

**FASTIN-FASTON(\*) Connector**  
2.8 – 4.8 – 6.3 – 7.9 and 9.5 mm srs.

**1. SCOPE**

This specification covers the performance requirements and test methods of 2.8 - 4.8 - 6.3 – 7.9 and 9.5 mm srs. FASTIN-FASTON\* Connectors.  
 Sizes are designed to correspond to the mating tab width of 2.8 - 4.8 - 6.3 – 7.9 and 9.5 mm. acc. to the IEC 760.  
 These terminals are suitable for Automotive, Consumer Goods, Computer, Telecommunications and Industrial Controllers Applications.

**2. REQUIREMENTS**

**2.1 Design and construction** (involved P/ns are listed on page 7 of 7)

Connectors shall be of the design, construction and physical dimensions specified on the applicable product drawings, called Customer drawing (C-.... TE Amp Part Number)

**2.2 Materials**

Contact : Brass and/or Phosphor Bronze (Tin or silver plated) and/or Steel nickel plated (▲).  
 Housing : According to Product drawings  
 (▲), Steel Nickel plated version has not been fully tested to insure this specification requirements.

**2.3 Current Carrying Capacity**

|                                      |   |   |
|--------------------------------------|---|---|
| 2.8 mm. (.110" Sr.).....             | : | 11A max with 1.0 or 1.5 mm <sup>2</sup> wire size                         |
| 4.8 mm. (.187" Sr.).....             | : | 20A max with 2.5 mm <sup>2</sup> wire size                                |
| 6.3/7.9 mm. (.250" and .312" Sr.)... | : | 28A max with 4 or 6 mm <sup>2</sup> wire size                             |
|                                      |   | For steel nickel plated version use:                                      |
|                                      |   | 7A with 0.75-0.80 mm <sup>2</sup> wire, 8A with 1.0 mm <sup>2</sup> wire, |
|                                      |   | 10A. with 1.5 mm <sup>2</sup> wire, 14A with 2.5 mm <sup>2</sup> wire.    |
| 9.5 mm. (.375" Sr.).....             | : | 50A max with 10 mm <sup>2</sup> wire size                                 |

**2.4 Temperature rating**

Temperature rating shall be within the range specified as following:  
 -30°C/+105°C for Brass versions  
 -40°C/+125°C for Phos. Bronze versions  
 -30°C/+240°C for Steel Nickel plated versions.  
 This range includes ambient temperature and temperature rising as a result of loaded current affection.

**2.5 Application of the FASTIN-FASTON terminal**

Crimp heights must be in accordance with the dimensions specified on plate of the relevant mini-applicator, supplied by TE Amp Italia for the terminal in subject.

**2.6 Maximum operating voltage**  
250V AC/DC.

|                  |  |                    |      |             |
|------------------|--|--------------------|------|-------------|
| <b>D3</b>        | UPDATED  | H.Y.               | G.T. | 02 APR 2009 |
| <b>D2</b>        | ADDED NEW PART 293041                                | H.Y.               | G.T. | 02 AUG 2005 |
| <b>D1</b>        | ADDED NEW PART 160173, ET00-0049-03                  | H.Y.               | C.T. | 24 APR 2003 |
| <b>D</b>         | CHANGED PARAMETERS, ET00-0034-03                     | H.Y.               | C.T. | 06 MAR 2003 |
| <b>C1</b>        | NEW P/N.s ADDED FOR ET00-0082-02                     | H.Y.               | C.T. | 23 APR 2002 |
| <b>C</b>         | REVISED FOR ET00-0225-01                             | H.Y.               | C.T. | 14 FEB 2002 |
| <b>B4</b>        | REVISED ADDING .110" sr P/Ns & REDRAWN, ET00-0088-01 | R.F.               | C.T. | 09 APR 2001 |
| rev letter       | rev. record  | DR                 | CHK  | Date        |
| DR.<br>R. FABRIS | DATE   | APVD<br>C. TARTARI | DATE |             |

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**3. TEST REQUIREMENTS AND PROCEDURE SUMMARY**

| TEST DESCRIPTION                                   | PROCEDURE                | REQUIREMENT  |  |   |
|--|--------------------------|--|--|---|
| <b>P R O D U C T E X A M I N A T I O N</b>         |                          |  |  |   |
| 3.1  | Visual examination       | Product shall be in accordance with the requirements of production drawing.  |  |   |
| <b>M E C H A N I C A L R E Q U I R E M E N T S</b> |                          |  |  |   |
| 3.2  | Connector mating force   | Female connector mated with proper tab connector (locking device not operating). Perform test at a rate of 25-50 mm/minute | 1° Cycle   |   |
|  |                          |  | 44N Max  | per pole for 2.8, 4.8 mm srs.   |
|  |                          |  | 25N Max  | per pole for 6.3 mm srs.  |
|  |                          |  | 35N Max  | per pole for 7.9, 9.5 mm srs.   |
| 3.3  | Connector unmating force |  | 1° Cycle   | 10° cycle   |
|  |                          |  | Not greater than connector mating force value. This is not applicable to receptacle contact with dimple and tab with hole. | 4N Min. per pole for Brass and Phos. Bronze versions, 13N Min. per pole for Steel nickel plated versions. |
| 3.4  | Engaging force           | Single receptacle contact mated with tab contact   | 40N Max  | Per pole for 2.8. 4.8 mm srs.   |
|  |                          |  | 22N Max  | For 6.3 mm srs.   |
|  |                          |  | 32N Max  | For 7.9, 9.5 mm srs.  |
|  |                          |  | 38N Max  | For 6.3 mm srs. when receptacle with dimple and tab with hole have been used.                             |
| 3.5  | Separating force         |  | 1° Cycle   | 10° cycle   |
|  |                          |  | Not greater than engaging force value. This is not applicable to receptacle contact with dimple and tab with hole.         | 4N Min. for Brass and Phos. Bronze versions, 13N Min. for Steel nickel plated versions.                   |
| 3.6  | Durability               |  | 10 mating/unmating operations  |   |

| TEST DESCRIPTION |  | PROCEDURE   | REQUIREMENT   |       |
|------------------|--|---|---|-------|
| 3.7              | Contact retention force                    | Apply an axial load to contact at a rate of 25 mm / minute  | 40N Min for 2.8, 4.8 mm srs.<br>60N Min for 6.3, 7.9, 9.5 mm srs. |       |
| 3.8              | Crimp tensile strength<br><br>(see note 3) | Subject crimped terminal to direct pull at a rate of 25-50 mm/min<br>(The wire insulation must be cut to avoid the plastic material contribution to the wire crimp tensile) | Wire Size (mm <sup>2</sup> )                                      | N Min |
|                  |  |   | 0.25  | 40    |
|                  |  |   | 0.35  | 60    |
|                  |  |   | 0.5   | 70    |
|                  |  |   | 0.75-0.8  | 90    |
|                  |  |   | 1.0   | 115   |
|                  |  |   | 1.5   | 155   |
|                  |  |   | 2.5   | 235   |
|                  |  |   | 4.0   | 320   |
| 6.0              | 400  |   |   |       |
| 10.0             | 600  |   |   |       |

**ELECTRICAL REQUIREMENTS**

|      |   |   |   |  |
|------|---|---|---|--|
| 3.9  | Millivolt drop, specified current<br><br>(see note 3) | As per Fig.1 and 2, page 6/7  |   | 3 mV / A Max, (6mV/A Max. for steel version).<br>(Before and after ten in/out operations). |
|      |   | Wire Size (mm <sup>2</sup> )  | Test current (A)  |  |
|      |   | 0.25  | 2   |  |
|      |   | 0.35  | 3   |  |
|      |   | 0.5   | 5   |  |
|      |   | 0.75-0.8  | 8   |  |
|      |   | 1.0   | 10  |  |
|      |   | 1.5   | 14  |  |
|      |   | 2.5   | 20  |  |
| 4.0  | 28  |   |   |  |
| 6.0  | 36  |   |   |  |
| 10.0 | 50  |   |   |  |
| 3.10 | Insulation resistance                                 | Test between adjacent contacts of connector assemblies.<br>500 Vd.c., hold 1 min.   | 10 MΩ Min. for Brass and Phos. Bronze versions and 100 MΩ Min. for Steel Nickel plated versions.                            |  |
| 3.11 | Dielectric withstanding voltage                       | Test between adjacent contacts of connector assemblies.   | 1000 V rms hold 1 minute for Brass and Phos. Bronze versions and 1750 V rms hold 1 minute for steel nickel plated versions. |  |
| 3.12 | Current overload                                      | a) For 1 hour apply a current of 1.5 times the one specified at point 3.9 (point 2.3 for Steel version) to one way only<br>b) For 1 hour apply the 70% of the current specified at point 3.9 to all the ways of the connector | Millivolt drop 6 mV/A Max<br>(8 mV/A Max for Steel version)   |  |

| TEST DESCRIPTION |  | PROCEDURE  | REQUIREMENT   |
|------------------|--|--|---|
| 3.13             | Thermal cycling  | Subject mated connectors to 5 cycles. Each cycle consists of : <ul style="list-style-type: none"> <li>• 2 hrs at max. temperature specified in para. 2.4.</li> <li>• 2 hrs : +40°C ±2°C at 95% RH</li> <li>• 2 hrs : -30°C ±2°C</li> </ul> | Millivolt drop 6 mV / A Max . (8 mV/A Max for Steel version). Shall meet the requirements of subsequent tests listed in para 5. |
| 3.14             | Current overloading, cyclic. (For steel nickel plated versions, .250" sr. only). | Test current 1.5 times the current specified at point 2.3. Duration: 250 cycles composed of: <p style="text-align: center;">45 min. current ON<br/>15 min. current OFF</p>   | Voltage drop 8mVA max.  |
| 3.15             | Accelerated ageing   | Subject mated connectors to 200 hrs at max. temperature environment specified in para. 2.4.  | Millivolt drop 6 mV / A Max., (8mV/A Max. for steel version). Shall meet the requirements of subsequent tests listed in para 5. |

**E N V I R O N M E N T A L   R E Q U I R E M E N T S**

|      |                                    |  |  |
|------|------------------------------------|--|--|
| 3.16 | Corrosion, salt spray (see note 3) | Subject mated connectors to 96 hrs at 5% concentration (Temperature : 35°C±2°C ; PH : 6.5 ÷ 7.2)   | Millivolt drop 6 mV/A Max., (8mV/A Max. for steel version). Shall meet the requirements of subsequent tests listed in para 5.    |
| 3.17 | Vibration                          | Subject mated connectors to 10-200-10 Hz traversed in 5 minutes at 1.5 mm total excursion 2 hrs in each of 3 mutually perpendicular directions. (10 g acceleration). | Millivolt drop 6 mV / A Max., (8 mV/A Max. for steel version). Shall meet the requirements of subsequent tests listed in para 5. |

Notes :

- 1) Unless otherwise specified, all measurements and tests shall be made using tin plated receptacle contacts and plain tab contacts at room temperature of 23°C ±5°C.
- 2) Corrosion resistance is not applicable to plain contacts.
- 3) For P/Ns 280075-... and 280756-... only : crimpable onto wire size 3 mm<sup>2</sup> too crimp tensile strength: 260N min., test current for millivolt drop : 24A

**4. QUALIFICATION**

When all the tests have been successfully performed on the subject product line, the product is qualified according to the present specification.

**5. TEST SEQUENCE**

| DESCRIPTION                                     | TEST GROUP AND SEQUENCE (a) |     |     |      |     |     |     |          |                |                |
|---|-----------------------------|-----|-----|------|-----|-----|-----|----------|----------------|----------------|
|   | A1                          | A2  | B   | C    | D   | E   | F   | G<br>(b) | H <sup>ⓐ</sup> | I <sup>ⓐ</sup> |
| Appearance                                      | 1.5                         | 1.7 | 1.7 | 1.13 | 1.7 | 1.7 | 1.5 | 1        | 1-7            | 1-11           |
| Mating force (Connector)                        |                             |     |     | 2.11 |     |     |     | 2        |                | 2-6            |
| Unmating force (Connector)                      |                             |     |     | 3.12 |     |     |     | 3        |                | 3-7            |
| Engaging force (Single contact)                 |                             | 2.5 |     |      |     |     |     | 4        |                |                |
| Separating force (Single contact)               |                             | 3.6 |     |      |     |     |     | 5        |                |                |
| Contact retention force                         |                             |     |     |      |     |     |     | 6        |                |                |
| Crimp tensile                                   |                             |     |     |      |     |     |     | 7        |                |                |
| Millivolt drop                                  | 2.4                         |     | 2.6 | 4.8  | 2.5 | 2.5 | 2.4 |          | 2-6            | 4-9            |
| Insulation resistance                           |                             |     | 3   | 5.9  |     | 3.6 |     |          | 3              | 10             |
| Dielectric withstanding voltage                 |                             |     | 4   | 6.10 | 3.6 |     |     |          | 4              |                |
| Current overload                                |                             |     | 5   |      |     |     |     |          |                |                |
| Thermal cycling                                 |                             |     |     | 7    |     |     |     |          |                |                |
| Accelerated ageing                              |                             |     |     |      | 4   |     |     |          |                |                |
| Corrosion, salt spray                           |                             |     |     |      |     | 4   |     |          |                | 8              |
| Vibration                                       |                             |     |     |      |     |     | 3   |          |                |                |
| Durability                                      | 3                           | 4   |     |      |     |     |     |          |                | 5              |
| Temperature rise with current overload, cycling |                             |     |     |      |     |     |     |          | 5              |                |

- (a) Numbers indicate sequence in which tests are performed
- (b) Tests to be performed on separate samples
- (c) For Steel Nickel plated version only.

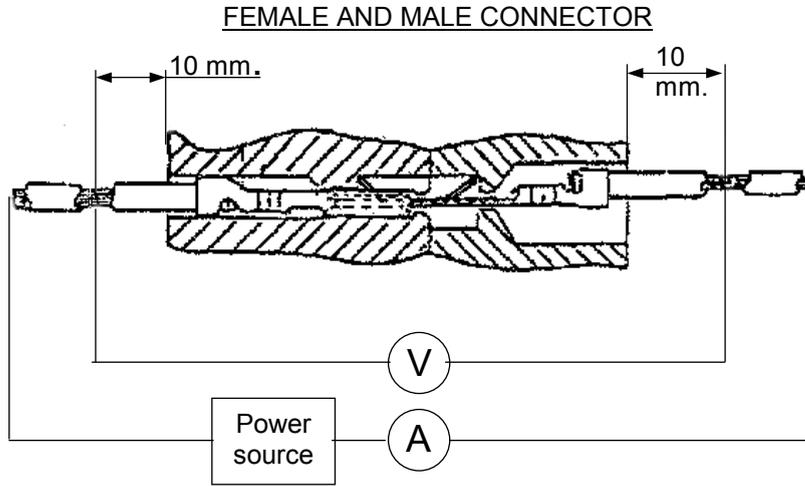


Figure 1

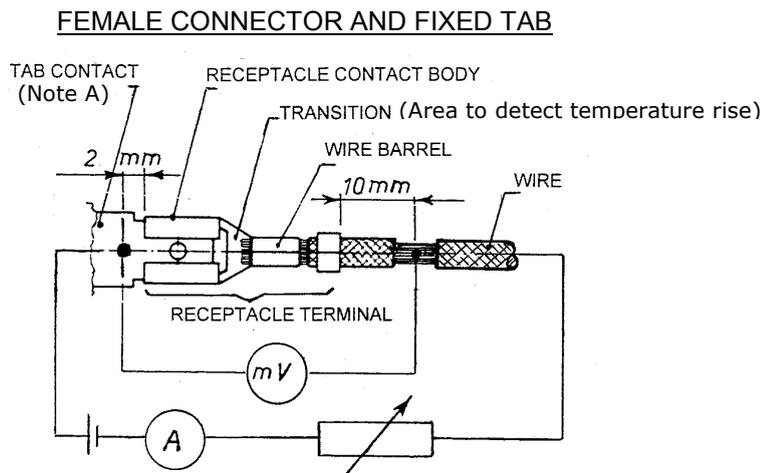


Figure 2

NOTE A) A male test tab having either a hole or dimple detent can be used (hole versions are preferred).

INVOLVED P/Ns (Base No. without prefix and suffix)

| TERMINALS              |        |                        |                        |        |                        |                        |        |
|------------------------|--------|------------------------|------------------------|--------|------------------------|------------------------|--------|
| 2.8 mm.<br>(.110" Sr.) |        | 4.8 mm.<br>(.187" Sr.) | 6.3 mm.<br>(.250" Sr.) |        | 7.9 mm.<br>(.312" Sr.) | 9.5 mm.<br>(.375" Sr.) |        |
| RECEPTACLE             | TAB    | RECEPTACLE             | RECEPTACLE             | TAB    | RECEPTACLE             | RECEPTACLE             | TAB    |
| 160366                 | 160743 | 280313                 | 42100                  | 42098  | 160251                 | 280076                 | 280074 |
| 160950                 | 160762 | 280919                 | 180351                 | 180352 | 160428                 | 280755                 | 280075 |
| 160729                 | 160776 | 281197                 | 180372                 | 280080 | 160557                 | 280756                 |        |
| 160864                 | 160887 | 282180                 | 180398 (*)             | 280081 | 160863                 | 281091                 |        |
| 160684                 | 160926 | 282331                 | 180560                 | 280096 | 160920                 |                        |        |
| 160173                 | 188352 |                        | 280084                 | 280425 | 180373 (*)             |                        |        |
|                        | 160888 |                        | 280085                 | 282170 | 180374 (*)             |                        |        |
|                        | 160923 |                        | 280095                 | 282186 | 180453                 |                        |        |
|                        |        |                        | 280098                 | 160457 | 280315                 |                        |        |
|                        |        |                        | 280285                 | 160691 |                        |                        |        |
|                        |        |                        | 280357 (*)             | 293041 |                        |                        |        |
|                        |        |                        | 280428                 |        |                        |                        |        |
|                        |        |                        | 280923                 |        |                        |                        |        |
|                        |        |                        | 282171                 |        |                        |                        |        |
|                        |        |                        | 282176                 |        |                        |                        |        |
|                        |        |                        | 282177                 |        |                        |                        |        |
|                        |        |                        | 282178                 |        |                        |                        |        |
|                        |        |                        | 180375                 |        |                        |                        |        |
|                        |        |                        | 284340                 |        |                        |                        |        |
|                        |        |                        | 284697(*)              |        |                        |                        |        |

| HOUSINGS               |     |                        |                        |        |                        |                        |        |
|------------------------|-----|------------------------|------------------------|--------|------------------------|------------------------|--------|
| 2.9 mm.<br>(.110" Sr.) |     | 4.8 mm.<br>(.187" Sr.) | 6.3 mm.<br>(.250" Sr.) |        | 7.9 mm.<br>(.312" Sr.) | 9.5 mm.<br>(.375" Sr.) |        |
| RECEPTACLE             | TAB | RECEPTACLE             | RECEPTACLE             | TAB    | RECEPTACLE             | RECEPTACLE             | TAB    |
| 180912                 |     | 281169                 | 163007                 | 180901 | 180913 (*)             | 280073                 | 280072 |
| 282015                 |     | 281750                 | 180451                 | 180906 | 280030                 | 280771                 | 280924 |
|                        |     |                        | 180452                 | 180908 | 280035                 | 281993                 | 281992 |
|                        |     |                        | 180904                 | 180916 | 280039                 |                        |        |
|                        |     |                        | 180905                 | 180924 |                        |                        |        |
|                        |     |                        | 180907                 | 180940 |                        |                        |        |
|                        |     |                        | 180914                 | 180948 |                        |                        |        |
|                        |     |                        | 180918 (*)             | 280099 |                        |                        |        |
|                        |     |                        | 180922                 | 280263 |                        |                        |        |
|                        |     |                        | 180923                 | 280430 |                        |                        |        |
|                        |     |                        | 280036                 | 280542 |                        |                        |        |
|                        |     |                        | 280262                 | 163008 |                        |                        |        |
|                        |     |                        | 280289                 | 180932 |                        |                        |        |
|                        |     |                        | 280314                 | 280290 |                        |                        |        |
|                        |     |                        | 280543                 |        |                        |                        |        |
|                        |     |                        | 280707 (*)             |        |                        |                        |        |
|                        |     |                        | 282448                 |        |                        |                        |        |
|                        |     |                        | 284674                 |        |                        |                        |        |
|                        |     |                        | 284698(*)              |        |                        |                        |        |
|                        |     |                        | 284699(*)              |        |                        |                        |        |
|                        |     |                        | 163120                 |        |                        |                        |        |
|                        |     |                        | 180900                 |        |                        |                        |        |
|                        |     |                        | 180929 (*)             |        |                        |                        |        |
|                        |     |                        | 180941                 |        |                        |                        |        |
|                        |     |                        | 280035                 |        |                        |                        |        |
|                        |     |                        | 280039                 |        |                        |                        |        |

(\*) Flag version