


**2-7 POS. SPLASH PROOF FEMALE CONNECTORS WITH SEC. LOCKING DEVICE**  
**(FOR JUNIOR POWER TIMER CONTACTS)**

**1. SCOPE**

This specification covers features and performances of Splash Proof connectors with the following AMP P/N:

- C-282190 : 2 pos. connector (with internal spring - Type B)
  - C-282648 : 2 pos. connector (with internal spring - Type B, ref. Hitachi injector)
  - C-282189 : 2 pos. connector (with external spring - Type A)
  - C-282680 to 282685 : 2 pos. connector (with external spring - Type A)
  - C-282762 : 2 pos. connector (with external spring - Type A)
  - C-282191 : 3 pos. connector (with external spring - Type A)
  - C-282545 : 3 pos. connector (with external spring - Type A)
  - C-282651 : 3 pos. connector (with external spring - Type A)
  - C-282686 to 282689 and 282800 : 3 pos. connector (with external spring - Type A)
  - C-282729 : 3 pos. connector (with external spring - Type A)
  - C-282192 : 4 pos. connector (with external spring - Type A)
  - C-282342 : 4 pos. connector (with external spring - Type A)
  - C-282764 : 4 pos. connector (with external spring - Type A)
  - C-282765 : 4 pos. connector (with external spring - Type A)
  - C-282765 : 4 pos. connector (with external spring - Type A)
  - C-282996 : 4 pos. connector (with external spring - Type A)
  - C-282193 : 5 pos. connector (with external spring - Type A)
  - C-282766 : 5 pos. connector (with external spring - Type A)
  - C-282236 : 6 pos. connector (with external spring - Type A)
  - C-282767 : 6 pos. connector (with external spring - Type A)
  - C-282194 : 7 pos. connector (with external spring - Type A)
  - C-282768 : 7 pos. connector (with external spring - Type A)
- with the relevant contacts - wire seals with AMP P/N :
- C-929939-3 : contact "AMP Junior Power Timer" wire range 0,5-1,0 mm<sup>2</sup>
  - C-929937-3 : contact "AMP Junior Power Timer" with wire range > 1,0-2,5 mm<sup>2</sup>
  - C-929937-1 : contact "AMP Junior Power Timer" wire range > 1,0-2,5 mm<sup>2</sup>
  - C-828904-1 : wire seal for single wire 0,5 - 1,0 mm<sup>2</sup>
  - C-828905-1 : wire seal for single wire 1.5 - 2,0 mm<sup>2</sup> (1,0 mm<sup>2</sup> admissible too)
  - C-282536-1 : wire seal for single wire 2,5 mm<sup>2</sup> only
  - C-828906-2 : cavity plug to close connector cavity (or, in alternative, P/N C-282081-1)

These connectors are suitable for header counterparts, as shown on above mentioned drawings.

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E	HOUSING MATERIAL NOTE UPDATING (PAGE 2)	M.P.	M.G.	24-03 2014	DR R. MARTINI <i>R.M.</i> 28 May 93				
D	REVISED PER EC ET00-0284-98	M.P.	R.M.	21-10 '98	CHK C. TARTARI 31 May 93				
C	REVISED PER EC ET00-0149-97	R.M.	C.T.	24-3 97	APP.	LOC. I	NUMBER 108 - 20091	REV. E	
B	REVISED PER EC ET00-0359-96	R.M.	C.T.	2-9 96	SHEET 1 OF 7 NAME SPLASH PROOF CONN. WITH SEC. LOCK FOR JUNIOR POWER TIMER CONTACTS, 2-7 POS. PRODUCT SPECIFICATION				
A	ACTIVE PER EC ET00-0019-94	R.M.	C.T.	27-1 94					
0	FIRST ISSUE (ENGLISH VERSION)	-	-	-					
REV LTR	REVISION RECORD	DR	CHK	DATE					

## 2. CONNECTOR FEATURES :

2.1 Materials : - contacts : Phosphor Bronze, or Cu Fe alloy for contact 929937-1, bright tin plated (with external reinforcement spring in stainless steel).  
- housings : PA 6.6 (and retaining spring in stainless steel and frontal sealing in silicone rubber)  
- single wire seals : silicone rubber.

2.2 Wire Range : - stranded cable acc. to FIAT normation table n° 91107/03 and 91107/05

0.5 mm <sup>2</sup> reduced insul. cable " phase 3 "	dia. 1.6 - 1.7 mm
0.75 " " " " "	1.9 - 2.0 mm
1.0 " " " " "	2.0 - 2.1 mm
1.5 " " " " "	2.3 - 2.4 mm
2.0 " " " " "	2.6 - 2.7 mm
2.5 " " " " "	2.9 - 3.0 mm

2.3 Current Rating : 20 A (with 2.5 mm<sup>2</sup> wire and contact 929937-1)

2.4 Working Temperature : -30 to +125 °C (with included the temperature increasing due to working current flow).

2.5 Degree of Protection : IP 5.4 according to IEC 529.

2.6 Socket Housings (2 - 7 pos.) : provided with secondary locking device like a door moulded at hinge and integral with housing body.

The sec. locking device hooks on the housing body after the complete introduction of contacts into their cavity; if contacts are partially or wrongly inserted into the cavity the sec. lock doesn' t hook in a right way to the housing body. Besides, it ensures a correct holding of contacts in their cavity in case of primary lock bad working.

2.7 Maximum operating voltage: 24 V dc. For application at higher voltage please contact AMP.

### 3. FEATURES AND TEST CONDITIONS

FEATURES	TEST CONDITIONS	LIMITS
3.1 Connector Mating Force ( with contacts inserted )	In working condition with header counterpart. Speed 25 - 50 mm/minute Direction equal to contact axis. ( tab cont. as shown in Fig. 1).	2 pos. ≤ 50 N ( type B ) 2 pos. ≤ 70 N ( type A ) 3 pos. ≤ 85 N ( type A ) 4 pos. ≤ 100 N ( type A ) 5 pos. ≤ 115 N ( type A ) 6 pos. ≤ 130 N ( type A ) 7 pos. ≤ 145 N ( type A )
3.2 Connector Unmating Force ( with contacts inserted )	a) like point 3.1 ----- b) like point 3.1, but pressing on the retaining spring.  ----- c) like point 3.1, but without pressing on the retaining spring.	2 pos. ≥ 30 N (type B) 1st extr. ----- Type A    1st extr.    Xth extr. 2 pos.    ≤ 20 N        ≥ 8 N 3 pos.    ≤ 35 N        ≥ 12 N 4 pos.    ≤ 50 N        ≥ 16 N 5 pos.    ≤ 65 N        ≥ 20 N 6 pos.    ≤ 80 N        ≥ 24 N 7 pos.    ≤ 95 N        ≥ 30 N ----- ≥ 20 N per no. of position of the connector, 1st extr.
3.3 Single Contact Mating Force	Single cont. (tab as shown in Fig.1)	≤ 18 N 1st insertion
3.4 Single Contact Unmating Force	Single cont. (tab as shown in Fig.1)	1st extr.                      Xth extr. ≤ 18 N                        ≥ 4 N
3.5 Retention Force of the single contact from the housing	At temperature + 23 ± 5 °C and at tensile speed of 25 - 50 mm/minute	Only with primary locking dev. ≥ 70 N Only with secondary locking dev. ≥ 30 N
3.6 Crimping Tensile Strength	Tensile speed 25 - 50 mm/minute	0.5 mm <sup>2</sup> ≥ 70 N 1.0 mm <sup>2</sup> ≥ 115 N 1.5 mm <sup>2</sup> ≥ 155 N 2.5 mm <sup>2</sup> ≥ 235 N
3.7 Voltage Drop	Between a point on the wire at 1 cm from the connector edge and a point on the tab very closed to the connector edge (see Fig.2)	≤ 3 mV/A on new contacts and after 10 insertions/extractions



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FEATURES	TEST CONDITIONS	LIMITS
3.8 Insulation Resistance	Between two adjacent contacts apply 500 Vdc for 1 minute.	$\geq 10 \text{ M}\Omega$
3.9 Dielectric Breakdown Resistance	Between two adjacent contacts apply voltage for 1 minute	$\geq 1000 \text{ Vac}$
3.10 High Temperature Resist. with current load. ( example of 6 pos.conn.)	On all ways contemporarily : -Not airy ambient-with a test temp. of $80 \pm 2 \text{ }^\circ\text{C}$ : -Test current on each way : 14 A (with a $1.5 \text{ mm}^2$ wire) or 20 A (with a $2.5 \text{ mm}^2$ wire) -Duration: 5 hours	Temperature increasing detected: $\leq 50 \text{ }^\circ\text{C}$ (thermocouple placed on transition between receptacle contact body and wire barrel)  Voltage drop within limits indicated for new contacts.  No damaging.
3.11 Current Overload	On one way only w/o housing : - Test current : 21 A ( with a $1.5 \text{ mm}^2$ wire ) or 30 A (with a $2.5 \text{ mm}^2$ wire ). - Duration: 500 cycles composed of 45' current "ON" 15' current "OFF".	Temperature increasing $\leq 60 \text{ }^\circ\text{C}$ on transition between contact body and wire barrel  Voltage drop $\leq 4.5 \text{ mV/A}$  No damaging
3.12 Thermal Cycling Resistance	a) 5 cycles composed of : 2 hrs. at $+125 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$ 2 hrs. at $-30 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$  b) 5 cycles composed of : 2 hrs. at $+125 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$ 2 hrs. at $+ 40 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$ and 90-95% R.H. 2 hrs. at $-30 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$  Note: time interval in passing from one ambient temperature to the next one must not exceed 3 minutes.  ( connector mated with header counterpart).	No deformation or cracking of the female connector.  Voltage drop $\leq 4.5 \text{ mV/A}$  Insulation resistance, dielectric breakdown resistance, and mechanical features at points 3.2.c and 3.5, within limits indicated for new contacts.

FEATURES	TEST CONDITIONS	LIMITS
3.13 Accelerated Ageing Test	200 hours at $+125\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$  (Connector mated with header counterpart).	Deformation or cracking of female connector and plastic material discoloring are not admitted.  Voltage drop $\leq 4.5\text{ mV/A}$  Dielectric breakdown resistance and mechanical features at points 3.2c - 3.5, within limits indicated for new contacts
3.14 Kesternich corrosion	4 cycles composed of : 8 hrs of exposure to an atmosphere with 0.66% of $\text{SO}_2$ at $40 \pm 2\text{ }^{\circ}\text{C}$ (method acc. to DIN 50118) 16 hrs in free air.  (Connector mated with header counterpart)	Voltage drop $\leq 4.5\text{ mV/A}$  Insulation resistance within indicated limits.
3.15 Salt Spray Corrosion Test	150 hrs of salt mist at $35\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ , 5% of NaCl, pH 6.5-7.2 class 2.  (Connector mated with header counterpart)	Voltage drop $\leq 4.5\text{ mV/A}$  Insulation resistance within indicated limits.
3.16 Vibration Test	2 hours for each axis : Freq: 10-500-10 Hz in 5 minutes Displacement : 1.5 mm pick to pick Acceleration : 25 g  (FIAT norm.7.Z8510).	Voltage drop $\leq 3\text{ mV/A}$  No circuit break greater than $1\mu\text{s}$
3.17 Water Resistance	Acc. to IEC norm.529 para. 7.4 and para. 8.4. Duration 2 hours. Test device acc. to Fig.4 Position of the conn.,connected with header counterpart, as required on the relevant Customer Dwg.  NOTE : This test must be carried out after tests 3.12 + 3.13	Insulation resistance within indicated limits.  Dielectric breakdown resistance within indicated limits.  Voltage drop $\leq 4.5\text{ mV/A}$  No water infiltration inside the connector.
NOTE : - Each test must be carried out, if not otherwise specified, at an ambient temperature of $23 \pm 5\text{ }^{\circ}\text{C}$ , relative humidity of 45-75% and atmospheric pressure of 860-1060 mbar .  - See also page 7 for test groups and sequences.		



TAB CONTACT IN BRIGHT TINNED BRASS

ALTERNATIVE SHAPE

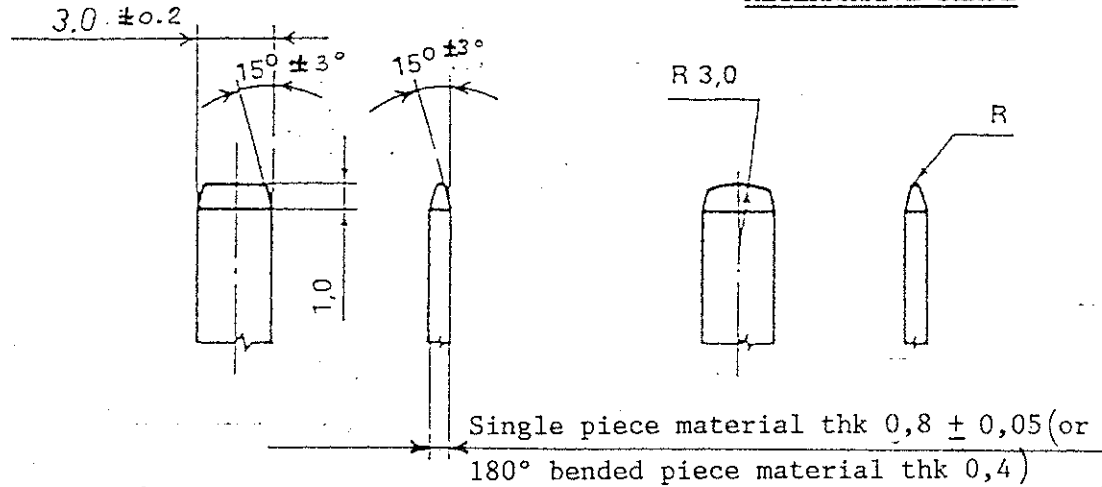


FIG. 1

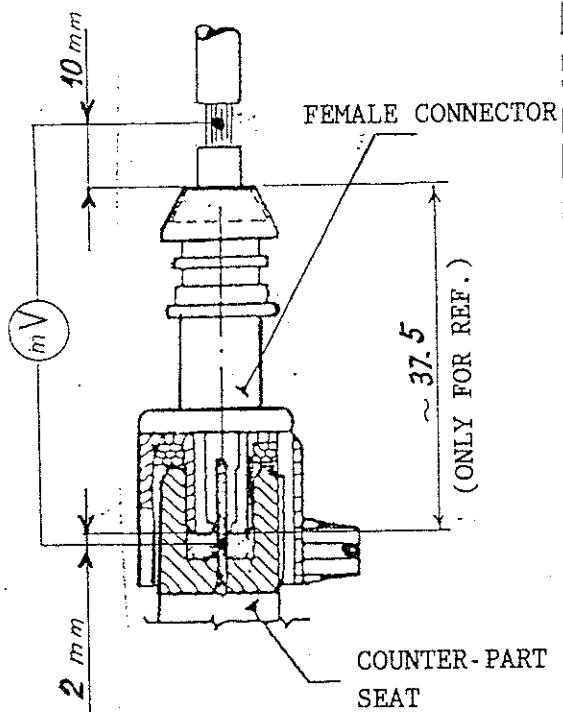
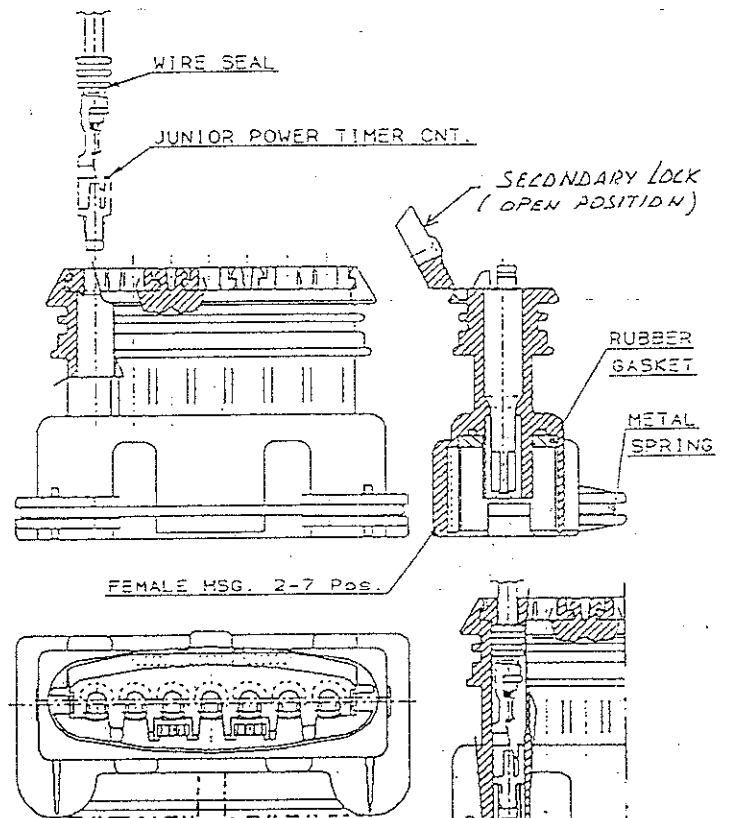


FIG. 2



TYPICAL TRANSVERSAL AND LONGITUDINAL CONNECTOR SECTION (ONLY FOR REF.)

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TEST TO BE CARRIED OUT	TEST GROUP AND SEQUENCY											
	A	B	C	D	E	F	G	H	I	L	M	N
- Visual examination	1,5	1,7	1,6	1,3	1,4	1,4	1,9	1,8	1,6	1,6	1,5	1,9
- Single contact mating force	2	2										
- Single contact unmating force	3	4										
- Connector mating force with contacts inserted			2									
- Connector unmating force with contacts inserted			3				5	5				
- Mechanical duration ( 10 cycles )	4	5	4									
- Voltage drop		3,6			3	3	2,4	2,4	2,4	2,4	2,4	2,6
- Retention force of the single contact in the housing			5				8	7				
- Crimping tensile strength				2								
- Insulation resistance							6		5	5		7
- Dielectric breakdown resist.							7	6				8
- High temperature resistance with current load					2							
- Current overload						2						
- Thermal cycling							3					3
- Accelerated ageing test								3				4
- Kesternich corrosion									3			
- Salt spray test										3		
- Vibration test											3	
- Water resistance												5

