

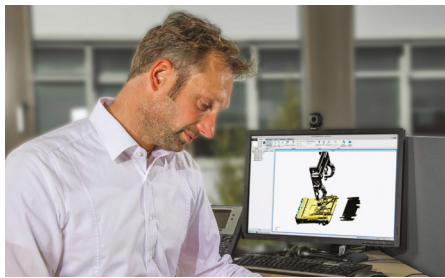
# DEUTSCH HD30 & HDP20 CONNECTOR SERIES

## TERMINALS AND CONNECTORS

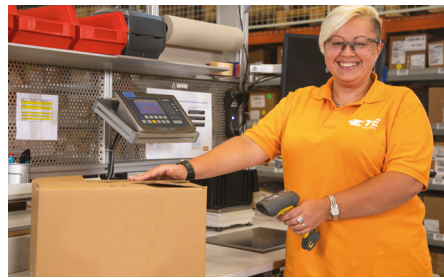




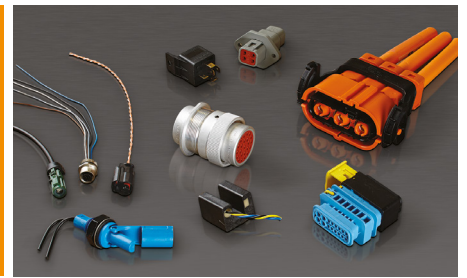
TE Connectivity (TE) Industrial & Commercial Transportation is a reliable provider of solutions for even the harshest environment. With a focus on employee expertise and durable products, we deliver the solutions and support our customers can count on.



**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



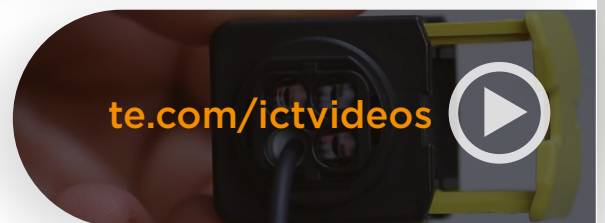
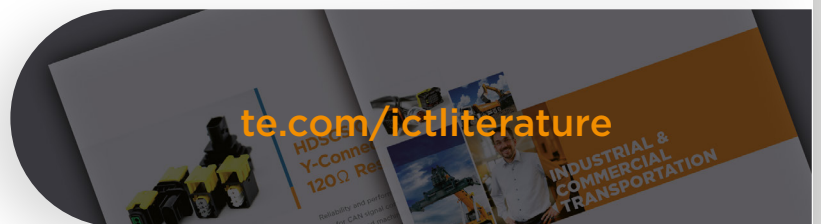
OFF-HIGHWAY



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:

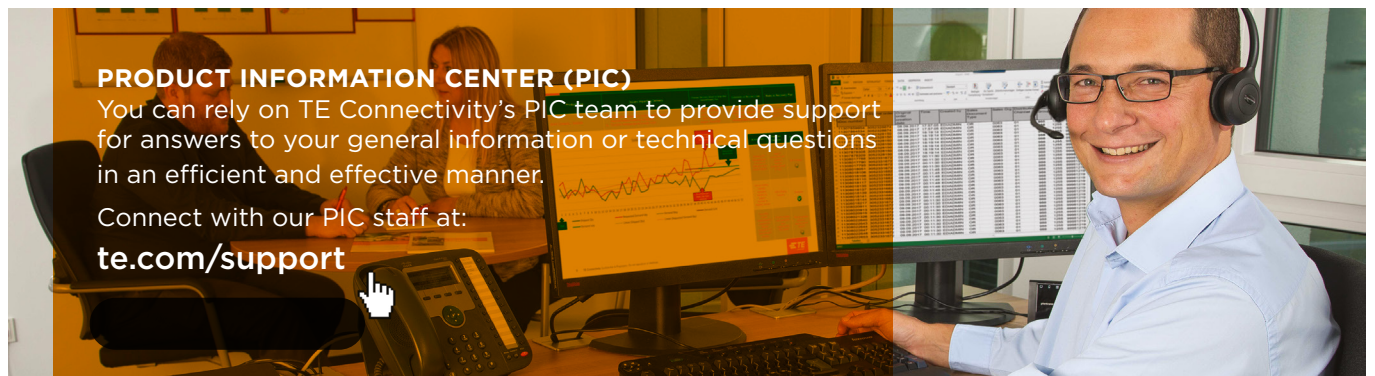


### PRODUCT INFORMATION CENTER (PIC)

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](https://te.com/support)





## DEUTSCH HD30 & HDP20 CONNECTOR SERIES

Designed specifically for the truck, bus, and off-highway industry, the HD30 & HDP20 series connectors are heavy duty, environmentally sealed, multi-pin circular connectors. Available in metal or thermoplastic housings, these connectors offer multiple pin configurations that accept contact sizes 4 through 20.





## DEUTSCH HD30 & HDP20 Series

|                             |       |
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# DEUTSCH HD30 & HDP20 CONNECTOR SERIES

## FEATURES & BENEFITS

- The HD30 and HDP20 connector series are robust circular connection systems with quick connect/disconnect bayonet coupling.
- The HD30 connector series shell is made of metal and the HDP20 connector series shell is made of thermoplastic.
- Available in 19 contact arrangements up to 47 positions, offering a broad array of options for power and signal circuits.
- Uses the DEUTSCH Common Contact System - A unique system of interchangeable and interchangeable contacts that can be used in all DEUTSCH connectors.
- Rated at 7.5 to 100 Amps and 250 VAC for 22 to 4 AWG (0.35-22.00 mm<sup>2</sup>)
- Optional jam nuts and gaskets are available for mounting. Multiple backshell adapters and wire strain relief backshells are available to enhance design flexibility and meet application specific needs.

## KEY INDUSTRIES

DEUTSCH HD30 & HDP20 products can be utilized in the truck, bus, construction, agriculture, and special vehicles industries.



Truck



Bus



Construction



Agriculture



Special

## APPLICATIONS

DEUTSCH HD30 & HDP20 products can be utilized in the following applications:



Powertrain



ABS/EBS  
Brake Units



Sensors,  
Displays and  
Devices



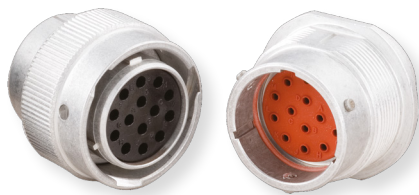
Wire-To-Wire



Telematics and  
Infotainment  
Applications



## DEUTSCH HD30 & HDP20 OVERVIEW



### HD30 SERIES

The DEUTSCH HD30 series connectors are constructed from a metal shell developed to meet the needs of the heavy duty equipment and transportation industries. The HD30 features include quick connect/disconnect bayonet coupling, single hole bulkhead mounting, silicone seals, and a rear insertion/rear removal contact system.



### HD20 SERIES

The HDP20 series connectors are heavy duty rated, environmentally sealed, composite shell, multi-pin connectors. The composite thermoplastic shell is suited for applications where chemicals can damage a connector housing. HDP20 features quick connect-disconnect bayonet coupling, single hole bulkhead mounting, silicone seals, and a rear insertion/rear removal contact system.

#### PERFORMANCE SPECIFICATIONS

|                                        |                                                                                                                                                                                                                                                  |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Temperature</b>                     | Operating at temperatures<br>-55°C to +125°C                                                                                                                                                                                                     |
| <b>Durability</b>                      | No electrical or mechanical defects after 100 cycles of engagement and disengagement.                                                                                                                                                            |
| <b>Vibration</b>                       | 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. |
| <b>Fluid Resistance</b>                | Connectors show no damage when exposed to most fluids used in industrial applications.                                                                                                                                                           |
| <b>Insulation Resistance</b>           | 1000 megohms minimum at 25°C.                                                                                                                                                                                                                    |
| <b>Immersion</b>                       | IP68 rating                                                                                                                                                                                                                                      |
| <b>Moisture Resistance</b>             | Properly wired and mated connections will withstand immersion under three feet of water without loss of electronic qualities or leakage.                                                                                                         |
| <b>Dielectric Withstanding Voltage</b> | Current leakage less than 2 milliamps at 1500 volts AC.                                                                                                                                                                                          |
| <b>Thermal Cycle</b>                   | No cracking, chipping or leaking after 20 test cycles from -55°C to +125°C.                                                                                                                                                                      |

#### MATERIAL SPECIFICATIONS (HD30)

|                                    |                 |
|------------------------------------|-----------------|
| <b>Grommet</b>                     | Silicone rubber |
| <b>Insert Retainer</b>             | Unfilled PEI    |
| <b>Receptacle Interfacial Seal</b> | Aluminum        |
| <b>Shell</b>                       | Aluminum        |

#### MATERIAL SPECIFICATIONS (HD20)

|                                    |                 |
|------------------------------------|-----------------|
| <b>Grommet</b>                     | Silicone rubber |
| <b>Insert Retainer</b>             | Unfilled PEI    |
| <b>Receptacle Interfacial Seal</b> | Glass filled PA |
| <b>Shell</b>                       | Glass filled PA |

#### PRODUCT DOCUMENTATION

Additional documentation is available for assistance with DEUTSCH HD30 & HDP20 products.

The following TE Connectivity document numbers may be helpful:

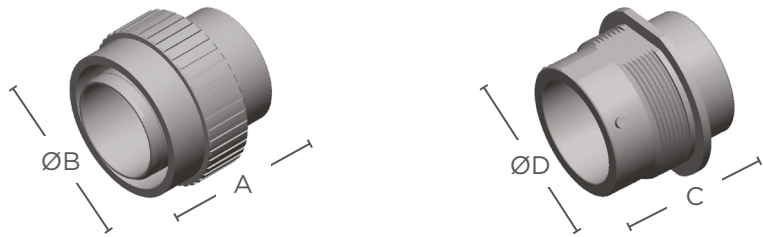
##### HD30 Series

[108-151014 \(HD30 Series Product Specification\)](#)  
[114-151014 \(HD30 Application Specification\)](#)  
[0425-013-1800 \(Arrangements for Shell Size 18\)](#)  
[0425-014-2400 \(Arrangements for Shell Size 24\)](#)

##### HDP20 Series

[108-151015 \(HDP20 Product Specification\)](#)  
[114-151015 \(HDP20 Application Specification\)](#)  
[0425-013-1800 \(Arrangements for Shell Size 18\)](#)  
[0425-014-2400 \(Arrangements for Shell Size 24\)](#)

DEUTSCH HD30 & HDP20 DIMENSIONS



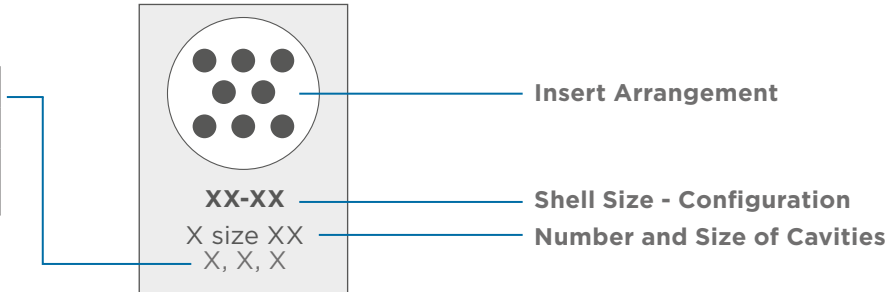
|            | HD/HDP Plug         |                      | HD/HDP Receptacle   |                      |
|------------|---------------------|----------------------|---------------------|----------------------|
| Shell Size | Overall Length<br>A | Overall Height<br>ØB | Overall Length<br>C | Overall Height<br>ØD |
| 18         | 1.521 (38.63)       | 1.700 (43.17)        | 1.648 (41.86)       | 1.750 (44.45)        |
| 24         | 1.521 (38.63)       | 1.950 (49.53)        | 1.648 (41.86)       | 2.000 (50.80)        |

Dimensions are for reference only.

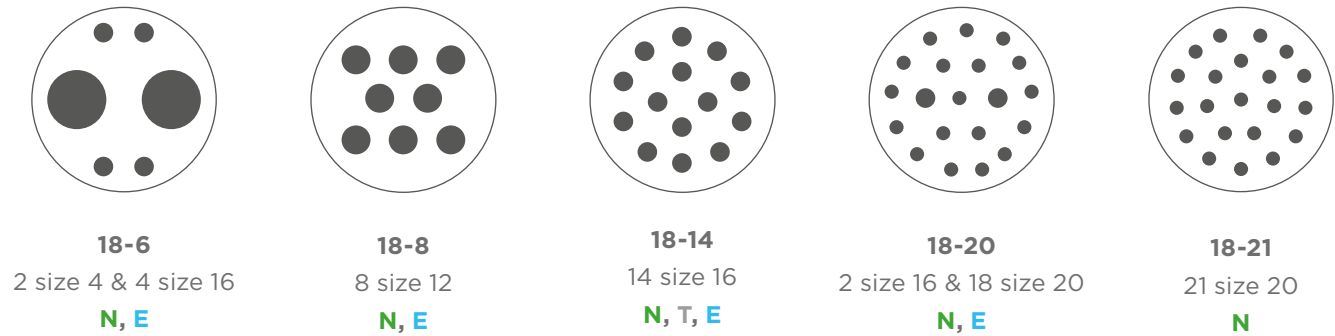
DEUTSCH HD30 & HDP20 CONFIGURATIONS

Wire Seal Options

|   |                                        |
|---|----------------------------------------|
| N | Normal wire seals (green ring)         |
| T | Thin wall wire seals (gray ring)       |
| E | Extra thin wall wire seals (blue ring) |

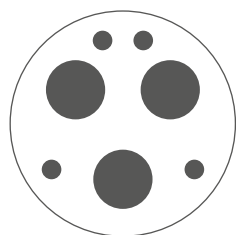


18 SHELL SIZE CONFIGURATIONS

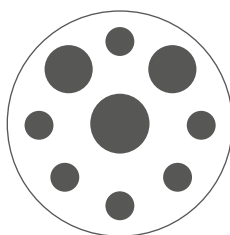


# DEUTSCH HD30 & HDP20 CONFIGURATIONS

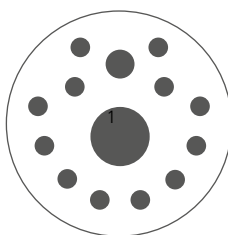
## 24 SHELL SIZE CONFIGURATIONS



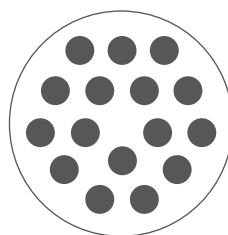
**24-7(-C038 only)**  
3 size 4<sup>+</sup> & 4 size 16  
**N**



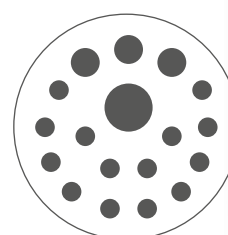
**24-9**  
1 size 4, 2 size 8  
& 6 size 12  
**N, E**



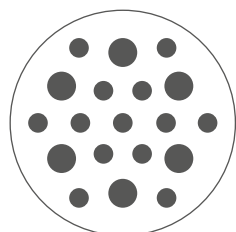
**24-14**  
1 size 4, 1 size 12  
& 12 size 16  
**N, E**



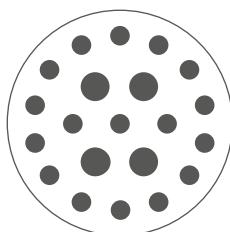
**24-16**  
16 size 12  
**N, E**



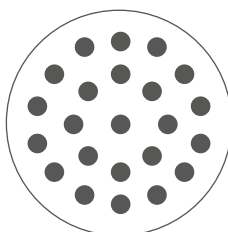
**24-18**  
1 size 8, 3 size 12  
& 14 size 16  
**N, E**



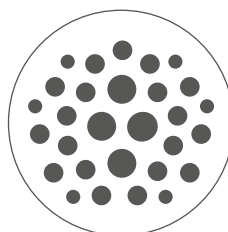
**24-19**  
6 size 12  
& 13 size 16  
**N, E**



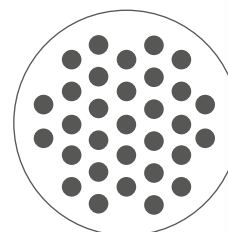
**24-21**  
4 size 12  
& 17 size 16  
**N, E**



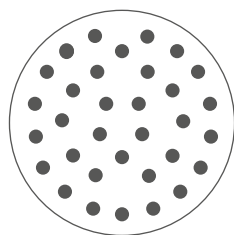
**24-23**  
23 size 16  
**N, T, E**



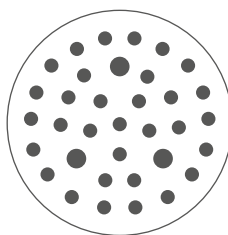
**24-29**  
4 size 12, 19 size 16  
& 6 size 20  
**E\***



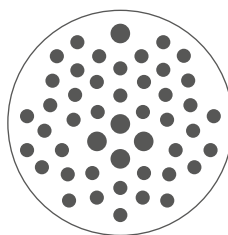
**24-31**  
31 size 16  
**T\*, E\***



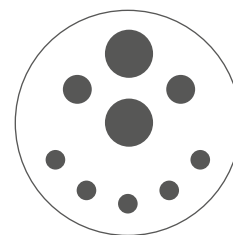
**24-33**  
33 size 20  
**N**



**24-35**  
3 size 16  
& 32 size 20  
**N, E**



**24-47**  
5 size 16  
& 42 size 20  
**E\***



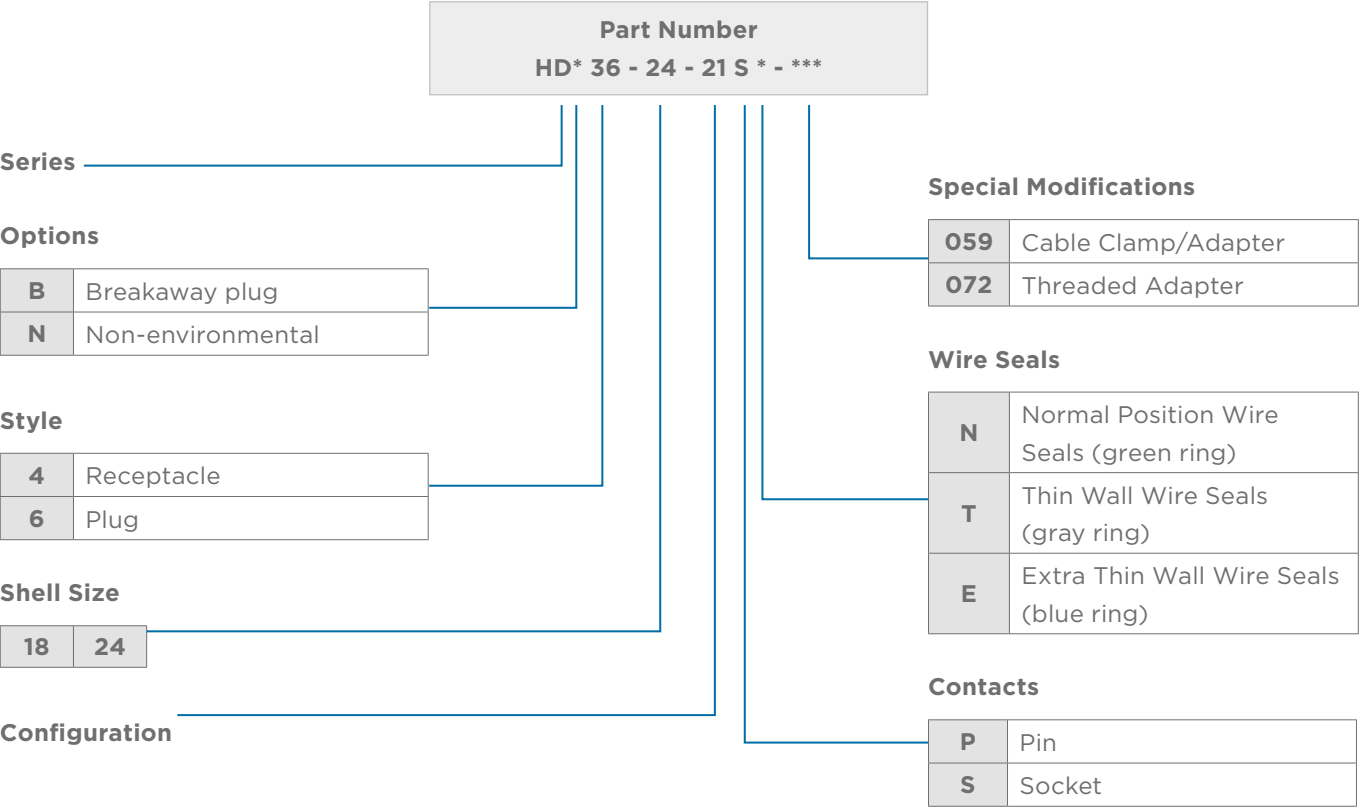
**24-91-P064†**  
2 size 8, 2 size 12  
& 5 size 16  
**N, E**

\*Modified seal, see drawing

†Without P064 modification, plug cavities 4 and 5 are internally connected



DEUTSCH HD30 PART NUMBERING SYSTEM



**Note**  
Reverse arrangements are available as a keying option for the HD30 & HDP20 series connectors.

## DEUTSCH HD30 ORDERING INFORMATION

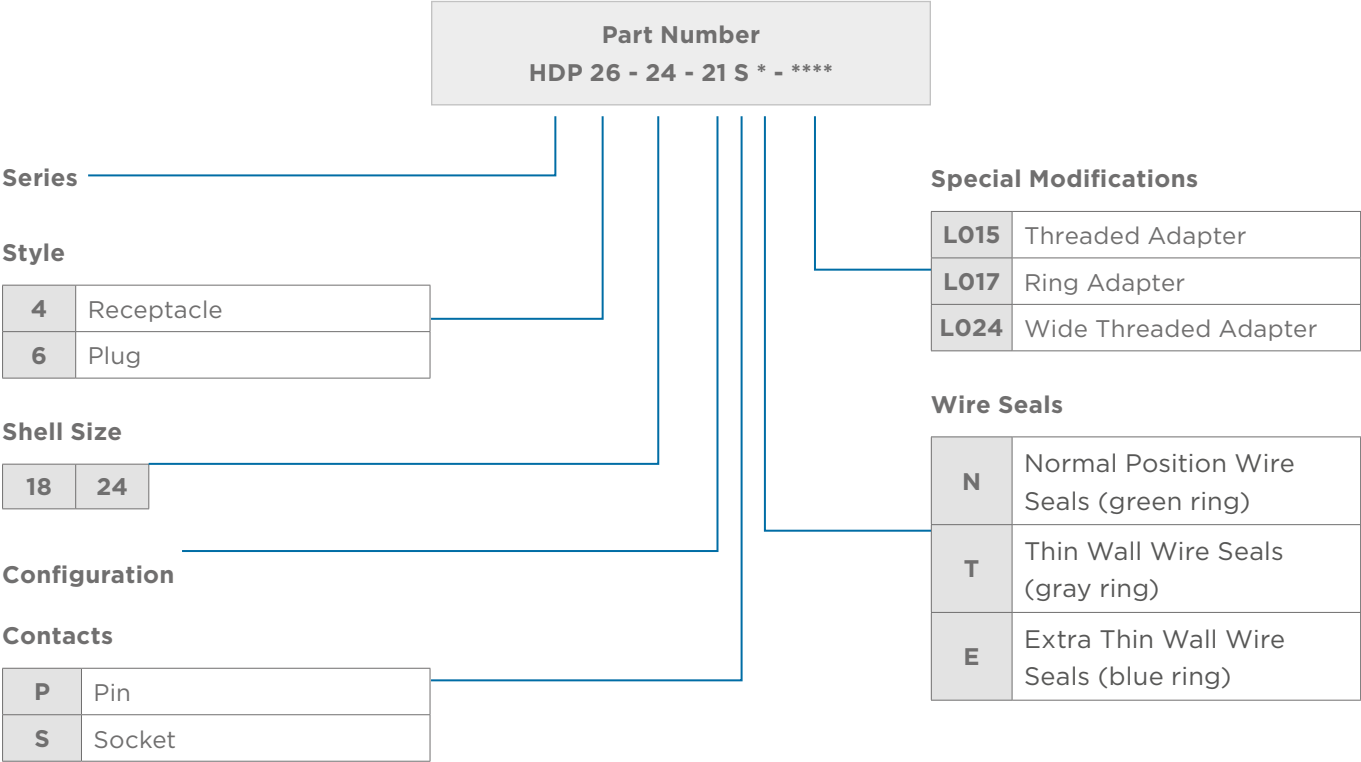
Here are some of the common part numbers in the HD30 series. Several additional connectors may be available.

| Shell Sz-<br>Position | Series | Plug<br>Standard Dia. Seal | Receptacle<br>Standard Dia. Seal | Plug<br>Reduced Dia. Seal | Receptacle<br>Reduced Dia. Seal |
|-----------------------|--------|----------------------------|----------------------------------|---------------------------|---------------------------------|
| 18-6                  | HD30   | HD36-18-6SN                | HD34-18-6PN                      | HD36-18-6SE               | HD34-18-6PE                     |
| 18-8                  | HD30   | HD36-18-8SN                | HD34-18-8PN                      | HD36-18-8SE               | HD34-18-8PE                     |
| 18-14                 | HD30   | HD36-18-14SN               | HD34-18-14PN                     | HD36-18-14SE              | HD34-18-14PE                    |
| 18-20                 | HD30   | HD36-18-20SN               | HD34-18-20PN                     | HD36-18-20SE              | HD34-18-20PE                    |
| 18-21                 | HD30   | HD36-18-21SN               | HD34-18-21PN                     | HD36-18-21SE              | HD34-18-21PE                    |
| 24-7                  | HD30   | HD36-24-7SN                | HD34-24-7PN                      | HD36-24-7SE               | HD34-24-7PE                     |
| 24-9                  | HD30   | HD36-24-9SN                | HD34-24-9PN                      | HD36-24-9SE               | HD34-24-9PE                     |
| 24-14                 | HD30   | HD36-24-14SN               | HD34-24-14PN                     | HD36-24-14SE              | HD34-24-14PE                    |
| 24-16                 | HD30   | HD36-24-16SN               | HD34-24-16PN                     | HD36-24-16SE              | HD34-24-16PE                    |
| 24-18                 | HD30   | HD36-24-18SN               | HD34-24-18PN                     | HD36-24-18SE              | HD34-24-18PE                    |
| 24-19                 | HD30   | HD36-24-19SN               | HD34-24-19PN                     | HD36-24-19SE              | HD34-24-19PE                    |
| 24-21                 | HD30   | HD36-24-21SN               | HD34-24-21PN                     | HD36-24-21SE              | HD34-24-21PE                    |
| 24-23                 | HD30   | HD36-24-23SN               | HD34-24-23PN                     | HD36-24-23SE              | HD34-24-23PE                    |
| 24-29                 | HD30   | HD36-24-29SN               | HD34-24-29PN                     | HD36-24-29SE              | HD34-24-29PE                    |
| 24-31                 | HD30   | HD36-24-31SN               | HD34-24-31PN                     | HD36-24-31SE              | HD34-24-31PE                    |
| 24-33                 | HD30   | HD36-24-33SN               | HD34-24-33PN                     | HD36-24-33SE              | HD34-24-33PE                    |
| 24-35                 | HD30   | HD36-24-35SN               | HD34-24-35PN                     | HD36-24-35SE              | HD34-24-35PE                    |
| 24-47                 | HD30   | HD36-24-47SN               | HD34-24-47PN                     | HD36-24-47SE              | HD34-24-47PE                    |

### Note

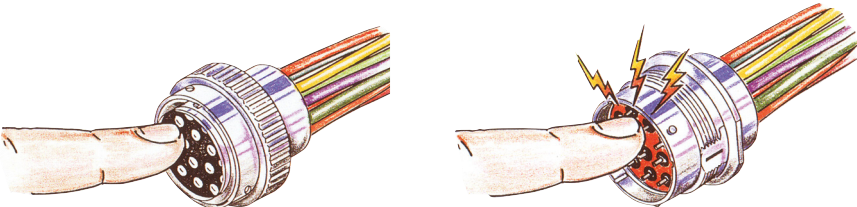
Undersize wire insulation is a major cause for leakage.

DEUTSCH HDP20 PART NUMBERING SYSTEM



**helpful hint**

Making the socket contact side the “hot side” can reduce the danger of electric shock.



## DEUTSCH HDP20 ORDERING INFORMATION

Here are some of the common part numbers in the HDP20 series. Several additional connectors may be available.

| Shell Sz-<br>Position | Series | Plug<br>Standard Dia. Seal | Receptacle<br>Standard Dia. Seal | Plug<br>Reduced Dia. Seal | Receptacle<br>Reduced Dia. Seal |
|-----------------------|--------|----------------------------|----------------------------------|---------------------------|---------------------------------|
| 18-6                  | HDP20  | HDP26-18-6SN               | HDP24-18-6PN                     | HDP26-18-6SE              | HDP24-18-6PE                    |
| 18-8                  | HDP20  | HDP26-18-8SN               | HDP24-18-8PN                     | HDP26-18-8SE              | HDP24-18-8PE                    |
| 18-14                 | HDP20  | HDP26-18-14SN              | HDP24-18-14PN                    | HDP26-18-14SE             | HDP24-18-14PE                   |
| 18-20                 | HDP20  | HDP26-18-20SN              | HDP24-18-20PN                    | HDP26-18-20SE             | HDP24-18-20PE                   |
| 18-21                 | HDP20  | HDP26-18-21SN              | HDP24-18-21PN                    | HDP26-18-21SE             | HDP24-18-21PE                   |
| 24-7                  | HDP20  | HDP26-24-7SN               | HDP24-24-7PN                     | HDP26-24-7SE              | HDP24-24-7PE                    |
| 24-91-<br>PO64        | HDP20  | HDP26-24-91SN-PO64         | HDP24-24-91PN-PO64               | -                         | -                               |
| 24-9                  | HDP20  | HDP26-24-9SN               | HDP24-24-9PN                     | HDP26-24-9SE              | HDP24-24-9PE                    |
| 24-14                 | HDP20  | HDP26-24-14SN              | HDP24-24-14PN                    | HDP26-24-14SE             | HDP24-24-14PE                   |
| 24-16                 | HDP20  | HDP26-24-16SN              | HDP24-24-16PN                    | HDP26-24-16SE             | HDP24-24-16PE                   |
| 24-18                 | HDP20  | HDP26-24-18SN              | HDP24-24-18PN                    | HDP26-24-18SE             | HDP24-24-18PE                   |
| 24-19                 | HDP20  | HDP26-24-19SN              | HDP24-24-19PN                    | HDP26-24-19SE             | HDP24-24-19PE                   |
| 24-21                 | HDP20  | HDP26-24-21SN              | HDP24-24-21PN                    | HDP26-24-21SE             | HDP24-24-21PE                   |
| 24-23                 | HDP20  | HDP26-24-23SN              | HDP24-24-23PN                    | HDP26-24-23SE             | HDP24-24-23PE                   |
| 24-29                 | HDP20  | HDP26-24-29SN              | HDP24-24-29PN                    | HDP26-24-29SE             | HDP24-24-29PE                   |
| 24-31                 | HDP20  | HDP26-24-31SN              | HDP24-24-31PN                    | HDP26-24-31SE             | HDP24-24-31PE                   |
| 24-33                 | HDP20  | HDP26-24-33SN              | HDP24-24-33PN                    | HDP26-24-33SE             | HDP24-24-33PE                   |
| 24-35                 | HDP20  | HDP26-24-35SN              | HDP24-24-35PN                    | HDP26-24-35SE             | HDP24-24-35PE                   |
| 24-47                 | HDP20  | HDP26-24-47SN              | HDP24-24-47PN                    | HDP26-24-47SE             | HDP24-24-47PE                   |

### Note

Undersize wire insulation is a major cause for leakage.



## DEUTSCH HD30 & HDP20 WIRE 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                                  | N-Seal<br>Green Ring      | T-Seal<br>Gray Ring      | T-Seal<br>Modified*      | E-Seal<br>Blue Ring      | E-Seal<br>Modified*      |
|-----------------------------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 20<br>14-22 AWG<br>(2.5-0.35mm <sup>2</sup> ) | .040-.095<br>(1.02-2.41)  | .040-.095<br>(1.02-2.41) | -                        | .040-.095<br>(1.02-2.41) | .040-.083<br>(1.01-2.10) |
| 16<br>14-20 AWG<br>(2.0-0.5mm <sup>2</sup> )  | .100-.134<br>(2.54-3.40)  | .088-.134<br>(2.23-3.40) | .088-.106<br>(2.24-2.69) | .053-.120<br>(1.35-3.05) | .053-.103<br>(1.35-2.62) |
| 12<br>10-14 AWG<br>(6.0-2.0mm <sup>2</sup> )  | .134-.170<br>(3.40-4.32)  | .113-.170<br>(2.87-4.32) | -                        | .097-.158<br>(2.46-4.01) | .097-.158<br>(2.46-4.01) |
| 8<br>8-10 AWG<br>(10.0-5.0mm <sup>2</sup> )   | .190-.240<br>(4.83-6.10)  | .170-.240<br>(4.32-6.10) | -                        | .135-.220<br>(3.43-5.59) | -                        |
| 4<br>6 AWG<br>(16.0-13.0mm <sup>2</sup> )     | .280-.292<br>(7.11-7.42)  | .261-.292<br>(6.63-7.42) | -                        | .261-.292<br>(6.63-7.42) | -                        |
| 4<br>4 AWG<br>(25.0-21.0mm <sup>2</sup> )     | .311-.420<br>(7.90-10.67) | -                        | -                        | -                        | -                        |

\*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.

Color code is visible from the rear of the receptacle or plug.

**Green:** Normal Seal

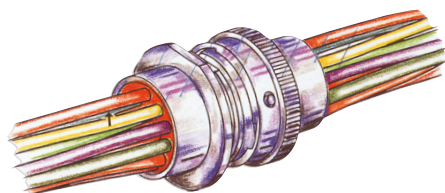
**Gray:** Thin Wall Seal

**Blue:** Extra Thin Wall Seal



### helpful hint

Proper wire outside diameters help provide water tight seals.



## DEUTSCH HD30 & HDP20 SPECIAL MODIFICATIONS

The HD30 & HDP20 series connectors offer several modifications to enhance design flexibility and meet application specific needs. Options include breakaway plugs, adapters, and high amperage options just to mention a few. By combining the HD30 & HDP20 series connectors with the available modifications and accessories, the design possibilities are greatly expanded.

### HDB - BREAKAWAY PLUG (HD30 SERIES ONLY)



The HDB breakaway plug is designed to provide an emergency disconnect between farm tractors and implements that require power connections. The HDB breakaway plug is designed to break the connection before damaging the wiring system. These plugs can be specified with pin or socket contacts and connect only with the HD30 series receptacles. As an added design convenience, the HDB breakaway plug is also available with an optional cable clamp (059 mod). Breakaway function occurs at an axial load of 50-100 lbs.



L015  
Threaded  
Adapter



L017  
Ring Adapter

### L015/L017/L024 MODIFICATIONS

The L015/L024 threaded adapters and L017 ring adapter modifications are available for the DEUTSCH HDP20 series connectors. These adapter modifications provide simple, low cost assembly solutions for applications that require a backshell or conduit. The adapters are designed to be used with the backshell of your choice.

- The L015 threaded adapter is available on size 24 shells in the HDP20 series.
- The L017 ring adapter is available on size 24 or size 18 shells in the HDP20 series.
- The L024 wide threaded adapter is available on size 24 or size 18 shells in the HDP20 series.



L024  
Wide Threaded Adapter

### C030 MODIFICATION



Originally designed for multiplexing and battery cable applications, the DEUTSCH C030 modification is an environmentally sealed, heavy duty two cavity connector that accepts size 4 solid contacts rated up to 100 amps for each cavity.



The C030 modification is available in size 18 shell in both metal (HD30 series) and thermoplastic (HDP20 series) to meet your heavy wire gauge application needs.

# DEUTSCH HD30 & HDP20 SPECIAL MODIFICATIONS



## C041/CL20 MODIFICATIONS

The C041 and CL20 modifications are available for the DEUTSCH HDP20 series 14 pin connector. The C041 modification features a data link key and reduced diameter seals on the receptacle. The CL20 modification includes a ring adapter, reduced diameter seals, and a data link key on the plug.



## CABLE CLAMP/BACKSHELL MODIFICATIONS

DEUTSCH cable clamps provide positive support to the wire bundle while reducing strain on the connector. The backshell is available with or without drain holes.

| Part Number<br>Suffix | Description                                          |
|-----------------------|------------------------------------------------------|
| -072                  | Adapter only                                         |
| -059                  | Adapter and cable clamp assembly with drain holes    |
| -L006                 | Adapter and cable clamp assembly without drain holes |

## DEUTSCH HD30 & HDP20 ACCESSORIES

Several accessory items can be used to complement the connectors. The HD30 & HDP20 family accessories include items such as boots, backshells, gaskets, and protective caps. Accessories are designed to complete the application and meet a wide array of design requirements such as solutions for mounting, providing additional protection, and offering increased aesthetics.

### BOOTS

Boots provide a professional looking finishing touch for the DEUTSCH HD30 & HDP20 family of 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                                                     |
|-----------------|-----------------------------------------------------------------|
| HD30-18BT       | 18 shell size boot, gray                                        |
| HD30-18BT-BK    | 18 shell size boot, black                                       |
| HD30-18BT-90-BK | 18 shell size boot, 90° bend, black                             |
| LC-90BT-HT      | 18 shell size boot, 90° bend, high temperature material, yellow |
| HD30-24BT       | 24 shell size boot, gray                                        |
| HD30-24BT-BK    | 24 shell size boot, black                                       |
| HD30-24BT-90-BK | 24 shell size boot, 90° bend, black                             |
| MT-90BT-HT-24   | 24 shell size boot, 90° bend, high temperature material, yellow |

\*Distorting the boots can lessen their longevity

### PROTECTIVE DUST CAPS

Protective caps are available for both plug and receptacle halves of the connectors. The metal caps, for use with the HD30 series, come with a mounting chain and are used to protect the connector while not mated. The thermoplastic caps, for use with the HDP20 series, are available with or without a lanyard.

#### HDP20 SERIES DUST CAPS



| Shell Size | Part Number | Description                                                |
|------------|-------------|------------------------------------------------------------|
| 18         | HDC26-18    | Plug cap for receptacle protection, environmentally sealed |
| 24         | HDC26-24    |                                                            |

#### HD30 SERIES DUST CAPS



| Shell Size | Part Number | Description                        |
|------------|-------------|------------------------------------|
| 18         | HDC36-18    | Plug cap for receptacle protection |
| 24         | HDC36-24    |                                    |
| 18         | HDC34-18    | Receptacle cap for plug protection |
| 24         | HDC34-24    |                                    |

\*To order HD30(HD3\*\*\*) protective caps without the mounting chain, add -1E to the end of the part number

DEUTSCH HD30 & HDP20 ACCESSORIES

STRAIN RELIEF

The DEUTSCH HD30 & HDP20 series connectors offer several backshell options to meet your design needs. Backshell options include straight or 90° and plastic or metal. The metal backshells work best with the HD30 series. It is attached to the rear of the connector using an adjustable screw and is secured to the wire bundle with the use of a tie wrap. The plastic backshells work best with the HDP20 series and attach to the rear of the connector with either a clamshell snap closure or by screwing them on to a threaded adapter. The rigid, durable backshells offer a high level of protection, provide strain relief, and improve aesthetics.



| Shell Size | Orientation | HD30 Series Backshell Part Number |
|------------|-------------|-----------------------------------|
| 18         | Straight    | WHDS-18-1                         |
| 24         |             | WHDS-24-1                         |
| 18         | 90°         | WHDS-18-2                         |
| 24         |             | WHDS-24-2                         |



| Shell Size | Orientation | HDP20 Series L017 Backshell Part Number | Conduit Size           |
|------------|-------------|-----------------------------------------|------------------------|
| 18         | Straight    | 2428-016-1805                           | 13, 17, 19 (mm) NW     |
|            | 90°         | 2428-015-1805                           | 13, 17, 19 (mm) NW     |
| 24         | Straight    | 2428-008-2405                           | 1"                     |
|            | 90°         | 2428-004-2405                           | 1"                     |
| 24         | Straight    | 2428-010-2405                           | 17, 19, 23, 26 (mm) NW |
|            | 90°         | 2428-011-2405                           | 17, 19, 23, 26 (mm) NW |

NW = Nominal Width of the conduit's inside diameter. See drawings for full specifications.



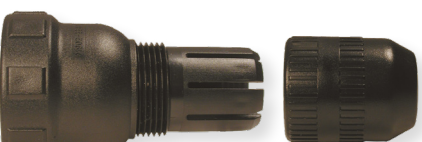
| Shell Size | HDP20 Series L015 Conduit Adapter Part Number |                 | Conduit Size |
|------------|-----------------------------------------------|-----------------|--------------|
| 24         | Seal Ring<br>SRN21                            | Cap Nut<br>CN21 | 22 (mm) NW   |



## DEUTSCH HD30 & HDP20 ACCESSORIES

### BACKSHELLS FOR L015 MODIFICATION

The DEUTSCH HDP20 series backshells are designed to screw onto connectors with the L015 modification, which adds a threaded adapter. 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.



Backshell

Compression Nut

|            |                | HDP20 Series L015     |                             |
|------------|----------------|-----------------------|-----------------------------|
| Shell Size | Cable Diameter | Backshell Part Number | Compression Nut Part Number |
|            |                |                       |                             |
| 24         | .430-.570      | M902-2243             | M902-2053                   |
|            | .570-.710      | M902-2244             | M902-2054                   |

Backshell Technical Specifications:

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

Flammability - material meets UL94-VO, Weatherability - UL746C

### BACKSHELLS FOR L024 MODIFICATION

The DEUTSCH HDP20 series backshells are designed to screw onto connectors with the L024 modification, which adds a wide threaded adapter. The rigid, durable backshells offer a high level of protection, provide strain relief, and improve aesthetics.

| Backshell | Shell Size | Orientation | HDP20 Series L024 Backshell Part Number |
|-----------|------------|-------------|-----------------------------------------|
|           | 18         | Straight    | 2428-025-1805                           |
|           | 24         |             | 2428-024-2405                           |

### GASKETS

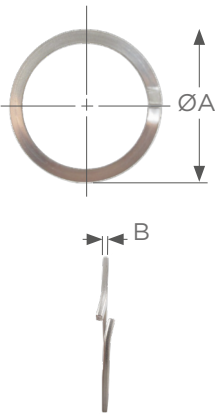
Moisture, dirt, salt, sand, and road debris can all work their way into electrical panels through unsealed mounting flanges. Rated to operate in environments from -70°F to +225°F (-56°C to +107°C), these rugged high quality neoprene gaskets form a tight seal between the panel face and connector flange to help keep out destructive elements. The gaskets have a thickness of .125" and the material meets the UL-94-HBF, Mil-R-6130C, and FMVSS-302 flammability specifications.

| Receptacle Shell Size | Gasket Part Number |
|-----------------------|--------------------|
| 18                    | 16-04978           |
| 24                    | 16-04477           |

DEUTSCH HD30 & HDP20 ACCESSORIES

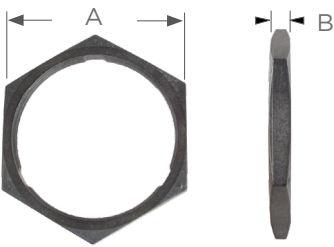
MOUNTING HARDWARE

DEUTSCH lockwashers and panel nuts are available to aid in mounting the HD30 and HDP20 series connectors. The lockwashers are used to add tension between the threads and the nut to provide a secure mount. The lockwasher and the panel nut should be used together.



| Shell Size | Series | Panel Lockwasher Part Number | ØA            | B           |
|------------|--------|------------------------------|---------------|-------------|
| 18         | HDP20  | 2414-002-1886                | 1.892 (48.06) | -           |
|            | HD30   | 114021                       | 1.699 (43.15) | .062 (1.57) |
| 24         | HDP20  | 2414-001-2486                | 2.080 (52.83) | -           |
|            | HD30   | 112264                       | 1.887 (47.93) | .062 (1.57) |

Dimensions are for reference only



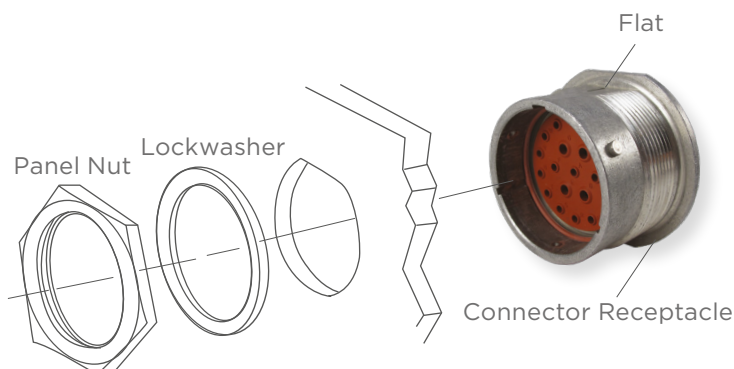
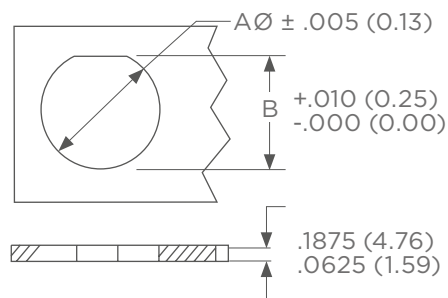
| Panel Nut Mounting Torque     |                                     |
|-------------------------------|-------------------------------------|
| HD30 series<br>18 shell size  | 260-280 IN. LB.<br>(29.4-31.6 N.M.) |
| HDP20 series<br>18 shell size | 45-55 IN. LB.<br>(5.1-6.1 N.M.)     |
| HD30 series<br>24 shell size  | 350-375 IN. LB.<br>(39.5-42.6 N.M.) |
| HDP20 series<br>24 shell size | 65-75 IN. LB.<br>(7.4-8.4 N.M.)     |

| Shell Size | Series | Panel Nut Part Number | Material | A             | B           |
|------------|--------|-----------------------|----------|---------------|-------------|
| 18         | HDP20  | 2411-002-1805         | Plastic  | 1.685 (42.80) | .250 (6.35) |
|            | HD30   | 114020-90             | Metal    |               | .178 (4.52) |
| 24         | HDP20  | 2411-001-2405         | Plastic  | 1.875 (47.63) | .250 (6.35) |
|            | HD30   | 112263-90             | Metal    |               | .178 (4.52) |

Dimensions are for reference only

## DEUTSCH HD30 & HDP20 MOUNTING

### RECEPTACLE MOUNTING



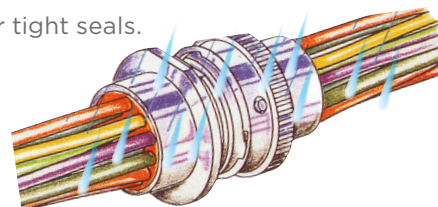
Recommended Size of Mounting Hole

| Shell Size | $\varnothing A$ | B             |
|------------|-----------------|---------------|
| 18         | 1.507 (38.28)   | 1.442 (36.63) |
| 24         | 1.696 (43.08)   | 1.632 (41.45) |

Dimensions are for reference only

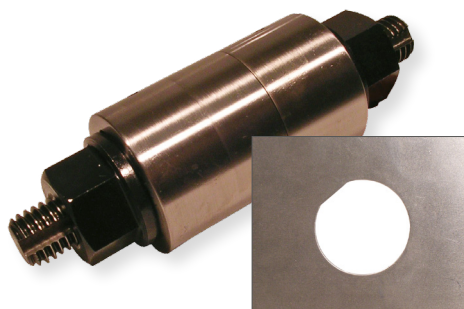
### helpful hint

Proper wire outside diameters help provide water tight seals.

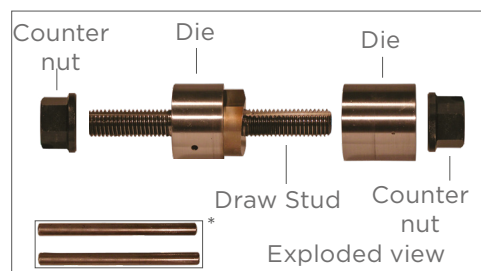


### D HOLE PUNCH

The D hole punch is a hand tool used to cut a D shaped hole. The D shaped hole allows the connector to be securely mounted and helps prevent the connector from spinning.



- Punchable Material: Up to .078" mild steel or aluminum. Up to .1875" plastic, wood, paneling, or other soft material.
- Tool Material: A2 material heat treated to a Rockwell hardness of 60 to 62.
- Tool Size: (rough dimensions) 5.5"L x 2"H x 2"D
- Sharpening: The tool can be sharpened as needed.
- Usability: A .625" minimum pilot hole is required to accommodate the draw stud. Air tools can be used.



\*The rods included with the "D" hole punch are used to remove the cutout and are not used in the cutting process.

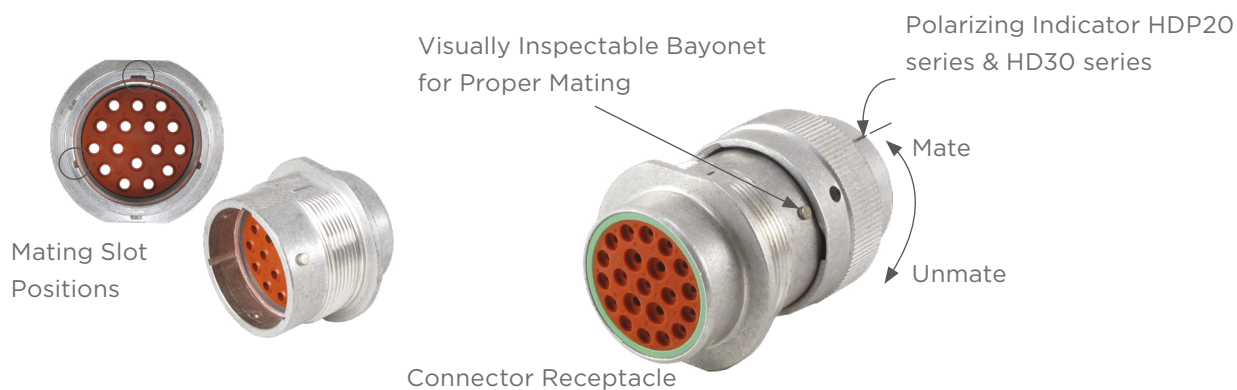
### Shell Size D Hole Punch Part Number

| Shell Size | D Hole Punch Part Number |
|------------|--------------------------|
| 18         | 18-D-PUNCH               |
| 24         | 24-D-PUNCH               |

## DEUTSCH HD30 & HDP20 HOW-TO INSTRUCTIONS

### MATING INSTRUCTIONS

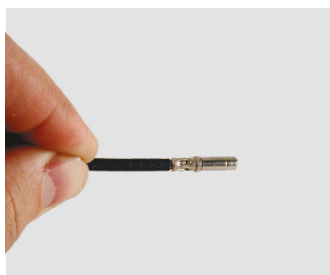
To mate the plug and the receptacle, line up the index groove on the plug with the flat surface on the receptacle, turn 1/4 turn clockwise. You will feel and hear the pieces snap into the locked position. To unmate the plug and receptacle, release the coupling ring by turning it counter-clockwise.



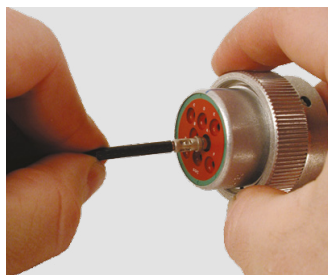
#### Note

When mating or unmating connectors, disassemble by hand. Do not use pliers or any other tool.

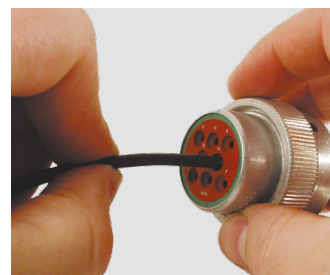
### CONTACT INSERTION



Step 1:  
Grasp contact approximately one inch behind the contact crimp barrel.



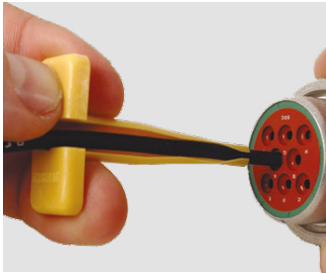
Step 2:  
Hold connector with the rear grommet facing you.



Step 3:  
Push contact straight into connector grommet until a positive stop is felt. A slight tug will confirm that it is properly locked in place.

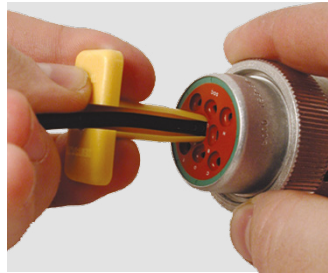
# DEUTSCH HD30 & HDP20 HOW-TO INSTRUCTIONS

## CONTACT REMOVAL



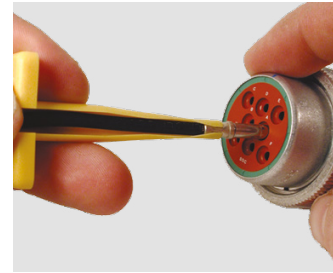
### Step 1:

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.

### Note

Do not twist or insert tool at an angle.





## 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 - 0.5mm<sup>2</sup>) 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 - 0.35mm<sup>2</sup>) 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.



a

## 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      | 7.5 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<br>AWG<br>(mm <sup>2</sup> ) | Recommended<br>Strip Length<br>Inches (mm) | Min. Contact<br>Retention | Ref Crimp<br>Tensile Lbs.<br>(N) | Max Rated<br>Amps at 125°C<br>Continuous |
|-------------|----------------------------|----------------|----------------------------------------|--------------------------------------------|---------------------------|----------------------------------|------------------------------------------|
|             | Pin                        | Socket         |                                        |                                            |                           |                                  |                                          |
| 20          | 0460-202-20**              | 0462-201-20**  | 20<br>(0.50)                           | .156-.218<br>(3.96-5.54)                   | 20<br>(89)                | 20<br>(89)                       | 7.5                                      |
|             | 0460-010-20**              | 0462-005-20**  | 16-18<br>(1.0-0.75)                    | .156-.218<br>(3.96-5.54)                   | 20<br>(89)                | 20<br>(89)                       | 7.5                                      |
| 16          | 0460-202-16**              | 0462-201-16**  | 16-20<br>(1.5-0.50)                    | .250-.312<br>(6.35-7.92)                   | 25<br>(111)               | 35-20<br>(156-89)                | 13                                       |
|             | 0460-215-16**              | 0462-209-16**  | 14<br>(2.0)                            | .250-.312<br>(6.35-7.92)                   | 25<br>(111)               | 70<br>(311)                      | 13                                       |
| 12          | 0460-204-12**              | 0462-203-12**  | 12-14<br>(3.0-2.0)                     | .222-.284<br>(5.64-7.21)                   | 30<br>(134)               | 75-70<br>(334-311)               | 25                                       |
| 8           | 0460-204-08**              | 0462-203-08**  | 8-10<br>(10.0-5.0)                     | .430-.492<br>(10.92-12.50)                 | 35<br>(156)               | 125-90<br>(556-400)              | 60                                       |
| 4           | 0460-204-04**              | 0462-203-04**  | 6<br>(16.0-13.0)                       | .430-.492<br>(10.92-12.50)                 | 35<br>(156)               | 300<br>(1334)                    | 100                                      |
| 4<br>(C038) | 5960-203-04141             | 5962-203-04141 | 4<br>(25.0-21.0)                       | .430-.492<br>(10.92-12.50)                 | 35<br>(156)               | 300<br>(1334)                    | 100                                      |

\*\* = Plating codes

## SOLID CONTACT PLATING CODES

| Part Number<br>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

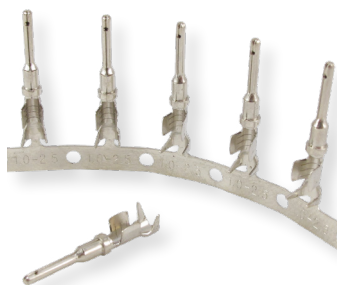
## STAMPED & FORMED CONTACT PART NUMBERS

| Size | S&F Contact Part Numbers |                            | Carrier Strip | Wire Size<br>AWG<br>(mm <sup>2</sup> ) | Wire<br>Insulation<br>O.D. Range | Recommended<br>Strip Length<br>Inches (mm) | Min.<br>Contact<br>Retention | Max. Rated<br>Amps at<br>125° C<br>Continuous |
|------|--------------------------|----------------------------|---------------|----------------------------------------|----------------------------------|--------------------------------------------|------------------------------|-----------------------------------------------|
|      | Pin                      | Socket                     |               |                                        |                                  |                                            |                              |                                               |
| 20   | 1060-20-01**             | 1062-20-01**               | 20-01         | 16-22<br>(1.5-0.35)                    | .075-.125<br>(1.91-3.18)         | .150-.200<br>(3.81-5.08)                   | 20<br>(89)                   | 7.5                                           |
|      | 1060-20-02**             | 1062-20-02**               | 20-02         | 16-22<br>(1.5-0.35)                    | .051-.085<br>(1.30-2.16)         | .150-.200<br>(3.81-5.08)                   | 20<br>(89)                   | 7.5                                           |
|      | -                        | 1062-20-03**<br>sleeveless | 20-03         | 16-22<br>(1.5-0.35)                    | .075-.125<br>(1.91-3.18)         | .150-.200<br>(3.81-5.08)                   | 20<br>(89)                   | 7.5                                           |
|      | 1060-20-06**             | 1062-20-06**               | 20-06         | 14-16<br>(2.5-1.0)                     | .075-.125<br>(1.91-3.18)         | .150-.200<br>(3.81-5.08)                   | 20<br>(89)                   | 7.5                                           |
| 16   | 1060-14-01**             | 1062-14-01**               | 14-16         | 14-18<br>(2.0-.75)                     | .095-.150<br>(2.41-3.81)         | .150-.200<br>(3.81-5.08)                   | 25<br>(111)                  | 13                                            |
|      | 1060-14-10**             | 1062-14-10**               | 14-16         | 14-18<br>(2.0-.75)                     | .095-.150<br>(2.41-3.81)         | .150-.200<br>(3.81-5.08)                   | 25<br>(111)                  | 13                                            |
|      | 1060-16-01**             | 1062-16-01**               | 16-18         | 14-18<br>(2.0-.75)                     | .075-.140<br>(1.90-3.55)         | .150-.200<br>(3.81-5.08)                   | 25<br>(111)                  | 13                                            |
|      | 1060-16-06**             | 1062-16-06**               | 0.5-1.0       | 16-20<br>(1.0-.50)                     | .055-.100<br>(1.40-2.54)         | .150-.200<br>(3.81-5.08)                   | 25<br>(111)                  | 13                                            |
|      | 1060-16-09**             | 1062-16-09**               | 16-18         | 14-18<br>(2.0-.75)                     | .075-.140<br>(1.90-3.55)         | .150-.200<br>(3.81-5.08)                   | 25<br>(111)                  | 13                                            |
|      | 1060-16-12**             | 1062-16-12**               | 1.0-2.5       | 12-16<br>(2.5-1.0)                     | .075-.140<br>(1.90-3.55)         | .175-.225<br>(4.45-5.72)                   | 25<br>(111)                  | 13                                            |
|      | -                        | 1062-16-14**<br>sleeveless | 14-16         | 12-16<br>(2.5-1.0)                     | .075-.140<br>(1.90-3.55)         | .175-.225<br>(4.45-5.72)                   | 25<br>(111)                  | 13                                            |
| 12   | 1060-12-01**             | 1062-12-01**               | 12-14         | 12-14<br>(4.0-2.0)                     | .113-.176<br>(2.87-4.47)         | .225-.275<br>(5.72-6.99)                   | 30<br>(134)                  | 25                                            |
|      | 1060-12-02**             | 1062-12-02**               | 10-12         | 10 <sup>+</sup><br>(6.0-4.0)           | .140-.204<br>(3.56-5.18)         | .225-.275<br>(5.72-6.99)                   | 30<br>(134)                  | 25                                            |

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

## S&F CONTACT PLATING CODES

| Part Number<br>Suffix | Plating Material |
|-----------------------|------------------|
| 22                    | Nickel           |
| 44                    | Gold             |
| 66                    | Tin/Nickel       |
| 77                    | Tin              |
| 88                    | Selective Gold   |



### Note

See information drawing  
0425-015-0000.

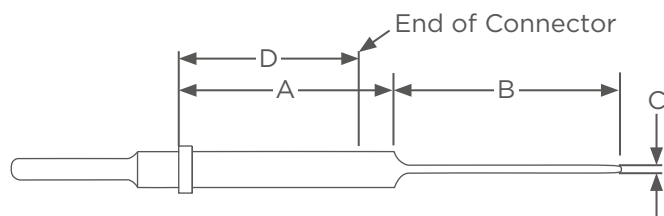
# DEUTSCH COMMON CONTACTS PCB PINS

## 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

|                      |                                                             |
|----------------------|-------------------------------------------------------------|
| <b>Material</b>      | Copper alloyr                                               |
| <b>Plating Codes</b> | 31: Gold<br>90: Tin<br>141: Nickel                          |
| <b>PCB Mounting</b>  | Consult factory for PCB mounting details and pin positions. |

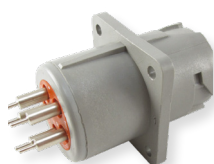


#### Note

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) |                                                                                    |               |

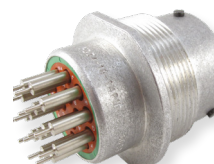
Dimensions are for reference only.



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:

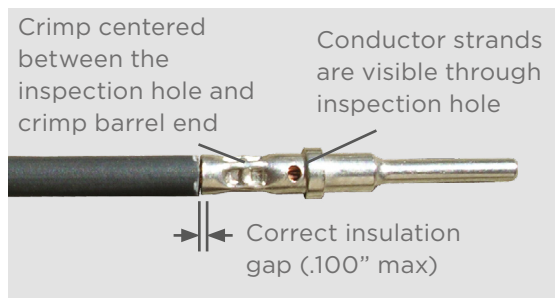
- The removed insulation should expose a conductor length that will pass beyond the inspection hole in the contact and still reveal the appropriate length of conductor between the contact and the insulation on the wire.
- Wire strands intact.
- All wire strands enter the contact barrel.
- Wire inserted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

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

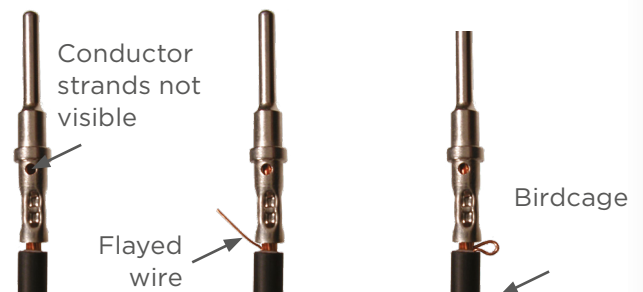
#### Note

For more detailed crimp dimensions please request a drawing

### SOLID CONTACT CRIMP

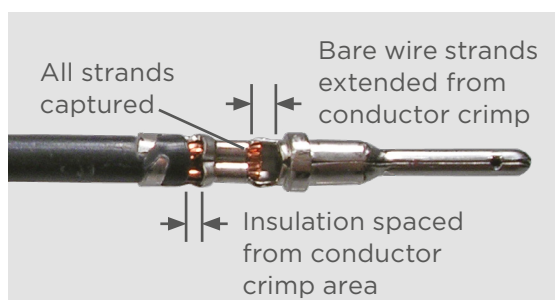


**Acceptable Crimp**

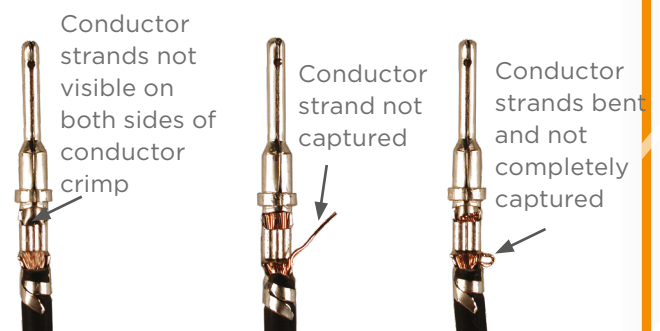


**Unacceptable Crimps**

### 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

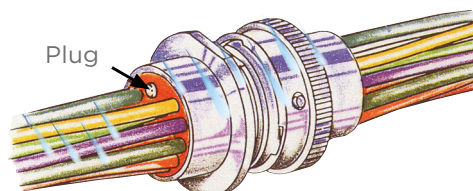
### SEALING PLUGS

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<br>(locking sealing<br>plug) | Size 16      | Thermoplastic, retained by locking<br>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.

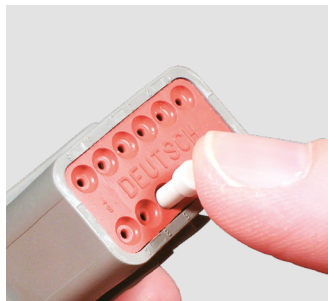


## DEUTSCH COMMON CONTACTS HOW-TO INSTRUCTIONS

### 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.

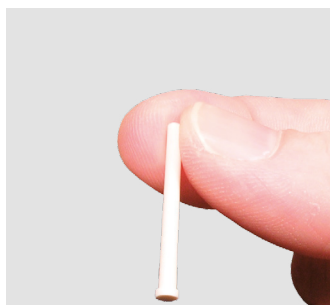
**Step 2:**

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

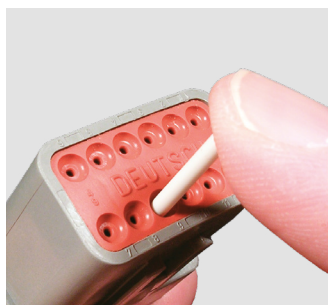
**Step 3:**

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.

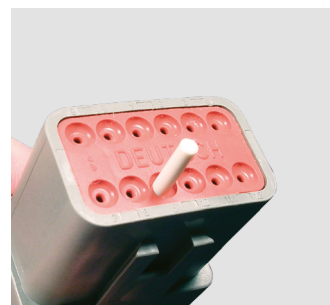
### LOCKING SEALING PLUG INSTALLATION

**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:**

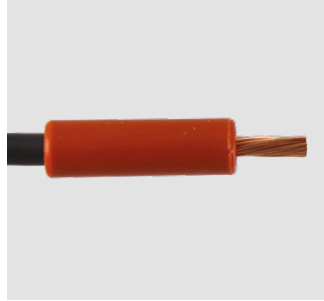
Apply pressure until sealing plug locks into place. A slight tug on the sealing plug will confirm it is locked into place.

# DEUTSCH COMMON CONTACTS HOW-TO INSTRUCTIONS

## CONTACT CRIMP SLEEVE REDUCER ASSEMBLY



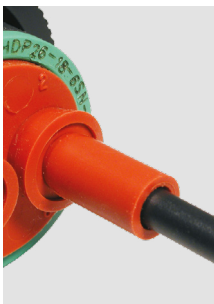
**Step 1:**  
Place crimp sleeve reducer into contact barrel.



**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<br>0462-203-04141  |
|                  | 8            | 0460-204-08141<br>0462-203-08141 |
|                  | 12           | 0460-204-12**<br>0462-203-12**   |
|                  | 16           | 0460-202-16**<br>0462-201-16**   |
|                  |              | 0460-215-16**<br>0462-209-16**   |
|                  | 20           | 0460-202-20**<br>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

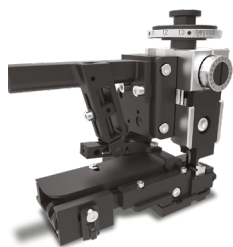


|                   | Pin P/N                                                                                                                      | Socket P/N                                                                                                                   | Insulation Range<br>O.D. (mm) | Applicator P/N<br>Conversion Kit P/N |
|-------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------|
| Size 12 - Group 1 | 1060-12-0144<br>1060-12-0166                                                                                                 | 1062-12-0144<br>1062-12-0166                                                                                                 | .151-.176<br>(3.83-4.47)      | 2266124-1<br>7-2266124-8             |
|                   |                                                                                                                              |                                                                                                                              | .130-.154<br>(3.30-3.91)      | 2266125-1<br>7-2266125-8             |
|                   |                                                                                                                              |                                                                                                                              | .113-.135<br>(2.87-3.43)      | 2266126-1<br>7-2266127-8             |
| Size 12 - Group 2 | 1060-12-0222<br>1060-12-0244                                                                                                 | 1062-12-0222<br>1062-12-0244                                                                                                 | .185-.204<br>(4.70-5.18)      | 2266127-1<br>7-2266127-8             |
|                   |                                                                                                                              |                                                                                                                              | .155-.190<br>(3.94-4.83)      | 2266128-1<br>7-2266128-8             |
|                   |                                                                                                                              |                                                                                                                              | .140-.160<br>(3.56-4.06)      | 2266129-1<br>7-2266129-8             |
| Size 16 - Group 1 | 1060-14-0122<br>1060-14-0144<br>1060-14-0177<br>1060-14-1077<br>1060-14-1088                                                 | 1062-14-0122<br>1062-14-0144<br>1062-14-0177<br>1062-14-1077<br>1062-14-1088                                                 | .120-.150<br>(3.05-3.81)      | 2266100-1<br>7-2266100-8             |
|                   |                                                                                                                              |                                                                                                                              | .105-.125<br>(2.67-3.18)      | 2266101-1<br>7-2266101-8             |
|                   | 1060-16-0122<br>1060-16-0144<br>1060-16-0177<br>1060-16-0722<br>1060-16-0744<br>1060-16-0777<br>1060-16-0977<br>1060-16-0988 | 1062-16-0122<br>1062-16-0144<br>1062-16-0177<br>1062-16-0722<br>1062-16-0744<br>1062-16-0777<br>1062-16-0977<br>1062-16-0988 | .105-.125<br>(2.67-3.18)      | 2266101-1<br>7-2266101-8             |
|                   |                                                                                                                              |                                                                                                                              | .085-.111<br>(2.16-2.82)      | 2266102-1<br>7-2266102-8             |
|                   |                                                                                                                              |                                                                                                                              | .075-.105<br>(1.91-2.67)      | 2266103-1<br>7-2266103-8             |
|                   |                                                                                                                              |                                                                                                                              | .063-.094<br>(1.60-2.39)      | 2266104-1<br>7-2266104-8             |
|                   |                                                                                                                              |                                                                                                                              |                               |                                      |
|                   |                                                                                                                              |                                                                                                                              |                               |                                      |
|                   |                                                                                                                              |                                                                                                                              |                               |                                      |
|                   |                                                                                                                              |                                                                                                                              |                               |                                      |
| Size 16 - Group 2 | 1060-16-0622<br>1060-16-0644<br>1060-16-0677<br>1060-16-0688                                                                 | 1062-16-0622<br>1062-16-0644<br>1062-16-0677<br>1062-16-0688                                                                 | .063-.094<br>(1.60-2.39)      | 2266110-1<br>7-2266110-8             |
|                   |                                                                                                                              |                                                                                                                              | .050-.075<br>(1.27-1.91)      | 2266111-1<br>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<br>O.D. (mm) | Applicator P/N<br>Conversion Kit P/N |
|-------------------|--------------|--------------|-------------------------------|--------------------------------------|
| Size 16 - Group 3 | 1060-16-1222 | 1062-16-1222 | .120-.140<br>(3.05-3.56)      | 2266112-1<br>7-2266112-8             |
|                   | 1060-16-1244 | 1062-16-1244 | .105-.125<br>(2.67-3.18)      | 2266113-1<br>7-2266113-8             |
|                   | 1060-16-1277 | 1062-16-1277 | .090-.110<br>(2.29-2.79)      | 2266114-1<br>7-2266114-8             |
|                   | -            | 1062-16-1422 | .075-.095<br>(1.91-2.41)      | 2266115-1<br>7-2266115-8             |
|                   | -            | 1062-16-1444 |                               |                                      |
|                   | -            | 1062-16-1477 |                               |                                      |
| Size 20 - Group 1 | 1060-20-0122 | 1062-20-0122 | .105-.125<br>(2.67-3.18)      | 2266116-1<br>7-2266116-8             |
|                   | 1060-20-0144 | 1062-20-0144 |                               |                                      |
|                   | 1060-20-0177 | 1062-20-0177 | .085-.111<br>(2.16-2.82)      | 2266117-1<br>7-2266117-8             |
|                   | -            | 1062-20-0322 |                               |                                      |
|                   | -            | 1062-20-0344 | .075-.105<br>(1.91-2.67)      | 2266118-1<br>7-2266118-8             |
|                   | -            | 1062-20-0377 |                               |                                      |
|                   | 1060-20-0222 | 1062-20-0222 | .063-.085<br>(1.62-2.16)      | 2266119-1<br>7-2266119-8             |
|                   | 1060-20-0244 | 1062-20-0244 |                               |                                      |
|                   | 1060-20-0277 | 1062-20-0277 | .050-.075<br>(1.27-1.91)      | 2266120-1<br>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<br>0462-203-04141                                  | HDT-04-08        | Two indent crimp  |
| 8            | 0460-204-08141<br>0462-203-08141                                 | HDT-04-08        | Two indent crimp  |
| 12           | 0460-204-12**<br>0462-203-12**                                   | HDT-48-00        | Four indent crimp |
|              |                                                                  | HDT-1561         | Two indent crimp  |
|              |                                                                  | HDT-50-00        | One indent crimp  |
| 16           | 0460-202-16**<br>0462-201-16**<br>0460-215-16**<br>0462-209-16** | HDT-48-00        | Four indent crimp |
|              |                                                                  | HDT-1561         | Two indent crimp  |
|              |                                                                  | HDT-50-00        | One indent crimp  |
| 20           | 0460-202-20**<br>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                      |

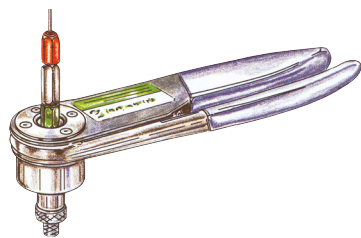


| Part Number | Description              |
|-------------|--------------------------|
| G454        | HDT-48-00 Go-No-Go Gauge |



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<br>(14-16 AWG) |
|              | 1062-16-01**        | DTT-16-01<br>(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

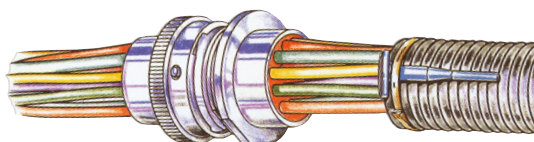
DEUTSCH removal tools are designed to simplify contact removal and field service repair in connectors that utilize a round shoulder contact retention system. Removal tools are compact, easy-to-use, and manufactured of heavy duty plastic to remove contacts without damage to the wire, insulation, connector 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<br>for HD Box | 8-10 AWG                                 | Green<br>Extended |
| 114010        | Size 12              | 12 AWG                                   | Yellow            |
| 0411-337-1205 | Size 12              | 12-14 AWG<br>Extra Thin Wall<br>(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<br>Extra Thin Wall<br>(E-Seal) | Dark Blue         |
| 0411-240-2005 | Size 20              | 20-22 AWG                                | Red               |

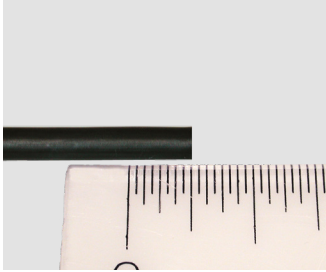
#### helpful hint

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



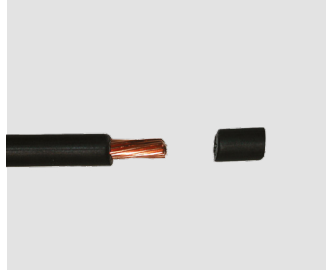
## DEUTSCH TOOLING HOW-TO INSTRUCTIONS

### WIRE STRIPPING



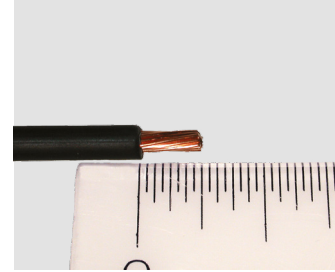
#### Step 1:

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.



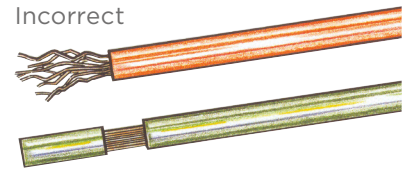
#### Step 3:

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.

Incorrect



Correct

### 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:

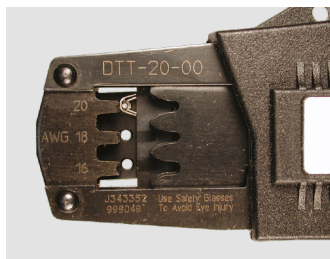
1. Insert wire into contact. Contact must be centered between indentors. Close handles until crimp cycle is completed.
2. Release handles and remove crimped contact.

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



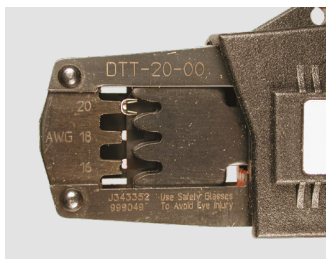
# DEUTSCH TOOLING HOW-TO INSTRUCTIONS

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



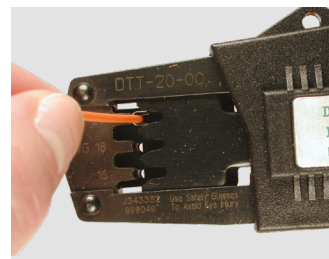
### Step 1:

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



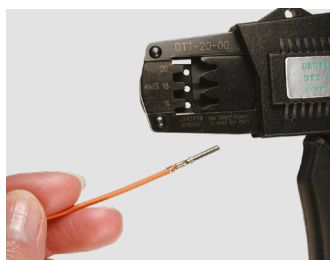
### Step 2:

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:

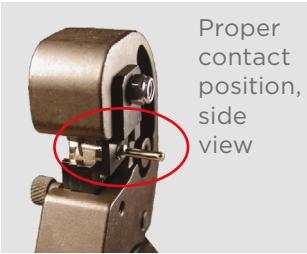
Close the tool until the ratchet releases. The ratchet is released when a loud click is heard and crimp is complete.

# 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.



**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 <sup>2</sup> | .160-.180           |
| 6.0 mm <sup>2</sup> | .170-.205           |



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