

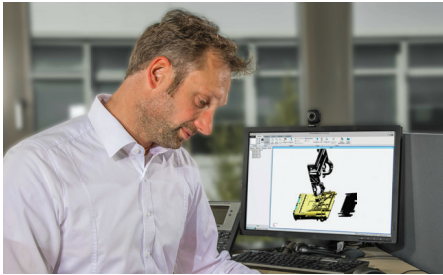


DEUTSCH HD10 CONNECTOR SERIES

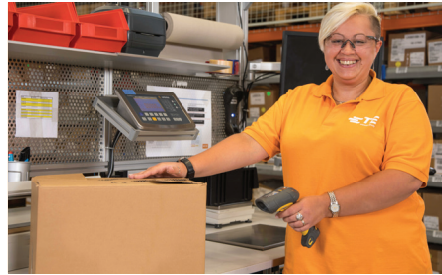
Terminals and Connectors



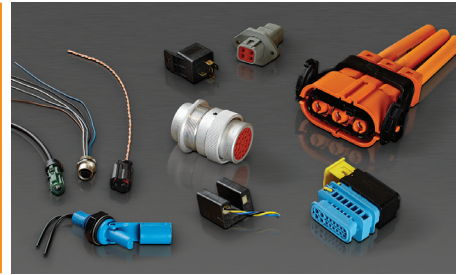
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**2,000+
Employees**



**10,000+
Customers**



**20,000+
Different Parts**

Years ago, tractors, construction equipment, trucks, and boats had simple electrical systems that might have included electrical starting and a basic lighting package. Today, ECUs, joysticks, fuel-efficient engines, LED lights, and CAN systems are standard equipment. The need to protect sensitive electrical systems from vibration, moisture, dust, dirt, salt, and airborne particles has never been greater. TE Industrial & Commercial Transportation is a leader in supporting today's increasingly complex and sophisticated equipment and applications.

Our comprehensive line of products includes an unparalleled portfolio of rugged sensors, terminals, connectors, relays, and hybrid electric mobility solutions. These solutions are designed to withstand the harshest environmental conditions and to help vehicles operate safer, cleaner, and smarter.

Our solutions adapt to virtually any **harsh environment application**, including:



Motors and
Gearboxes



ABS/EBS
Brake Units



Telematics
Units



Sensors



Wire-To-Wire
Coupling at
the Chassis



Infotainment
Applications

MARKETS WE SERVE



ON-HIGHWAY



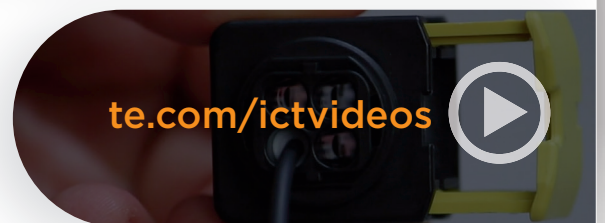
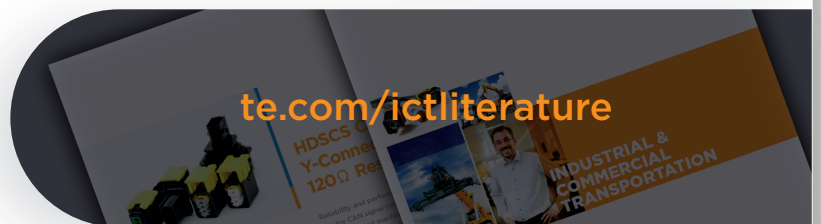
OFF-HIGHWAY



RECREATIONAL
TRANSPORTATION

ONLINE RESOURCES

To learn more about TE Connectivity Industrial & Commercial Transportation, its products, and their corresponding documents and videos, please check out the following pages on TE.com:



PRODUCT INFORMATION CENTER (PIC)

You can rely on TE Connectivity's PIC team to provide support for answers to your general information or technical questions in an efficient and effective manner.

Connect with our PIC staff at:

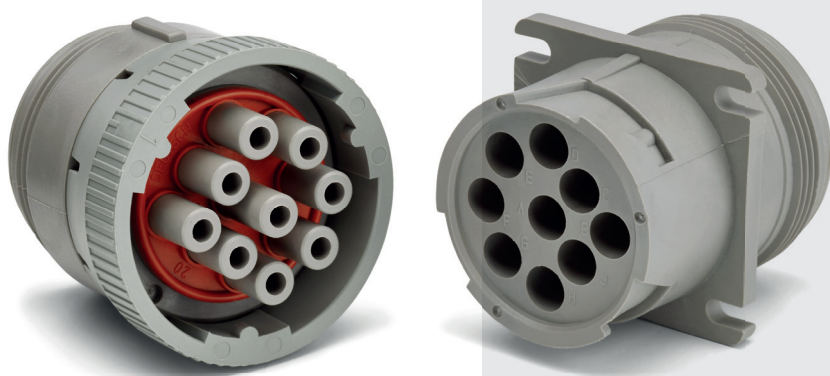
te.com/support





DEUTSCH HD10 CONNECTOR SERIES

The HD10 series is an environmentally sealed, thermoplastic, and cylindrical connector series. With arrangements from 3 to 9 cavities, HD10 connectors accept size 4, 12, or 16 contacts and are available either in-line or flanged. HD10 connectors are heavily used for diagnostic applications and are available with or without a coupling ring.



DEUTSCH HD10 Series

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DEUTSCH HD10 CONNECTOR SERIES

FEATURES & BENEFITS

- The HD10 connector series is a robust circular connection system with quick connect/disconnect bayonet coupling.
- Available in seven contact arrangements and up to nine positions, offering options for power and signal circuits.
- Uses the DEUTSCH Common Contact System - A unique system of interchangeable and intermatable contacts that can be used in all DEUTSCH connectors.
- Rated at 13 to 60 Amps and 250 VAC for 20 to 6 AWG (0.50-13.00 mm²)
- Optional jam nuts and gaskets are available for mounting. Backshells, boots, strain reliefs, and dust caps are available to enhance design flexibility and meet application specific needs.
- The nine position connector is the standard SAE-J1939 diagnostic plug interface.

KEY INDUSTRIES

DEUTSCH HD10 products can be utilized in the truck, bus, construction, agriculture, and special vehicles industries.



Truck



Bus



Construction



Agriculture



Special

APPLICATIONS

DEUTSCH HD10 products can be utilized in the following applications:



Motors and Gearboxes



ABS/EBS Brake Units



Sensors, Displays and Devices



Onboard Diagnostics



Wire-To-Wire



Telematics and Infotainment Applications

PRODUCT DOCUMENTATION

Additional documentation is available for assistance with DEUTSCH HD10 products.

The following TE Connectivity document numbers may be helpful:

[108-151016 \(Product Specification\)](#) [501-151034 \(HD10 Qualification Test Report \)](#)



PERFORMANCE SPECIFICATIONS

Temperature	Operating at temperatures -55°C to +125°C
Durability	No electrical or mechanical defects after 100 cycles of engagement and disengagement.
Vibration	No unlocking or unmating and exhibits no mechanical or physical damage after sinusoidal vibration levels of 20 G's at 10 to 2000 Hz in each of the three mutually perpendicular planes. No electrical discontinuities longer than 1 microsecond.
Fluid Resistance	Connectors show no damage when exposed to most fluids used in industrial applications.
Insulation Resistance	1000 megohms minimum at 25°C.
Immersion	IP68 rating
Moisture Resistance	Properly wired and mated connections will withstand immersion under three feet of water without loss of electronic qualities or leakage.
Dielectric Withstanding Voltage	Current leakage less than 2 milliamps at 1500 volts AC.
Thermal Cycle	No cracking, chipping or leaking after 20 test cycles from -55°C to +125°C.

MATERIAL SPECIFICATIONS

Grommet	Silicone rubber
Insert Retainer	Thermoplastic
Receptacle Interfacial Seal	Silicone rubber
Shell	Thermoplastic

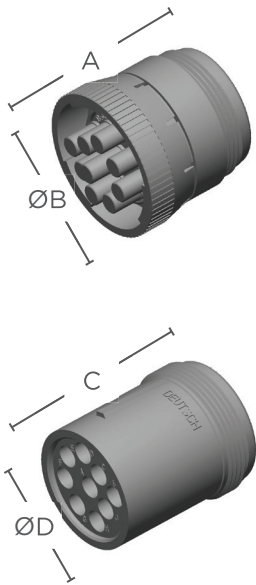


DEUTSCH HD10 PLUG AND RECEPTACLE

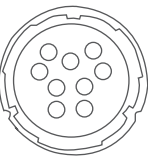
DIMENSIONS

	HD10 Plug		HD10 Receptacle	
Cavity	Overall Length A	Overall Height ØB	Overall Length C	Overall Height ØD
3	1.609 (40.87)	1.069 (27.15)	1.639 (41.63)	.851 (21.62)
4	1.639 (41.63)	1.595 (40.51)	1.639 (41.63)	1.281 (32.54)
5	1.609 (40.87)	1.218 (30.94)	1.639 (41.63)	1.001 (25.43)
6	1.619 (41.12)	1.453 (36.91)	1.639 (41.63)	1.141 (28.98)
9	1.609 (40.87)	1.593 (40.47)	1.639 (41.63)	1.281 (32.54)

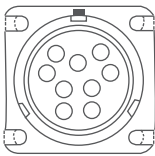
Dimensions are for reference only



CONNECTOR STYLES



Plug HD16

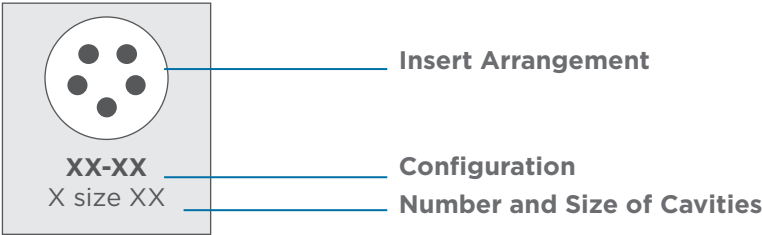


Square Flange
Receptacle HD10



In-line
Receptacle HD14

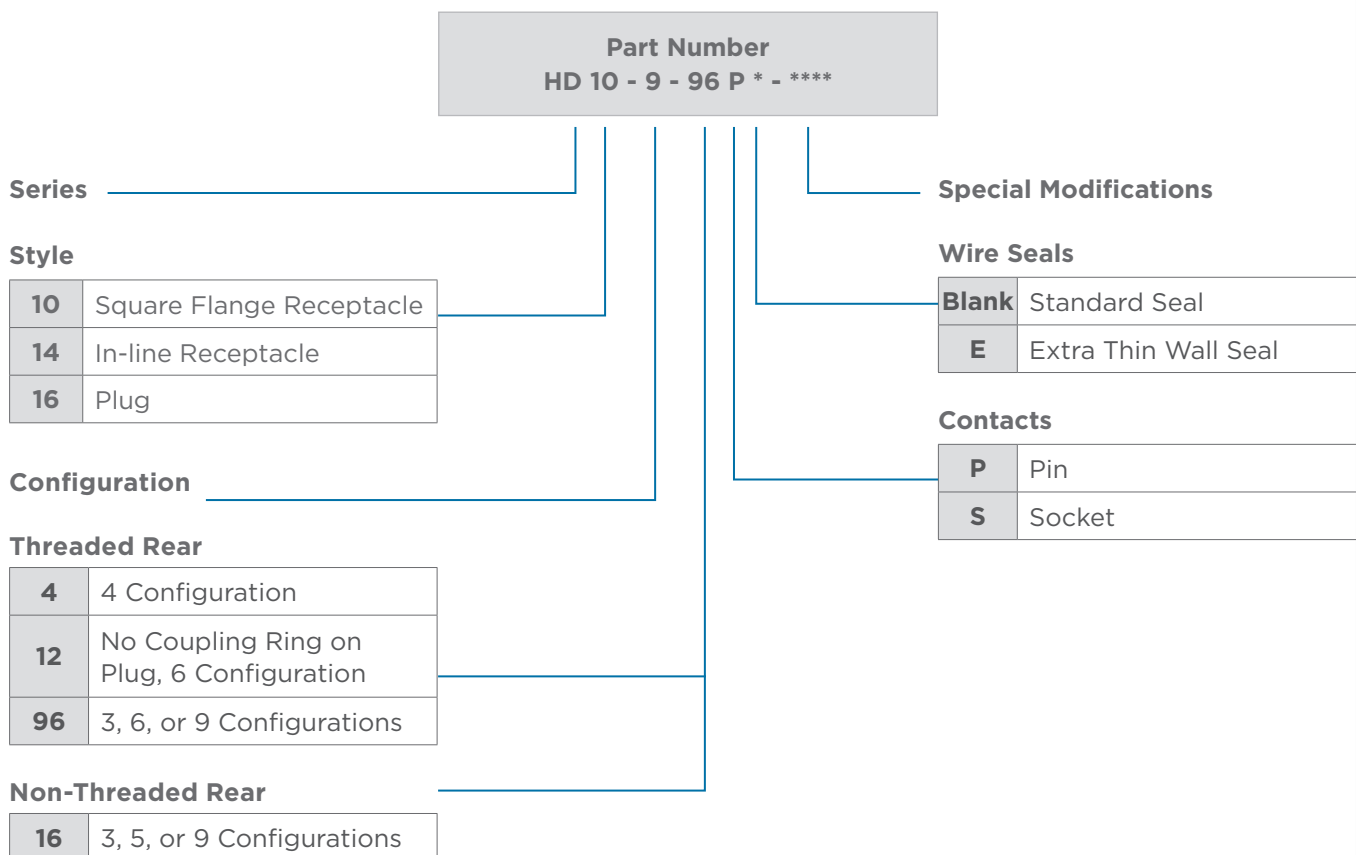
CONFIGURATIONS



*Also available in an "E" seal

DEUTSCH HD10 PLUG AND RECEPTACLE

PART NUMBERING SYSTEM



ORDERING INFORMATION

Here are some of the common part numbers in the HD10 series. Several additional connectors may be available.

Position	Contact Size	Rear Threads	Plug	Receptacle Inline	Receptacle Flange
3	16	No	HD16-3-16S	HD14-3-16P	-
		Yes	HD16-3-96S	HD14-3-96P	HD10-3-96P
4	4/16	Yes	HD16-4-4S	-	HD10-4-4P
5	16	No	HD16-5-16S	HD14-5-16P	HD10-5-16P
6	16	Yes	HD16-6-96S	HD14-6-96P	HD10-6-96P
6	12	Yes	HD16-6-12S-B010	HD14-6-12P	HD10-6-12P
9	16	No	HD16-9-16S	HD14-9-16P	HD10-9-16P
		Yes	HD16-9-96S	HD14-9-96P	HD10-9-96P
9	16	Yes	HD16-9-1939S	HD14-9-1939P	HD10-9-1939P

DEUTSCH HD10 SEALING RANGE

The wire sealing range is the recommended outside diameter of the wire insulation required to maintain an environmental seal in the rear connector cavities.

Contact Size	Standard Seal	Extra Thin Seal E-Seal
16 14-20 AWG (2.0-0.5mm ²)	.100-.150 (2.54-3.81)	.053-.120 (1.35-3.05)
12 10-14 AWG (5.0-2.0mm ²)	.134-.170 (3.40-4.32)	-
4 6 AWG (13.0mm ²)	.280-.292 (7.11-7.42)	-

DEUTSCH HD10 SPECIAL MODIFICATIONS

HD10 series connectors offer several modifications to enhance the design flexibility and meet application specific needs. Options include the addition of a coupling ring and connector body color, just to mention a few. By combining the HD10 series connectors with the available modifications and accessories, the design possibilities are increased.



B010 MODIFICATION

The B010 modification provides the addition of a coupling ring used for mating. The B010 modification is only available on the HD16-6-12S-B010 connector.



E004 MODIFICATION

The E004 modification changes the HD10 series connector from the standard gray to a black connector body.



J1939 MODIFICATIONS (BP03, P080)

The P080 modification changes the HD10 series connector body color from the standard gray to green and meets the J1939 Type II requirements. The BP03 modification is similar to the P080 modification, but features a panel mount.



N005 MODIFICATION

The N005 modification is an HD10 series receptacle with molded-in, straight PCB pins.

DEUTSCH HD10 ACCESSORIES

Several accessory items are available to complement HD10 series connectors including boots, backshells, gaskets, and protective caps. Accessory items cover a wide array of design requirements such as assisting with mounting, providing additional protection, and offering enhanced aesthetics.

BACKSHELL

DEUTSCH HD10 series backshells are designed to screw onto all threaded HD10 connectors. Rated for temperatures from -40°C to +134°C, the rigid, durable backshells offer a high level of protection, provide strain relief, and improve aesthetics.



Connector Part Number	Cable Diameter	Backshell Part Number	Compression Nut Part Number
HD1*-3-96*	.187-.300	M902-2131	M902-2041
	.300-.430	M902-2132	M902-2042
HD1*-6-96*/HD1*-6-12*	.187-.300	M902-2161	M902-2041
	.300-.430	M902-2162	M902-2042
	.430-.570	M902-2163	M902-2053
	.570-.710	M902-2164	M902-2054
HD1*-9-96*/HD1*-9-1939**	.187-.300	M902-2191	M902-2041
	.300-.430	M902-2192	M902-2042
	.430-.570	M902-2193	M902-2053
	.570-.710	M902-2194	M902-2054

Backshell Technical Specifications:

Material - PC/PET Polyester Blend, UV-Stabilized, Flame Retardant, Black

Flammability - UL94-VO rated material, Weatherability - UL746C

DEUTSCH HD10 ACCESSORIES

STRAIN RELIEF

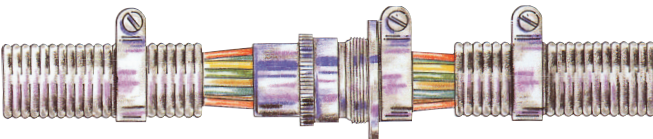
DEUTSCH HD10 series strain reliefs are designed to screw onto threaded 3, 4, 6, and 9 cavity HD10 connectors. The rigid, durable strain reliefs offer a high level of protection, provide tie wrap holders to reduce strain from the wires, and improve aesthetics.



Part Number	Description
HD18-003	3 cavity strain relief
HD18-006	6 cavity strain relief
HD18-009	4 or 9 cavity strain relief

helpful hint

Attaching the connector to a structure eliminates straining the electrical system in service.



BOOTS

Boots provide a professional looking finishing touch for DEUTSCH HD10 series connectors. Made of durable plastisol, these slip-on boots are not only aesthetically appealing, but also provide increased protection from dirt, paint overspray, and pressure washing. The plastisol boots are rated from -20°F to +212°F (-28°C to + 100°C) and offer a slip-on design making installation quick and easy.



Part Number	Description
HD10-3BT	3 cavity boot, gray
HD10-5BT	5 cavity boot, gray
HD10-5BT-BK	5 cavity boot, black
HD10-6BT	6 cavity boot, gray
HD10-6BT-BK	6 cavity boot, black
HD10-9BT	9 cavity boot, gray
HD10-9BT-BK	9 cavity boot, black

*Distorting the boots can lessen their longevity

DEUTSCH HD10 ACCESSORIES

GASKETS

Rated to operate in environments from -70°F to +225°F (-56°C to +107°C), these rugged high quality neoprene gaskets are placed between the panel face and connector flange. They are designed to block dust, noise, and vibration. The gaskets have a thickness of .125" and the material meets the UL-94-HBF, Mil-R-6130C, and FMVSS-302 flammability specifications.



Gasket Part Number	Connector Part Number
HD10-3-GKT	HD10-3-****
HD10-5-GKT	HD10-5-****
HD10-6-GKT	HD10-6-****
HD10-9-GKT	HD10-9-****

PROTECTIVE DUST CAPS

HD10 series protective dust caps provide an environmental seal and are used to protect the connector interface when the connector is not mated.

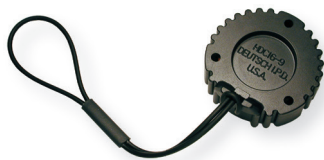


Part Number	Description
HDC14-3	3 cavity plug protective cap
HDC14-6	6 cavity plug protective cap
HDC14-9	9 cavity plug protective cap
HDC16-3	3 cavity receptacle protective cap
HDC16-5	5 cavity receptacle protective cap
HDC16-6	6 cavity receptacle protective cap
HDC16-6-E004	6 cavity receptacle protective cap, black
HDC16-9	9 cavity receptacle protective cap
HDC16-9-E004	9 cavity receptacle protective cap, black

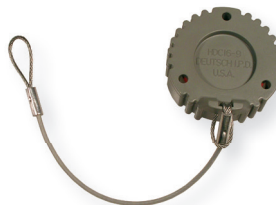
DEUTSCH HD10 ACCESSORIES

LANYARDS

Lanyards are available in nitrile or nylon coated steel and designed for use with protective dust caps.



HDC9-JDL082397
(DEUTSCH HDC16-9-E004 dust cap
assembled with JDL082397)



HDC16-9-L47N
(DEUTSCH HDC16-9 dust cap
assembled with L47N-600-1)

Lanyard	Material	Material Diameter	Length	Min. Breaking Strength
JDL082397	Nitrile o-ring, 3M heat shrink with thermoplastic adhesive	.07 inches	5.31 inches	---
L47N-600-1	7 x 7 galvanized steel cable coated with clear nylon	.047 inches	6 inches	270 lbs.

Dimensions are for reference only.

Dust Cap/Lanyard Assembly Part Number*	Used On	Connector Cavities	Lanyard Material	Dust Cap Color
HDC14-3-JDL	Plug	3	Nitrile	Gray
HDC14-6-JDL	Plug	6	Nitrile	Gray
HDC14-6-LA	Plug	6	Steel	Gray
HDC14-9-JDL	Plug	9	Nitrile	Gray
HDC16-3-JDL	Receptacle	3	Nitrile	Gray
HDC16-3-LA	Receptacle	3	Steel	Gray
HDC16-5-LA	Receptacle	5	Steel	Gray
HDC16-6-JDL	Receptacle	6	Nitrile	Gray
HDC16-6-LA	Receptacle	6	Steel	Gray
HDC16-9-JDL	Receptacle	9	Nitrile	Gray
HDC9-JDL082397	Receptacle	9	Nitrile	Black
HDC16-9-L47N	Receptacle	9	Steel	Gray
HDC16-9-E004-L47N	Receptacle	9	Steel	Black

*Other dust cap/lanyard assemblies may be available

DEUTSCH HD10 CONTROLLER AREA NETWORKS

J1939/13 UNIVERSAL 9-PIN DIAGNOSTIC

DEUTSCH J1939/13, HD10 9 pin connector is a standard diagnostic tool interface for on- and off-highway OEMs. The HD10-9-1939P is a data port connector designed to allow an on-board CAN system to mate with a diagnostic computer. The connectors are for use with the 250 kbps network. The DEUTSCH HD10 J1939/13 connectors offer several mounting options for the receptacle, and a mating plug that is available with or without a coupling ring.

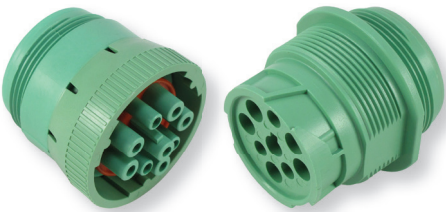


Part Number	Description
HD10-9-1939P	Receptacle
HD10-9-1939P-B022	Receptacle, panel nut mount
HD10-9-1939PE-B022	Receptacle, panel nut mount, reduced wire seal
HD10-9-1939PE	Receptacle, reduced wire seal
HD16-9-1939S	Plug, coupling ring
HD16-9-1939SE	Plug, coupling ring, reduced wire seal
HD17-9-1939S	Plug, no coupling ring (slip-on)
HD17-9-1939SE	Plug, no coupling ring (slip-on), reduced wire seal
O460-202-1631	Pin, solid, size 16, gold
O460-247-1631	Pin, solid, size 16, gold, extended
O462-201-1631	Socket, solid, size 16, gold
O462-221-1631	Socket, solid, size 16, gold, extended

DEUTSCH HD10 CONTROLLER AREA NETWORKS

J1939/13 TYPE II UNIVERSAL 9-PIN DIAGNOSTIC

DEUTSCH J1939/13, HD10 9 pin connector is a standard diagnostic tool interface for on- and off-highway OEMs. The HD10-9-1939P*-P080 is a data port connector designed to allow an on-board CAN system to mate with a diagnostic computer. The green, Type II connectors, HD10-9-1939P-P080, are for use with the 500 kbps network. The DEUTSCH HD10 J1939/13 connectors offer several mounting options for the receptacle, and a mating plug that is available with or without a coupling ring.

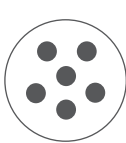


Part Number	Description
HD10-9-1939P-P080	Receptacle, flange mount, type II
HD10-9-1939PE-P080	Receptacle, flange mount, type II, reduced wire seal
HD10-9-1939P-BP03	Receptacle, panel nut mount, type II
HD10-9-1939PE-BP03	Receptacle, panel nut mount, type II, reduced wire seal
HD14-9-1939P-P080	Receptacle, type II
HD14-9-1939PE-P080	Receptacle, type II, reduced wire seal
HD16-9-1939S-P080	Plug, coupling ring, type II
HD16-9-1939SE-P080	Plug, coupling ring, type II, reduced wire seal
HD17-9-1939S-P080	Plug, no coupling ring (slip-on), type II
HD17-9-1939SE-P080	Plug, no coupling ring (slip-on), type II, reduced wire seal
0460-202-1631	Pin, solid, size 16, gold
0460-247-1631	Pin, solid, size 16, gold, extended
0462-201-1631	Socket, solid, size 16, gold
0462-221-1631	Socket, solid, size 16, gold, extended

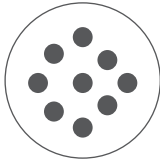
DEUTSCH HD10 PRINTED CIRCUIT BOARD CONNECTORS

H10 SERIES STRAIGHT

Materials	Mating Plugs	Modifications
Housing: Glass filled PA Contacts: Molded-in copper alloy, nickel plated Mounting Seal: Standard o-rings may be used	6 Pin: HD16-6-96S 9 Pin: HD16-9-96S	N005: Straight reduced diameter pins supplied as standard



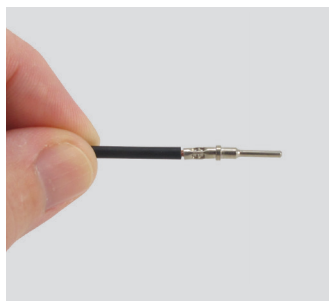
HD10-6-96P-N005
6 size 16



HD10-9-96P-N005
9 size 16

DEUTSCH HD10 HOW-TO INSTRUCTIONS

CONTACT INSERTION



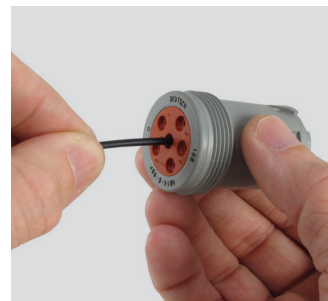
Step 1:

Grasp crimped contact approximately one inch behind the contact barrel.



Step 2:

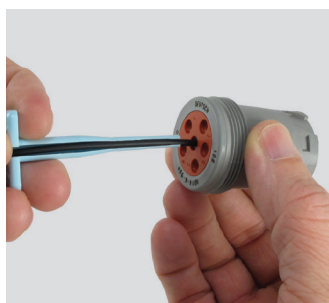
Hold connector with rear grommet facing you.



Step 3:

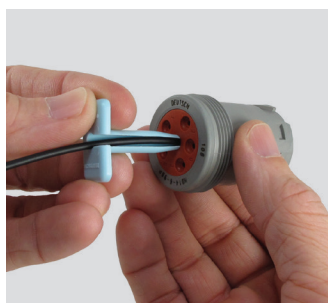
Push contact straight into connector grommet until a click is felt. A slight tug will confirm that it is properly locked in place.

CONTACT REMOVAL



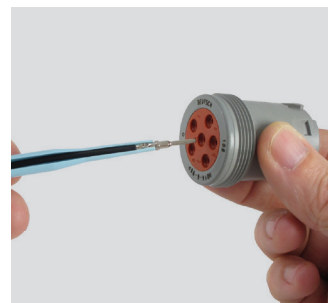
Step 1:

With rear insert toward you, snap appropriate size removal tool over the wire of contact to be removed.



Step 2:

Slide tool along the wire into the insert cavity until it engages contact and resistance is felt.



Step 3:

Pull contact wire assembly out of connector.

DEUTSCH COMMON CONTACTS OVERVIEW

Several contacts are used interchangeably across most DEUTSCH connector product lines. This commonality improves performance, reliability, and maintainability by reducing changes in the assembly of the wire harness. The use of the same contact system helps eliminate many of the failures reported in harnesses where hundreds of different terminations are used.

CONTACT STYLES

Two styles of contacts are available: solid and stamped & formed. Both contact types use a crimp style termination, eliminating the need for solder. The variations in the 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 4 AWG to 20 AWG (25 - 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.

STAMPED & FORMED

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 wide range of wire insulation. The specific contact is determined by the outside diameter of wire insulation and conductor size.



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DEUTSCH COMMON CONTACTS OVERVIEW

PERFORMANCE SPECIFICATIONS

DURABILITY

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

CURRENT RATING (Contact current rating at 125° C continuous)

Contact Size	Max. Current
Size 20	1.5 amps
Size 16	13 amps
Size 12	25 amps
Size 8	60 amps
Size 4	100 amps

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

CONTACT MILLIVOLT DROP

Contact Size	Test Current Amps	Millivolt Drop* (Solid)	Millivolt Drop* (S&F)
20	7.5	60	100
16	13	60	100
12	25	60	100
8	60	60	-
4	100	60	-

*Less drop through wire

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

helpful hint

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



DEUTSCH COMMON CONTACTS SOLID CONTACT

SOLID CONTACT PART NUMBERS

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°C Continuous
	Pin	Socket					
20	0460-202-20**	0462-201-20**	20 (0.50)	.156-.218 (3.96-5.54)	20 (89)	20 (89)	7.5
	0460-010-20**	0462-005-20**	16-18 (1.0-0.75)	.156-.218 (3.96-5.54)	20 (89)	20 (89)	7.5
16	0460-202-16**	0462-201-16**	16-20 (1.5-0.50)	.250-.312 (6.35-7.92)	25 (111)	35-20 (156-89)	13
	0460-215-16**	0462-209-16**	14 (2.0)	.250-.312 (6.35-7.92)	25 (111)	70 (311)	13
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 (10.0-5.0)	.430-.492 (10.92-12.50)	35 (156)	125-90 (556-400)	60
4	0460-204-04**	0462-203-04**	6 (16.0-13.0)	.430-.492 (10.92-12.50)	35 (156)	300 (1334)	100
4 (C038)	5960-203-04141	5962-203-04141	4 (25.0-21.0)	.430-.492 (10.92-12.50)	35 (156)	300 (1334)	100

** = Plating codes

SOLID CONTACT PLATING CODES

Part Number Suffix	Plating Material
31	Gold
90	Nickel (size 4 pin only)
141	Nickel



Note
See information drawing
0425-015-0000.

DEUTSCH COMMON CONTACTS STAMPED & FORMED

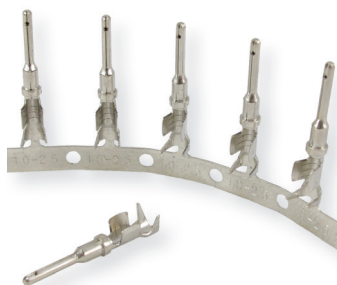
STAMPED & FORMED CONTACT PART NUMBERS

Size	S&F Contact Part Numbers		Carrier Strip	Wire Size AWG (mm ²)	Wire Insulation O.D. Range	Recommended Strip Length Inches (mm)	Min. Contact Retention	Max. Rated Amps at 125° C Continuous
	Pin	Socket						
20	1060-20-01**	1062-20-01**	20-01	16-22 (1.5-0.35)	.075-.125 (1.91-3.18)	.150-.200 (3.81-5.08)	20 (89)	7.5
	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
	-	1062-20-03** sleeveless	20-03	16-22 (1.5-0.35)	.075-.125 (1.91-3.18)	.150-.200 (3.81-5.08)	20 (89)	7.5
	1060-20-06**	1062-20-06**	20-06	14-16 (2.5-1.0)	.075-.125 (1.91-3.18)	.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
	1060-14-10**	1062-14-10**	14-16	14-18 (2.0-.75)	.095-.150 (2.41-3.81)	.150-.200 (3.81-5.08)	25 (111)	13
	1060-16-01**	1062-16-01**	16-18	14-18 (2.0-.75)	.075-.140 (1.90-3.55)	.150-.200 (3.81-5.08)	25 (111)	13
	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
	1060-16-09**	1062-16-09**	16-18	14-18 (2.0-.75)	.075-.140 (1.90-3.55)	.150-.200 (3.81-5.08)	25 (111)	13
	1060-16-12**	1062-16-12**	1.0-2.5	12-16 (2.5-1.0)	.075-.140 (1.90-3.55)	.175-.225 (4.45-5.72)	25 (111)	13
	-	1062-16-14** sleeveless	14-16	12-16 (2.5-1.0)	.075-.140 (1.90-3.55)	.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
	1060-12-02**	1062-12-02**	10-12	10 ⁺ (6.0-4.0)	.140-.204 (3.56-5.18)	.225-.275 (5.72-6.99)	30 (134)	25

** = Plating codes; † = TXL wire insulation is preferred

S&F CONTACT PLATING CODES

Part Number Suffix	Plating Material
22	Nickel
44	Gold
66	Tin/Nickel
77	Tin
88	Selective Gold



Note

See information drawing
0425-015-0000.

DEUTSCH COMMON CONTACTS PCB PINS

PCB PINS

Straight reduced diameter extended pins are available for installation in 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 SPECIFICATIONS

Material Copper alloy

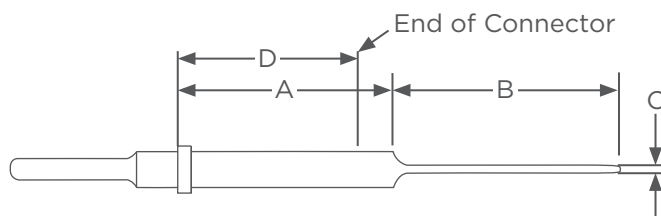
31: Gold

Plating Codes 90: Tin

141: Nickel

PCB Mounting

Consult factory for PCB mounting details and pin positions.

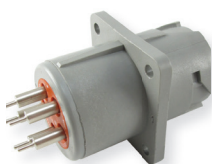


Note

See information drawing 0425-202-0000 for full specifications.

Contact Size	Part Number	A	B	C	Series	D*
20	0460-208-2031	1.305 (33.15)	.248 (6.30)	.025 (.64)	HD30/HDP20	.939 (23.85)
	0460-208-2090	1.305 (33.15)	.248 (6.30)	.025 (.64)	HD10	.925 (23.50)
16	0460-208-16141	1.300 (33.02)	.248 (6.30)	.025 (.64)	DT	.777 (19.74)
	0460-208-1631	1.300 (33.02)	.248 (6.30)	.025 (.64)	DT04-2P	.677 (17.20)
	0460-229-16141	.545 (13.84)	.248 (6.30)	.025 (.64)	DT04-3P	.677 (17.20)
	0460-241-16141	1.305 (33.15)	.160 (4.06)	.040 (1.02)	DRC	1.063 (27.00)
	0460-244-16141	.976 (24.79)	.400 (10.16)	.041 (1.04)	*D is equal to the distance from the contact shoulder to the end of the connector.	
	0460-244-1631	.976 (24.79)	.400 (10.16)	.041 (1.04)		
12	0460-208-12141	1.305 (33.15)	.248 (6.30)	.025 (.64)		
	0460-245-1231	1.024 (26.01)	.500 (12.70)	.041 (1.04)		
	0460-245-1290	1.024 (26.01)	.500 (12.70)	.041 (1.04)		

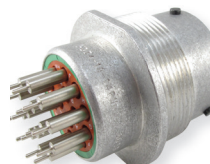
Dimensions are for reference only.



HD10 Series



HDP20 Series



HD30 Series

DEUTSCH COMMON CONTACTS 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 mutual flow of metal, causing a symmetrical distortion of wire strands.

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 strand 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.

BENEFITS OF CRIMPED CONTACTS

Stamped & Formed Style



Cross-Section Across Axis
Figure 1

Solid Style



Indenter Crimp
Cross-Section Across Axis
Figure 2

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

- With smaller wire, the crimp is as strong as the wire itself.
- 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 the inspector.
- Plating thickness is not restricted, as in solder joints, so better corrosion resistance and contact reliability are achieved.
- 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.
- Total installed and maintenance costs are lower.

helpful hint

Solder should not be added to DEUTSCH terminals.



Note

The use of dielectric grease is not recommended.

DEUTSCH COMMON CONTACTS CRIMPING

CRIMP INSPECTION

Crimping tools provide lower total installation and maintenance costs. However, controls are required to help confirm 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.

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

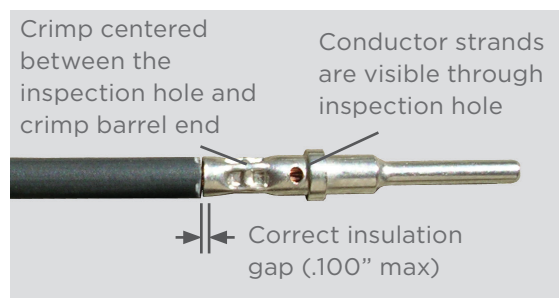
- The removed insulation should expose a conductor length that will pass beyond the inspection hole in the contact and still reveal the appropriate length of conductor between the contact and the insulation on the wire.
- Wire strands intact.
- All wire strands enter the contact barrel.
- Wire inserted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

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

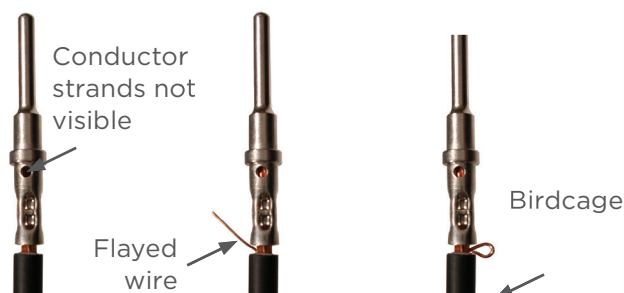
Note

For more detailed crimp dimensions please request a drawing

SOLID CONTACT CRIMP

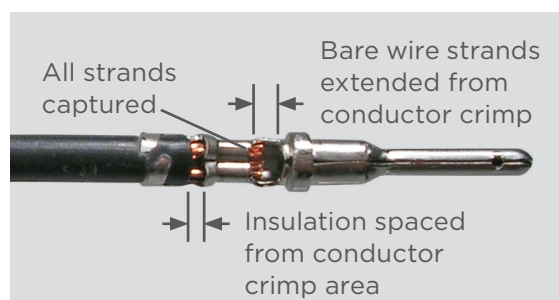


Acceptable Crimp

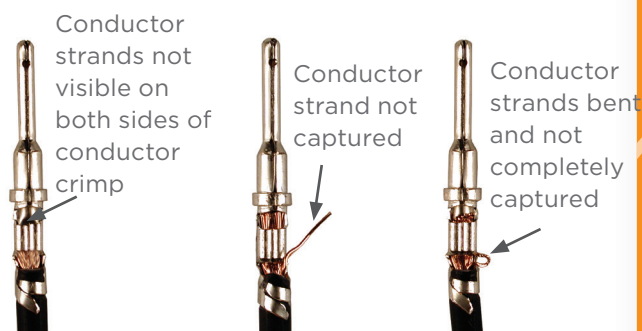


Unacceptable Crimps

STAMPED & FORMED CONTACT CRIMP



Acceptable Crimp



Unacceptable Crimps

DEUTSCH COMMON CONTACTS ACCESSORIES

Additional accessories are available to aid in the design flexibility and sealing requirements of applications. Accessory items such as sealing plugs and keying pins help to maintain an environmental seal and prevent mis-mating.

KEYING PINS

Keying pins are solid plastic rods used to help 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, helping to prevent the mis-mating of like connectors. Proper usage requires that the corresponding mating pin be omitted and a sealing plug 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 help 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 help prevent unintentional forced mating.

CONTACT CRIMP SLEEVE REDUCER

A crimp sleeve reducer is available to allow DEUTSCH 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 is not recommended because it may not provide an environmental seal against the insert seal.

DEUTSCH COMMON CONTACTS ACCESSORIES

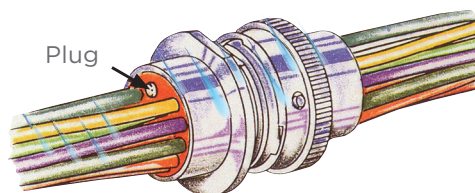
SEALING PLUGS

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

Part Number	Contact Size	Description
114019	Size 4	Silicone rubber
114018	Size 8	Thermoplastic
114017	Size 12, 16	Thermoplastic
0413-217-1605 (locking sealing plug)	Size 16	Thermoplastic, retained by locking fingers
0413-003-1605	Size 16	Thermoplastic, used with STRIKE series
0413-204-2005	Size 20	Thermoplastic

helpful hint

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

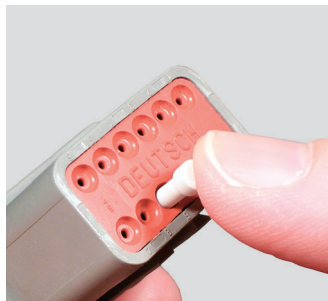


DEUTSCH COMMON CONTACTS HOW-TO INSTRUCTIONS

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.

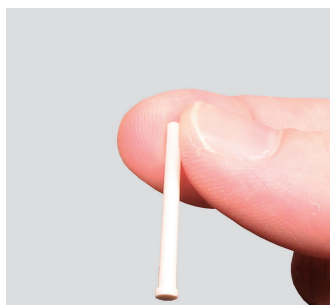
**Step 2:**

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

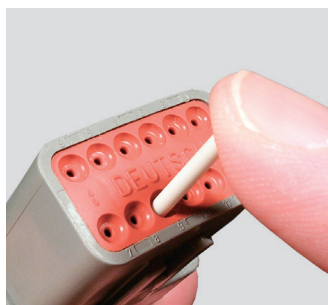
**Step 3:**

Apply pressure until sealing plug is forced to stop by contact with rear grommet. Visually inspect the sealing plug to confirm 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:**

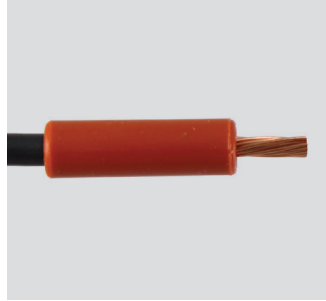
Apply pressure until sealing plug locks into place. A slight tug on the sealing plug will confirm it is locked into place.

DEUTSCH COMMON CONTACTS HOW-TO INSTRUCTIONS

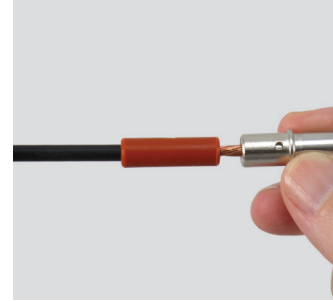
CONTACT CRIMP SLEEVE REDUCER ASSEMBLY



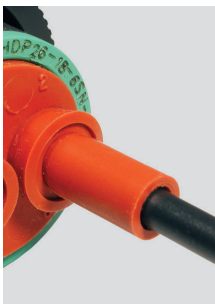
Step 1:
Place crimp sleeve reducer into contact barrel.



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:
Confirm seal is not distorted.

DEUTSCH TOOLING OVERVIEW

CRIMP TOOL OVERVIEW

The two types of DEUTSCH contacts are solid and stamped & formed. Both styles of contacts are designed for crimp style terminations - no solder is required or recommended. A crimp style termination displaces the wire strands creating a superior bond between the wire and the contact.

Several tools are available for hand and production wire crimping, wire insertion and removal, and wedgelock/terminal position assurance removal. The tools are specific to the solid contacts or the stamped & formed contacts. To create a proper crimp and achieve the highest performance specifications, contacts must be crimped with the recommended tooling.

AUTOMATED TOOLING OVERVIEW

For higher production volumes, a pneumatic power crimp tool is available for the DEUTSCH solid contacts, and applicator dies for stamped & formed contacts. The HDP-400, a pneumatic solid crimp tool, is a fast, bench-top tool that crimps most DEUTSCH contacts. The HDP-400 has a foot control, and easy-to-change dies and locators for each contact size. TE's stamped & formed OCEAN applicator dies are heavy duty mini-dies that work in many industry standard presses. The OCEAN applicator dies offer simple adjustments and the flexibility to accept different sized contacts and wire gauge.

DEUTSCH TOOLING SOLID CONTACTS

AUTOMATED TOOLING FOR SOLID CONTACTS



Tool Part Number	Contact Size	Contact Part Number
HDP-400	4	0460-204-0490 0462-203-04141
	8	0460-204-08141 0462-203-08141
	12	0460-204-12** 0462-203-12**
	16	0460-202-16** 0462-201-16**
		0460-215-16** 0462-209-16**
	20	0460-202-20** 0462-201-20**

For the appropriate die and locator, see drawing 0425-205-0000

DEUTSCH TOOLING STAMPED & FORMED CONTACTS

AUTOMATED TOOLING FOR STAMPED & FORMED CONTACTS



	Pin P/N	Socket P/N	Insulation Range O.D. (mm)	Applicator P/N Conversion Kit P/N
Size 12 - Group 1	1060-12-0144 1060-12-0166	1062-12-0144 1062-12-0166	.151-.176 (3.83-4.47)	2266124-1 7-2266124-8
			.130-.154 (3.30-3.91)	2266125-1 7-2266125-8
			.113-.135 (2.87-3.43)	2266126-1 7-2266127-8
Size 12 - Group 2	1060-12-0222 1060-12-0244	1062-12-0222 1062-12-0244	.185-.204 (4.70-5.18)	2266127-1 7-2266127-8
			.155-.190 (3.94-4.83)	2266128-1 7-2266128-8
			.140-.160 (3.56-4.06)	2266129-1 7-2266129-8
Size 16 - Group 1	1060-14-0122 1060-14-0144 1060-14-0177 1060-14-1077 1060-14-1088	1062-14-0122 1062-14-0144 1062-14-0177 1062-14-1077 1062-14-1088	.120-.150 (3.05-3.81)	2266100-1 7-2266100-8
			.105-.125 (2.67-3.18)	2266101-1 7-2266101-8
	1060-16-0122 1060-16-0144 1060-16-0177 1060-16-0722 1060-16-0744 1060-16-0777 1060-16-0977 1060-16-0988	1062-16-0122 1062-16-0144 1062-16-0177 1062-16-0722 1062-16-0744 1062-16-0777 1062-16-0977 1062-16-0988	.105-.125 (2.67-3.18)	2266101-1 7-2266101-8
			.085-.111 (2.16-2.82)	2266102-1 7-2266102-8
			.075-.105 (1.91-2.67)	2266103-1 7-2266103-8
			.063-.094 (1.60-2.39)	2266104-1 7-2266104-8
Size 16 - Group 2	1060-16-0622 1060-16-0644 1060-16-0677 1060-16-0688	1062-16-0622 1062-16-0644 1062-16-0677 1062-16-0688	.063-.094 (1.60-2.39)	2266110-1 7-2266110-8
			.050-.075 (1.27-1.91)	2266111-1 7-2266111-8

The -1 suffix on the applicator p/n represents a mechanical feed, for other feed options contact your representative. The conversion kit is to convert applicators within the same group. For more information, please reference TE catalog 1-1773730-8 or contact your representative.

DEUTSCH TOOLING STAMPED & FORMED CONTACTS

AUTOMATED TOOLING FOR STAMPED & FORMED CONTACTS (continued)



	Pin P/N	Socket P/N	Insulation Range O.D. (mm)	Applicator P/N Conversion Kit P/N
Size 16 - Group 3	1060-16-1222	1062-16-1222	.120-.140 (3.05-3.56)	2266112-1 7-2266112-8
	1060-16-1244	1062-16-1244	.105-.125 (2.67-3.18)	2266113-1 7-2266113-8
	1060-16-1277	1062-16-1277	.090-.110 (2.29-2.79)	2266114-1 7-2266114-8
	-	1062-16-1422	.075-.095 (1.91-2.41)	2266115-1 7-2266115-8
	-	1062-16-1444		
	-	1062-16-1477		
Size 20 - Group 1	1060-20-0122	1062-20-0122	.105-.125 (2.67-3.18)	2266116-1 7-2266116-8
	1060-20-0144	1062-20-0144		
	1060-20-0177	1062-20-0177	.085-.111 (2.16-2.82)	2266117-1 7-2266117-8
	-	1062-20-0322		
	-	1062-20-0344	.075-.105 (1.91-2.67)	2266118-1 7-2266118-8
	-	1062-20-0377		
	1060-20-0222	1062-20-0222	.063-.085 (1.62-2.16)	2266119-1 7-2266119-8
	1060-20-0244	1062-20-0244		
	1060-20-0277	1062-20-0277	.050-.075 (1.27-1.91)	2266120-1 7-2266120-8

The -1 suffix on the applicator p/n represents a mechanical feed, for other feed options contact your representative. The conversion kit is to convert applicators within the same group. For more information, please reference TE catalog 1-1773730-8 or contact your representative.

DEUTSCH TOOLING ACCESSORIES

HDP-400 TOOLING ACCESSORIES

The Go-No-Go gauge is used to determine if the HDP-400 tool is calibrated within the recommended specifications to produce a proper crimp.



Part Number	Go-No-Go Gauges
GA20N	HDP-400 Size 20
450GA-16N	HDP-400 Size 16
450GA-12N	HDP-400 Size 12
GA8-SPEC	HDP-400 Size 8
450GA-4-SPEC	HDP-400 Size 4

DEUTSCH TOOLING HAND TOOL

For field service, prototype, and low-volume production, there are several easy-to-use hand crimp tools for both solid barrel and stamped & formed contacts. All hand crimp tools provide a tight, complete crimp with minimal effort. The HDT-48-00, the most commonly used tool for solid contacts, crimps a wide range of contact sizes. It provides a symmetrical four indent crimp, is compact and easy-to-use for field service, yet sturdy and reliable enough for low volume production. Hand crimp tools for DEUTSCH stamped & formed contacts are wire gauge specific and simultaneously crimp the insulation and conductor, saving time and effort during field service.

HAND TOOLS FOR SOLID CONTACTS



HDT-04-08



HDT-48-00



HDT-50-00



HDT-1561

Contact Size	Contact Part Number	Tool Part Number	Crimp Type
4	0460-204-0490 0462-203-04141	HDT-04-08	Two indent crimp
8	0460-204-08141 0462-203-08141	HDT-04-08	Two indent crimp
12	0460-204-12** 0462-203-12**	HDT-48-00	Four indent crimp
		HDT-1561	Two indent crimp
		HDT-50-00	One indent crimp
16	0460-202-16** 0462-201-16** 0460-215-16** 0462-209-16**	HDT-48-00	Four indent crimp
		HDT-1561	Two indent crimp
		HDT-50-00	One indent crimp
20	0460-202-20** 0462-201-20**	HDT-48-00	Four indent crimp
		HDT-1561	Two indent crimp
		HDT-50-00	One indent crimp

DEUTSCH TOOLING HAND TOOL

HDT-48-00 TOOLING ACCESSORIES

Replacement parts, such as adjustment screws, locking nuts, and inspection tools are available for the HDT-48-00 hand tool.

Part Number	Crimp Tool Replacement Part
0426-209-0000	Adjustment screw and locking nut
M2700-395-10	Locking nut

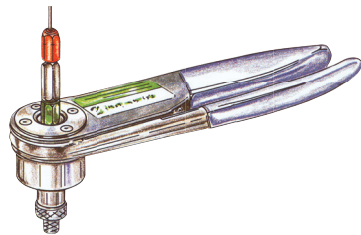


Part Number	Description
G454	HDT-48-00 Go-No-Go Gauge



helpful hint

Go-no-go gauges are used to inspect crimp tooling. The G454 gauge is used with the HDT-48-00 hand tool.



HAND TOOLS FOR DEUTSCH STAMPED & FORMED CONTACTS



DTT-12-00



DTT-12-01



DTT-16-00
DTT-16-01
DTT-20-00
DTT-20-02

Contact Size	Contact Part Number	Tool Part Number
12	1060-12-01**	DTT-12-00
	1062-12-01**	
	1060-12-02**	DTT-12-01
	1062-12-02**	
16	1060-16-01**	DTT-16-00 (14-16 AWG)
	1062-16-01**	DTT-16-01 (18 AWG)
	1060-16-06**	
	1062-16-06**	
20	1060-20-01**	DTT-20-00
	1062-20-01**	
	1060-20-02**	DTT-20-02
	1062-20-02**	

DEUTSCH TOOLING HAND TOOL

MULTI-USE REMOVAL TOOL



Part Number	Description
DT-RT1	Multi-use tool with a small hook on one end for wedgelock removal, and a small screwdriver on the other end to push back the locking fingers and release the contact. For use with the DT, DTM, DTP, DTV, DRB, and STRIKE series.

REMOVAL TOOLS

DEUTSCH removal tools are designed to simplify contact removal and field service repair in connectors that utilize a round shoulder contact retention system. Removal tools are compact, easy-to-use, and manufactured of heavy duty plastic to remove contacts without damage to the wire, insulation, connector seals, or connector body. The

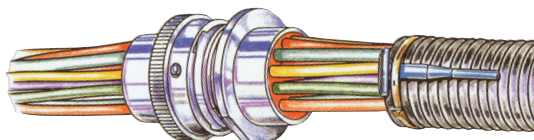
removal tools are required for wire removal in the DTHD, Jiffy Splices, HD10, HDP20, HD30, DRC, AEC, and WT series.



Part Number	Contact Size	Wire Gauge Range	Color
0411-027-0405	Size 4	4 AWG	Black
114009	Size 4	6 AWG	White
114008	Size 8	8-10 AWG	Green
0411-353-0805	Size 8 for HD Box	8-10 AWG	Green Extended
114010	Size 12	12 AWG	Yellow
0411-337-1205	Size 12	12-14 AWG Extra Thin Wall (E-Seal)	Orange
0411-291-1405	Size 16	14-16 AWG	Green
0411-310-1605	Size 16	16-20 AWG	Light Blue
0411-336-1605	Size 16	16-18 AWG Extra Thin Wall (E-Seal)	Dark Blue
0411-240-2005	Size 20	20-22 AWG	Red

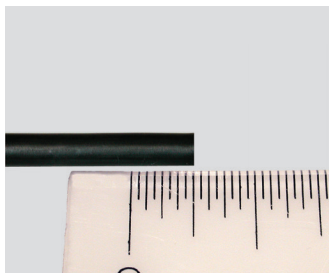
helpful hint

A contact removal tool taped or tie wrapped to the harness will make it easily available, should repairs be needed.



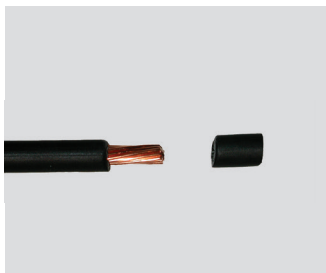
DEUTSCH TOOLING HOW-TO INSTRUCTIONS

WIRE STRIPPING



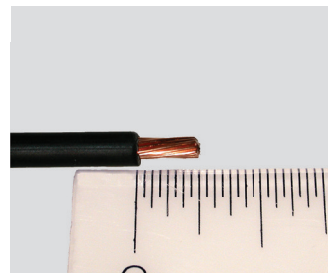
Step 1:

1. Choose the correct AWG for the contact being used.
2. Measure from the end of the wire the recommended strip length according to the contact size.
3. Place the wire into a stripping tool at the recommended strip length. Strip the wire according to stripping tool instructions.



Step 2:

1. After stripping, a small piece of the insulation should come off.
2. Check for any broken strands or for a dent in the wire. If either exist, the wire is damaged and should be cut and stripped again.

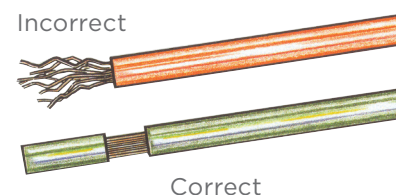


Step 3:

Measure the exposed strands to be sure the crimp length is correct.

helpful hint

Leaving the stripped portion of the insulation on the wire until crimping will avoid frayed wire strands.



CRIMPING WITH THE HDT-48-00 HAND TOOL



Step 1:

1. Strip insulation from wire.
2. Raise selector knob and rotate until arrow is aligned with wire size to be crimped.
3. Loosen locknut, turn adjusting screw in until it stops.



Step 2:

Insert contact with barrel up. Turn adjusting screw counterclockwise until contact is flush with indenter cover. Tighten locknut.



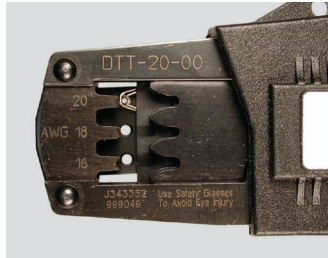
Step 3:

1. Insert wire into contact. Contact must be centered between indentors. Close handles until crimp cycle is completed.
2. Release handles and remove crimped contact.

Note: Tool must be adjusted for each type/size of contact.

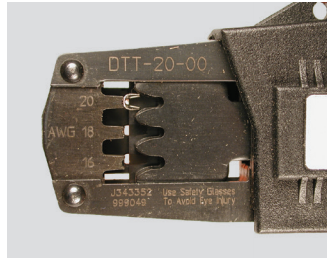
DEUTSCH TOOLING HOW-TO INSTRUCTIONS

CRIMPING WITH DTT STYLE HAND TOOLS (SIZE 16 & 20)



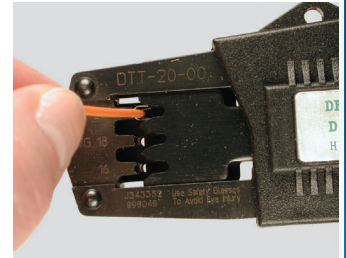
Step 1:

Cycle the hand tool to the open position. Place the contact into the correct die nest.



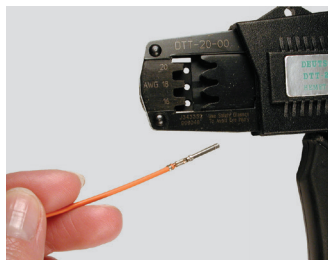
Step 2:

Partially close the tool until the contact is held in place.



Step 3:

Insert the prestripped wire into the crimp area of the contact.



Step 4:

Close the tool until the ratchet releases. The ratchet is released when a loud click is heard and crimp is complete.

DEUTSCH TOOLING HOW-TO INSTRUCTIONS

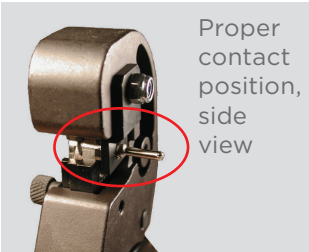
CRIMPING WITH DTT-12-01 HAND TOOL



Step 1:
Cycle handles to release ratchet and fully open crimp jaws. Pull out insulation selector and push into proper diameter using the chart below.



Proper contact position, front view



Proper contact position, side view

Step 2:
1. Insert contact into locator. Adjust alignment and width of crimp wings if necessary to help confirm capture by crimp jaws.
2. Insert stripped wire into the contact. Close crimp tool until full-cycle ratchet control releases.

Wire Type	Insulation Selector
10 TXL	.150-.170
10 GXL	.160-.180
10 SXL	.170-.205
5.0 mm ²	.160-.180
6.0 mm ²	.170-.205

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