121959301

Test Results

SCN400 Fender Durability Test

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Authority: MYS27434-105396-Rev2

Witnesses: Tan Wee Chong, Khaw Seng Khoon, Kee Shun Jiun, Abdul Jamal Bin Mohd Tahir ,

Test Date(s): 15/04/2019 - 18/04/2019

Test Objective/Method/Specification No

Durability test on a marine fender (Part no. SCN400) compromising of 15,000 cycles of 50% compression and 30% shear.

Specimen Description/Part No(s)/Delivery Dates

Trelleborg SCN400 Marine Fender

Results Summary

The subject was tested in accordance with the test specification ~~with~~ without deviation. The acceptance criteria of the test specification were:	Met	✓	Not Met		See comments	

Deviations

The fenders height was measured at 386mm. The test was conducted with the following compression and shear displacements
Applied compression was 193mm/386mm = 50%
Applied shear was measured to be 118mm/400mm = 29.5%

Prepared By:

Luke Hollely
Test Engineer

Approved By:

Andy Hayto
Facilities Operations Leader

Date: 26 April 2019

Test Equipment

The sample was mounted into the previous fender durability rig. This rig consists of a large actuator connected to the upper plate on the fender. This upper plate runs parallel to the lower plate which the fender sits on. Both plates are connected via pivoting arms. The lengths of the pivoting arms dictate the amount of shear that will be applied.

For this test the front bolt on the fender was removed and replaced with a small assembly to clamp the front of the fender to the lower plate. This can be seen in photo 3.

Test Results Detail

Upon completion of the 15,000 cycles, the test specimen was visually inspected for cracks by MIRA & Trelleborg staff. No damage was found on the external surface. Internally there was a minor crease, seen in internal visual inspection images, which the customer deemed acceptable.

Attachments

Photos 1 to 3- Rig Design

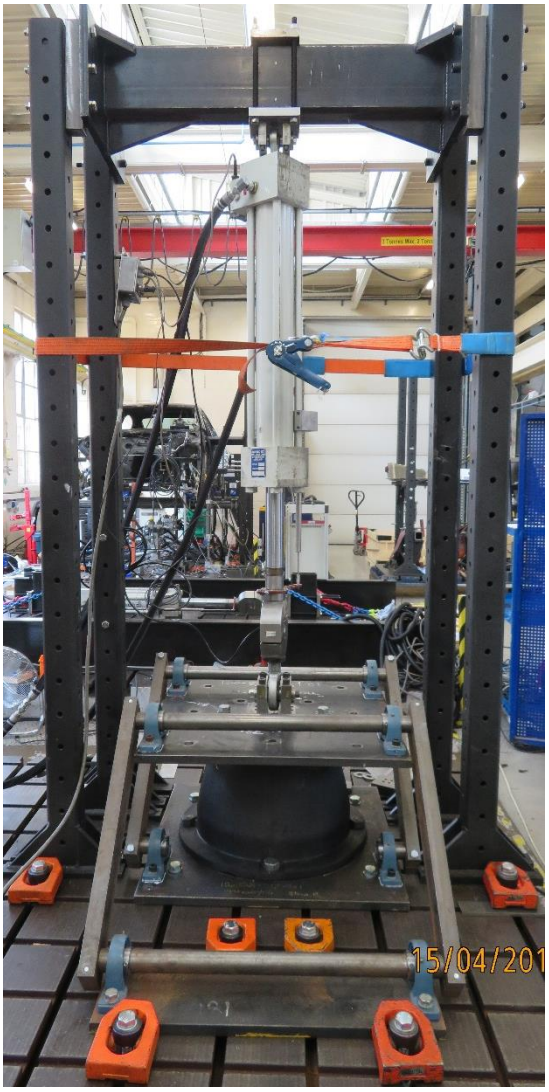
Photos 4 to 7- Compression Cycle

Photos 8 to 10- Post-Test Inspection

Graphs 1 to 3- Position & Load Data

Appendix – Quality Assurance of Measurements

Rig Design



Photos 1 & 2- Entire rig

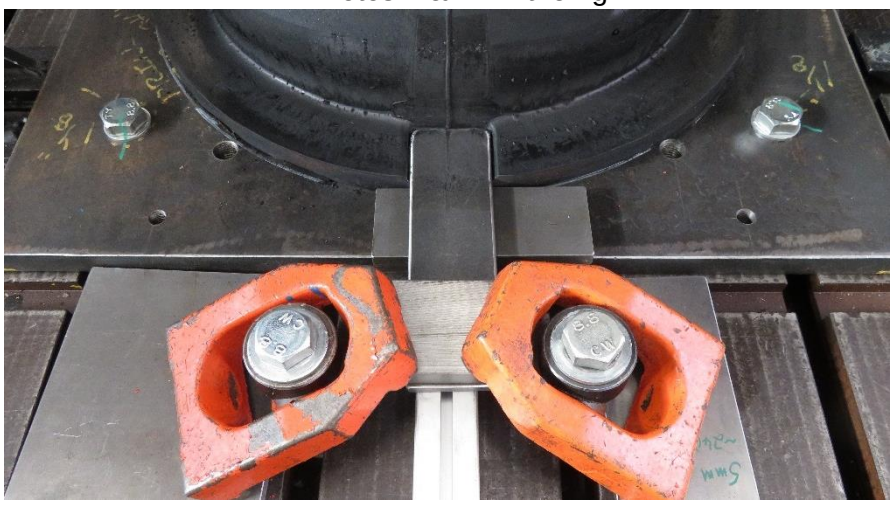


Photo 3- Clamp to replace the bolt

Compression Cycle

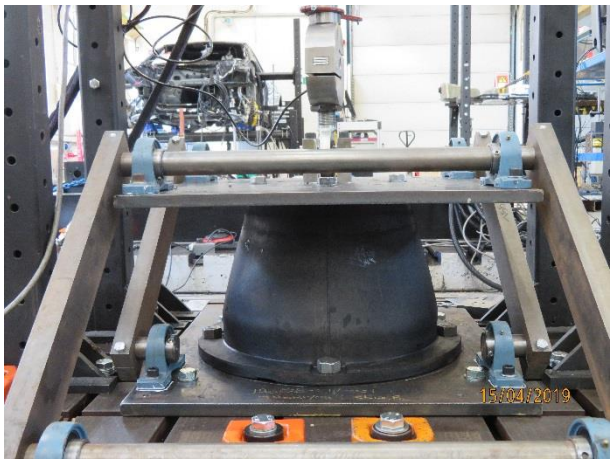


Photo 4- 0N Load (from rear of rig)

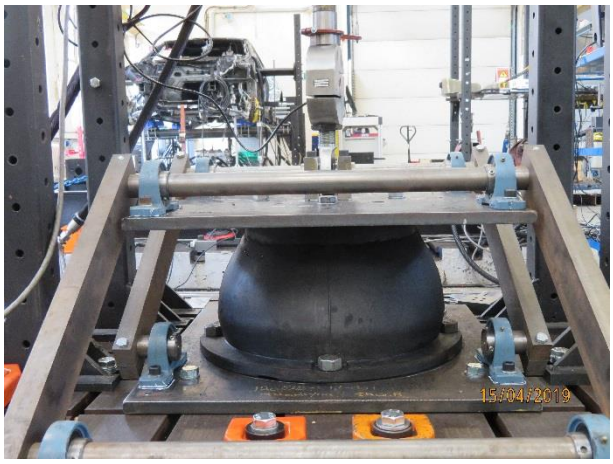


Photo 5- Load Applied (from rear of rig)

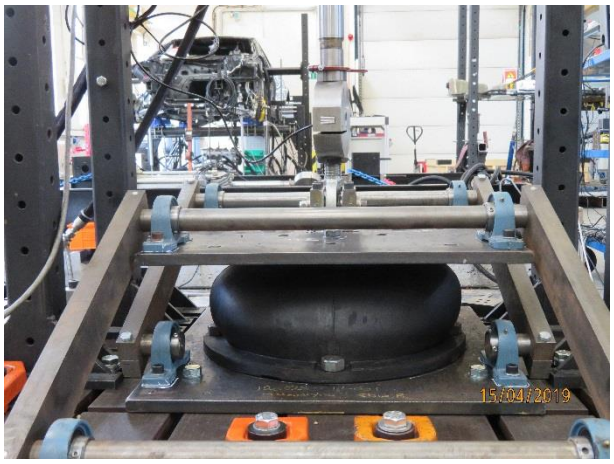


Photo 6- Load Still Applied (from rear of rig)

Photo 7- Fully Compressed (from front of rig)

Post-Test Inspection

Photo 8- Small rubber deposits seen on the flange

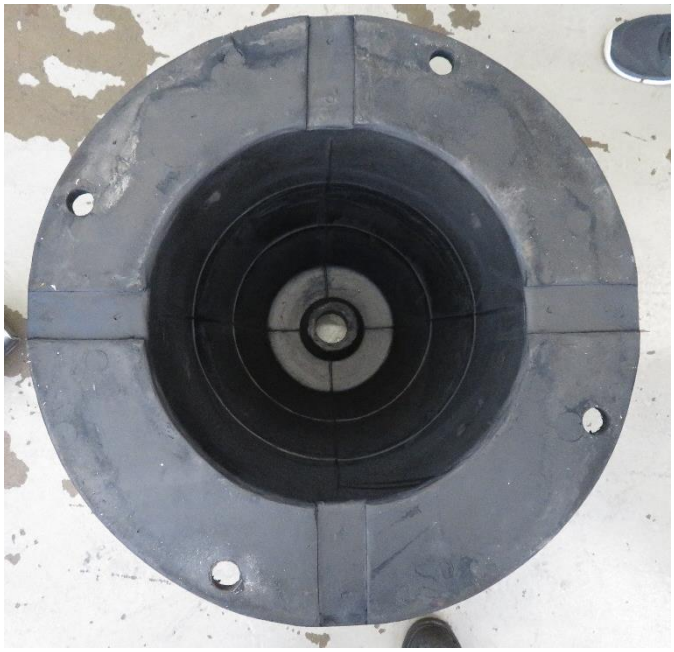
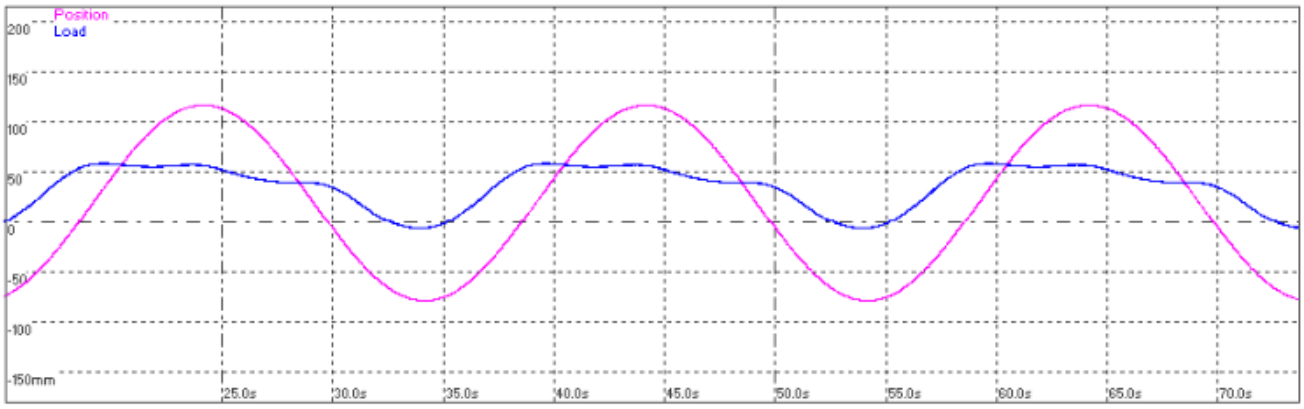


Photo 9 & 10- No cracks seen on upper or lower surfaces

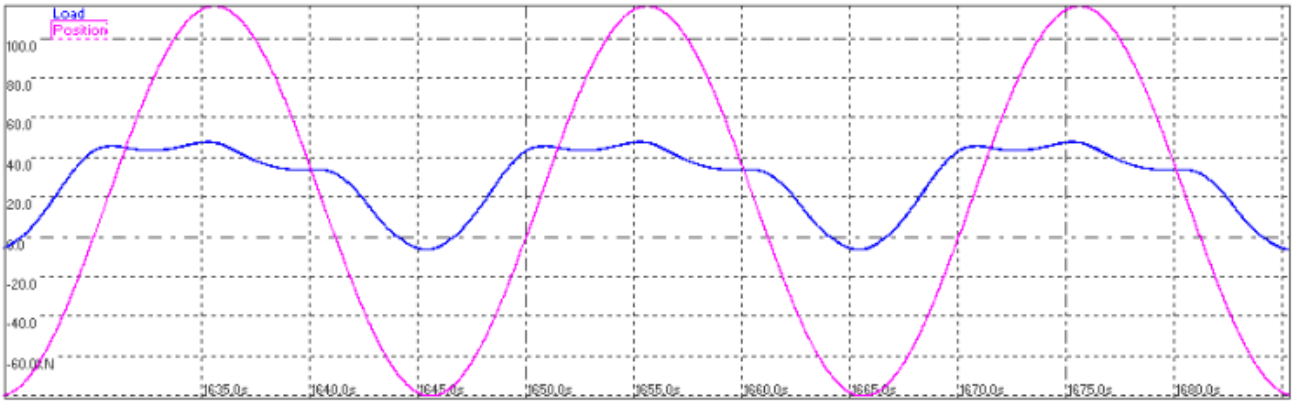
External Visual Inspection

Internal Visual Inspection

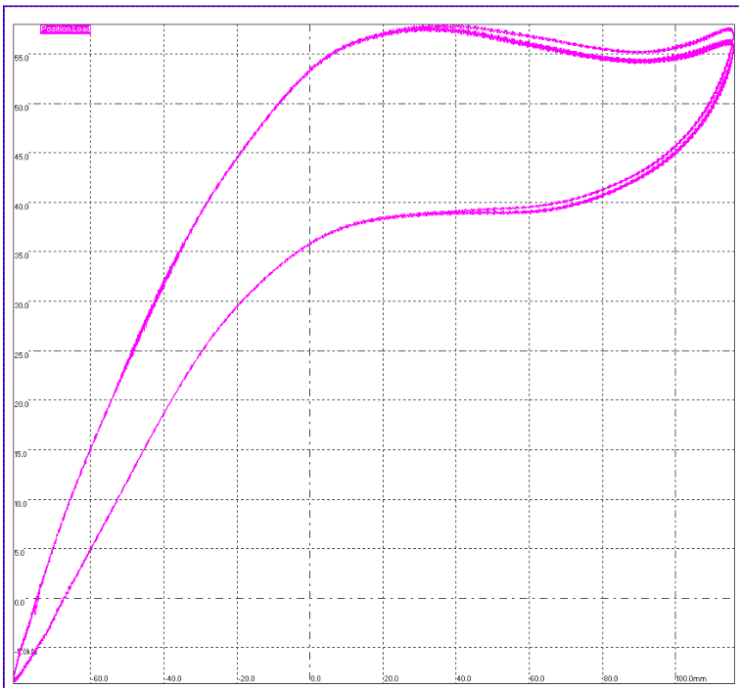
Data



Graph 1- First 3 Cycles Position & Load



Graph 2- Last 3 Cycles Position & Load



Graph 3- Position Against Load

Appendix 1 Quality Assurance of Measurements

The test equipment is checked on a regular schedule to traceable standards in an International Assurance of Measurements (QAM) procedure. Each item of equipment is issued with a QAM number.

The numbers for the equipment used in these tests were:-

Description	QA Number	Due on
200kN Load Cell	28004	22/08/2019
300mm LVDT	46755	12/04/2020
Controller	27318	14/06/2019