

# 025 10P Header ASS'Y

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[APPENDIX]

## 1. Scope

### 1.1 Content

This specification covers the requirements for product performance, test methods and quality assurance provisions of the Header ass'y. The applicable product description and part number are as follows:

Part number	Descriptions
2188561	025 10P HEADER ASS'Y

### 1.2 Qualification

When test are performed the following specified documents and standards should be used. All inspections should be performed using the relating inspection plan and product drawing.

## 2. Applicable Documents

### 2.1 Reference Documents

- A. VW 80106
- B. VW 75174

### 2.2 Definition of Terms :

#### 2.2.1 Contact (Terminal) :

An electrically conductive metallic member, used independently or as a component of connector Assembly. This is assembled with Housing.

#### 2.2.2 Housing (Header HSG):

A dielectric component member of connector.

#### 2.2.4 Connector (Header Ass'y)

Connector is an assembly of housing.

## 3. Requirements :

### 3.1 Design and Construction

Product Design, construction and physical dimensions shall be followed applicable product drawing.

### 3.2 Material and Finish

A. Terminal

Material : CuSn6

Finish : Tin Plated

B. Housing

Header HSG : PPS-GF40

\*\* Refer applicable drawing for more detail.

3.3 Performance and Test Descriptions

The product is designed to meet electrical, mechanical and environmental performance requirements specified in Par.3.4. All test are performed at ambient temperature unless otherwise specified.

3.3.1 General Requirements

A. Sample selection

Test samples are to be subjected to production intend processing, including final packaging.

D. Vibration Classification

Connector to be tested must be assigned a class below according to the expected environment in their intended vehicle application.

**Component Temperature/Vibration Class**

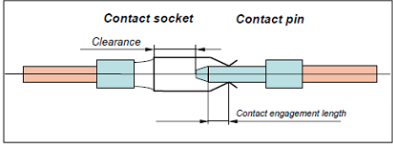
Severity	TC (temperature cycle)	Random vibration with TC	Sine wave with TC	No. of shocks
1) "Body" unsealed	0 min/20 °C	8 h per axis	No sine wave	A = 30 g T = 6 ms sinusoidal half-wave No. of shocks: 6 000
	60 min/-40 °C	RMS value of acceleration		
	150 min/-40 °C	19,7 m/s <sup>2</sup>		
	300 min/105 °C			
	420 min/105 °C	Hz   (m/s <sup>2</sup> ) <sup>2</sup> /Hz		
	480 min/20 °C	10   10		
		55   3,25		
		180   0,125		
	300   0,125			
	360   0,07			
	1 000   0,07			

3.4 Test Requirements and Procedures Summary

\*\* Visual Inspection : No defect on the components such as cracks, deterioration, etc

\*\* For more detail refer VW75174

No	TEST DESCRIPTION	ACCEPTANCE CRITERIA	PROCEDURES
3.4.1	Visual Inspection	No defect on the components such as cracks, deterioration, etc	The basic mechanical functions of the connector must be checked as part of the visual inspection.
3.4.2	Contact Resistance	TAB : 0.63mm $R_t \leq 15m\Omega$	The measured values must be correspond to the manufacturer's specifications. The limits must be complied with (Appendix A), and the measured values must be documented accordingly in the test report.
3.4.3	Insulation Resistance	$R > 100$ Mohms @ 500 VDC for 60s	Contact Parts : arbitrary Housings : 1 housing per injection mold Insulation resistance between all adjacent contacts. (See Appendix B)
3.4.4	Visual Inspection (dimension)	The measured values must correspond to the released drawing or product specifications.	Measure dimension based on released drawing or product specifications.
3.4.5	Visual Inspection (material and surface analysis, contact)	All material must be documented in the manufacturer's product specifications.	<p>Data sheets must be attached to the test report as documentation.</p> <ul style="list-style-type: none"> <li>o Material certificate</li> <li>o Electrical conductances</li> <li>o Tensile strength</li> </ul> <ul style="list-style-type: none"> <li>• Material documentation of the surface: <ul style="list-style-type: none"> <li>o Material certificates</li> <li>o Measurement of coating thickness on the finished contact area and on the line connection area</li> <li>o Measurement of surface roughness (if limits are specified, e.g., in drawings) and documentation that the surface was not damaged by the production process.</li> </ul> </li> </ul>
3.4.6	Material and surface analysis, housing	All material must be documented in the manufacturer's product specifications.	<p>All materials must be documented.</p> <ul style="list-style-type: none"> <li>• Documentation of the materials: <ul style="list-style-type: none"> <li>o Material certificate and declaration of all possible materials</li> <li>o The RAL colors (for all keyings)</li> </ul> </li> <li>• Documentation of the surface quality: <ul style="list-style-type: none"> <li>o Measurement of maximum permissible burrs at the function-relevant locations</li> <li>o Measurement of surface roughness (if limits are specified, e.g., in drawings) and documentation that the surface was not damaged by the production process.</li> </ul> </li> </ul> <p>Markings on the surface The markings on the housing parts must be recognizable after processing (manufacture of the wiring harness).</p> <ul style="list-style-type: none"> <li>• Clear legibility of the housing labeling that is specified in the drawings</li> </ul> <p>Requirement: Injection molded skins, tool offset, and mold separation marks must not impair the handling or function. Burr, tool offset, etc. are permissible within the drawing specifications. NOTE Burrs are not permissible on the actuation surfaces. Burr, tool offset, or part markings are not permissible (due to the design) on surfaces that come in contact with seals. The material breakdown of the materials used must be available in the IMDS.</p>

No	TEST DESCRIPTION	ACCEPTANCE CRITERIA	PROCEDURES
3.4.7	Contact engagement length	Contact engagement length > 1.0mm(All contact point) Clearance >0 (worst case)	1. Visual Inspection 2. Measure contact engagement length 
3.4.8	Interaction between contact and housing	1. Visual Inspection 2. No closed in the drop 3. No open in the drop 4. must be closable at the end, Not be closable until all contacts are properly locked in the housing 5. Must latch audibly and checked by pulling it back (10N max) 6. 10~50N 7. 50 Max 8. Fs nok > 3 times	1. Visual Inspection 2. Drop test – secondary lock in pre engagement position 3. Drop test – secondary lock in final engagement position 4. Documentation of locking play, secondary lock 5. Documentation of locking play, primary lock 6. Actuation force secondary lock, closing 7. Actuation force secondary lock, opening 8. Forces – secondary lock, closing not OK
3.4.9	Handling and functional reliability of housing	1. Visual inspection 2. Polarizing efficiency > 3 times the insertion force 3. 100N Min 4. Not damaged or deformed	1. Visual inspection 2. Protection against wrong use polarizing of housing 3. retention force, housing locking 4. Insertion force or actuation force for insertion and removal aids
3.4.10	Pin insertion inclination/misuse safe/scoop-proofing	1. Visual inspection 2. Scoop investigation by modeling	1. Visual inspection 2. Scoop investigation by modeling

No	TEST DESCRIPTION	ACCEPTANCE CRITERIA	PROCEDURES
3.4.11	Insertion/removal force, mating cycle frequency	1. Visual Inspection 2. measure contact opening dimension 3. measure insertion/removal force 4. insertion force may change by at most 25% compare to initial value 5. measure contact opening dimension 6. Visual inspection	1. Visual Inspection 2. measure contact opening dimension 3. measure insertion/removal force 4. measure insertion/removal force after mating frequency 5. measure contact opening dimension 6. Visual Inspection
3.4.12	Housing effect on deration	1. Visual Inspection 2. must marked information based on VW75174 PG13 E0.1 in the dration graph	1. Visual Inspection 2. Measure value
3.4.13	Dynamic load	1. Visual Inspection 2. TAB : 0.63mm $R_t \leq 15m\Omega$ 3. Resistance > $7\Omega$ > 1ms 4. TAB : 0.63mm $R_t \leq 15m\Omega$ 5. visual inspection 6. Resistance > $7\Omega$ > 1ms 7. TAB : 0.63mm $R_t \leq 15m\Omega$ 8. visual inspection	1. Visual Inspection 2. contact resistance 3. random vibration 4. contact resistance 5. visual inspection 6. Endurance sock 7. contact resistance 8. Visual inspection
3.4.14	Climate Load of housing	1. Visual inspection 2. $R > 100$ Mohms @ 500 VDC for 60s 3. aging in dry heat 4. humid heat, constant 5. $R > 100$ Mohms @ 500 VDC for 60s 6. visual inspection 7. low temperature aging 8. possible to open and reclose the connector even at -20°C 9. visual inspection 10. aging in dry heat 11. drop test 12. visual inspection	1. visual inspection 2. Insulation resistance 3. aging in dry heat 130 °C, 120h 4. humid heat, constant 40 °C, 95% 10day 5. Insulation resistance 6. Visual inspection 7. Low temperature aging -40°C, 48h 8. Removal and insertion at -20°C 9. Visual inspection 10. aging in dry heat 80 °C, 48h 11. Drop test in the unplugged state 12. visual inspection

3.4.15	Long term temperature aging (Group 1)	<ol style="list-style-type: none"> <li>1. visual inspection</li> <li>2. DIN60068-2-2</li> <li>3. DIN 60512-2-1</li> <li>4. DIN 60068-2-31</li> <li>5. Visual inspection</li> </ol>	<ol style="list-style-type: none"> <li>1. Visual inspection</li> <li>2. Long-temperature aging 130°C, 1000h, subsequent 48h at RT</li> <li>3. 5 x completed locking and completed disconnection</li> <li>4. drop test in unplugged state</li> <li>5. visual inspection</li> </ol>
3.4.16	Long term temperature aging (Group 2)	<ol style="list-style-type: none"> <li>1. Visual inspection</li> <li>2. TAB : 0.63mm <math>R_t \leq 15m\Omega</math></li> <li>3. Long-temperature aging</li> <li>4. TAB : 0.63mm <math>R_t \leq 15m\Omega</math></li> <li>5. DIN 60512-2-1</li> <li>6. visual inspection</li> </ol>	<ol style="list-style-type: none"> <li>1. visual inspection</li> <li>2. contact resistance</li> <li>3. Long-temperature aging 130°C, 1000h, subsequent 48h at RT</li> <li>4. contact resistance</li> <li>5. 5 x completed locking and completed disconnection</li> <li>6. visual inspection</li> </ol>
3.4.17	Chemical resistance	<ol style="list-style-type: none"> <li>1. Visual inspection</li> <li>2. <math>R &gt; 100</math> Mohms @ 500 VDC for 60s</li> <li>3. Chemical resistance 48h</li> <li>4. <math>R &gt; 100</math> Mohms @ 500 VDC for 60s</li> <li>5. Visual inspection</li> <li>6. Dimension all parts</li> </ol>	<ol style="list-style-type: none"> <li>1. Visual inspection</li> <li>2. Insulation resistance</li> <li>3. Chemical resistance 48h</li> <li>4. Insulation resistance</li> <li>5. Visual inspection</li> <li>6. Dimension all parts</li> </ol>
3.4.18	Locking Noise	<ol style="list-style-type: none"> <li>1. Visual Inspection</li> <li>2. Aging 28h at RT</li> <li>3. 70dB(A) min ambient noise must be at least 7dB(A)</li> <li>4. Visual Inspection</li> </ol>	<ol style="list-style-type: none"> <li>1. Visual Inspection</li> <li>2. Aging 28h at RT</li> <li>3. Locking noise</li> <li>4. Visual Inspection</li> </ol>

**[APPENDIX]**

**APPENDI**

**Appendix D Resistance limits**

Maximum limits of the contact resistance in mΩ at room temperature after aging

The values include: contact contact resistance + 2 \* crimp contact resistance, measure to DIN EN 60512-2-1

Lines according to LV 112 (line test specification, low-voltage lines)

Contact material conductivity >20% IACS, correction factor for smaller conductivities a DIN EN 60352-2

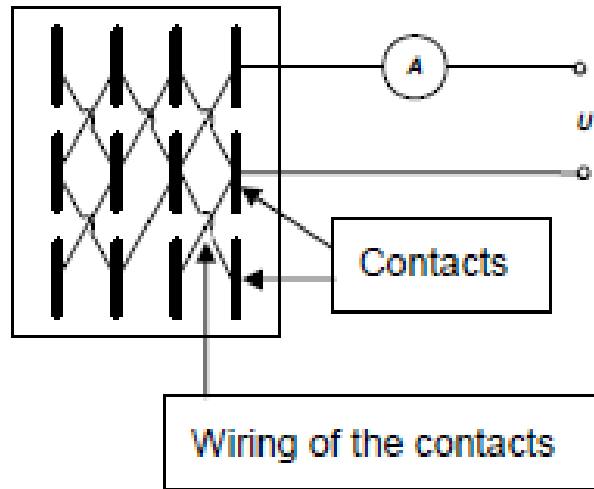
Applies to all surfaces (e.g., Au, Ag, Sn)

**Table D.1 Resistance limits**

Conductor cross-section in mm <sup>2</sup> /contact size in mm	Group 1						Group 2				
	0,13	0,22	0,35	0,5	0,75	1,0	1,5	2,5	4	6	10
0,63	30	30	15	15	15	-	-	-	-	-	-
1,2	20	20	15	15	15	15	10	-	-	-	-
1,5	-	15	15	15	15	15	10	10	-	-	-
2,8	-	15	15	15	15	10	10	10	5	-	-
4,8-6,3	-	10	10	8	8	8	5	5	3	3	2
8	-	-	-	-	-	-	-	3	3	3	2
9,5-12	-	-	-	-	-	-	-	-	3	2	2

**APPENDIX B: Insulation Resistance Measurement setup**





**Figure 3** Insulation resistance measurement setup

<i>Rev</i>	<i>Change</i>	<i>Description</i>	<i>Date</i>
A	-	Initial Released	06, Mar, 2014

