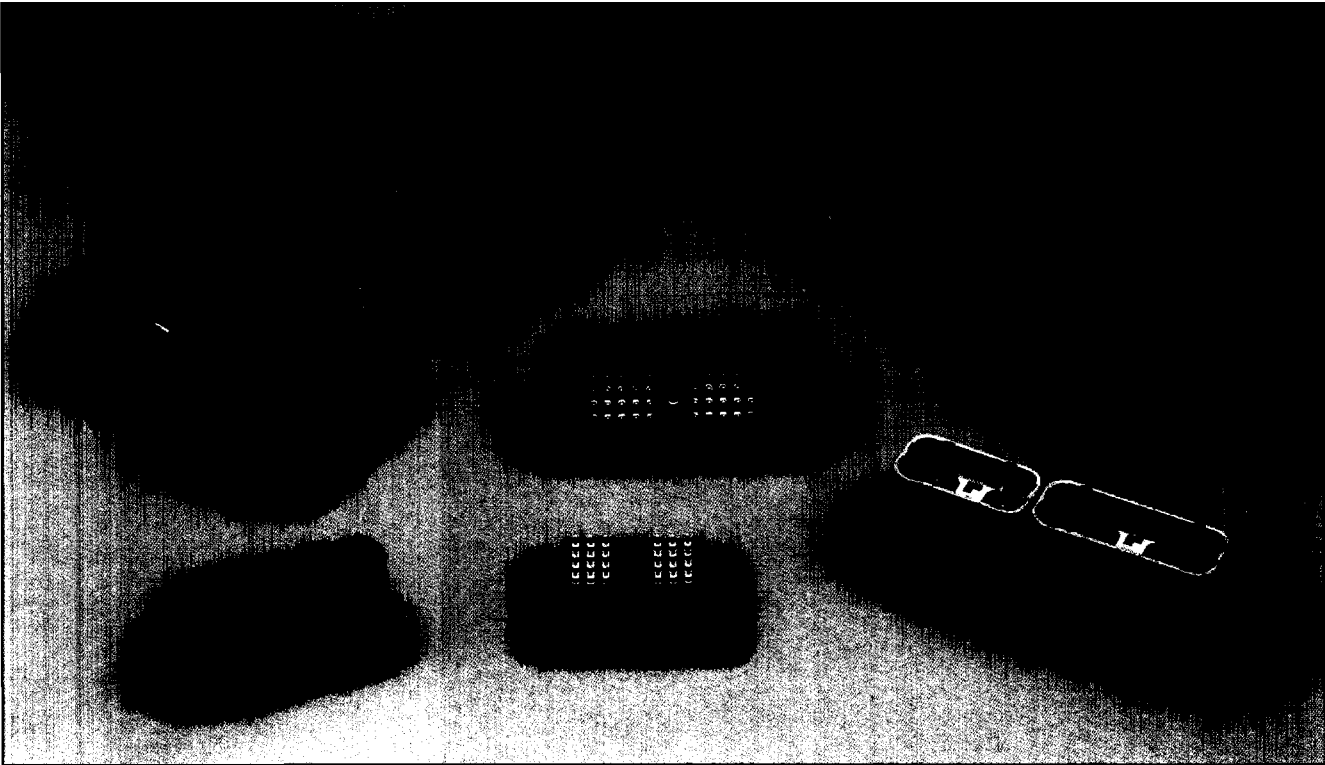
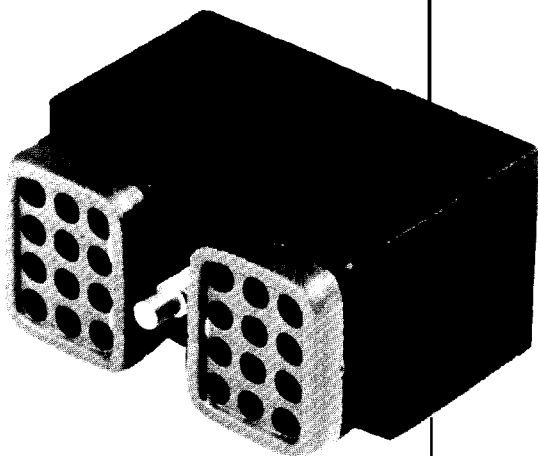


**DEUTSCH**

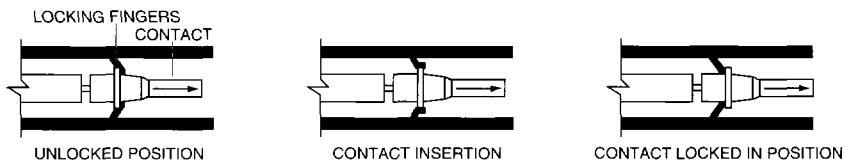


**DRC SERIES**  
TECHNICAL MANUAL

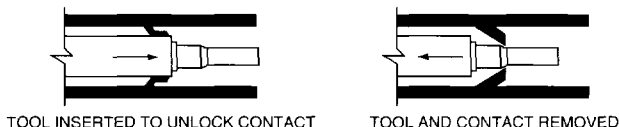
# DRC SERIES



## Contact Retention System

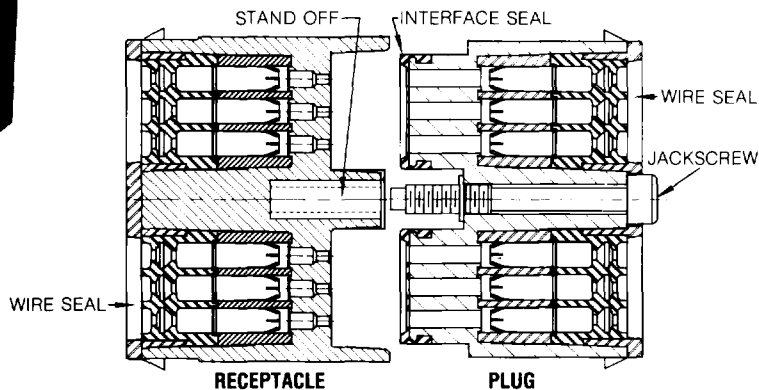


### CONTACT INSERTION PROCEDURE

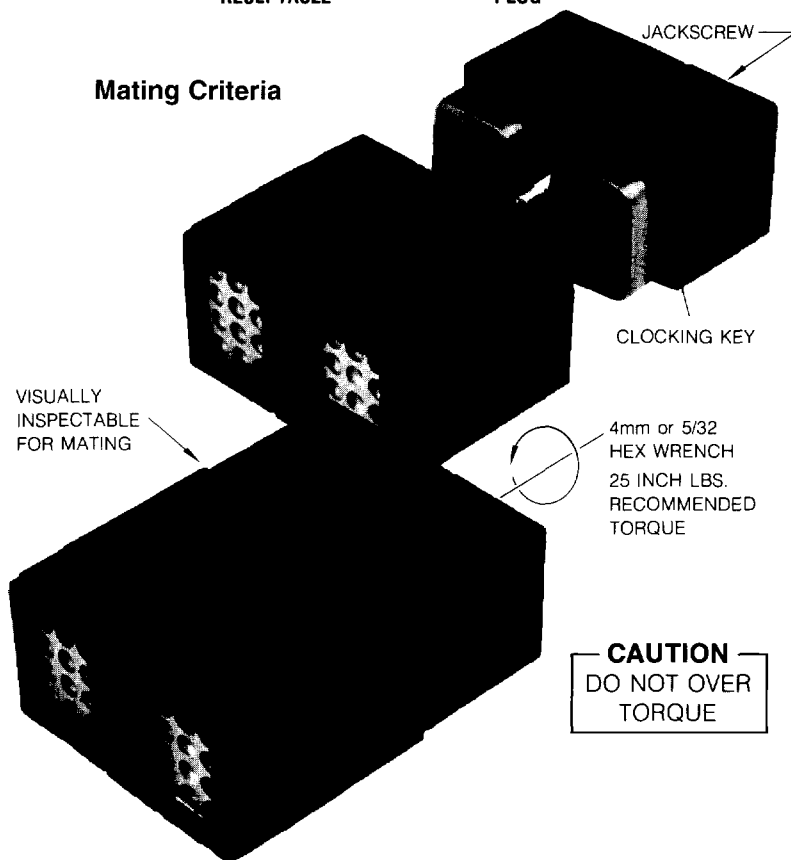


### CONTACT REMOVAL PROCEDURE

## Connector Sealing Elements



## Mating Criteria



## INDEX

**DRC Series -**  
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**Technical Data** .....3  
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 General Specifications

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 Receptacles  
 Insert Arrangements

**Assembly Instructions** .....5

**Contacts and**  
**Application Tooling Data** .....4

## ELECTRICAL INTERCONNECTIONS FOR HEAVY DUTY EQUIPMENT

The heavy duty connector industry is entering the most dynamic and challenging time in its history. The advent of electronics in trucks, buses, off-road equipment and farm machinery brings new objectives, considerations and criteria to the design philosophy of not only electrical systems, but also the maintenance, service and reliability of these new high-technology systems.



### The Challenge

Many new electronic systems will be made available to the heavy duty industry during the 1990's. Most notable are: engine, controls, transmission controls, electronic panels, ABS, traction controls, navigation and electrical load management. Designers of these new systems must address new criteria for connector selection that has never been imposed before, i.e.:

- Higher Density - Greater Number of Terminals
- Data Transmission Added to Power Distribution
- Non-Cab Mounted Electronics
- Significance of Total Installed Cost

### Introducing the Deutsch DRC Series

Taking advantage of the many years

Deutsch has been a major supplier of electrical interconnections for the heavy duty equipment industry and working with design, manufacturing and test personnel at the leading O.E.M.s in the truck, bus and off-highway industry, we have defined the Deutsch rectangular connector series. To Meet the Challenge of the new century

### Deutsch DRC Series Design

The DRC Series is designed with a higher number of terminal counts. Insert arrangements of 24, 40, 50 and 70 contacts are tooled and available. The use of size 16 & 20 contacts common to the other Deutsch product lines simplifies the design effort required to accomplish electrical and

mechanical criteria.

Deutsch crimp type, solid or stamped copper alloy contacts have years of field experience.

By utilizing a rectangular shape, the DRC is best suited to be compatible with externally or internally mounted electronic modules. P.C.B. applications are addressed with the DRC Series receptacles being supplied with contact terminations designed for flex-tape or direct board mountings.

The Deutsch DRC Series is completely environmentally sealed, using silicone seals and wire grommets that withstand engine and transmission temperatures. The rugged thermoplastic housings are designed to meet field abuse for the

life of the equipment.

The DRC contact systems decrease installation costs and increase reliability.

- Crimp type solid copper alloy contacts eliminate the need to solder.
- Wire seals are designed in the connector housing - no need to attach the seals to the wire.
- The DRC dielectric contact retention system is an integral part of the connector insert, thus allowing quick and easy assembly, while providing a positive lock for reliability.
- As in all Deutsch products, a common contact design is specified. This commonality reduces inventory costs and eliminates the chance of error in the harness system, as the termination process is common, allowing assembly operators repeat performance regardless of wire size. This ensures the repeatability of crimping, inserting and inspection.

### DRC Features/Benefits

Rugged thermoplastic shells. Designed for **heavy duty service**.

**Environmentally sealed** against moisture and contaminants. Silicone wire grommets are an integral part of the connector, reducing total installed costs.

**-55° to +125° continuous operation** at rated current for engine service.

Available in **high density pin counts** of 24, 40 and 70, meeting most electronic design demands.

Crimp-type, nickel plated, solid copper alloy contacts increase **durability** and reduce **installation costs** by eliminating soldering after crimping.

**Positive locking contact retention system** by use of dielectric "fingers" designed in the connector inserts, thus, eliminating the need for a second lock.

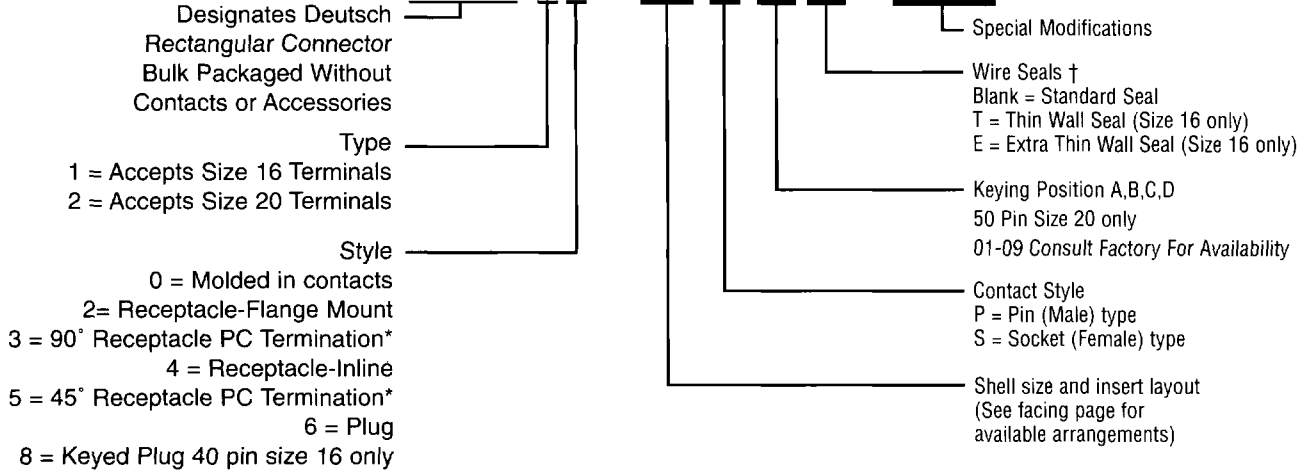
**Quick, fool-proof assembly**, decreasing time on the assembly line and increasing profits. The ease of contact insertion and removal reduces field-service down time.

Deutsch's common contact system **slashes inventory costs**, and **reduces the chance of errors** caused by hundreds of different types of terminations within one harness assembly.

# DRC SERIES

## PART NUMBERING SYSTEM

### DRC 14 - 40 P A X - XXX



## MATERIAL SPECIFICATIONS

### Plug

Shell: Thermoplastic  
Insert: Retainer-Thermoplastic  
Grommet-Silicone  
Rubber  
Jackscrew: Stainless Steel

### Receptacle

Shell: Thermoplastic  
Insert: Retainer-Thermoplastic  
Grommet-Silicone  
Rubber  
Standoff: Stainless Steel

### Contacts

Pin: Copper Alloy  
Socket: Copper Alloy  
Finish: Nickel Plated

### Sealing Plugs

Thermoplastic: Size 16  
Size 20

## GENERAL SPECIFICATIONS

### Dielectric Withstanding

**Voltage** (Test Voltage):  
Sea Level - 1500 VAC (rms)

### Current Rating (Maximum):

No. 16 13 amps  
No. 20 7.5 amps

### Silicone Insert:

Front and rear silicone inserts are devoid of all organic matter.

### ARC Resistance:

All dielectric materials withstand a minimum of 130 seconds per ASTM D-495.

### Physical Shock:

No locking, unmating or other unsatisfactory result after 50g's in each of three mutually perpendicular planes.

### Dielectric Strength:

350 volts per mil. minimum.

### Submersion:

Properly wired and mated connection will withstand immersion under three feet of water without loss of electronic qualities or leakage.

### Vibration:

Maintains continuity and exhibits no mechanical or physical damage after vibration.

### Temperature:

Operative at temperatures from -55° to +125°C at rated current.

### Contact Retention:

Contacts withstand a minimum load of 25 lbs. for size 16, 20 lbs. for size 20.

### Thermal Shock:

No cracking, chipping or leaking after 5 test cycles from -55° to +125°C.

### Insulation Resistance:

1000 megohms minimum at 25°C.

### Durability:

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

### Wire Sealing Range:

WIRE SEALING RANGE			
SEAL TYPE	CONTACT SIZE	INCH	MM
STD	16	.100 - .134	2.54 - 3.40
REDUCED "T"	16	.088 - .134	2.24 - 3.40
REDUCED "E"	16	.053 - .120	1.35 - 3.05
STD	20	.040 - .095	1.02 - 2.41

### Contact Millivolt Drop:

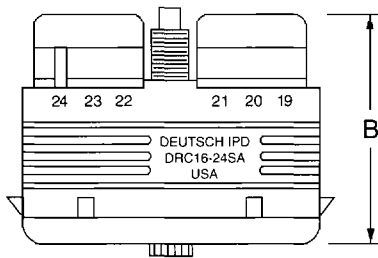
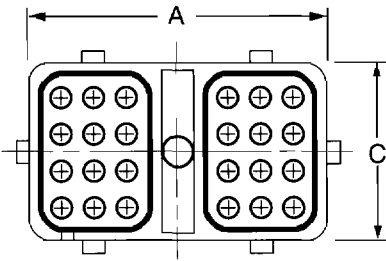
CONTACT MILLIVOLT DROP			
SOLID	WIRE GAUGE	TEXT AMPS	MILLIVOLT DROP*
16	16	13 Amps	60
20	20	7.5 Amps	60
STAMPED & FORMED			
16	16	13 Amps	100
20	20	7.5 Amps	100

For more information consult factory or see IPD Brochure: Environmentally Sealed Connectors For Electronic Modules.

\* Consult factory for availability.

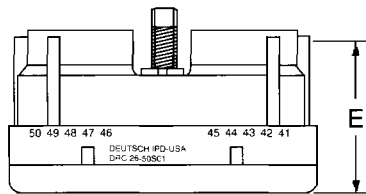
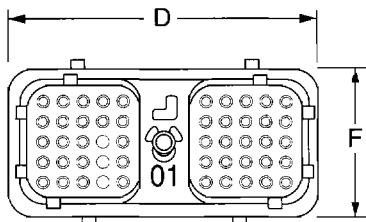
# DRC SERIES

## PLUG DRC 16



SHELL SIZE	A	B	C
24	2.100	1.597	1.148
40	2.868	1.592	1.202
70	4.094	1.620	1.421

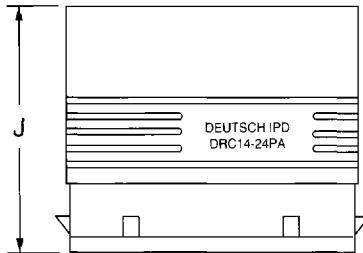
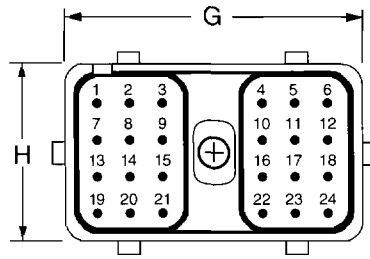
## DRC 26



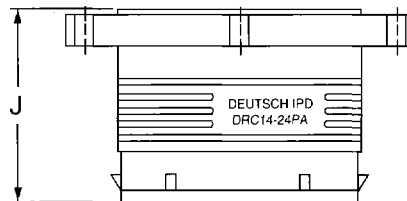
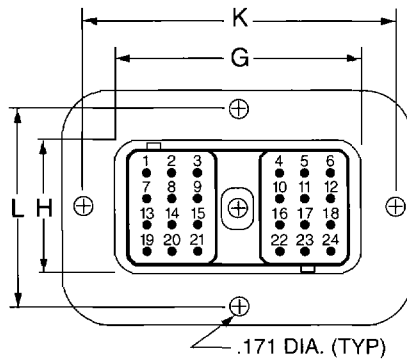
SHELL SIZE	D	E	F
24	2.004	1.435	1.100
40	2.70	1.285	1.100
50	2.70	1.435	1.274

## RECEPTACLE DRC 14

### Inline Receptacle



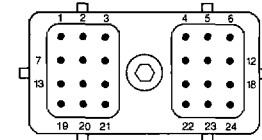
### Flange Mounting Receptacle



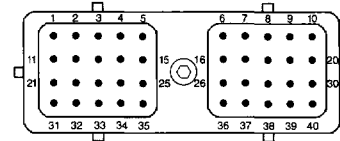
SHELL SIZE	G	H	J	K	L
24	2.154	1.202	1.742	2.724	1.772
40	2.908	1.202	1.699	3.530	1.772
70	4.094	1.421	1.757	4.664	1.991

## INSERT ARRANGEMENTS

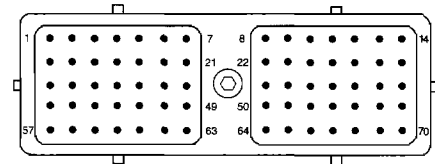
### SIZE 16 ARRANGEMENTS



**24**  
24 SIZE 16

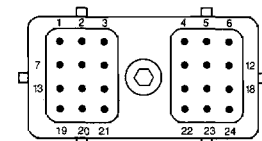


**40**  
40 SIZE 16

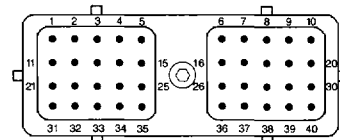


**70**  
70 SIZE 16

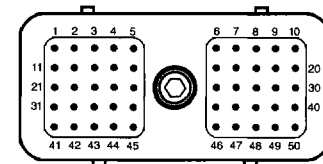
### SIZE 20 ARRANGEMENTS



**24**  
24 SIZE 20



**40**  
40 SIZE 20



**50**  
50 SIZE 20

ALL INSERT ARRANGEMENTS  
SHOW REAR GROMMET (SOCKET INSERT)

# DRC SERIES

## ASSEMBLY INSTRUCTIONS

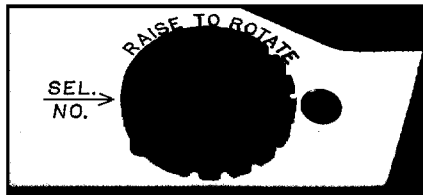
The purpose of this section is to assist you in assembling the Deutsch DRC Series electrical connectors. This section describes the correct procedure to use when crimping, inserting and removing contacts.

To determine the correct insert arrangement, check the part number stamped on the connector. A typical part number would appear as DRC 16-24SA. The number 24 indicates the insert arrangement (24 contacts). The designation "P" indicates pin contacts. An "S" designation indicates socket contacts.

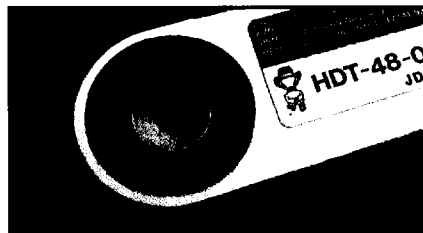
Since contacts are inserted and extracted from the REAR or wire side of the connector, the views shown are of the REAR GROMMET.

Size 16 Terminals for 16 and 18 AWG Wire

### Contact Crimping



1. Strip 1/4" (6.3 mm) insulation from wire.
2. Raise selector knob and rotate until arrow is aligned with wire size to be crimped.
3. Loosen lock nut, turn adjusting screw in until it stops.

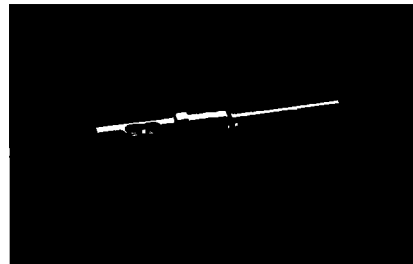


4. Insert contact with wire barrel up. Turn adjusting screw counter-clockwise until contact is flush with indentor cover. Tighten lock nut.



5. Insert wire into contact. Contact must be centered between indicators. Close handles until crimp cycle is completed.

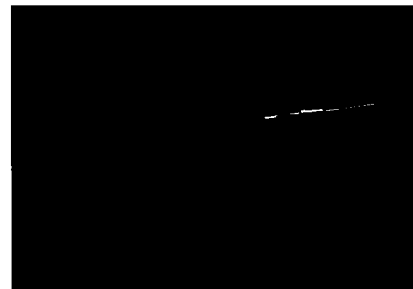
6. Release handles and remove crimped contact.



7. Inspect terminal to insure that all strands are in crimp barrel.

**NOTE:** Tool must be readjusted for each type/size of contact.

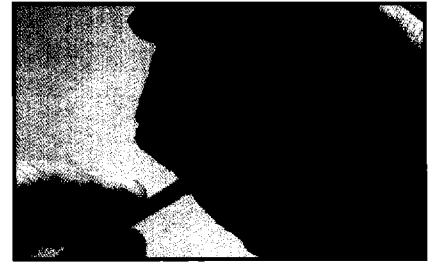
### Contact Insertion



1. Grasp contact approximately 1.00" (25.4 mm) behind the contact crimp barrel.



2. Hold connector with rear grommet facing you.



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.

### Contact Removal

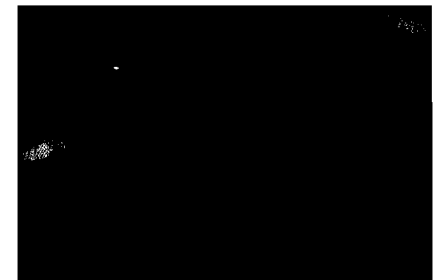


1. With rear insert toward you, snap appropriate size extractor tool over the wire of contact to be removed.



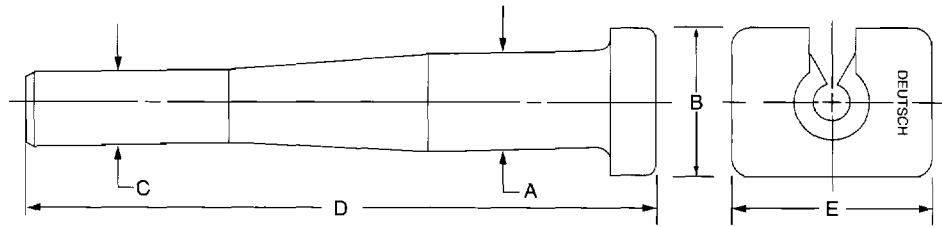
2. Slide tool along wire into the insert cavity until it engages contact and resistance is felt.

**NOTE:** Do not twist or insert tool at an angle.



3. Pull contact-wire assembly out of connector.

## Removal Tool

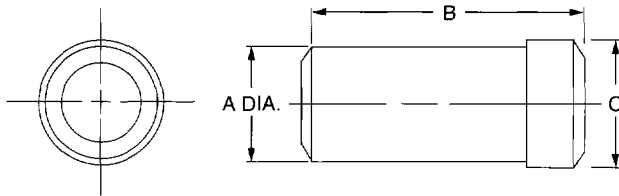


SIZE 16 CONFIGURATION

## CONTACTS AND APPLICATION TOOLING DATA

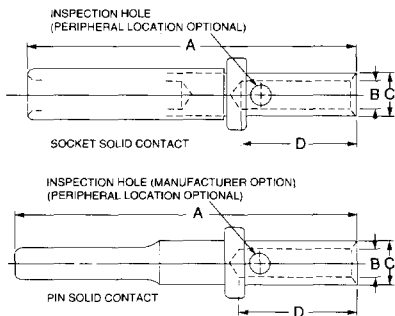
PART NUMBER	SIZE	A ±.015	B ±.031	C REF	D MAX	E ±.031
0411-204-1605	16	.286	.500	.160	2.300	1.000
0411-240-2005	20	.252	.500	.121	2.230	1.000

## Sealing Plug

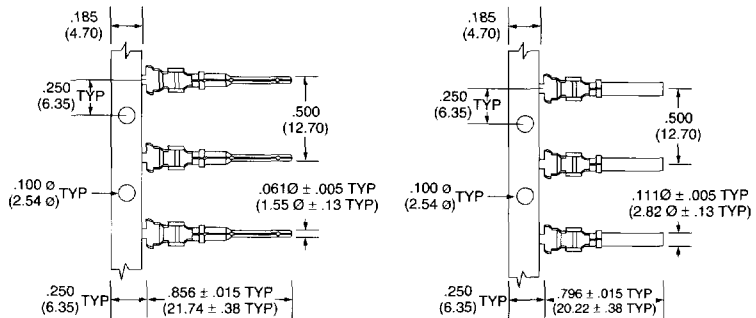


PART NUMBER	CONT. SIZE	A DIA ±.010	B DIM ±.030	C DIAM ±.015
114017	16	.121	.575	.171
0413-204-2005	20	.062	.575	.085

## Solid Contacts



## Stamped and Formed Contacts



### SOLID

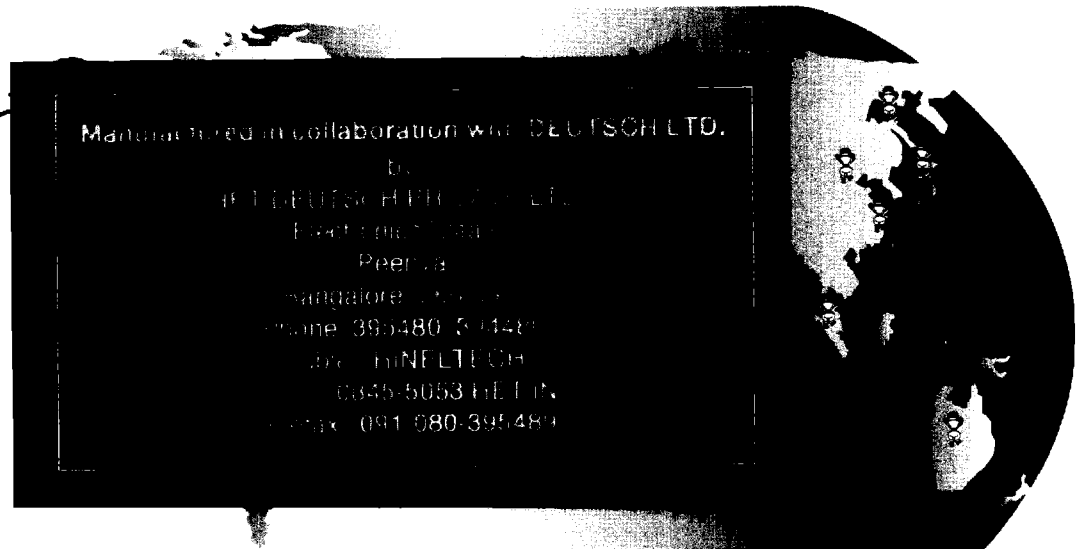
CONTACT PART NUMBER	SIZE & TYPE	A ±.020	B MIN	C MAX	D MIN	WIRE GAUGE RANGE	RECOMMENDED STRIP LENGTH	SUGGESTED CRIMP TOOL
0460-202-16141	16 PIN	.821	.062	.106	.250	16-18 AWG (1.0-0.8mm)	.250 - .312 (0.635 - 0.792mm)	HDT - 48-00 HAND HDP 400 PROD.
0462-201-16141	16 SOCKET	.759	.062	.106	.250	16-18 AWG (1.0-0.8mm)	.250 - .312 (0.635 - 0.792mm)	
0460-202-20141	20 PIN	.711	.050	.076	.172	20-24 AWG (0.5-0.2mm)	.218 - .156 (5.54 - 3.96mm)	HDT - 48-00 HAND HDP 400 - PROD.
0462-201-20141	20 SOCKET	.647	.050	.076	.172	20-24 AWG (0.5-0.2mm)	.218 - .156 (5.54 - 3.96mm)	

### STAMPED AND FORMED

		± .015			
1060-16-0122	16 PIN	.856		16 - 18 AWG (1.0-0.8 mm)	.150 - .200 (3.81 - 5.08mm)
1062-16-0122	16 SOCKET	.790		16 - 18 AWG (1.0-0.8 mm)	.150 - .200 (3.81 - 5.08mm)
1060-20-0122	20 PIN	.855		16 - 20 AWG (1.0-0.5 mm)	.150 - .200 (3.81 - 5.08mm)
1062-20-0122	20 SOCKET	.792		16 - 20 AWG (1.0-0.5 mm)	.150 - .200 (3.81 - 5.08mm)

# DEUTSCH CONNECTOR FAMILY

## A COMMON SYSTEM OF CONTACTS KNOWN WORLDWIDE



### DEUTSCH COMMON CONTACT SYSTEM

Fundamental to the Deutsch connector series is the principle that all wires are terminated by a single contact system. The only variation in contacts is that dictated by wire gauge. The word "common" describes the Deutsch contact system well. For one contact, whether it be a solid or stamped and formed style, can be assembled with the complete Deutsch connector family and applies to a common system of contacts, tooling processes, and terminations. Let's look at each of these subjects in detail:

#### Common Contacts

The basic system uses five contact sizes: 4, 8, 12, 16, & 20. These are the only contacts that an O.E.M. or their supplier need stock in volume no matter what connector is being terminated. Two styles of Deutsch contacts are available - solid crimp types, manufactured by a cold heading process using solid copper alloys, and stamped and formed types, manufactured by a stamping and forming process. Both contacts are interchangeable within the connector and are selected based upon the user's application. Stocking costs, engineering costs, and termination costs are all slashed, because the number of evaluations, test procedures, test reports, process standards, drawing notes, etc., is reduced, if not eliminated.

#### Common Tooling

By selecting the common Deutsch contact system, only one tool is needed to remove wires and in designs like the DT Series, even this tool is eliminated. One or two hand crimp tools are used to crimp the five different sizes of contacts to the wire end. For semi-automation to full automation, one universal crimp tool will crimp the volume required for wire termination.

#### Common Processing

Using Deutsch contacts means that the way an O.E.M. supplier attaches a wire to its terminus never varies. This procedural standard allows electrical workers to become highly proficient in terminating Deutsch connectors.

#### Common Terminations

The selection of Deutsch connectors means that all contact terminations will be the same, thus reducing the chance of errors in the harness system. Performance, reliability, and maintainability are critical to any electrical system. The use of a common contact system eliminates many of the failures reported in harnesses where hundreds of different types of terminations are used. The end result of selecting Deutsch is increased profits and long term performance.



For Regional Information Contact ...

# DEUTSCH

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