

CONFIDENTIAL

**DEVELOPMENTAL TEST REPORT**

No. SHL/16/2011-2012/2310/1813

Date:- 21.09.2011

1.0	NAME AND ADDRESS OF CUSTOMER	M/s. Sealexcel (India) Pvt. Ltd. 56&61, Veena Dalvai Industrial Estate, S. V. Road, Oshiwara, Jogeshwari (W), Mumbai-400102, India
2.0	CUSTOMERS LETTER REF.	Nil; Dated:- 01.07.2011
3.0	DESCRIPTION OF TEST COMPONENT:	
a.	Name of The Component	Tube Fittings
b.	Name of The Manufacturer	M/s. Sealexcel (India) Pvt. Ltd. 56&61, Veena Dalvai Industrial Estate, S. V. Road, Oshiwara, Jogeshwari (W), Mumbai-400102, India
c.	Part No. / Identification No.	AL-1,AL-2, AL-3 AL-4, AS-1,AS-2, AS-3 and AS-4
d.	Quantity	Each 04 nos.
e.	Working pressure ( P <sub>w</sub> )	300 bar

4.0 TEST OBJECTIVE:  
To evaluate performance of Tube Fittings as per customer define specification given in the table-1.

5.0 TEST REQUIREMENTS / RESULTS:

Table-1




Sr. No.	Test Particulars / Cl. No.	Test Requirements	Component Id. No.	Observation:
1.	Over Pressure Test.	The tube fitting shall withstand test pressure of hydraulic 1000 bar without any rupture / leakage at least 3 min.	AL-1 & AS-1	Pressure increased to 1.5 P <sub>w</sub> i.e. 450 bar. No leakage observed. Then pressure increased to 1000 bar hydraulic test pressure. No leakage observed at 1000 bar.
	Leakage Test	Test component shall withstand 300 bar pneumatic pressure		After hydraulic test both the assemblies withstood the P <sub>w</sub> i.e. 300 bar pneumatic pressure without any leakage.
2.	Corrosion Resistance Test [ECE R110 Annex. 5E]	The tube fitting shall not show leakage at test pressures after subjected to salt spray with following conditions: Duration – 144 h Temp. – 33°C to 36°C Solution – 5% NaCl in 95% Distilled water by weight.	AL-2, AL-3 AL-4, and AS-2, AS-3 AS-4	No Corrosion observed on the components after subjecting to salt spray test for the following conditions: Duration – 144 h Temp. – 33°C to 36°C Solution – 5% NaCl in 95% Distilled water by weight.
	Leakage Test	Test component shall withstand 300 bar pneumatic pressure		After Corrosion Resistance Test, all assemblies withstood the P <sub>w</sub> i.e.300 bar pneumatic pressure without any leakage.
3.	Vibration Resistance Test [As Per ECE R110 Annex. 5N]	The component shall remain undamaged and continue to operate and comply leakage test requirements when vibrated for 2 h at 17 Hz with amplitude 1.5 mm in each of three orientation axis.	AL-2, AL-3 AL-4, and AS-2, AS-3 AS-4	All assemblies were subjected to vibration test at 17 Hz with amplitude 1.5 mm for 2 h in each of three orientation axis.

*M. Akhilesh*  
*K. Kar*  
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Progress through Research  
THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

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Sr. No.	Test Particulars / Cl. No.	Test Requirements	Component Id. No.	Observation:																				
	Leakage Test	Test component shall withstand 300 bar pneumatic pressure at room temperature.		After vibration resistance test, all assemblies withstood the P <sub>w</sub> i.e. 300 bar pneumatic pressure without any leakage.																				
4.	Continued Operation Test [Clause 6.4 of ISO 15500 Part:19]	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="4">Tube Fitting shall not show any leakage at test pressures after subjected to following test cycles,</td> </tr> <tr> <td>Test pressure</td> <td>Temp.</td> <td>No. of cycles</td> <td></td> </tr> <tr> <td>300 bar</td> <td>Room temp.</td> <td>After every 6000 Cycle Up to 96000</td> <td></td> </tr> <tr> <td>300 bar</td> <td>- 40°C</td> <td>2000</td> <td></td> </tr> <tr> <td>300 bar</td> <td>120°C</td> <td>2000</td> <td></td> </tr> </table>	Tube Fitting shall not show any leakage at test pressures after subjected to following test cycles,				Test pressure	Temp.	No. of cycles		300 bar	Room temp.	After every 6000 Cycle Up to 96000		300 bar	- 40°C	2000		300 bar	120°C	2000		AL-2, and AS-2	<p><b>At room Temperature</b> 50%P<sub>s</sub> &lt; P<sub>t</sub> &lt; P<sub>s</sub> 100 bar &lt; P<sub>t</sub> &lt; 200 bar</p> <p>Disassembly &amp; Re-assembly after every 6000 cycles followed by leakage test No leakage observed at 300 bar</p> <p>Disassembly &amp; Re-assembly after every 1000 cycles followed by leakage test No leakage observed at 300 bar</p> <p>Disassembly &amp; Re-assembly after every 1000 cycles followed by leakage test. No leakage observed at 300 bar</p>
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300 bar	- 40°C	2000																						
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6.	<p><b>Observation:</b> Tube Fittings bearing Identification No.:AL-1,AL-2, AL-3 AL-4, AS-1,AS-2, AS-3 and AS-4 are manufactured and submitted by M/s. Sealexcel (India) Pvt. Ltd., Mumbai <b>compliance</b> with the test requirements as per customer define standard. All tests were witness by representative of TÜV Rheinland (India) Pvt. Ltd. Pune.</p>																							
<b>PREPARED BY</b>		<b>CHECKED BY</b>		<b>AUTHORISED BY</b>																				
																								
<b>S. N. LONDHE TECH. ASSISTANT</b>		<b>A.D DEKATE SR. PROJECT ENGINEER</b>		<b>M. SREENIVASULU ASSISTANT DIRECTOR</b>																				
Place of Issue: PUNE Disclaimer:		Date of Issue: <u>21/9/11.</u>																						
<small>This test report pertains only to the components / parts / assemblies / vehicles etc. actually tested at ARAI in the presented condition based on the documents / information produced / submitted by the customer. The issuance of this test report alone does not indicate any measure of approval, certification, supervision, control of quality surveillance by ARAI of the product. No extract, abridgement or abstraction from this test report shall be published or used to advertise the product without the written consent of the Director, ARAI, who reserves the absolute right to agree or reject all or any of the details of any items of publicity for which consent may be sought. ARAI is in no way responsible for any misuse of copying of any design / type / system in connection with entire vehicle / components / parts and assemblies. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the customer and ARAI shall not be liable for any claims or damages, made by the party whatsoever, the customer shall alone be liable for the same, and undertakes to indemnify ARAI in this regard. Further, the ARAI has the right to initiate cancellation / withdrawal of the certificate issued, in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI. The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this report.</small>																								

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