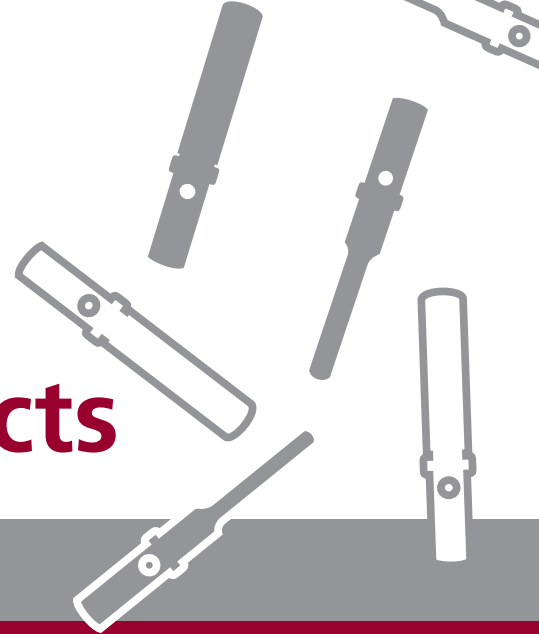


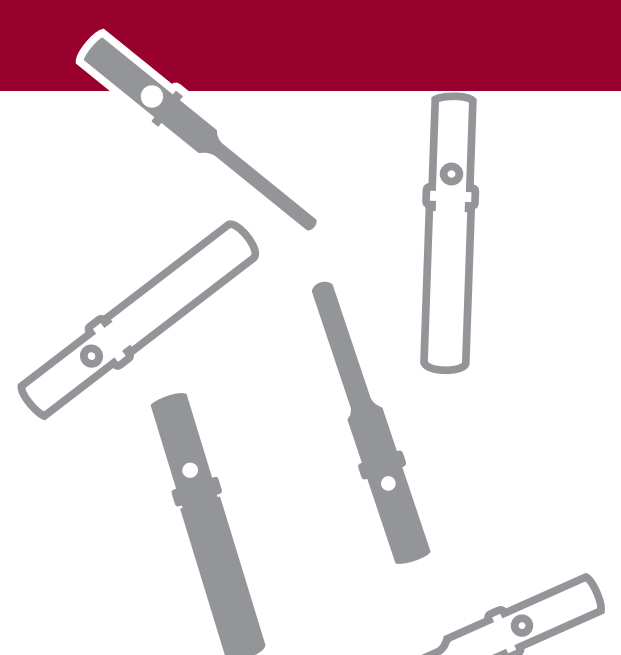


Common Contacts



Contents

Common Contact System Overview	PG 118	Crimping	PG 126
Features & Benefits	PG 119	Crimp Inspection	PG 127
Performance Specifications	PG 120	Accessories	PG 128-129
Wire Sealing Ranges	PG 121-122	How To Instructions	PG 129-130
Solid Contacts	PG 123		
Stamped & Formed Contacts	PG 124		
PCB Pins	PG 125		





Common Contact System Overview

The word “common” is used to describe the Deutsch contact system because the contacts are used interchangeably in many Deutsch Industrial connectors and across most connector series. The common contact system improves performance, reliability, and maintainability by reducing changes in the assembly of the wire harness. The use of a common contact system eliminates many of the failures reported in harnesses where hundreds of different terminations are used.

■ Contacts

Deutsch offers two styles of contacts, stamped & formed and solid. Both contact types use a crimp style termination, eliminating the need for solder. All Deutsch Industrial terminals protect the split socket tines. The only variations in the Deutsch Common Contact System are those dictated by wire gauge and contact style.

Solid

The solid contacts are designed for use with larger wire size and heavy duty applications. Solid contacts are manufactured using a cold heading process with solid copper alloy wire and are available with either a nickel or gold plating finish.

Solid contacts terminate wire from 6 AWG to 20 AWG (13 - 0.5mm²) and are available in 5 sizes each of the pin and socket. The applicable contact is determined by the size of the conductor only. The solid style contacts are sold in bulk.

■ Design Materials and Selection

Deutsch engineers combined superior material selection with mechanical CAD/CAM designs to create stamped & formed contacts that exceed the demands of today’s industrial electrical systems.

To provide exceptional durability, performance, corrosion, and oxidation resistance, contacts are made from copper alloys, finished with nickel, tin, or gold plating. To guarantee resistance to crimp relaxation and displacement of metal, the contacts are designed with the conductor wings formed in the direction of the crimp to achieve gas tight crimps that eliminate the need for solder. All Deutsch socket tines are protected to provide controlled contact pressure for maximum conductivity with minimum surface wear.

Stamped & Formed

Deutsch stamped & formed contacts are designed for use where wire termination costs are of primary concern without sacrificing reliability of electrical circuits. The stamped & formed contacts are made on a precision stamping machine using flat strip stock, then a durable and corrosion proof nickel, tin, or optional gold plating is applied.

The stamped & formed style contacts terminate wire from 10 AWG to 22 AWG (6.0 - 0.35mm²) and are available in multiple sizes to accommodate a wide range of wire insulation. The specific contact is determined by the outside diameter of wire insulation and conductor size. The stamped & formed contacts are sold on reels.

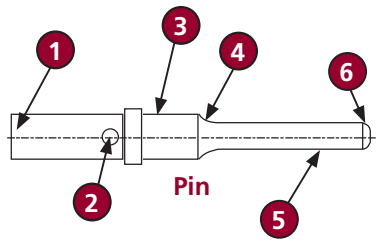


In keeping with the Deutsch commitment to total quality, all stamped & formed contacts are manufactured using statistical process controls and are subjected to extensive rigorous testing programs, in the lab and in actual field performance.

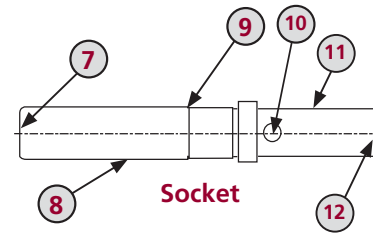




Solid Contact Features

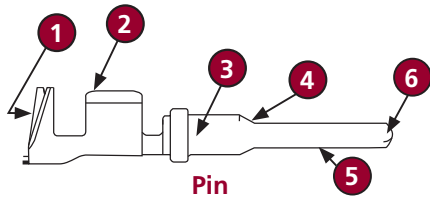


- 1 Wire lead-in chamfer to aid wire insertion
- 2 Inspection hole
- 3 Maximum diameter to prevent bending
- 4 Radius for added strength
- 5 Smooth finish to minimize mating forces
- 6 Radius for smooth engagement and prevent misalignment

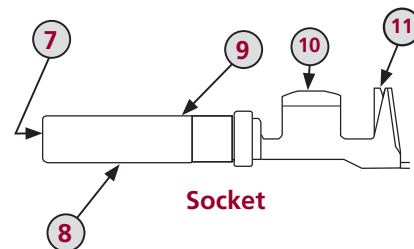


- 7 Closed entry to prevent probe damage and prevent misalignment, chamfered lead-in to prevent misalignment
- 8 Durable tines for superior electrical performance
- 9 Stainless steel sleeve for maximum socket tine protection (except sleeveless sockets)
- 10 Inspection hole
- 11 Crimp barrel
- 12 Wire lead-in chamfer to aid wire insertion

Stamped & Formed Contact Features



- 1 Insulation wings for additional wire support
- 2 Conductor wings for minimal contact resistance
- 3 Maximum diameter to prevent bending
- 4 Chamfered for added strength
- 5 Smooth finish to minimize mating forces
- 6 Radius for smooth engagement and prevent misalignment



- 7 Closed entry to prevent probe damage and prevent misalignment, chamfered lead-in to prevent misalignment
- 8 Durable tines for superior electrical performance
- 9 Stainless steel sleeve for maximum socket tine protection (except sleeveless sockets)
- 10 Conductor wings for minimal contact resistance
- 11 Insulation wings for additional wire support

Benefits of Deutsch Contacts

- Solid shoulder for high tensile strength pin retention.
- Nickel plating standard for corrosion resistance.
- Solder is not recommended, eliminating flux corrosion.
- No retention tangs required, eliminating contact damage.



■ Performance Specifications

Deutsch can only warrant electrical performance when proper parts, procedures, and tooling are used.

Durability

No electrical or mechanical defects after 100 cycles of engagement and disengagement.

Current Rating (Contact current rating @ 125° C continuous)

Contact Size	Max. Current
Size 20	7.5 amps
Size 16	13 amps
Size 12	25 amps
Size 8	60 amps
Size 4	100 amps

Crimp Tensile Strength (Solid)

Contact Size	Tensile Strength
Size 20	20 lbs
Size 16	25 lbs
Size 12	70 lbs
Size 8	90 lbs
Size 4	300 lbs

Crimp Tensile Strength (Stamped & Formed)

Contact Size	Tensile Strength
Size 20	20 lbs
Size 16	25 lbs
Size 12	70 lbs

Contact Retention (Solid and Stamped & Formed)

Contacts withstand a minimum load of:

- 20 lbs (89 N) for size 20
- 25 lbs (111 N) for size 16
- 30 lbs (133 N) for size 12
- 35 lbs (156 N) for size 8
- 35 lbs (156 N) for size 4



A crimp tensile test easily and rapidly identifies a proper crimp.



Contact Millivolt Drop

Contact Size	Test Current Amps	Millivolt Drop Solids	Millivolt Drop* S&F
20	7.5	60	100
16	13	60	100
12	25	60	100
8	60	60	N/A
4	100	60	N/A

* Less drop through wire

■ Wire Sealing Ranges

Dimensions are for reference only.

HD30, HDP20, DRC Series Rear Grommet Sealing Ranges

Contact Size	Normal Seal N-Seal	Thin Seal T-Seal	T-Seal Modified*	Extra Thin Seal E-Seal	E-Seal Modified*
4 4 AWG (21.0mm ²)	.311-.420 (7.90-10.67)	N/A	N/A	N/A	N/A
6 6 AWG (13.0mm ²)	.280-.292 (7.11-7.42)	.261-.292 (6.63-7.42)	N/A	.261-.292 (6.63-7.42)	N/A
8 8-10 AWG (8.0-5.0mm ²)	.190-.240 (4.83-6.10)	.170-.240 (4.32-6.10)	N/A	.135-.220 (3.43-5.59)	N/A
12 10-14 AWG (5.0-2.0mm ²)	.134-.170 (3.40-4.32)	.113-.170 (2.87-4.32)	N/A	.097-.158 (2.46-4.01)	.097-.158 (2.46-4.01)
16 14-20 AWG (2.0-0.5mm ²)	.100-.134 (2.54-3.40)	.088-.134 (2.24-3.68)	.088-.106 (2.24-2.69)	.053-.120 (1.35-3.05)	.053-.103 (1.35-2.62)
20 16-20 AWG (1.0-0.5mm ²)	.040-.095 (1.02-2.41)	.040-.095 (1.02-2.41)	N/A	.040-.095 (1.02-2.41)	.040-.083 (1.01-2.10)

*Deutsch cavity arrangements 24-29, 24-47, and 24-31 are only available with the modified seals. Arrangement 24-31 Modified E Seal = .053-.106. Please see drawings 0425-016-0000 and 0425-021-0000 for full specifications.

DT, DTM, DTP Series Rear Grommet Sealing Ranges

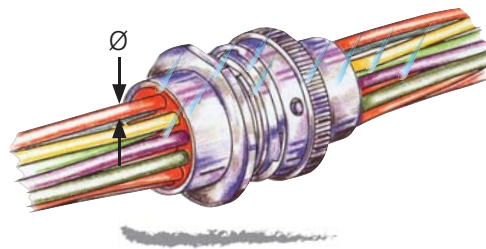
Contact Size	Standard Seal	Extra Thin Seal E-Seal
12 10-14 AWG (5.0-2.0mm ²)	.134-.170 (3.40-4.32)	N/A
16 14-20 AWG (2.0-0.5mm ²)	.100-.134 (2.54-3.40)	.053-.120 (1.35-3.05)
20 16-20 AWG (1.0-0.5mm ²)	.100-.134 (2.54-3.40)	.053-.120 (1.35-3.05)

WT Series Rear Grommet Sealing Ranges

Contact Size	Standard Seal
4 6 AWG (13.0mm ²)	.280-.292 (7.11-7.42)
16 14-20 AWG (2.0-0.5mm ²)	.065-.109 (1.65-2.77)



Proper wire outside diameters assure water tight seals.





■ Wire Sealing Ranges (continued)

Dimensions are for reference only.

AEC Series Rear Grommet Sealing Ranges

Contact Size	Standard Seal	Extra Thin Seal E-Seal
16 14-20 AWG (2.0-0.5mm ²)	.100-.134 (2.54-3.40)	.053-.120 (1.35-3.05)

HD10 Series Rear Grommet Sealing Ranges

Contact Size	Standard Seal	Extra Thin Seal E-Seal
4 6 AWG (13.0mm ²)	.280-.292 (7.11-7.42)	N/A
12 10-14 AWG (5.0-2.0mm ²)	.134-.170 (3.40-4.32)	N/A
16 14-20 AWG (2.0-0.5mm ²)	.100-.134 (2.54-3.40)	.053-.120 (1.35-3.05)

STRIKE Series Sealing Ranges

Contact Size	Standard Seal
12 12-14 AWG (3.0-2.0mm ²)	.077-.146 (1.96-3.71)
16 14-20 AWG (2.0-0.5mm ²)	.047-.118 (1.20-3.00)
20 16-20 AWG (1.0-0.5mm ²)	.064-.094 (1.55-2.40)

DRB Series Rear Grommet Sealing Ranges

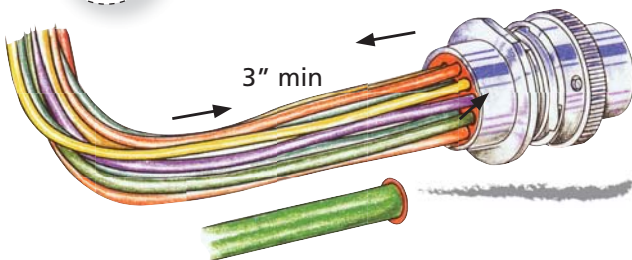
Contact Size	Extra Thin Seal E-Seal
4 6 AWG (13.0mm ²)	.261-.292 (6.63-7.42)
8 8-10 AWG (8.0-5.0mm ²)	.135-.220 (3.43-5.59)
12 10-14 AWG (5.0-2.0mm ²)	.097-.158 (2.46-4.01)
16 14-20 AWG (2.0-0.5mm ²)	.053-.120 (1.35-3.05)
20 16-20 AWG (1.0-0.5mm ²)	.053-.120 (1.35-3.05)

Quick Connect Series Rear Grommet Sealing Ranges

Contact Size	Standard Seal
16 16-20 AWG	.065-.109 (1.65-2.77)
20 20-24 AWG	.040-.083 (1.02-2.11)
22 22-26 AWG	.030-.054 (.76-1.37)



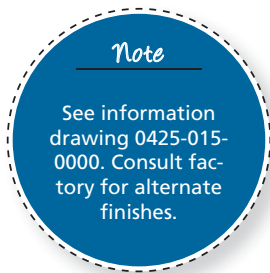
Proper wire routing assures water tight seal performance.



■ Solid Contacts

Size	Solid Contact Part Numbers		Wire Size AWG (mm ²)	Recommended Strip Length Inches (mm)	Min. Contact Retention	Ref Crimp Tensile Lbs. (N)	Max Rated Amps at 125° Continuous
	Pin	Socket					
22	6860-201-22278	6862-201-22278	22-26	.160-.190 (4.06-4.83)	10 (44)	---	5
20	0460-202-20**	0462-201-20**	20 (0.50)	.156-.218 (3.96-5.54)	20 (89)	20 (89)	7.5
20	0460-010-20**	0462-005-20**	16-18 (1.0-0.75)	.156-.218 (3.96-5.54)	20 (89)	20 (89)	7.5
20	6860-201-20278	6862-201-20278	20-24	.230-.260 (5.84-6.60)	15 (67)	---	7.5
16	0460-202-16**	0462-201-16**	16-20 (1.0-0.50)	.250-.312 (6.35-7.92)	25 (111)	35-20 (156-89)	13
16	0460-215-16**	0462-209-16**	14 (2.0)	.250-.312 (6.35-7.92)	25 (111)	70 (311)	13
16	6860-201-16278	6862-201-16278	16-20	.230-.260 (5.84-6.60)	25 (111)	---	25
12	0460-204-12**	0462-203-12**	12-14 (3.0-2.0)	.222-.284 (5.64-7.21)	30 (134)	75-70 (334-311)	25
8	0460-204-08**	0462-203-08**	8-10 (8.0-5.0)	.430-.492 (10.92-12.50)	35 (156)	125-90 (556-400)	60
4	0460-204-04**	0462-203-04**	6 (13.0)	.430-.492 (10.92-12.50)	35 (156)	300 (1334)	100
4	5960-203-04**	5962-203-04**	4 (21.0)	.430-.492 (10.92-12.50)	35 (156)	300 (1334)	100

** = Plating Codes. Consult factory for custom finish needs.



Solid Contact Plating Codes

Part Number Suffix (**)	Material
31	Gold
90	Nickel (Size 4 pin only)
141	Nickel



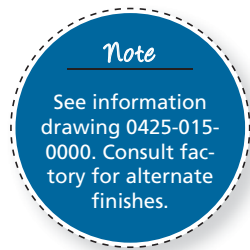
■ Stamped & Formed Contacts

Size	Stamped & Formed Contact Part Numbers		Carrier Strip Identification	Wire Size AWG (mm ²)	Wire Insulation O.D. Range	Recommended Strip Length Inches (mm)	Min. Contact Retention	Max Rated Amps at 125° Continuous
	Pin	Socket						
20	1060-20-01**	1062-20-01**	20-01	16-22 (1.5-0.35)	.075-.125 (1.91-3.15)	.150-.200 (3.81-5.08)	20 (89)	7.5
20	1060-20-02**	1062-20-02**	20-02	16-22 (1.5-0.35)	.051-.085 (1.30-2.16)	.150-.200 (3.81-5.08)	20 (89)	7.5
20	N/A	1062-20-03**	20-03	16-22 (1.5-0.35)	.075-.125 (1.91-3.15)	.150-.200 (3.81-5.08)	20 (89)	7.5
20	1060-20-06**	1062-20-06**	20-06	14-16 (2.5-1.0)	.075-.125 (1.91-3.15)	.150-.200 (3.81-5.08)	20 (89)	7.5
16	1060-14-01**	1062-14-01**	14-16	14-18 (2.0-.75)	.095-.150 (2.41-3.81)	.150-.200 (3.81-5.08)	25 (111)	13
16	1060-14-10**	1062-14-10**	14-16	14-16 (2.0-.75)	.095-.150 (2.41-3.81)	.150-.200 (3.81-5.08)	25 (111)	13
16	1060-16-01**	1062-16-01**	16-18	14-18 (2.0-.75)	.075-.140 (1.91-3.55)	.150-.200 (3.81-5.08)	25 (111)	13
16	1060-16-06**	1062-16-06**	0.5-1.0	16-20 (1.0-.50)	.055-.100 (1.40-2.54)	.150-.200 (3.81-5.08)	25 (111)	13
16	1060-16-07**	1062-16-07**	0.75-2.0	14-18 (2.0-.75)	.075-.140 (1.91-3.55)	.150-.200 (3.81-5.08)	25 (111)	13
16	1060-16-09**	1062-16-09**	16-18	14-18 (2.0-.75)	.075-.140 (1.91-3.55)	.150-.200 (3.81-5.08)	25 (111)	13
16	1060-16-12**	1062-16-12**	1.0-2.5	12-16 (2.5-1.0)	.075-.140 (1.91-3.55)	.175-.225 (4.45-5.72)	25 (111)	13
16	N/A	1062-16-14**	14-16	12-16 (2.5-1.0)	.075-.140 (1.91-3.55)	.175-.225 (4.45-5.72)	25 (111)	13
12	1060-12-01**	1062-12-01**	12-14	12-14 (4.0-2.0)	.113-.176 (2.87-4.47)	.225-.275 (5.72-6.99)	30 (134)	25
12	1060-12-02**	1062-12-02**	10-12	10-12 (6.0-4.0)	.140-.204 (3.56-5.18)	.225-.275 (5.72-6.99)	30 (134)	25

** = Plating Codes. Consult factory for custom finish needs.

S&F Contact Plating Codes

Part Number Suffix (**)	Material
22	Nickel
44	Gold
66	Tin/Nickel
77	Tin
88	Selective Gold





PCB Pins

Deutsch Industrial offers a complete line of straight reduced diameter extended pins that may be installed in any of the Deutsch family of connectors. The use of removable contacts provides design flexibility and a low cost alternative to meet application needs. These solid copper alloy pins may be specified in various platings and assembled in HD30, HDP20, HD10, DRC, or DT receptacles.

Material

Copper alloy

Plating

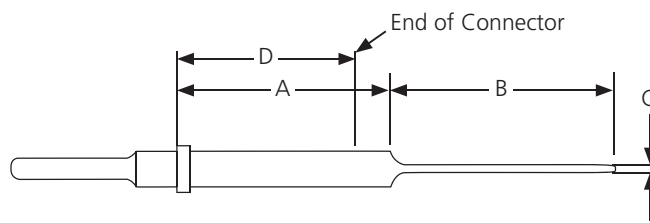
31: Gold

90: Tin

141: Nickel

PCB Mounting

Consult factory for PCB mounting details and pin positions.



Part Number	A	B	C
0460-208-16**	1.300 (33.02)	.248 (6.30)	.025 (.64)
0460-229-16**	.545 (13.84)	.248 (6.30)	.025 (.64)
0460-238-12**	.714 (18.14)	.549 (13.94)	.043 (1.09)
0460-241-16**	1.305 (33.15)	.160 (4.06)	.040 (1.02)
0460-245-16**	.976 (24.79)	.400 (10.16)	.041 (1.04)
0460-245-12**	1.024 (26.01)	.500 (12.70)	.041 (1.04)
0460-257-16**	.793 (20.14)	.248 (6.30)	.025 (.64)
0460-208-12**	1.305 (33.15)	.248 (6.30)	.025 (.64)
0460-263-16**	1.305 (33.15)	.248 (6.30)	.093 (2.36)

Dimensions are for reference only.

Product	D
HD30/HDP20	.939 (23.85)
HD10	.925 (23.50)
DT	.777 (19.74)
DT04-2P	.677 (17.20)
DT04-3P	.677 (17.20)
DRC	1.063 (27.00)

Note

"D" is equal to the distance from the contact shoulder to the end of the connector.



HD10 Series



HDP20 Series



HD30 Series



Crimping

Crimping is defined as the act of joining a conductor to a pin or socket contact using a mechanical tool to compress and displace metal. In a good crimp joint, there is a mutual flow of metal, causing a symmetrical distortion of wire strands and contact material. A proper crimp will establish mechanical strength and excellent electrical conductivity.

■ Crimping Configurations

Stamped & formed contacts use a folded type of crimp (Fig. 1) while solid contacts use a 1, 2, or 4 indenter crimp (Fig. 2). In both styles of crimps, the wire strands and the contact material are formed together in a solid mass creating a reduction of the wire strands area. The reduced wire strand area creates a minimum of voids allowing for excellent conductivity. Crimping may be accomplished with hand tools or power tools.

Stamped & Formed Style



Cross-Section Across Axis

Figure 1

Solid Style



Indenter Crimp
Cross-Section Across Axis

Figure 2

■ Benefits of Crimped Contacts

Mechanically crimping contacts is the dominant wire termination method, for some very good reasons:

1. With smaller wire, the crimp is as strong as the wire itself.
2. The joint can be visually inspected. Viewing the wire through an inspection hole in the contact makes inspection quick and easy, both by the operator and by the inspector.
3. Plating thickness is not restricted, as in solder joints, so better corrosion resistance and contact reliability are achieved.
4. Crimping can be done anywhere, without special preparation. Terminations are replaced or modified in the field exactly the same as in the shop, using the same tools and the same techniques, and with the same ease of operation and certainty of results.
5. Total installed and maintenance costs are lower.



Solder should not be added to Deutsch terminals.



Note

The use of dielectric grease is not recommended.



■ Crimp Inspection

Crimping tools provide lower total installation and maintenance costs. However, controls are required to ensure that the proper crimp tools designed for the type and size contact are used, the pin or socket is properly inserted into the tool, the wire insulation is stripped properly, and the wire fully inserts into the contact.

Note

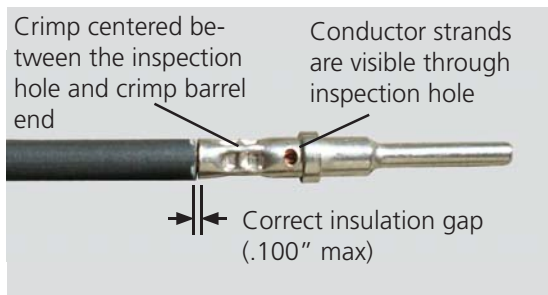
For more detailed crimp dimensions please request a factory drawing. For stamped & formed style see 0425-203-0000. For solid style see 0425-205-0000.

When a crimp is completed, correct termination can be visually inspected. The inspector should check for:

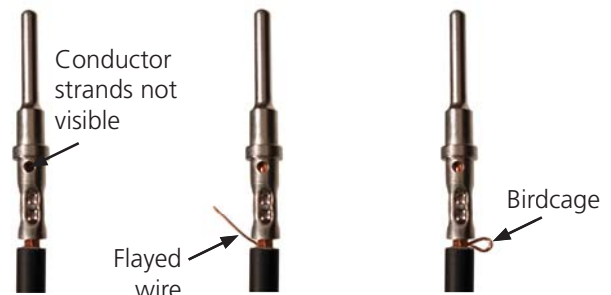
- The removed insulation should expose a conductor length that will pass beyond the inspection hole in the contact and still reveal .100" (2.54) max. of conductor between the contact and the insulation on the wire.
- Wire strands intact.
- All wire strands enter the contact barrel.
- Wire inserted to the proper depth in the contact.

When the correct crimp tool and process are used, a good termination is assured.

■ Solid Contact Crimp

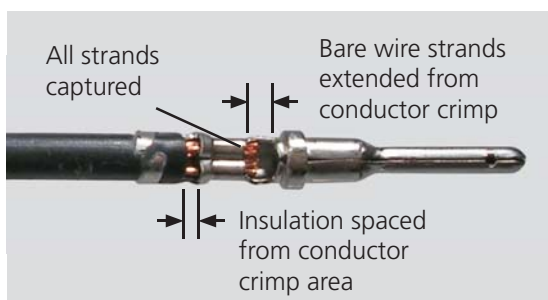


Acceptable Crimp

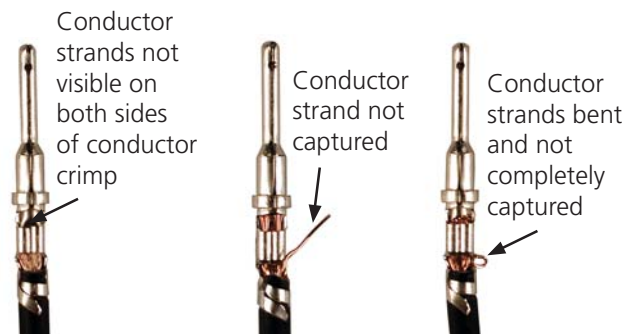


Unacceptable Crimps

■ Stamped & Formed Contact Crimp



Acceptable Crimp



Unacceptable Crimps



Accessories

The Deutsch Common Contact System is designed to be a reliable easy-to-use combination of pins and sockets. Additional accessories are available to aid in the design flexibility and sealing requirements of applications. Accessory items such as keying pins and sealing plugs assist in maintaining an environmental seal and preventing mis-mating.

■ Keying Pins

Keying pins are solid plastic rods used to prevent mis-mating of like connectors in close proximity. Applicable Deutsch product lines include HD10, HD30, HDP20, DT, and DTM Series.

Keying pins are inserted into the retention fingers of an empty socket cavity. Once installed, the keying pin blocks a mating contact pin from being inserted. The contact pin will be blocked before the coupling device mates the connectors, preventing the mis-mating of like connectors. Proper usage requires that the corresponding mating pin be omitted and a sealing plug is inserted in the rear cavity of the mating connector. Individual applications will vary, and testing should be done to determine the best pattern arrangement to prevent improper connector mating.



Part Number	Contact Size	Color
0413-216-2005	20	Red
0413-215-1605	16	White
0413-214-1205	12	Yellow

Note
Multiple keying pins may be required to prevent unintentional forced mating.

■ Contact Crimp Sleeve Reducer

Deutsch offers a crimp sleeve reducer to allow size 4 solid contacts to accept 8-10 AWG wire. When populating a connector using a contact with a reducer sleeve, be sure the insert seal penetrates the rear grommet. The use of the crimp sleeve reducer requires no extra crimp tools and provides an easy transition and increased flexibility.



Insert Seal
0410-241-0406








Crimp Sleeve
0421-203-04141

Note
TXL wire insulation with 10 AWG wire is not recommended because it may not provide an environmental seal against the insert seal.

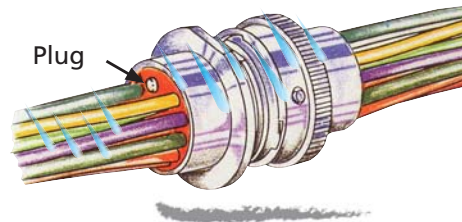
■ Sealing Plugs

Open cavities provide pathways for contaminants to enter the connectors. To ensure the integrity of the seal, any unused cavity must be filled with the appropriate size sealing plug.

Sealing Plug	Part Number	Contact Size	Wire Gauge Range
	114019	Size 4	6 AWG
	114018	Size 8	8-10 AWG
	114017	Size 12-16	12-20 AWG
	0413-217-1605 (locking sealing plug)	Size 16	14-20 AWG
	0413-204-2005	Size 20	20 AWG

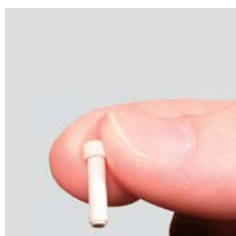


Sealing plugs are used to seal the connector when all the cavities are not used by wires.



How To Instructions

■ Sealing Plug Installation



Step 1: Holding the sealing plug with large diameter end away from the connector, gently apply downward pressure to force the sealing plug into the cavity.



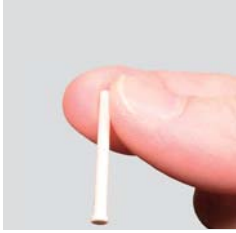
Step 2: With perpendicular motion, apply downward pressure to the large diameter end of the sealing plug.



Step 3: Apply pressure until sealing plug is forced to stop by contact with rear grommet. Visually inspect the sealing plug to ensure it is flush with cavity opening.



■ Locking Sealing Plug Installation



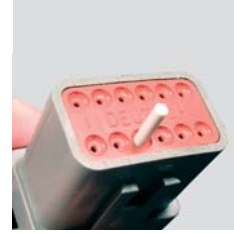
Step 1:

Holding the sealing plug with large diameter end towards the connector, gently apply downward pressure to force the sealing plug into the cavity.



Step 2:

With perpendicular motion, apply downward pressure to the small diameter end of the sealing plug.



Step 3:

Apply pressure until sealing plug locks into place. A slight tug on the sealing plug will ensure it is locked into place.

■ Contact Crimp Sleeve Reducer Assembly



Step 1:

Place crimp sleeve reducer into contact barrel.



Step 2:

Slide insert seal onto 8-10 AWG wire stopping just at the edge of the stripped insulation.



Step 3:

Insert wire into barrel of contact and crimp using designated tooling.



Step 4:

Ensure seal is not distorted.