

## DESIGN OBJECTIVES

The product described in this document has not been fully tested to insure conformance to the requirements outlined below. Therefore AMP Incorporated makes no representation or warranty, expressed or implied, that the product will comply with these requirements.

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Il prodotto descritto in questa specifica non è stato ancora completamente provato per garantirne la conformità ai requisiti indicati nel documento. Perciò l'AMP non può al momento fornire assicurazione sulla conformità del prodotto a questi requisiti.

L'AMP si riserva inoltre la facoltà di modificare i requisiti della specifica sulla base dei risultati di addizionali prove e valutazioni.

Per ulteriori informazioni si prega di contattare l'Ufficio Tecnico.

## PRODUCT SPECIFICATION

### 070 sr **MULTILOCK**\* Connector For P.c.b.

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				CHK <i>C. Tartari</i> 27/02/95			
		<i>M. Palma</i>		APP.		LOC. NUMBER I 108-20150	
A	REVISED ET00-0492-97	M.P.	C.T.	16 Dec-1997	SHEET NAME 070 SERIES <b>MULTILOCK</b> * CONNECTOR FOR P.C.B.		
1	ADDED 8 Pos. 282770-1	M.P.	C.T.	20 Dec 1995			
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## 1. SCOPE:

### 1.1 CONTENTS

This specification covers the requirements for product performance, test methods and quality assurance provisions of 070 sr. MULTILOCK Connector for Printed circuit board.

Part Number	Description
C-282627-1	3 Pos. Plug Housing
C-282366-1	8 Pos. Plug Housing
C-282367-1	12 Pos. Plug Housing
C-173852-1	14 Pos. Plug Housing
C-282368-1	18 Pos. Plug Housing
C-282369-1	20 Pos. Plug Housing
C-282268-1	8 Pos. P.C.B. Header (horizontal type)
C-282594-1	11 Pos. P.C.B. Header (horizontal type)
C-282629-1	12 Pos. P.C.B. Header (horizontal type)
C-282630-1	14 Pos.P.C.B. Header (horizontal type)
C-282631-1	18 Pos.P.C.B. Header (horizontal type)
C-282632-1	20 Pos. P.C.B. Header (horizontal type)
C-282633-1	24 Pos.P.C.B. Header (horizontal type)
C-282634-1	30 Pos. P.C.B. Header (horizontal type)
C-282770-1	8 Pos. P.C.B. Header (vertical type)
C-282525-5 to -8	12 Pos. P.C.B. Header (vertical type)
C-282526-5 to -8	20 Pos. P.C.B. Header (vertical type)

## 2. APPLICABLE DOCUMENTS:


The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

### 2.1 AMP SPECIFICATIONS :

- A. 109-5000 Test Specification, General Requirements for Test Methods
- B. 114-20056 Application Specification for 070 sr. receptacle contact crimp version

### 2.2 COMMERCIAL STANDARD AND SPECIFICATIONS :

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

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### 3. REQUIREMENTS:

#### 3.1 DESIGN AND CONSTRUCTION:

Product shall be of the design, construction and physical dimensions specified in the applicable product drawing.

#### 3.2 MATERIALS:

##### A. Contact:

Stitched tab contact: Post-tinned brass  
Crimped receptacle contact: Pre-tinned brass

##### B: Housing:

- PBT unfilled (plug hsgs and horizontal headers)  
- PBT glassfiber filled (vertical headers)

#### 3.3 RATINGS:

A. Current Rating : 14 A max. (with 1,5 mm<sup>2</sup> wire and max six adjacent contacts)

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.

#### 3.4 QUALITY ASSURANCE PROVISION:

##### A. Sample preparation:

The test samples to be used for the tests shall be prepared by randomly selected from the current production, and the 070 sr. rec. contact crimped in accordance with the applic. spec. 114-20056.

No sample shall be reused, unless otherwise specified.


##### B. Test Condition:

All the tests shall be performed under any combination of the following test conditions, unless otherwise specified.

Room temperature: 23 ± 5°C

Relative Humidity: 45÷75%

Atmospheric Pressure: 860÷1060 mbar

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### 3.5 TEST REQUIREMENTS AND PROCEDURES SUMMARY:

Para.	Test Items	Requirements	Procedures
3.5.1	Confirmation of product	- Product shall be confirming to the requirements of applicable product drawing and Application specification	Visually, dimensionally and functionally inspected per applicable quality inspection plan.
Electrical Requirements			
3.5.2	Voltage drop	- $\leq 3$ mV/A on new contacts and after ten insertions/extractions	Between a point of the wire at 1 cm from the conn. edge and a point very closed to the header edge. (for test current see Fig. 1) (Termination resistance is obtained after deducing the mV drop of the cable length used for termination)
3.5.3	Dielectric strength	- Neither creeping discharge nor flashover shall occur	$\geq 1000$ Vac for 1 minute. Test between adjacent circuits of mated connectors.
3.5.4.	Insulation resistance	- 10 M $\Omega$ Min.	Impressed voltage 500 Vdc. Test between adjacent circuits of mated connectors.
3.5.5	High temperature resist. with current load (example of 6 pos. conn.)	- Temperature increasing detected: $\leq 50^{\circ}\text{C}$ (thermocouple placed on transition between contact body and wire barrel)  - Voltage drop within limits indicated for new contacts  - No damaging	On all ways contemporarily: - Not airy ambient with a test temp of $80 \pm 2^{\circ}\text{C}$ - Test current on each way: 14A with a 1.5 mm <sup>2</sup> wire - Duration: 5 hours  (for the acceptable current carrying capacity / position of conn. / wire section see Fig. 2)
3.5.6	Current overload	Temperature increasing $\leq 60^{\circ}\text{C}$ on transition between contact body and wire barrel  - Voltage drop within limits indicated for new contacts  - No damaging	On one way w/o housing: - Test current: 21 A (with a 1.5 mm <sup>2</sup> wire) - Duration: 500 cycles composed of: 45' current "ON" 15' current

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Para.	Test Items	Requirements	Procedures
Physical Requirements			
3.5.7	Vibration test	<ul style="list-style-type: none"> <li>- Voltage drop within limits indicated for new contacts</li> <li>- No electrical discontinuity greater than 1 <math>\mu</math>sec. shall occur</li> </ul>	2 hours for each axis: <ul style="list-style-type: none"> <li>- Freq.: 10-500-10 Hz in 5 minutes</li> <li>- Displacement: 1.5 mmpp</li> <li>- Acceleration: 5 g</li> </ul>
3.5.8	Single contact engaging force	- Ist insertion $\leq$ 8 N	- Operation Speed: 50 mm/min. (Tab as shown on Fig. 3)
3.5.9	Single contact separating force	<ul style="list-style-type: none"> <li>- Ist extraction <math>\leq</math> 8 N</li> <li>- Xth extraction <math>\geq</math> 2 N</li> </ul>	- Same as point 3.5.8
3.5.10	Connector mating force	3 Pos: $\leq$ 40 N 6 Pos: $\leq$ 65 N 8 Pos: $\leq$ 70 N 10 Pos: $\leq$ 80 N 12 Pos: $\leq$ 95 N 14 Pos: $\leq$ 105 N 18 Pos: $\leq$ 125 N 20 Pos: $\leq$ 140 N  24 Pos: See 10 Pos & 14 Pos 30 Pos: See 12 Pos & 18 Pos	<ul style="list-style-type: none"> <li>- In working condition with header counterpart</li> <li>- Operation Speed: 50 mm/min.</li> <li>- Direction equal to contact axis</li> </ul>
3.5.11	Connector unmating force	Ist extract.   -   Xth extract. 3 Pos: $\leq$ 40 N $\geq$ 10 N 6 Pos: $\leq$ 65 N $\geq$ 20 N 8 Pos: $\leq$ 70 N $\geq$ 25 N 10 Pos: $\leq$ 80 N $\geq$ 30 N 12 Pos: $\leq$ 95 N $\geq$ 35 N 14 Pos: $\leq$ 105 N $\geq$ 40 N 18 Pos: $\leq$ 125 N $\geq$ 55 N 20 Pos: $\leq$ 140 N $\geq$ 60 N  24 Pos: See 10 Pos & 14 Pos 30 Pos: See 12 Pos & 18 Pos	- Same as point 3.5.10 but pressing on latching arm.



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Para.	Test Items	Requirements	Procedures										
3.5.12	Connector locking strength	- 100 N Min.	- Operation Speed: 50 mm/min. - Apply an axial pull-off load to the cables bundle.										
3.5.13	Rec. contact insertion force	- 15 N Max. per contact	- Measure the force required to insert rec. contact into housing										
3.5.14	Rec. contact retention force (primary locking only)	- 80 N min.	- Apply an axial pull-off load to crimped wire. - Operation speed: 50 mm/min.										
3.5.15	Rec. contact retention force (secondary locking included)	- 100 N min.	- Same as point 3.5.14										
Physical Requirements													
3.5.16	Crimp tensile strength	<table border="1"> <thead> <tr> <th>Wire Size mm<sup>2</sup></th> <th>Crimp tensile N min.</th> </tr> </thead> <tbody> <tr> <td>0.35</td> <td>50</td> </tr> <tr> <td>0.5</td> <td>70</td> </tr> <tr> <td>1.0</td> <td>115</td> </tr> <tr> <td>1.5</td> <td>155</td> </tr> </tbody> </table>	Wire Size mm <sup>2</sup>	Crimp tensile N min.	0.35	50	0.5	70	1.0	115	1.5	155	- Apply an axial pull-off load to crimped wire of contact secured on the tester. - Operation Speed: 25-50 mm/min.
Wire Size mm <sup>2</sup>	Crimp tensile N min.												
0.35	50												
0.5	70												
1.0	115												
1.5	155												
3.5.17	Durability (Repeated Mating/Unmating)	-Single eng./separating force -Conn.mating/unmating force	- Operation Speed: 50 mm/min., no. of Cycles: 10										
3.5.18	Solderability	Wet Solder Coverage: 95% Min.	- Solder Temperature: 230 ± 5°C - Immersion Duration: 3 ± 0.5 seconds - Flux: Alpha 100 (AMP Spec. 109-5203)										

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Para.	Test Items	Requirements	Procedures
Environmental Requirements			
3.5.19	Thermal cycling resistance	<ul style="list-style-type: none"> <li>- No deformation or cracking of the plastic parts</li> <li>- Voltage drop <math>\leq 4.5</math> mV/A</li> <li>- Insul. resist., dielectr.resist., mech.feature at point 3.5.15 within limits indicated for new contacts</li> </ul>	5 cycles composed of: <ul style="list-style-type: none"> <li>- 2 hrs at <math>+125 \pm 2^\circ\text{C}</math></li> <li>- 2 hrs at <math>+ 40 \pm 2^\circ\text{C}</math> and 90-95% r.h.</li> <li>- 2 hrs at <math>-30 \pm 2^\circ\text{C}</math></li> </ul> (mated connector)
3.5.20	Salt spray corrosion test	<ul style="list-style-type: none"> <li>- Voltage drop <math>\leq 4.5</math> mV/A</li> <li>- Insulation resistance within indicated limits</li> </ul>	<ul style="list-style-type: none"> <li>- 150 hours of salt mist at <math>35 \pm 2^\circ\text{C}</math>, 5% of NaCl, pH 6.5-7.2 class 2</li> </ul> (mated connector)
3.5.21	Kesternich corrosion	<ul style="list-style-type: none"> <li>- Voltage drop <math>\leq 4.5</math> mV/A</li> <li>- Insulation resistance within indicated limits</li> </ul>	4 cycles composed of: <ul style="list-style-type: none"> <li>- 8 hours of exposure to an atmosphere with 0.66% of <math>\text{So}_2</math> at <math>40 \pm 2^\circ\text{C}</math> (method acc. to DIN 50118)</li> <li>- 16 hours in free air.</li> </ul> (mated connector)
3.5.22	Accelerated aging test	<ul style="list-style-type: none"> <li>- No deformation or cracking of the plastic parts and plastic material discoloration are admitted</li> <li>- Voltage drop <math>\leq 4.5</math> mV/A</li> <li>- Dielectr. resist. and mech.feature at point 3.5.15 within limits indicated for new contacts</li> </ul>	<ul style="list-style-type: none"> <li>- 120 hours at <math>120^\circ\text{C}</math></li> </ul> (mated connector)

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### 3.6 PRODUCT QUALIFICATION TEST SEQUENCE

Test Items	Test group												
	A	B	C	D	E	F	G	H	K	L	M	N	--
	Test sequence												
Confirmation of Product	1,5	1,7	1,7	1,3	1,8	1,5	1,5	1,3	1,7	1,5	1,5	1,5	
Single contact engaging force	2	2											
Single contact separating force	3	4											
Connector mating force			2										
Connector unmating force			3										
Durability (10 cycles)	4	5	4										
Voltage drop		3,6			2,4	2,4	2,4		2,4	2,4	2,4	2,4	
Rec.cont. retention force (primary lock plus secon lock)			6		7				6				
Connector locking strength			5										
Dielectric strength					6				5				
Insulation resistance					5								
Crimp tensile strength				2									
Thermal cycling resistance					3								
High temp. resist. (in oven)						3							
Current overload (on free air)							3						
Solderability								2					
Accelerated aging test									3				
Salt spray corrosion test										3			
Kesternich corrosion											3		
Vibration test												3	



FIG. 1

Wire Size (mm <sup>2</sup> )	Current Max. (A)
0.5 mm <sup>2</sup>	DC 6 A
1.0 mm <sup>2</sup>	DC 11 A
1.5 mm <sup>2</sup>	DC 14 A

FIG. 2

No. of Pos.	Reduction Coefficient
2-6	1
7-10	0.7
11-14	0.6
15-19	0.5
> 20	0.4

Note: The acceptable current carrying capacity is obtained by the specified maximum coefficient obtained by the number of contacts above table.

FIG. 3

