DEUTSCH

Industrial Products Division

CYLINDRICAL HEAVY DUTY
ENVIRONMENTAL CONNECTORS

HD30 & HDP20 Series

TECHNICAL MANUAL

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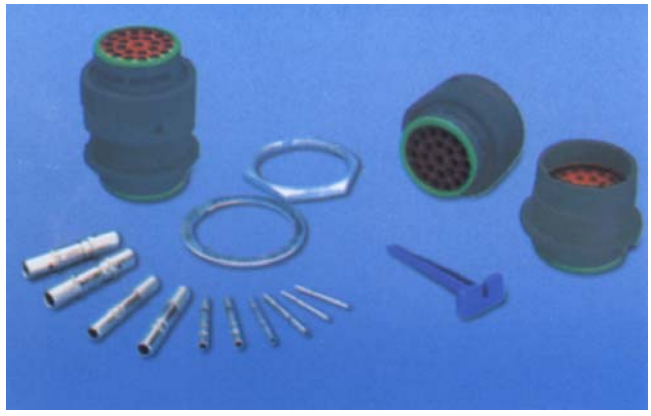
DEUTSCH CONNECTORS A Step Ahead

Deutsch HD 30 Series

A heavy duty, environmentally sealed, multi-pin circular connector, featuring quick connect-disconnect bayonet coupling, single hole bulkhead mounting, silicone seals, with a rear insertion/rear removal contact system.

The Deutsch HD30 Series connector, was developed to meet the needs of the heavy duty equipment and transportation industries for rugged, multi-pin, sealed connector systems.



Deutsch HDP 20 Series

Designed specifically for the truck, bus and off-highway industry, the HDP 20 Series is a heavy duty rated, environmentally sealed, composite shell, multi-pin connector. The plug features a quick connect-disconnect bayonet style coupling and the receptacle is designed for single hole mounting. Thus reducing assembly line time and installation costs.

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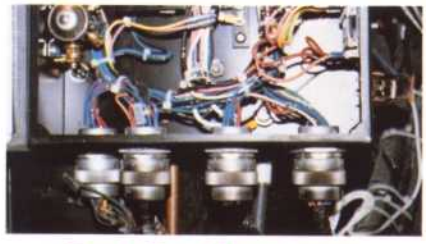
HD/HDP Series - Heavy Duty
Field-Proven Interconnection Systems



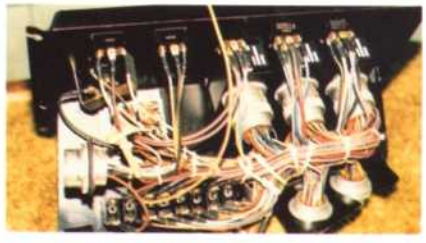
Truck Applications


Bus Applications



Farm Equipment


Construction Equipment

Electrical Connectors:

Critical to System Reliability and Maintainability

Recent studies indicate that electrical system failures are a common and constant source of equipment malfunction. A major area of electrical system failure is in electrical interconnections. Typical problems include loose and miswired terminals, corrosion, and contamination of terminals. Coupled with these problems, the impact of sophisticated safety devices, automated check-out systems, and other increased use of electronics, calls for a re-examination of traditional termination techniques. To the operator, termination failures mean excessive down time and maintenance costs. This adds up to slipped production schedules, cost over-runs and user problems. The end result: decreased profits and a loss of share of the market. In today's competitive arena, improved electrical connectors can make the difference between a growing, profitable operation or a losing one.

Information contained herein is for reference only. Consult factor for new envelope drawings, updated specifications, and additions to product lines.

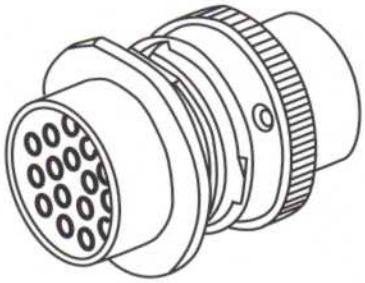
The HD/HDP Series

Decreases Costs and UP-Grades Performance

The Deutsch HD/HDP Series was developed to provide a solution to today's system problems found in the heavy duty trucking, equipment and transportation industries. The HD/HDP is a cylindrical, multi-pin, sealed device utilizing crimp type contacts that are quickly and easily inserted or removed. Use of the HD/HDP Series eliminates several other common connector problems.

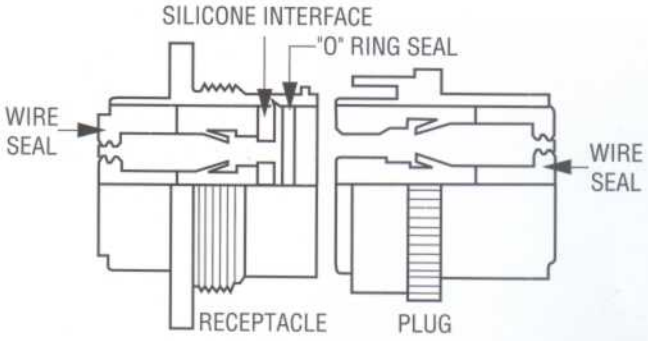
Problems associated with assembly and rework time, operational breakdowns requiring costly repairs and lengthy out of service time in the field have all been reduced and/or eliminated by the judicious application of the HD/HDP Series.

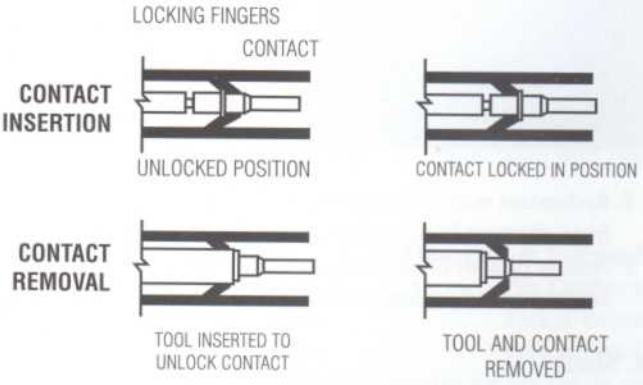
Deutsch HD/HDP Series provide the widest selection of interconnections for critical circuits requiring heavy-duty environmental terminations. Together, the HD and HDP offer common layouts, common tooling, the same adaptability to backshells and both meet the performance standards for heavy duty applications. So whether you are looking for rugged HD metal shells or cost effective HDP plastic shells, Deutsch offers the best product for your applications while holding the line on hidden inventory and assembly costs.



Some of the benefits of the Deutsch HD/HDP Series include:

- Quick, fool-proof assembly, decreasing time on the assembly line and eliminating miswiring.
- Simple and easy to rework, decreasing down time and increasing profits to the operator.
- Sealed against moisture and contaminants, eliminating open wiring system.
- Operation under severe shock and vibration, reducing break down and out of commission loss due to rugged operating conditions.
- Performance over a wide temperature range (-55 C to +125 C) meaning continuous operation in all environments, from arctic to desert conditions.
- Human factors engineered to assure that assembly and rework can be reliably handled by unskilled personnel.





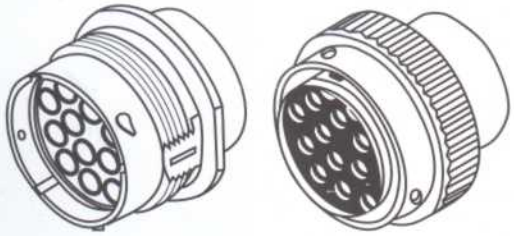
Sealed Against Moisture and Contaminants

Unlike terminal strips, binding posts and other open-wiring systems, the Deutsch HD/HDP Series is a completely sealed unit. The rear of the connector features an integral grommet wire seal that automatically seals each contact as it is locked into place during installation. There is no extra hardware to fasten or tighten or potting operation to achieve this seal. To further seal this connector, a silicone rubber blanket is located on the face of the connector to prevent moisture and other contaminants from reaching the contacts.

Fabricated from tear resistant, high temperature silicone, this rear grommet protects the contact from moisture, sand, dust, lubricating oils, road salt, hydraulic fluid, grease, mud and other contaminants encountered in heavy duty use. The elimination of open-wiring systems does away with such common hazards as short circuits due to metallic objects across the terminals. This is especially important during loading or refueling operation when a spark could cause a serious explosion. Closed wiring also protects maintenance personnel against accidental shock, yet can be easily checked for circuit continuity.

Contact Retention Decreases Installation Costs and Increases Reliability

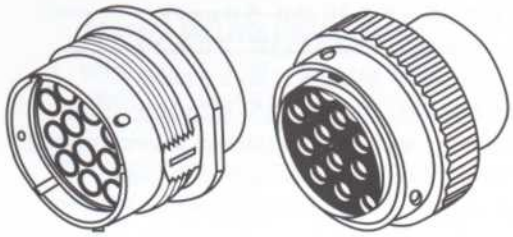
The HD/HDP Series uses crimp type, solid copper alloy contacts for damage proof performance and stamped & formed copper alloy contacts for cost effectiveness. Each style has the ability to carry continuous high operating current loads without overheating. The contacts or terminals are crimp terminated using automatic tooling for production and inexpensive readily available hand tools for field maintenance. After crimping, these contacts are easily installed by simply pushing the contact into place by hand. Contacts are positively secured by use of "fingers" in the connector which lock behind the shoulder of the contact, preventing accidental dislodging. Although securely locked in place, these contacts can be quickly and easily removed by the use of an inexpensive, non-conductive removal tool.



Corrosion Proof Plastic Shell HDP20 Series Provide a Cost Effective Alternative

Deutsch plastic shell HDP20 Series provide cost effectiveness with heavy duty terminations for the truck, bus & off-highway industries. Other features include: silicone wire and interfacial seals, visual indication of lock and mated position. Corrosion proof plastic shells and use of low cost stamped and formed contacts provides a cost effective solution for your application.

The HDP20 uses a bayonet coupling system to provide a vibration resistant locking mechanism. This shell provides a multiple keying system that positively prevents mismating and makes plug and receptacle coupling quick and easy. Receptacles mount with a single hole using a "flat" to prevent the connector from rotating.

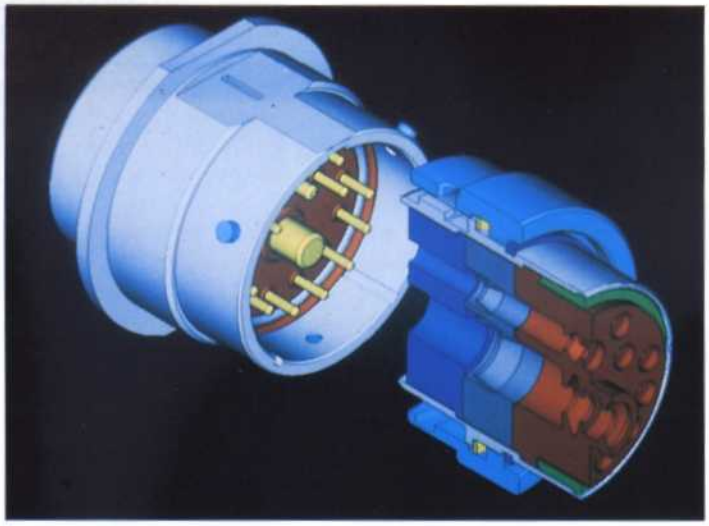


Rugged Metal Shell HD30 Series Withstands Years of Abuse

Deutsch HD30 Series features a lightweight, yet compact and rugged shell to protect contacts and sealing grommets. This shell provides a multiple keying system that positively prevents mismating and makes plug and receptacle coupling quick and easy.

The HD 30 Series uses a bayonet coupling system that provides a positive vibration resistant locking mechanism with visual indication of proper mate and lock. This quick disconnect system requires only a quarter turn to operate.

Easy installation to structure is provided by a single one-hole mounting system using a "flat" to prevent the connector from rotating during assembly or service.



HD/HDP Series Connector Features

Deutsch HD/HDP Series environmental connectors offer the advantages of decreased costs and upgraded performance. Designed to withstand years of abuse, the Deutsch HD/HDP Series is setting the pace in the Heavy Equipment Industry. Key features common to the HD/HDP Series are itemized below.

1. Contacts

A. Solid copper alloy construction withstands continuous current overload without degradation
Cost effective stamped and formed contacts provide high reliability and low cost.
B. Range of contact and acceptable wire sizes
1. Size #4 AWG 6 (13.0 mm²)
2. Size #8 AWG 8 & 10 (8.0 - 5.0 mm²)
3. Size #12 AWG 12 & 14 (3.0 - 2.0 mm²)
4. Size #16 AWG 14 & 18 (1.0 - 2.0 mm²)
5. Size #20 AWG 20 & 24 (0.5 - 0.2 mm²)
C. Closed entry socket contact design assures positive conductivity and eliminates probe damage
D. Simplified pin contact design limits possibility of bending

II Inserts

A. The hard plastic insert and closed contact interface captivate the contacts to prevent "float" and "splay"
B. Positive contact retention is provided through the use of plastic locking fingers which snap closed behind the shoulder of the contact
C. Interfaces
1. Lead-ins on socket interface properly align bent pins
2. Hard plastic prevents pins from penetrating dielectric material
D. Available in several insert arrangements*
1. Four in shell size 18 metal shells (HD30) only
2. Twelve in shell size 24 (HD30 or HDP20)
*See Page 9
E. Redundant wire seals prevent contamination from entering from rear of connector
F. Sealing plug to fill unused cavities to keep environmental sealing characteristics intact

III. Shell

A. Rugged, all metal shell to withstand years of abuse (HD30) Corrosion resistant all plastic shell (HDP20 Series) has same features (item C)
B. Positive shell keying prevents mismating
C. Simple, one quarter turn coupling
1. Free rotating, captivated coupling ring for fast assembly
2. Coupling ring designed to insure proper environmental sealing with minimum mating forces
3. Audio and visual indications of positive locked condition
D. Available in a straight plug and single hole mounting receptacle for easy installation to structure

IV. Application Tooling

A. Standard crimp tool or semi-automated, high-speed crimping tool is available
1. Fast, reliable, uniform results
2. Simplified procedures mean that only average skill is required for assembly
3. No soldering heat means:
a. No chance of heat damage to parts
b. No wicking to contribute to vibration failure
B. Inexpensive plastic removal tool designed to eliminate hidden internal insert damage
1. Removal tool designed to break rather than injure connector
2. Dielectric tool construction prevents shocks to personnel

Material Specifications

HD30 Plug
Shell: Aluminum
Coupling Ring: Aluminum
Insert: Retainer - Thermoplastic
Grommet - Silicone rubber

HDP20 Plug
Shell: Thermoplastic
Coupling Ring: Plastic
Insert: Retainer - Thermoplastic
Grommet - Silicone rubber

HD30 Receptacle
Shell: Aluminum
Insert: Retainer - Thermoplastic
Grommet - Silicone rubber

HDP20 Receptacle
Shell: Thermoplastic
Insert: Retainer - Thermoplastic
Grommet - Silicone rubber

HD/HDP Mounting Hardware
Panel Nut: Aluminum
Lockwasher: Spring Steel - cadmium plate with clear chromate finish

Solid Contacts
Pin: Copper alloy
Socket: Copper alloy
Finish: Nickel plating

Stamped & Formed Contact
Pin: Copper Alloy
Socket: Copper Alloy
Finish: Nickel plating

Optional: Gold plating is available for dry circuit applications

Sealing Plugs
Thermoplastic: Size 20 thru 8
Elastomer: Size 4

Performance Specifications

Temperature
Operating at temperatures from -55° C to + 125° C.

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

Physical Shock
No unlocking, unmating or other unsatisfactory result during or after 50 g's in each of three mutually perpendicular planes. No electrical discontinuities longer than 1 microsecond.
MIL-STD 202, Method 213, Condition "C."

Contact Current Rating @ 125°C (continuous)

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

Insulation Resistance
1000 megohms min. at 25° C.

Vibration
Maintains continuity and exhibits no mechanical or physical damage during or while subject to a sinusoidal vibration, having an amplitude of .060 inches double amplitude and the frequency varied linearly between limits of 10 to 2000 to 10 Hz with a maximum force of 20g's. No electrical discontinuities longer than 1 microsecond.

Moisture Resistance
Water does not penetrate seals when submerged in 3 feet of water.

Corrosion Resistance
Connectors show no evidence of corrosion after exposure to 48 hours of salt spray per MIL-STD 1344 method 1001.

Fluid Resistance
Connectors show no damage when exposed to most fluids used in industrial applications.

Dielectric Withstanding Voltage:
Current leakage less than 2 milliamps at 1500 VAC.

Crimp Tensile Strength: (Solid)

#4	Size	Contacts	300 lbs.
#8	Size	Contacts	90 lbs.
#12	Size	Contacts	70 lbs.
#16	Size	Contacts	25 lbs.
#20	Size	Contacts	20 lbs.

CONTACT MILLIVOLT DROP (SOLID)

WIRE (AWG)	TEST CURRENT	MILIVOLT DROP*
4	100	60
8	60	60
12	25	60
16	13	60
20	7.5	60

*Less drop through wire

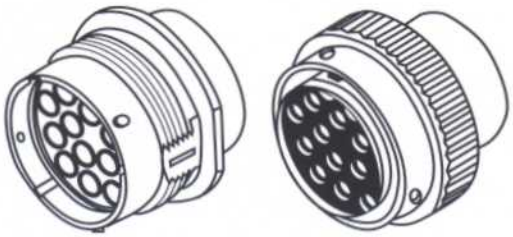
Crimp Tensile Strength: (Stamped & Formed)

#12	Size	Contacts	70 lbs.
#16	Size	Contacts	38 lbs.
#20	Size	Contacts	20 lbs.

CONTACT MILLIVOLT DROP (STAMPED & FORMED)

WIRE GAUGE	TEST CURRENT	MILIVOLT DROP*
12	25 Amps	100
16	13 Amps	100
20	7.5 Amps	100

*Less drop through wire



Part Numbering System

HD X 36 - 24-21 SN - XXX

Designates Deutsch Heavy Duty Cylindrical Connector

B = Breakaway plug option
N = Non-environmental option

Type
3 = Standard Commercial - Bulk packed without contacts or accessories
4 = Kit - Individually packaged with contacts, sealing plugs, mounting hardware and removal tool

Style
4 = Receptacle - Jam nut type mounting
6 = Plug

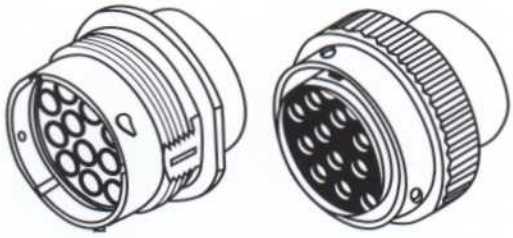
Special modifications
-072 = Threaded adapter
-059 = Cable clamp/adapter

Wire Seal Options
N = Normal positon and wire seals (Green Ring)
T = Thin wall wire seals option (Grey Ring)
E = Extra thin wall wire seals (Blue Ring)

Contact Style
P = Pin (Male) type
S = Socket (Female) type

Shell size and insert layout

(Consult factory for options and special modifications available.)



Part Numbering System

HDP 26 - 24-21 SN - XXXX

Designates Deutsch Heavy Duty Plastic Connector

Type
2 = Standard Commercial - Bulk packed without contacts or accessories

Style
4 = Receptacle - Jam nut type mounting
6 = Plug

Deutsch HD30 Series contacts, sealing plugs and tooling are specified for use in the HDP20 Series. Consult factory for additonal options and special modifications available.

Special modifications
-L015 Threaded Adapter

N = Normal positon and wire seals (Green Ring)
T = Thin wall wire seals option (Grey Ring)
E = Extra thin wall wire seals (Blue Ring)

Contact Style
P = Pin (Male) type
S = Socket (Female) type

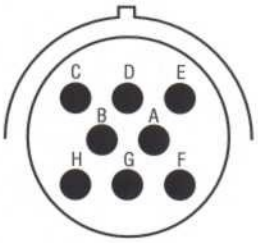
Shell size and insert layout

Caution: Check with factory for changes, deletions, and additions.

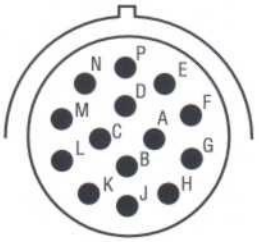
HD 30 Series Insert Arrangements

All insert arrangements show socket rear insert.

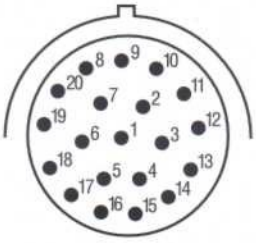
NORMAL POSITION



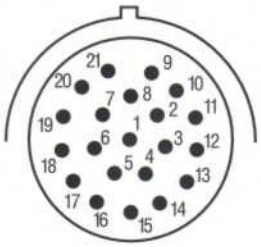
18-8*
8 size 12**
N, E***



18-14
14 size 16
N, T, E



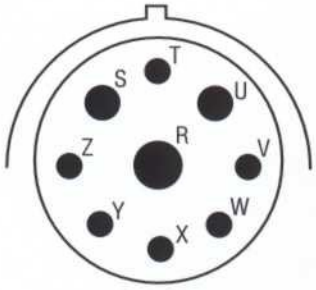
18-20
2 size 16 & 18 size 20
N



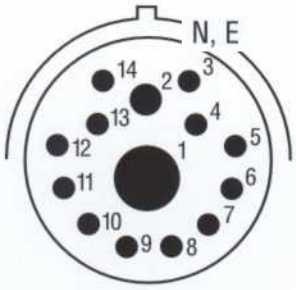
18-21
21 size 20
N

HD30 & HDP20 Series Insert Arrangements

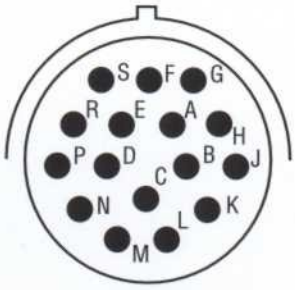
All insert arrangements show socket rear insert.



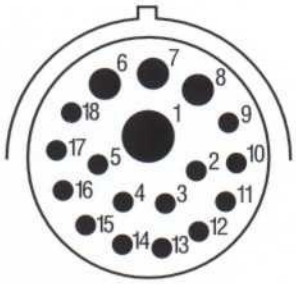
24-9
1 size 4, 2 size 8 & 6 size 12
N, E



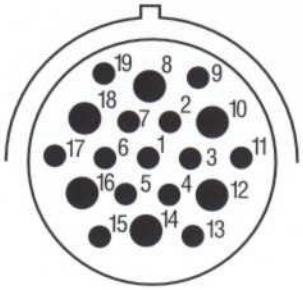
24-14
1 size 4, 1 size 12 & 12 size 16
N



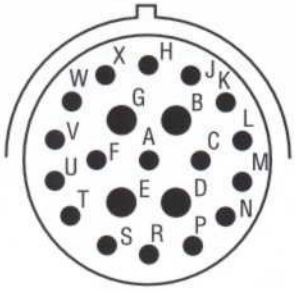
24-16
16 size 12
N, E



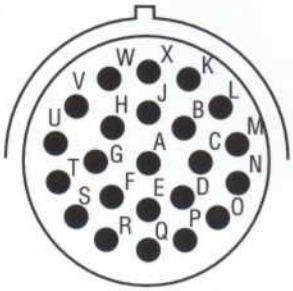
24-18
1 size 8, 3 size 12 & 14 size 16
N, E



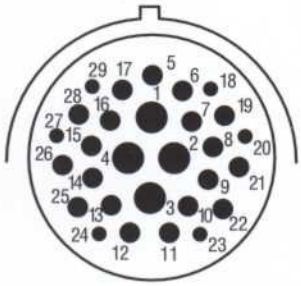
24-19
6 size 12 & 13 size 16
N, E



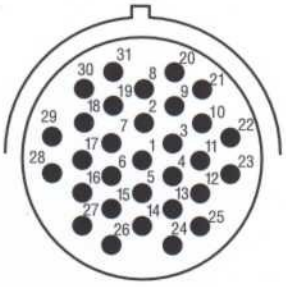
24-21
4 size 12 & 17 size 16
N, E



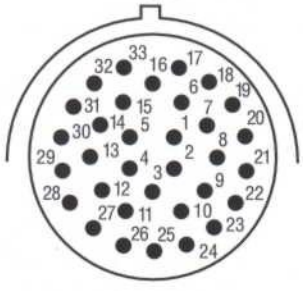
24-23
23 size 16
N, T, E



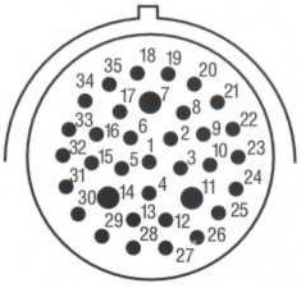
24-29
4 size 12, 19 size 16 & 6 size 20
E



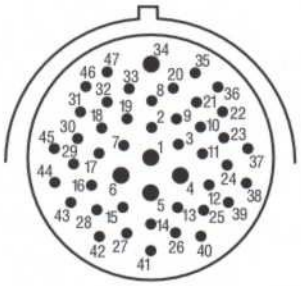
24-31
31 size 16
T, E



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

*Arrangement
**Description
***Rear Seal

Information contained herein is for reference only.
Consult factor for new envelope drawings, updated specifications, and additions to product lines.

USABLE WIRE SIZES

Caution: Check with factory for changes, deletions, and additions.

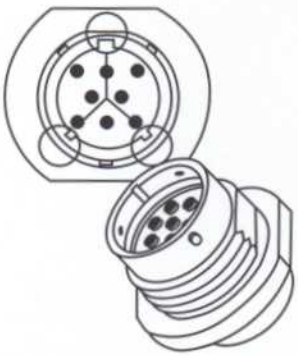
INSERT ARRANGEMENT	SEAL TYPE		
	N	T	E
18-8	✓		✓
18-14	✓	✓	✓
18-20	✓		
18-21	✓		
24-9	✓		✓
24-14	✓		
24-16	✓		✓
24-18	✓		✓
24-19	✓		✓
24-21	✓		✓
24-23	✓	✓	✓
24-29			✓*2
24-31		✓*1	✓
24-33	✓		✓
24-35	✓		✓
24-47			✓*2
24-91	✓		

NOTES: 24-91 arrangement is the ISO Box interface and includes electronics. See Page 11.

*1 Modified "T" Seal. See envelope print
*2 Modified "E" Seal. See envelope print

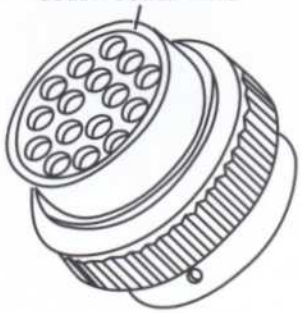
CONTACT SIZE	RECOMMENDED WIRE INSULATION O.D. FOR:		
	N-SEAL Green Ring	T-SEAL Grey Ring	E-SEAL Blue Ring
#4	.280-.292 (7.11-7.42)	.261-.292 (6.63-7.42)	.261-.292 (6.63-7.42)
#8	.190-.240 (4.83-6.10)	.170-.240 (4.32-6.10)	.135-.220 (3.43-5.59)
#12	.134-.170 (3.40-4.32)	.113-.170 (2.87-4.32)	.097-.158 (2.46-4.01)
#16	.100-.134 (2.54-3.40)	.088-.134 (2.23-3.40)	.053-.120 (1.35-3.05)
#20	.040-.095 (1.02-2.41)	.040-.095 (1.02-2.41)	.040-.095 (1.02-2.41)

Connector Identification



MATING SLOT POSITIONS

COLOR CODED RING



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

Green: Normal Seal
Grey: Thin Wall Seal
Blue: Extra Thin Seal

CAUTION: Undersize wire insulation is a major cause for leakage. Shrink Tubing SHOULD NOT BE USED.

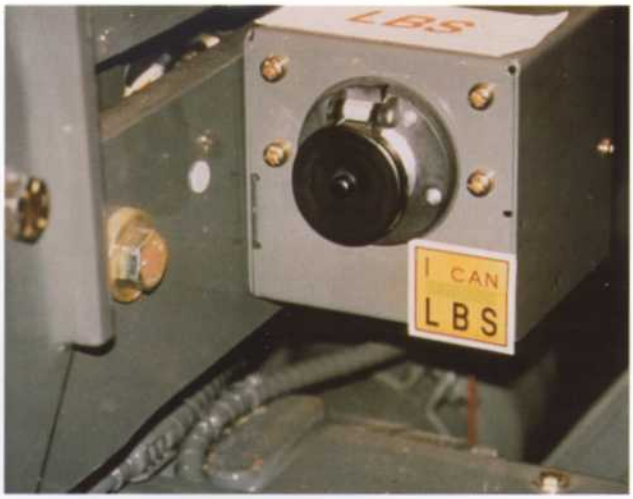
Information contained herein is for reference only.
Consult factor for new envelope drawings, updated specifications, and additions to product lines.

Requirements for improved output of farm production is causing rapid technological changes in agricultural equipment. Precision farming involves the collection and analysis of data as small as one square meter. Responding to the need and working with the ISO committee, Deutsch defined an interface for the distribution of power and gathering of data between agricultural tractors and towed implements. Responding to these needs, Deutsch developed its ISO box with field proven interconnects.

Deutsch's ISO Box is part of the CAN (Communication Area Network) Based System which is critical to the future of precision farming. The design allows standard field proven Deutsch electrical interfacing for the communication and transfer of power and multiplex data between agricultural tractors and towed implements. Data can be collected on a square meter basis, stored, then used to maximize the effect of operations like seeding, fertilization and application of pesticides to dramatically improve yields.

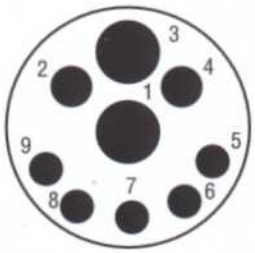
ISO Box Interface

ISO/CD 11783-2



Removable Splash Guard

Socket Rear Shown



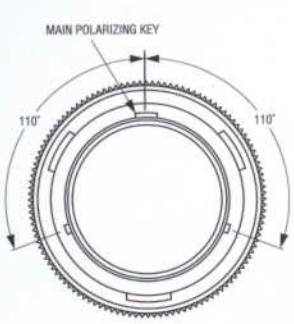
2 size 8, 2 size 12
& 5 size 16

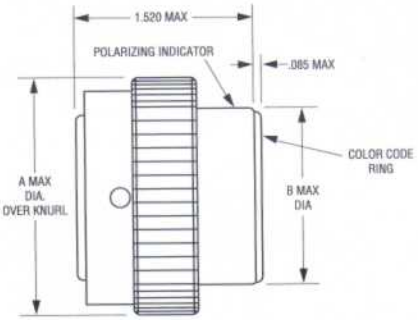
HDBox24-91PN

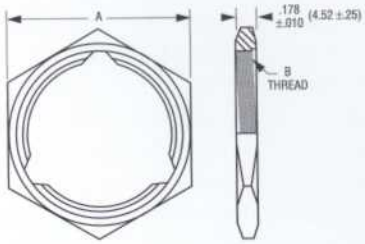
ISO Box with receptacle connectors, box cover plus 4 screws, less contacts

HDB36-24-91SN-059 Mating Plug*
DT06-4S Gold Contacts Mating Plug*
DT06-2S Gold Contacts Mating Plug*
Plugs sold less contacts

*Mating plugs and contacts sold separately. See "DT" Technical Brochure for performance information.
For contact information see page 15 of this brochure. Contact factory for plating variations.







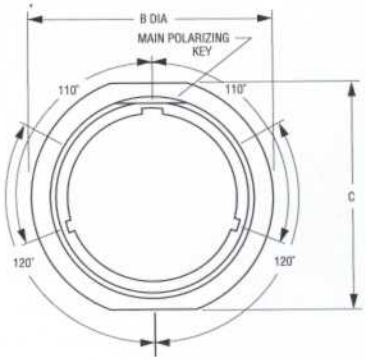
Series Plug

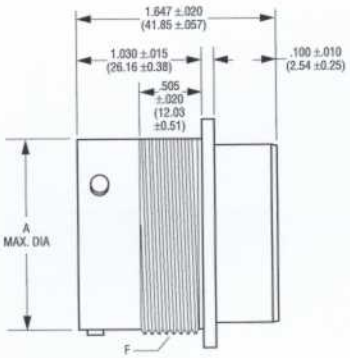
SHELL SIZE	A MAX DIA	B MAX DIA ±.010
18	1.692 (42.98)	1.220 (30.99 ±0.25)
24	1.942 (49.33	1.470 (37.34 ±.0.25)

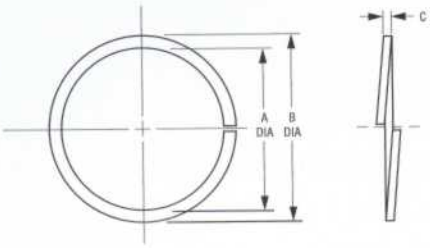
Panel Nut*

PART NUMBER	SHELL SIZE	A DIA ± .030	B THREAD
114020-90	18	1.678 (42.62 ±.76)	1 1/2-18 UNEF-2B
112263-90	24	1.875 (47.63 ±.76)	1 11/16-18 UNEF-2B

PANEL NUT MOUNTING TORQUE	
HD30 18 SHELL SIZE	260-280 IN/LB
HD30 24 SHELL SIZE	350-375 IN/LB
HDP20 24 SHELL SIZE	70±5 IN/LB (7.9±5N.M.)







Series Receptacle

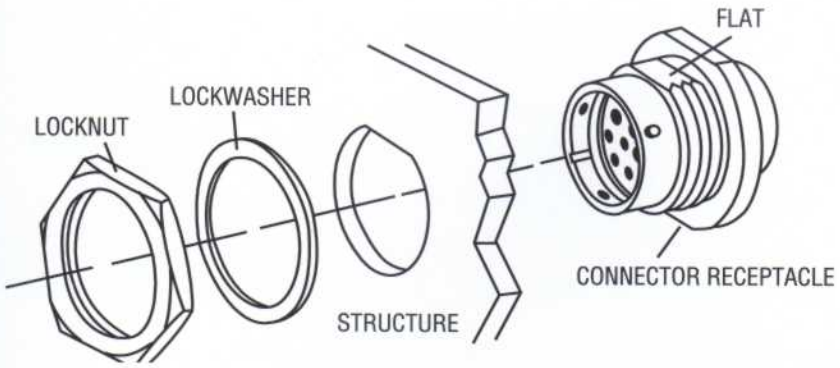
SHELL SIZE	A ±.010	B ±.020	C MAX.	F THREAD
18	1.329 (33.76 ±0.25)	1.750 (44.45 ±0.51)	1.625 (41.28)	1 1/2-18 UNEF
24	1.579 (40.11 ±0.25)	2.000 (50.80 ±0.51)	1.875 (47.63)	1 11/16-18 UNEF

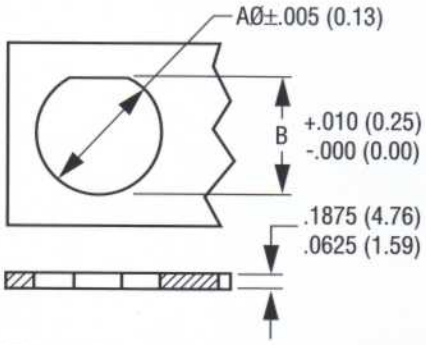
Panel Lockwasher*

SHELL SIZE	A DIA. ± .015	B DIA. ±.030	C REF ±.015
18	1.512 (38.40 ±.38)	.187 ±.010 (4.75 ±.25)	.062 (1.57 ±.38
24	1.700 (43.18 ±.38)	2.074 (4.75 ±.25)	.062 (1.57 ±.38)

**Metal lockwasher and Panel Nuts are used on HD30 and HDP20 Series*

Receptacle Mounting



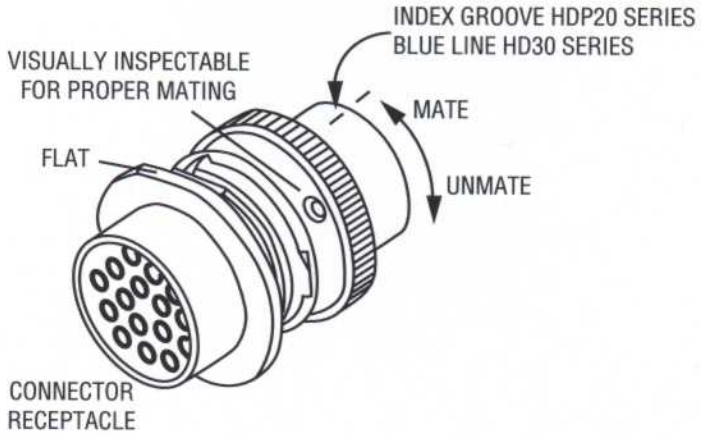


RECOMMENDED SIZE OF MOUNTING HOLE		
SHELL SIZE	AØ	B
18	1.507 (38.28)	1.442 (36.63)
24	1.696 (43.08)	1.632 (41.45)

"D" Hole Punches available from: LADD Industrial Sales.

Mating / Unmating Instructions

To mate the plug and the receptacle, line up the blue line or 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, reverse the above procedure.



CAUTION: When mating or unmating plug and receptacle, take them apart by hand. DO NOT use pliers or any other tool to take them apart.

HDP20 Series Backshell Accessories

Product Definition. A modification to the rear of a connector that provides for the attachment of convoluted tubing to the rear of the HDP20 Series.

Primary Purpose. An accessory used under special circumstances where the wires must make a 90^0 turn immediately following the rear of the connector and wire the harness must be inside convoluted tubing. The threaded type adapter allows for a wider range of backshell and/or accessories to be terminated

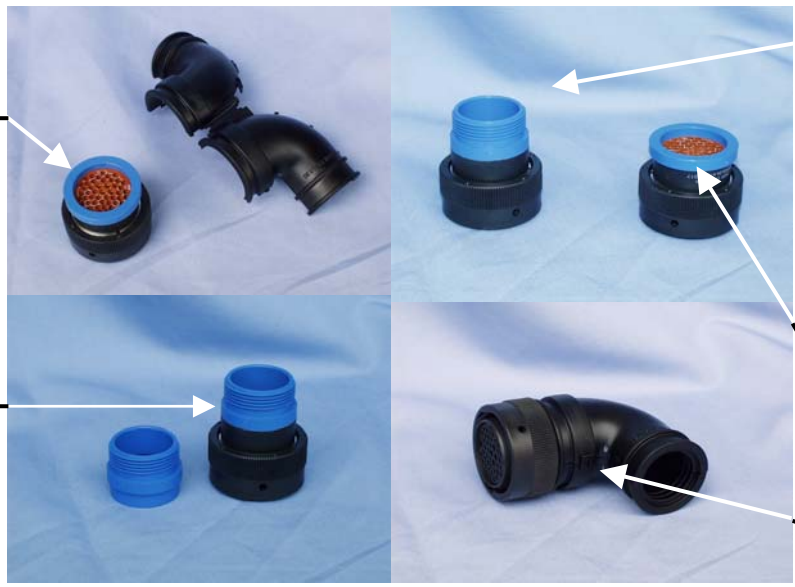
Main Features. 90^0 backshell assures wire exits rear seal properly, easy snap on assembly, light weight and black color. Threaded adapter provides attachment of alternate backshells using 32mm threads.

Benefits

90^0 backshell maintains environmental seals and quick low-cost assembly. Threaded adapter allows flexibility of additional after market backshells.

-L017 Mod provides locking ring for 90^0 back-shell accessory.

-L015 Mod provides threaded adapters for 32mm thread.



Color coded ring matches type of connector seal:
green = normal
blue = extra thin
grey = thin wall

Clamping ring

Locking Tabs

Typical Applications. Any HDP20 application where the wires exiting the rear of the connector must be inside convoluted tube.

Ordering Information

Part Numbering System-Size 24 Shell only: ***These accessories must be ordered separately:***

2428 – **004** – 2405 = clamp type 90^0 backshell only.
2428 – **008** – 2405 = straight type backshell.

To terminate clamping backshell: The HDP20 connector part number *must* have the **-L017** modification specified as as the last four digits of the part number, i.e. **HDP26-24-47SN-L017**.

To terminate threaded adapter: The HDP connector part number *must* have the **-L015** modification specified as the last four digits of the part number, i.e. **HDP26-24-47SN-L015.**

Cable Clamp*

*Metal Shells Only

-059 WITH DRAIN HOLES
-L006 WITHOUT DRAIN HOLES

Straight Strain Relief (Aluminum)

SIZE	PART NO.
18	WHDS-18-1
24	WHDS-24-1

(Connector shown for reference only.)

90° Strain Relief (Aluminum)

SIZE	PART NO.
18	WHDS-18-2
24	WHDS-24-2

(Connector shown for reference only.)

Information contained herein is for reference only. Consult factor for new envelope drawings, updated specifications, and additions to product lines.

Information contained herein is for reference only. Consult factor for new envelope drawings, updated specifications, and additions to product lines.

Protective Caps

Plug cap for receptacle protection (Aluminum)

SIZE	PART NO.	WITHOUT MTG CHAIN (ADD)
18	HDC 36-18	-1 E
24	HDC 36-24	-1 E

Protective Caps

Receptacle cap for plug protection (Aluminum)

SIZE	PART NO.	WITHOUT MTG CHAIN (ADD)
18	HDC 34-18	-1 E
24	HDC 34-24	-1 E

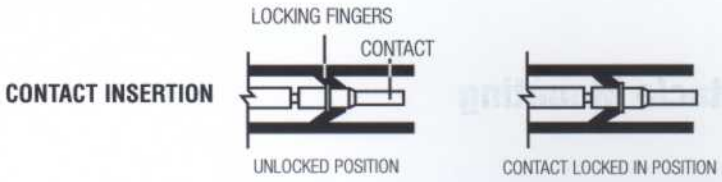
HDB - HD30 Series Only Breakaway Plug

(Aluminum)

Designed to interconnect with the HD 34 Series receptacles and provide an emergency disconnect between farm tractors and implements requiring power connections. HDB - Breakaway Plugs can be specified with pin or socket contacts and cable clamps (-059 mod). Minimum force required to emergency disconnect is 50 lbs. Maximum force required is 100 lbs. Mate with HD30 Series Only.

SIZE	PART NO.
18	HDB 36-18-XXSN-059
24	HDB 36-24-XXSN-059

Contact Insertion



1 Grasp contact approximately (25.4 mm) one inch behind the contact crimp barrel.

2 Hold connector with rear grommet facing you.

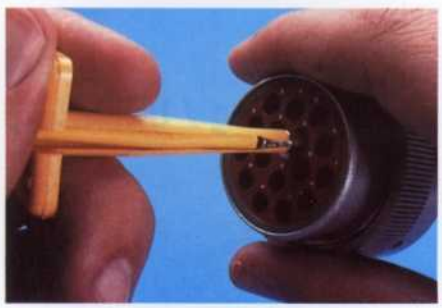
3 Push contact straight into connector grommet until a positive stop is felt. A slight tug will confirm that it is properly locked in place.

NOTE: For unused wire cavities, insert sealing plugs for full environmental sealing

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 into the insert cavity until it engages contact and resistance is felt



3 Pull contact-wire assembly out of connector.

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

NORMAL WIRE SEALS		
PART NO.	SIZE	WIRE RANGE
114009	4	6
114008	8	8-10
114010	12	12-14
0411-204-1605	16	16-18
0411-240-2005	20	20-24
THIN WALL WIRE SEALS		
0411-310-1605	16	16-18

SEALING PLUG	
CONTACT SIZE	PART NO.
4	114019
8	114018
12-16	114017
20	0413-204-2005

COMMON CONTACTS MATERIAL SPECIFICATIONS

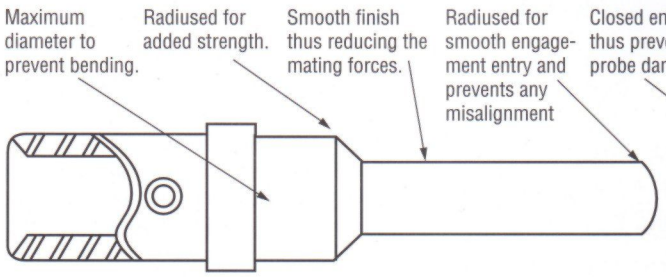
The word "common" describes the Deutsch contact system well. It applies to either style of contact, and its related tooling, processes, and terminations.

The stamped and formed style includes 7 sizes each of pin and socket contacts that terminate 12 AWG to 20 AWG (0.5 - 3.0mm2). The specific contact is determined by the outside diameter of wire insulation and conductor size. See the appropriate chart on page 8 of this manual for specific part numbers.

The solid style contact terminates wire from 6 AWG to 24 AWG (0.2 - 13.0mm2). The solid style is available in 6 sizes each of pin and socket. The applicable contact is determined by the size of the conductor only. See the appropriate chart on page 5 of this manual for specific part numbers.

The selection of Deutsch IPD connectors insures that the contact termination system will be compatible. This reduces changes in the assembly of the wire harness. It also improves performance, reliability and maintainability. Critical functions to any electrical system. The use of a common contact system eliminates many of the failures reported in harnesses where hundreds of different terminations are used. The end result of selecting Deutsch is increased profits and long term performance.

SOLID CONTACTS



Material:
Solid copper alloy

Termination Method:
Crimp

Manufacturing Method:
Cold-headed

Finish-Standard:
Nickel plated

Finish Options:
a) Gold
b) Tin

Solid shoulder for high tensile strength pin retention.

Nickel plated as standard for corrosion resistance.

Inspection hole for conductor strand visibility.

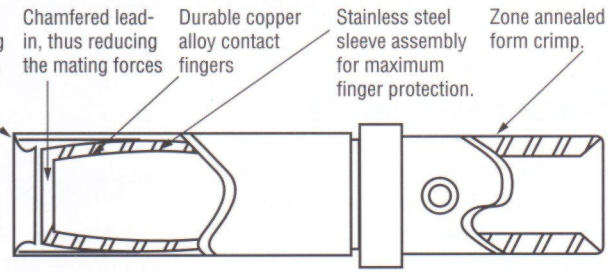
Insulation cup not required due to integral wiring sealing connector grommet design.

Solder is not recommended, eliminating flux corrosion and reducing assembly costs.

Wire lead-in chamfer for 6, 8, 12, 16, 20 & 24 AWG wire entry.

No retention tangs required, eliminating contact damage and the need for secondary locks.

STAMPED & FORMED CONTACTS



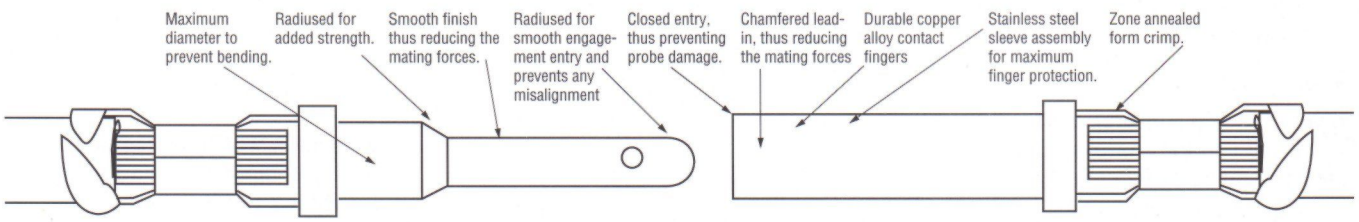
Material:
Solid copper alloy with stainless steel sleeve

Termination Method:
Crimp

Manufacturing Method:
Cold-headed

Finish-Standard:
Nickel plated

Finish Options:
a) Gold



Material:
Copper alloy

Termination Method:
Crimp

Manufacturing Method:
Stamped & Formed production Method

Finish-Standard: Nickel plated Size 16 & 20
Tin/Nickel Size 12

Finish Options:
a) Gold

Material:
Copper alloy with stainless steel sleeve

Termination Method:
Crimp

Manufacturing Method:
Stamped & Formed production Method

Finish-Standard: Nickel plated Size 16 & 20
Tin/Nickel Size 12

Finish Options:
a) Gold

SOLID CONTACTS

CRIMP & ORDERING INFORMATION

Contact Part Number	Size & Type	Wire Gauge Range	Recommended Strip Length	Hand Crimp Tool	Production Crimp Tool
0460-202-20141 0462-201-20141	20 PIN 20 SOCKET	20 & 24 AWG (0.5-0.2 mm²) 20 & 24 AWG (0.5-0.2mm²)	.156-.218 (3.96-5.54mm) .156-.218 (3.96-5.54mm)	HDT-48-00 HDT-48-00	HDP-400 HDP-400
0460-202-16141 0462-201-16141	16 PIN 16 SOCKET	16, 18 & 20 AWG (1.0-0.5mm²) 16, 18 & 20 AWG (1.0-0.5mm²)	.250-.312 (6.35-7.92mm) .250-.312 (6.35-7.92mm)	HDT-48-00 HDT-48-00	HDP-400 HDP-400
0460-215-16141 0462-209-16141	16 PIN 16 SOCKET	14 AWG (2.0mm2) 14 AWG (2.0mm2)	.250-.312 (6.35-7.92mm) .250-.312 (6.35-7.92mm)	HDT-48-00 HDT-48-00	HDP-400 HDP-400
0460-204-12141 0462-203-12141	12 PIN 12 SOCKET	12 & 14 AWG (3.0-2.0mm²) 12 & 14 AWG (3.0-2.0mm²)	.222-.284 (5.64-7.21mm) .222-.284 (5.64-7.21mm)	HDT-48-00 HDT-48-00	HDP-400 HDP-400
0460-204-08141 0462-203-08141	8 PIN 8 SOCKET	8 & 10 AWG (8.0-5.0mm²) 8 & 10 AWG (8.0-5.0mm²)	.430-.492 (10.9-.12.5mm) .430-.492 (10.9-.12.5mm)	HDT-04-08 HDT-04-08	HDP-400 HDP-400
0460-204-0490 0462-203-04141	4 PIN 4 SOCKET	6 AWG (13.0mm²) 6 AWG (13.0mm²)	.430-.492 (10.9-.12.5mm) .430-.492 (10.9-.12.5mm)	HDT-04-08 HDT-04-08	HDP-400 HDP-400

*See Envelope Print 0425-205-0000. Consult factory for alternate finishes.

See Page 8 for general specifications

SOLID CONTACTS
Universal Hand Crimp Tool
HDT - 48 - 00

For size 20, 16 & 12 contacts

HAND CRIMPING INSTRUCTIONS

1 Strip (6.3mm) 1/4" 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, turn adjusting screw counter clockwise out until contact is flush with indentor cover. Tighten lock nut.

5 Insert wire in contact, contact must be centered between indicators, close handles until handle contacts the stop.

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 or wire.

"Field Maintenance" Hand Crimp Tools

HDT - 48 - 00
For size 20, 16 & 12 contacts

HDT - 04 - 08
For size 4 & 8 contacts
Field repair tool only. Not for production use.

Production Crimp Tools

Power Crimp Equipment
HDP - 400

For size 4, 8, 12, 16 & 20 contacts.

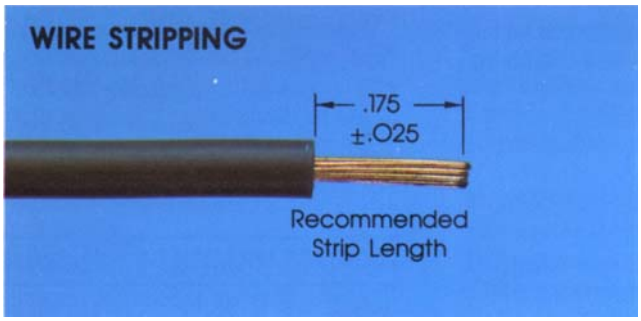
Automatic Crimp Equipment
HDP - 600

For size 16 Contacts.

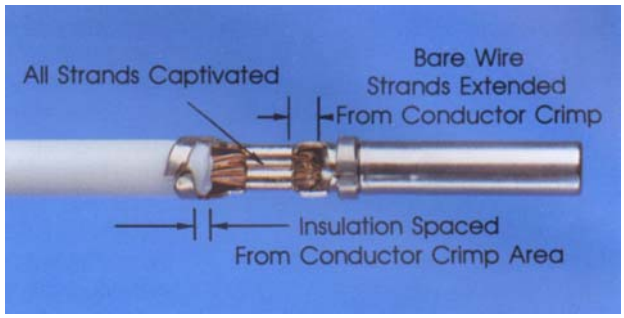
Consult factory for availability and sources.

STAMPED AND FORMED CONTACTS - TERMINATION TOOLING

CRIMPING



CRIMP INSPECTION



HAND CRIMP TOOLING

APPLICATION DIES

FITS ALL STANDARD PRESSES

DCT20-02-00
DCT16-02-00
DCT12-02-00

Standard
Consult factory for Further application Information.

HAND TOOL

Field Maintenance *All hand tools have ratchet designs for full cycle crimp reliability.*

DTT-12-00 Size 12 Contacts (12 & 14 AWG) (4.0-2.0mm2)
DTT-16-00 Size 16 Contacts (14 & 16 AWG) (2.5-1.0mm2)
DTT-16-01 Size 16 Contacts (18 AWG) (.75-.50mm2)
DTT-20-00 Size 20 Contacts (16-18-20 AWG) (0.75-0.50mm2)

STAMPED & FORMED CONTACTS — CRIMP & ORDERING INFORMATION

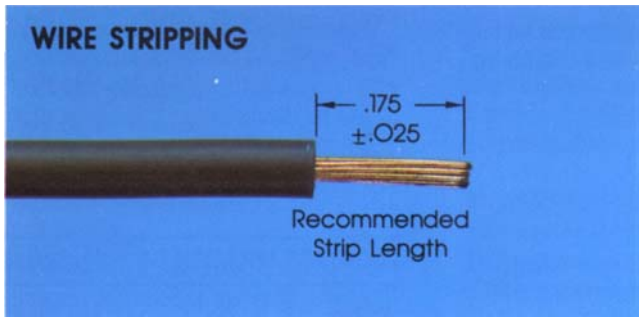
Contact Part Number	Size & Type	Wire Gauge Range	Insulation O.D.	Recommended Strip Length	Hand Crimp Tool	Production Crimp Tool Die **
1060-20-0122 1062-20-0122	20 PIN 20 SOCKET	16, 18 & 20 AWG (1.0-.5mm²) 16, 18 & 20 AWG (1.0-.5mm²)	0.075-0.125 (1.90-3.15mm) 0.075-0.125 (1.90-3.15mm)	.150-2.00 (3.81-5.08mm) .150-2.00 (3.81-5.08mm)	DTT-20-00 DTT-20-00	DCT20-02-00 DCT20-02-00
1060-20-0222 1062-20-0222	20 PIN 20 SOCKET	16, 18 & 20 AWG (1.0-0.5mm²) 16, 18 & 20 AWG (1.0-0.5mm²)	0.050-0.085 (1.3-2.15mm) 0.050-0.085 (1.3-2.15mm)	.150-2.00 (3.81-5.08mm) .150-2.00 (3.81-5.08mm)	DTT-20-02 DTT-20-02	DCT20-02-00 DCT20-02-00
1060-16-0722 1062-16-0722	16 PIN 16 SOCKET	14, 16 & 18 AWG (0.75-2.0mm²) 14, 16 & 18 AWG (0.75-2.0mm²)	.075-0.115 (1.90-2.90mm) .075-0.115 (1.90-2.90mm)	.150-2.00 (3.81-5.08mm) .150-2.00 (3.81-5.08mm)	DTT-16-00 DTT-16-00	DCT16-02-00 DCT16-02-00
1060-16-0622 1062-16-0622	16 PIN 16 SOCKET	16, 18 & 20 AWG (0.50-1.0mm²) 16, 18 & 20 AWG (0.50-1.0mm²)	.055-.083 (1.40-2.10mm) .055-.083 (1.40-2.10mm)	.150-2.00 (3.81-5.08mm) .150-2.00 (3.81-5.08mm)	DTT-16-00 DTT-16-00	DCT16-02-00 DCT16-02-00
1060-16-0122 1062-16-0122	16 PIN 16 SOCKET	16 & 18 AWG (0.75-1.5mm²) 16 & 18 AWG (0.75-1.5mm²)	.075-0.115 (1.90-2.92mm) .075-0.115 (1.90-2.92mm)	.150-2.00 (3.81-5.08mm) .150-2.00 (3.81-5.08mm)	DTT-16-00 DTT-16-00	DCT16-02-00 DCT16-02-00
1060-14-0122 1062-14-0122	16 PIN 16 SOCKET	14 & 16 AWG (2.0-1.0mm²) 14 & 16 AWG (2.0-1.0mm²)	.095-.150 (2.41-3.81mm) .095-.150 (2.41-3.81mm)	.150-2.00 (3.81-5.08mm) .150-2.00 (3.81-5.08mm)	DTT-16-00 DTT-16-00	DCT16-02-00 DCT16-02-00
1060-12-0166 1062-12-0166	12 PIN 12 SOCKET	12 & 14 AWG (3.0-2.0mm²) 12 & 14 AWG (3.0-2.0mm²)	.113-.170 (2.87-4.32mm) .113-.170 (2.87-4.32mm)	.225-.275 (5.72-6.99mm) .225-.275 (5.72-6.99mm)	DTT-12-00 DTT-12-00	DCT12-02-00 DCT12-02-00

***For proper dies and stamped & formed crimp dimensions - See Envelope 0425-208-0000 12 Size, 0425-203-0000 16 Size, 0425-207-0000 20 Size*

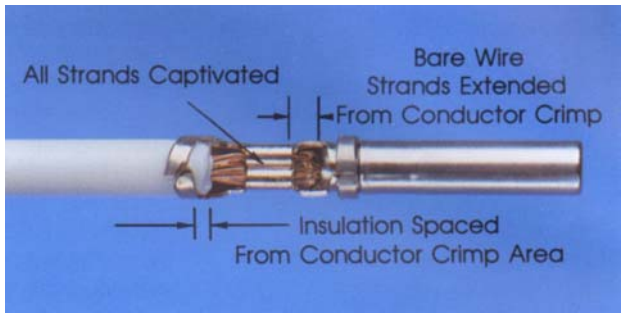
Consult factory for alternate finishes

STAMPED AND FORMED CONTACTS - TERMINATION TOOLING

CRIMPING



CRIMP INSPECTION



HAND CRIMP TOOLING

APPLICATION DIES

FITS ALL STANDARD PRESSES

DCT20-02-00
DCT16-02-00
DCT12-02-00

Standard
Consult factory for Further application Information.

HAND TOOL

Field Maintenance *All hand tools have ratchet designs for full cycle crimp reliability.*

DTT-12-00 Size 12 Contacts (12 & 14 AWG) (4.0-2.0mm^2)
DTT-16-00 Size 16 Contacts (14 & 16 AWG) (2.5-1.0mm^2)
DTT-16-01 Size 16 Contacts (18 AWG) (.75-.50mm^2)
DTT-20-00 Size 20 Contacts (16-18-20 AWG) (0.75-0.50mm^2)
DTT-20-02 Size 20 Contacts (18 & 20 AWG) (1.00-0.50mm^2)

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. Deutsch contacts, whether solid or stamped and formed, can be assembled into the entire Deutsch connector family. Let's look at the common system of contacts, tooling, processes, and terminations 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 no matter what connector is being terminated. Two styles of Deutsch contacts are available - solid crimp types, manufactured by a cold heading process of solid copper alloys. Stamped and formed contacts are manufactured with a series of progressive dies. 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., are reduced, if not eliminated.

COMMON TOOLING
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 ...
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