



TEST REPORT

PRODUCT ENGINEERING LABORATORY	RL. 140239	REVISION: 1
Material / Parts description: MT2 GEH 6P, ASSY. SW	PN: 6-929264-2	REVISION: E
Requester: GENTIL OLIVEIRA JR.	Dept: EPA	

Customer: FIAT	Supplier: TE CONNECTIVITY
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Confidentiality:	Distribution:
<input type="checkbox"/> 1- CONFIDENTIAL <input type="checkbox"/> 2- TE RESTRICTED <input checked="" type="checkbox"/> 3- ADDRESSED CUSTOMER <input type="checkbox"/>	<input checked="" type="checkbox"/> REQUESTER <input checked="" type="checkbox"/> DMTEC <input type="checkbox"/> <input type="checkbox"/>

Purpose: 1 - VALIDATION TEST	History: LOCALIZATION PROJECT FOR FIAT CUSTOMER. VALIDATION TEST ACCORDING TO TEST PLAN ATTACHED.
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Test(s) Made : ACCORDING TO TEST PLAN ATTACHED.	Specification (s): SPEC. FIAT 9.91320/02 AND 7.Z8260 REVISION 2005.
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Conclusion:

Please see individual tests results.

<u>June 05, 2014</u> Date	<u>*Signature on file</u> Executed by DIOGO BIASETTO ROJAS TEST ENGINEER	<u>*Signature on file</u> Responsible PAULO S. ALMEIDA LABORATORY COORDINATOR
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Accomplished tests according to Test Plan attached:

Results:

MECHANICAL TESTS (ITEM 3.3 SPEC. FIAT 7-Z8260):

1 - TEST GROUP A	pg. 04	Approved.
1.1 - Visual inspection (item 7.1.1 spec. 7-Z8260).....	pg. 04	Approved.
1.2 - Terminal mating load to connector (item 7.3.5 spec. 7-Z8260).....	pg. 05	Approved.
1.3 - Connector mating load (item 7.4.2 spec. 7-Z8260).....	pg. 06	Approved.
1.4 - Effectiveness of connector polarization (item 7.4.6 spec. 7-Z8260).....	pg. 07	Approved.
1.5 - Connector pull-out load (item 7.4.5 spec. 7-Z8260).....	pg. 08	Approved.
1.6 - Connector pull-off load (item 7.4.4 spec. 7-Z8260).....	pg. 09	Approved.
1.7 - Terminal pull-off load from connector (item 7.3.6 spec. 7-Z8260).....	pg. 10	Approved.
1.8 - Lever/Slide holding load in open position (item 7.6.1 spec. 7-Z8260).....	pg. 11	Approved.
1.9 - Lever/Slide resistance to transversal loads (item 7.6.2 spec. 7-Z8260).....	pg. 11	Approved.

1 General

1.1 Samples Identification

50 MT2 GEH 6P, ASS'Y, SW PN: 6-929264-2.

50 ACCELERATOR PEDAL (COUNTERPART)PN FIAT 5190-8691.

200 terminals MICRO TIMER II CONTACT 1,0mm² wire gauge PN: 962876-2 (wire seal PN: 963530-1).

50 Secondary lock device PN: 929268-1.



Photo 1 - HSG 6 POS. MT2

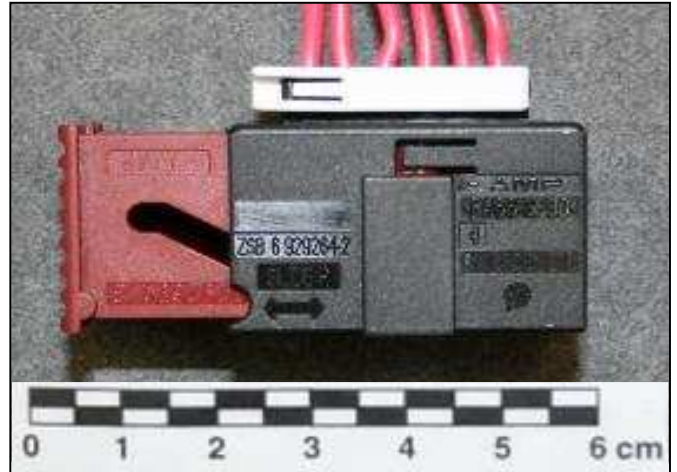


Photo 2 - HSG ASS'Y with sec. Lock and terminals



Photo 3 - Secondary lock device PN: 929268-1



Photo 4 - MICRO TIMER II CONTACT PN: 962876-2



Photo 5 - FIAT counterpart



Photo 6 - HSG 6 POS. assembled to FIAT counterpart



Photo 7 - HSG 6 POS. assembled to accelerator pedal FIAT

Tests execution:

Performed by TE lab technicians at Bragança Paulista Electrical Components Test Laboratory facilities.

MECHANICAL TESTS ON TERMINAL (ITEM 3.3 SPEC. FIAT 7-Z8260):

1 - TEST GROUP A :

Test sequence:

- 1.1 - Visual inspection (item 7.1.1 spec. 7-Z8260);
- 1.2 - Terminal mating load to connector (item 7.3.5 spec. 7-Z8260);
- 1.3 - Connector mating load (item 7.4.2 spec. 7-Z8260);
- 1.4 - Effectiveness of connector polarization (item 7.4.6 spec. 7-Z8260);
- 1.5 - Connector pull-out load (item 7.4.5 spec. 7-Z8260);
- 1.6 - Connector pull-off load (item 7.4.4 spec. 7-Z8260);
- 1.7 - Terminal pull-off load from connector (item 7.3.6 spec. 7-Z8260);
- 1.8 - Lever/Slide holding load in open position (item 7.6.1 spec. 7-Z8260);
- 1.9 - Lever/Slide resistance to transversal loads (item 7.6.2 spec. 7-Z8260).

1.1 - Visual inspection (item 7.1.1 spec. 7-Z8260):

Samples:

Samples number 1 to 50.

Equipments:

Visual Inspection.

Procedure:

Carry out a detailed visual inspection to identify any technological defect or material flaw, as cracking, stains, etc.

Requirements:

Product shall be conforming to the requirements of applicable product drawing and application specification.

Results:

All samples met the requirements.

1.2 - Terminal mating load to connector (item 7.3.5 spec. 7-Z8260):

Samples:

Samples number 1 to 10.

Equipment:

Imada Digital dynamometer, model DPS 11R, ref. TE 92-339017-076.

Procedure:

Measure mating force from terminal to housing, with a 50mm/min speed.

Requirements:

Mating force $\leq 15\text{N}$.



Photo 8 - Ways identification

Results:

Sample	Terminal mating load to connector [N]					
	Way 1	Way 2	Way 3	Way 4	Way 5	Way 6
1	8,19	10,12	11,02	9,05	9,50	11,52
2	8,99	12,24	12,06	9,58	9,61	9,80
3	7,66	9,47	8,91	9,62	8,55	7,44
4	8,98	10,04	12,52	8,27	9,09	9,16
5	7,69	9,16	9,16	11,79	11,42	9,36
6	9,36	10,00	10,00	9,56	9,42	7,81
7	7,31	12,02	12,02	9,54	8,29	9,41
8	9,74	11,23	11,23	12,56	11,82	10,40
9	8,87	11,20	11,20	11,40	9,63	9,92
10	9,48	9,35	9,35	10,66	10,55	9,71
Minimum	7,31	9,16	8,91	8,27	8,29	7,44
Average	8,63	10,48	10,75	10,20	9,79	9,45
Maximum	9,74	12,24	12,52	12,56	11,82	11,52

Conclusion:

All samples met the requirements.

1.3 - Connector mating load (item 7.4.2 spec. 7-Z8260):

Samples:

Samples number 11 to 20.

Equipment:

Universal tensile strength machine VERSATEST with digital dynamometer Mecmesin AFG 2500N, ref. TE 92-339017-090.

Procedure:

Measure mating force from connector to counterpart, with a 50mm/min speed.

Requirements:

Mating load $\leq 75\text{N}$.

Results:

Sample	Mating load [N]
11	58,5
12	59,9
13	71,5
14	58,0
15	59,5
16	71,0
17	69,0
18	59,5
19	70,0
20	68,0
Minimum	58,0
Average	64,5
Maximum	71,5

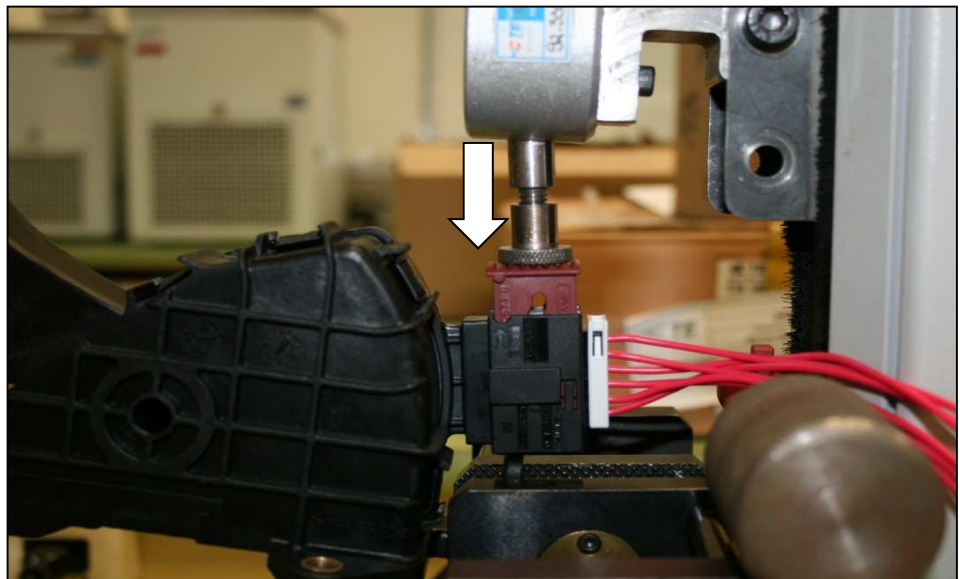


Photo 9 - Connector mating load

Conclusion:

Samples met the requirements.

1.4 - Effectiveness of connector polarization (item 7.4.6 spec. 7-Z8260):

Samples:

Samples number 1 to 10.

Equipment:

Universal tensile strength machine VERSATEST with digital dynamometer Mecmesin AFG 2500N, ref. TE 92-339017-090.

Procedure:

Apply a mating load (in wrong position) at a constant speed of 50 ± 10 mm/min until achieving 3*Mating load force (average $64,5\text{N} * 3 = 193,5\text{N}$).

Requirements:

No electrical contact must occur and both plastics and terminals must be free from damages.

Results:

It was applied 200N to the samples.

Samples didn't show electrical contact, and both plastics and terminals kept without damage.

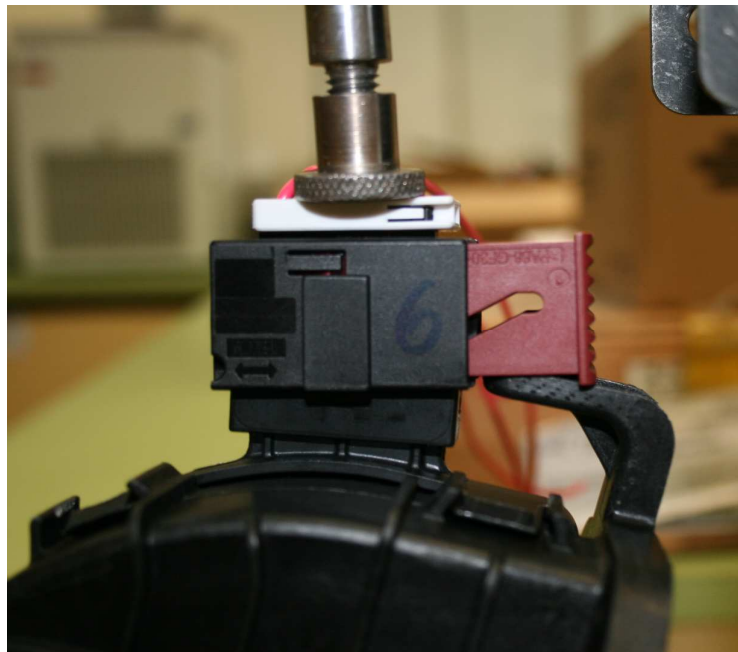


Photo 10 - Effectiveness of connector polarization

Conclusion:

All samples met the requirements.

1.5 - Connector pull-out load (item 7.4.5 spec. 7-Z8260):

Samples:

Samples number 11 to 20.

Equipment:

Universal tensile strength machine VERSATEST with digital dynamometer Mecmesin AFG 2500N, ref. TE 92-339017-090.

Procedure:

Measure unmating force from connector (without terminals) to counterpart, with a 50mm/min speed.

Requirements:

Pull-out load \geq 100N.

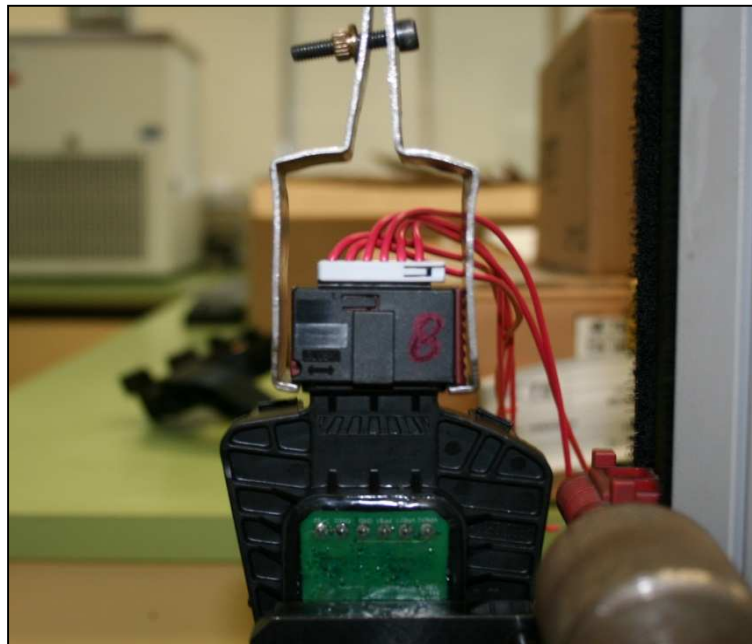


Photo 11 - Connector pull-out load

Results:

Sample	Unmating load [N]
11	1239,0
12	1201,5
13	1226,0
14	1125,0
15	1104,0
16	1122,0
17	1205,0
18	1206,5
19	1233,5
20	1102,0
Minimum	1102,0
Average	1176,5
Maximum	1239,0

Conclusion:

All samples met the requirements.

1.6 - Connector pull-off load (item 7.4.4 spec. 7-Z8260):

Samples:

Samples number 21 to 30.

Equipment:

Universal tensile strength machine VERSATEST with digital dynamometer Mecmesin AFG 2500N, ref. TE 92-339017-090.

Procedure:

Procure at least 10 connector pairs with all terminals as test specimen;
Measure unmating force from connector to counterpart, with a 50mm/min speed.

Requirements:

Pull-off load \leq 100N.

Results:

Sample	Pull-off load [N]
21	39,0
22	40,0
23	39,5
24	37,5
25	38,5
26	43,0
27	41,0
28	40,5
29	40,0
30	42,0
Minimum	37,5
Average	40,1
Maximum	43,0

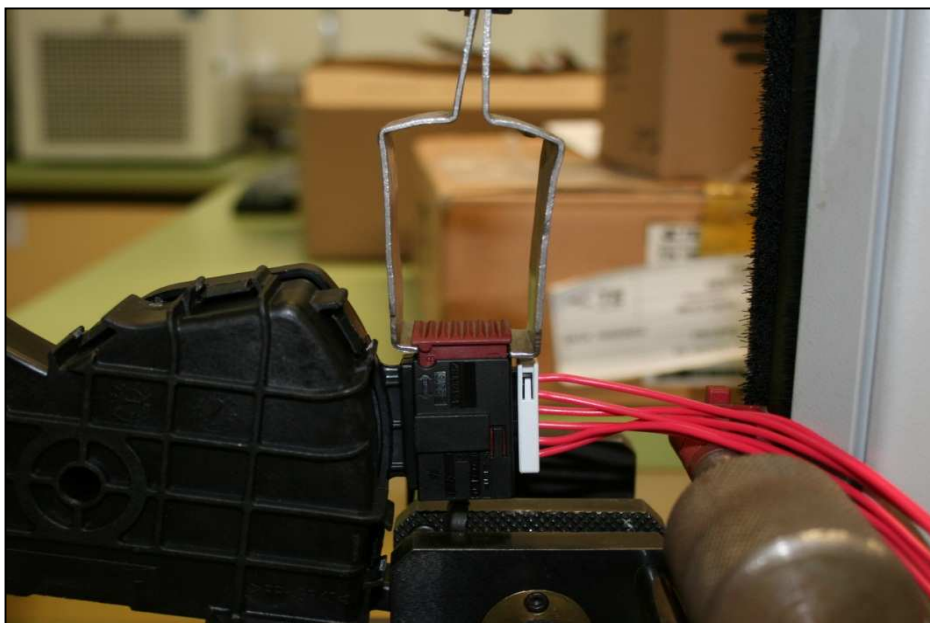


Photo 12 - Connector pull-off load

Conclusion:

Samples met the requirements.

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1.7 - Terminal pull-off load from connector (item 7.3.6 spec. 7-Z8260):

Samples:

Samples number 1 to 10 (primary lock only).

Samples number 31 to 40 (primary lock + secondary lock).

Equipment:

Universal tensile strength machine VERSATEST with digital dynamometer Mecmesin AFG 2500N, ref. TE 92-339017-090.

Procedure:

Measure unmating force from terminal to connector, with a 50mm/min speed.

Requirements:

Terminal pull-off load > 50N (primary lock only).

Terminal pull-off load > 70N (primary lock + secondary lock).

Results:

Sample	Terminal pull-out load from connector [N] (primary lock only)					
	Way 1	Way 2	Way 3	Way 4	Way 5	Way 6
1	198,0	222,5	215,0	200,0	218,0	199,0
2	159,0	209,0	194,0	207,5	205,5	210,5
3	199,0	216,0	199,5	208,5	202,5	212,5
4	204,5	195,0	198,5	199,5	200,0	209,5
5	199,0	170,0	206,0	203,5	192,0	214,0
6	203,5	202,0	194,0	210,5	200,0	196,0
7	199,5	216,0	199,5	211,4	203,5	199,0
8	199,5	204,0	206,0	211,5	196,0	204,5
9	159,0	204,5	203,5	198,5	197,0	194,0
10	219,0	194,0	192,0	214,5	210,5	202,5
Minimum	159,0	170,0	192,0	198,5	192,0	194,0
Average	194,0	203,3	200,8	206,5	202,5	204,2
Maximum	219,0	222,5	215,0	214,5	218,0	214,0

Sample	Terminal pull-out load from connector [N] (prim. lock + sec. Lock)					
	Way 1	Way 2	Way 3	Way 4	Way 5	Way 6
31	197,5	196,0	210,5	219,5	221,5	206,0
32	221,0	211,5	198,5	182,5	208,5	220,0
33	200,0	204,5	210,0	199,0	215,5	213,0
34	193,0	223,5	207,5	207,5	218,0	210,0
35	213,0	214,5	204,5	214,0	199,0	208,5
36	193,0	201,5	204,0	204,0	201,5	212,0
37	200,0	210,5	200,5	222,0	203,5	203,0
38	202,0	226,5	198,5	198,0	196,5	218,5
39	219,0	206,0	203,0	186,5	205,0	200,5
40	214,0	204,0	200,0	210,0	211,0	204,0
Minimum	193,0	196,0	198,5	182,5	196,5	200,5
Average	205,3	209,9	203,7	204,3	208,0	209,6
Maximum	221,0	226,5	210,5	222,0	221,5	220,0

Conclusion:

All samples met the requirements.

1.8 - Lever/Slide holding load in open position (item 7.6.1 spec. 7-Z8260):

Samples:

Samples number 41 to 50.

Equipment:

Universal tensile strength machine VERSATEST with digital dynamometer Mecmesin AFG 2500N, ref. TE 92-339017-090.

Procedure:

Pull the slide parallel to its operation direction at a constant speed of 50 ± 10 mm/min as described in following figure 1 below until achieving a load of 50N.

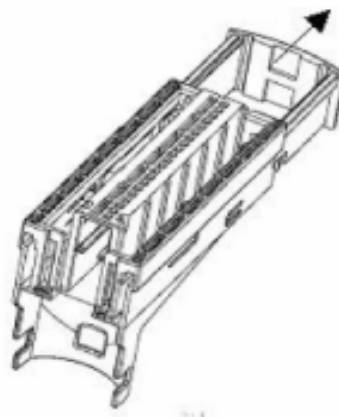


Figure 1

(Figure extracted from spec. 7-Z8260 item 7.6.1, for reference only).

Requirements:

Check any signs of damage if any.

Results:

Samples didn't show any sign of damage.

Conclusion:

All samples met the requirements.

1.9 - Lever/Slide resistance to transversal loads (item 7.6.2 spec. 7-Z8260):

Samples:

Samples number 41 to 50.

Equipment:

Universal tensile strength machine VERSATEST with digital dynamometer Mecmesin AFG 2500N, ref. TE 92-339017-090.

Procedure:

Pull the lever/slide crosswise at a constant speed of 50 ± 10 mm/min as described in following Figure 2 until achieving a load of 100N for both open and close position, and 60N in any other position.

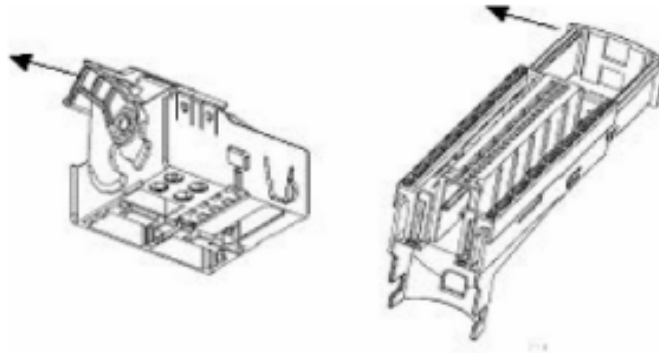


Figure 2

(Figure extracted from spec. 7-Z8260 item 7.6.2, for reference only).

Requirements:

Check any signs of damage if any.

Results:

Samples didn't show any sign of damage.

Conclusion:

All samples met the requirements.