Service Report

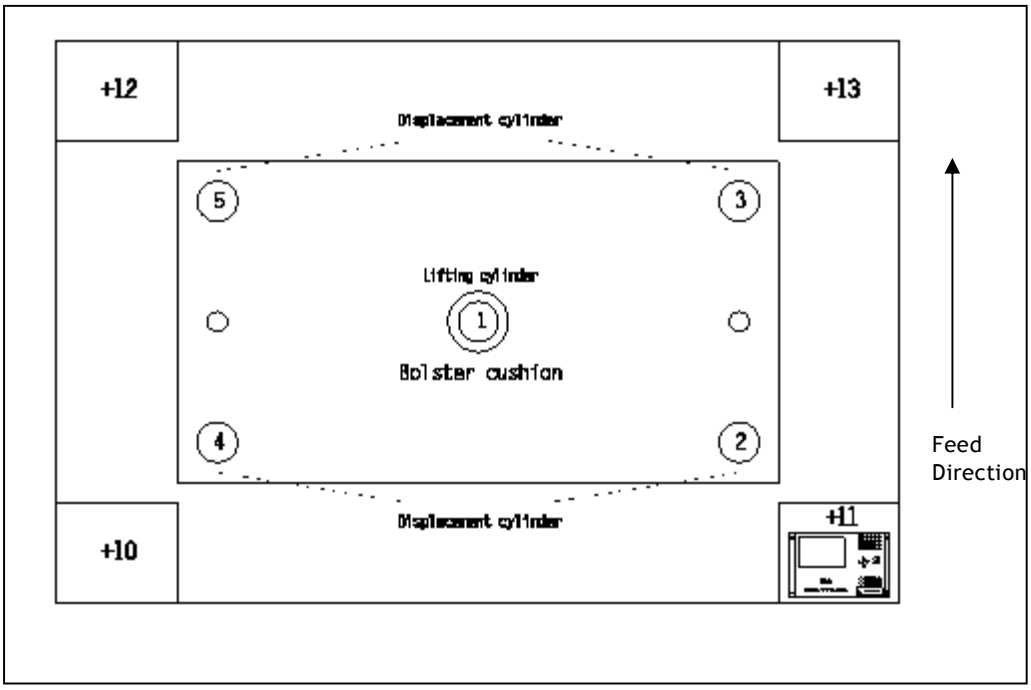
Customer: Siemens
Location: Jaguar Land-rover
Plant Reference: Wiengarten VK2000
Engineer: Chris Neary / Mark Collyer

Job Number: SPE 047
Order No: C1190-002

Date: 18/12/09

Task:
Log bed cushion pressure response when running in curve and pre-acceleration modes.

Cushion layout:



Inspection:

Cushion cylinders.

4 High resolution pressure transducers connected to system test points M7, 1 per cushion cylinder.

Lifting cylinder.

2 high resolution pressure transducers attached to lift cylinder at the following points
=12-M2 and =12-M3, an un-calibrated linear transducer was also attached to the underside of the cushion in order to give a positional reference to the pressure values.
Input signals are recorded to PC via dedicated data logging units.
Extracts from logging results will be used to illustrate cushion functions with full graphs attached at the end of report.

Cushion Settings.

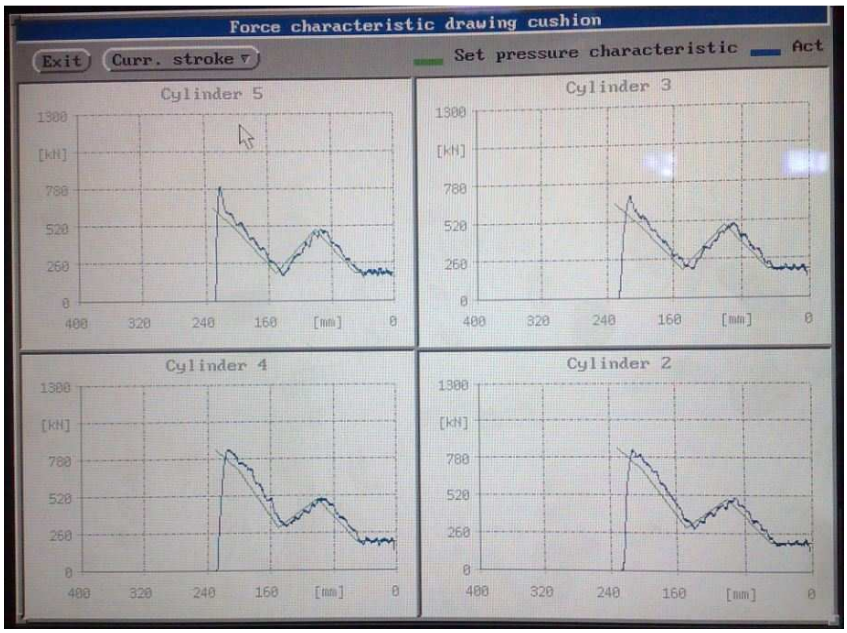
The following measurements were taken on 18-12-2009 with Job 8-6H52 27847 LH Freelander Body Side in press, with cushion data as below.
Curve function enabled, with transitions requested ever 50 mm. values chosen are all below normal tool parameters in order to prevent possible tooling damage during trials.
Cushion enable on down-stroke positions on= 68 degrees off =182 degrees.
Stroke = 230 mm

Position (mm)	Cylinder 2 target kN	Cylinder 3 target kN	Cylinder 4 target kN	Cylinder 5 target kN
----------	850	650	850	650
200	700	500	700	500
150	300	200	300	200
100	500	500	500	500
50	200	200	200	200

Cushion response with curve function enabled.

Several test strokes where performed using settings from above.

Cushion response trace from press cushion control system.



Cushion response trace from data logger

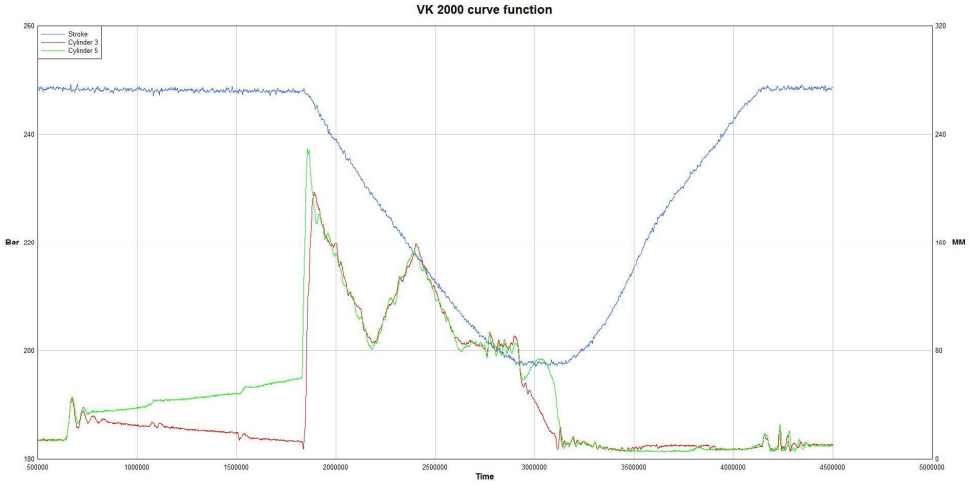
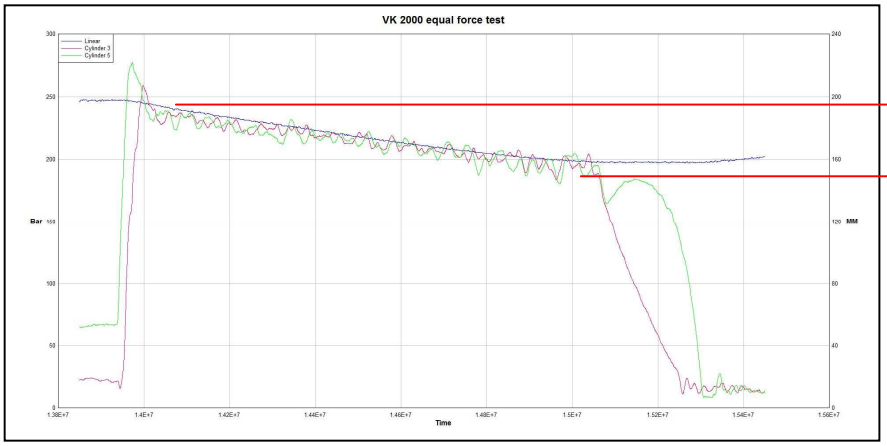


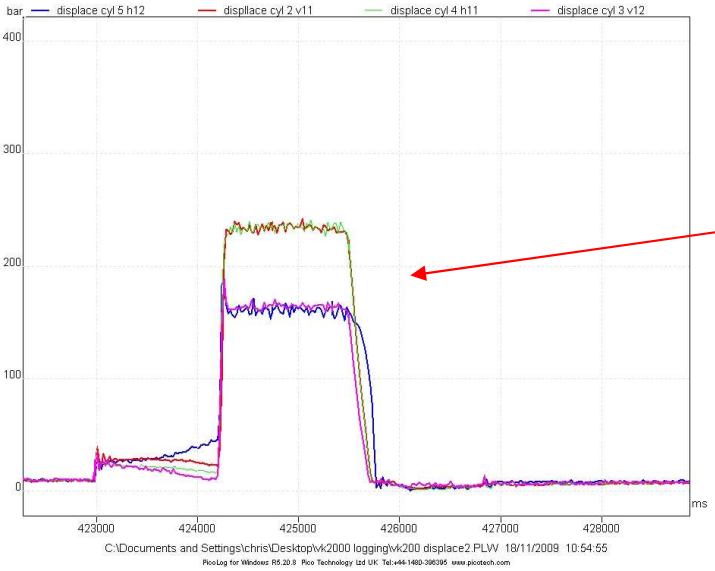
Fig 1.0 Cushion response with curve function enabled

Results for curve function.

Cushion response to the requested target values was very good, as noted in the previous report there is still a problem with the response of cylinder 5.
We also logged cushion response with all cylinders set to the same target force as we have been unable to check this prior to this test, From this check we can see that target force is not maintained throughout the stroke, instead we see a reduction in force of about 17% this most likely due to features within the tooling as the previous test using a different tool produced better results. This can only be proven by the use of loading blocks and load spreading plates but should be discussed with the customer prior to buyoff protocols being agreed.



VK 2000 with constant force target showing 17% reduction in force.



Bed cushion with constant force target from previous test

Cushion response with Pre-acceleration function enabled.

Cushion Settings.

Pre acceleration function enabled, with tool mass set at 14 tonnes. Cushion target force values chosen are all below normal tool parameters in order to prevent possible tooling damage during trials.
Cushion enable on down-stroke positions on=68 degrees off =182 degrees.
Stroke = 230 mm
Actual tooling weight = 13 tonnes + setting pins

Position (mm)	Cylinder 2 target kN	Cylinder 3 target kN	Cylinder 4 target kN	Cylinder 5 target kN
----------	650	650	650	650

Intended Function.

From information contained in the press operating manual states that the proportional valves will be opened by about 20%, this function is activated by cushion enable on down-stroke cam. The cam should be set to activate approx 50mm before die contact.
We checked these details with the operator before commencing the test as this function is not used with any of the current tooling.

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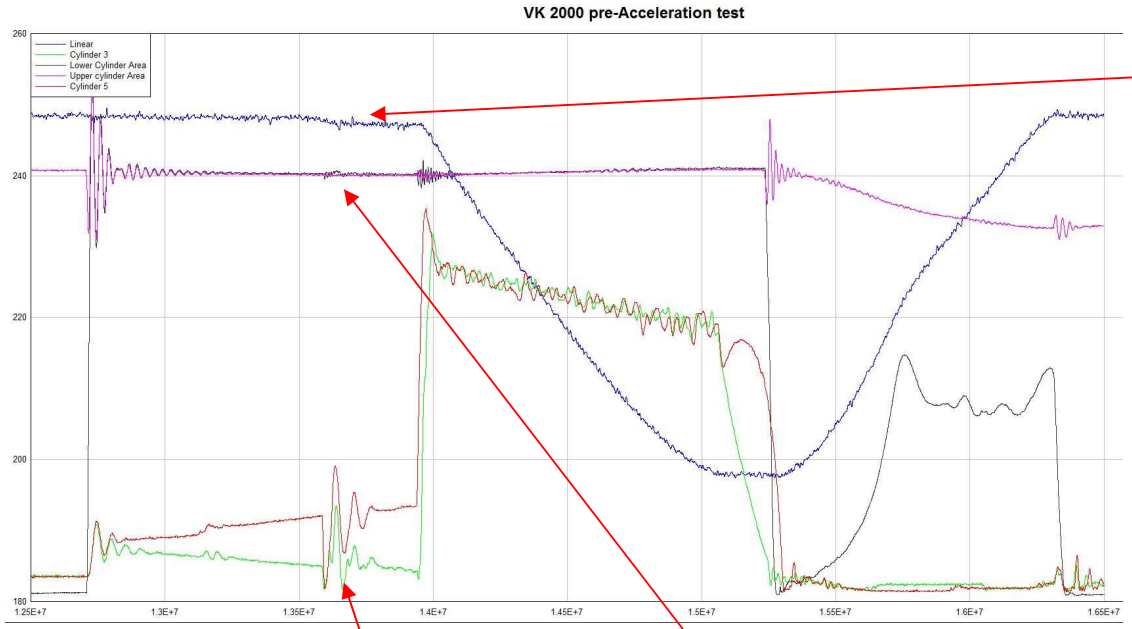

Approx 3mm of travel

Pressure build up in cylinders

Slight increase in upper cylinder area pressure

Results for Pre-Acceleration tests.

During testing of this function there was no visible movement of the bed cushion. Analysis of the logging traces showed a movement of approx 3mm.
Effectively this function is not working.
Following discussions with the machine operator it became apparent that this function has never been used on this press.

Recommendations.

Discuss requirement for Pre – Acceleration function with customer.
Problem with cylinder 5 must be resolved prior to start of upgrade programme.

Figures.

1.0 Cushion with curve table activated
2.0 Cushion with Pre – Acceleration function activated
3.0 Cushion equal force checking

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Fig 1.0

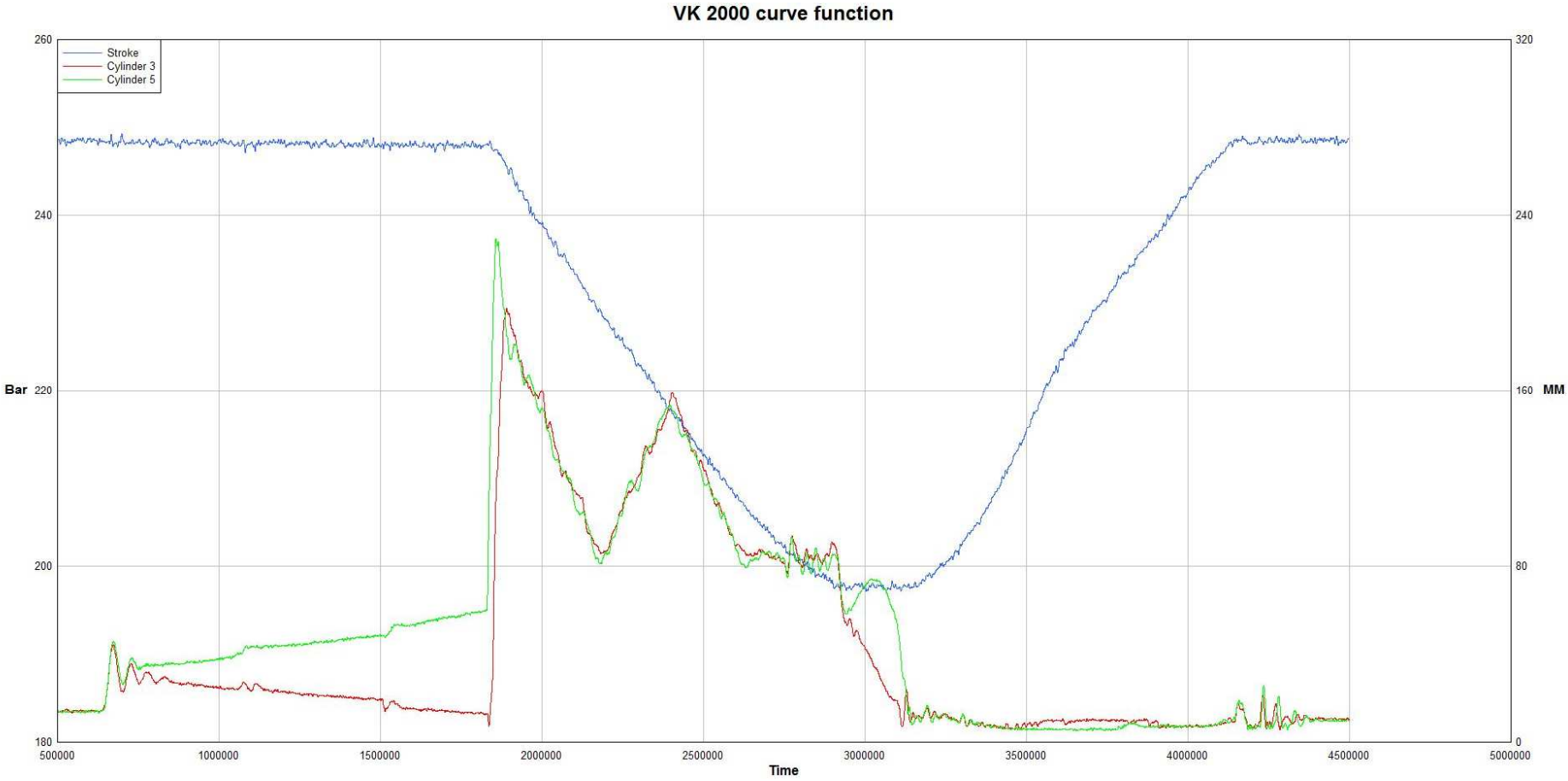

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Fig 2.0

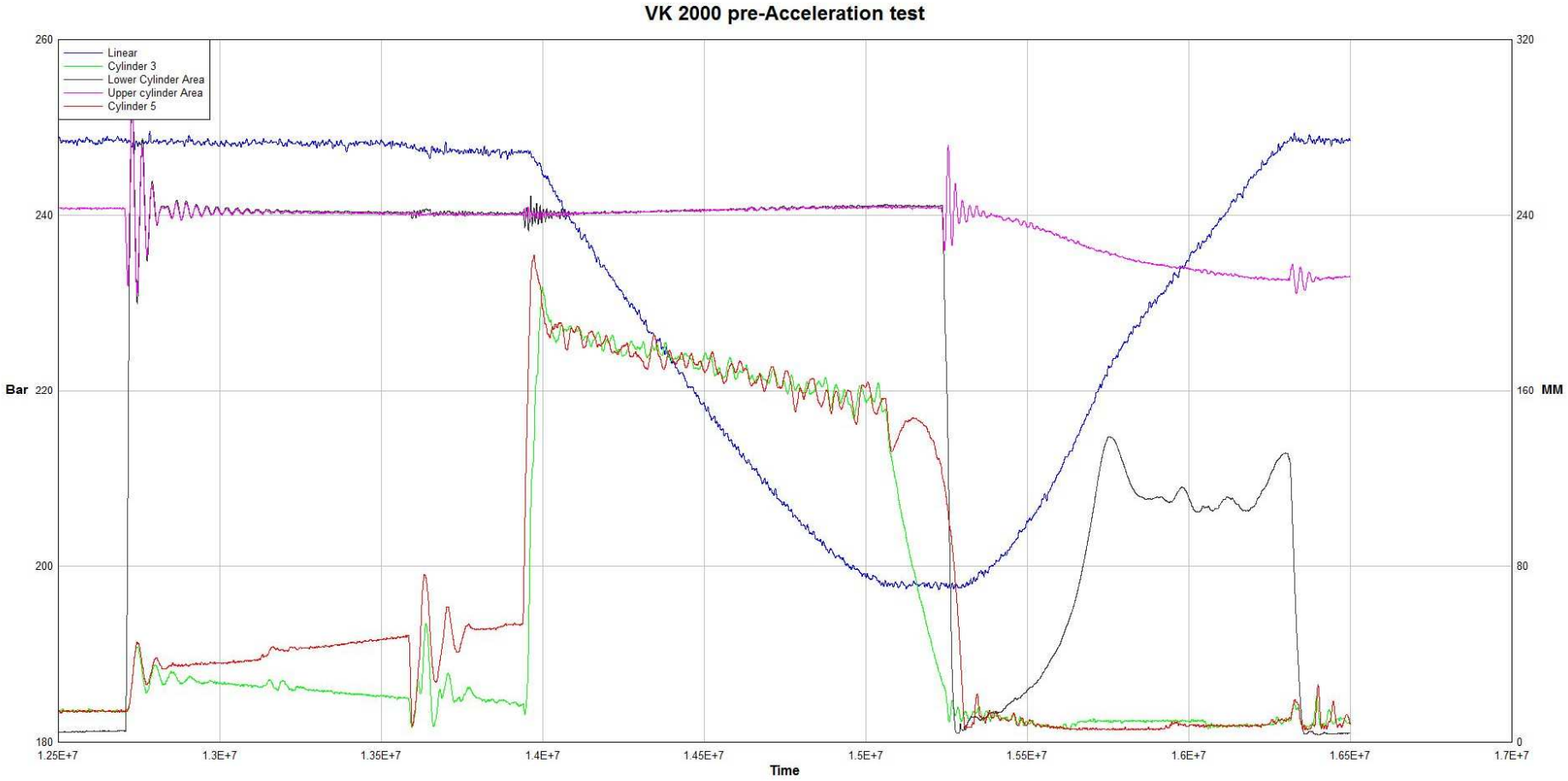

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Fig 3.0