



# TEST REPORT

PRODUCT ENGINEERING LABORATORY	RL. <b>120977</b>	<b>Revision:</b> <b>1</b>
Material / Parts description: <b>HSG MT TAB 2 WAYS</b>		PN: <b>493224-1</b> Revision: <b>A</b>
Requester: NATANAEL M. SANTOS		Dept: EPA
Customer: <b>VW CZECH REPUBLIC</b>		Supplier: <b>TE</b>

Confidentiality:	Distribution:
( ) 1- CONFIDENTIAL	( X ) REQUESTER
( ) 2- TYCO RESTRICTED	( X ) DMTEC
( X ) 3- ADDRESSED CUSTOMER	( )

Purpose: 1 - VALIDATION TEST	History:  VALIDATION TESTS ACCORDING TO CZECH REPUBLIC REQUESTING.
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Performed tests:  ENVIRONMENTAL CYCLE TEST EMISSION BEHAVIOR PLUG-IN / PULL-OUT STRENGTH CONTACT TERMINAL INSERTION / EXTRACTION FORCE	Specification (s):  TEST PLAN "HSG 2 WAYS MICRO TIMER TAB" ATTACHED.
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Conclusion:  
  
SEE RESULTS FOR INDIVIDUAL TESTS.

Oct 03, 2012 Date	<b>*Signature on file</b> Performed by DIOGO BIASETTO ROJAS LABORATORY ENGINEER	<b>*Signature on file</b> Responsible ROBERTO DE OLIVEIRA PRINCIPAL AND LABORATORY MANAGER
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### I- SAMPLES IDENTIFICATION:

#### **SAMPLING:**

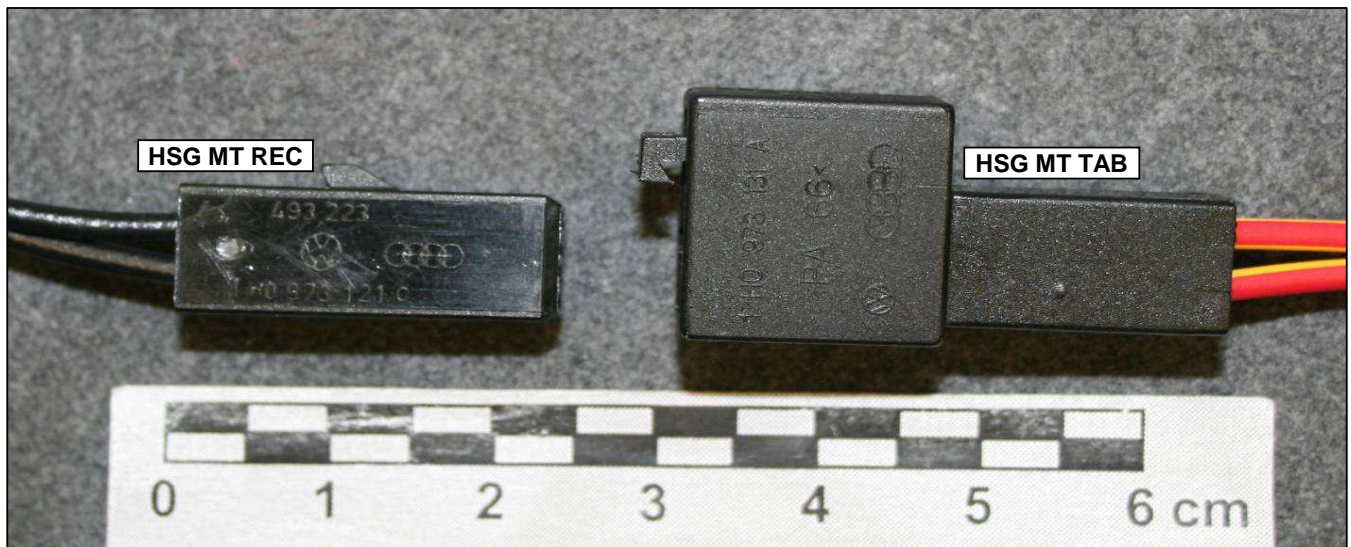
Part:

20 housings Rec 2 posn, PN 493223.

20 housings MT Tab 2 posn, PN 493224-1.

40 terminals Micro Timer REC, PN 964263-2, crimped with 1,0mm<sup>2</sup> wire gauge.

40 terminals Micro Timer TAB, PN 964267-2, crimped with 1,0mm<sup>2</sup> wire gauge.



Picture 1: Hsg REC and TAB

**ENVIRONMENTAL CONDITIONS:**

Temperature: 23 +/- 5°C.

Humidity: 45 - 70%.

**SPECIFICATION:**

TEST PLAN "HOUSING 2 POSN. MICRO TIMER TAB".

**ACCOMPLISHED TESTS:****Group I:**

- 1.1 Conditioning;
- 2.2 Visual inspection;
- 2.3 Voltage drop;
- 2.6 Environmental cycle test;
- 2.3 Voltage drop;
- 2.2 Visual inspection;
- 2.4 Pull-out strength;
- 2.5 Terminal Extraction.

**Group II:**

- 1.1 Conditioning;
- 2.2 Visual inspection;
- 2.7 Emission behavior.

**Group III:**

- 1.1 Conditioning;
- 2.2 Visual inspection;
- 2.4 Plug-in / Pull-out strength

**Group IV:**

- 1.1 Conditioning;
- 2.2 Visual inspection;
- 2.5 Contact terminal insertion / extraction force.

## Results:

### Group I:

#### 1.1 Conditioning:

**Equipments:**

None.

**Procedure:**

Soak the samples to 25°C / 60% humidity for 24 hours, according to DIN 50 014-23/50-2.

**Requirements:**

Visual check, please see item 2.2 below.

**Results:**

Please see item 2.2 below.

#### 2.2 Visual inspection:

**Equipments:**

20X magnifying glass.

**Procedure:**

The samples must be checked for production defects, changes before and after individual tests.

**Requirements:**

Samples must present no plastic deformation, precipitation hardenings, tears, breaks, discolorations, partly fusion, extension of an existing corrosion, etc.

**Results:**

Samples approved.

#### 2.3 Voltage drop:

**Equipments:**

Power supply PAK 20-36A.

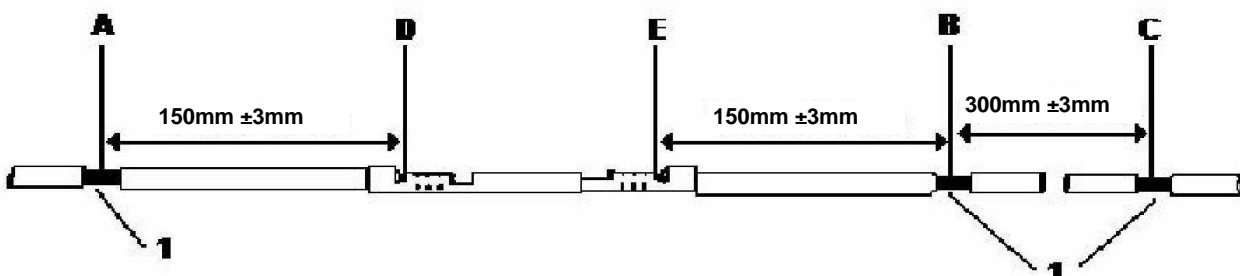
Digital Multimeter Agilent model: 34401A, nr. 93-339033-024.

Digital Multimeter HP model: 34401A, nr. 93-339033-031.

**Procedure:**

Measure the voltage drop between points AB and BC (please see sketch below), then  $V_{\text{drop connection}} = V_{AB} - V_{BC}$

Current applied 1Adc.



**Requirements:**

After conditioning, the voltage drop must be less than twice of the initial measurement.

**Results:****Initial measurements:**

Samples	Voltage drop [mV]	
	Way 1	Way 2
<b>1</b>	2,71	3,34
<b>2</b>	5,55	3,86
<b>3</b>	3,68	3,00
<b>4</b>	2,96	2,72
<b>5</b>	2,74	3,00
<b>6</b>	2,88	2,63
<b>7</b>	2,20	2,33
<b>8</b>	3,95	2,83
<b>9</b>	2,59	4,58
<b>10</b>	2,88	6,02
<b>Min.</b>	2,20	2,33
<b>Average</b>	3,21	3,43
<b>Max.</b>	5,55	6,02

**Conclusion:**

Informative.

**2.6 Environmental cycle test:**

Perform 100 climatic cycles according to spec. PV 2005, please see VW test report nr. 51-L-12-01172 attached.

**Results:**

Samples approved, please see VW test report nr. 51-L-12-01172 attached.

**NOTE:**

*The test sequence could not be finished due to the fact that the samples went astray during the return trip from VW lab to TE lab (before reaching TE lab).*

*A decision shall be made by the requester on repeat the test sequence or not.*

**Group II:****1.1 Conditioning:**

Please see item 1.1 at test group I.

**2.2 Visual inspection:**

Please see item 2.2 at test group I.

**2.7 Emission behavior:**

Test performed at VW, please see VW test report nr. 51-L-12-00958 AND 51-L-12-01170 attached.

**Results:**

Samples approved, please see VW test report nr. 51-L-12-00958 AND 51-L-12-01170 attached.

## Group III:

### 1.1 Conditioning:

Please see item 1.1 at test group I.

### 2.2 Visual inspection:

Please see item 2.2 at test group I.

### 2.4 Plug-in / Pull-out strength:

#### *Equipment:*

Digital Dinamometer Mecmesin, model MFG 500, ref. Tyco 92-339017-001.

#### *Procedure:*

Measure the plug-in and pull-out force between HSG 2 ways and counter part.

Speed: 50mm/minute.

#### *Requirements:*

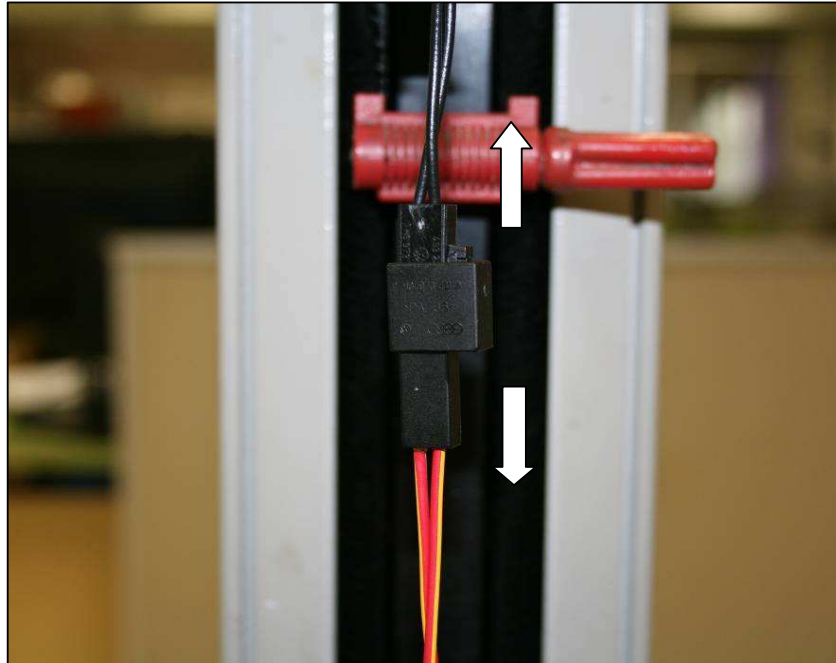
Plug-in: Informative.

Pull-out: 75N maximum.

#### *Results:*

Sample	Force [N]	
	Plug-in	Pull-out
11	7,8	35,8
12	7,0	35,3
13	9,0	19,1
14	9,0	42,6
15	7,2	31,8
16	8,6	34,8
17	8,2	35,3
18	7,0	38,7
19	7,6	35,3
20	8,8	34,3
Min.	7,0	19,1
Average	8,0	34,3
Max.	9,0	42,6

*Photos:*



*Connector counter part pull-out test*

*Conclusion:*

Samples approved.

**Group IV:**

**1.1 Conditioning:**

Please see item 1.1 at test group I.

**2.2 Visual inspection:**

Please see item 2.2 at test group I.

**2.5 Contact terminal insertion / extraction force.**

*Equipment:*

Digital Dinamometer Mecmesin, model MFG 2500, ref. Tyco 92-339017-032.

*Procedure:*

Measure the terminal insertion and extraction force from housing.

Speed: 50mm/minute.

*Requirements:*

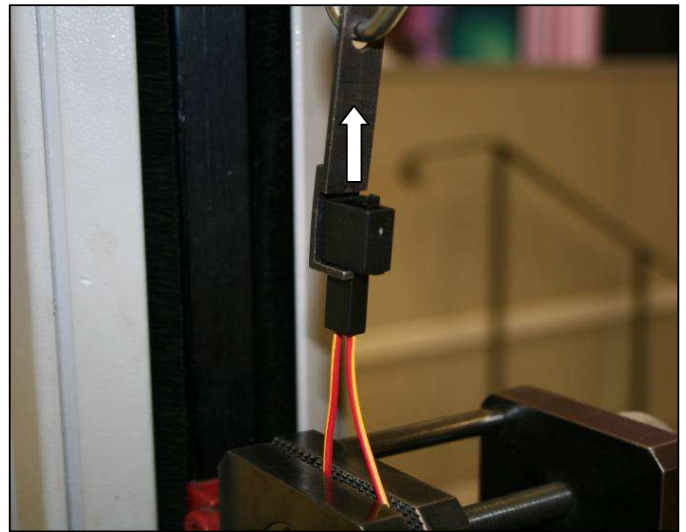
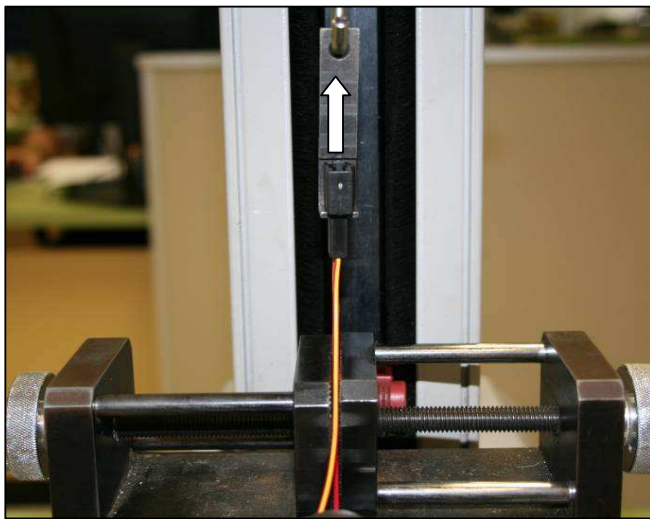
Insertion force: Informative.

Extraction force: 55N minimum.

**Results:**

Sample	Force [N]			
	Insertion		Extraction	
	Way 1	Way 2	Way 1	Way 2
<b>1</b>	5,1	3,7	100,5	102,5
<b>2</b>	4,5	4,3	137,8	103,9
<b>3</b>	4,3	3,9	125,5	91,2
<b>4</b>	4,3	4,7	108,9	105,9
<b>5</b>	4,3	5,2	98,1	103,5
<b>6</b>	4,1	4,5	96,1	99,5
<b>7</b>	4,3	4,3	103,5	100,5
<b>8</b>	5,2	4,7	101,5	102
<b>9</b>	3,7	4,1	99,5	104,4
<b>10</b>	4,1	4,3	99,0	75,5
<b>Min.</b>	3,7	3,7	96,1	75,5
<b>Average</b>	4,4	4,4	107,0	98,9
<b>Max.</b>	5,2	5,2	137,8	105,9

**Photos:**



*Terminal pull-out test*

**Conclusion:**

Samples approved.