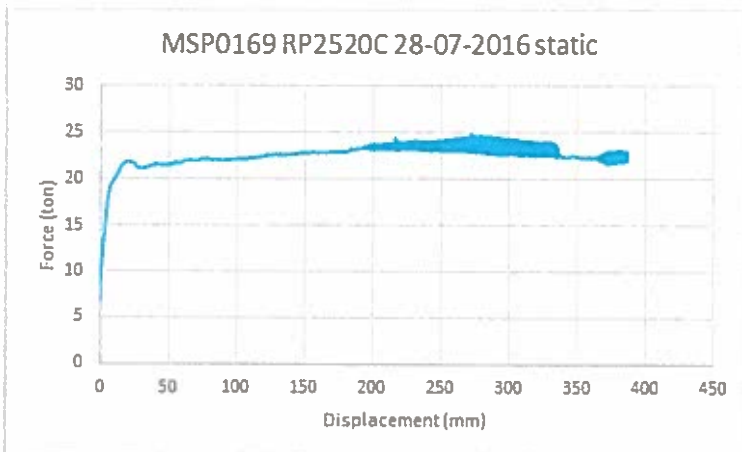
<p><b>Welding on MK3 prop</b></p> 	<p>The dome area, nozzle and handle was checked to see welding was correct and to check if handle and nozzle positioning is correct.</p>	<p>Welding Mk2 prop on dome, nozzle and handles are sufficient.  <i>I/D of nozzle</i> min 16.0 max 16.1mm  <i>Lip</i> min 6.5mm max 7.5mm</p>	<p>Welding was found to be sufficient</p>
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## Test Results

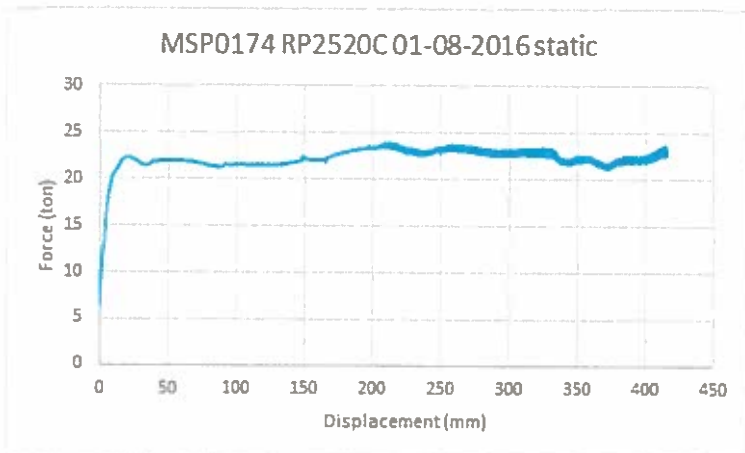
### Material test results

Specimen number	Cone specs	Certificate number	YS (MPA) 0.2%	TS (MPA)	Yield/ Tensile ratio	EL 050 (mm) %
MSP0169	9.55; 10.10 10.03; 9.94	HL06182	417 431	509 514	0.82 0.84	32 35
MSP0174	10.50; 10.56 10.53; 10.85	HL06182	417 431	509 514	0.82 0.84	32 35
MSP0175	10.38; 10.34 10.43; 10.56	HL06182	417 431	509 514	0.82 0.84	32 35
MSP0177	10.20; 10.31 10.34; 10.63	HL06182	417 431	509 514	0.82 0.84	32 35

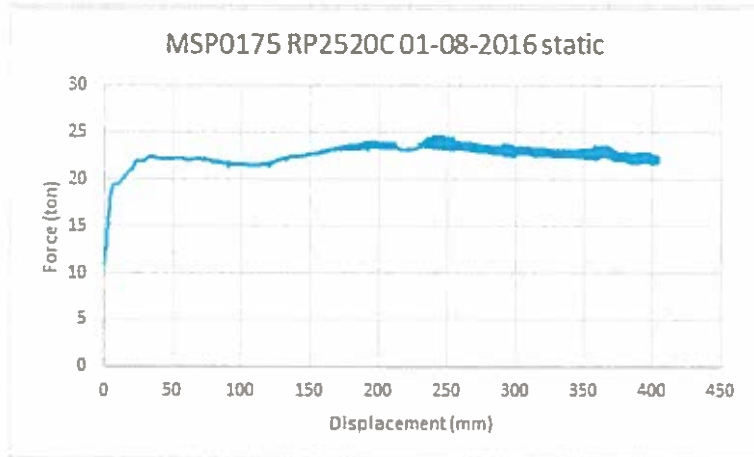
### TEST 1



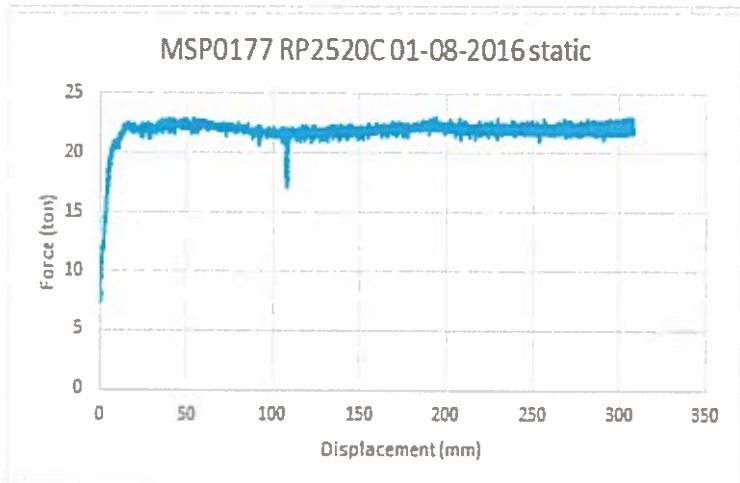
### TEST 2



Test 3



Test 4



**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.

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

Testing Officer.....H Els  
R&D Engineer.....C Nissen