

RoHS
Ready 



MCON Interconnection System


TE
connectivity
AUTOMOTIVE



Driver
Information



Powertrain
Systems

THE 5 APPLICATION AREAS



Convenience



Safety & Security Systems



Body & Chassis Systems

INNOVATIVE TECHNOLOGIES

TE Automotive - a business segment of TE Connectivity - follows the globalization goals of our customers, speeds up the integration of new technologies and enables our customers access to our vast product portfolio and services.

TERMINALS & CONNECTORS



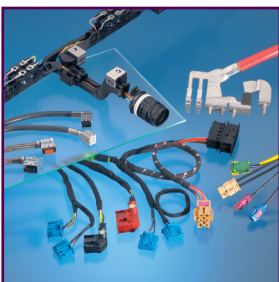
TE Automotive offers a broad range of high quality terminals and connectors. Our electrical/electronic interconnection products and solutions are used to electrically and mechanically join wires and cables, printed circuit boards, integrated circuit packages and batteries. TE Automotive expanding capabilities include new copper and fiber-optic connectors, wires, cables/cable management systems that are designed to meet automotive industry demands. Our brands encompass the broadest range of connectors in the world, including high-density, high-speed designs for leading-edge communications equipment.

HYBRID & ELECTRIC MOBILITY SOLUTIONS



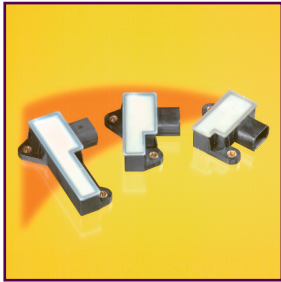
Complete the connections you need to safely, and reliably make hybrid and electric mobility a reality for everyone, everyday. With over 50 years experience in automotive, industrial and energy connectivity, TE is an expert in pushing innovation from one industry to the next. Our portfolio of AMP+ high voltage relays, resistors, AMP+ headers, connectors, IPT/APT and cable assemblies and vehicle charging solutions are designed to connect and protect electric distribution inside and outside of the vehicle.

CABLE ASSEMBLY SYSTEMS



TE Automotive is your partner for special cable assemblies. We offer research and development capabilities, prototyping, samples as well as manufacturing facilities for special cable assemblies. This includes overmold technology, semi/fully automatic manufacturing, testing equipment and appliances for handling of high volume production.

SENSORS



Contact-less measuring eliminates interference effects, wear and tear, and provides increased reliability. TE Automotive, one of the largest technology providers for the automobile industry, offers contact-less sensors for a variety of applications.

As sensor manufacturer and processing partner, TE Automotive also provides project planning support for new sensor applications, assistance in the selection of the appropriate sensor technology for the respective application, and assistance with defining the corresponding mechanical, electrical and magnetic interface.

TE Automotive has a broad electro-mechanical portfolio that includes robust housing technologies, connector systems, and temperature stable designs based on foil and cable networks. This combination of technologies and experience ensures that reliable and cost effective sensor solutions are available for all application types.

INFOTAINMENT



TE Automotive is the technology leader in high speed data communication in the automotive industry. TE Automotive offers high performance connectors based on optical, coaxial as well as shielded electrical cables.

Through a deep understanding of the technical properties and requirements of signal integrity and combined with our application knowledge both in the vehicle as well as in the logistics chain, TE Automotive is well positioned to offer the right solution for all current and next generation Infotainment Systems.

INDUCTIVE COIL SYSTEMS



TE Automotive is your source for interconnection technologies for automotive, truck and off-highway OEMs and Tier 1 suppliers. With our global design center in Belgium and manufacturing sites in all regions, TE Automotive's Inductive Systems (ICS) group is ready to design your next-generation coil modules and provide local production support.

The ICS group maintains a leading market position in braking modules and other automotive coil applications. Through early involvement with you on your next design, TE Automotive can offer the benefits of miniaturization, design-in of platform components and optimized process flow for your standard, hybrid and E.V. project needs.

TE Automotive Online

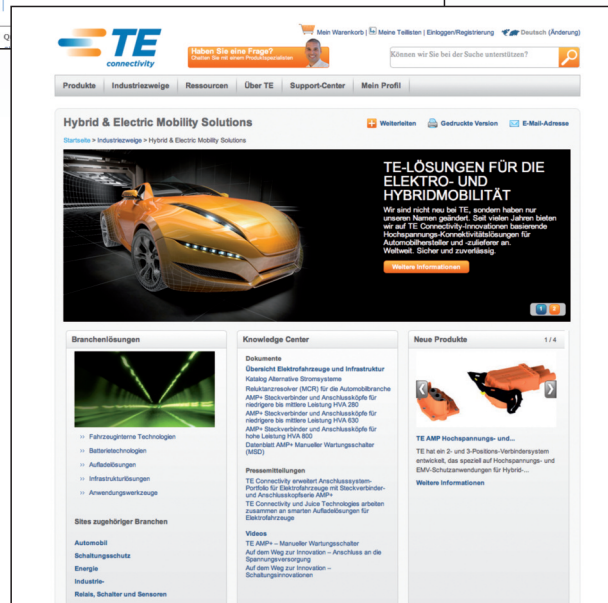
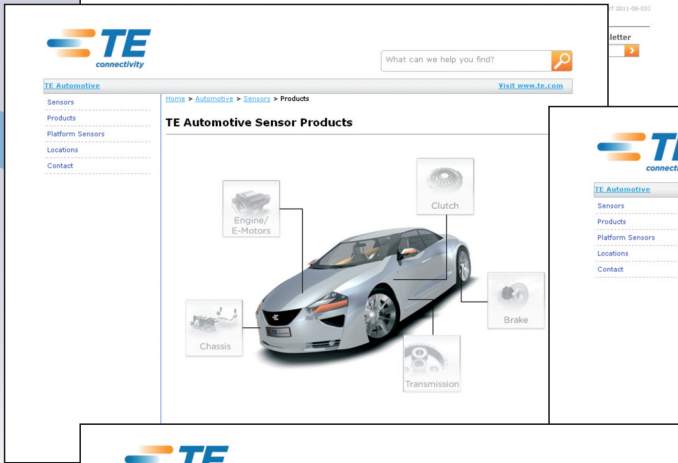
The TE Automotive website is an innovative and interactive source for application information, product updates and technical solutions. Please contact us at:
www.te.com/automotive

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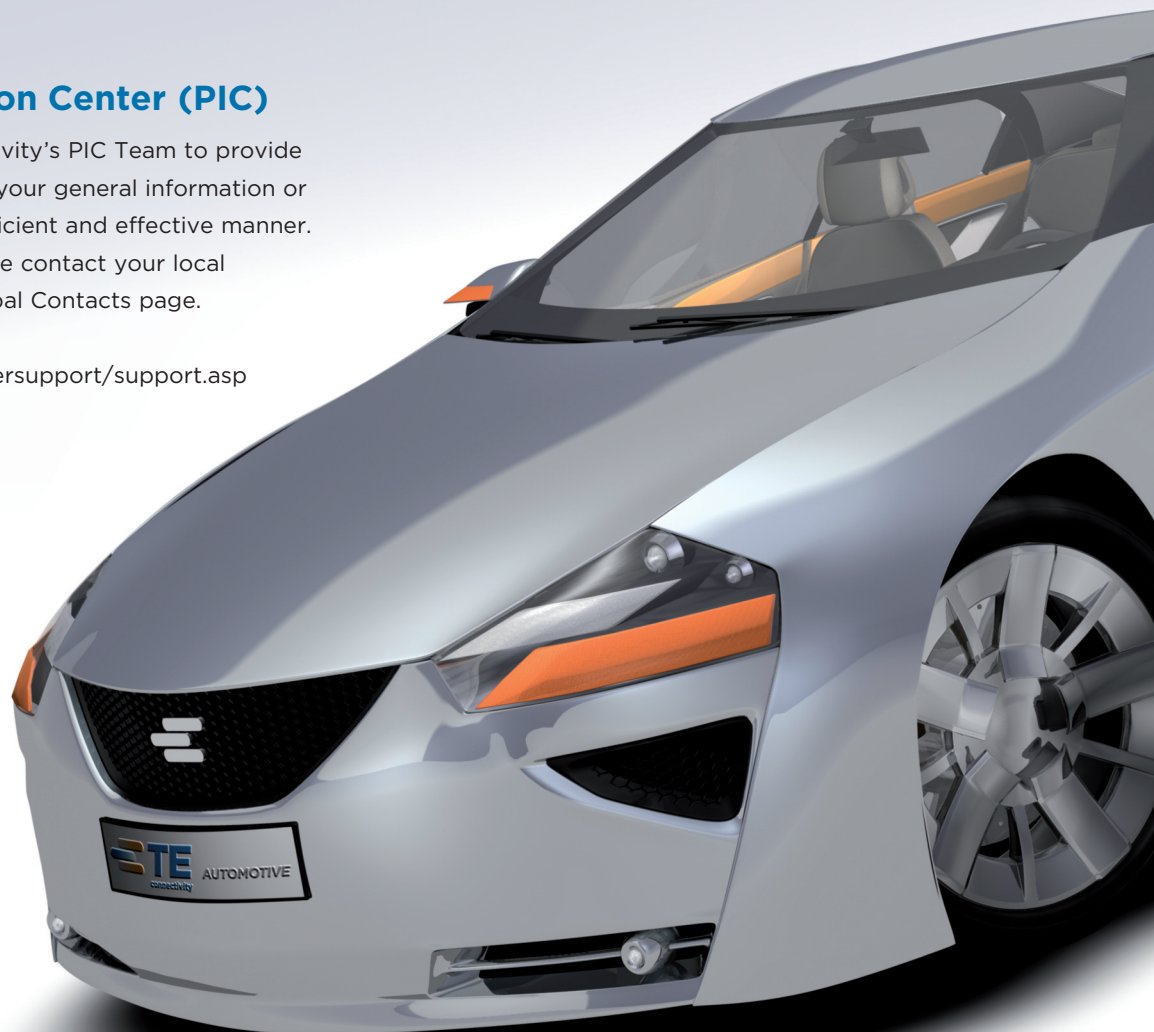
Product and Machine Literature

TE Automotive offers a variety of product specific catalogs, brochures and high impact flyers to help better serve you!

For more information on literature for TE Automotive, please contact your local organization or go to www.te.com/automotive

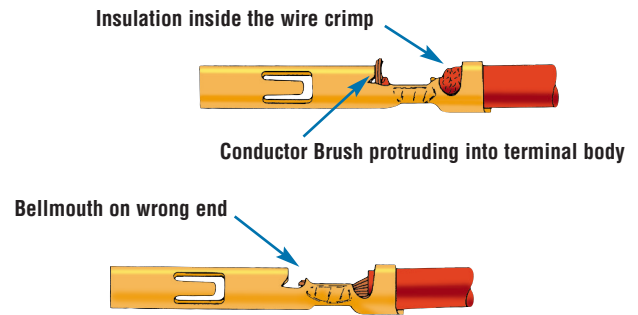
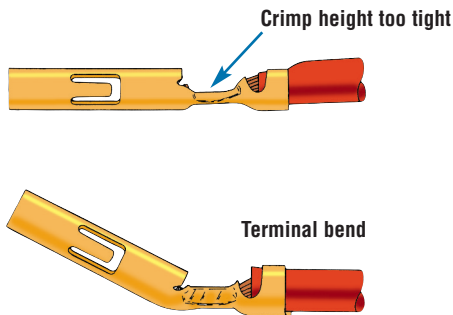
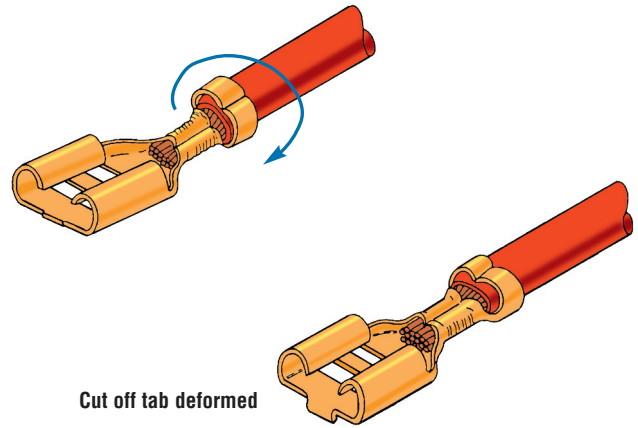
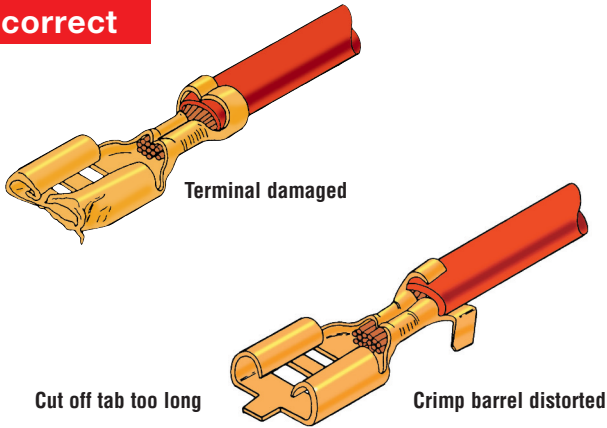
Product Information Center (PIC)

You can rely on TE Connectivity's PIC Team to provide you support for answers to your general information or technical questions in an efficient and effective manner. To reach our PIC staff, please contact your local organization or see our Global Contacts page. Please contact us at:
<http://www.te.com/customersupport/support.asp>

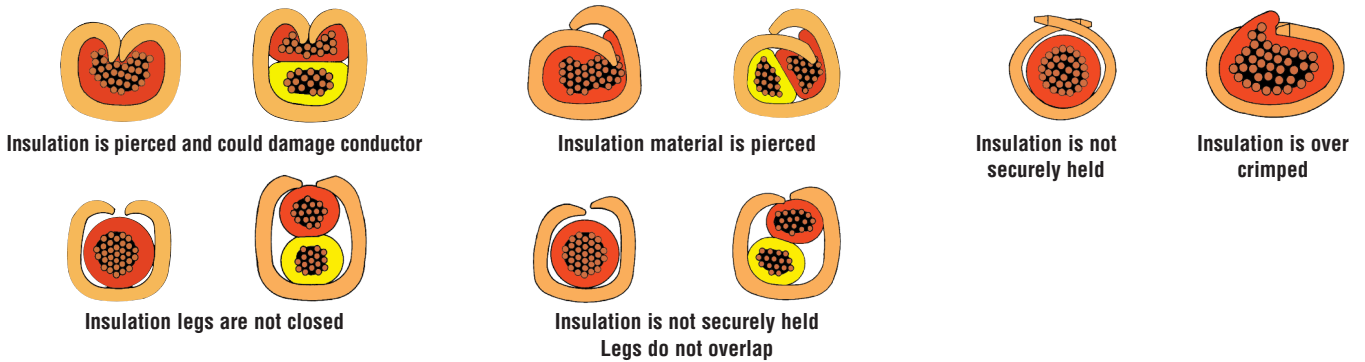


Quality Guidelines

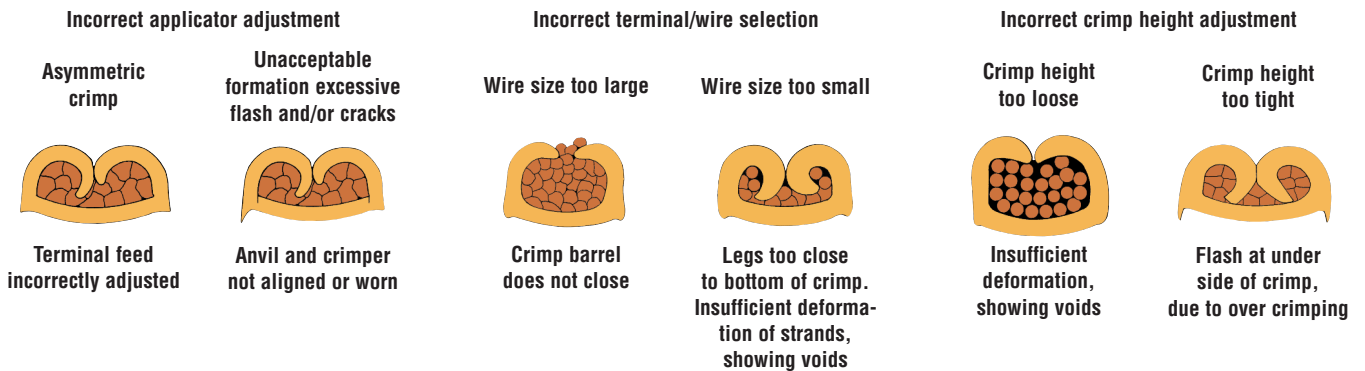
Incorrect



INSULATION CRIMP



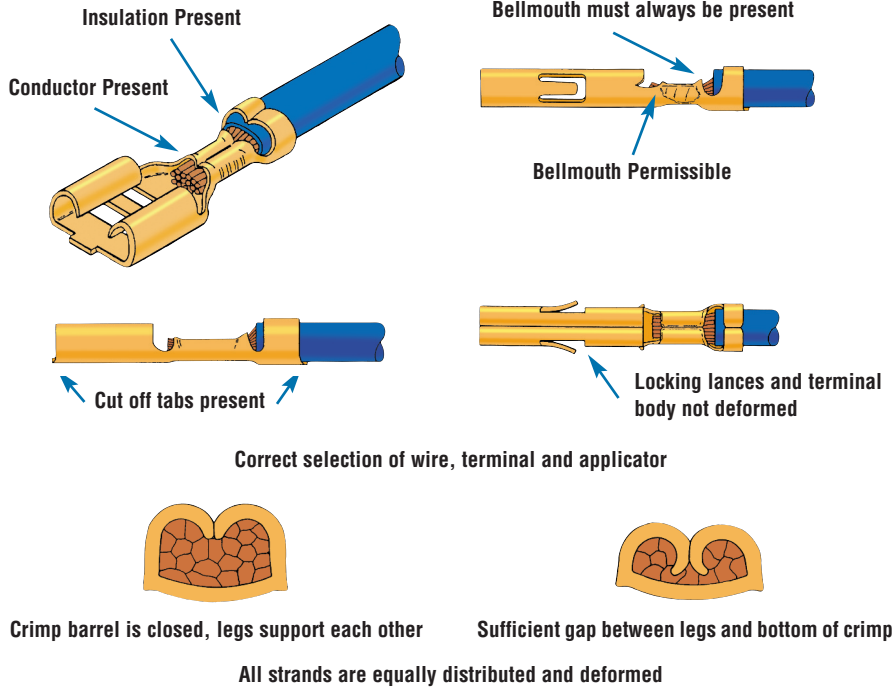
WIRE CRIMP



Quality Guidelines

Correct

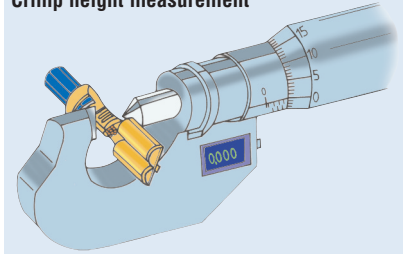
WIRE CRIMP



Test

WIRE CRIMP

Crimp height measurement



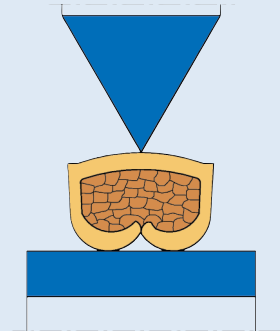
Crimp heights and tolerances

For crimp height tolerances for any given contact, please refer to the relevant application specification.

Examples:

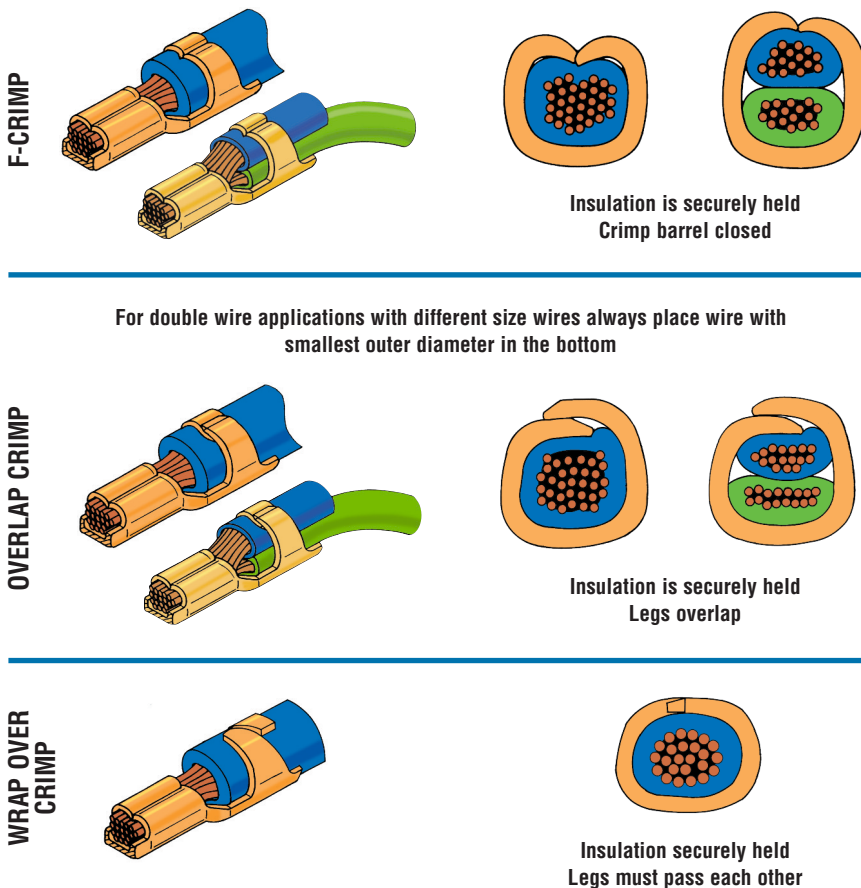
Contact	Part No.	Wire Range (mm ²)	Tolerance (mm)	Application Spec.
MQS	962885 962886	0.2-0.5	±0.03	114-18025
JPT	927775	0.5-1.0	±0.05	114-18050
JPT	927773	1.5-2.5	±0.05	114-18050

Digital Crimp Height Micrometer
(0.001 mm increments) acc. to DIN ISO 9001
Part No. 547203-1



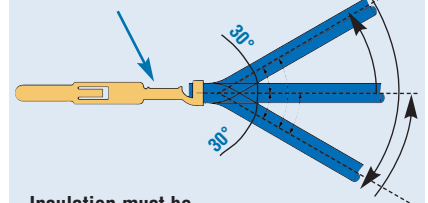
INSULATION CRIMP

Correct Insulation Diameter, Applicator and Terminal





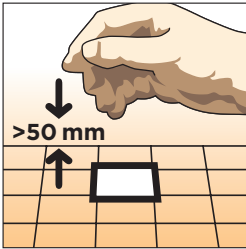

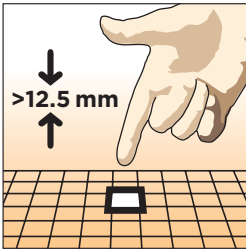
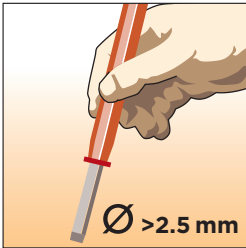
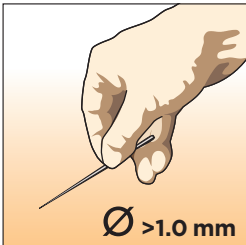
INSULATION CRIMP

Wire crimp without conductor





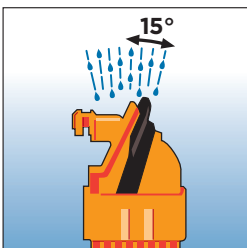

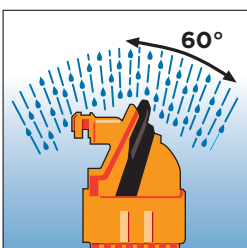
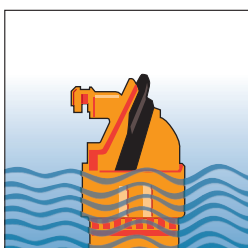
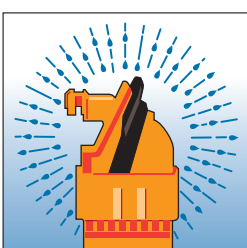
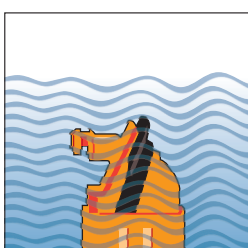
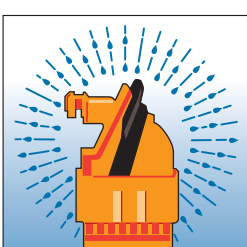



Insulation must be securely held after bend test

IP Code (Elements and Significance acc. to IEC 60529 and DIN 40050)

1st Digit	Against Foreign Objects (incl. Dust)	1st Digit	Against Foreign Objects (incl. Dust)
0	 <p>Not protected.</p>	5K	 <p>Dust protected.</p>
1	 <p>Protected against solid objects greater than 50 mm (ex. Back of hand).</p>	6K	 <p>Dust tight.</p>
2	 <p>Protected against solid objects greater than 12.5 mm (ex. Finger).</p>		
3	 <p>Protected against solid objects greater than 2.5 mm (ex. Tool).</p>		
4	 <p>Protected against solid objects greater than 1.0 mm (ex. Wire).</p>		

IP Code (Elements and Significance acc. to IEC 60529 and DIN 40050)

2nd Digit	Against Water	2nd Digit	Against Water
0	 <p>Not protected.</p>	5	 <p>Protected against jetting water.</p>
1	 <p>Protected against vertically dripping water.</p>	6	 <p>Protected against powerfully jetting water.</p>
2	 <p>Protected against dripping water when tilted up to 15°.</p>	6K	 <p>Protected against powerfully jetting water with increased pressure (Automotive).</p>
3	 <p>Protected against spraying water (up to 60° inclination).</p>	7	 <p>Protected against the temporary effects of immersion up to 1 meter.</p>
4	 <p>Protected against splashing water.</p>	8	 <p>Protected against continuous submersion agreed with customer, but more severe than code 7.</p>
4K	 <p>Protected against splashing water with increased pressure.</p>	9K	 <p>Protected against high-pressure/steam-jet cleaning (Automotive).</p>

Restriction on the Use of Hazardous Substances (RoHS)

Restriction on the Use of Hazardous Substances (RoHS)

At TE Connectivity, we're ready to support your RoHS requirements. We've assessed more than 1.5 million end items/components for RoHS compliance, and issued new part numbers where any change was required to eliminate the restricted materials. Part numbers in this catalog are identified as:

RoHS Compliant

Part numbers in this catalog are RoHS Compliant, unless marked otherwise.

These products comply with European Union Directive 2002/95/EC as amended 1 January 2006 that restricts the use of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE in certain electrical and electronic products sold into the EU as of 1 July 2006.

Note: For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories.

Non-RoHS Compliant

These part numbers are identified with a "◆" symbol. These products do not comply with the material restrictions of the European Union Directive 2002/95/EC.

5 of 6 Compliant

A "●" symbol identifies these part numbers. These products do not fully comply with the European Union Directive 2002/95/EC because they contain lead in solderable interfaces (they do not contain any of the other five restricted substances above allowable limits). However, these products may be suitable for use in RoHS applications where there is an application-based exception for lead in solders, such as the server, storage, or networking infrastructure exemption.

Note: Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For latest compliance status, refer to our website referenced below.

Getting the Information You Need

Our comprehensive on-line RoHS Customer Support Center provides a forum to answer your questions and support your RoHS needs. A RoHS FAQ (Frequently Asked Questions) is available with links to more detailed information. You can also submit RoHS questions and receive a response within 24 hours during a normal work week. The Support Center also provides:

- Cross-Reference from Non-compliant to Compliant Products
- Ability to browse RoHS Compliant Products in our on-line catalog: <http://www.te.com/commerce/alt/RohsAltHome.do>
- Downloadable Technical Data Customer Information Presentation
- More detailed information regarding the definitions used above

RoHS
Customer
Support
Center 

So whatever your questions when it comes to RoHS, we've got the answers at <http://www.te.com/customersupport/rohssupportcenter/>

AWG Conversion Table (Average Value)

Conversion Tables

Most of the wire size ranges are mentioned in mm², as well as the insulation diameters which are in many cases only in mm's.

We therefore included the conversion tables on page X and page XI.

Please note that wire and insulation sizes are for guidance only.

Consult the customer drawing for precise detail.

AWG Code	Diameter (Inch)	Diameter (mm)	F (mm ²)
000000	0.5800	14.733	170.0
00000	0.5165	13.13	135.0
0000	0.4600	11.684	103.8
000	0.4096	10.40	79.0
00	0.3648	9.27	67.5
0	0.3249	8.25	53.4
1	0.2893	7.34	42.2
2	0.2576	6.55	33.7
3	0.2294	5.82	26.6
4	0.2043	5.18	21.0
5	0.1819	4.62	16.9
6	0.1620	4.115	13.25
7	0.1443	3.66	10.25
8	0.1285	3.26	8.34
9	0.1144	2.90	6.6
10	0.1019	2.59	5.27
11	0.0907	2.30	4.15
12	0.0808	2.05	3.3
13	0.0720	1.83	2.63
14	0.0641	1.63	2.08
15	0.0571	1.45	1.65
16	0.0508	1.29	1.305
17	0.0453	1.14	1.01
18	0.0403	1.02	0.79
19	0.0359	0.91	0.65
20	0.0320	0.81	0.51
21	0.0285	0.72	0.407
22	0.0253	0.64	0.32
23	0.0226	0.57	0.255
24	0.0201	0.51	0.205
25	0.0179	0.455	0.162
26	0.0159	0.40	0.125
27	0.0142	0.36	0.102
28	0.0126	0.320	0.08
29	0.0113	0.287	0.0646
30	0.0100	0.254	0.0516
31	0.0089	0.226	0.04
32	0.0080	0.203	0.0324
33	0.0071	0.180	0.0255
34	0.0063	0.160	0.02
35	0.0056	0.142	0.0158
36	0.0050	0.127	0.0127
37	0.0045	0.114	0.01
38	0.0040	0.101	0.008
39	0.0035	0.089	0.0062
40	0.0031	0.079	0.0049
41	0.0028	0.071	0.00395
42	0.0025	0.064	0.00321
43	0.0022	0.056	0.00246
44	0.00198	0.050	0.00196
45	0.00176	0.045	
46	0.00157	0.040	
47	0.00140	0.036	
48	0.00124	0.031	
49	0.00110	0.028	
50	0.00099	0.025	

FLK/FLR Cable

FLK and FLR stand for German DIN (72551) abbreviations.

FLK means:

- In German:
 - Fahrzeug Leitung Kunststoff
 In English:
 - Vehicle Cable Plastic

FLR means:

- In German:
 - Fahrzeug Leitung Reduziert
 In English:
 - Thin Walled Cable (reduced insulation thickness)

Remark: Starting from 0.03 mm² (AWG 32) a wire can be crimped.

Conversion Table – Inch/mm

Inch	0	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
0	0	0.0254	0.0508	0.0762	0.1016	0.1270	0.1524	0.1778	0.2032	0.2286
0.010	0.2540	0.2794	0.3048	0.3302	0.3556	0.3810	0.4064	0.4318	0.4572	0.4826
0.020	0.5080	0.5334	0.5588	0.5842	0.6096	0.6350	0.6604	0.6858	0.7112	0.7366
0.030	0.7620	0.7874	0.8128	0.8382	0.8636	0.8890	0.9144	0.9398	0.9652	0.9906
0.040	1.0160	1.0414	1.0668	1.0922	1.1176	1.1430	1.1684	1.1938	1.2192	1.2446
0.050	1.2700	1.2954	1.3208	1.3462	1.3716	1.3970	1.4224	1.4478	1.4732	1.4986
0.060	1.5240	1.5494	1.5748	1.6002	1.6256	1.6510	1.6764	1.7018	1.7272	1.7526
0.070	1.7780	1.8034	1.8288	1.8542	1.8796	1.9050	1.9304	1.9558	1.9812	2.0066
0.080	2.0320	2.0574	2.0828	2.1062	2.1336	2.1590	2.1844	2.2098	2.2352	2.2606
0.090	2.2860	2.3114	2.3368	2.3622	2.3876	2.4130	2.4384	2.4638	2.4892	2.5146
0.100	2.5400	2.5654	2.5908	2.6162	2.6416	2.6670	2.6924	2.7178	2.7432	2.7686
0.110	2.7940	2.8194	2.8448	2.8702	2.8956	2.9210	2.9464	2.9718	2.9972	3.0226
0.120	3.0480	3.0734	3.0988	3.1242	3.1496	3.1750	3.2004	3.2258	3.2512	3.2766
0.130	3.3020	3.3274	3.3528	3.3782	3.4036	3.4290	3.4544	3.4798	3.5052	3.5306
0.140	3.5560	3.5814	3.6068	3.6322	3.6576	3.6830	3.7084	3.7338	3.7592	3.7846
0.150	3.8100	3.8354	3.8608	3.8862	3.9116	3.9370	3.9624	3.9878	4.0132	4.0386
0.160	4.0640	4.0894	4.1148	4.1402	4.1656	4.1910	4.2164	4.2418	4.2672	4.2926
0.170	4.3180	4.3434	4.3688	4.3942	4.4196	4.4450	4.4704	4.4958	4.5212	4.5466
0.180	4.5720	4.5974	4.6228	4.6482	4.6736	4.6990	4.7244	4.7498	4.7752	4.8006
0.190	4.8260	4.8514	4.8768	4.9022	4.9276	4.9530	4.9784	5.0038	5.0292	5.0546
0.200	5.0800	5.1054	5.1308	5.1562	5.1816	5.2070	5.2324	5.2578	5.2832	5.3086
0.210	5.3340	5.3594	5.3848	5.4102	5.4356	5.4610	5.4864	5.5118	5.5372	5.5626
0.220	5.5880	5.6134	5.6388	5.6642	5.6896	5.7150	5.7404	5.7658	5.7912	5.8166
0.230	5.8420	5.8674	5.8928	5.9182	5.9436	5.9690	5.9944	6.0198	6.0452	6.0706
0.240	6.0960	6.1214	6.1468	6.1722	6.1976	6.2230	6.2484	6.2738	6.2992	6.3246
0.250	6.3500	6.3754	6.4008	6.4262	6.4516	6.4770	6.5024	6.5278	6.5532	6.5786
0.260	6.6040	6.6294	6.6548	6.6802	6.7056	6.7310	6.7564	6.7818	6.8072	6.8326
0.270	6.8580	6.8834	6.9088	6.9342	6.9596	6.9850	7.0104	7.0358	7.0612	7.0866
0.280	7.1120	7.1374	7.1628	7.1882	7.2136	7.2390	7.2644	7.2898	7.3152	7.3406
0.290	7.3660	7.3914	7.4168	7.4422	7.4676	7.4930	7.5184	7.5438	7.5692	7.5946
0.300	7.6200	7.6454	7.6708	7.6962	7.7216	7.7470	7.7724	7.7978	7.8232	7.8486
0.310	7.8740	7.8994	7.9248	7.9502	7.9756	8.0010	8.0264	8.0518	8.0772	8.1026
0.320	8.1280	8.1534	8.1788	8.2042	8.2296	8.2550	8.2804	8.3058	8.3312	8.3566
0.330	8.3820	8.4074	8.4328	8.4582	8.4836	8.5090	8.5344	8.5598	8.5852	8.6106
0.340	8.6360	8.6614	8.6868	8.7122	8.7376	8.7630	8.7884	8.8138	8.8392	8.8646
0.350	8.8900	8.9154	8.9408	8.9662	8.9916	9.0170	9.0424	9.0678	9.0932	9.1186
0.360	9.1440	9.1694	9.1948	9.2202	9.2456	9.2710	9.2964	9.3218	9.3472	9.3726
0.370	9.3980	9.4234	9.4488	9.4742	9.4996	9.5250	9.5504	9.5758	9.6012	9.6266
0.380	9.6520	9.6774	9.7028	9.7282	9.7536	9.7790	9.8044	9.8298	9.8552	9.8806
0.390	9.9060	9.9314	9.9568	9.9822	10.0076	10.0330	10.0584	10.0838	10.1092	10.1346
0.400	10.1600	10.1854	10.2108	10.2362	10.2616	10.2870	10.3124	10.3378	10.3632	10.3886
0.410	10.4140	10.4394	10.4648	10.4902	10.5156	10.5410	10.5664	10.5918	10.6172	10.6426
0.420	10.6680	10.6934	10.7188	10.7442	10.7696	10.7950	10.8204	10.8458	10.8712	10.8966
0.430	10.9220	10.9474	10.9728	10.9982	11.0236	11.0490	11.0744	11.0998	11.1252	11.1506
0.440	11.1760	11.2014	11.2268	11.2522	11.2776	11.3030	11.3284	11.3538	11.3792	11.4046
0.450	11.4300	11.4554	11.4808	11.5062	11.5316	11.5510	11.5824	11.6078	11.6332	11.6586
0.460	11.6840	11.7094	11.7348	11.7602	11.7856	11.8110	11.8364	11.8618	11.8872	11.9126
0.470	11.9380	11.9634	11.9888	12.0142	12.0396	12.0650	12.0904	12.1158	12.1412	12.1666
0.480	12.1920	12.2174	12.2428	12.2682	12.2936	12.3190	12.3444	12.3698	12.3952	12.4206
0.490	12.4460	12.4714	12.4968	12.5222	12.5476	12.5730	12.5984	12.6238	12.6492	12.6746
0.500	12.7000									
Inch	0	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009

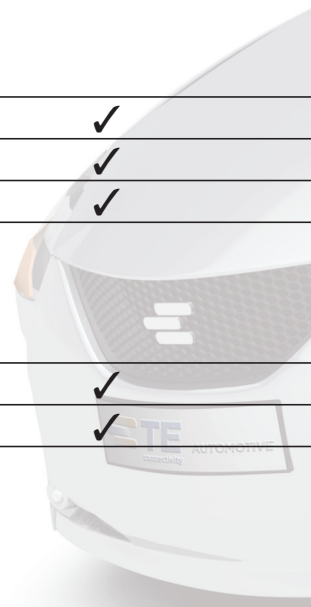
Conversion Table – Inch/mm (continued)

Inch	0	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
0.500	12.7000	12.7254	12.7508	12.7762	12.8016	12.8270	12.8524	12.8778	12.9032	12.9286
0.510	12.9540	12.9794	13.0048	13.0302	13.0556	13.0810	13.1064	13.1318	13.1572	13.1826
0.520	13.2080	13.2334	13.2588	13.2842	13.3096	13.3350	13.3604	13.3858	13.4112	13.4366
0.530	13.4620	13.4874	13.5128	15.5382	13.5636	13.5890	13.6144	13.6398	13.6652	13.6906
0.540	13.7160	13.7414	13.7668	13.7922	13.8176	13.8430	13.8684	13.8938	13.9192	13.9446
0.550	13.9700	13.9954	14.0208	14.0462	14.0716	14.0970	14.1224	14.1478	14.1732	14.1986
0.560	14.2240	14.2494	14.2748	14.3002	14.3256	14.3510	14.3764	14.4018	14.4272	14.4526
0.570	14.4780	14.5034	14.5288	14.5542	14.5796	14.6050	14.6304	14.6558	14.6812	14.7066
0.580	14.7320	14.7574	14.7828	14.8082	14.8336	14.8590	14.8844	14.9098	14.9352	14.9606
0.590	14.9860	15.0114	15.0368	15.0622	15.0876	15.1130	15.1384	15.1638	15.1892	15.2146
0.600	15.2400	15.2654	15.2908	15.3162	15.3416	15.3670	15.3924	15.4178	15.4432	15.4686
0.610	15.4940	15.5194	15.5448	15.5702	15.5956	15.6210	15.6464	15.6718	15.6972	15.7226
0.620	15.7480	15.7734	15.7988	15.8242	15.8496	15.8750	15.9004	15.9258	15.9512	15.9766
0.630	16.0020	16.0274	16.0528	16.0782	16.1036	16.1290	16.1544	16.1798	16.2052	16.2306
0.640	16.2560	16.2814	16.3068	16.3322	16.3576	16.3830	16.4084	16.4338	16.4592	16.4846
0.650	16.5100	16.5354	16.5608	16.5862	16.6116	16.6370	16.6624	16.6878	16.7132	16.7386
0.660	16.7640	16.7894	16.8148	16.8402	16.8656	16.8910	16.9164	16.9418	16.9672	16.9926
0.670	17.0180	17.0434	17.0688	17.0942	17.1196	17.1450	17.1704	17.1958	17.2212	17.2466
0.680	17.2720	17.2974	17.3228	17.3482	17.3736	17.3990	17.4244	17.4498	17.4752	17.5006
0.690	17.5260	17.5514	17.5768	17.6022	17.6276	17.6530	17.6784	17.7038	17.7292	17.7546
0.700	17.7800	17.8054	17.8308	17.8562	17.8816	17.9070	17.9324	17.9528	17.9832	18.0086
0.710	18.0340	18.0594	18.0848	18.1102	18.1356	18.1610	18.1864	18.2118	18.2372	18.2626
0.720	18.2880	18.3134	18.3388	18.3642	18.3896	18.4150	18.4404	18.4658	18.4912	19.5166
0.730	18.5420	18.5674	18.5928	18.6182	18.6436	18.6690	18.6944	18.7198	18.7452	18.7706
0.740	18.7960	18.8214	18.8468	18.8722	18.8976	18.9230	18.9484	18.9738	18.9992	19.0246
0.750	19.0500	19.0754	19.1008	19.1262	19.1516	19.1170	19.2024	19.2278	19.2532	19.2786
0.760	19.3040	19.3294	19.3548	19.3802	19.4056	19.4310	19.4564	19.4818	19.5072	19.5326
0.770	19.5580	19.5834	19.6088	19.6342	19.6596	19.6850	19.7104	19.7358	19.7612	19.7866
0.780	19.8120	19.8374	19.8628	19.8882	19.9136	19.9390	19.9644	19.9898	20.0152	20.0406
0.790	20.0660	20.0914	20.1168	20.1422	20.1676	20.1930	20.2184	20.2438	20.2692	20.2946
0.800	20.3200	20.3454	20.3708	20.3962	20.4216	20.4470	20.4724	20.4978	20.5232	20.5486
0.810	20.5740	20.5994	20.6248	20.6502	20.6756	20.7010	20.7264	20.7518	20.7772	20.8026
0.820	20.8280	20.8534	20.8788	20.9042	20.9296	20.9550	20.9804	21.0058	21.0312	21.0566
0.830	21.0820	21.1074	21.1328	21.1582	21.1836	21.2090	21.2344	21.2598	21.2852	21.3106
0.840	21.3360	21.3614	21.3868	21.4122	21.4376	21.4630	21.4884	21.5138	21.5392	21.5646
0.850	21.5900	21.6154	21.6408	21.6662	21.6916	21.7170	21.7424	21.7678	21.7932	21.8186
0.860	21.8440	21.8694	21.8948	21.9202	21.9456	21.9710	21.9964	22.0218	22.0472	22.0726
0.870	22.0980	22.1234	22.1488	22.1742	22.1996	22.2250	22.2504	22.2758	22.3012	22.3266
0.880	22.3520	22.3774	22.4028	22.4282	22.4536	22.4790	22.5044	22.5298	22.5552	22.5806
0.890	22.6060	22.6314	22.6568	22.6822	22.7076	22.7330	22.7584	22.7838	22.8092	22.8346
0.900	22.8600	22.8854	22.9108	22.9362	22.9616	22.9870	23.0124	23.0378	23.0632	23.0886
0.910	23.1140	23.1394	23.1648	23.1902	23.2156	23.2410	23.2664	23.2918	23.3172	23.3426
0.920	23.3680	23.3934	23.4188	23.4442	23.4696	23.4950	23.5204	23.5458	23.5712	23.5966
0.930	23.6220	23.6474	23.6728	23.6982	23.7236	23.7490	23.7744	23.7998	23.8252	23.8506
0.940	23.8760	23.9014	23.9268	23.9522	23.9776	24.0030	24.0284	24.0538	24.0792	24.1046
0.950	24.1300	24.1554	24.1808	24.2062	24.2316	24.2570	24.2824	24.3078	24.3332	24.3586
0.960	24.3840	24.4094	24.4348	24.4602	24.4856	24.5110	24.5364	24.5618	24.5872	24.6126
0.970	24.6380	24.6634	24.6888	24.7142	24.7396	24.7650	24.7904	24.8158	24.8412	24.8666
0.980	24.8920	24.9174	24.9428	24.9682	24.9936	25.0190	25.0444	25.0698	25.0952	25.1206
0.990	25.1460	25.1714	25.1968	25.2222	25.2476	25.2730	25.2984	25.3228	25.3492	25.3746
1.000	25.4000									
Inch	0	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009



Page

MCON Interconnection System		
Introduction	4-1	✓
Contact Systems		
Introduction	4-3	✓
MCON - 1.2 mm Contact System		
Receptacle Contacts - Locking Lance	4-4	✓
Receptacle Contacts - Clean Body	4-5	✓
Tab Contacts - Locking Lance	4-6	✓
Tab Contacts - Clean Body	4-7	✓
Single Wire Seals and Sealing Plugs	4-8	✓
MCON - 2.8 mm Contact System		
Receptacle Contacts	4-9	✓
Single Wire Seals and Sealing Plugs	4-10	✓
Receptacle Contacts Weld Version	4-6	✓
MCON - 6.3 mm Contact System		
Receptacle Contacts	4-12-4-13	✓
Single Wire Seals and Sealing Plugs	4-14	✓




Page

Housings and Connectors		
Introduction	4-15	✓
Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts		
2 Positions	4-16-4-20	✓
3 Positions	4-23-4-25	✓
4 Positions	4-28-4-29	✓
5 Positions	4-32-4-33	✓
6 Positions	4-35	✓
Sealed 1.2 mm Tab Housings		
2 Positions	4-21-4-22	✓
3 Positions	4-26-4-27	✓
4 Positions	4-30-4-31	✓
5 Positions	4-34	✓
6 Positions	4-36-4-37	✓
Sealed 1.2 mm Receptacle Housings for Clean Body Contacts		
2 Positions	4-16-4-20	✓
3 Positions	4-21-4-22	✓
4 Positions	4-23-4-25	✓
6 Positions	4-28-4-29	✓
Sealed 1.2 mm Receptacle Housings for Clean Body Contacts		
2 Positions	4-38-4-39	✓
3 Positions	4-40-4-41	✓
4 Positions	4-42	✓
6 Positions	4-43-4-44	✓
Application Tooling		
	4-45-4-71	
Numerical Index		
	4-77-4-78	

THE PRODUCTS



✓	✓	✓	✓
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Engineering Notes

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Engineering Notes

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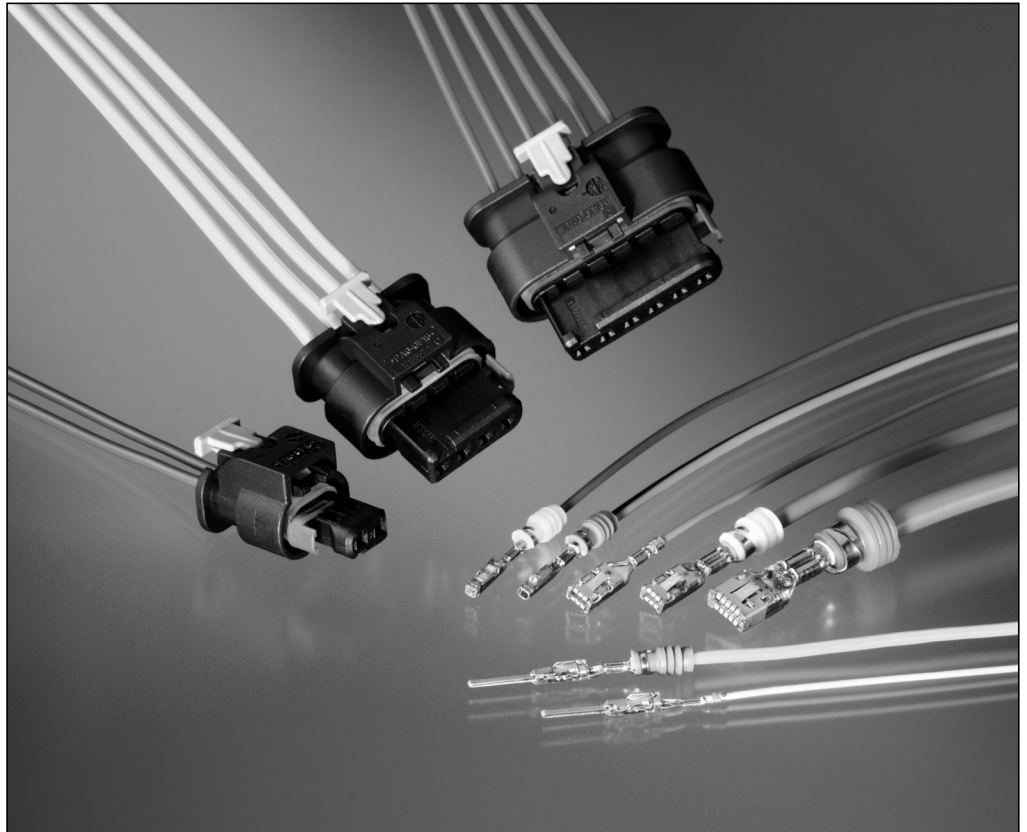
Engineering Notes

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Introduction



MCON Interconnection System offers High Reliability for Long Term Use



The New Generation MCON Connector System is designed for electronic and electrical applications in motor vehicles.

It fulfils all requirements for a connector system for use in automobiles and covers a wide range of applications.

MCON Contact System

- Base material with high current capacity
- 8 or more defined contact points for increased reliability
- Improved vibration resistance
- Good guiding inside the cavity
- Protected contact spring due to the closed box
- Overstress protection of the contact springs
- Box with polarization and secondary locking feature
- Protected locking lance

MCON Connectors

- High reliability status supported for long term use
- High vibration level supported
- Perfect design to avoid quality problems, reduce manufacturing and service cost
- Integrated secondary locking device delivered in pre-locked position
- Wire-to-wire sealed and unsealed connectors (SWS)
- Polarization, several keyings
- Locking mechanism for smaller connectors/mating aid for higher numbers of ways

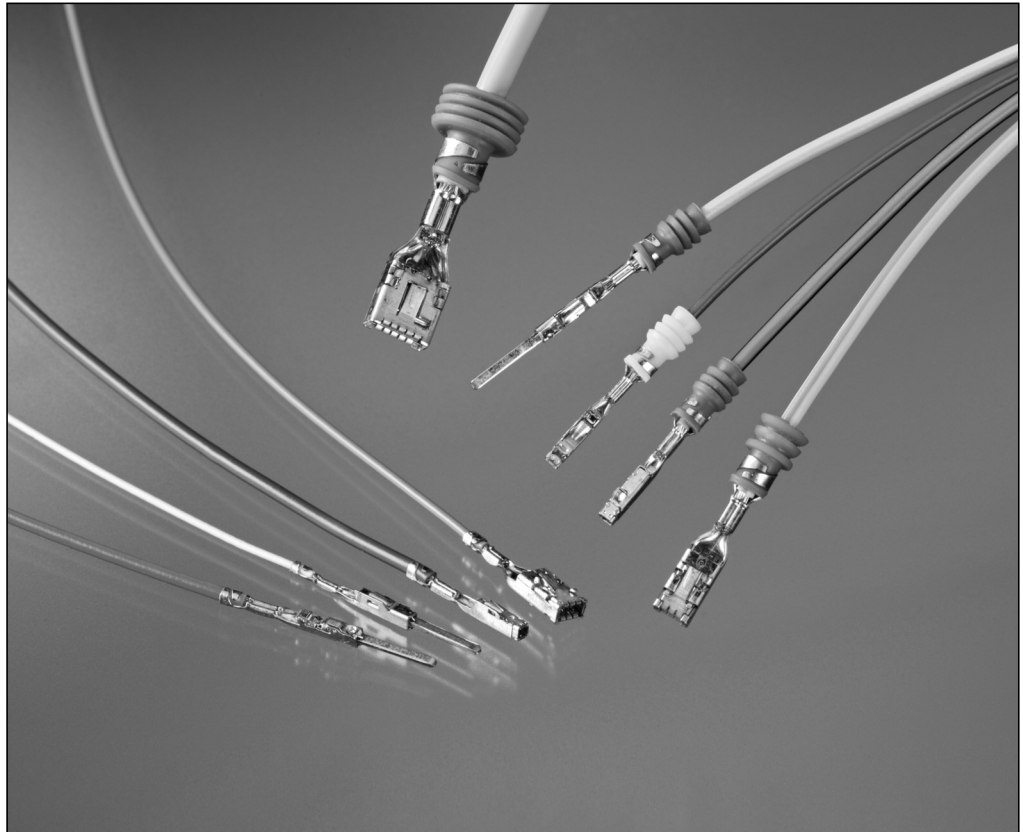
Engineering Notes

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Introduction



MCON Tabs and Receptacles for Fast and Economical Application



The MCON New Generation Contact System is mainly used in the automotive industry. Each contact consists of a flat receptacle, which mates with a flat tab. Base material of contact spring and body is copper alloy.

The two-piece contact design means that the electrical and mechanical properties are separated. One end of the contact body is crimped to wire and the other end mates with the matching tab.

- Protection of the contact springs
- No over elongation of the contact springs possible under normal circumstances
- No possibility to connect from the rear side
- Protection against mechanical damage
- Good guiding in the cavity
- Secondary locking possible (from 3 directions)
- Assembly into housing fully-automatically

The Main Advantages of the MCON Contact System are:

- Base material with high current capacity
- 8 or more defined contact points for increased reliability
- Improved vibration resistance
- Good guiding inside the cavity
- Protected contact spring due to the closed box
- Overstress protection of the contact springs
- Box with secondary locking feature
- Protected locking lance

Tabs and receptacles can be applied in both sealed and unsealed connectors.

MCON contacts can be fast and economically arranged to the lead using TE Application Tooling.

Receptacle Contacts – Locking Lance (LL)

Technical Features

Contact Material:

CuSn4;
Insert Spring: CuNiSi

Contact Finish:

Tin plated, selective silver plated,
selective gold plated

Wire Size Range:

0.08–0.15 mm²,
0.16–0.22 mm²,
0.25–0.35 mm²,
0.50–0.75 mm²,
1.00–1.50 mm²

Contact Resistance:

New State ≤ 2 mΩ

Current Carrying Capacity:

up to 17 Ampere
(at 80 °C ambient temperature)

Total Temperature Max.:

–40 °C ... +130 °C (tin plated)
–40 °C ... +150 °C (silver plated)
–40 °C ... +150 °C (gold plated)

Mating Cycles:*

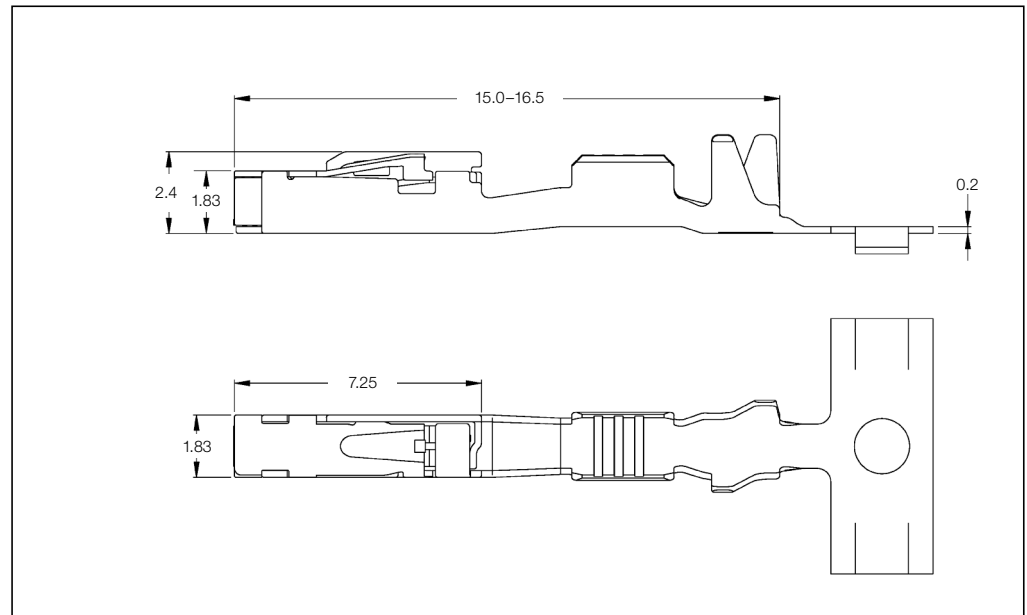
up to 20 cycles (tin-silver plated)
up to 50 cycles (silver plated)
up to 100 cycles (gold plated)

Insertion Force: Max. 5 N

Extraction Force: Max. 2.5 N

Dimension of Male Contacts:

(1.2 ±0.1 x 0.6 ±0.03 mm)



Modular Dimensions (Centerline):

max. 0.75 mm² 2.5 x 2.5 mm

max. 1.0 mm² 2.5 x 3.0 mm

max. 1.5 mm² 2.5 x 3.5 mm
3.0 x 3.5 mm

sealed 4.0 x 4.0 mm;
sealed staggered 3.5 x 4.0 mm,
cavity diameter 3.55 mm
sealed 4.5 x 4.5 mm;
sealed staggered 4.0 x 4.5 mm,
cavity diameter 3.95 mm

Version in Single Seal:

Mandatory fields

Extraction Tool:*

Part No. **5-1579007-3**

Product Group Drawing: 1452674

Product Specification: 108-18782

Application Specification: 114-18464

- *) Mating Cycles are depending on various technical influences and must be clarified in each individual case.
- *) Extraction Tool depends on the terminal/housing combination.

Standard Receptacle Contacts (SRC), Contact Material CuSn4

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator*	Hand Tool
0.08–0.15	–	0.85–1.05	-1 / -2	0-2141861	–	–	–	x-1530515-x	–◇
0.16–0.22	–	0.9–1.2	-1 / -2	0-2141972	–	–	–	x-1530514-x	–◇
0.25–0.35	–	1.10–1.75	-1 / -2 / -3	7-1452653	10,000	–	–	x-1528156-x	4-1579001-3
0.50–0.75	–	1.4–1.9	-1 / -2 / -3	7-1452656	8,000	–	–	x-1528157-x	4-1579001-2
1.0–1.5	–	1.9–2.4	-1 / -2 / -3	7-1452659	8,000	–	–	x-1528159-x	4-1579001-1

Receptacle Contacts with Single Wire Sealing System (SWS), Contact Material CuSn4

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator*	Hand Tool
0.08–0.15	–	0.85–1.05	-1 / -2	0-2141970	–	–	–	–	–
0.16–0.22	–	0.9–1.2	-1 / -2	0-2141974	–	–	–	–	–
0.25–0.35	–	1.10–1.75	-1 / -2 / -3	7-1452665	6,500	–	–	x-1528161-x	4-1579001-7
0.50–0.75	–	1.4–1.9	-1 / -2 / -3	7-1452668	6,500	–	–	x-1528162-x	4-1579001-6
1.0–1.5	–	1.9–2.4	-1 / -2 / -3	7-1452671	6,500	–	–	x-1528163-x	4-1579001-5

***) Material and Finish:**

xxx-1 = CuNiSi, pre-tin plated
xxx-2 = CuNiSi, selective gold plated
xxx-3 = CuNiSi, selective silver plated

Note: All part numbers are RoHS and ELV compliant.

*) The pre- and suffix for the applicators depends on the applied termination equipment.

◇) On request.

Receptacle Contacts – Clean Body (CB)

Technical Features

Contact Material:

CuSn0.15/0.2; Insert Spring: CuNiSi

Contact Finish:

Tin plated, selective silver plated, selective gold plated

Wire Size Range:

0.25–0.35 mm², 0.50–0.75 mm², 1.00–1.50 mm²

Contact Resistance:

New State ≤ 2 mΩ

Current Carrying Capacity:

up to 17 Ampere
(at 80 °C ambient temperature)

Total Temperature Max.:

–40 °C ... +130 °C (tin plated)
–40 °C ... +150 °C (silver plated)
–40 °C ... +150 °C (gold plated)

Mating Cycles:●

up to 20 cycles (tin-silver plated)
up to 50 cycles (silver plated)
up to 100 cycles (gold plated)

Inserting Force: Max. 5 N

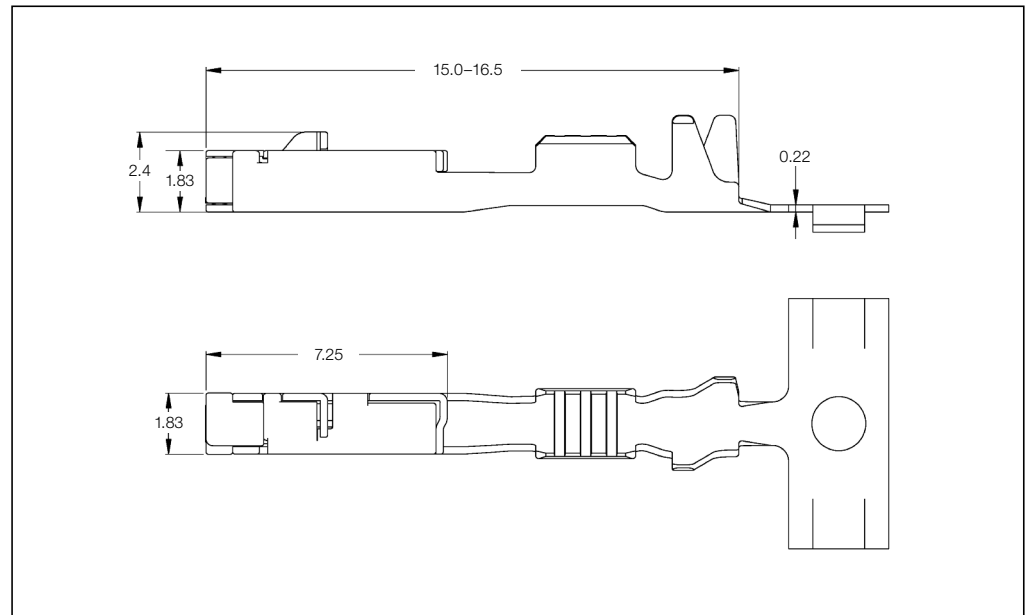
Extraction Force: Max. 2.5 N

Retention Force (from Housing):
Max. 2.5 N

Dimension of Male Contacts:
(1.2 ±0.1 x 0.6 ±0.03 mm)

Extraction Tools – Typically:*

Part Nos. **1579007-8** (Secondary Lock) and **1-1579007-0** (Housing)



Modular Dimensions (Centerline):

max. 0.75 mm² 2.5 x 2.5 mm

max. 1.0 mm² 2.5 x 3.0 mm

max. 1.5 mm² 2.5 x 3.5 mm

3.0 x 3.5 mm

sealed 4.0 x 4.0 mm;
sealed staggered 3.5 x 4.0 mm,
cavity diameter 3.55 mm
sealed 4.5 x 4.5 mm;
sealed staggered 4.0 x 4.5 mm,
cavity diameter 3.95 mm

Product Group Drawing:

1534326

Product Specification:

108-18782

Application Specification:

114-18464

●) Mating Cycles are depending on various technical influences and must be clarified in each individual case.

*) Extraction Tool depends on the terminal/housing combination.

Standard Receptacle Contacts (SRC)

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator*	Hand Tool
0.25–0.35	–	1.10–1.75	-1 / -2 / -3	0-1534594	10,000	–	–	x-1528147-x	1579001-6
0.50–0.75	–	1.4–1.9	-1 / -2 / -3	0-1670144	8,000	–	–	x-1528673-x	2-1579016-1
1.0–1.5	–	1.9–2.4	-1 / -2 / -3	0-1452503	8,000	–	–	x-1528150-x	1-1579001-3

Receptacle Contacts with Single Wire Sealing System (SWS)

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator*	Hand Tool
0.25–0.35	–	1.10–1.75	-1 / -2 / -3	0-1418844	6,500	–	–	x-1528152-x	3-1579001-9
0.50–0.75	–	1.4–1.9	-1 / -2 / -3	0-1670146	6,500	–	–	x-1528674-x	2-1579016-2
1.0–1.5	–	1.9–2.4	-1 / -2 / -3	0-1418850	6,500	–	–	x-1528154-x	3-1579001-7

***) Material and Finish:**

xxx-1 = CuNiSi, pre-tin plated
xxx-2 = CuNiSi, selective gold plated
xxx-3 = CuNiSi, selective silver plated

Note: All part numbers are RoHS and ELV compliant.

◆) The pre- and suffix on the applicators depends on the applied termination equipment.

◇) On request.

Tab Contacts – Locking Lance (LL)

Technical Features

Contact Material:

CuNiSi;
Insert Tab: CuSn0.15/0.2

Contact Finish:

Tin plated,
selective silver plated,
selective gold plated

Wire Size Range:

0.08–0.15 mm²,
0.16–0.22 mm²,
0.25–0.35 mm²,
0.50–0.75 mm²,
1.00–1.50 mm²

Total Temperature Max.:

–40 °C ... +130 °C (tin plated)
–40 °C ... +150 °C (silver plated)
–40 °C ... +150 °C (gold plated)

Extraction Tool:*

Part No. **5-1579007-3**

Product Group Drawing:

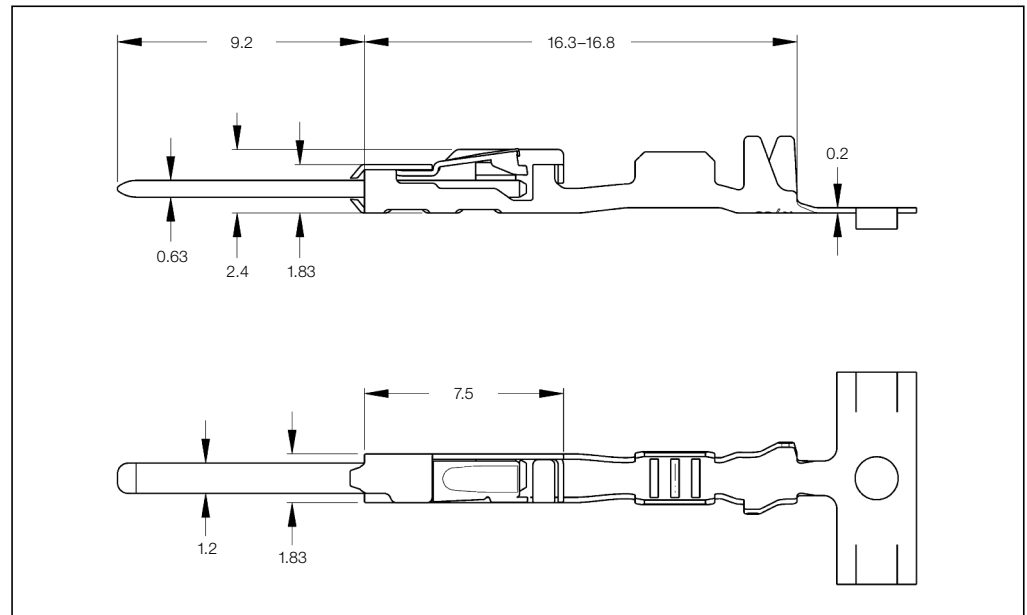
1418754

Product Specification:

108-18782

Application Specification:

114-18464



Modular Dimensions (Centerline):

max. 0.75 mm ²	2.5 x 2.5 mm	
max. 1.0 mm ²	2.5 x 3.0 mm	sealed 4.0 x 4.0 mm; sealed staggered 3.5 x 4.0 mm, cavity diameter 3.55 mm
max. 1.5 mm ²	2.5 x 3.5 mm	sealed 4.5 x 4.5 mm;
	3.0 x 3.5 mm	sealed staggered 4.0 x 4.5 mm, cavity diameter 3.95 mm

*) Extraction Tool depends on the terminal/housing combination

Standard Tab Contacts

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator*	Hand Tool
0.08–0.15	–	0.85–1.05	-1 / -2	2141864	–	–	–	x-1530515-x	–
0.16–0.22	–	0.9–1.20	-1 / -2	2141866	–	–	–	x-1530514-x	–
0.25–0.35	–	1.10–1.75	-1 / -2 / -3	5-1418758	9,000	–	–	x-1528428-x	4-1579001-3
0.50–0.75	–	1.4–1.9	-1 / -2 / -3	5-1418760	8,000	–	–	x-1528506-x	4-1579001-2
1.0–1.5	–	1.9–2.4	-1 / -2 / -3	1418762	7,000	–	–	x-1528507-x	4-1579001-1

Tab Contacts with Single Wire Sealing System (SWS)

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator*	Hand Tool
0.08–0.15	–	0.85–1.05	-1 / -2	2141868	–	–	–	–	–
0.16–0.22	–	1.05–1.20	-1 / -2	2141870	–	–	–	–	–
0.25–0.35	–	1.10–1.75	-1 / -2 / -3	1718758	6,500	–	–	x-1528509-x	4-1579001-7
0.50–0.75	–	1.4–1.9	-1 / -2 / -3	1718760	6,000	–	–	x-1528510-x	4-1579001-6
1.0–1.5	–	1.9–2.4	-1 / -2 / -3	1718762	6,000	–	–	x-1528511-x	4-1579001-5

*) **Material and Finish:**

xxx-1 = CuNiSi, pre-tin
xxx-2 = CuNiSi, selective gold plated
xxx-3 = CuNiSi, selective silver plated

Note: All part numbers are RoHS and ELV compliant.

*) The pre- and suffix for the applicators depends on the applied termination equipment.

*) On request.

Tab Contacts – Clean Body (CB)

Technical Features

Contact Material:

CuSn0.15/0.2;
Insert Tab: CuSn0.15/0.2

Contact Finish:

Tin plated,
selective silver plated,
selective gold plated

Wire Size Range:

0.25–0.35 mm²,
0.50–0.75 mm²

**Modular Dimensions
(Centerline):**

max. 0.75 mm² 2.5 x 2.5 mm
max. 1.0 mm² 2.5 x 3.0 mm
max. 1.5 mm² 2.5 x 3.5 mm
3.0 x 3.5 mm

Product Group Drawing:

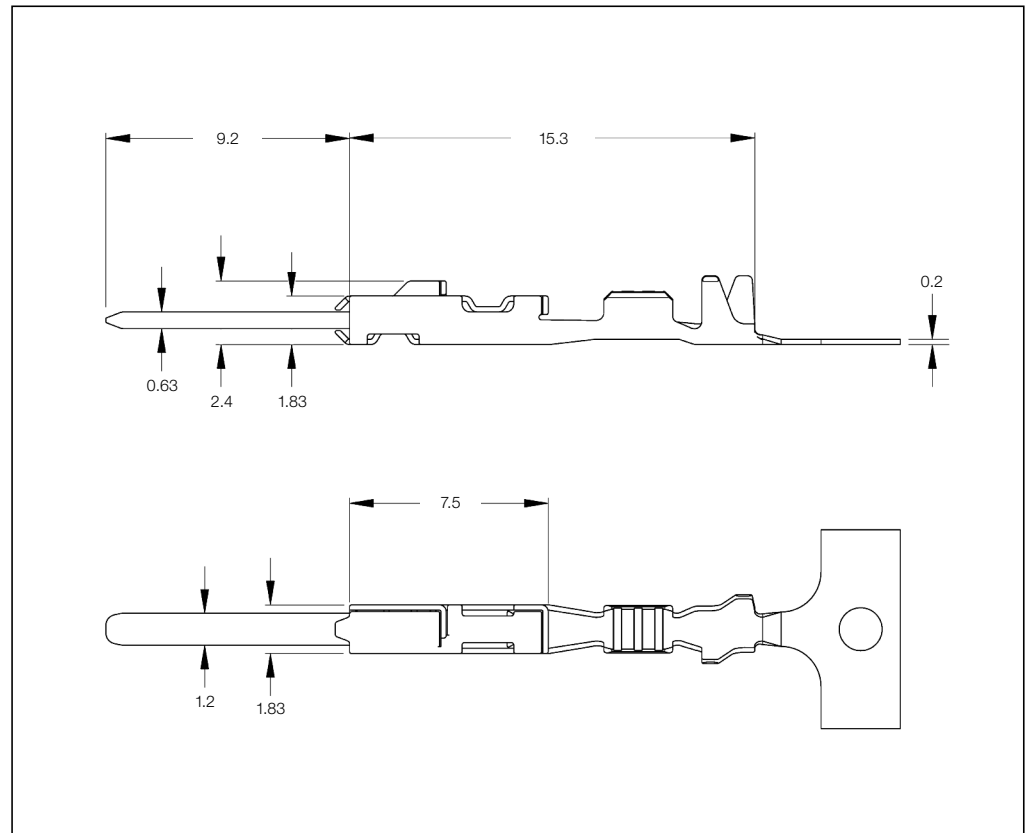
1718398

Product Specification:

108-18782

Application Specification:

114-18464



Standard Tab Contacts

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator [♦]	Hand Tool
0.25–0.35	–	1.10–1.75	-1 / -2 / -3	1718348	9,000	–	–	x-1528156-x	4-1579001-3
0.50–0.75	–	1.4–1.9	-1 / -2 / -3	1718350	8,000	–	–	x-1528157-x	4-1579001-2

Tab Contacts with Single Wire Scaling System (SWS)

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator [♦]	Hand Tool
0.25–0.35	–	1.10–1.75	-1 / -2 / -3	2141114	9000	–	–	x-1528509-x	2063573-x [◇]
0.50–0.75	–	1.4–1.9	-1 / -2 / -3	2141116	8000	–	–	x-1528510-x	2063537-1

***) Material and Finish:**

xxx-1 = CuNiSi, pre-tin
xxx-2 = CuNiSi, selective gold plated
xxx-3 = CuNiSi, selective silver plated

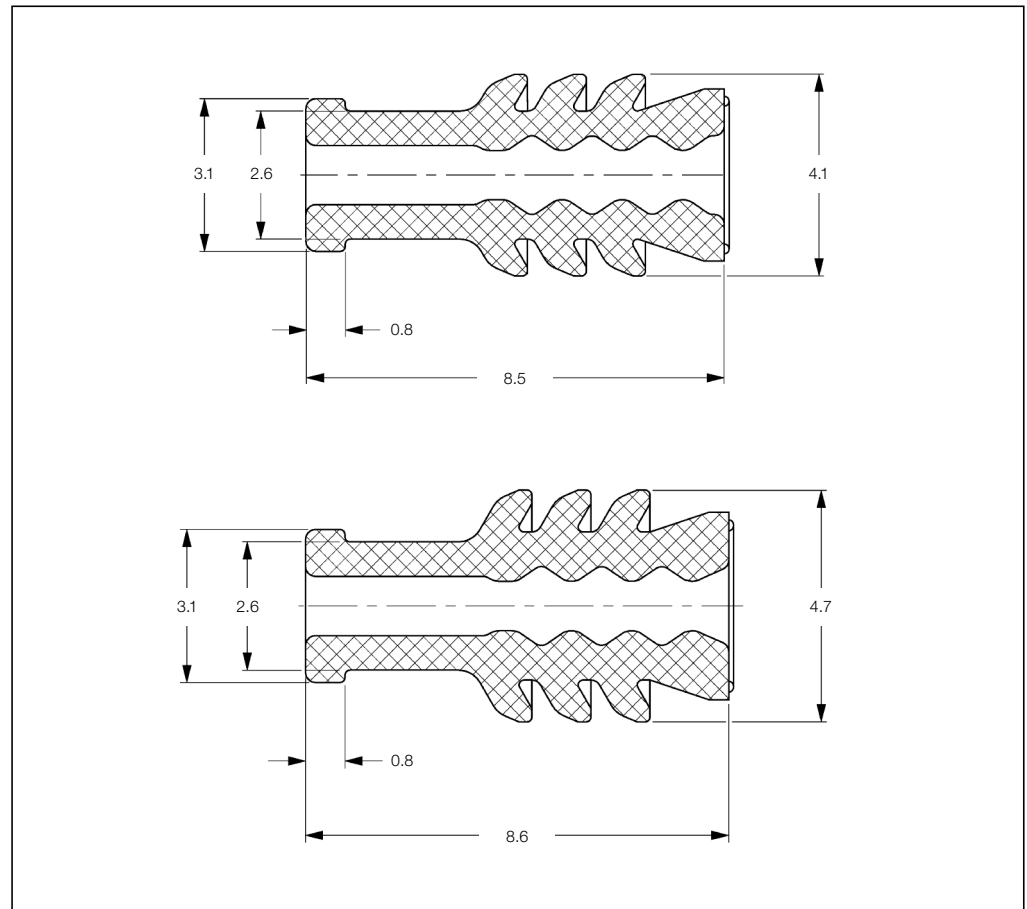
Note: All part numbers are RoHS and ELV compliant.

[♦]) The pre- and suffix for the applicators depends on the applied termination equipment.

[◇]) On request.

Single Wire Seals and Sealing Plugs

Single Wire Seals and Sealing Plugs for MCON Contact System (Cavity Diameter 3.55 mm and 3.95 mm)



Cavity Diameter 3.55 mm

Insulation Diameter		Color	Part Number	Package Quantity
FLK (mm)	FLR (mm)			
-	0.9-1.4	Yellow	967067-2	20,000
-	1.4-2.1	Green	967067-1	20,000
-	1.4-1.9	Red	2098582-1*	20,000
-	1.9-2.1	Yellow	964972-1	20,000
Sealing Plug		Blue	967056-1	5,000

*) Seals for 150 °C applications.
Wire used must be able to withstand 150 °C for 1008 hours.

Cavity Diameter 3.95 mm

Insulation Diameter		Color	Part Number	Package Quantity
FLK (mm)	FLR (mm)			
-	0.9-1.9	Gray	963142-2	20,000
-	1.9-2.4	Green	967067-1	20,000
Sealing Plug		White	963143-1	20,000

Receptacle Contacts

Technical Features

Contact Material:

CuSn 0.15/0.2;
Insertion Spring: CuNiSi

Contact Finish:

Tin plated,
selective silver plated

Wire Size Range:

0.20–0.35 mm²,
0.50 mm²,
0.75–1.00 mm²,
>1.0–2.5 mm²
>2.5–4.0 mm²

Current Carrying Capacity:

up to 36 Ampere
(at 80 °C ambient temperature)

Total Temperature Max.:

–40 °C ... +130 °C (tin plated)
–40 °C ... +150 °C (silver plated)

Insertion Force:

Max. 7 N

Extraction Force:

Max. 6 N

Extraction Tool:

Part No. **5-1579008-2**

Product Group Drawing:

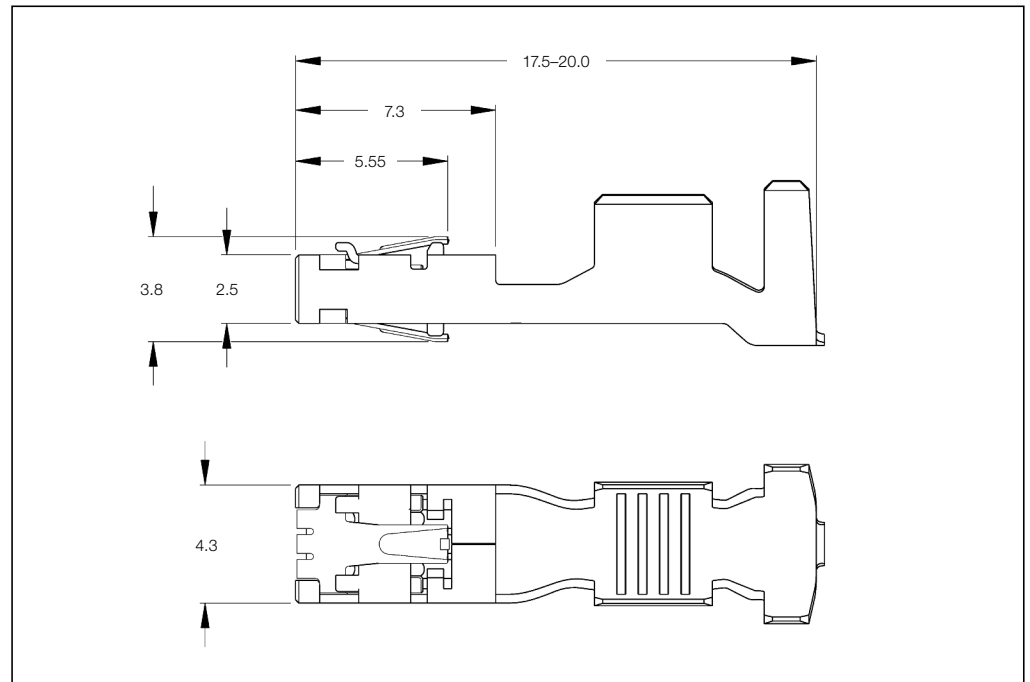
1719797

Product Specification:

108-94002

Application Specification:

114-18718



Modular Dimensions (Centerline):

max. 2.5 mm ²	5.0 x 5.5 mm	sealed 5.5 x 5.5 mm
	staggered 4.5 x 5.5 mm	sealed staggered 5.0 x 5.5 mm
		cavity diameter 4.9 mm
max. 4.0 mm ²	5.5 x 5.5 mm	sealed 7.2 x 7.2 mm
	staggered 5.0 x 5.5 mm	sealed staggered 6.0 x 7.2 mm
		cavity diameter 6.4 mm

Standard Receptacle Contacts

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator [♦]	Hand Tool
0.20–0.35	–	1.15–1.40	-1 / -3	1719836	2,500	1719837	500	x-1528691-x	9-1579004-6
0.50	–	1.4–1.6	-1 / -3	1563719	2,500	1563720	500	x-1528899-x	9-1579004-7
0.75–1.00	–	1.7–2.1	-1 / -3	1719838	2,500	1719839	500	x-1528632-x	
>1.0–2.5	–	2.2–3.0	-1 / -3	1719840	2,500	1719841	500	x-1528633-x	9-1579004-8
>2.5–4.0	–	3.4–3.7	-1 / -3	1718475	2,500	1718477	500	x-1528585-x	9-1579004-9

Receptacle Contacts with Single Wire Sealing System (SWS)

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator [♦]	Hand Tool
0.50	–	1.4–1.6	-1 / -3	1563935	2,500	1563936	500	1530133	6-1579014-7
0.75–1.00	–	1.7–2.1	-1 / -3	1670802	2,500	1670803	500	x-1528773-x	6-1579014-1
>1.0–2.5	–	2.2–3.0	-1 / -3	1670804	2,500	1670805	500	x-1528774-x	6-1579014-2
>2.5–4.0	–	3.4–3.7	-1 / -3	1670806	2,500	1670807	500	x-1528775-x	6-1579014-3

***) Material and Finish:**
xxx-1 = CuNiSi, pre-tin plated
xxx-3 = CuNiSi, selective silver plated

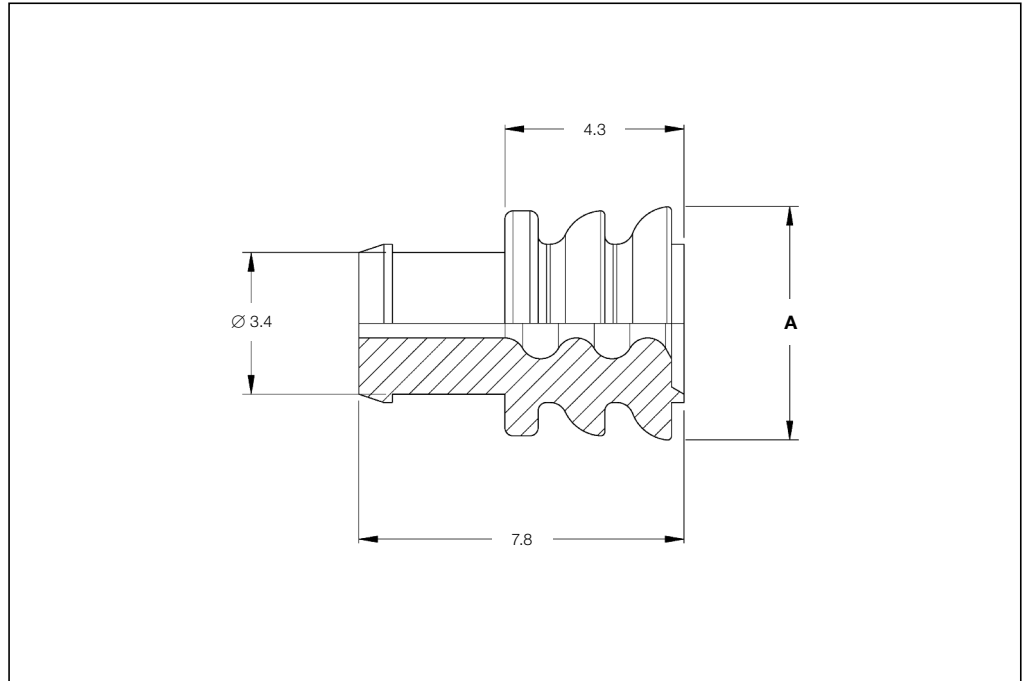
Note: All part numbers are RoHS and ELV compliant.

[♦]) The pre- and suffix for the applicators depends on the applied termination equipment.

[◇]) On request.

Single Wire Seals and Sealing Plugs

Single Wire Seals and Sealing Plugs for MCON Contact System (Cavity Diameter 4.9 mm and 6.4 mm)



Cavity Diameter 4.9 mm

Wire Size Range (mm)	Insulation Diameter (mm)	Color	Diameter A (mm)	Part Number	Package Quantity
0.75-1.00	1.4-2.1	Blue	5.6	828904-1	1,000
				828904-2	10,000
>1.5-2.5	2.2-3.0	White	5.6	828905-1	10,000
	Sealing Plug	Natural	5.6	828922-1	10,000

Cavity Diameter 6.4 mm

Wire Size Range (mm)	Insulation Diameter (mm)	Color	Diameter A (mm)	Part Number	Package Quantity
>2.5-4.0	3.4-3.7	Green	7.2	828985-1	5,000
	Sealing Plug	Brown	7.2	828986-1	5,000

Receptacle Contacts Weld Version

Technical Features

Contact Material:

CuSn0.15/0.2;
Insertion Spring: CuNiSi

Contact Finish:

Tin plated

Contact Resistance:

New State $\leq 2 \text{ m}\Omega$

Total Temperature Max.:

$-40 \text{ }^\circ\text{C} \dots +130 \text{ }^\circ\text{C}$

Inserting Force: Max. 7 N

Extraction Force: Max. 6 N

Extraction Tool:

Part No. **5-1579008-1**

Product Group Drawing:

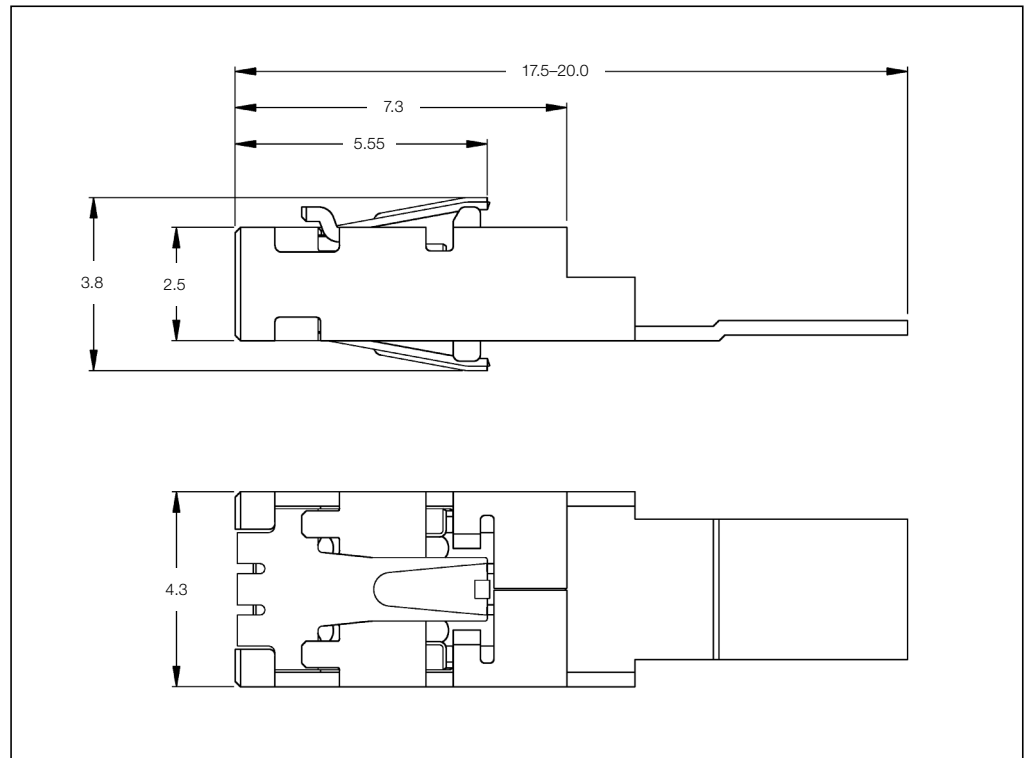
1823716

Product Specification:

108-94002

Application Specification:

NA



Standard Receptacle Contacts

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator [‡]	Hand Tool
-	-	-	-1	1-1823716	-	-	-	-	-

***) Material and Finish:**

xxx-1 = CuNiSi, pre-tin plated
xxx-3 = CuNiSi, selective silver plated

Note: All part numbers are RoHS and ELV compliant.

‡) The pre- and suffix for the applicators depends on the applied termination equipment.

Receptacle Contacts – Locking Lance (LL)

Technical Features

Contact Material:

CuSn0.15/0.2;
Insertion Spring: CuNiSi

Contact Finish:

Tin plated
selective silver plated

Wire Size Range:

>2.5–4.0 mm²
>4.0–6.0 mm²

Contact Resistance:

New State ≤ 2 mΩ

Current Carrying Capacity:

up to 54 Ampere
(at 80 °C ambient temperature)

Total Temperature Max.:

–40 °C ... +130 °C (tin plated)
–40 °C ... +150 °C (silver plated)

Inserting Force: Max. 15 N

Extraction Force: Max. 10 N

Extraction Tool:

Part No. **5-1579008-1**

Product Group Drawing:

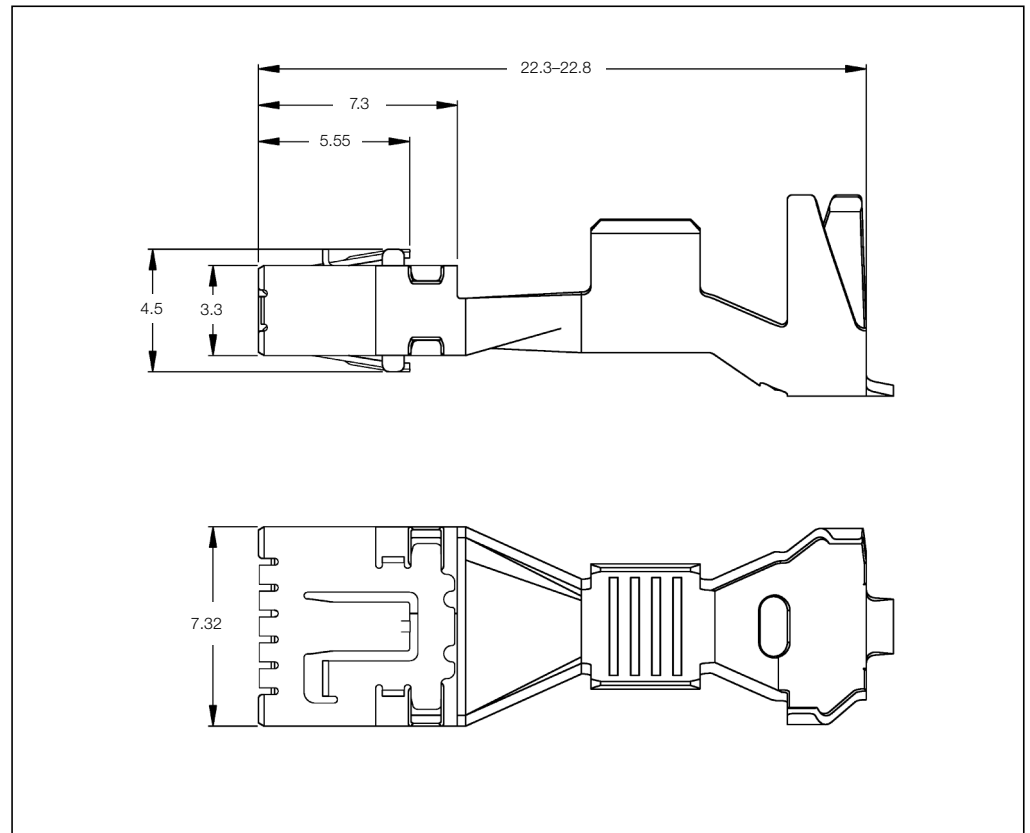
1564888

Product Specification:

108-94149

Application Specification:

114-18944



Modular Dimensions (Centerline):

sealed 9.0 x 9.0 mm
sealed staggered 9.0 x 8.0 mm
cavity diameter 8.5 mm

Standard Receptacle Contacts with Single Wire Sealing System (SWS)

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator [♦]	Hand Tool
>2.5–4.0	–	3.4–3.7	-1 / -3	1703836	–	–	–	1855593	NA [◇]
>4.0–6.0	–	4.0–4.3	-1 / -3	1703834	–	–	–	1855505	NA [◇]

***) Material and Finish:**

xxx-1 = CuNiSi, pre-tin plated
xxx-3 = CuNiSi, selective silver plated

Note: All part numbers are RoHS and ELV compliant.

♦) The pre- and suffix for the applicators depends on the applied termination equipment.

◇) On request.

Receptacle Contacts – Clean Body (CB)

Technical Features

Contact Material:

CuSn0.15/0.2;
Insertion Spring: CuNiSi

Contact Finish:

Tin plated
selective silver plated

Wire Size Range:

>2.5–4.0 mm²
>4.0–6.0 mm²

Contact Resistance:

New State ≤ 2 mΩ

Current Carrying Capacity:

up to 54 Ampere
(at 80 °C ambient temperature)

Total Temperature Max.:

–40 °C ... +130 °C (tin plated)
–40 °C ... +150 °C (silver plated)

Inserting Force: Max. 15 N

Extraction Force: Max. 10 N

Product Group Drawing:

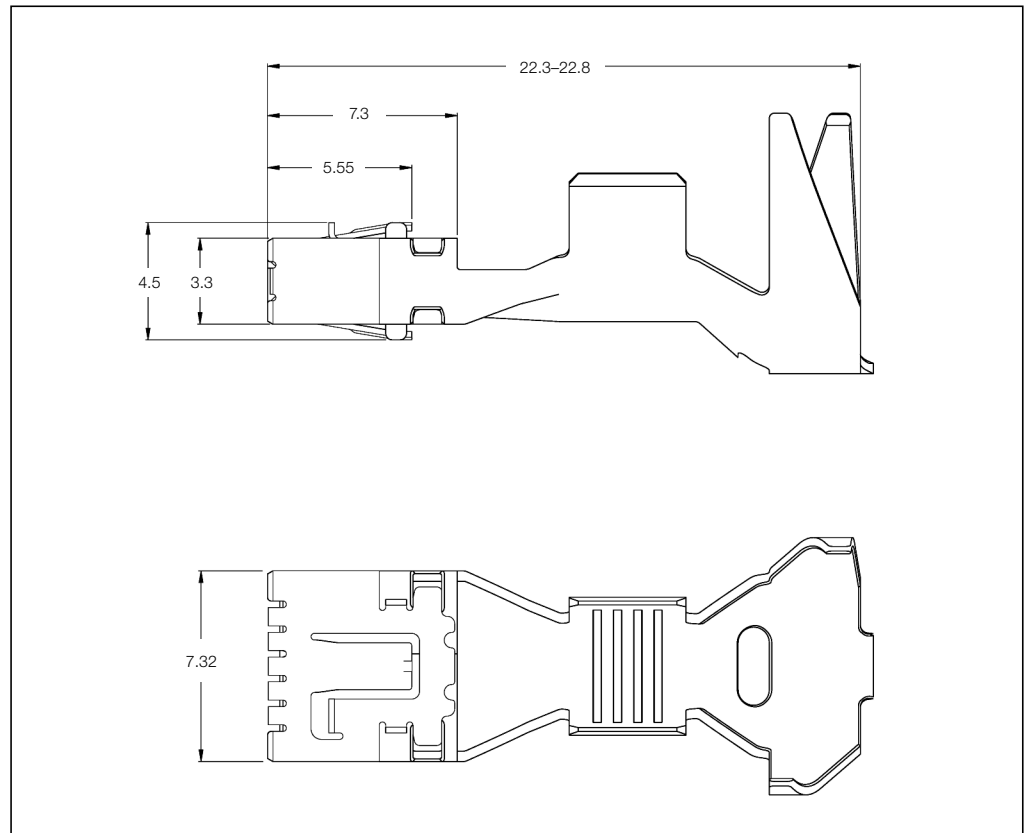
1564888

Product Specification:

108-94149

Application Specification:

114-18944



Modular Dimensions (Centerline):

sealed 9.0 x 9.0 mm
sealed staggered 9.0 x 8.0 mm
cavity diameter 8.5 mm

Standard Receptacle Contacts (SRC) in Clean Body

Wire Size Range (mm ²)	Insulation Diameter (mm)		Material and Finish*	Part Numbers					
	FLK	FLR		Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator [♦]	Hand Tool
>2.5-4.0	–	3.4-3.7	-1 / -3	2177771	–	–	–	NA	NA
>4.0-6.0	–	4.0-4.3	-1 / -3	2177770	–	–	–	NA	NA

***) Material and Finish:**

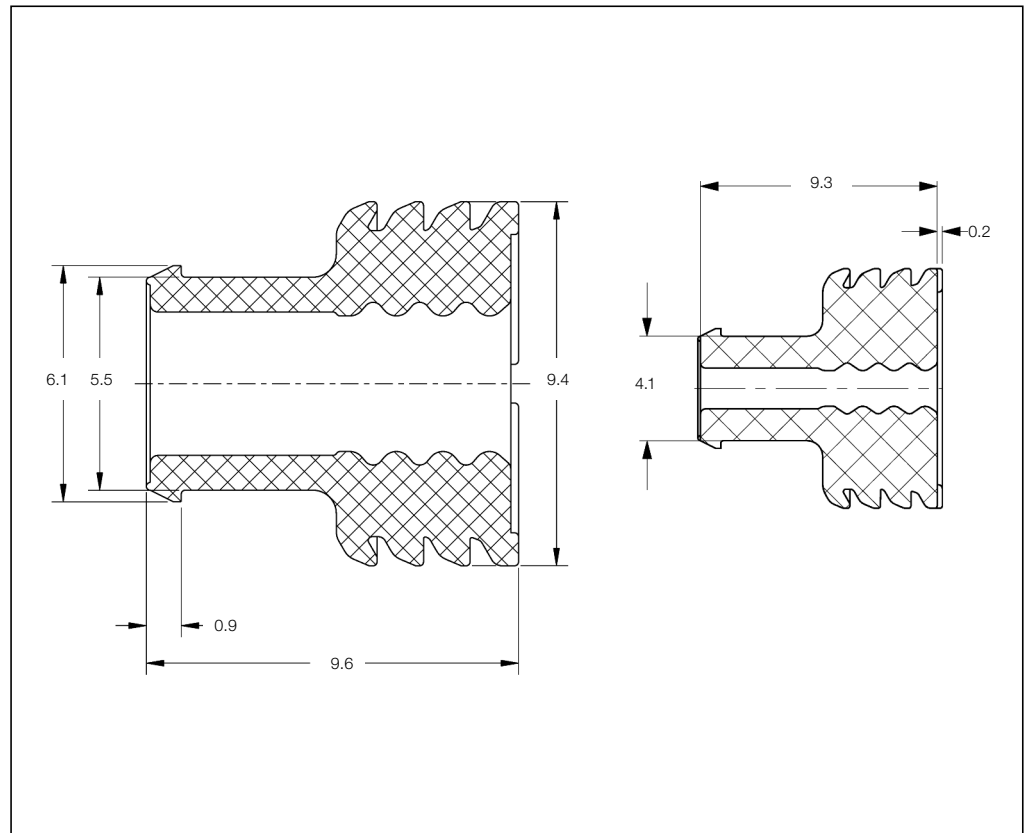
xxx-1 = CuNiSi, pre-tin plated
xxx-3 = CuNiSi, selective silver plated

Note: All part numbers are RoHS and ELV compliant.

♦) The pre- and suffix for the applicators depends on the applied termination equipment.

Single Wire Seals and Sealing Plugs

Single Wire Seals and Sealing Plugs for MCON Contact System (Cavity Diameter 8.5 mm)

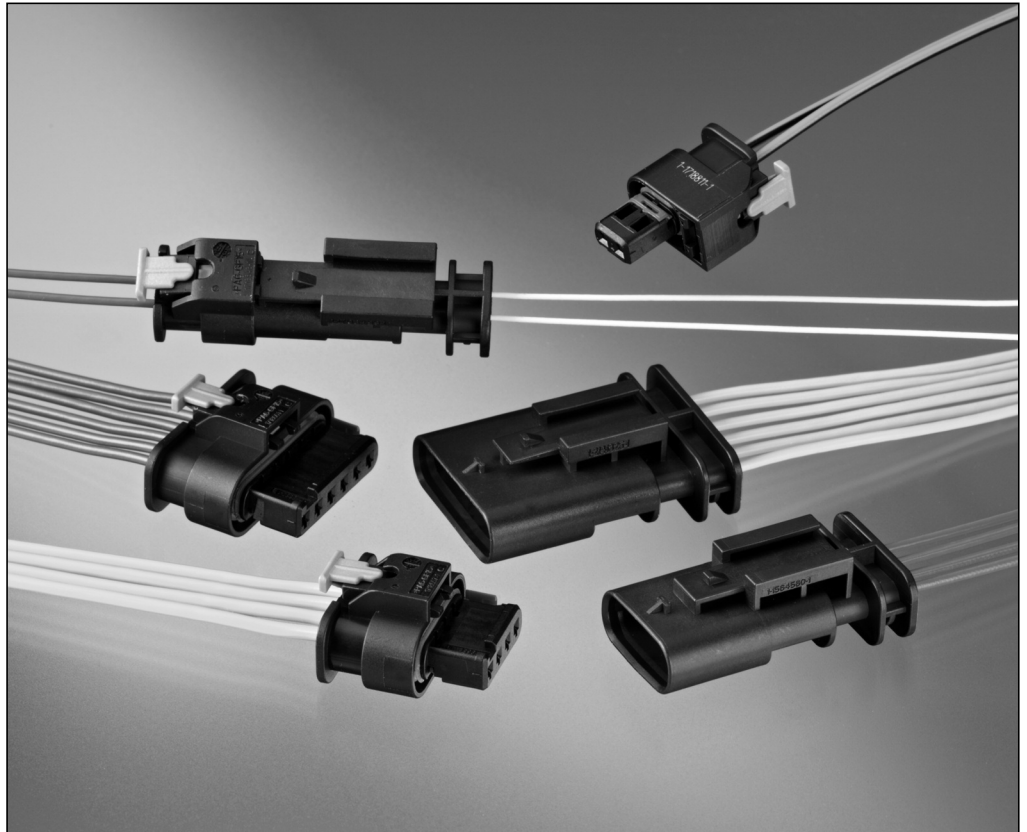


Insulation Diameter		Color	Part Number	Package Quantity
FLK (mm)	FLR (mm)			
-	3.4-3.7	Green	967608-1	30,000
-	4.0-4.3	blue	1719972-1	20,000

Introduction



MCON Connectors offer Highest Reliability for Use in the Automotive Industry



The New Generation MCON Connector System offers receptacle and tab housings with capability for waterproofing and resistance to conditions of extreme vibration.

The system is designed for electronic and electrical applications in motor vehicles, where vibrations and mechanical stress, in the long term, can affect the quality on the contact system.

Features

- CPA (Connector Position Assurance) capability
- High reliability status supported for long term use
- High vibration level supported
- Perfect design to avoid quality problems, reduce manufacturing and service cost
- Integrated secondary locking device delivered in pre-locked position
- Wire-to-Wire sealed and unsealed connectors (SWS)
- Polarization, several keyings
- Locking mechanism for smaller connectors/mating aid for higher numbers of ways

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

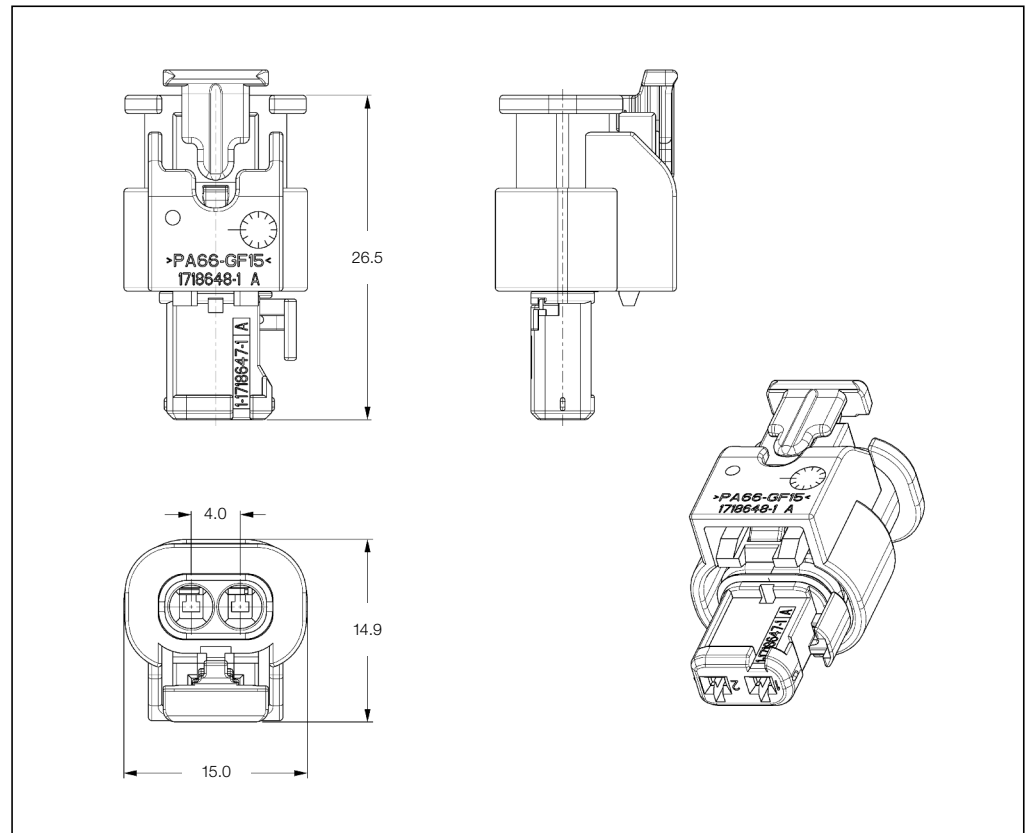
No. of Positions:
2 Positions

Housing Material:
PA66-GF15

Wire Size Range:
1.0 mm²

Product Specification:
108-18969

Application Specification:
114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
2	A	Black	1-1718643-1	-	1-1703498-1/-2	-	-

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

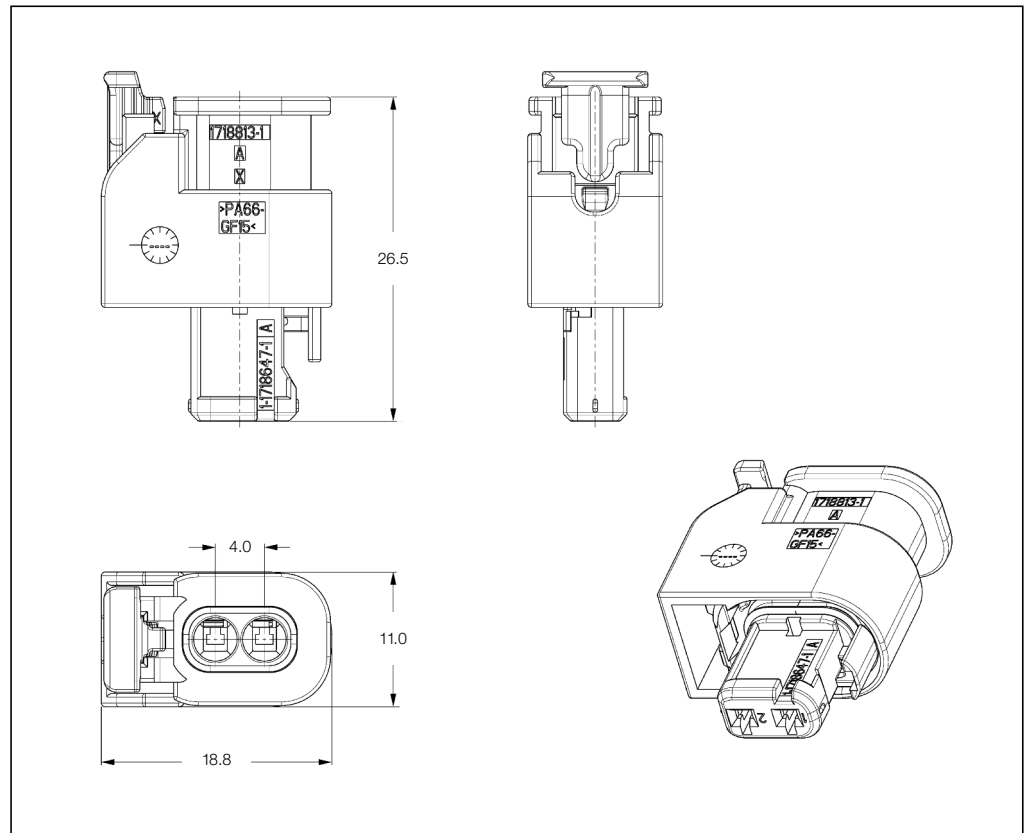
No. of Positions:
2 Positions

Housing Material:
PA66 GF15

Wire Size Range:
1.0 mm²

Product Specification:
108-18969

Application Specification:
114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
2	A	Black	1-1718811-1	-	-	-	-

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

No. of Positions:

2 Positions

Housing Material:

PA66-GF30/PA6-GF15

Wire Size Range:

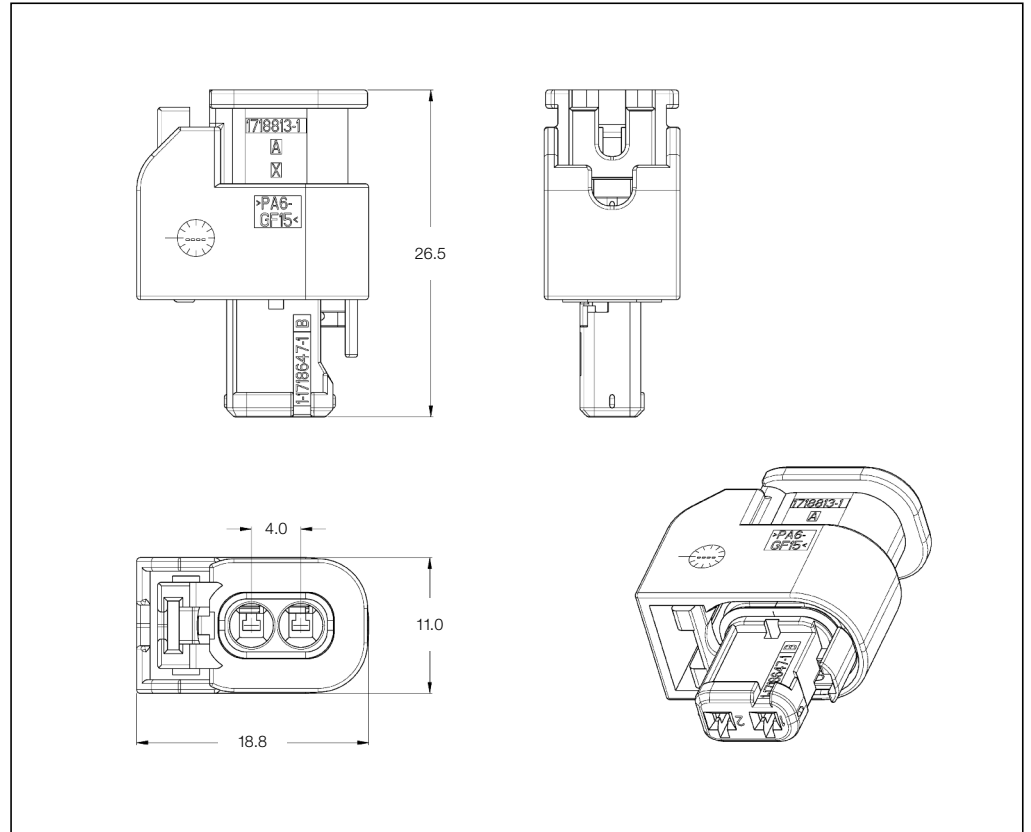
1.0 mm²

Product Specification:

108-18969

Application Specification:

114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
2	A	Black	1-1564440-1	-	-	-	-

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

No. of Positions:

2 Positions

Housing Material:

PA66-GF30/PA6-GF15

Wire Size Range:

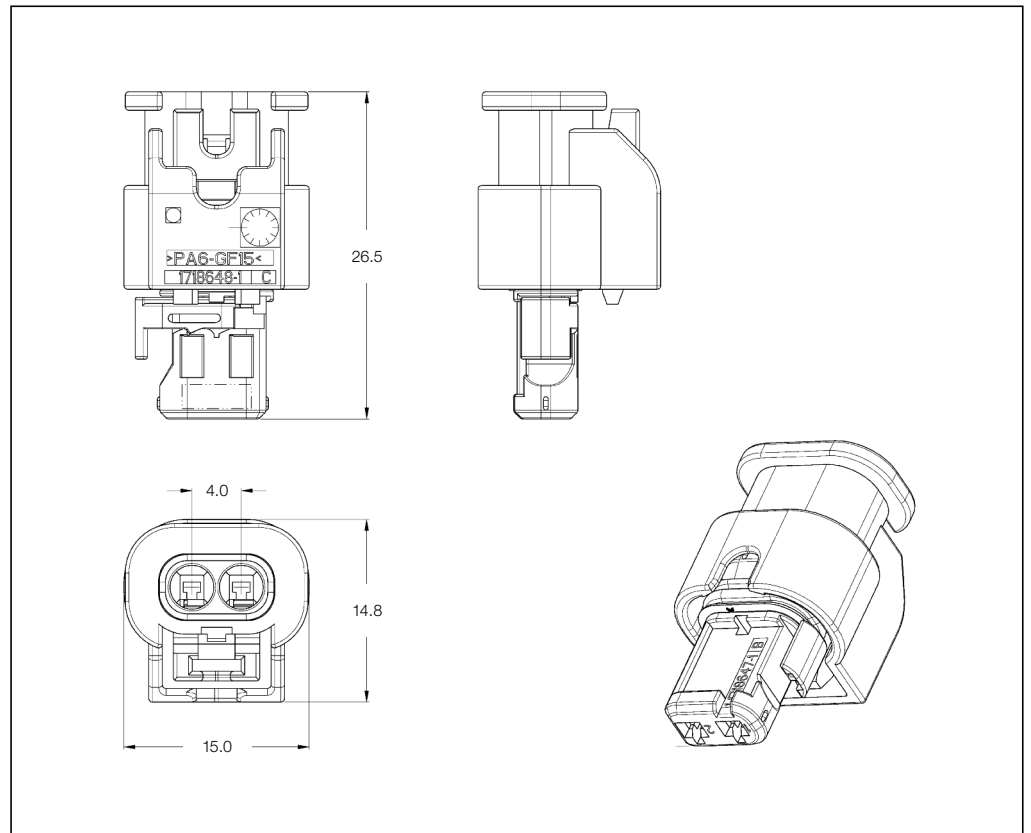
1.0 mm²

Product Specification:

108-18969

Application Specification:

114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
2	A	Black	1-1670915-1	-	-	-	-

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

No. of Positions:

2 Positions

Housing Material:

PA66-GF30/PA6-GF15

Wire Size Range:

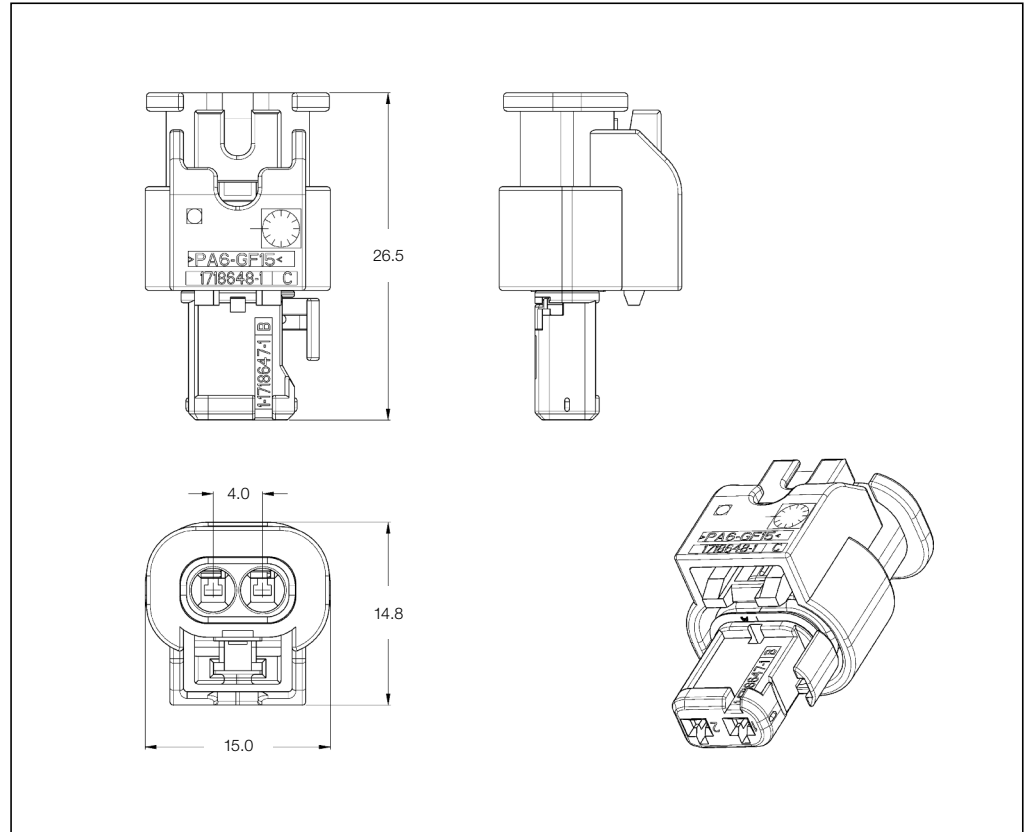
1.0 mm²

Product Specification:

108-18969

Application Specification:

114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
2	A	Black	1-1670916-1	–	1-1703498-1/-2	–	–
	B	Natural	2-1670916-1	–	–	–	–

Sealed 1.2 mm Tab Housings for Locking Lance Contacts

Technical Features

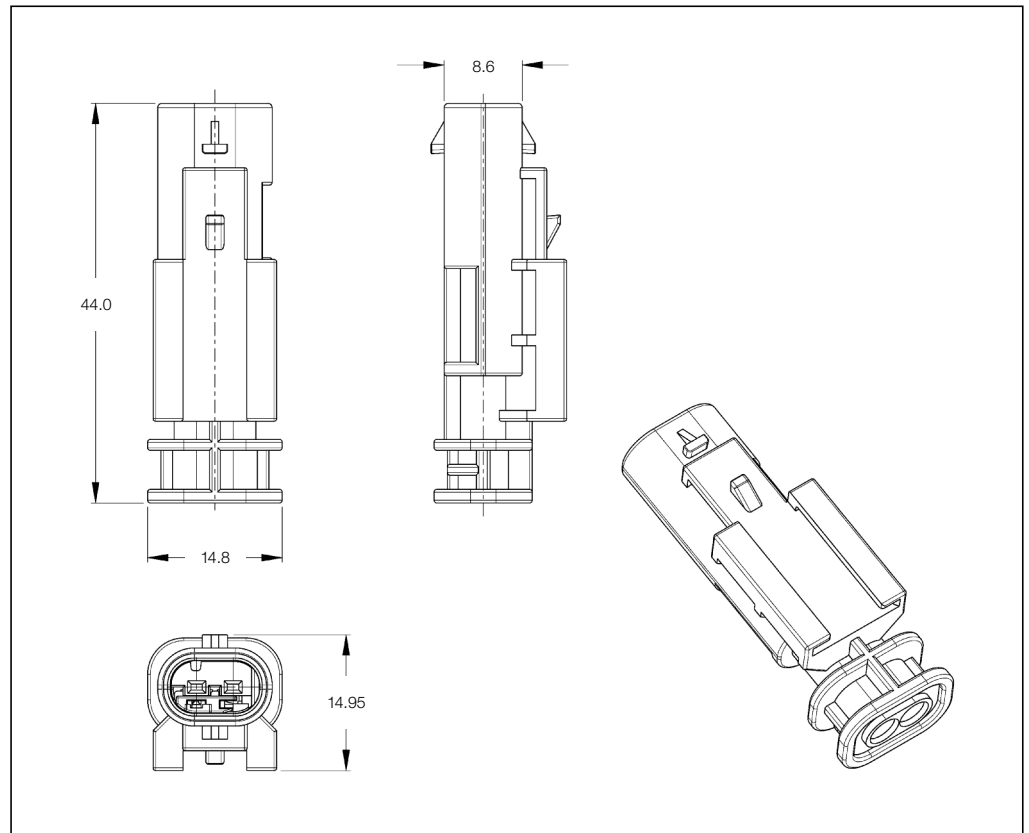
No. of Positions:
2 Positions

Housing Material:
PBT-GF30

Wire Size Range:
1.0 mm²

Product Specification:
—

Application Specification:
114-18910-1



Sealed 1.2 mm Tab Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Tab Housing	Cover	Mating Receptacle Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
2	A	Black	1-1703498-1	—	1-1670916-1	—	—

Sealed 1.2 mm Tab Housings for Locking Lance Contacts

Technical Features

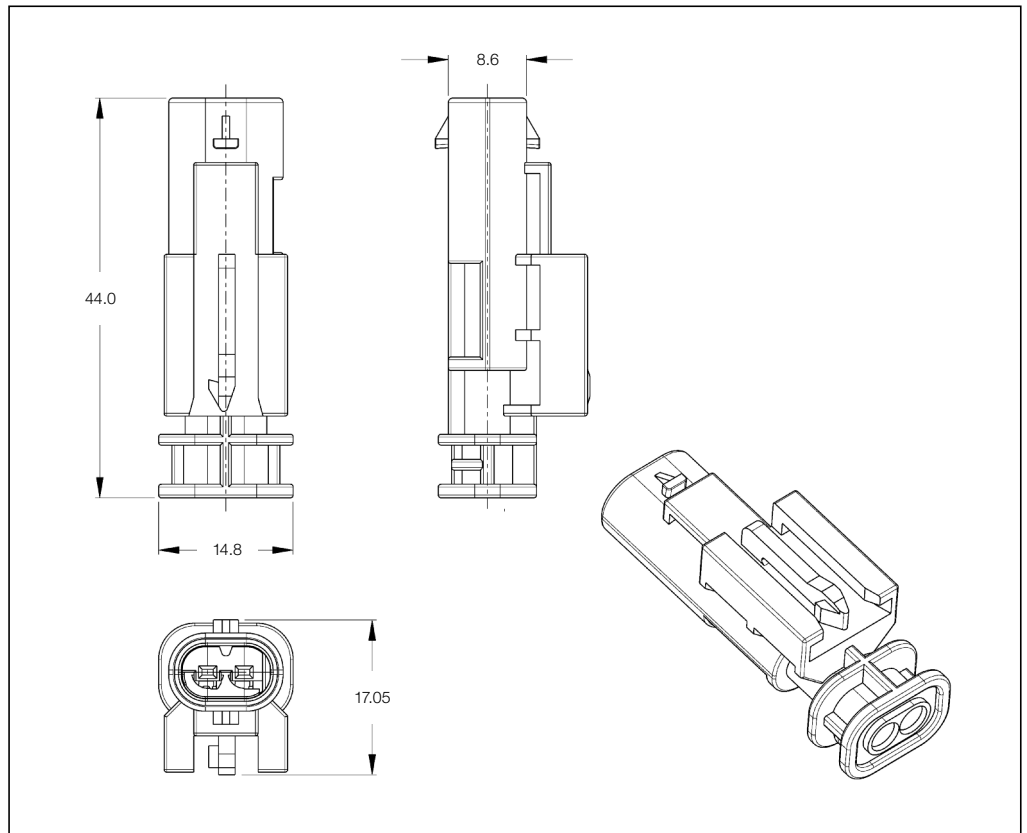
No. of Positions:
2 Positions

Housing Material:
PBT-GF30

Wire Size Range:
1.0 mm²

Product Specification:
—

Application Specification:
114-18910-1



Sealed 1.2 mm Tab Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Tab Housing	Cover	Mating Receptacle Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
2	A	Black	1-1703498-2	—	1-1670916-1	—	—

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

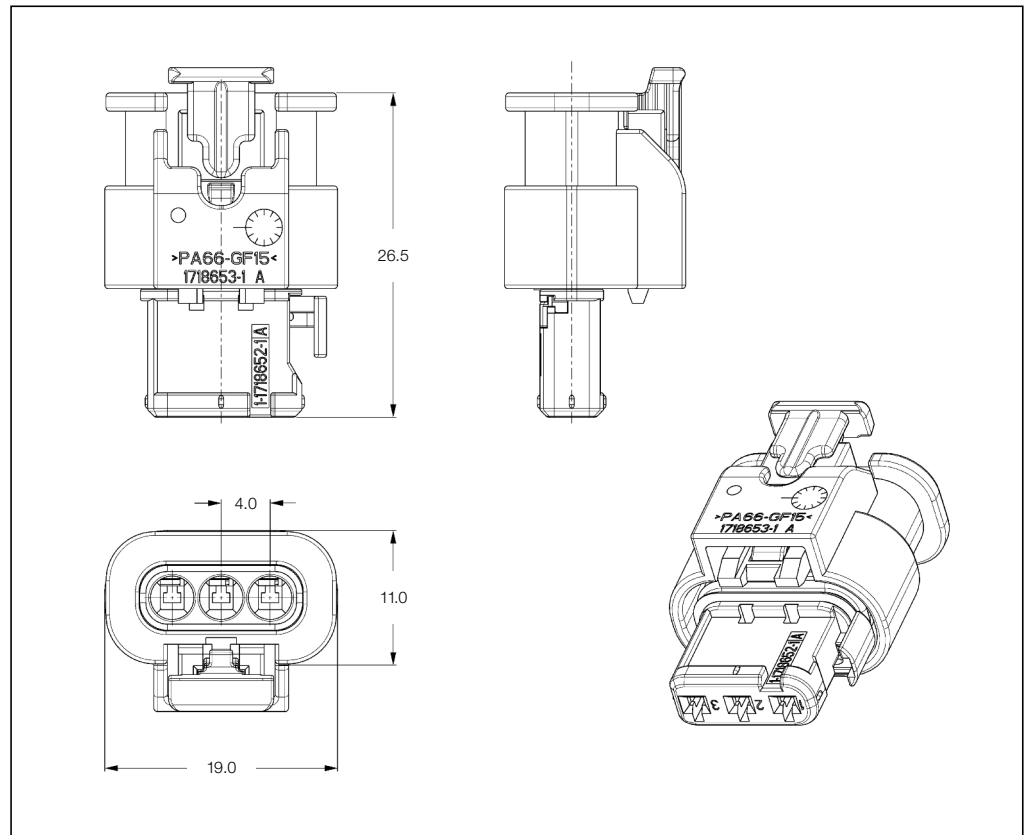
No. of Positions:
3 Positions

Housing Material:
PA66-GF15/PA 46

Wire Size Range:
1.0 mm²

Product Specification:
108-18969

Application Specification:
114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
3	A	Black	1-1718644-1	–	1-1703494-1/-2	–	–
3	A	Black	1-1718644-5*	–	1-1703494-1/-2	–	–

*) High temperature version –40 °C ...+150 °C

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

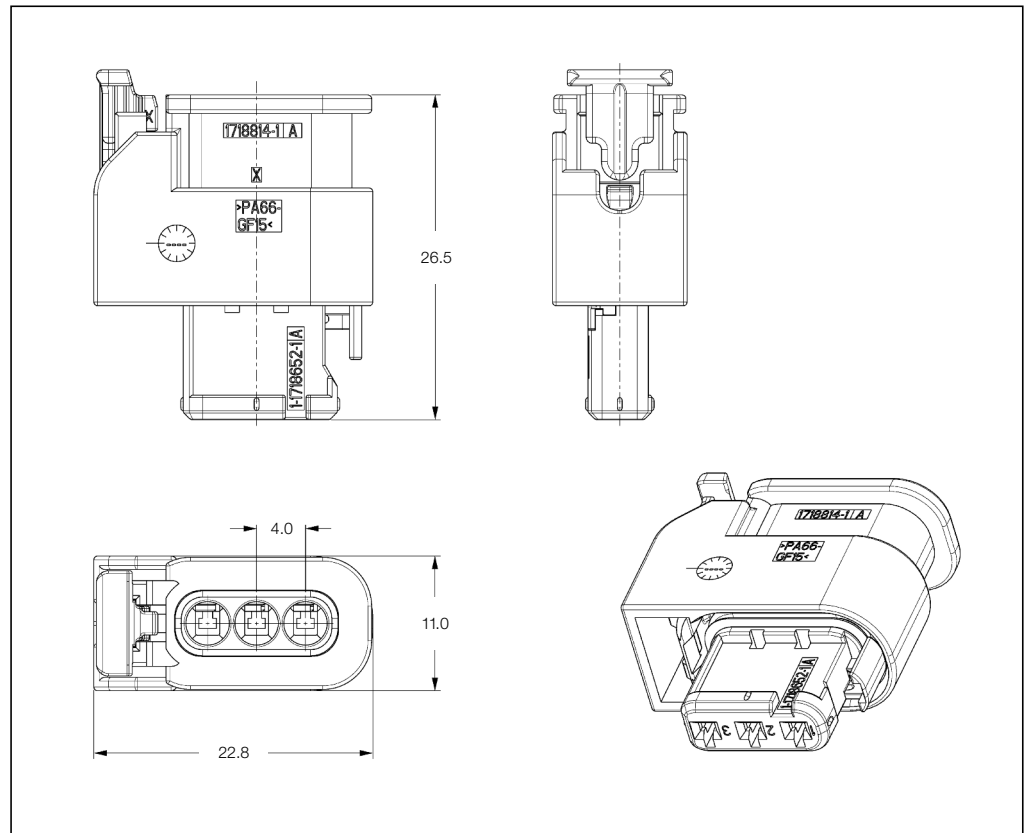
No. of Positions:
3 Positions

Housing Material:
PA66-GF15

Wire Size Range:
1.0 mm²

Product Specification:
108-18969

Application Specification:
114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
3	A	Black	1-1718812-1	-	-	-	-

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

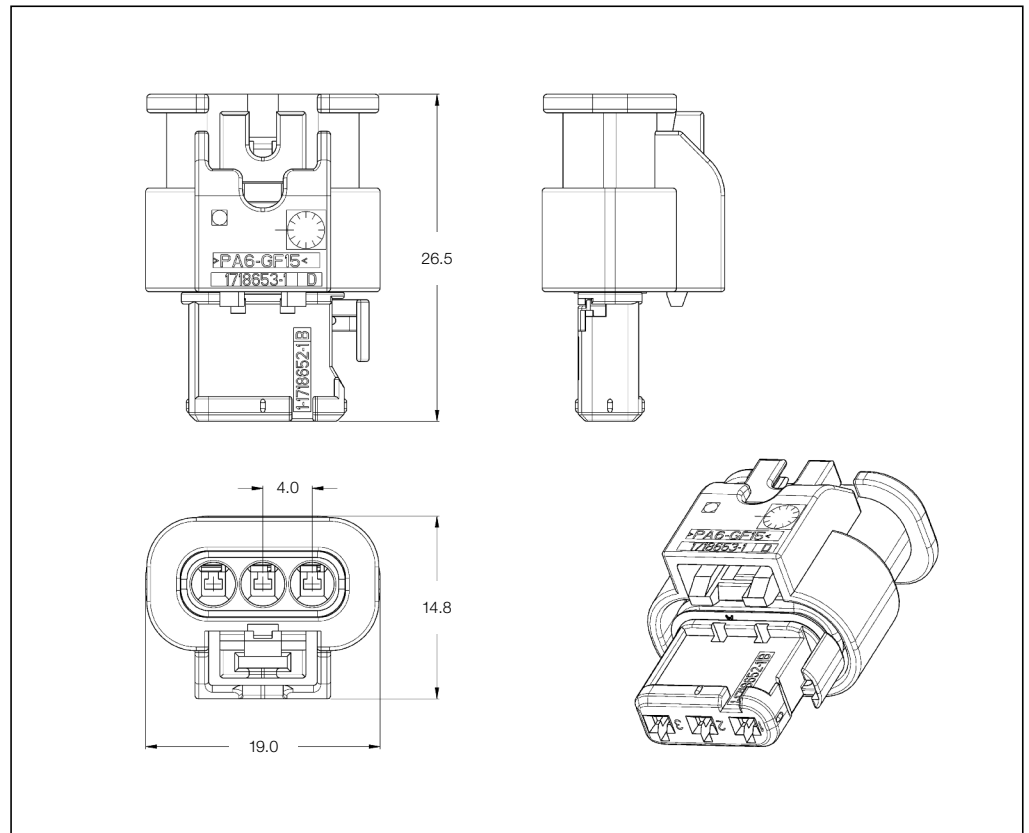
No. of Positions:
3 Positions

Housing Material:
PA66-GF15/PA46

Wire Size Range:
1.0 mm²

Product Specification:
108-18969

Application Specification:
114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
3	A	Black	1-1670917-1	–	1-1703494-1/-2	–	–
	B	Natural	2-1670917-1	–	–	–	–
	A	Black	1-1670917-5*	–	–	–	–

*) High temperature version –40 °C ...+150 °C

Sealed 1.2 mm Tab Housings for Locking Lance Contacts

Technical Features

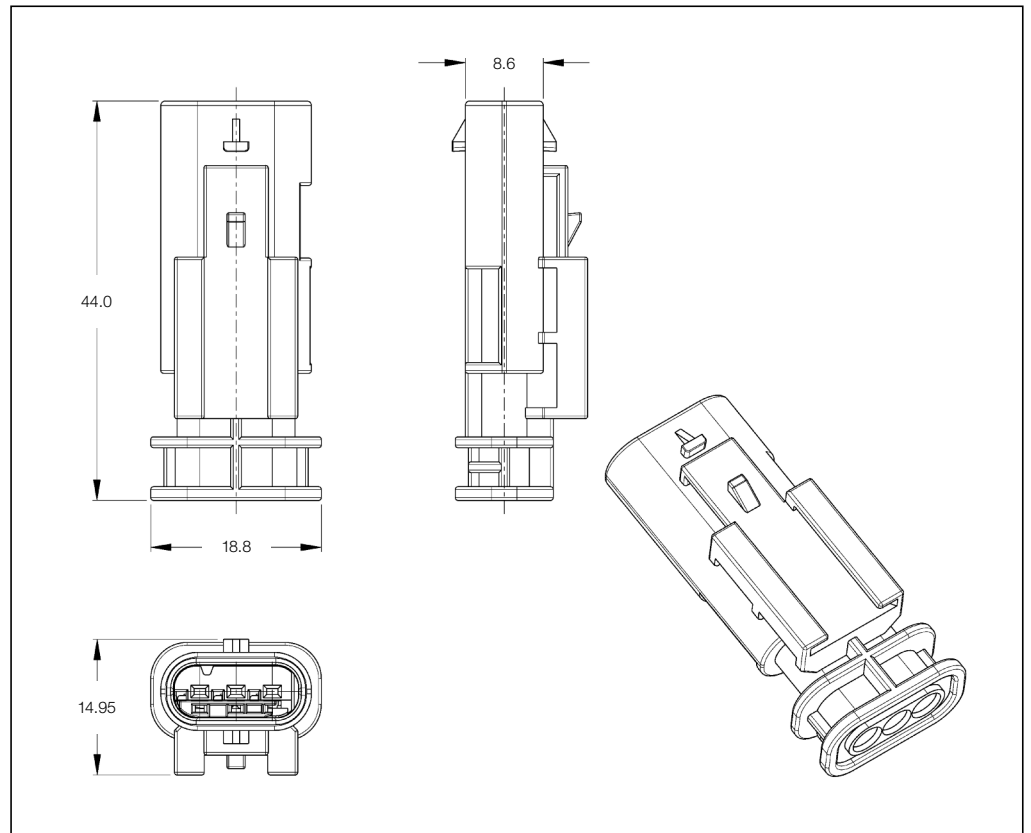
No. of Positions:
3 Positions

Housing Material:
PBT-GF30

Wire Size Range:
1.0 mm²

Product Specification:
—

Application Specification:
114-18910-1



Sealed 1.2 mm Tab Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Tab Housing	Cover	Mating Receptacle Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
3	A	Black	1-1703494-1	—	1-1670917-1	—	—

Sealed 1.2 mm Tab Housings for Locking Lance Contacts

Technical Features

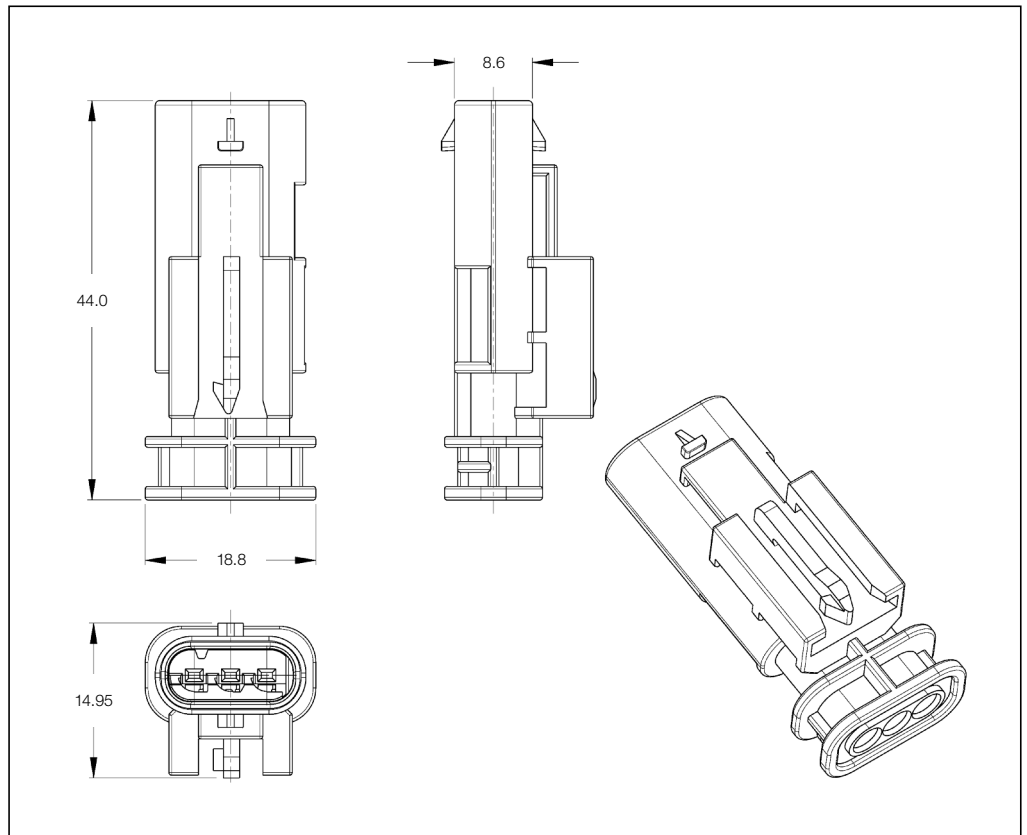
No. of Positions:
3 Positions

Housing Material:
PBT-GF30

Wire Size Range:
1.0 mm²

Product Specification:
—

Application Specification:
114-18910-1



Sealed 1.2 mm Tab Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Tab Housing	Cover	Mating Receptacle Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
3	A	Black	1-1703494-2	—	1-1670917-1	—	—

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

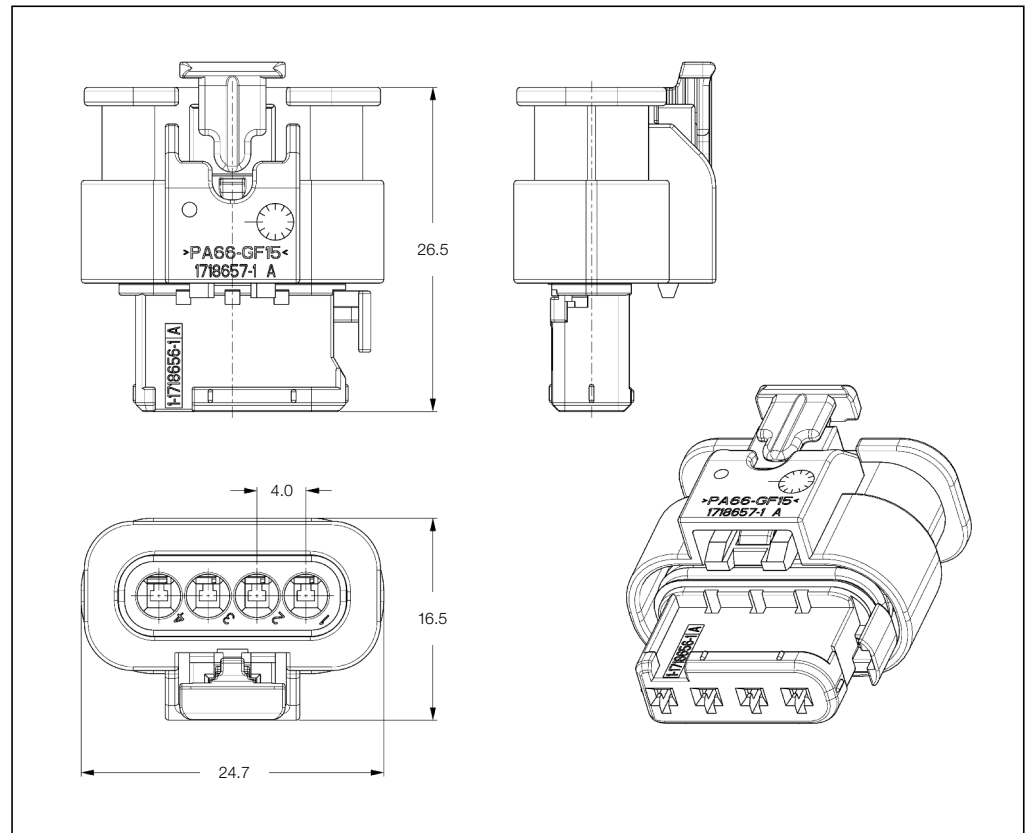
No. of Positions:
4 Positions

Housing Material:
PA66-GF15

Wire Size Range:
1.0 mm²

Product Specification:
108-18969

Application Specification:
114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
4	A	Black	1-1718645-1	-	1-1564559-1/-2	-	-

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

No. of Positions:

4 Positions

Housing Material:

PA66-GF30/PA6-GF15

Wire Size Range:

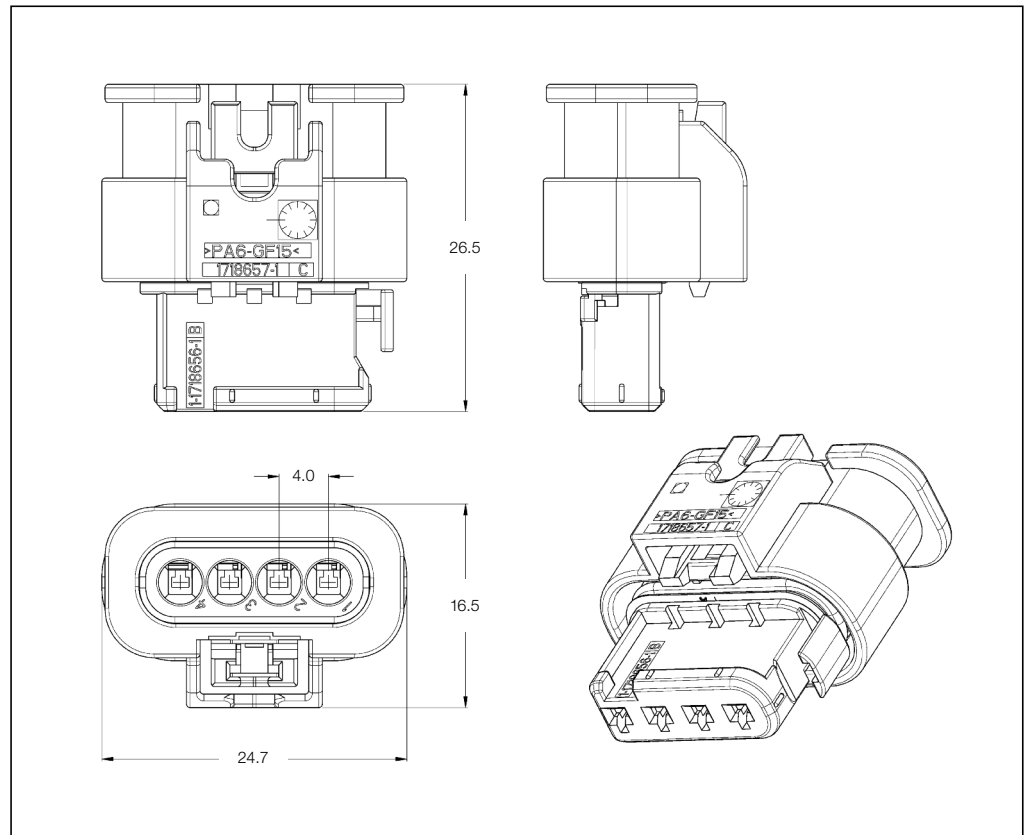
1.0 mm²

Product Specification:

108-18969

Application Specification:

114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
4	A	Black	1-1670918-1	–	1-1564559-1/-2	–	–
	B	Natural	2-1670918-1	–	–	–	–

Sealed 1.2 mm Tab Housings for Locking Lance Contacts

Technical Features

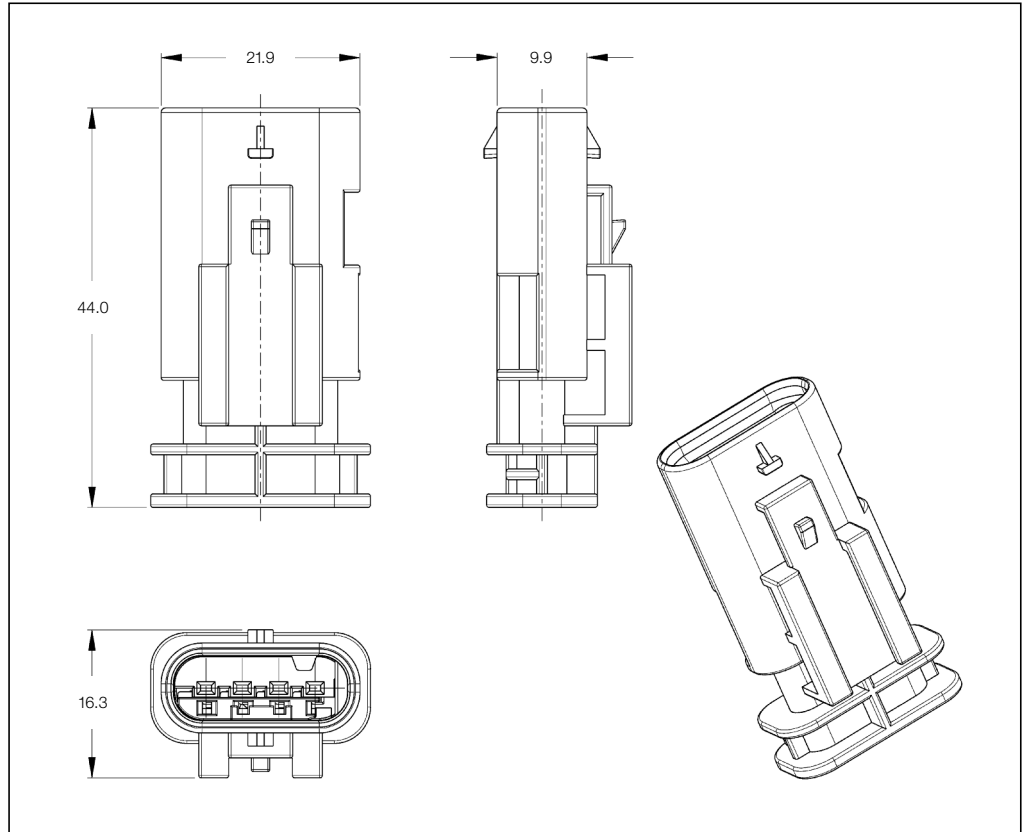
No. of Positions:
4 Positions

Housing Material:
PBT-GF30

Wire Size Range:
1.0 mm²

Product Specification:
—

Application Specification:
114-18910-1



Sealed 1.2 mm Tab Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Tab Housing	Cover	Mating Receptacle Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
4	A	Black	1-1564559-1	—	1-1670918-1	—	—

Sealed 1.2 mm Tab Housings for Locking Lance Contacts

Technical Features

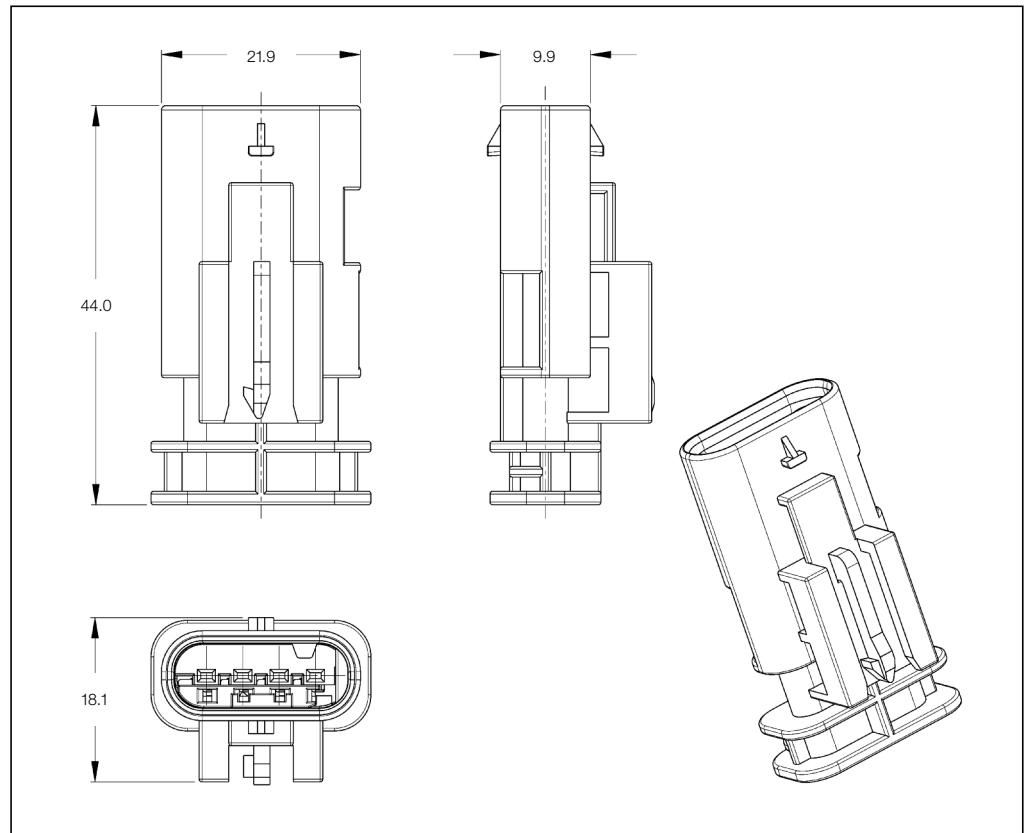
No. of Positions:
4 Positions

Housing Material:
PBT-GF30

Wire Size Range:
1.0 mm²

Product Specification:
—

Application Specification:
114-18910-1



Sealed 1.2 mm Tab Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Tab Housing	Cover	Mating Receptacle Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
4	A	Black	1-1564559-2	—	1-1670918-1	—	—

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

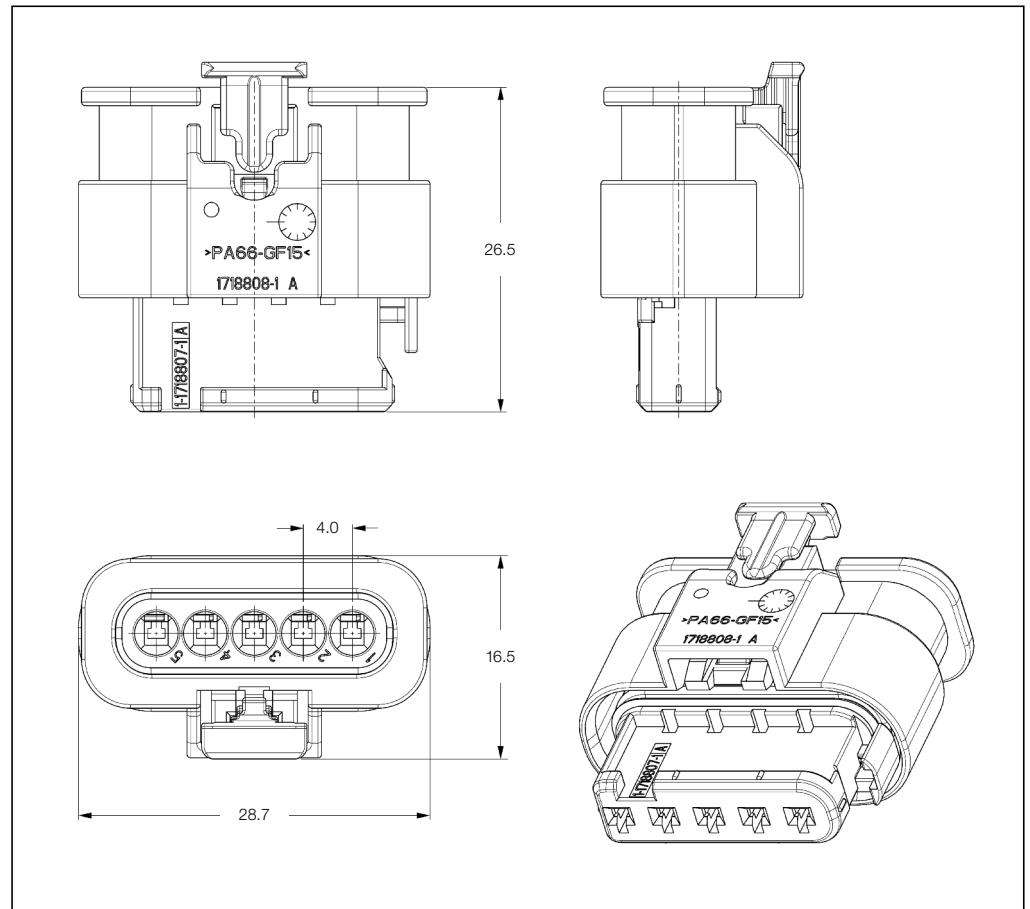
No. of Positions:
5 Positions

Housing Material:
PA66-GF15

Wire Size Range:
1.0 mm²

Product Specification:
108-18969

Application Specification:
114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
5	A	Black	1-1718806-1	-	1-2141520-1	-	-

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

No. of Positions:

5 Positions

Housing Material:

PA66-GF30/PA6-GF15

Wire Size Range:

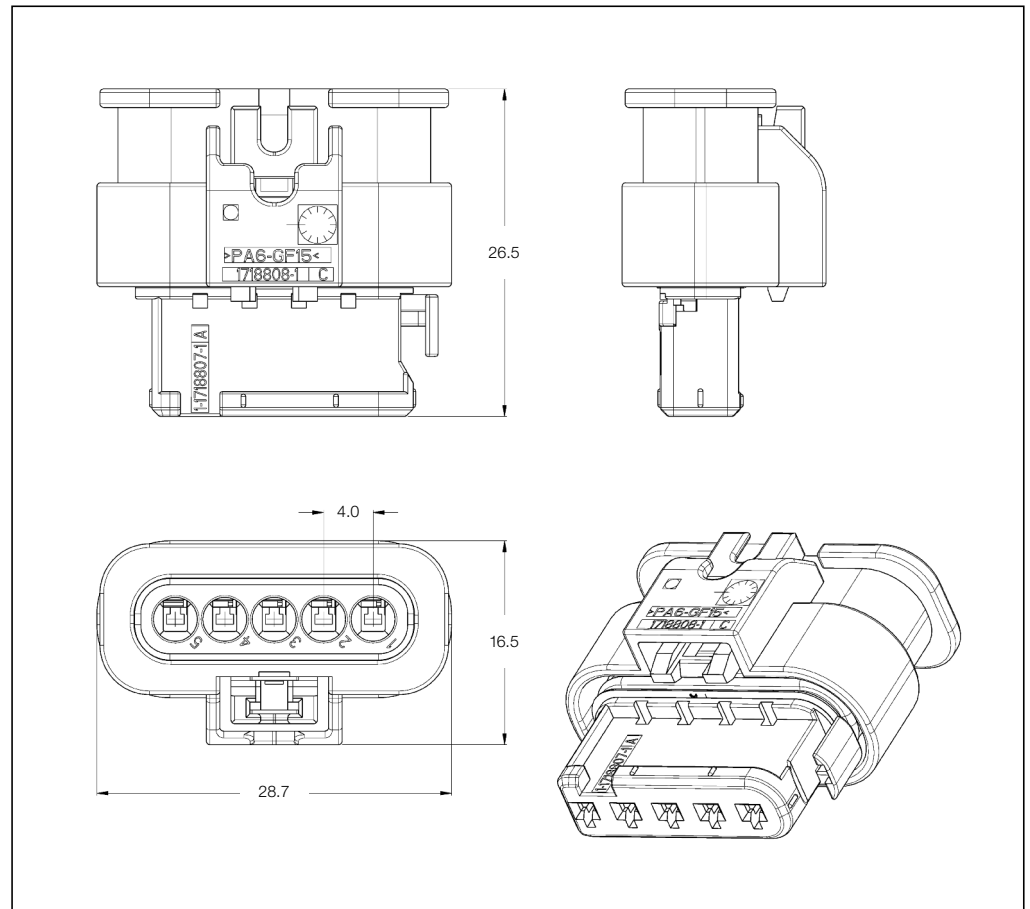
1.0 mm²

Product Specification:

108-18969

Application Specification:

114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
5	A	Black	1-1670921-1	-	1-2141520-1	-	-
	B	Natural	2-1670921-1	-	-	-	-

Sealed 1.2 mm Tab Housings for Locking Lance Contacts

Technical Features

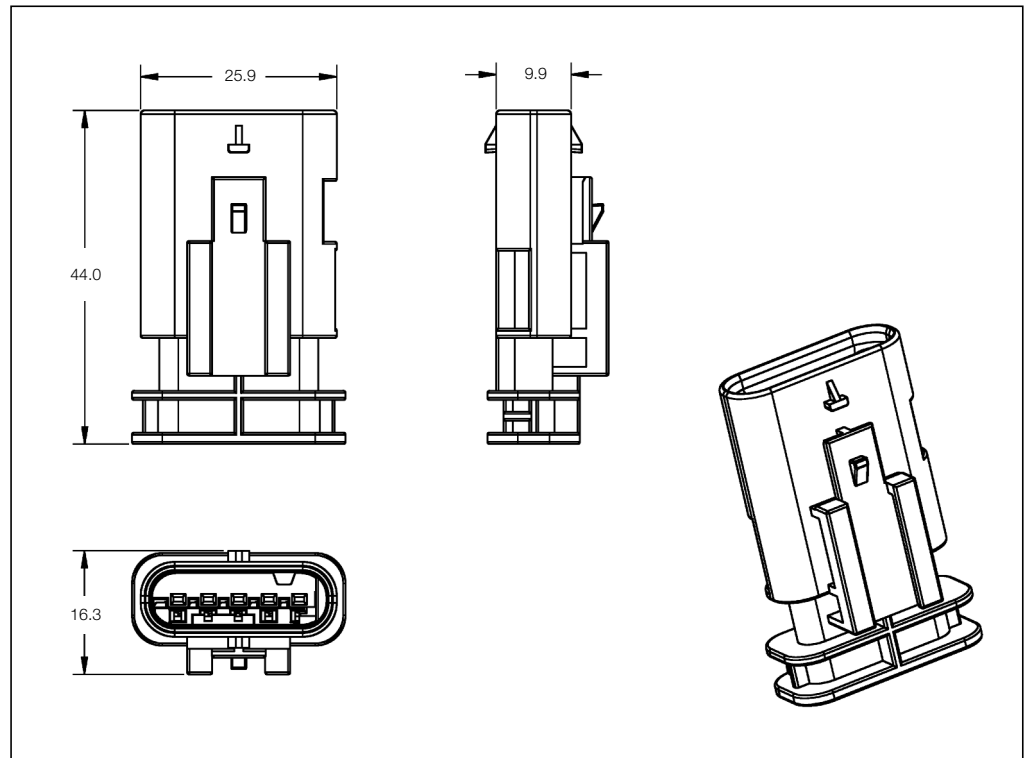
No. of Positions:
5 Positions

Housing Material:
PPT-GF30

Wire Size Range:
1.0 mm²

Product Specification:
-

Application Specification:
114-18910-1



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
5	A	Black	1-2141520-1	-	1-1670921-1	-	-

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

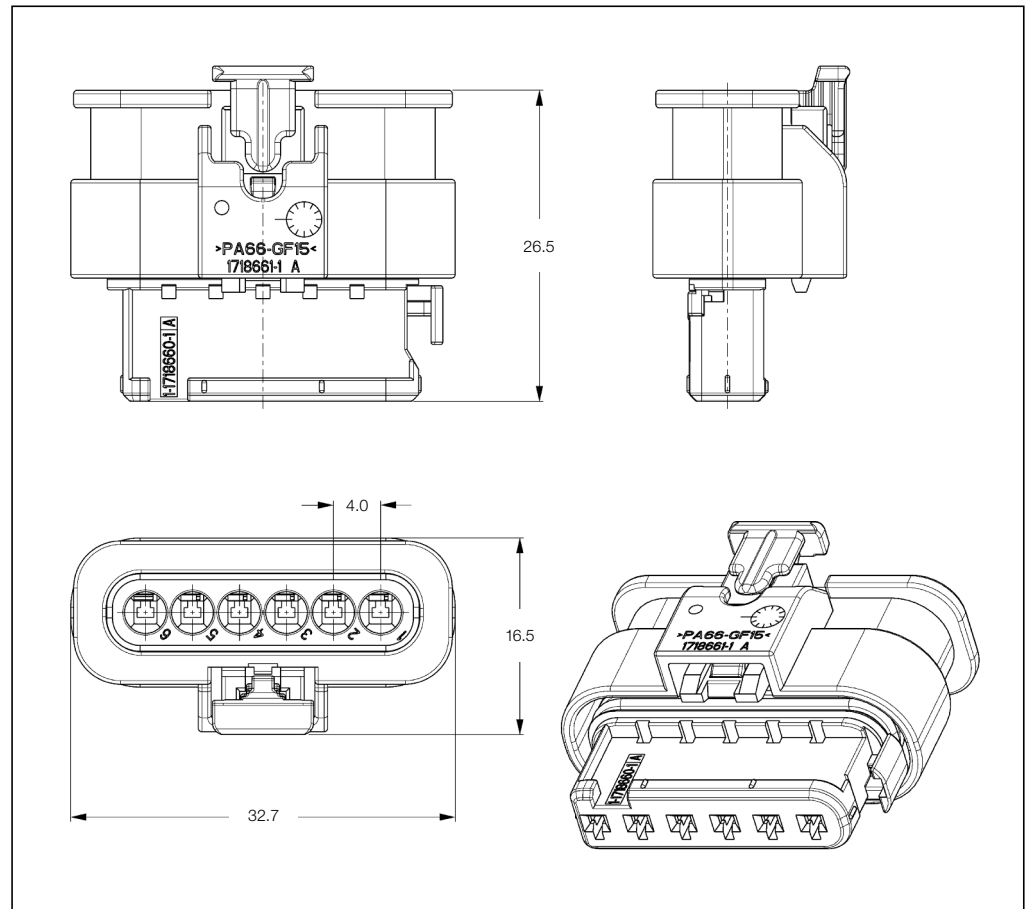
No. of Positions:
6 Positions

Housing Material:
PA66-GF15

Wire Size Range:
1.0 mm²

Product Specification:
108-18969

Application Specification:
114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
6	A	Black	1-1718646-1	-	1-2141324-1	-	-

Sealed 1.2 mm Receptacle Housings for Locking Lance Contacts

Technical Features

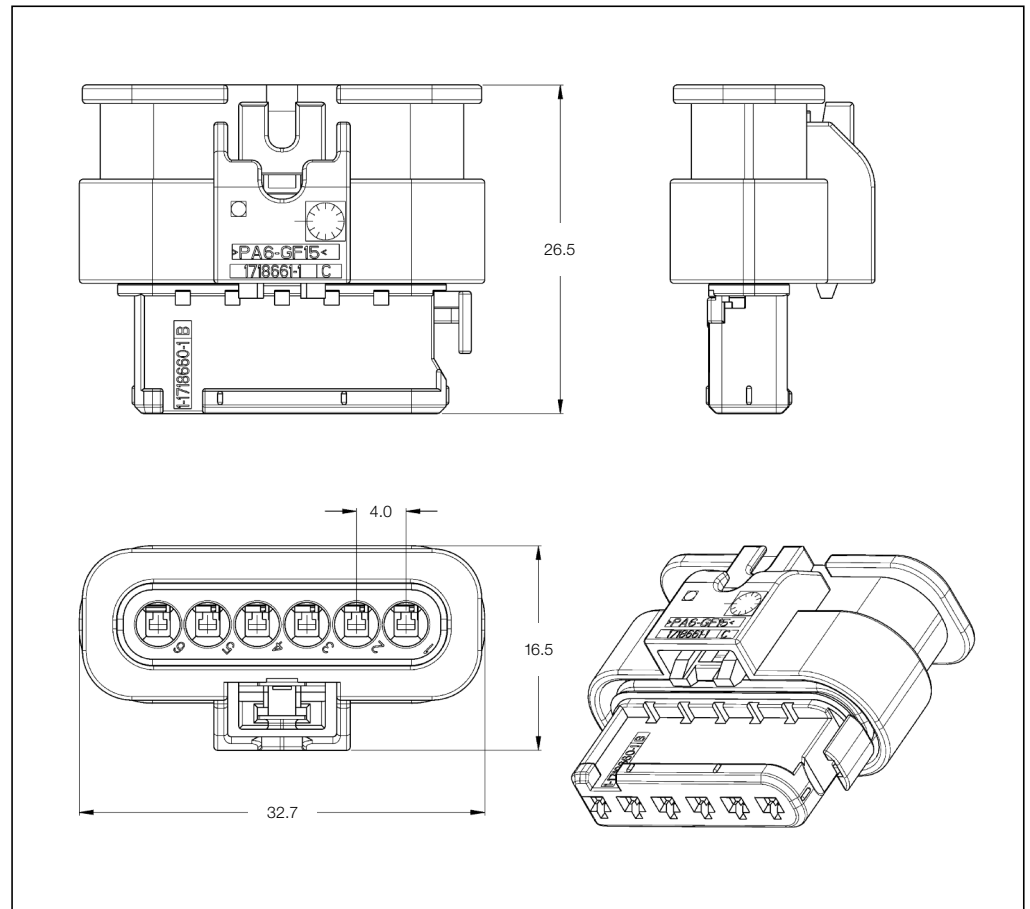
No. of Positions:
6 Positions

Housing Material:
PA66-GF30/PA6-GF15

Wire Size Range:
1.0 mm²

Product Specification:
108-18969

Application Specification:
114-18861



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
6	A	Black	1-1670919-1	-	1-2141324-1	-	-

Sealed 1.2 mm Tab Housings for Locking Lance Contacts

Technical Features

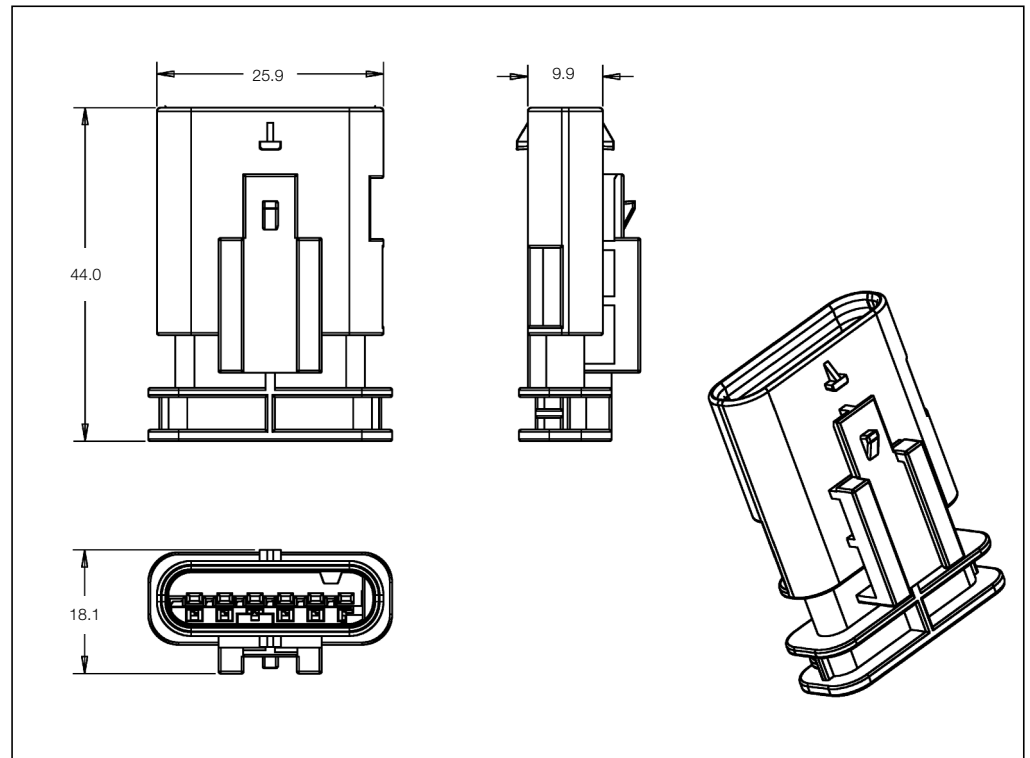
No. of Positions:
6 Positions

Housing Material:
PDT-GF30

Wire Size Range:
1.0 mm²

Product Specification:
-

Application Specification:
114-18910-1



Sealed 1.2 mm Receptacle Housings

No. of Positions	Keying Options	Housing Color	Part Numbers				
			Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
6	A	Black	1-2141324-1	-	1-1670919-1	-	-

Sealed 1.2 mm Receptacle Housings for Clean Body Contacts

Technical Features

No. of Positions:

2 Positions

Housing Material:

PA66-GF15 for outer housing,
PA66-GF35 for inner housing

Wire Size Range:

0.5–1.5 mm² (20–16 AWG)

Product Specification:

—

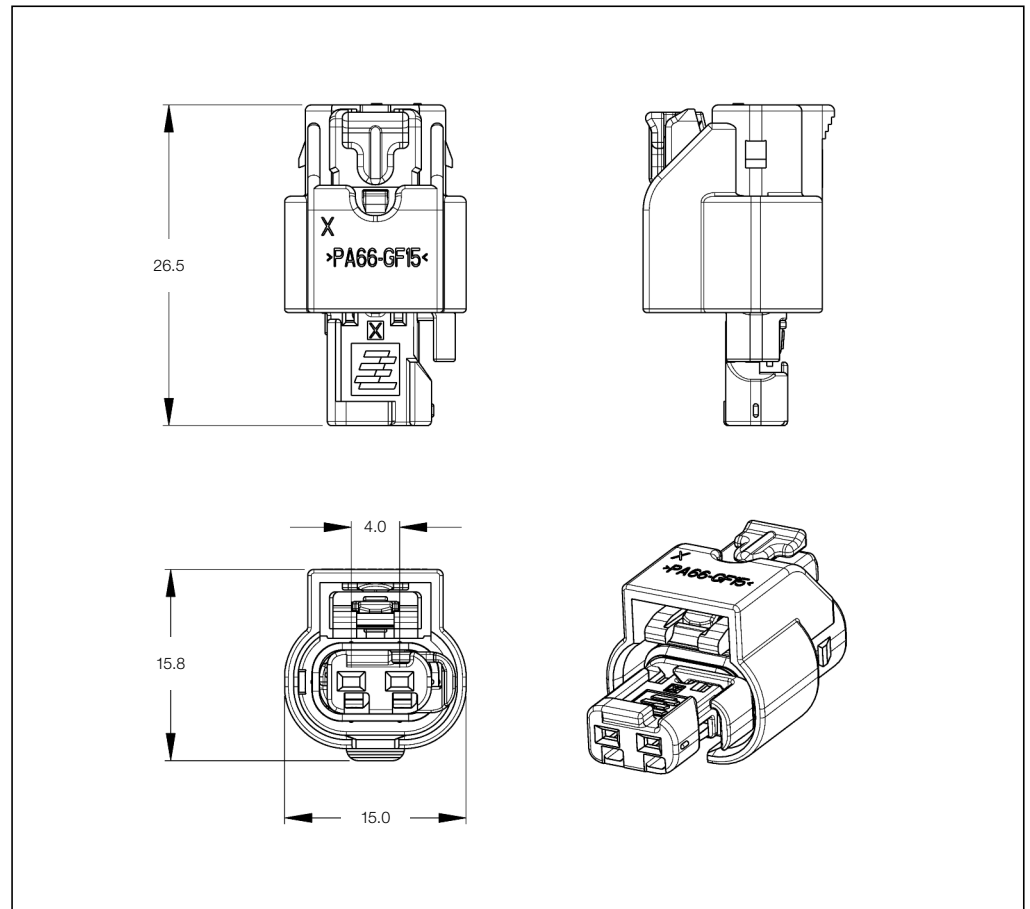
Application Specification:

408-8928

- For use with Clean Body Contacts Numbers **1418847** and **1418850**.
- Can be used with or without CPA (Connector Position Assurance).

Test Specification for 150 °C Product:

502-1277



Sealed 1.2 mm Receptacle Housings – Standard Latch without CPA

No. of Positions	Keying Options	Housing Color	Temperature Rating	Part Numbers				
				Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
2	A	Black	125 °C	1-1924067-1				
	B	Natural	125 °C	1-1924067-2	–	–	–	–
	C	Blue	125 °C	1-1924067-3				
	A	Brown	150 °C	2098557-1				
	B	Brown	150 °C	2098557-2	–	–	–	–
	C	Brown	150 °C	2098557-3				

Sealed 1.2 mm Receptacle Housings for Clean Body Contacts (continued)

Technical Features

No. of Positions:

2 Positions

Housing Material:

PA66-GF15 for outer housing,
PA66-GF35 for inner housing

Wire Size Range:

0.5–1.5 mm² (20–16 AWG)

Product Specification:

—

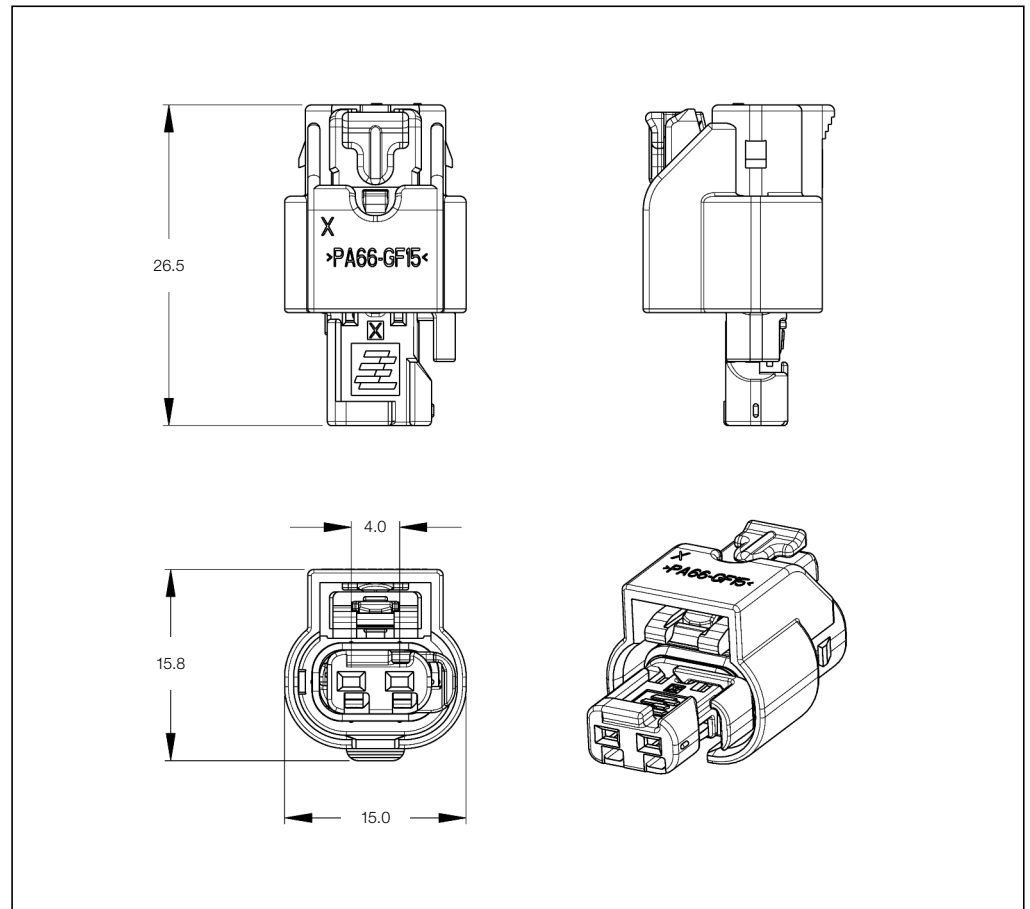
Application Specification:

408-8928

- For use with Clean Body Contacts Numbers **1418847** and **1418850**.
- Can be used with or without CPA (Connector Position Assurance).

Test Specification for 150 °C Product:

502-1277



Sealed 1.2 mm Receptacle Housings – Standard Latch with CPA

No. of Positions	Keying Options	Housing Color	Temperature Rating	Part Numbers				
				Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
2	A	Black	125 °C	1-1924067-4				
	B	Natural	125 °C	1-1924067-5	–	–	–	–
	C	Blue	125 °C	1-1924067-6				
	A	Brown	150 °C	2098557-4				
	B	Brown	150 °C	2098557-5	–	–	–	–
	C	Brown	150 °C	2098557-6				

Sealed 1.2 mm Receptacle Housings – Side Latch without CPA

No. of Positions	Keying Options	Housing Color	Temperature Rating	Part Numbers				
				Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
2	A	Brown	150 °C	2098641-1				
	B	Brown	150 °C	2098641-2	–	–	–	–
	C	Brown	150 °C	2098641-3				

Sealed 1.2 mm Receptacle Housings for Clean Body Contacts

Technical Features

No. of Positions:

3 Positions

Housing Material:

PA66-GF35

Wire Size Range:

0.5–1.5 mm² (20–16 AWG)

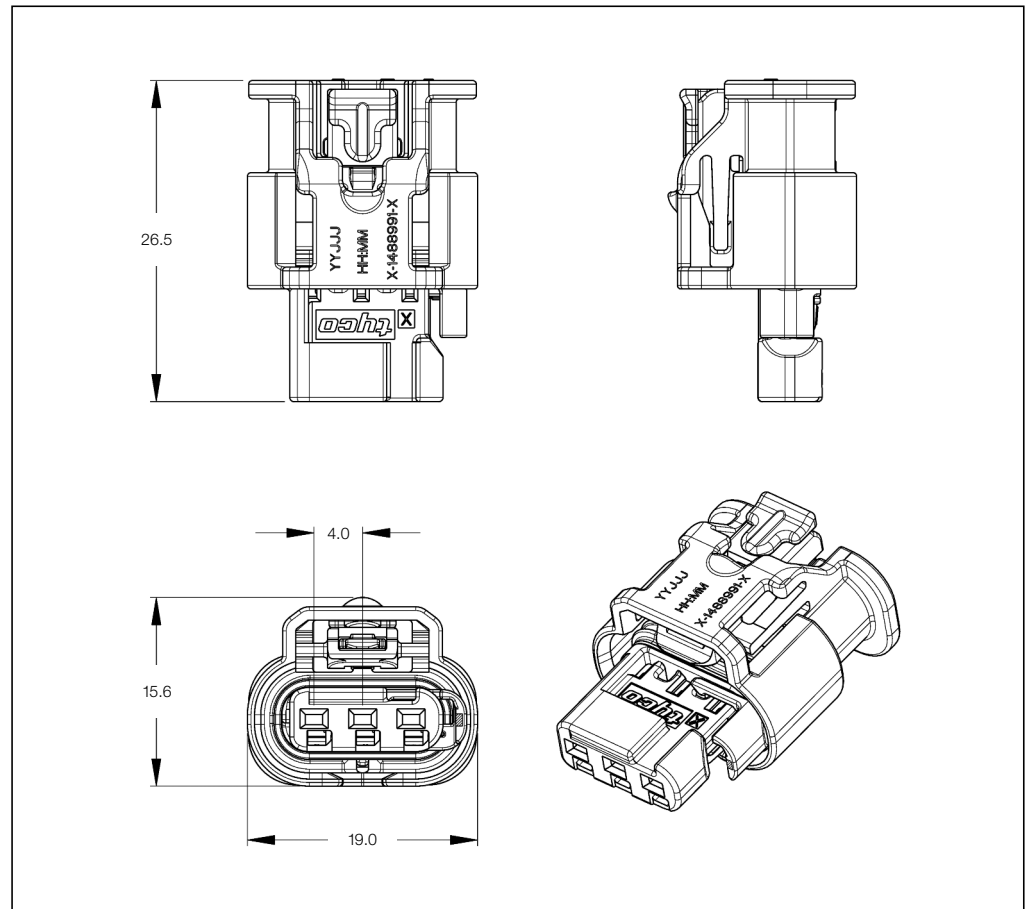
Product Specification:

—

Application Specification:

408-8928

- For use with Clean Body Contacts Numbers **1418847** and **1418850**.
- Can be used with or without CPA (Connector Position Assurance).
- Blocked circuits versions are available (see customer drawing for released options).



Sealed 1.2 mm Receptacle Housings – Standard Latch without CPA

No. of Positions	Keying Options	Housing Color	Temperature Rating	Part Numbers				
				Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
3	A	Black	125 °C	1488991-1				
	B	Natural	125 °C	1488991-2	–	–	–	–
	C	Blue	125 °C	1488991-3				
	D	Gray	125 °C	1488991-4				

Sealed 1.2 mm Receptacle Housings – Standard Latch with CPA

No. of Positions	Keying Options	Housing Color	Temperature Rating	Part Numbers				
				Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
3	A	Black	125 °C	1488991-5				
	B	Natural	125 °C	1488991-6				
	C	Blue	125 °C	1488991-7	–	–	–	–
	D	Gray	125 °C	1488991-8				

Sealed 1.2 mm Receptacle Housings for Clean Body Contacts

Technical Features

No. of Positions:

3 Positions

Housing Material:

PA66-GF35

Wire Size Range:

0.5–1.5 mm² (20–16 AWG)

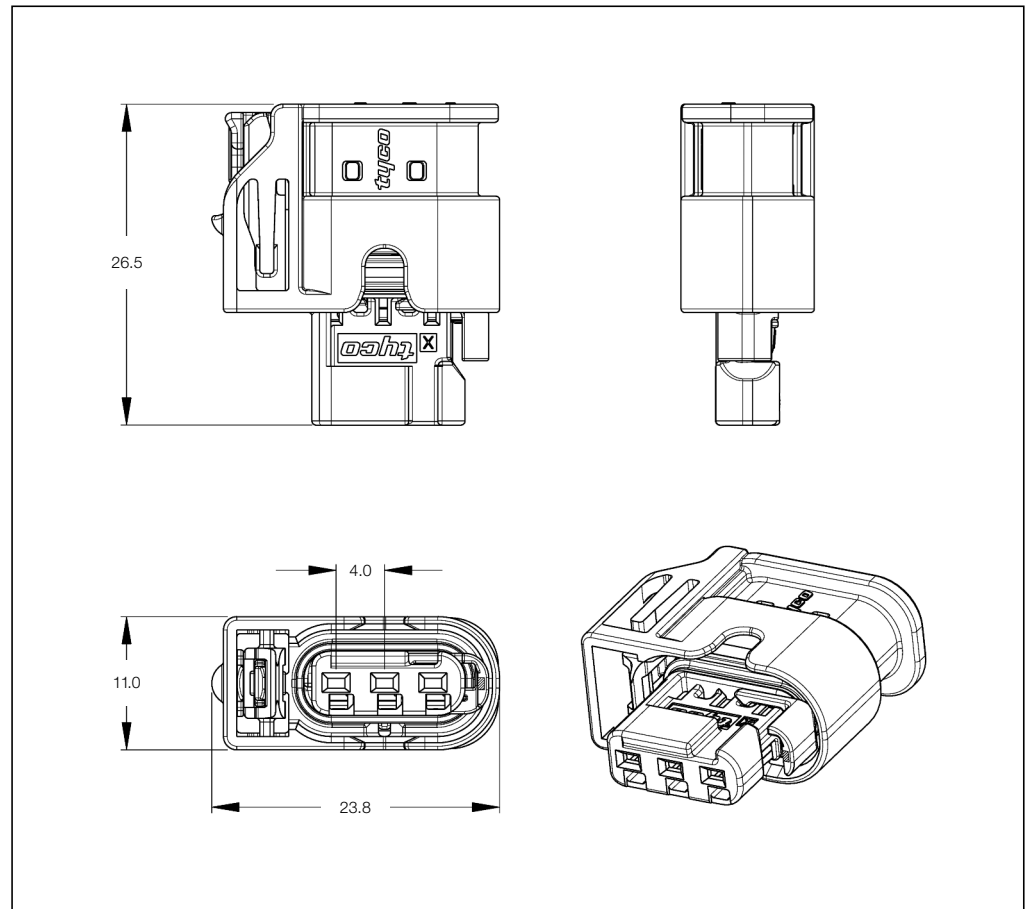
Product Specification:

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Application Specification:

408-8928

- For use with Clean Body Contacts Numbers **1418847** and **1418850**.
- Can be used with or without CPA (Connector Position Assurance).
- Blocked circuits versions are available (see customer drawing for released options).



Sealed 1.2 mm Receptacle Housings – Low Profile Latch without CPA

No. of Positions	Keying Options	Housing Color	Temperature Rating	Part Numbers				
				Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
3	A	Black	125 °C	1488992-1				
	B	Natural	125 °C	1488992-2	—	—	—	—
	C	Blue	125 °C	1488992-3				
	D	Gray	125 °C	1488992-4				

Sealed 1.2 mm Receptacle Housings – Low Profile Latch with CPA

No. of Positions	Keying Options	Housing Color	Temperature Rating	Part Numbers				
				Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
3	A	Black	125 °C	1488992-5				
	B	Natural	125 °C	1488992-6	—	—	—	—
	C	Blue	125 °C	1488992-7				
	D	Gray	125 °C	1488992-8				

Sealed 1.2 mm Receptacle Housings for Clean Body Contacts

Technical Features

No. of Positions:

4 Positions

Housing Material:

PA66-GF15 for outer housing,
PA66-GF35 for inner housing

Wire Size Range:

0.5–1.5 mm² (20–16 AWG)

Product Specification:

—

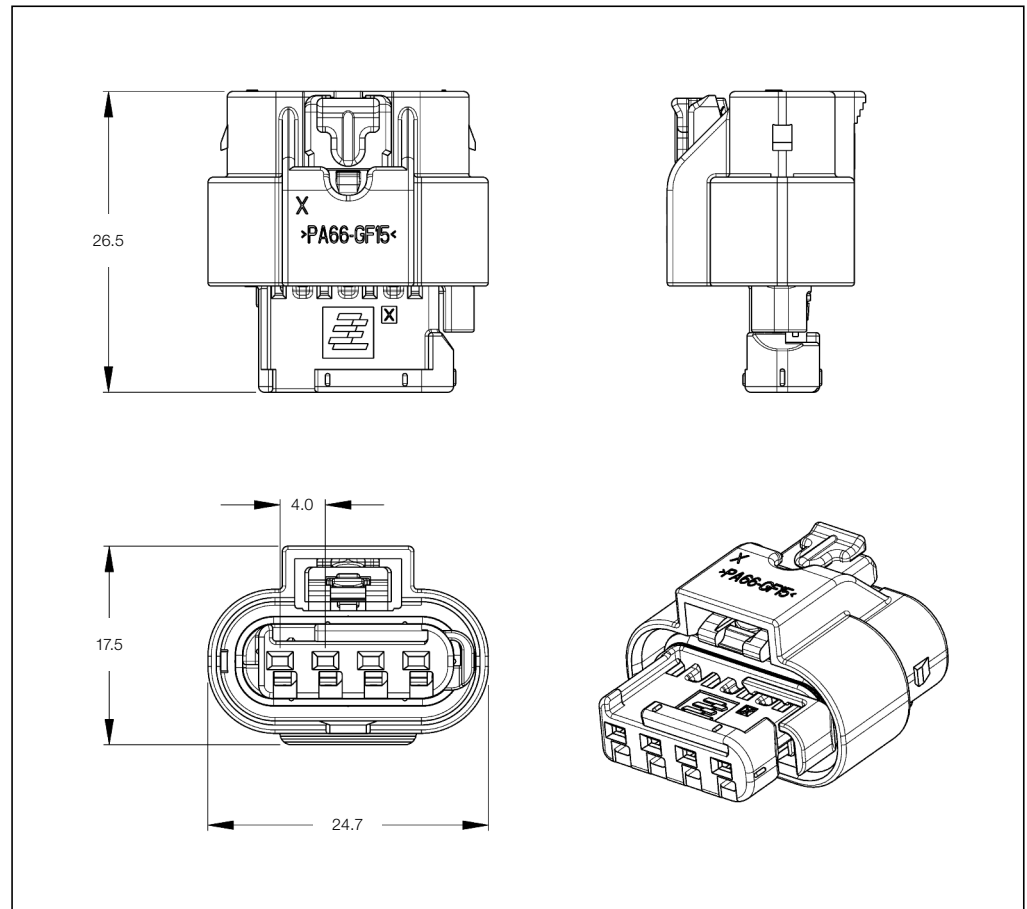
Application Specification:

408-8928

- For use with Clean Body Contacts Numbers **1418847** and **1418850**.
- Can be used with or without CPA (Connector Position Assurance).

Test Specification for 150 °C Product:

502-1277



Sealed 1.2 mm Receptacle Housings – Standard Latch without CPA

No. of Positions	Keying Options	Housing Color	Temperature Rating	Part Numbers				
				Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
3	A	Brown	150 °C	1-1456426-1				
	B	Brown	150 °C	1-1456426-2	-	-	-	-
	C	Brown	150 °C	1-1456426-3				
	D	Brown	150 °C	1-1456426-4				

Sealed 1.2 mm Receptacle Housings – Standard Latch with CPA

No. of Positions	Keying Options	Housing Color	Temperature Rating	Part Numbers				
				Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
3	A	Brown	150 °C	1-1456426-5				
	B	Brown	150 °C	1-1456426-6				
	C	Brown	150 °C	1-1456426-7	-	-	-	-
	D	Brown	150 °C	1-1456426-8				

Sealed 1.2 mm Receptacle Housings for Clean Body Contacts

Technical Features

No. of Positions:

6 Positions

Housing Material:

PA66-GF15 for outer housing,
PA66-GF35 for inner housing

Wire Size Range:

0.5–1.5 mm² (20–16 AWG)

Product Specification:

—

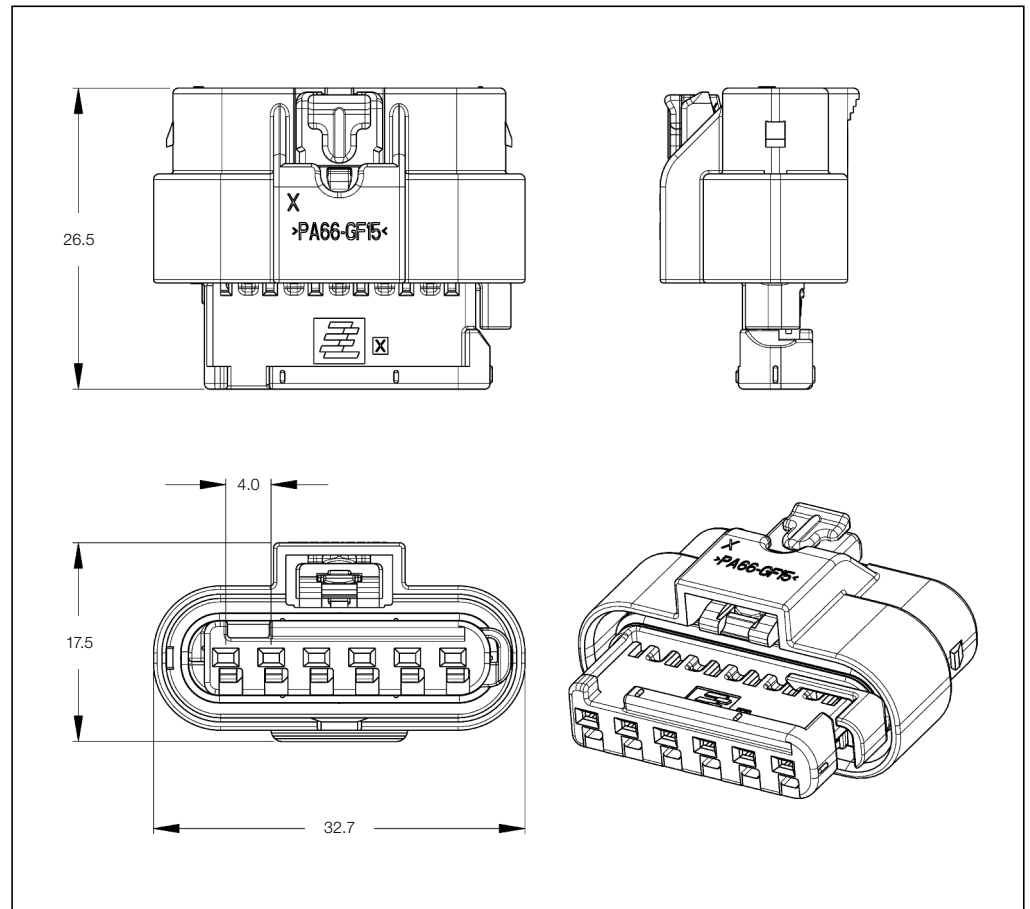
Application Specification:

408-8928

- For use with Clean Body Contacts Numbers **1418847** and **1418850**.
- Can be used with or without CPA (Connector Position Assurance).

Test Specification for 150 °C Product:

502-1277



Sealed 1.2 mm Receptacle Housings – Standard Latch without CPA

No. of Positions	Keying Options	Housing Color	Temperature Rating	Part Numbers				
				Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
6	A	Black	125 °C	1924292-1				
	B	Natural	125 °C	1924292-2				
	C	Blue	125 °C	1924292-3				
	D	Gray	125 °C	1924292-4				
	A	Brown	150 °C	2098559-1				
	B	Brown	150 °C	2098559-2				
	C	Brown	150 °C	2098559-3				
	D	Brown	150 °C	2098559-4				

Sealed 1.2 mm Receptacle Housings for Clean Body Contacts (continued)

Technical Features

No. of Positions:
6 Positions

Housing Material:
PA66-GF15 for outer housing,
PA66-GF35 for inner housing

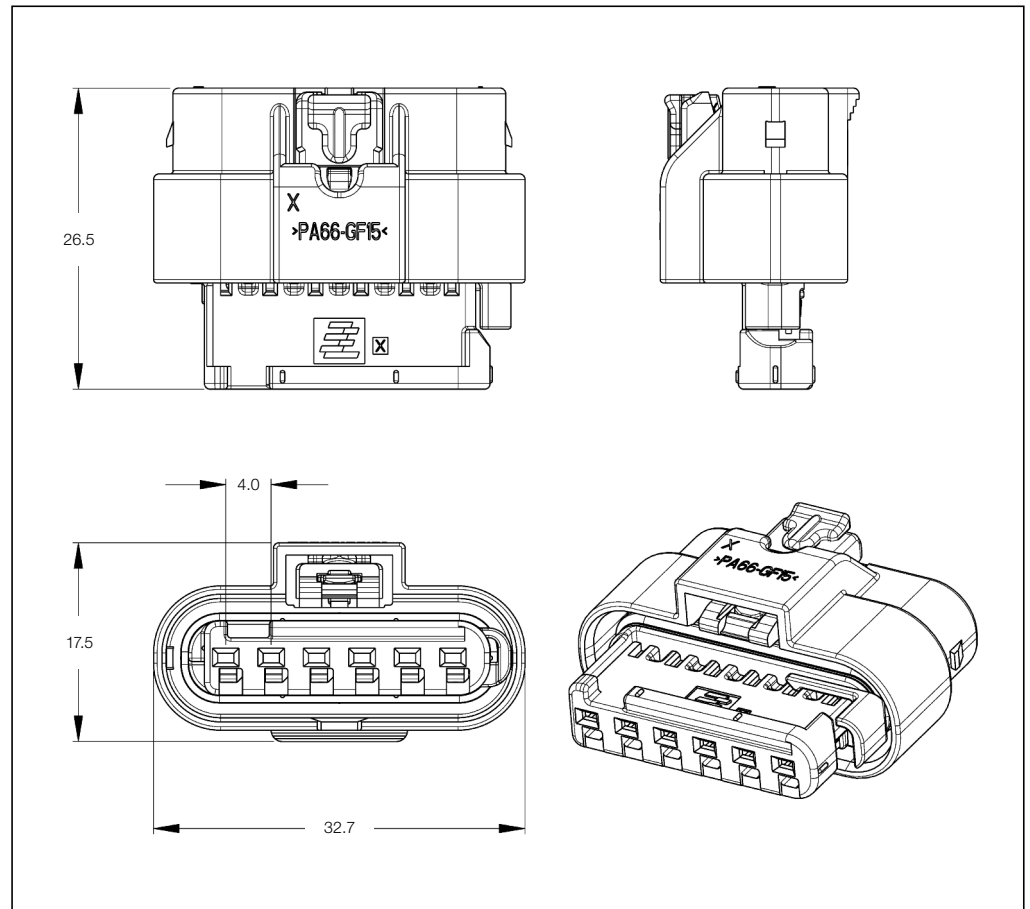
Wire Size Range:
0.5–1.5 mm² (20–16 AWG)

Product Specification:
—

Application Specification:
408-8928

- For use with Clean Body Contacts Numbers **1418847** and **1418850**.
- Can be used with or without CPA (Connector Position Assurance).

Test Specification for 150 °C Product:
502-1277



Sealed 1.2 mm Receptacle Housings – Standard Latch with CPA

No. of Positions	Keying Options	Housing Color	Temperature Rating	Part Numbers				
				Receptacle Housing	Cover	Mating Tab Housing	Mating PCB Header Right-Angle	Mating PCB Header Vertical
6	A	Black	125 °C	1924292-5				
	B	Natural	125 °C	1924292-6	—	—	—	—
	C	Blue	125 °C	1924292-7				
	D	Gray	125 °C	1924292-8				
	A	Brown	150 °C	2098559-5				
	B	Brown	150 °C	2098559-6	—	—	—	—
	C	Brown	150 °C	2098559-7				
	D	Brown	150 °C	2098559-8				

Introduction



Application Tooling and Equipment Portfolio

- Applicators
- Crimp Machines and Equipment
- FFC-FPC Equipment
- Hand Tools
- IDC Machines
- Pin Insertion and Press-Fit Machines
- Lead Makers
- Magnet Wire Equipment
- MOST Equipment
- SOLARLOK Equipment
- Wire Preparation Equipment
- Installation, Inspection and Service as well as Training and Short Term Rental Crimp Applicators within EMEA region

For more detailed information please visit our websites: www.tooling.te.com • www.tooling.te.com/europe • www.tooling.te.com/china

Insertion Machines for Single Contacts

P 100 Pin Insertion Machine

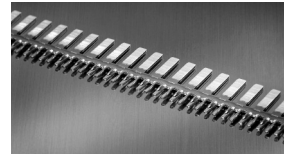
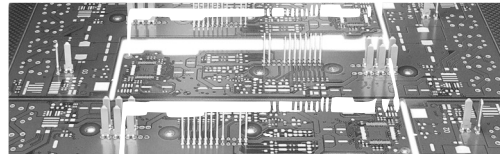
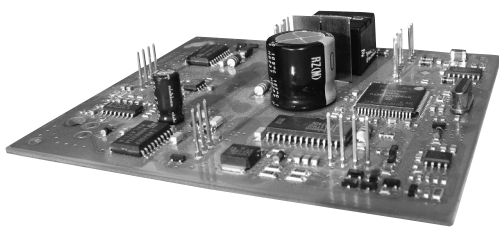


The semi-automatic P100 machine belongs to the TE Connectivity pin insertion system line. Designed and manufactured with a focus on mid-volume level production, the P100 machine provides a broad range of features at a very competitive price. With the ability to apply products from TE Connectivity and other manufacturers, the P100 machine does not limit your production to “TE Connectivity only” applications and provides flexibility to address both current and future tooling needs.

The P100 machine uses a pneumatic power unit together with product specific “quick change” tooling packs. The insertion heads can be equipped with a rotary insertion finger that can apply products at different angles without decreasing the insertion rate. The tooling packs can be exchanged within 30 minutes to meet your full range of application requirements.

CE approval is in process.

- X/Y-Table with stepper motors
- Database driven software for simple programming and automatic setup
- “Quick change” tooling packs allow easy and fast setup
- Wide range of tooling packs for TE and non-TE products available
- Easy-to-use operator interface



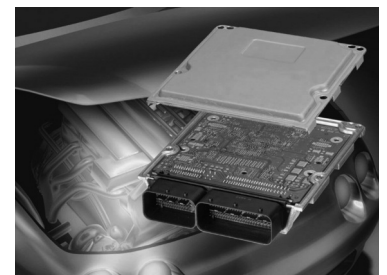
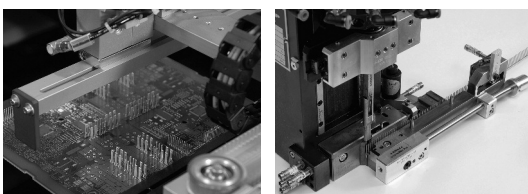
P 300 Fully-Automatic Machine for PCB Processing



For the automatic assembly of printed circuit boards, the basic P 300 machine is equipped with a product specific insertion head. A speciality is the rotary insertion finger which allows the products to be inserted in different angles of rotation.

A XY table, powered by servo drives, positions the printed circuit boards under the insertion head. Up to 4 motor driven insertion heads, each equipped with a terminal specific conversion kit, allow the application of up to 4 different products. Available accessories like

- Insertion Force Monitoring
- Vision System for position detection and program correction
- Flip unit to insert terminals on both sides of a PCB
- PCB transfer belts for an in-line installation
- Pin length detection
- Traceability features such as reel scan, board scan, etc.
- Motor driven insertion head for continuous wire products
- Tool changer for up to 4 Insertion heads and lower tools allows the P 300 to be adapted to the most varied manufacturing tasks.



Insertion Machines for Single Contacts

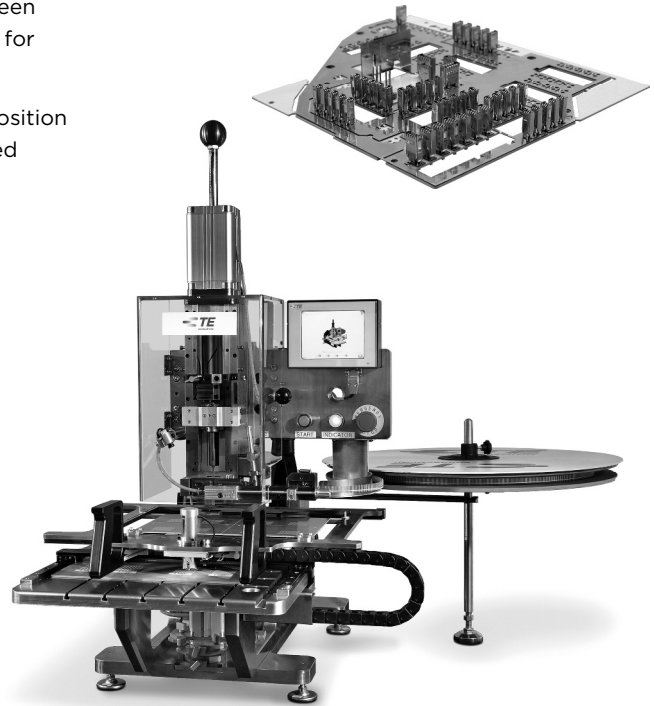
P 50 Insertion Machine

The successful product line of single pin insertion machines has been expanded with the addition of a manual operated bench machine for low volume production, repair work and sample production.

The P 50 manual bench insertion machine uses a tracer slide to position the PCB under the pneumatic insertion head. A regular PCB is used as master to position the indexing pin above the insertion hole. When activating the two hand start, the indexing pin extracts. If a hole is detected, the terminal is inserted into the board in production.

To fulfil automotive requirements, the P 50 insertion machine can be equipped with an insertion force monitoring system. In cooperation with an optional barcode scanner, the insertion forces can be stored for traceability purposes.

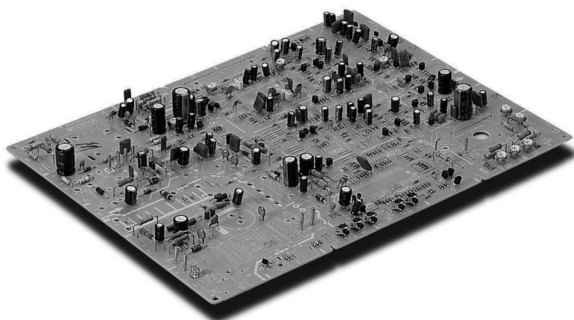
- Pneumatic insertion head can also be used on other machines of the product line.
- Conversion kits can be changed without too much difficulty to run different terminal types.
- Conversion kits can also be installed on motor-driven insertion heads used on P 200, P 300 and P 350 machines
- Terminal insertion is possible at different angles without the need to re-load the PCB in different orientations.



M200C Mulserter Insertion Machine

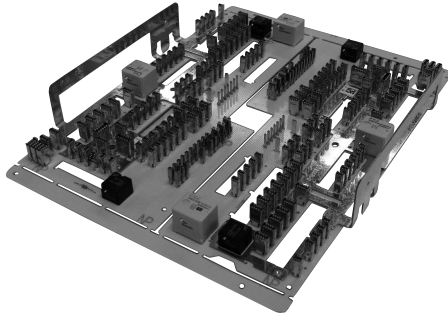
The Mulserter series of insertion machines from TE Connectivity provides the flexibility and the cost savings to meet a wide range of customer requirements in the through hole technology. Our full range of systems can help with the application of insertion from reeled components, loose components to odd shaped components.

The M200C Mulserter machine is designed to insert eyelet, round pin, gripper, etc. into PCBs automatically with insertion program made by operator. The head for tooling can be chosen from 1 to max. 4 and each head can have individual tooling depending on customer's parts.



Equipment for Heat Shrink Products

Press-Fit Systems



TE Connectivity offers a wide range of machines for processing press-fit connectors.

The range includes bench presses with a press capacity of 5 tons as well as semi-automatic machines with automatic seating of connectors before pressing, including a number of quality assurance systems.

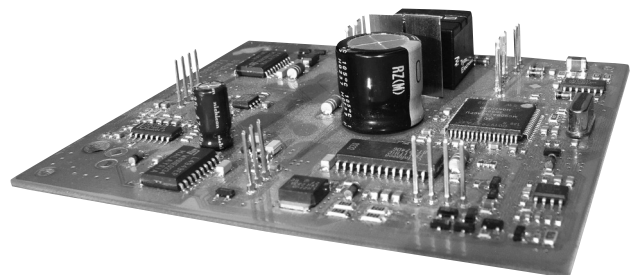
All presses are servo driven, providing a constant press force over the entire press range. In conjunction with the Press Quality Monitor, included with all presses, this ensures a consistently high process quality.

CSP-3T Shuttle Electric Press

The CSP-3T servo electric press incorporates an automatic shuttle system to the proven TE press line for fast and simple product presentation. Focused at the application of PCB's onto compliant pin housings, this system is provided with full control and monitoring of force, distance and speed for quality assurance of every product applied.

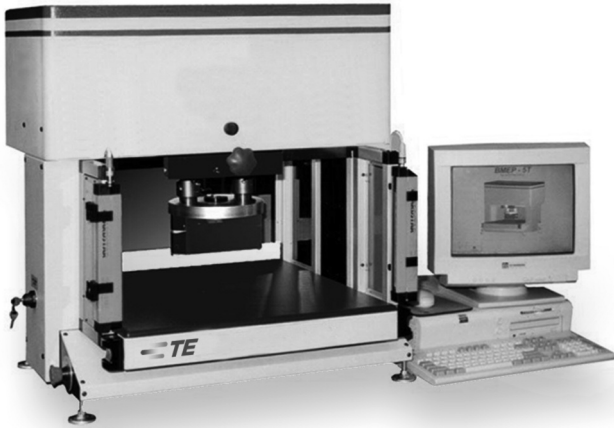
Each system is supplied with a servo electric drive with force feedback control. Force capacity is available up to 27 kN [3 tons] to handle a range of compliant pin housings and connectors on the market today. Compared to pneumatic or hydraulic systems, the CSP Press is quiet, efficient, and does not suffer from oil leaks that can damage PCBs. With PC control, the servo driven CSP Press provides an easily programmed press system with automatic set up from press cycle to press cycle.

Force, distance and speed are the core parameters of any press cycle. With feed back and PC control, CSP systems can monitor and control each characteristic of every press stroke run on the press in real-time. If any aspect of that press cycle is outside of specified limits, the system can stop the press, mid-stroke, to prevent damage to the product and reduce or eliminate scrap. This gives CSP systems a distinct advantage over pneumatic or hydraulic systems which can not offer the same level of control. Optional pin penetration sensing (PPS) tools also allow the CSP to assure that every pin has properly penetrated the PCB a predetermined minimum distance. Any missing, bent or improperly seated pins will be detected and illustrated to the operator.

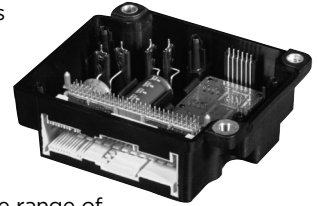


Equipment for Heat Shrink Products

CBP-5T Electric Bench-Top Press

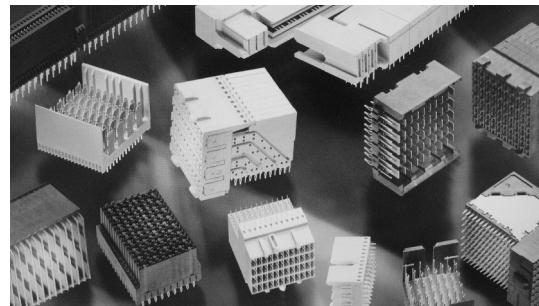


The CBP-5T of servo electric press provides the ability to process most compliant pin connector applications in a compact benchtop system. Board size capacity and press force range allows the system to handle a wide range of applications for low to medium production volume operations.



Each system is supplied with a servo electric drive with force feedback control. The CBP is available in 44 kN [5 ton] force capacity to handle most compliant pin connectors on the market. With PC control, the servo driven CBP provides an easily programmed press system with automatic set up from press cycle to press cycle. The system reaches levels of precision and accuracy not available in a pneumatic or hydraulic press.

Force, distance and speed are the core parameters of any press cycle. With feed back and PC control, the CBP system can monitor and control each characteristic of every press stroke run on the press in real-time. If any aspect of that press cycle is outside of specified limits, the CBP can stop the press, mid-stroke, to prevent damage to the PCB and reduce or eliminate rework and/or scrap. Common problems such as PCB holes out of tolerance, missing connectors, improper connectors used and, in some cases, bent pins can be detected and reported to eliminate quality problems.



CMP-6T and CMP-12T Manual Electric Servo Presses

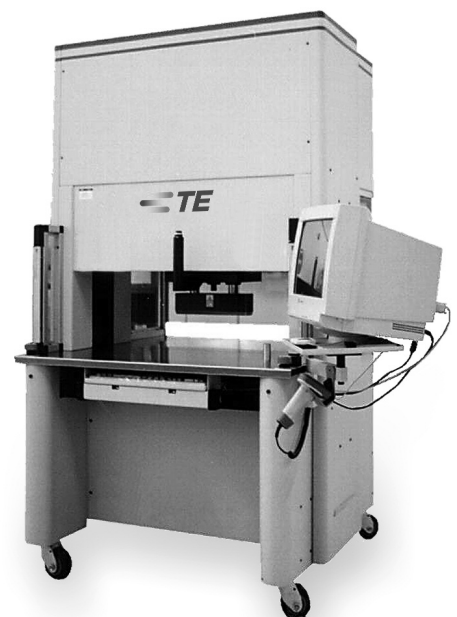
The CMP manual electric servo presses are designed with a rigid "H" frame to minimize deflection. The CMP-6T press provides 53 kN [6 tons] of force and the CMP-12T press provides 107 kN [12 tons] of force. The operator is able to manually adjust the press head and/or the PCB between connector press cycles.

An air bearing system provides effortless press head positioning. The PCB capacity of the CMP-6T press is 610 x 915mm [24 x 36"] and the PCB capacity of the CMP-12T press is 760 x 900mm [30 x 36"]. The SPC feature within the CMP's included software provides a press log and in addition, allows press force plotting for every connector.

The product setup for these machines is accomplished without any required hardware adjustments. The use of tool and connector databases, and a press sequence program, provides a fully data driven press cycle.

There is a wide range of insertion heads available for these machines for both TE and non-TE products.

Options for these machines include a Bar Code Scanner, which provides fast PCB serial number entry, an Air Table Option that assists the operator when positioning product under the press head, and a Touch Screen Monitor for enhanced machine operation.



Lead Makers

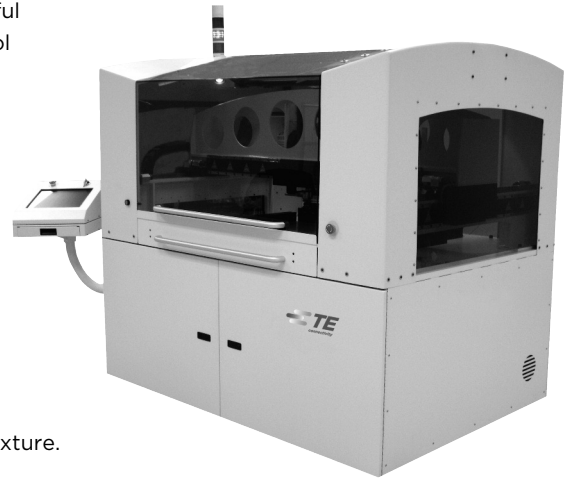
CAP-6T Automatic Electric Press

The CAP-6T automatic electric press is the newest addition to the successful TE Application Tooling servo press line. It provides the proven force control capabilities and quality assurance of the line in an automatic press. The automatic pressing capabilities of the CAP-6T press provide the end user with greater control and simplified processing to help improve quality, lower rework and prevent rejects. This provides users with lower true applied cost and higher end profits. The In-Line version of the CAP-6T allows the integration of the press into a fully automatic production line.

The CAP-6T press was designed to apply compliant pin connectors to a wide range of PCBs. It is fully capable of handling high demanding applications today from daughter cards to mid-planes to back-planes. The CAP-6T press is focused on all but the largest board applications. This press can also hold up to 12 insertion tools and uses a lower support fixture.

Compliant pin technology has distinct advantages versus through hole solder products. A key advantage is the ability to monitor and control the press cycle in real-time to provide 100% quality assurance. The CAP-6T Press gives your operation the ability to maximize this advantage with higher quality, higher yield and lower applied cost production line.

The key is the CAP-6T's ability to precisely and accurately apply each connector to the pre-programmed force, height and speed requirements. Each parameter can be individually programmed for each connector. Connectors can be pressed to height or force based upon their individual specifications. If an error is encountered during the press stroke, the cycle is stopped immediately to help prevent damage to the PCB and allow for the minimum amount of re-work.

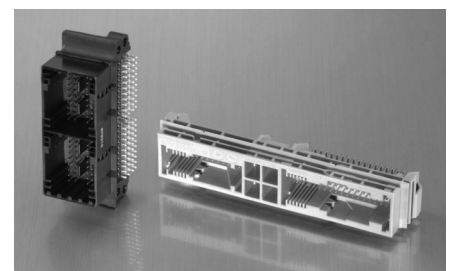
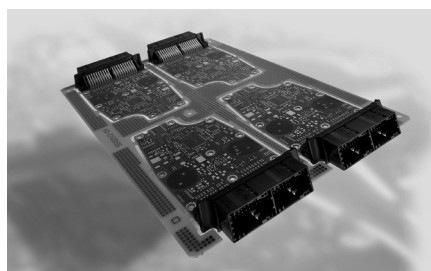
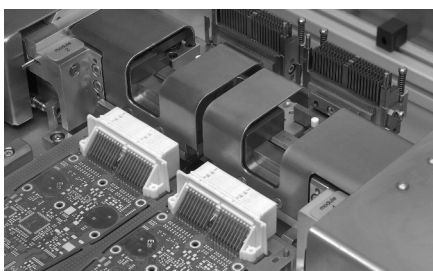


CSM-200 Connector Seating Machine



PCB and connectors are loaded manually into fixtures. When started, the machine checks the correct loading of the connectors before placing the connectors onto the PCB. The tool then moves under the press ram where the connectors get pressed one after the other onto the PCB. The BMEP 5-T servo-electric press is used to seat the PCB which provides a force-distance check to guarantee quality production.

A special tooling plate allows the sequential pressing of a number of different pre-loaded connectors. An intermediate plate, positioned between the PCB with its pre-positioned connectors and the flat rock press ram contains the connector specific press tools. For each connector a force distance curve is available after completion.



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Lead Makers

Application Tooling for Processing Small Wire Sizes

A range of application tooling solutions is available to embrace the current trend in the automotive industry towards using wires with increasingly smaller cross sections.

Thinner stranded wires require crimp connections with smaller contacts such as the NanoMQS, MQS and other contact systems that allow stranded wires to be processed up to a minimum of 0.13 mm² cross section.

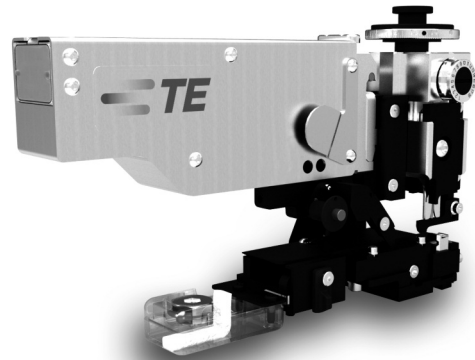
Miniaturization of the connectors place higher demand both on the processing machines and tools as well as the machine operator. The hand tool, crimp tool, and fully automatic machine manufacturers have addressed the issue of processing small wire sizes by equipping the machines with tailored components to ensure reliable and secure processing.

To process crimp contacts both hand tools and applicators with pneumatic feed or motorized contact feed can be used.

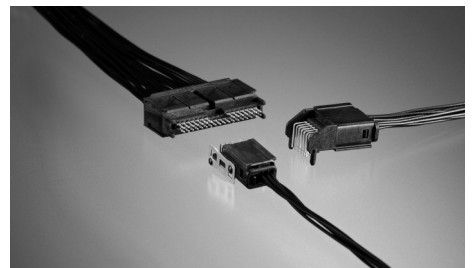
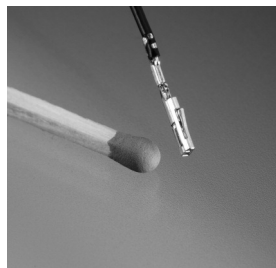
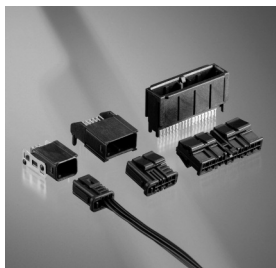
For automatic processing the quality of the crimp connection can be recorded with standard commercial crimp monitoring systems, modified to accommodate the small cross section.

Available tooling and accessories for the processing of small wire sizes:

- Hand tools for crimping NanoMQS and MQS contacts
- Ocean Applicator with pneumatic or servo-motor contact feed
- Fully automatic crimping machines, equipped with special part kit to apply small wire sizes from 0.13–0.22 mm².
- Komax Zeta, with automatic housing loading, customized for small wire applications



Example: The Komax Alpha 355 lead maker can be equipped with special application tooling kits and applicators for small wire sizes.



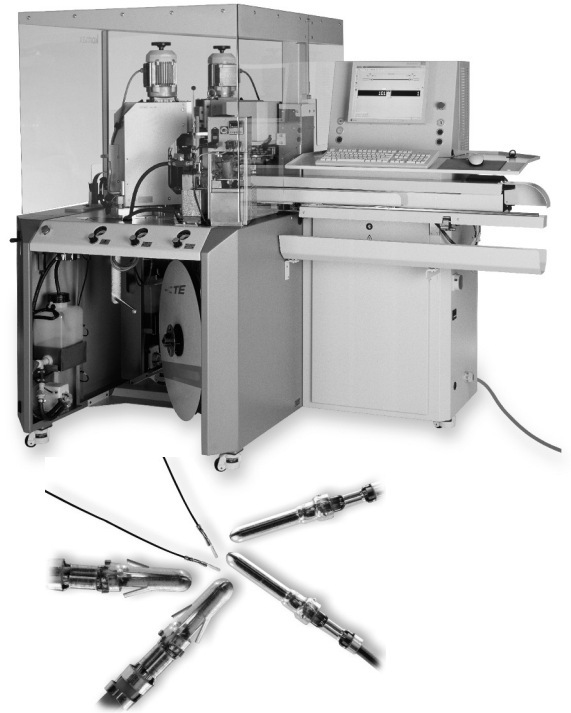
Lead Makers

Gamma 255 Fully Automatic Crimping Machine

The Gamma 255 lead maker is a flexible fully automatic crimping machine for efficient wire processing. It processes cross sections in a range from 0.0123 mm²/AWG 36 to 2.5 mm²/AWG 14. It is compatible with all commercially available applications. It also handles double-sided crimped wires as short as 20 mm. The entire cross section is processed using programmable, highly dynamic servo-drives and V stripping blades.

As part of its standard equipment, the machine has a prefeeder, splice, wire-end and knot detection, as well as two wire straightening units. A bad wire handling system with automatic post-production is also integrated in the Gamma 255 lead maker. To verify quality, you can also integrate devices for measuring crimp height and pull-out force right into the production process. The compact layout is carefully thought-out and allows you to change over from crimping to twisting, fluxing and tinning very fast.

With its vertically opening safety cover, the Gamma 255 lead maker is readily accessible from all sides. Operations and material handling are convenient and simple. The reliable TopWin software user interface adds to this high level of user convenience in over 20 different languages.

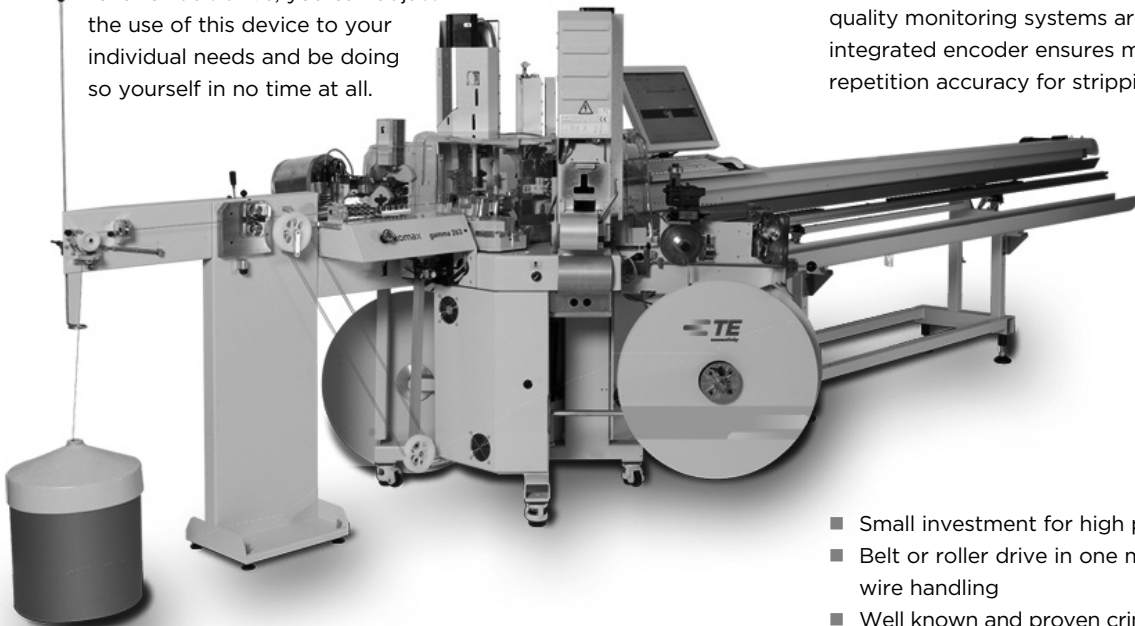


Gamma 263 Fully Automatic Crimping Machine

Although compact in size, this fully automatic crimping machine combines simplicity and functionality with economy and process reliability to deliver a high piece output. It is a real hit when it comes to obtaining excellent value for money. Whether you opt for the

roller or belt drive, you can adjust the use of this device to your individual needs and be doing so yourself in no time at all.

The machine is designed for one and two-sided crimping and for one-sided seal loading. The wire transport system ensures gentle processing of varying conductors with cross-sections ranging from 0.13 mm² to 4 mm² (26-12 AWG). Proven quality monitoring systems are integrated. A second integrated encoder ensures maximum length and repetition accuracy for stripping and wire length.

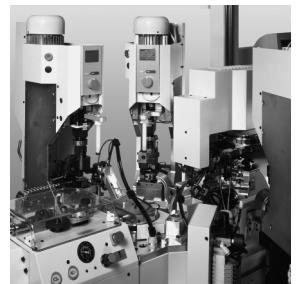
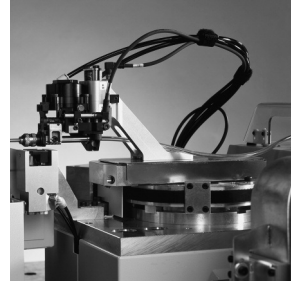
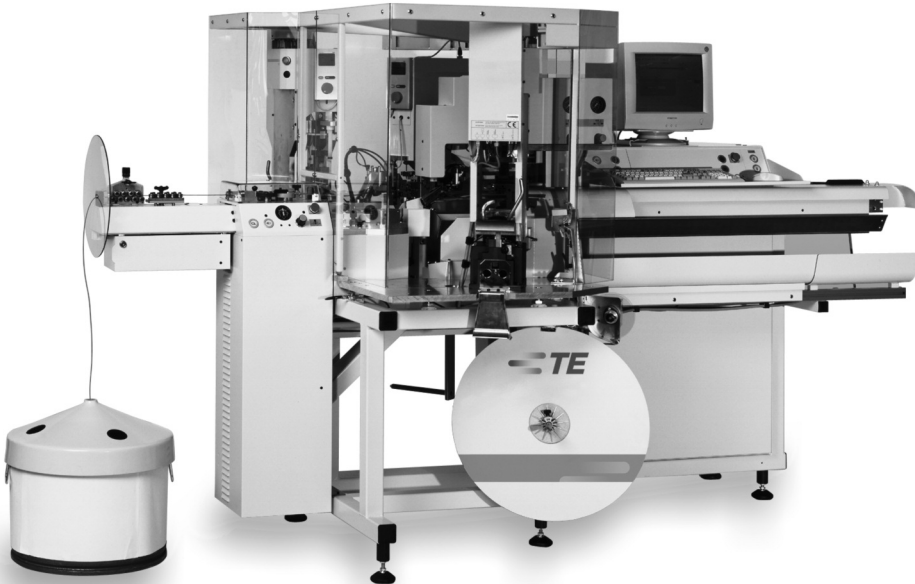


- Small investment for high production output
- Belt or roller drive in one machine for gentle wire handling
- Well known and proven crimping press technology
- Compact and user friendly on very small floor space
- Highly ergonomic thanks to the touch screen control

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Lead Makers

Gamma 333 PC-B Flexible Wire Processing



The Gamma 333 PC-B lead maker is a flexible fully automatic crimping machine for efficient wire processing. It processes cross sections in a range from 0.13-5.0 mm² (AWG 26-AWG 10).

Short conversion times, additional applications and a user-friendly user interface with multiple-language capability. The Gamma 333 PC-B lead makers with belt-drive makes it all possible! With its third processing station and state of the art control software, you are provided high flexibility and an even more efficient way of meeting your wire processing needs.

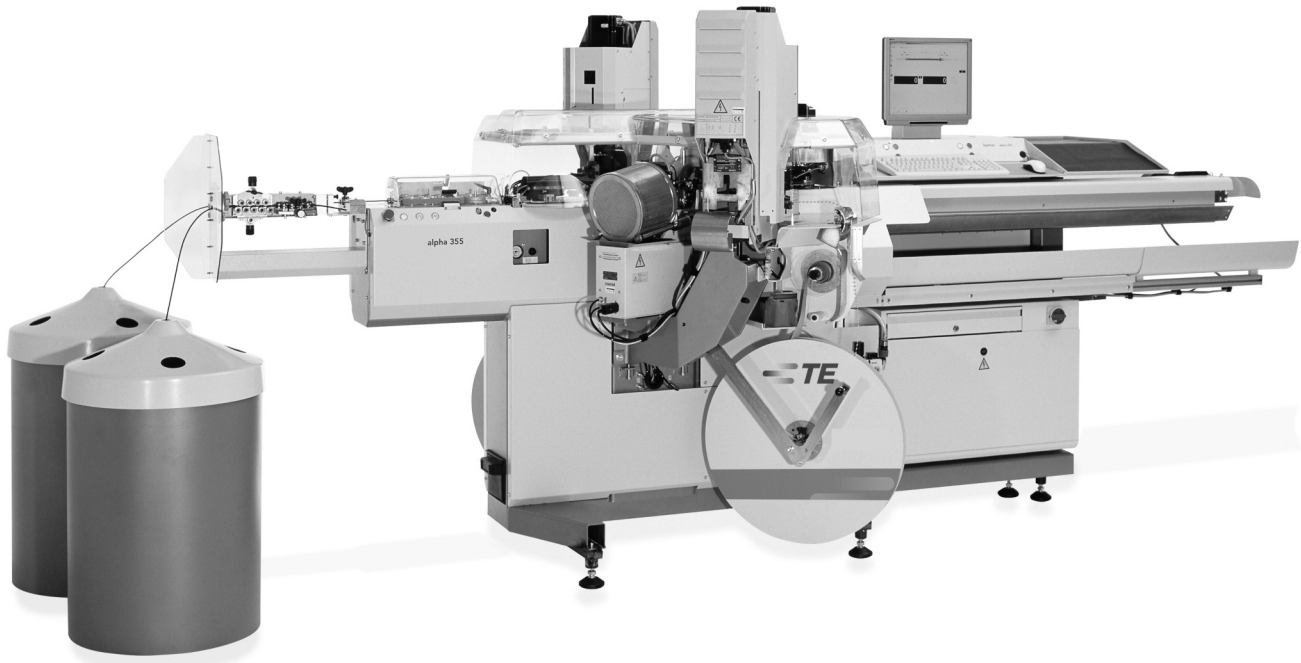
With an additional processing station on side 1, the Gamma 333 PC-B lead maker enables you to crimp both ends of the wire, to create double crimp connections with three different contacts, to carry out one-ended seal application, tinning or ink-jet marking.

In addition, process monitoring is all integrated to ensure that the wire is cut to length and stripped perfectly.

- Exact reproducible settings for processing stations
- Maintenance-free step and servo motor of top quality
- Very short conversion times thanks to integrated processing modules
- Highly comfortable and convenient to operate thanks to graphic-based TopWin software
- User specified language – more than ten different languages to choose from
- Integrated good/bad sorting
- Can be networked with additional WPCS (Wire Processing Communication Standard) software

Lead Makers

Alpha 355 and Alpha 355 S Fully Automatic Crimping Machines



Short setup and changeover times, integrated quality measurements, and top performance are the three main features of the Alpha 355 fully automatic crimping machines.

Alpha 355 Lead Maker

The Alpha 355 lead maker is designed for one and two-sided crimping and seal loading. It even handles double-crimp connections involving varying lengths and the same wire types without any problem. The precise dual-channel blade system allows for a large range of wire sizes without blade changes. With options like the manual wire selector and/or the quick-change system for crimping tools, materials and tools can be prepared for the next job while the machine is running.

- Short changeover times
- Reliable process monitoring
- High production output
- Setup of next job while production of current job is underway
- WPCS (Wire Processing Communication Standard)
- Q-monitoring, CFA+ (Crimp Force Analyzer), SPM (Seal Position Monitor)

Alpha 355 S Lead Maker

The Alpha 355 fully automatic crimping machine is a proven performer and now available in a model offering the flexible selection of modules. The high safety cover and the flat table design is the most striking difference between this version and the Alpha 355 lead maker. It allows processing modules not specifically designed for certain machines to be mounted. One of the two module slots on each processing side is fitted with special mounting tables to accommodate the various mounting methods. Combined with the ingenious open-ended software interface, the flexibility of the Alpha 355 S lead maker can be increased.

- Flexibility in module selection
- Reliable basic machine
- Open-ended software interface
- WPCS
- Q-monitoring, CFA+ (Crimp Force Analyzer), SPM (Seal Position Monitor)

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Lead Makers

Alpha 356 Fully Automatic Crimping Machine



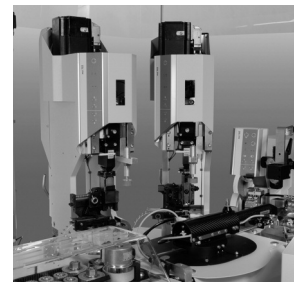
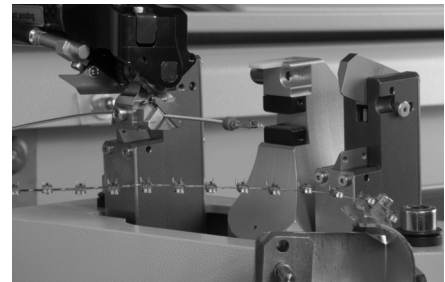
The Alpha 356 fully automatic crimping machine has room for up to seven processing stations.

A wide variety of configurations are possible, in fact, almost any combination of crimping, seal loading, fluxing/tinning, twisting, fitting with insulating sleeves and end sleeves for strands as well as bulk turned contacts and customer-specific processes. In a configuration featuring three crimping presses, for example, you can crimp the three wire ends for double-crimp connections with different contacts or select different articles without a machine changeover.

With the rotating wire selector and the TopWin user software, you can complete most of the preparations for the next job while the current one is still being produced on the machine.

Crimping tools, contact rolls and other application-specific parts can be changed without tools. Thanks to the use of the modern technology, the production output - and the degree of process control - is extremely high in this machine generation.

- High flexibility with up to seven processing stations
- Both standard and customer-specific processes can be integrated
- Wide choice of different processing configurations
- High productivity thanks to the latest technology
- Integrated quality measurements
- Next job can be prepared while machine is processing current job
- Combinable in networks using WPCS (Wire Processing Communication Standard) interface



Lead Makers

Alpha 433 H Fully Automatic Crimping Machine



The Alpha 433 lead maker is a flexible fully automatic crimping machine for efficient wire processing. Large wires no longer pose a problem. The machine is capable of processing large wires from 0.20-16 mm² / AWG 24-6 (fine-wire conductors). The P104 crimping press delivers the requisite force to process large terminals. Terminals can be crimped on both ends but seals can also be loaded at one end. Wire processing to the most exacting standards - great versatility without conversion. The Alpha 433 fully automatic crimping machine is based on state of the art technology and is designed for processing single conductors as well as double crimp connections.

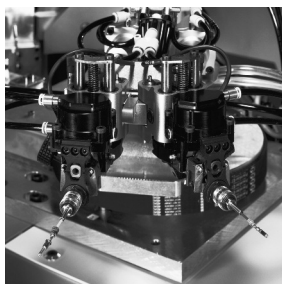
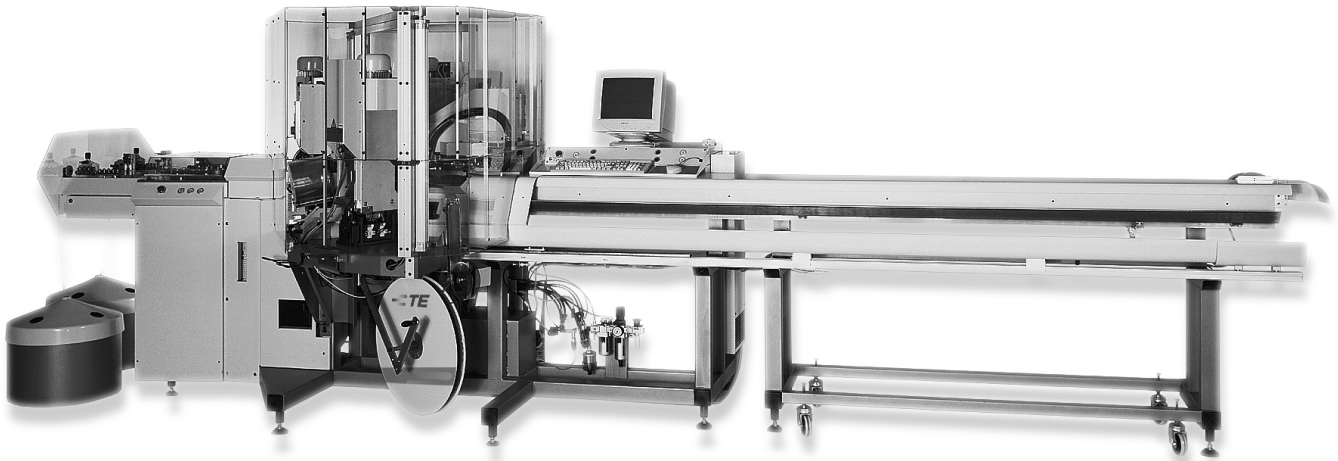
- High flexibility with up to five processing stations
- Short conversion times
- Maximum ease of operation thanks to TopWin user software
- Networkable with WPCS interface
- Modern quality monitoring
- Belt drive for high processing speed
- Extensive range of accessories



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Lead Makers

Alpha 477 Fully Automatic Crimping Machine



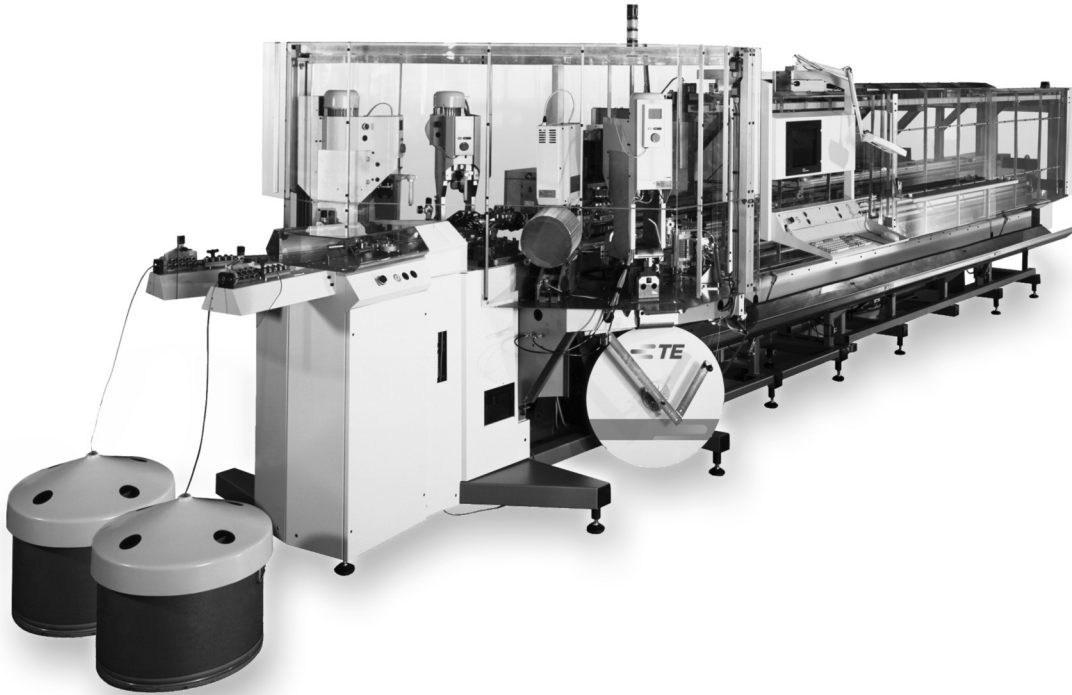
The Alpha 477 fully automatic double crimping machine allows you to process two different wires simultaneously to produce your choice of double crimp or single wires. The two wire drives are fitted with highly dynamic AC-servo axes and an integrated anti-slip system. With this sophisticated handling technology, two wires can be fed in parallel and their ends cut to length and terminated in a controlled process. Wires are handled gently throughout.

With four processing stations at the lead termination and two at the trailing end, you have a large number of possible processes at your command.

- No conversion required when switching from double crimp to single wire production
- Double crimp connections can be produced side-by-side or one above the other
- Integrated head separation and batch sorting
- Active good/bad wire sorting
- An ergonomic layout assures the operator optimum accessibility and minimal walking/reaching distances
- mci 722/mci 712 module assure superb flexibility and shorter changeover times
- Integrated quality monitoring
 - CFA (Crimp Force Analyzer),
 - SPM (Seal Position Monitor)
 with automatic post-production of defective parts
- Accommodates up to six processing stations
- Great ease of operation thanks to TopWin software
- Networking possibilities with reliable WPCS and special software

Lead Makers

Alpha 488 Fully Automatic Processing Machine



The high machine output of twisted wires results from the parallel processing of the two conductors and a division of overall processing into three main processes, all optimally synchronized with each other. The linear wire draw-in unit with integrated delta length analyzer (DLA) assures the gentle handling of the wires. The twisting head with AC servo-drive is the heart of the Alpha 488 lead maker. The integrated twist force analyzer (TFA) enables uniform twisting by analyse the forces during the twisting process.

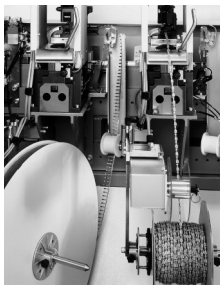
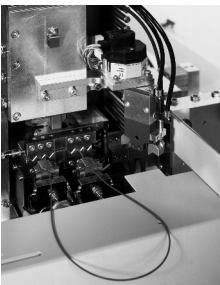
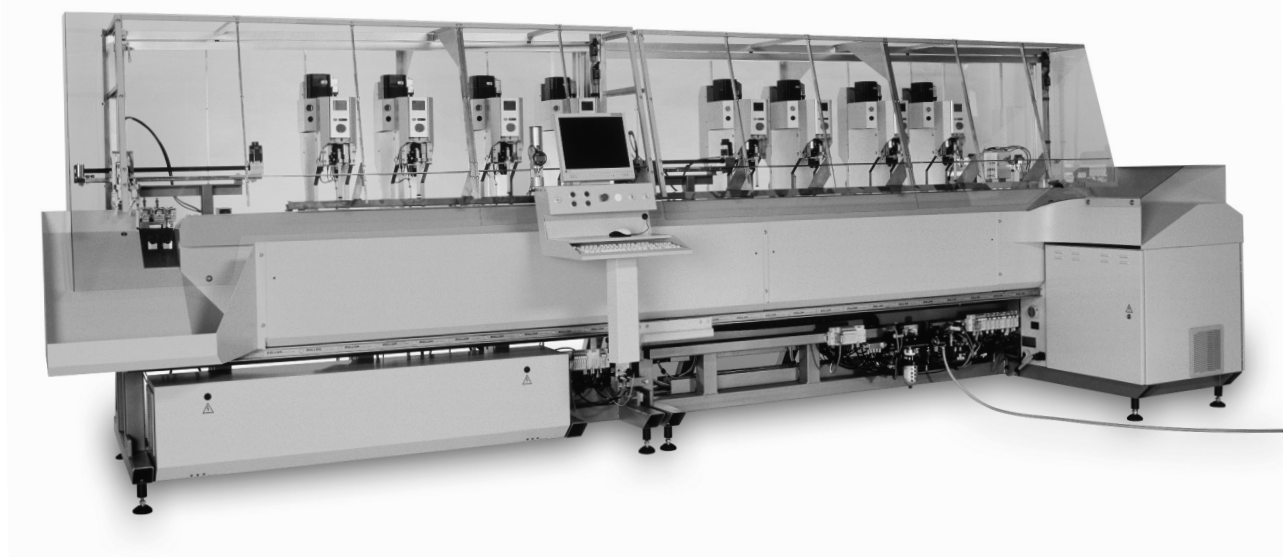
Drawing on continuous stock, the Alpha 488 fully automatic twister produces twisted pairs completely cut to length and terminated. It can handle wire cross sections ranging from 2x 0.13 mm² to 2x 2.5 mm² with no trouble at all. Four stations on side 1 and two stations on side 2 open up flexible processing possibilities such as two-ended seals loading and crimping.

- Complete processing of continuous stock into twisted pairs with processed ends
- Gentle handling of base stock to ensure high-quality end products
- Also possible to process different open ends up to 125 mm in length on side 1 (as an option)
- Usable as well for two-end crimping and seal loading on two identical single wires
- High degree of flexibility and reduction of conversion times
- Integrated quality monitoring
 - DLA (Delta Length Analyzer),
 - CFA+ (Crimp Force Analyzer),
 - SPM (Seal Position Monitor), also during twisting
 - TFA (Twist Force Analyzer)
- Active good/bad sorting
- Accommodates up to six processing stations
- Great ease of operation thanks to TopWin software
- Networking possibilities with reliable WPCS (Wire Processing Communication Standard) and special software



Lead Makers

Zeta 633 L Fully Automatic Processing Machine



Zeta 633 harness maker is a highly flexible fully automatic crimping machine used for just-in-time production. With its flexible machine concept, the Zeta 633 harness maker opens up many possibilities for handling small jobs and wire sequences.

Up to 36 conductors are available for wire feed without changeover. Wire transport can be adapted to the specific properties of each conductor. Applying the loop transfer principle, the device feeds the two wire ends of the loop individually one after the other to the appropriate processing station.

Modules can be configured as desired along the entire length of the Zeta 633 harness maker. That means total flexibility for each area of application. The Zeta 633 standard machine accommodates up to five processing stations, the Zeta 633 L Version even 8 processing station. If need be, both Zeta versions can be successively expanded and still have space for additional processing stations.

The wires can be bundled or deposited in predefined order as a chain.

- Up to 36 different conductors can be processed without changeover
- Station layout can be defined as desired
- Full integration of existing processing stations
- High processing quality
- TopWin software: Existing user expertise can be applied immediately.
- Excellent accessibility and safety
- Expandable
- Prepared for Zeta 651 and Zeta 655 machines
- Fully integrated quality monitoring with good/bad sorting
- Customer specified special applications possible

For more detailed information please visit our websites: www.tooling.te.com • www.tooling.te.com/europe • www.tooling.te.com/china

Harness Makers

Zeta 651 Fully Automatic Processing Machine



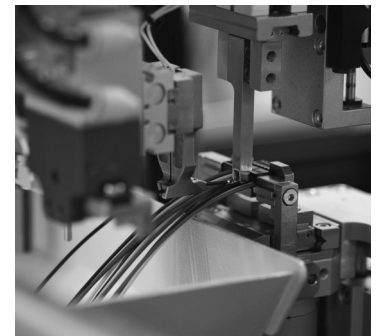
Together, the Zeta 633 and Zeta 651 harness makers offer a reliable and attractively priced complete solution for the single-sided loading of single and double row blocks.

The Zeta 633 fully automatic crimping machine applies the loop transfer principle to feed the two wire ends of the loop individually one after the other to the appropriate processing station. With the Zeta 651 harness maker, the contacts are mechanically centered prior to loading and optionally rotated, if need be. The use of the reliable loading head and the process monitoring systems of the Zeta 655 harness maker ensure optimum loading. The entire loading process is monitored, from insert in chamber to correct locking. Blocks are fed automatically and can be replenished while the machine is running.

Feed and deposit can be adapted to meet the respective needs of the specific customer.

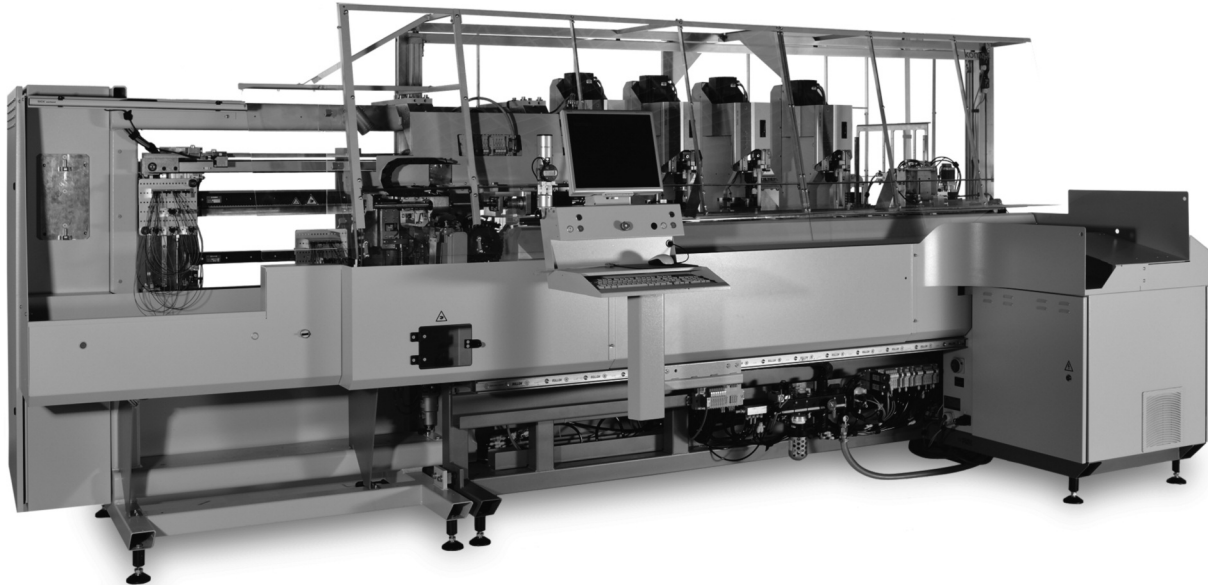
The long deposit system with batch separation and integrated bad part cutter is used for producing harnesses with long conductors up to 3000 mm in length.

- Fully automatic block loading
- Full integration into TopWin software
- Integrated process monitoring with good/bad separation
- Automatic block feed
- Blocks can be replenished while machine is running.
- Economical production of harnesses undergoing single-sided loading



Harness Makers

Zeta 656 Fully Automatic Processing Machine



The Zeta 656 harness maker is a block loading robot designed to take into account the ever smaller sizes of production batches. Thanks to its machine design, the Zeta 656 harness maker allows investment costs to be amortized in parallel on different types of wire harnesses, markedly reducing the cost per lead set. The Zeta 656 harness maker allows new applications to be subsequently incorporated. With the flexible pallet carousel, the most varied types of wire harnesses can be produced just-in-time and changeover times are very short. All the operator has to do to change over to a new type of block is switch the two pallets. The loading of each and every block is monitored and controlled by a force sensor.

The Zeta 633 basic machine has a 36-wire changer and several crimping stations with automatic crimp height adjustment, allowing far more than 300 different wire/terminal variations to be processed without any changeover

at all. In combination with a machine extension, another four processing stations can be accommodated. Moreover, wire marking systems can be connected, allowing different wires within the same harness to be marked with the operator's choice of black or colored text.

- Extremely broad variety of harnesses on one machine – no application-specific parts
- New applications can be easily added later on
- Economical even for tiny production batches
- Non-contact position recognition for the terminals
- Uniform top quality processing – high degree of process reliability
- Integrated quality monitoring with good/bad sorting
- Short amortization period

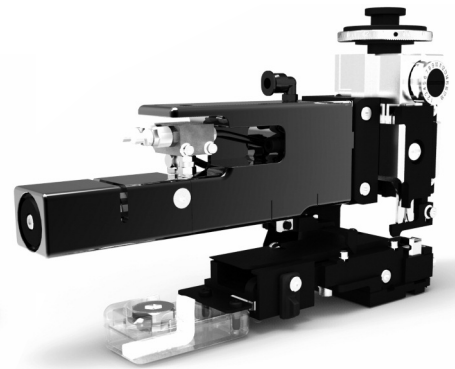
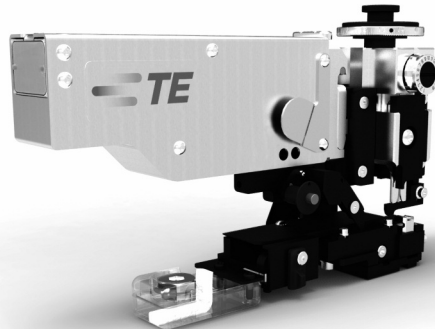
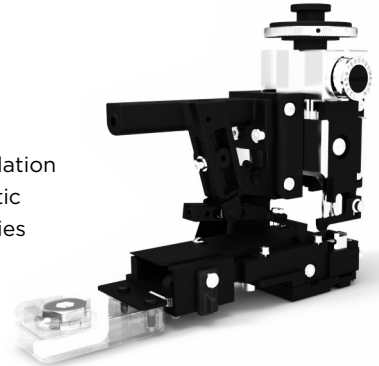
Applicators

Ocean Applicator Series

Crimping standards continue to rise to higher levels of quality and repeatability. Taking customer input and market demands into consideration, TE Application Tooling has created the Ocean Applicator series to meet those higher demands and to take terminal crimping to a new level.

By consolidating our applicator offering, TE can provide design consistency and tooling standardization to the market. One of the resulting benefits to customers of this consolidation is flexibility in the choice of feeding options: new and improved mechanical and pneumatic feeds along with the innovative and precise servo feed option. The Ocean Applicator series design also allows customers to perform field upgrades to system III technology. It provides an upgrade path for terminal intelligence that allows the machine to obtain set-up features as the applicator is upgraded.

- One applicator platform – modular family design
- Two ram interface styles
- Three interchangeable feed options:
 - Mechanical
 - Pneumatic
 - Servo



Applicator Wear Parts

Applicator Wear Parts Stocking Programme

To ensure the support of our installed Applicator base, we have established a stocking programme for wear parts. Subsequently, all crimpers and anvils for your applicator are normally available ex stock, ensuring the shortest possible lead times.



Wear Tooling to Apply Stainless Steel Contacts

The application of nickel plated stainless steel terminals has always been a problem with regard to the uptime of the crimp tooling. We have developed crimpers and anvils, using special base materials and surface treatments in the crimp area. These have enabled us to significantly increase the tool life and thus reduce the applied cost of these products.

If you are experiencing specific wear problems in your production, please contact your TE Connectivity Service representative.

For more detailed information please visit our websites: www.tooling.te.com • www.tooling.te.com/europe • www.tooling.te.com/china

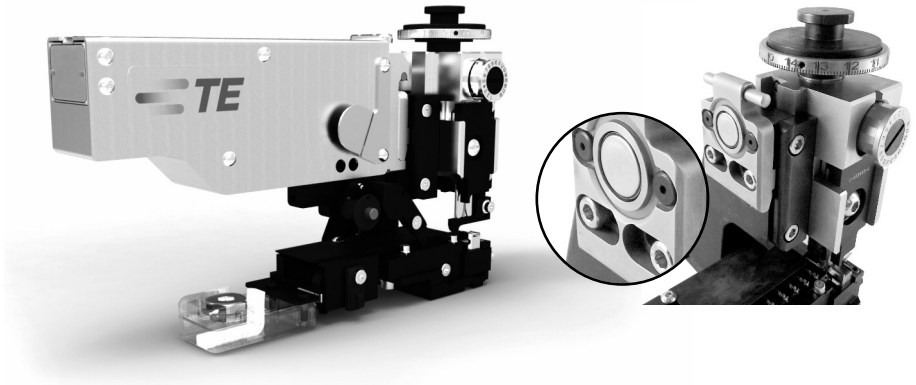
Applicators

Smart Applicator

Now it is possible to have smart applicators in any of the feed styles of the Ocean Applicator series. The system III applicator data is now extended to an entire smart applicator strategy. It allows the operator to conveniently view all the data about the applicator. The data contains serial numbers, part numbers, wearable tooling part numbers (and tooling cycle counters), strip length, instruction sheet numbers and more. This data includes the terminals, with acceptable crimp heights, that can be terminated with the applicator. With this information conveniently available to the operator, programming and verifying the crimp application has never been easier. Setup will be less time consuming and more accurate.

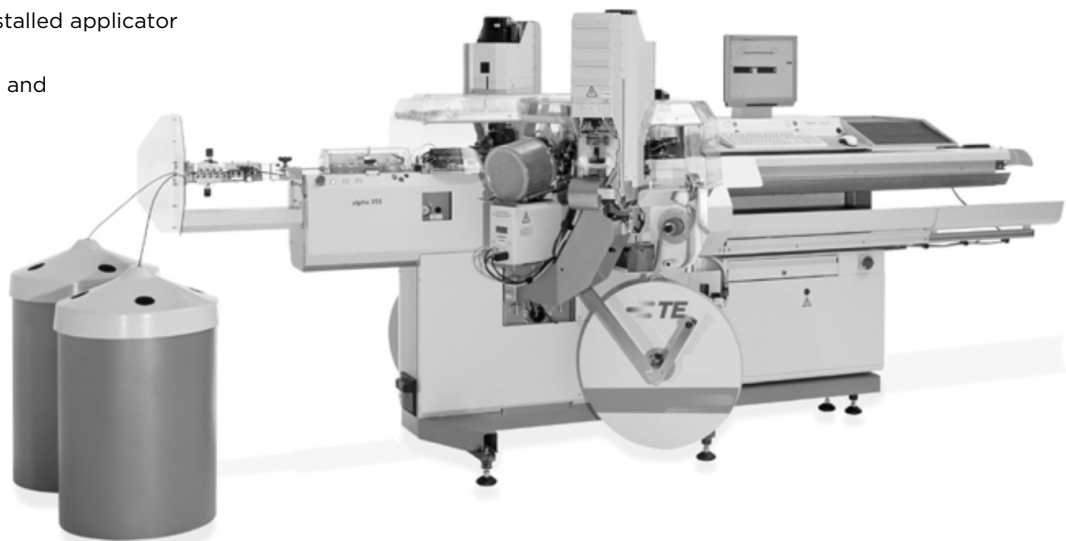
This system also extends the availability of the high-precision servo feeder technology recently developed by TE Application Tooling.

- Smart applicator data module stores complete information about the applicator
- Feeder automatically reads terminal information from the applicator data chip



TE Application Tooling has teamed up with Komax Wire to provide a fully integrated smart applicator system into a wire-processing machine. This smart applicator solution is a must for any demanding harness manufacturer. Your wire-processing machine is now able to verify that the applicator installed in the machine is capable of terminating the programmed terminal and that the crimp height specification is correct. This integration allows the operator to view all the applicator data and maintenance counts, wearable tooling, crimp heights, strip length and list terminals that can be used. When a smart applicator is attached to the machine, the operator can select the terminal from a list while programming the article. This makes setup less time consuming and more accurate. With other information provided by the applicator programming parts and verifying application is easy.

- Verification of the installed applicator
- View applicator data
- Less time consuming and more accurate setup



Crimping Presses and Accessories

AMP 5K-40 Splice Terminator

Applying thru-splices is fast and efficient when you have access to both sides of the applicator for placing and holding the wires. The AMP 5K-40 splice terminator and splice applicator have been designed with this efficiency in mind. Specifically designed for thru-splice and short lead length applications, the AMP 5K-40 splice terminator combined with a splice applicator provides open access in front of and behind the crimper for controlled wire placement close to the crimping area in order to maximize production efficiency. The splice terminator also has full guarding with interlocks that meet the latest CE requirements for operator safety.

The splice terminator is offered in two versions, with and without crimp quality monitoring (CQM II). Equipped with optional CQM II, five different crimp analysis methods, including crimp height, can be used during every crimp cycle, providing real-time monitoring.

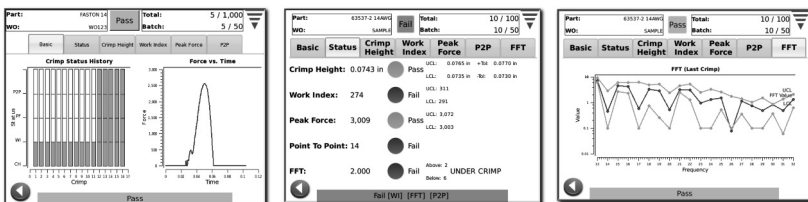
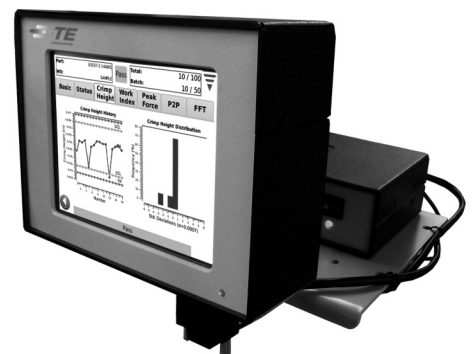
Each unit includes fine crimp height adjustment, total/batch counters and capabilities for jog operation. The AMP 5K-40 splice terminator does not accept heavy-duty (HD-M or HD-I) applicators.



Crimp Quality Monitor II (CQM II)

Simply put, crimp height measurement is the best non-destructive way to meet the stringent mechanical and electrical properties of the crimp. The CQM II is the only crimp monitoring system that offers continuous crimp height analysis for every crimp produced. This analysis helps produce quality crimps and helps detect faulty crimps. In fact, the new CQM II features five different methods of process analysis to give you more choices to observe and monitor the process than ever before. These five analysis methods can be used individually or in combination to provide flexible, complete coverage of the crimping process. All functions are controlled through the touch screen, with a new, intuitive and easy-to-use graphical interface. Now, for the first time, the CQM II can be used on non-TE terminators, allowing you to standardize and provide TE crimp quality monitoring across your production area.

Look no further than the TE Application Tooling CQM II for an effective, easy-to-use crimp quality metric and real time 100% crimp height measurement when used on TE terminators.



For more detailed information please visit our websites: www.tooling.te.com • www.tooling.te.com/europe • www.tooling.te.com/china

Crimping Presses and Accessories

SC15 Stripper Crimper

The pneumatically and electrically driven SC15 crimping machine is a particularly efficient and operator friendly crimping machine with outstanding repetitive precision, which satisfies the high requirements. It can be adjusted to the specific requirements of any given contact/cable connection.

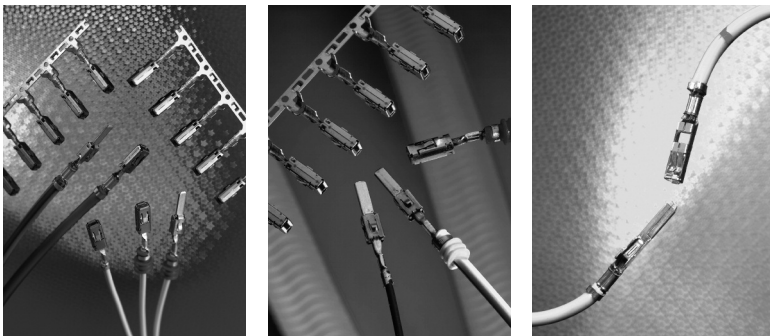
If you

- want to strip a cable composed of many wires down to only 13 mm,
- would like to then insulate these single wires at 2 mm to 6 mm and thereby
- cover a wire size area of from 0.09 mm² to 4 mm²

then with the stripper crimper SC15 you have made the right decision.

Further features are:

- Automatic bare wire recognition
- Crimp force monitoring
- Remote diagnoses via serial interface

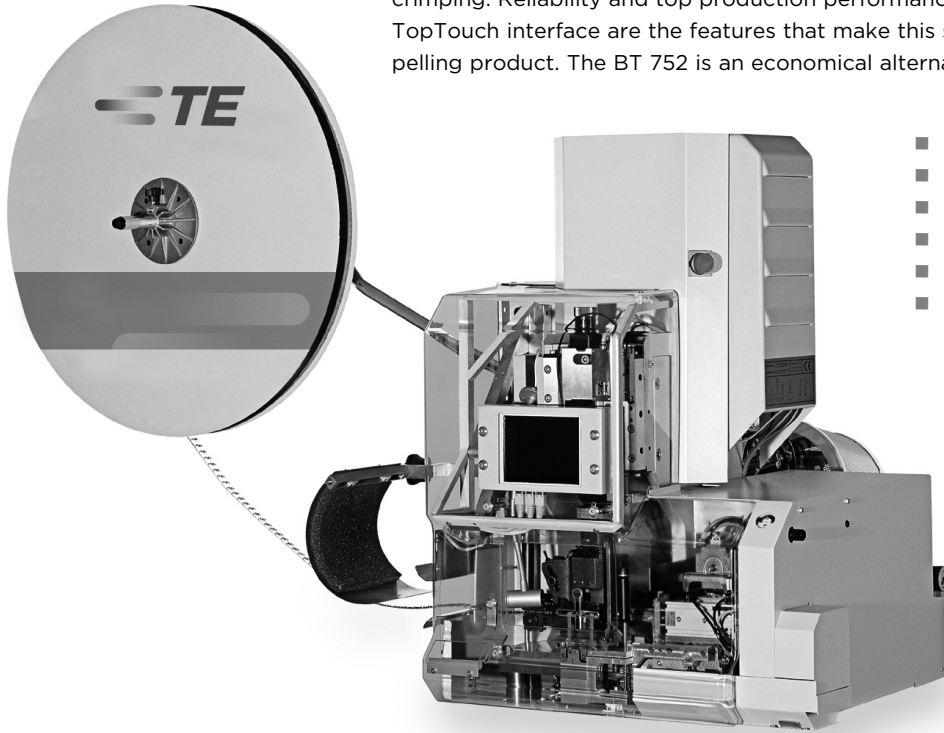


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Crimping Presses and Accessories

BT 752 Stripping, Sealing and Crimping Machine

The BT 752 delivers three processes in a single device: stripping, seal loading and crimping. Reliability and top production performance coupled with the user friendly TopTouch interface are the features that make this semi-automatic device such a compelling product. The BT 752 is an economical alternative to fully-automatic machines.



- Ultra-short setup and cycle times
- Ultra-simple changeovers
- Active quality control
- Integrated crimp force analysis
- Simple operation with TopTouch
- Seal applications compatible with mci 761, mci 762 and bt 700

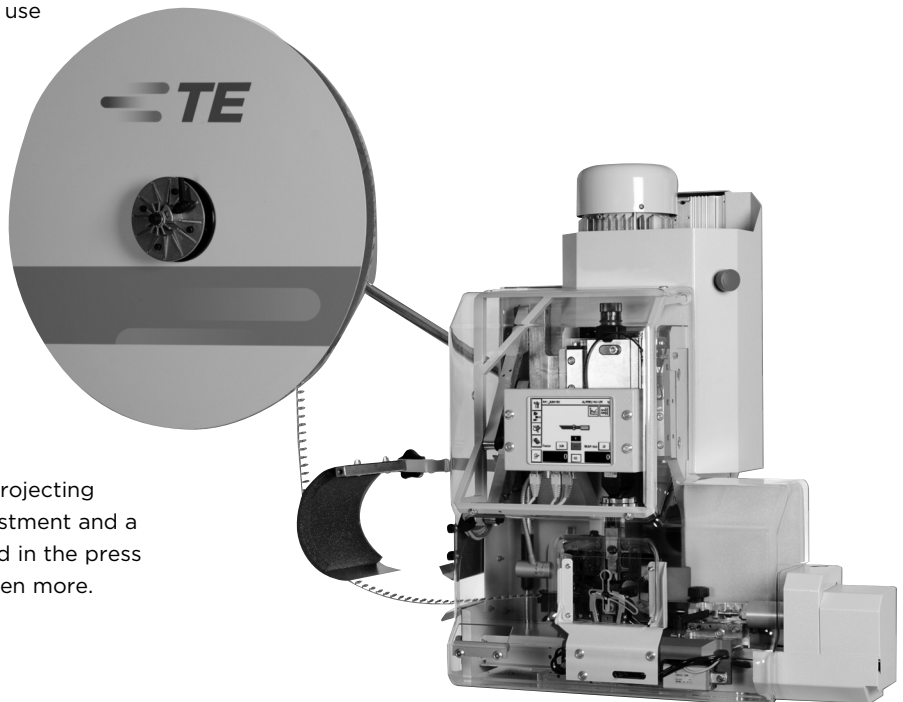
BT 712 Bench Top Crimping Machine

This all-purpose press accommodates the use of all common commercial crimping tools.

The software (in 12 languages) can be operated from a small touch screen interface (TCI).

The bench top press is also a service tool with a data memory for storing up to 500 articles, for making backups and for uploading updates. The crimp force analyzer that comes with the press detects good and bad wires reliably and gives a detailed description of errors.

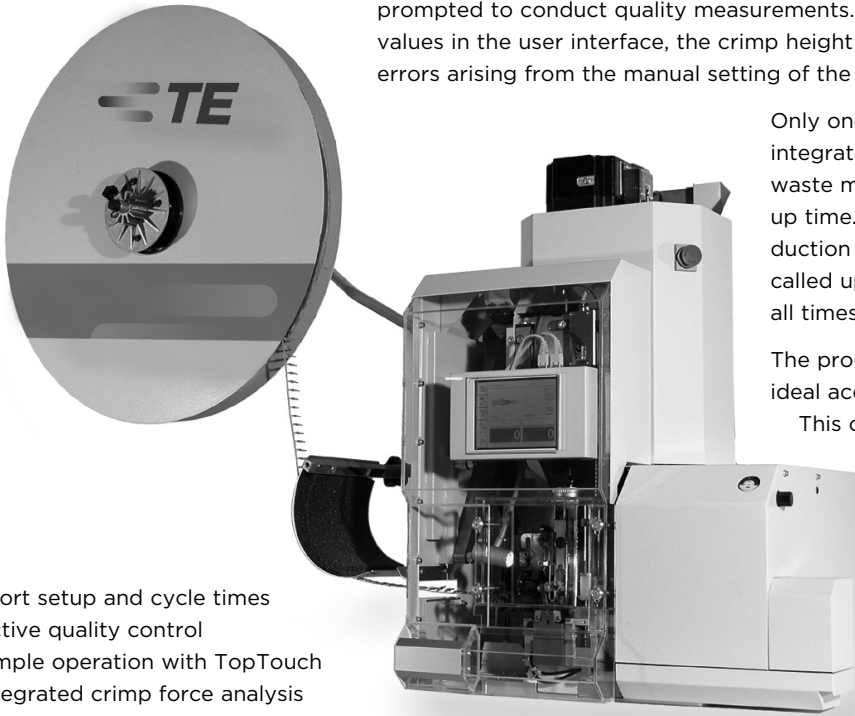
Proven and useful options such as short projecting cable, bad contact cutter (BCC), fine adjustment and a contact strip chopper can all be integrated in the press to boost efficiency and process quality even more.



Crimping Presses and Accessories

BT 722 Crimping Machine

The BT 722 crimping machine is used for the manual crimping of contacts. The BT 722 is operated from a touch screen. The new TopTouch user interface allows jobs to be set-up quickly and easily. Even during production set-up, the machine operator is prompted to conduct quality measurements. Following the input of the calculated values in the user interface, the crimp height is automatically corrected. This prevents errors arising from the manual setting of the crimp height.



- Short setup and cycle times
- Active quality control
- Simple operation with TopTouch
- Integrated crimp force analysis
- Integrated handling of bad terminals

Only one crimp is needed for referencing the integrated crimp force monitoring. This reduces waste material consumption and minimizes set-up time. The quality values measured during production are saved and can therefore always be called up later. This ensures traceable quality at all times.

The programmable DigiStripper (Option) is an ideal accessory to the BT 722 crimping machine.

This can be set-up without any mechanical adjustment. Thanks to the functions zero cut and pull back, as well as the pre-programmable cutting depth, the perfect stripping is ensured.

Gauge for Presses

In order to help you to ensure that our applicators are placed correctly in the presses we offer you this press gauge.

It is possible to have a mis-alignment between the center of the applicator and the terminator due to the way they mount in the terminator. If this happens, a side load is applied to the applicator which can lead to pre-mature wear and/or quality problems with the crimped terminals.

The use of the gauge is simple: You install the press gauge into the press like an applicator. Then you unlock the gauge head, on which is mounted a gauge ring. A spring in the gauge is now pressing the gauge head upwards. The gauge ring should now fit easily into the press head. If this is not the case the applicator ram would not be in a centred position and the mounting plate of the press has to be adjusted. The special design of the press gauge base plate allows free access to the press mounting plate fixing screws.



Crimping Presses and Accessories

Crimpmatic 970/971 Crimp Machine for Reeled or Loose Piece Terminals

Both machine versions permit the cost effective manufacturing of crimp connections with a high production efficiency. The Crimpmatic 970 machines are capable of processing wires of up to approx. 16 mm² (AWG 5), depending on the terminal stock thickness.

- Compact, space-saving design
- Compatible with MQC applicators
- Step mode during set-up

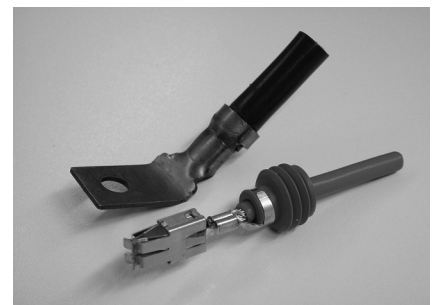
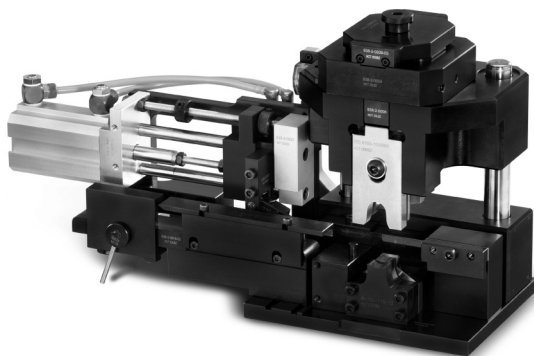
The Crimpmatic 971 machine is capable of processing wires of up to approx. 50 mm² (AWG 0), depending on the terminal stock thickness. The machines can be equipped with a quick change device for power crimp tools. MQC applicators with a lower dead center of 135.78 mm can be mounted by means of an adapter plate. These machines can be utilized as manual work stations and can be integrated into fully-automatic processing lines. The terminator as shown is a manual work station Crimpmatic 971. The unit can be supplied with or without crimp process monitoring, or it maybe retrofitted later.

Options are available upon request

- Crimp force monitoring
- Paper spooler
- Adapter plate for MQC applicator

Applicators

- Especially designed for larger wire sizes
- Pneumatic feed
- Can be used with both crimp presses
Crimpmatic 970 and Crimpmatic 971



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Cross Section Laboratories

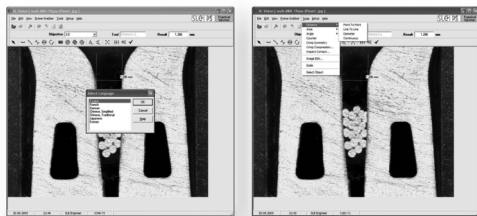
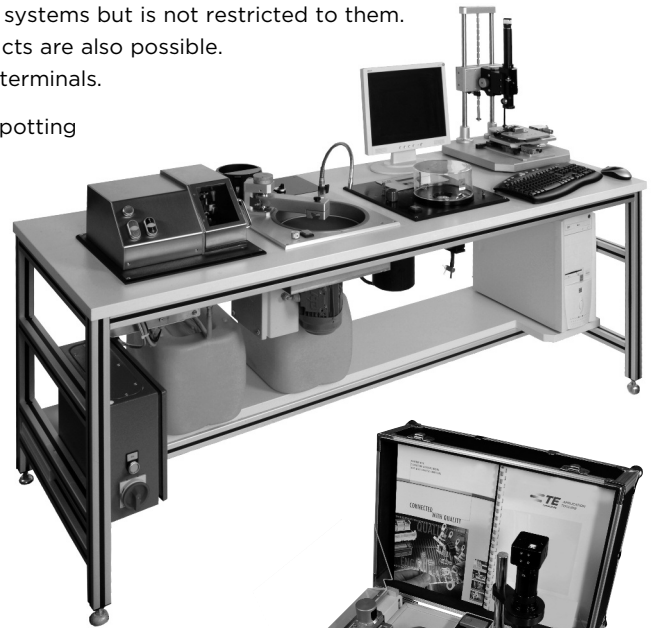
Micrograph Laboratories for IDC and Crimp Contact Systems

The micrograph laboratory is designed for TE Connectivity terminal systems but is not restricted to them. With a modified sample holder, cross sections of competitors products are also possible. The flexibility of the laboratory allows cross sections of a variety of terminals.

Better than conventional processes the new cutting method makes potting and long drying times a thing of the past. So processing time can be reduced dramatically.

For special requirements an optional impregnation module is available. With it the cutting area can be lightly fixed.

If you need more detailed information please contact your local TE Application Tooling representative. The relevant contact can be found on the website below.



- Quick process flow of 5 to 10 minutes
- Sample range: 0.22 mm² up to 100 mm², depending on sample holder
- No cross section potting
- Evaluation according to DIN and different electrical and physical parameters
- PC specific software for micrograph evaluation
- Compact, easy to operate
- Sample range: 0.22 mm² up to 6 mm²
- Optional electrolyte etching module
- Easy fixation station for sample holder
- Secure mechanism for optic during transportation
- 1.3 megapixels USB 2.0 camera with SL Vision II evaluation and documentation module

Automatic Micrograph Laboratory for Crimp Terminal Systems

The automatic micrograph laboratory allows continuous preparation and analysis of micrographs.

It is the ideal solution for production lines especially in the automotive wire harness industry, thanks to small footprint, low weight (app. 35 kg) and short cycle time for micrograph production time down to 1 minute per sample.

Cutting and grinding are done fully automatically. Therefore the automatic micrograph laboratory provides excellent repeatability.

- Compact automatic micrograph laboratory for production of micrographs within shortest time.
- Automatic sample transport system conveying the mobile sample holder through the stations for sample cutting and grinding
- Accurate alignment of the sample with the sample holder by laser
- Sample range: 0.08 mm² up to 6 mm²
- Integrated etching system
- Integrated optical evaluation system for micrograph analysis



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Wire Preparation Equipment

AT-SC Wire Stripping and Twisting Machine



The AT-ST machine strips and twists wires with sizes from 0.03 mm² up to 6 mm² / AWG 32-10. The adjustable turret head with 8 guide tubes for different wire sizes centralizes positioning of wires. Special ground blades cut and strip special insulations.

The machine can be set either clockwise or anticlockwise dependent on wire drilling direction.

- Adjustable turret head
- Cutting/Stripping blades for special insulation
- Stripping and twisting process

AT-FE 0400 Strip Box

The strip box is an electric driven machine to strip standard PVC (polyvinylchlorid) wires up to an outside diameter of 4.2 mm. Except of power supply no further equipment required. Due to the low weight the AT-FE 0400 machine can be placed on nearly every workplace.

- Electrically driven
- Simple adjustment
- Easy handling
- Stepping switch for manual operation
- Small space required
- Practically maintenance-free
- Clear cut through insulation by special shape of cutting blades / 4 cutting blades
- Continues adjustment of wire size and stripping length



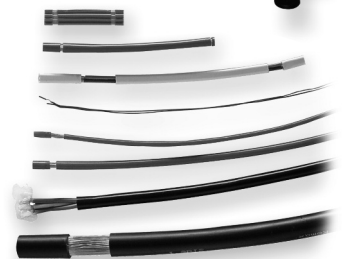
Kappa Cut and Strip Family

The Kappa family strippers are ideal for cutting individual and special wires to length and stripping them. They can strip in sections, allowing them to strip even extremely long length in perfect quality. The machines cover an extraordinarily broad range of cross sections.

Kappa 310, 320, 321, 330 and 350 strippers support a variety of processing options such as wire marking with hot-stamp or ink jet markers. Hot stamp marking can even be done on the Kappa 310 stripper, the entry-level model.

New Kappa Generation:

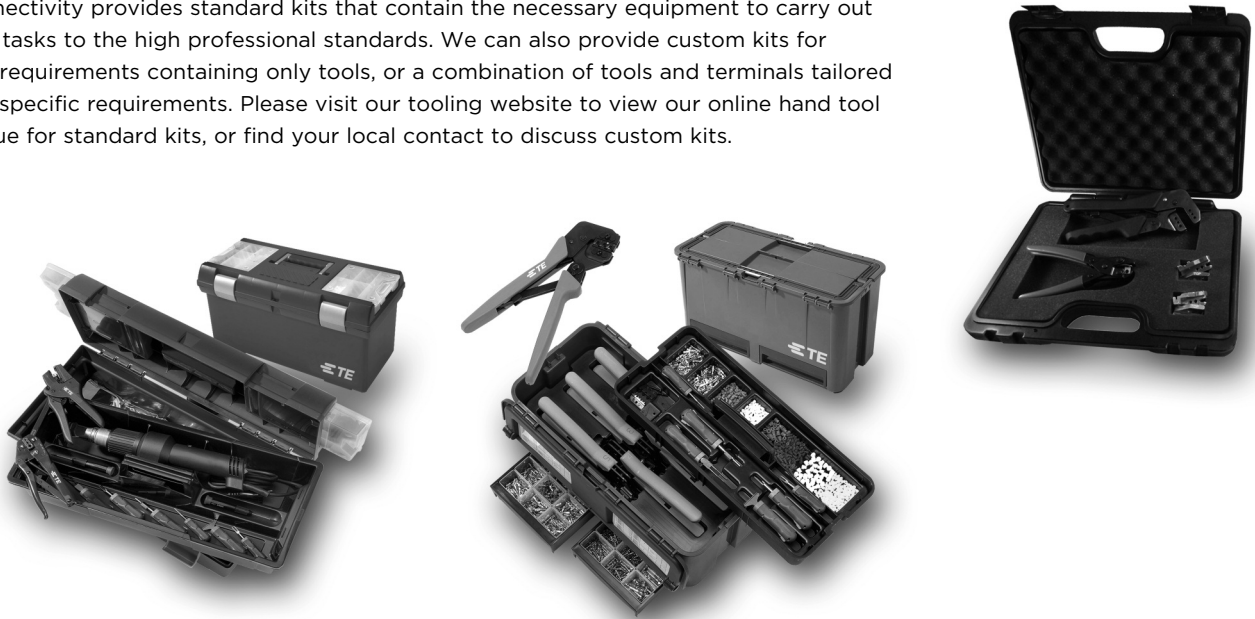
- Dynamic, flexible cutting and stripping unit
- New intelligent sensors
- New electronic and software
- Optional TopWin™ connection



Hand Tools

Hand Tool Kits

TE Connectivity provides standard kits that contain the necessary equipment to carry out specific tasks to the high professional standards. We can also provide custom kits for volume requirements containing only tools, or a combination of tools and terminals tailored to your specific requirements. Please visit our tooling website to view our online hand tool catalogue for standard kits, or find your local contact to discuss custom kits.



Insertion and Extraction Tools

Insertion and extraction tools are used for inserting discrete terminals into connector housings or removing them, without causing damage to either the terminals or housings. Our new standard design features a comfortable handle and snap-in/out protective cover that allows users to stow the business end of the tool to help protect from inadvertent personal injury when the tools are not in use.

Many different design types currently exist for our vast terminal product range, which we continue to convert. If you would like the tool you use converted to the new design, want a custom kit or tools in this design for other manufacturers products - contact us, and where volumes permit we will be pleased to provide you with a quotation for your requirement.



Engineering Notes

A large grid of graph paper for engineering notes, consisting of a 30x40 grid of small squares.

Application Tooling Global Field Service Organization

TE Connectivity provides global field service support on our application tooling. Field specialists are located across every continent to provide timely response to customer needs. In addition to installation, warranty and repair service, TE Connectivity field specialists can help you with equipment choices, training of maintenance and operation personnel, troubleshooting assistance and spare parts. Service contracts to cover all your application equipment needs are also available. We have implemented a service management tool that provides standardization of reporting that gives us the ability to continuously improve our global service organization. Throughout the year we educate our field service engineers on the latest industry technologies and equipment. See for yourselves the advantages of our professional consultation and individual services. Our qualified service teams are ready to assist you.

Service Offerings:

Standard Service

Includes troubleshooting problems, making repairs, and/or installing parts.

Equipment Installations

Providing installation, set-up and training of application equipment at the time of delivery.

Training

Providing customers with practical training programs addressing machine operation, set-up, maintenance, inspection, and connector application. Training programs can be scheduled at the customer's site or a TE Connectivity training center. A training certificate will be issued upon the completion of each formal training course.

We are proud to be able to offer a comprehensive range of customer training programs. The following are some of the standard training programs we offer:

- The Fundamentals of Crimp Technology, 4901
- The Proper Handling of Crimping Applicators, 4902
- Crimping Training Program, 4903 (combination of 4901 and 4902)
- The Proper Handling of Crimping Hand Tools, 4904
- FFC Crimp Technology, 4906
- Fundamentals of Crimping Technology for Machine Operators, 4907
- Magnet Wire Connection Technology, 4910
- Advanced Seminar on Crimping Quality, 4911
- Advanced Seminar on Crimp Force Monitoring, 4912
- Advanced Cross Sectioning - Photos, 4913
- MAG-MATE Module, Pneumatic, 4914
- Insulation Displacement Technology, 4930

Service Contracts

Preventive Maintenance and/or Inspection Calibration

Provides service for periodic visits to perform preventive maintenance and/or inspection calibration service on hand tools, applicators, bench and automatic equipment.

Comprehensive Service

Provides for a specified number of field specialist visits. A visit can be used for services such as standard service, installation, set-up and training for all application equipment, preventive maintenance and/or inspection calibration, spare parts management, equipment process evaluation and technical assistance on application tooling and/or product related problems or concerns.

“A customized service / training contract ensures equipment optimization”

Short Term Rental of Crimping Applicators

Applicators are being increasingly required at short notice for a limited period. This may include preproduction runs, prototype series, and the subsequent production of single part requirement or simply small series production. It is often uneconomical to purchase a crimp tool or to rent it on a long-term basis, when it is only required for a few weeks in the year. Our short-term rental service has applicators readily available for you, which you can return when complete with your rental period.

Your local TE Connectivity representative will gladly inform you about the availability of an appropriate applicator for your specific need.



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Wuhan

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Changchun

Phone +86-431-88964709

Fax +86-431-88961143

Taibei

Phone +886-2-87682788

Fax +886-2-87681866

Hongkong

Phone +852-27351628

Fax +852-27350243

Others

Japan

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Fax +81-44-900-5037

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Numerical Index

Part Number	Page	Part Number	Page	Part Number	Page
0-0828904-1	4-10	0-1534594-2	4-5	0-1718758-2	4-6
0-0828904-2	4-10	0-1534594-3	4-5	0-1718758-3	4-6
0-0828905-1	4-10	0-1563719-1	4-9	0-1718760-1	4-6
0-0828922-1	4-10	0-1563719-3	4-9	0-1718760-2	4-6
0-0828985-1	4-10	0-1563720-1	4-9	0-1718760-3	4-6
0-0828986-1	4-10	0-1563720-3	4-9	0-1718762-1	4-6
0-0963142-2	4-8	0-1563935-1	4-9	0-1718762-2	4-6
0-0963143-1	4-8	0-1563935-3	4-9	0-1718762-3	4-6
0-0964972-1	4-8	0-1563936-1	4-9	0-1719836-1	4-9
0-0967056-1	4-8	0-1563936-3	4-9	0-1719836-3	4-9
0-0967067-1	4-8	0-1670144-1	4-5	0-1719837-1	4-9
0-0967067-2	4-8	0-1670144-2	4-5	0-1719837-3	4-9
0-0967608-1	4-14	0-1670144-3	4-5	0-1719838-1	4-9
0-1418762-1	4-6	0-1670146-1	4-5	0-1719838-3	4-9
0-1418762-2	4-6	0-1670146-2	4-5	0-1719839-1	4-9
0-1418762-3	4-6	0-1670146-3	4-5	0-1719839-3	4-9
0-1418844-1	4-5	0-1670802-1	4-9	0-1719840-1	4-9
0-1418844-2	4-5	0-1670802-3	4-9	0-1719840-3	4-9
0-1418844-3	4-5	0-1670803-1	4-9	0-1719841-1	4-9
0-1418850-1	4-5	0-1670803-3	4-9	0-1719841-3	4-9
0-1418850-2	4-5	0-1670804-1	4-9	0-1719972-1	4-14
0-1418850-3	4-5	0-1670804-3	4-9	0-1924292-1	4-43
0-1452503-1	4-5	0-1670805-1	4-9	0-1924292-2	4-43
0-1452503-2	4-5	0-1670805-3	4-9	0-1924292-3	4-43
0-1452503-3	4-5	0-1670806-1	4-9	0-1924292-4	4-43
0-1488991-1	4-40	0-1670806-3	4-9	0-1924292-5	4-44
0-1488991-2	4-40	0-1670807-1	4-9	0-1924292-6	4-44
0-1488991-3	4-40	0-1703834-1	4-12	0-1924292-7	4-44
0-1488991-4	4-40	0-1703834-3	4-12	0-1924292-8	4-44
0-1488991-5	4-40	0-1703836-1	4-12	0-2098557-1	4-38
0-1488991-6	4-40	0-1703836-3	4-12	0-2098557-2	4-38
0-1488991-7	4-40	0-1718348-1	4-7	0-2098557-3	4-38
0-1488991-8	4-40	0-1718348-2	4-7	0-2098557-4	4-39
0-1488992-1	4-41	0-1718348-3	4-7	0-2098557-5	4-39
0-1488992-2	4-41	0-1718350-1	4-7	0-2098557-6	4-39
0-1488992-3	4-41	0-1718350-2	4-7	0-2098559-1	4-43
0-1488992-4	4-41	0-1718350-3	4-7	0-2098559-2	4-43
0-1488992-5	4-41	0-1718475-1	4-9	0-2098559-3	4-43
0-1488992-6	4-41	0-1718475-3	4-9	0-2098559-4	4-43
0-1488992-7	4-41	0-1718477-1	4-9	0-2098559-5	4-44
0-1488992-8	4-41	0-1718477-3	4-9	0-2098559-6	4-44
0-1534594-1	4-5	0-1718758-1	4-6	0-2098559-7	4-44

Numerical Index

Part Number	Page	Part Number	Page	Part Number	Page
0-2098559-8	4-44	1-1564559-2	4-28, 4-29	2-1670921-1	4-33
0-2098582-1	4-8		4-31	5-1418758-1	4-6
0-2098641-1	4-39	1-1670915-1	4-19	5-1418758-2	4-6
0-2098641-2	4-39	1-1670916-1	4-20, 4-21	5-1418758-3	4-6
0-2098641-3	4-39		4-22	5-1418760-1	4-6
0-2141114-1	4-7	1-1670917-1	4-25, 4-26	5-1418760-2	4-6
0-2141114-2	4-7		4-27	5-1418760-3	4-6
0-2141114-3	4-7	1-1670917-5	4-25	7-1452653-1	4-4
0-2141116-1	4-7	1-1670918-1	4-29, 4-30	7-1452653-2	4-4
0-2141116-2	4-7		4-31	7-1452653-3	4-4
0-2141116-3	4-7	1-1670919-1	4-36, 4-37	7-1452656-1	4-4
0-2141861-1	4-4	1-1670921-1	4-33, 4-34	7-1452656-2	4-4
0-2141861-2	4-4	1-1703494-1	4-23, 4-25	7-1452656-3	4-4
0-2141864-1	4-6		4-26	7-1452659-1	4-4
0-2141864-2	4-6	1-1703494-2	4-23, 4-25	7-1452659-2	4-4
0-2141866-1	4-6		4-27	7-1452659-3	4-4
0-2141866-2	4-6	1-1703498-1	4-16, 4-20	7-1452665-1	4-4
0-2141868-1	4-6		4-21	7-1452665-2	4-4
0-2141868-2	4-6	1-1703498-2	4-16, 4-20	7-1452665-3	4-4
0-2141870-1	4-6		4-22	7-1452668-1	4-4
0-2141870-2	4-6	1-1718643-1	4-16	7-1452668-2	4-4
0-2141970-1	4-4	1-1718644-1	4-23	7-1452668-3	4-4
0-2141970-2	4-4	1-1718644-5	4-23	7-1452671-1	4-4
0-2141972-1	4-4	1-1718645-1	4-28	7-1452671-2	4-4
0-2141972-2	4-4	1-1718646-1	4-35	7-1452671-3	4-4
0-2141974-1	4-4	1-1718806-1	4-32		
0-2141974-2	4-4	1-1718811-1	4-17		
0-2177770-1	4-13	1-1718812-1	4-24		
0-2177770-3	4-13	1-1823716-1	4-11		
0-2177771-1	4-13	1-1924067-1	4-38		
0-2177771-3	4-13	1-1924067-2	4-38		
1-1456426-1	4-42	1-1924067-3	4-38		
1-1456426-2	4-42	1-1924067-4	4-39		
1-1456426-3	4-42	1-1924067-5	4-39		
1-1456426-4	4-42	1-1924067-6	4-39		
1-1456426-5	4-42	1-2141324-1	4-35, 4-36		
1-1456426-6	4-42		4-37		
1-1456426-7	4-42	1-2141520-1	4-32, 4-33		
1-1456426-8	4-42		4-34		
1-1564440-1	4-18	2-1670916-1	4-20		
1-1564559-1	4-28, 4-29	2-1670917-1	4-25		
	4-30	2-1670918-1	4-29		

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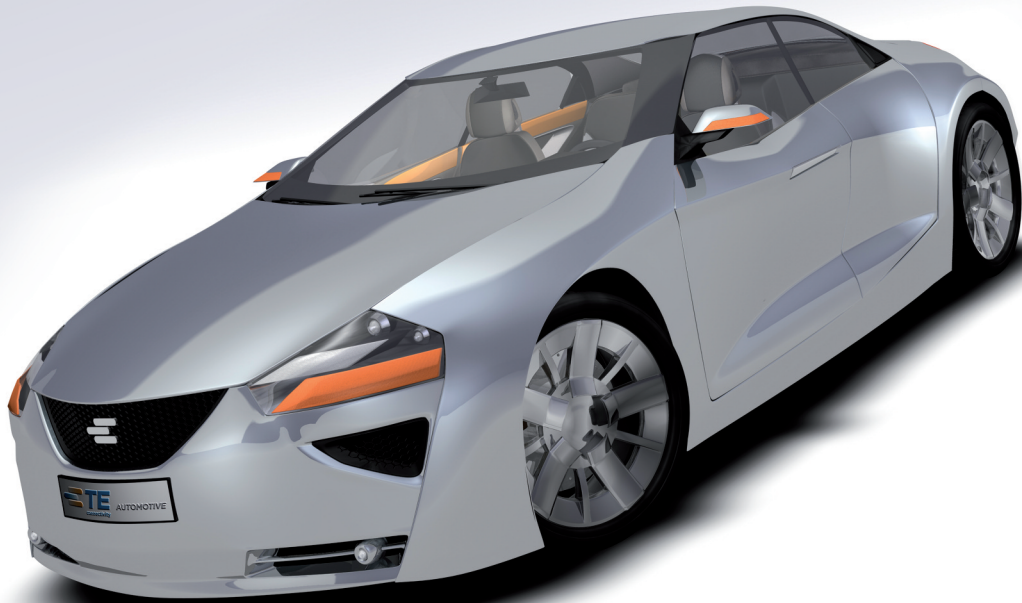
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