PRODUCT SPECIFICATION

32 POSITIONS MQS

AIRBAG CONNECTOR SYSTEM

Rev letter	rev. record	DR	Date	CHK	Date
A2	UPDATED LOGO AND PNS TABLE	M.B.	09/10/09	A.G.	09/10/09
A1	ACTIVE (ET00-0191-02)	M.B.	20/11/02	O.C.	20/11/02
A	PRELIMINARY ISSUE	O.C.	15/01/01	A.G.	15/01/01

DR.	DATE	APVD	DATE
O. CANUTO	15/JAN/2001	A. GENTA	15/JAN/2001

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For electrical requirement 3.1, 3.2, and 3.3 see MQS Qualification Test Report N. 501-18004.

1.0 SCOPE

This specification intend to cover all the electro-mechanicanical and enviromental performances of the 32+32 pos. air bag connector system.

1.1 COMPONENT LIST

PART NUMBER	DESCRIPTION
284423-3,-4,-5,-6,-7	32 pos. Kit assembly
284999-3,-4,-5,-6,-7	32 pos. Kit assembly for Korean car makers
144969-2	MQS contact gold plated version
1355737-X	Header 24+32 pos.

1.2 APPLICABLE DOCUMENTS

Product drawings have to be considered part of this specification. In case of conflicts between specification and referenced documents, this specification shall take precedence.

1.3 AMP SPECIFICATION

A. 109-1 Test Specification, General Requirements for Test Methods

1.4 COMMERCIAL STANDARD SPECIFICATIONS

Low Voltage Stranded Cables for Automobiles acc. to FIAT Normation Table N°91107/03

1.5 RATINGS

A. CURRENT RATINGS:

6.0 A max. with 0.50 mm^2 wire

3.5 A max. with 0.35 mm^2 wire

Current rating per wire section a.m. are according to Fiat spec. 91107/03

B. TEMPERATURE RATING:

-30°C TO +105 °C (including the temperature increasing due to working current flow).

C: MAXIMUM OPERATING VOLTAGE:

24 V D.C. (for application at higher voltage please contact AMP)

1.6 QUALITY ASSURANCE PROVISION

A. SAMPLE PREPARATION:
The test samples to be used for the test shall be prepared by random selection from the current production and the contact shall be crimped in accordance with the applic. spec. 114-15077.
No sample shall be reused, unless otherwise specified.

B. TEST CONDITION:
All the test shall be performed under any combination of the following test condition, unless otherwise specified:
Room temperature: 23±5°C
Relative humidity: 45÷75%
Atmospheric pressure: 860÷1060 mbar

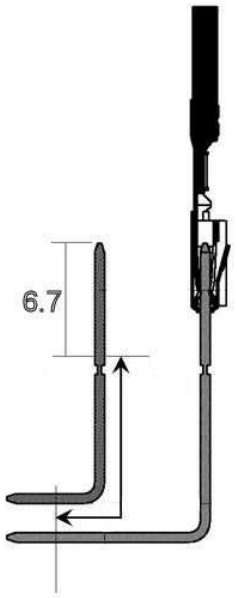
1.7 PRODUCT DESCRIPTION

The system includes an header with 32 pins 2.54 mm pitch on two rows. Pins are gold plated on connector mating part, while on the other side are tin plated to be soldered on a P.C.B. (1.6 mm thk). In the header recess there are special finger actuating the short circuit bar when the male connector is mated. The male connectors have cavities suitable for MQS contacs gold plated version and in between the two contacts cavities rows are assembled eight short circuit bars golded plated. The short circuit bars work with a contact row only, putting the female contacts MQS in short circuit when the system is not closed (male connector not inserted into the header).
The connectors are provided with a secondary lock, that do not allow to assembly the housing 32 pos. into the frame, when a contact is not fully inserted into his cavity.

TEST PROCEDURE

TEST DESCRIPTION	REQUIREMENTS	PROCEDURE
1.9 Confirmation of product	- Product shall confirm the requirements of applicable product drawing and Application specification.	Visually, dimensionally and functionally inspection per applicable quality inspection plan
1.10 Visual examination	- No visible damage, cracking or defect when the product is new and even after environmental, mechanical end electrical test.	Visual inspection.
2.0 MECHANICAL	**REQUIREMENTS**	
2.1 Connector mating force	≤ 70 N At new and after 10 cycles of insertion/unmating. Electrical continuity between two contacts and the relative short circuit bar.	All contacts (32) inserted into the frame housing Test to be performed with correspondent header counterpart, all assembled moving the lever with an operation speed of 50 mm/min.

2.2. Connector unmating force	≤ 70 N At new and after 10 cycles of insertion/unmating. Electrical continuity between two contacts and the relative short circuit bar.	All contacts (32) inserted into the frame housing. Test to be performed with correspondent header counterpart, all assembled moving the lever with an operation speed of 50 mm/min.
2.3. Connector locking strength	100 N min.	Connector fully loaded, assembled with the correspondent header counterpart. Operating speed: 50 mm/mim. Apply an pull-off load to the cables bundle in two directions: 1- axial direction (SEE PICTURE 1-A) 2- perpendicular direction (SEE PICTURE 1-B)
2.4. Retention force housing/frame	100 N min.	Apply a force on assembled housing, fully loaded, with the correspondent frame. Operating speed: 50 mm/mim. Pulling by wire bundle in an axial direction (SEE PICTURE 2)
2.5. Lever retention when closed	100 N min.	Connector mated into the correspondent header part. Without disengage the lever hook, apply the load of 100 N per 30 sec. To the lever. No lever disengage shall occur
2.6. Contact insertion force (into the cavity)	≤ 5 N	Crimped contacts onto 0.5 mm^2 Use a free floating fixture with an operating speed of 25.4 mm/min.
2.7 Contact extraction force	≥ 60 N	Pull out the contacts from the cavity with an operation speed of 25.4 mm/min.
2.8 Secondary lock effectiveness	80 N min.	Force applied to the connector housing when a contact is not fully inserted into its own cavity, shall not produce the insertion of the housing into the cover. Insertion operating speed: 25.4 mm/min.
2.9 Connector polarization effectiveness	150 N	Force applied on the assembled connector, rotated of 180 degree in the mating direction with the correspondent header, shall not produce the insertion of the connector into the header.

2.10 Vibration test (Random -passengers compartment)	Voltage drop within limits indicated for new contacts No electrical discontinuity greater than 1 micro sec.. shall occur Electrical continuity between two contacts and the relative short circuit bar shall be verified.	On mated connector with the counterpart. Random vibration test as per diagram 1 enclosed. (SEE DIAGRAM 1). Duration: 16 hrs on the direction of mating axis. Wires bundle fixed at 20 cm. Test current: 1 mA.
2.11 Lever robustness (in opened position)	100 N min. No permanent deformation or damage that can reduce the functionality of the lever shall occur.	Apply a force in the direction of the Rotation axis of the lever on the edge of the lever. The lever must be in opened position. Operation speed of 10.0 mm/min. (SEE PICTURE 3)
3.0 ELECTRICAL	**REQUIREMENTS**	
3.1 Voltage drop	≤ 5,0 mV/A wire size: 0.5 mm² for a single contact At new and after ten insertion/extraction	Between a point of the wire at 1 cm from the connector edge and a point very close to the header edge (single contact). Termination resistance is obtained after subtraction of due to wire used for termination and due to male pin (length 10 mm min as shown in the following picture). 
3.2 Dielectric strength	Neither creeping discharge or flashover shall occur	≥ 1000Vac for 1 minute. Test between adjacent circuits of mated connectors.
3.3 Insulation resistance	10 MΩ min.	Applied voltage: 500 V D.C.

3.4 Temperature rise over Oven Temperature (esercizio gravoso)	Temperature increasing : ≤ 50°C Thermocouple placed on transition between contact body and wire. Voltage drop within limits indicated for new contacts. No damaging.	On 6 adjacent ways contemporary In not airy ambient with a test temp. of 80 ±2°C. Test current on each way: see par. 0.6 Duration of test: 5 hours
3.5 Current overload	Temperature rise increase: ≤ 60°C Thermocouple placed on transition between contact body and wire barrel. Voltage drop within limits indicated for new contacts. No damaging	On one way without housing: Test current 1.5 nominal current (see par. 0.6) Duration 500 cycles composed of: 45' current ON. 15' current OFF
4.0 ENVIRONMENTAL	**REQUIREMENTS**	
4.1 Thermal cumulative ageing	No deformation or cracking of the plastic parts Voltage drop: :≤ 10 mVA Insulation resistance within indicated limits Electrical continuity between two contacts and the relative short circuit bar shall be verified.	On mated connectors: 5 cycles composed of: -4 hrs at +105°C ± 2°C -4 hrs at -30°C± 2°C 5 cycles composed of: -4 hrs at +105°C ± 2°C -4 hrs at +40°C ± 2°C and 90÷95% r.h. -4 hrs at -30°C± 2°C 200 hrs at 105 °C
4.2 Salt spray corrosion test	Voltage drop: :≤ 10 mVA Insulation resistance within indicated limits Electrical continuity between two contacts and the relative short circuit bar shall be verified.	On mated connectors: 98 hours of permanence in salt mist at 35°C± 2°C, 5% of NaCl, pH 6.5-7.2 class 2.
4.3 Kesternich corrosion	Voltage drop: ≤ 10 mVA Electrical continuity between two contacts and the relative short circuit bar.	On mated connectors: 4 cycles composed of: - 8 hours of exposure to an atmosphere with 0.66% of SO_2 at +40°C ± 2°C (method according to DIN 50118) - 16 hours in free air

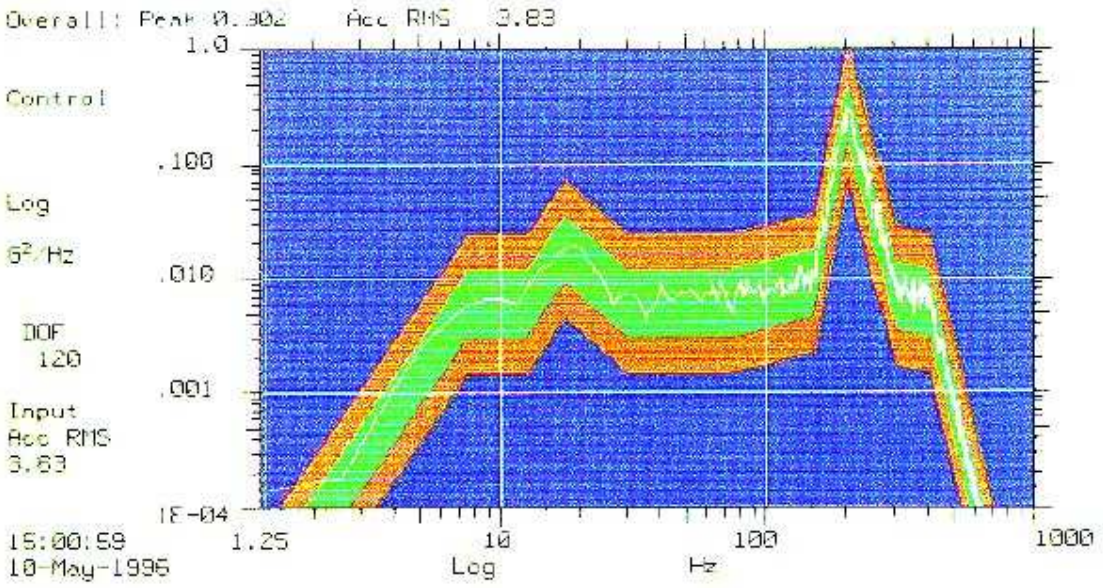
PRODUCT QUALIFICATION TEST SEQUENCE

TEST GROUP

ITEM	DESCRIPTION	A	B	C	D	E	F	G	H	I	L	M	N
1.9	Visual examination	1,9, 11	1,3	1,3	1,3	1,6	1,4, 6	1,5	1,6	1,5	1,6	1,5	1,5
2.1	Connector mating force	2,6											
2.2	Connector unmating force	4,8											
2.3	Connector locking stregth	10											
	Durability (10 cycles)	5											
2.4	Retention force housing/frame						2						
2.5	Lever retention(when it's closed)						3						
2.6	Contact insertion force (into the cavity)		2										
2.7	Contact extraction force			2									
2.8	Secondary lock effectiveness				2								
2.9	Connector pol. effectiveness					5							
2.10	Vibration					3							
2.11	Lever robustness						5						
3.1	Voltage drop	3,7				2,4		2,4	2,5	2,4	2,4	2,4	2,4
3.2	Dielectric strength								4				
3.3	Insulation resistance								3		5		
3.4	Temp. rise (in oven)									3			
3.5	Current over-load							3					
4.1	Thermal cum. Ageing										3		
4.2	Salt spray											3	
4.3	Kesternick corrosion												3

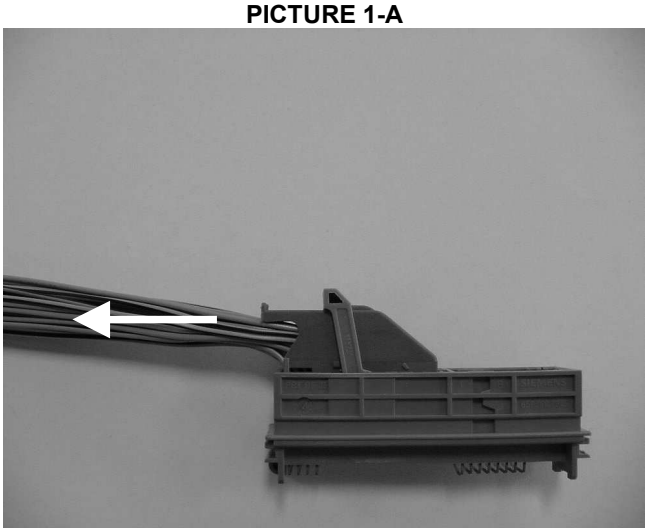
DIAGRAM 1: Random vibration test for car body
(according to FIAT Auto 7.Z8260 Curva di PSD per connettori di classe vibrazionale V1)

FIAT CONNECTORS ON THE BODY

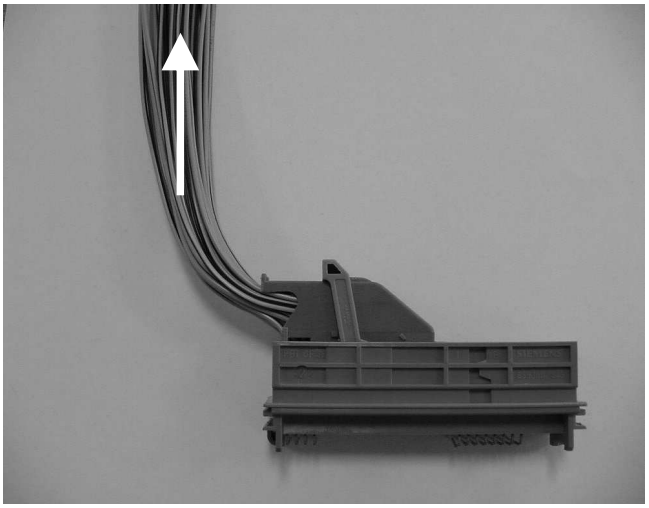


f (Hz)	8	12	18	30	50	72	150	200	300	400
G²/Hz	0,006	0,006	0,018	0,006	0,006	0,006	0,009	0,28	0,007	0,006

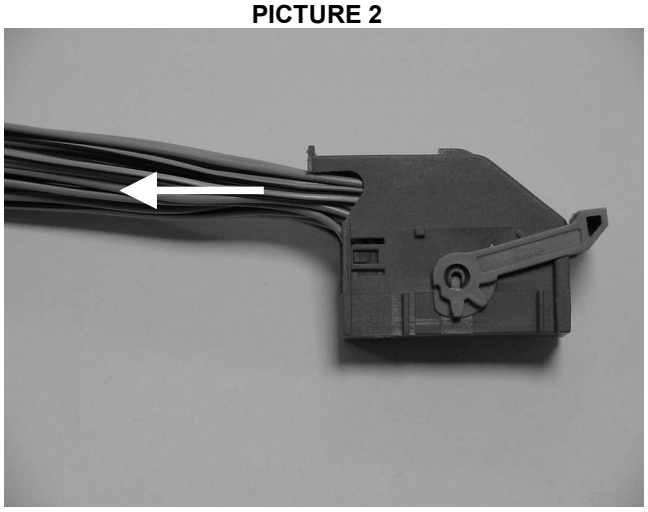
PICTURE 1-A



PICTURE 1-B



PICTURE 2



PICTURE 3