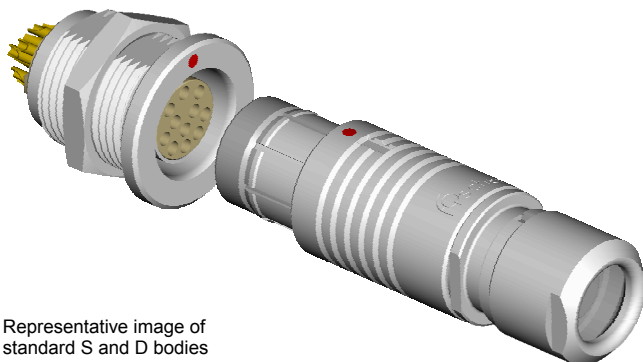


## Product range covered:

S / SC / SA / SV / SOV / SS / SSC / WSO / SF / SFE / SFU / SFPE / SFPV / D / DB / DBP / DBPC / DG / DGP  
DEE / DEU / DBEE / DBEU / DBPE / DBPU / DBPLE / DBPLU / K / KE / KS / KSE / DKBE / WDE



Representative image of  
standard S and D bodies

## Product Benefits

- Up to a maximum of 27 contacts
- Unsealed (IP50), waterproof (IP68) or hermetically sealed
- 3 keying-codes
- Reverse contact variants
- Standard matt silver chrome or non-reflective matt black chrome finish
- Full range of accessories including bend reliefs and sealing caps available
- Scoop-proof (IEC 60512-1-4)

## Pages

|                                       |   |
|---------------------------------------|---|
| Environmental & Mechanical Data ..... | 2 |
| Material & Surface Treatments .....   | 2 |
| Electrical Data .....                 | 2 |
| Contact Configurations.....           | 3 |
| Tooling .....                         | 5 |

Information provided herein is believed to be accurate at time of publishing. Fischer Connectors reserves the right to make modifications on products for continuous improvement without prior notice.

Environmental & Mechanical Data

| Characteristic              | Product Type                                         | Value                                                                                                                      | Standard                                                     |
|-----------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Sealing Performance         | Unsealed Connectors (mated)                          | IP50                                                                                                                       | IEC 60529                                                    |
|                             | Plugs with General Purpose Sealed Clamps (mated) (1) | IP68: 2 m submersion for 24 hours<br>IP69K (2)                                                                             |                                                              |
|                             | Receptacles "U" Body Style                           | IP68: 2 m submersion for 24 hours                                                                                          |                                                              |
|                             | Receptacles "E" Body Style                           | Hermetic: Tested: < 10 <sup>-8</sup> mbar l/sec.<br>IP69K (2)                                                              |                                                              |
| Operating Temperature Range | Unsealed Connectors                                  | -65°C to +200°C                                                                                                            | IEC 60512-6-11 i+j<br>IEC 60068-2-14-Nb                      |
|                             | Plugs Using General Purpose Sealed Clamps            | -65°C to +130°C                                                                                                            |                                                              |
|                             | Receptacles "U" Body Style                           | -50°C to +200°C (3)                                                                                                        |                                                              |
|                             | Receptacles "E" Body Style                           | -50°C to +150°C (3)                                                                                                        |                                                              |
| Corrosion Resistance        |                                                      | Salt mist, 96 hours, 5% salt solution, 35°C                                                                                | IEC 60068-2-11 Test Ka<br>MIL-STD-202 Method 101 Condition A |
| Endurance                   |                                                      | 5'000 mating cycles                                                                                                        | IEC 60512-5-9a<br>EIA-364-09                                 |
| Vibration                   |                                                      | 10 to 2000 Hz, 1.5 mm or 15 g, 12 sweep cycles per axis, 20 minutes per 10-2000-10 Hz sweep cycle, no discontinuity > 1 us | MIL-STD-202 Method 204 Condition B                           |
| Radiation Resistance (4)    | Unsealed Connectors                                  | PEEK: 10 <sup>6</sup> Gy (=100M Rads)                                                                                      |                                                              |
|                             | Sealed Receptacles                                   | Viton® O-rings: 10 <sup>5</sup> Gy (=10M Rads)                                                                             |                                                              |

(1) The sealing performance can be affected by the long term quality of the cable.

(2) Dust tight, protected against the effects of high-pressure liquids. The test requirements for IP69K exist only in DIN 40050-9, the German version of IEC 60529.

(3) With Viton® O-ring (standard) in receptacle interface: Operating temperature of Viton® O-ring: -20°C to +200°C. Min mating temperature of 0°C.

With EPDM O-ring (Low temp) on request in receptacle interface: Operating temperature of EPDM O-ring: -50°C to +160°C. Min mating temperature of -20°C.

(4) For information only. Not tested by Fischer Connectors.

Material & Surface Treatments

| Metal Parts                                                 | Material                           |             |                                   | Finish                |                                    |
|-------------------------------------------------------------|------------------------------------|-------------|-----------------------------------|-----------------------|------------------------------------|
|                                                             | Designation                        | ISO         | Standard                          | Designation           | Standard                           |
| Body Shell                                                  | Brass                              | CuZn39Pb3   | CW614N<br>UNS C 38500             | Chrome over Nickel    | SAE-AMS-QQ-C-320                   |
| Cable Clamps, Nuts and other Inner Parts                    | Brass                              | CuZn39Pb3   | CW614N<br>UNS C 38500             | Nickel                | SAE-AMS-QQ-N-290<br>SAE-AMS2404    |
| Contacts<br>- Male (solder)<br><br>- Female, - Male (crimp) | Brass                              | CuZn39Pb3   | CW614N<br>UNS C 38500             | 1 µm Gold over Nickel | MIL-DTL-45204D Type I<br>ASTM B488 |
|                                                             | Bronze                             | CuSn4Zn4Pb4 | CW456K<br>ASTM B 139, UNS C 54400 |                       |                                    |
| Insulator and Sealing                                       | International Symbol               |             | Flammability                      | Standard              |                                    |
| Insulator                                                   | PEEK                               |             | UL 94 V-0                         | MIL-P-46183           |                                    |
| Interface O-rings (Receptacles)                             | Viton®<br>EPDM                     |             | UL 94 V-0<br>UL 94 HB             | ~SAE-AMS7276          |                                    |
| Sealant Material (Receptacles)<br>- IP68<br>- Hermetic      | Silicon compound<br>Epoxy compound |             | UL 94 V-0<br>UL 94 HB             |                       |                                    |
| Cable Sealing (Plugs)<br>- IP68                             | TPE-S                              |             | UL 94 HB                          |                       |                                    |

Our products are RoHS compliant and conform with the EC Directive 2002/95/EC

Electrical Data

| Characteristic                              | Contact Size                                                   | Typical Values                                     | Standard                 |
|---------------------------------------------|----------------------------------------------------------------|----------------------------------------------------|--------------------------|
| Contact Resistance over 5'000 Mating Cycles | Ø0.5 mm<br>Ø0.7 mm<br>Ø0.9 mm<br>Ø1.3 mm<br>Ø1.6 mm<br>Ø2.3 mm | 5 mΩ<br>5 mΩ<br>4 mΩ<br>2.5 mΩ<br>2.5 mΩ<br>2.5 mΩ | IEC 60512-2-2a/b         |
| Shell Resistance                            |                                                                | 20 mΩ                                              | IEC 60512-2-2f           |
| Insulation Resistance                       |                                                                | > 10 <sup>10</sup> Ω                               | IEC 60512-2-3a, Method C |
| Shielding Effectiveness                     |                                                                | > 60 dB up to 1GHz                                 | IEC 60512-23-3           |

## Contact Configurations

| Type        | Pin Layout                                                                          | Number of Contacts | Contact Diameter [mm] | Wire Size (2)                              |                                        | Current Rating [A] | Rated Voltage r.m.s. [V] | Insertion/Extraction Force (typ.) [N] (5) |        |
|-------------|-------------------------------------------------------------------------------------|--------------------|-----------------------|--------------------------------------------|----------------------------------------|--------------------|--------------------------|-------------------------------------------|--------|
|             |                                                                                     |                    |                       | Solder (1) Contacts                        | Crimp Contacts                         | IEC 60512-3-5b     | IEC 60664-1              | IEC 60512-7-13a, MIL-STD-1344             |        |
|             |                                                                                     |                    |                       |                                            |                                        | (3)                | (4)                      | Unsealed                                  | Sealed |
| 104 A Z 051 |    | 2                  | 1.6                   | Max Ø1.86 mm<br>AWG13 [1]<br>AWG14 [7/22]  | -                                      | 20                 | ≤ 500                    | ~20                                       | ~35    |
| 104 A Z 040 |    | 3                  | 1.6                   | Max Ø1.86 mm<br>AWG13 [1]<br>AWG14 [7/22]  | Max 1.78 mm<br>Min 1.17 mm<br>AWG14-18 | 18                 | ≤ 500                    | ~20                                       | ~40    |
| 104 A Z 037 |    | 4                  | 1.3                   | Max Ø1.18 mm<br>AWG17 [1]<br>AWG18 [16/30] | Max 1.18 mm<br>Min 0.58 mm<br>AWG18-24 | 12                 | ≤ 500                    | ~20                                       | ~40    |
| 104 A Z 087 |    | 2                  | 2.3                   | Max Ø2.48 mm<br>AWG11 [1]<br>AWG12 [7/20]  | -                                      | 28                 | ≤ 400                    | ~25                                       | ~45    |
|             |                                                                                     | 2                  | 0.9                   | Max Ø0.79 mm<br>AWG21 [1]<br>AWG22 [7/30]  | -                                      | 3.0                |                          |                                           |        |
| 104 A Z 053 |   | 5                  | 1.3                   | Max Ø1.18 mm<br>AWG17 [1]<br>AWG18 [16/30] | -                                      | 11                 | ≤ 320                    | ~25                                       | ~40    |
| 104 A Z 065 |  | 6                  | 0.9                   | Max Ø0.79 mm<br>AWG21 [1]<br>AWG22 [7/30]  | Max 0.83 mm<br>Min 0.48 mm<br>AWG22-26 | 6.5                | ≤ 400                    | ~20                                       | ~40    |
| 104 A Z 054 |  | 7                  | 0.9                   | Max Ø0.79 mm<br>AWG21 [1]<br>AWG22 [7/30]  | -                                      | 6.5                | ≤ 320                    | ~25                                       | ~40    |
| 104 A Z 066 |  | 8                  | 0.9                   | Max Ø0.79 mm<br>AWG21 [1]<br>AWG22 [7/30]  | Max 0.83 mm<br>Min 0.48 mm<br>AWG22-26 | 6.2                | ≤ 320                    | ~25                                       | ~40    |
| 104 A Z 055 |  | 1                  | 1.3                   | Max Ø1.18 mm<br>AWG17 [1]<br>AWG18 [16/30] | -                                      | 12                 | ≤ 250                    | ~25                                       | ~45    |
|             |                                                                                     | 8                  | 0.9                   | Max Ø0.79 mm<br>AWG21 [1]<br>AWG22 [7/30]  | -                                      | 6.0                |                          |                                           |        |

(1) Stranding values in brackets.

(2) Exceptionally for a given AWG, the diameter of some stranded conductor designs could be larger than the hole diameter of the barrel. Trials may be required.

(3) Recommended max. operating current per contact at 40°C temperature rise.

(4) Recommended operating voltage at sea level.

This rated voltage is a general purpose guideline where no other electrical safety standard applies. In case other standards rule a specific use of the connector, then the application specific safety criteria shall be considered first. This must be evaluated in the frame of equipment engineering. In case other calculation methods are preferred, please refer to general catalogue for test voltage data.

(5) Values may vary strongly depending on environmental conditions, ageing, finish or type of seal.

Contact Configurations (cont.)

| Type          | Pin Layout                                                                        | Number of Contacts | Contact Diameter [mm] | Wire Size (2)                             |                                        | Current Rating [A] | Rated Voltage r.m.s. [V] | Insertion/Extraction Force (typ.) [N] (5) |        |
|---------------|-----------------------------------------------------------------------------------|--------------------|-----------------------|-------------------------------------------|----------------------------------------|--------------------|--------------------------|-------------------------------------------|--------|
|               |                                                                                   |                    |                       | Solder (1) Contacts                       | Crimp Contacts                         | IEC 60512-3-5b     | IEC 60664-1              | IEC 60512-7-13a, MIL-STD-1344             |        |
|               |                                                                                   |                    |                       |                                           |                                        | (3)                | (4)                      | Unsealed                                  | Sealed |
| 104 A Z 056   |  | 11                 | 0.9                   | Max Ø0.79 mm<br>AWG21 [1]<br>AWG22 [7/30] | Max 0.83 mm<br>Min 0.48 mm<br>AWG22-26 | 5.8                | ≤ 250                    | ~30                                       | ~45    |
| 104 A Z 086   |  | 16                 | 0.7                   | Max Ø0.79 mm<br>AWG21 [1]<br>AWG22 [7/30] | Max 0.62 mm<br>Min 0.38 mm<br>AWG24-28 | 4.0                | ≤ 200                    | ~35                                       | ~55    |
| 104 A Z 092   |  | 19                 | 0.7                   | Max Ø0.79 mm<br>AWG21 [1]<br>AWG22 [7/30] | Max 0.62 mm<br>Min 0.38 mm<br>AWG24-28 | 3.5                | ≤ 200                    | ~40                                       | ~60    |
| 104 A 124 (6) |  | 27                 | 0.5                   | -                                         | Max 0.43 mm<br>Min 0.20 mm<br>AWG28-32 | 2.0                | ≤ 200                    | ~40                                       | ~60    |

- (1) Stranding values in brackets.

(2) Exceptionally for a given AWG, the diameter of some stranded conductor designs could be larger than the hole diameter of the barrel. Trials may be required.

(3) Recommended max. operating current per contact at 40°C temperature rise.

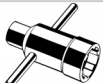
(4) Recommended operating voltage at sea level.  
  

This rated voltage is a general purpose guideline where no other electrical safety standard applies. In case other standards rule a specific use of the connector, then the application specific safety criteria shall be considered first. This must be evaluated in the frame of equipment engineering.  
In case other calculation methods are preferred, please refer to general catalogue for test voltage data.

(5) Values may vary strongly depending on environmental conditions, ageing, finish or type of seal.

(6) This configuration has different environmental performances than those shown on page 2 due to the use of another sealant material.  
Please contact us for more information.

## Tooling

|                                                                                     | Designation                                                              | Contact Gender | Size [mm] | Part Number |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------|-----------|-------------|
|    | <b>Crimp Tool (1)</b>                                                    |                |           | TX00.240    |
|    | <b>Crimp Positioner (1)</b>                                              | Male           | Ø0.7      | TX00.304    |
|                                                                                     |                                                                          | Female         | Ø0.7      | TX00.305    |
|                                                                                     |                                                                          | Male           | Ø0.9      | TX00.307    |
|                                                                                     |                                                                          | Female         | Ø0.9      | TX00.309    |
|                                                                                     |                                                                          | Male           | Ø1.3      | TX00.311    |
|                                                                                     |                                                                          | Female         | Ø1.3      | TX00.312    |
|                                                                                     |                                                                          | Male           | Ø1.6      | TX00.313    |
|                                                                                     |                                                                          | Female         | Ø1.6      | TX00.314    |
|    | <b>Contact Insertion Tool</b>                                            |                | Ø0.7      | TX00.210    |
|                                                                                     |                                                                          |                | Ø0.9      | TX00.211    |
|                                                                                     |                                                                          |                | Ø1.3      | TX00.273    |
|    | <b>Contact Extraction Tool</b>                                           |                | Ø0.7      | TX00.200    |
|                                                                                     |                                                                          |                | Ø0.9      | TX00.205    |
|                                                                                     |                                                                          |                | Ø1.3      | TX00.212    |
|                                                                                     |                                                                          |                | Ø1.6      | TX00.201    |
|  | <b>Double-End Open Spanner Extra Thin</b>                                |                | 12        | TX00.012    |
|                                                                                     |                                                                          |                | 13        | TX00.013    |
|                                                                                     |                                                                          |                | 14        | TX00.014    |
|  | <b>Open-End Spanner Extra Thin</b>                                       |                | 17        | TX00.017    |
|                                                                                     |                                                                          |                | 19        | TX00.019    |
|  | <b>Nut Driver with T-Handle and Hex Drive for Decorative Slotted Nut</b> |                | M 15 x 1  | TK00.000    |
|                                                                                     |                                                                          |                | M 16 x 1  | TK00.002    |

(1) For detailed crimping instructions, log on to our online technical library at [www.fischerconnectors.com/technical](http://www.fischerconnectors.com/technical)