

PRODUCT SPECIFICATION

1. SCOPE

This specification covers the performance requirements and test methods for the Econoseal 3, Wire-to-Board connector system, manufactured by AMP of G.B. Ltd. The product features, construction and dimensions, shall conform to the relevant customer drawings.

2. DEFINITION OF TERMS

For the purpose of this product specification the following terms shall apply:

Contact

An electrically conductive metallic member used as a component of a connector assembly to form circuit connection by contacting. Receptacle and in-moulded tab contacts are available.

Housing

A dielectric component member of a connector made of insulating material that encapsulates contacts in its cavities. In this product line receptacle housings encapsulate receptacle contacts and headers encapsulate in-moulded tab contacts.

Anti-Backout

A dielectric component member of a connector made of insulating material that acts as secondary retention for receptacle contacts in the receptacle housing.

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						TITLE PRODUCT SPECIFICATION ECONOSEAL 3, WIRE-TO-BOARD		

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Cable Seal

A cable seal is a moulded piece of rubber pierced with a contact path that provides a seal between the housing and the cables on the cable entry side of the housing.

Blanking Plug

A moulded piece of rubber without contact path that provides a seal in the cavities not filled with a receptacle contact and cable seal.

Peripheral Seal

A peripheral seal is a moulded rubber ring that forms a seal between the mated header and receptacle housing.

Connector

A connector is an assembly of a header and receptacle housing. The latter loaded with peripheral seal, blanking plugs where appropriate, receptacle contacts crimped to cable and cable seal, and a fitted anti-backout.

3. PRODUCT DESCRIPTION

The Econoseal 3, Wire-to-Board system is a sealed 18 or 36 Way wire-to-board version of the Econoseal 3 low current wire-to-wire system. Due to the much larger number of ways and low/signal currents involved, the tabs and receptacles are gold plated over nickel, whilst the receptacles have a larger clip gap to reduce insertion force.

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A complete assembly consists of a header with in-moulded tabs connected to a receptacle housing assembly, with peripheral seal for housing to housing sealing. This assembly is loaded with .070 receptacle contacts crimped with cable seal, and blanking plugs filling the unused cavities.

The receptacle housings have resin lances for primary retention, which are pushed up as the receptacle contacts are inserted. These then fall back down behind the receptacle contacts when fully inserted. The anti-backout is assembled to the receptacle housing assembly from the front, after each cavity has been filled with either receptacle contacts or blanking plugs. As the anti-backout is inserted its legs pass over and come to rest above the resin lances, thus preventing them from rising and allowing the receptacle contacts to be released. If the receptacle contacts are not fully inserted, the anti-backout cannot be correctly assembled since the legs butt on the resin lances.

This product range is used to connect a car's wiring harness to the engine management control unit inside the engine compartment.

4. PRODUCT REQUIREMENTS

This connector family is to be 'User Friendly'. The anti-backouts and peripheral seals are to be a contrasting colour to the housings, for easier identification of presence. Receptacle housings are to have an 'Inertia Locking' latch. The tabs in the header are to be adequately shrouded to prevent damage during mating.

Connectors of different numbers of ways must not mate with each other, and those intended to mate, should only do so in the designed configuration.

This family of connectors is to be suitable for automatic harness manufacture, hence the contact orientation must be in the same plane, for auto-assembly.

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Tabs in the headers are to be in-moulded with suitable gold plating in the contact area for signal currents. Plating at the PCB end of the tabs is to be suitable for flow soldering.

The receptacle contacts are to be similarly gold plated in the contact area only.

Receptacle contacts are suitable for crimping thin walled irradiated or non-irradiated cable in the wire range 0.50mm² to 1.50mm², although 2.00mm² cable can be crimped satisfactorily. The insulation crimp is to be a 'special' to crimp both wire and seal.

5. GENERAL REQUIREMENTS

The following customer drawing numbers form part of this specification.

C344103
C344106
C344107
C344108
C344111
C344112
c344113
C172746
C172748

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The part numbers used in this product include:

344103-1 18 Way Header.
 344104-1 18 Way Receptacle Housing.
 344105-1 18 Way Peripheral Seal.
 344106-1 18 Way Receptacle Housing Assembly.
 344107-1 18 Way Anti-Backout.
 344108-1 36 Way Header.
 344109-1 36 Way Receptacle Housing.
 344110-1 36 Way Peripheral Seal.
 344111-1 36 Way Receptacle Housing Assembly.
 344112-1 36 Way Anti-Backout.
 344113-1 .070 Receptacle Contact.
 172746-1 Cavity Rear Seal.
 172748-1 Cavity Blank Plug.

6. MATERIALS

PART NO.	MATERIALS
344103-1	} 13% GLASS FILLED NYLON
344108-1	
344104-1	} 6,6 NYLON
344106-1	
344109-1	
344111-1	
344112-1	
344105-1	} NEOPRENE
344110-1	
344113-1	GOLD OVER NICKEL PLATED PHOSPHOR BRONZE.
172746-1	} N.B.R.
172748-1	

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7. OTHER DOCUMENTS REFERRED TO:

The following documents form a part of this specification to the extent 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 requirements of this specification and referenced documents, this specification shall take precedence.

8. OTHER SPECIFICATIONS CONFORMED TO:

114-5082 Application Specification.

107-3044 Packaging Specification - Headers.

107-3045 Packaging Specification - Housings
& Anti-Backouts.

108-3069 Product Specification for Econoseal
3 family.

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9. TEST CONDITIONS OF PERFORMANCE

TEST DESCRIPTION	REQUIREMENT	PROCEDURE												
Contact Insertion Force	4 Newton maximum initial per contact	Measure force necessary to mate contact assembly at a rate of 0 to 300mm per min. Ref: BLS 62.21.712 Section: 7.1												
Contact Withdrawal Force	1.5 Newton minimum final per circuit	Measure force of the 12th disengagement of the same contact ass'y at a rate of 0-300 mm per min. Ref: BLS 62.21.712 Section: 7.2												
Tensile, Straight	<table border="1"> <thead> <tr> <th>Wire Size mm²</th> <th>Strength min. Newton</th> </tr> </thead> <tbody> <tr> <td>upto 0,3</td> <td>40</td> </tr> <tr> <td>0,3 - 0,45</td> <td>70</td> </tr> <tr> <td>0,45- 0,65</td> <td>90</td> </tr> <tr> <td>0,65- 1,00</td> <td>105</td> </tr> <tr> <td>1,00- 2,00</td> <td>160</td> </tr> </tbody> </table>	Wire Size mm ²	Strength min. Newton	upto 0,3	40	0,3 - 0,45	70	0,45- 0,65	90	0,65- 1,00	105	1,00- 2,00	160	Determine crimp tensile at a rate of 25mm/min. Apply force parallel to axis of wire. Ref: BLS 62.21.712 Section: 7.3
Wire Size mm ²	Strength min. Newton													
upto 0,3	40													
0,3 - 0,45	70													
0,45- 0,65	90													
0,65- 1,00	105													
1,00- 2,00	160													
Receptacle Contact Backout Force	80 Newton minimum per contact	Apply gradually increasing axial load on wire to pull receptacle contact from rear of receptacle housing. Anti-backout fitted if applicable Ref. BLS 62.21.712 Section: 18.4												
Vibration	No discontinuities greater than 1 micro second; Termination and contact resistance	10-200-10 Hz traversed in 1 min. at 0,8mm amplitude for 16 hrs. in each of 3 mutually perpendicular directions. Ref: BLS 62.21.712 Section: 21												

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9. TEST CONDITIONS OF PERFORMANCE CONT'D


TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Special Temp Test	Header must operate at a max. temp of 125°C	Connect all header tabs in series. Pass current to cause 20°C rise and subject the assembly to a total temp. of 125°C.
Engagement Force of Mated Connector	Max. engagement Force: for 36 way = 180N for 18 way = 140N	Measure force to mate fully loaded housings at a rate of 300mm per minute. Ref: BLS 62.21.712 Section 18.1
Intentional Disengagement force of mated connector	36 way: - 50N min. 170N max. 18 way: - 25N min. 100N max.	Measure force of the first 12 disengagements of the same fully loaded housing. The latch to be inoperative and disengagement rate to be 300mm/minute. Max force to be that of first disengagement. Min force to be that of twelfth disengagement. Ref: BLS 62.121.712 Section: 18.2
Unintentional Disengagement force of mated connector	36 way: - 220N min 340N max 18 way: - 200N min 300N max	Measure the force of disengaging the same fully loaded housings with the latch operative. Disengagement rate of 300mm/minute Ref. BLS 62.21.712 Section: 18.3

9. TEST CONDITIONS OF PERFORMANCE CONT'D

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Temperature Rise vs Current (see note (a))	Maximum 20°C T-rise at specified current Wire size: 1.5mm ² Current: 8A	Measure T-rise at specified current. All contacts from one connector put in series. Ref: BLS 62.21.712 Section: 8.1
Derated current for multi-way housings.	For fully loaded housing at a max. temp rise of 20°C derated current per contact = 7A	Using max wire size, measure T-rise at specified current, passed through all contacts of a fully loaded assembly. Determine current rating per contact.
Salt Spray Test	Leakage current flow into any pin shall not rise above 100µA	Connector installed in salt cabinet a) all pins connected to +ve supply. b) alternate pins connected to +ve and -ve supply.

a) Maximum current that can be carried by this product is limited by maximum operating temperature of housings, which is 100°C, and temperature rise of contacts, which is 20°C.
Variable which shall be considered for each application are:

Wire size
Connector size
Ambient temperature
Printed circuit board design.

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