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Design, Manufacturing and Final Inspection Report	INS/F80
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Data Bureau Veritas Inspection & Certification the Netherlands B.V. (BV)		
Report number		6431283-IR001-rev.01
Relation number		97083
Project number		6431283
Inspector/Assessor		M. Willenburg
Date		14-04-2017 Rev.01: 18-05-2017

Data Applicant		
Applicant		Dhr. Hans Slavenburg ROS International B.V. Phone: +31 (0)162 685522
Manufacturer		ROS International B.V. Burg. van Campenhoutstraat 39A 4921 KR Made The Netherlands
Manufacturer No./Serial no.		The load tests made on original or repaired shelf supports of Type Mecalux 101. R.O.S. offers a procedure for repair of supports which can be applied without removing the load from the shelf. Even supports damaged in a number of places or a number of times can be repaired.
Year of manufacturing		2017
Object / Equipment		Certification of procedure to repair shelving racks including Witnessing of the test on location.
Drawing no.		N.V.T.
Design code		EN 15635:2008

Data erection location		
Naam Gebruiker		No information.
Location		-
Project		Witness of storage-repair testing procedure

Classification		
Object		Appraisal and certification of test method
Inspection		The inspection of all storage equipment should be done systematically on a regular basis and is normally carried out from ground level, which is where most of the damage tends to occur unless there are indications of problems that need investigation. If it is necessary to carry out a high-level inspection then a safe method of access shall be used in order to carry out the inspection. Free climbing shall not be allowed.
Damage investigation		Any damage shall result in an investigation of the potential causes of the problem with the intention of reducing or eliminating the possibility of the problem and the damage reoccurring. Appropriate actions shall be taken accordingly.
Damage control procedures		A management procedure shall require an inspection report of rack damage to initiate the isolation and making safe sections of racking that are red risk (see 9.5.4 and 9.7) after which, repair procedures shall be commenced.
Reason for test		During the operation of shelving facilities, the supports in particular are exposed to the risk of being so distorted by impact loads that they must be replaced or repaired.
Purpose of procedure		This procedure is designed largely to avoid interruption to business operations.



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Design Criteria	
Subject	Repair procedure
Test execution	Sample sections of supports: The 6 shelf-support sections were produced from 2 original single supports. - Manufacturer: Mecalux – Section type: 101 – Test length: 1000 mm
Test design description	R.O.S. offers a procedure for repair of supports which can be applied without removing the load from the shelf. Even supports damaged in a number of places or a number of times can be repaired.
Purpose of test	Assessment of R.O.S. procedure for multiple rack repairs to shelving under load.
Additional information:	
DEKRA Automobil AG has been commissioned to establish whether this procedure meets existing regulations and leads to safe results. Report Number: NL202-28507-101127 [Stuttgart, 20.05.2011]	
N.A.: Not applicable.	

	Technical documentation	Document number	Copy
1.	Agreement / Application form	By mail From: ROS International < info@ros-intl.com > To: Arsene Te-beek/NLD/VERITAS@VERITAS Date: 07-12-2016 13:30 Subject: Re: Contact details Sent by: hslavenburg@gmail.com Protocol according to tests performed ROS International to: Ming Willenborg 16-05-2017 11:42 Sent by: hslavenburg@gmail.com	Yes
2.	General description assembly	Witness of storage-repair testing procedure	Yes
3.	Drawings, technical documentation	Protocol ROS International B.V. Certification of a procedure for repairing shelving racks Opinion Part I – refurbishment of supports Date: 20.04.2017 Type: Warehousing logistics Principles: see next page Details of equipment: see next page Purpose of opinion: Assessment of R.O.S. procedure for multiple rack repairs to shelving under load The present Report Part 1: Refurbishment of Supports contains the results of the load tests made on original or repaired shelf supports of Type Mecalux 101.	Yes



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4.	Reference report / certificate	<p>➤ Certification of a procedure for repairing shelving racks Opinion Part I – refurbishment of supports Report Number: NL202-28507-101127 Date: 20.05.2011</p> <p>The present Report Part I: Refurbishment of Supports contains the results of the load tests made on original or repaired shelf supports of Type PLU 15 – manufacturer: STOW.</p> <p>➤ Certification of a procedure for shelving repair Opinion Part II – Organisational considerations Report Number: NL202-28507-101127 Date: 20.07.2011</p> <p>This Part II sets out the limitations on use of the procedure and the technical and organisational measures for assuring constant quality and industrial safety.</p>	Yes																																
5.	Priority list	N.A.	-																																
6.	Applicable standards and solutions.	<p>EN 15635:2008 English Version Steel static storage systems - Application and maintenance of storage equipment</p> <p>This European Standard gives guidelines for operational aspects relevant to structural safety of storage systems.</p>	Yes																																
7.	Findings of preinspection / condition	N.A.	-																																
8.	Results van design calculations and/or performed tests/inspections assembly	<p>The results obtained in the tests are summaries in the following table:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 15%;">Test number</th> <th style="width: 25%;">Tested state</th> <th style="width: 20%;">Buckling load [kN]</th> <th style="width: 40%;">Depth/width</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">Original</td> <td style="text-align: center;">95</td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">Repaired once</td> <td style="text-align: center;">92</td> <td style="text-align: center;">10 mm deep 122 mm wide</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">Repaired once</td> <td style="text-align: center;">99</td> <td style="text-align: center;">16 mm deep 400 mm wide</td> </tr> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;">Repaired once</td> <td></td> <td style="text-align: center;">7,5 mm deep 270 mm wide fork simulation</td> </tr> <tr> <td></td> <td style="text-align: center;">Repaired 2nd time</td> <td style="text-align: center;">92</td> <td style="text-align: center;">18 mm deep 350 mm wide</td> </tr> <tr> <td style="text-align: center;">6</td> <td style="text-align: center;">Repaired once</td> <td></td> <td style="text-align: center;">11,5 mm deep 320 mm wide</td> </tr> <tr> <td></td> <td style="text-align: center;">Repaired 2nd time</td> <td style="text-align: center;">110</td> <td style="text-align: center;">11 mm deep 300 mm wide</td> </tr> </tbody> </table> <p>Note: Up to two repair procedures are repeated for one support.</p>	Test number	Tested state	Buckling load [kN]	Depth/width	1	Original	95		3	Repaired once	92	10 mm deep 122 mm wide	4	Repaired once	99	16 mm deep 400 mm wide	5	Repaired once		7,5 mm deep 270 mm wide fork simulation		Repaired 2nd time	92	18 mm deep 350 mm wide	6	Repaired once		11,5 mm deep 320 mm wide		Repaired 2nd time	110	11 mm deep 300 mm wide	Yes
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9.	Inspection Plan for NDE including qualifications personnel.	N.A.	-																																
10.	Production schedule, especially the planning, production frequency and batch size	N.A.	-																																

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11.	Documented method of manufacturer's final inspection	In accordance with the test plan set out above, this distortion, with the repair, was applied up to two times. The load test to determine the critical compression force was carried out with a test speed of 2 mm per minute.	Yes
12.	Data Nameplate	N.A.	-
13.	Risk analysis	N.A.	-
14.	Applied materials	N.A.	-
15.	Quality management measures	<ul style="list-style-type: none"> Only vertical sections open at one side can be repaired; Due to the materials used, only temperatures of a normal kind are permissible; The procedure is not intended for use in areas protected against explosion; The procedure must be applied no more than twice within one 50 cm area of the support. The areas must be marked, and the prior damage must be documented; The distribution of forces must not be altered during the repair. 	Yes

Design assessment		
	Loads of equipment	Checked
16.	Belasting factoren	
17.	Design value of the conversion factor	N.A.
18.	Partial factor	N.A.
19.	Characteristic fractile factor	N.A.
20.	Analyse methode	For misshaping of the supports under DIN EN 15635 Section 9.5.4, a distortion of 10 mm was applied on the front of the sample, which belongs well into the red danger range, since here the factor of greater than three was set for the permissible distortion thresholds.
21.	Test procedure	In accordance with the test plan set out above, this distortion, with the repair, was applied up to two times. The load test to determine the critical compression force was carried out with a test speed of 2 mm per minute.
22.	Loads due to traffic, wind and earthquakes	N.A.
23.	Loads due to reaction forces and moment forces	N.A.
24.	Degradation mechanism (corrosion, erosion, etc..)	N.A.
25.	Fatigue	Following distortion, the samples were repaired again, using a procedure patented by R.O.S., they were distorted back into their original form.
26.	Used 3D model	N.A.
27.	Analysis of test results	After two repair procedures no material fatigue can be identified.
28.	Conclusion	This support repairs procedure has been approved by Bureau Veritas.



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Design specification			
29.	Applied design specification	EN 15635:2008 R.O.S procedure for repair of supports	√
30.	Design calculations	N.A.	-
31.	Conclusion	<p><i>Summary and results:</i> <i>After two repair procedures no material fatigue can be identified.</i> <i>Assuming that the shelf supports are overloaded in comparable basic conditions as set out in Annexe 2, a repair using the R.O.S. procedure produces good results, providing no more than two repair procedures are undertaken.</i></p> <p>Bureau Veritas has been commissioned to establish whether this procedure meets existing regulations and leads to safe results.</p>	√


Check during manufacturing – Fill in during manufacturing				Checked
32.	Prefabrication	Shop		
33.		Used tools		
34.		Methods to form the materials		
35.		Preparation and finishing welding		
36.	Preparation welding details	Preparation weld details		
37.		Welding plan approved		
38.		Welding details traceable to drawing		
39.	Permanent joints	Welding procedure (WPS)/Welding qualification (PQR)		
40.	Welder permanent joints.	Qualified welder (WPQR)	N.A.	-
41.		WPS, PQR and WPQR traceable	N.A.	-
42.	NDE	Qualified	N.A.	-
43.		Results NDE reports	N.A.	-
44.	Materials	3.1. certificates	N.A.	-
45.		Traceability	N.A.	-
46.		Charge number, labelling, etc.	N.A.	-
47.		Overview used material and traceability	N.A.	-
48.	PWHT	PWHT done	N.A.	-
49.		Registrations and declarations	N.A.	-
50.	Visual	Overall impression work done	N.A.	-
51.	Montage construction	Visual inspection montage construction on / in object	N.A.	-



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Final check				Checked
52.	General	General condition of installation	Final inspection	√
53.		Data nameplate conform drawing	N.A.	-
54.		Final inspection	Final inspection	√
55.				
56.	Other safety devices	Functional control safety	N.A.	-

Assessment	
57. Have the checkpoints been performed with positive results?	Yes
58. Certificate of conformity number Bureau Veritas	COC-EN15635-6431283-00-17-NLD-rev.00
59.	
60. Remarks:	
<p>On May 17, 2017, the following certificate was submitted to Bureau Veritas:</p> <p><i>CERTIFICATE</i> <i>number 2012378.01700.1EN/R1</i></p> <p><i>Investigated: Compression test bench for storage uprights.</i></p> <p><i>manufacturer : ROS International</i> <i>identification : PN 14</i> <i>kind of drive : Electric hydraulic</i> <i>capacity : 220 kN</i></p> <p><i>NMi Certin B.V.</i> <i>March 14th 2017</i></p> <p>Bureau Veritas inspector, Ming Willenborg has attended the test with this manufacturer. This test was successfully performed at the location listed below.</p> <p>Test date: 20-04-2017 Test location: Mennens Dongen B.V. Metaalstraat 5 Dongen</p>	
61. The considered object conforms to the design code of EN 15635: 2008.	<p>This support repairs procedure has been approved by Bureau Veritas. The certificate of this procedure can be issued.</p> <p>Assessor: M. Willenborg Inspector: M. Willenborg</p> <p>Date: 14-04-2017 Rev.01: 18-05-2017</p>
<p>Checked by:  R. Tjink Rachel Tjink</p> <p>Date: 18-05-2017</p> 