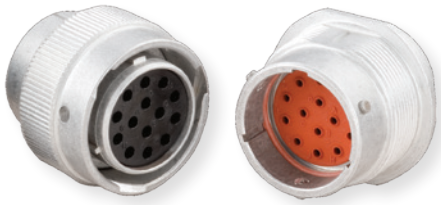
HD30 & HDP20 Series Overview

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.



HD30 SERIES OVERVIEW

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.

HDP20 SERIES OVERVIEW

The HDP20 series connectors are heavy duty rated, environmentally sealed, composite shell, multi-pin connectors. The composite thermo-plastic 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.

DEUTSCH CONNECTOR PERFORMANCE SPECIFICATIONS

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

MATERIAL SPECIFICATIONS

HD30 Series

Grommet: Silicone rubber

Insert Retainer: Unfilled PEI

Plug Coupling Ring: Aluminum

Shell: Aluminum

HDP20 Series

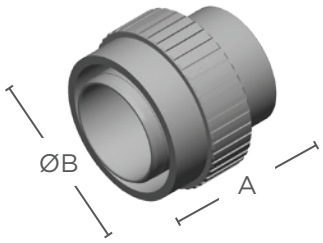
Grommet: Silicone rubber

Insert Retainer: Unfilled PEI

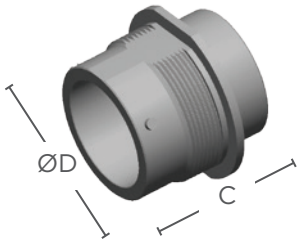
Plug Coupling Ring: Glass filled PA

Shell: Glass filled PA

DIMENSIONS



HD/HDP Plug



HD/HDP Receptacle

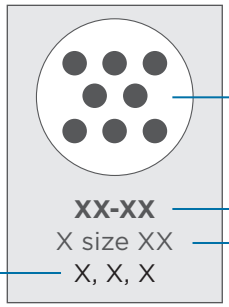
Shell Size	Overall Length A	Overall Height ØB	Overall Length C	Overall Height ØD
18	1.521 (38.63)	1.700 (43.17)	1.648 (41.86)	1.750 (44.45)
24	1.521 (38.63)	1.950 (49.53)	1.648 (41.86)	2.000 (50.80)

Dimensions are for reference only.

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)

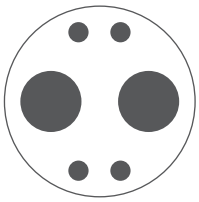


Insert Arrangement

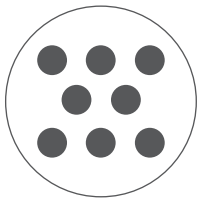
XX-XX
X size XX
X, X, X

Shell Size - Configuration
Number and Size of Cavities

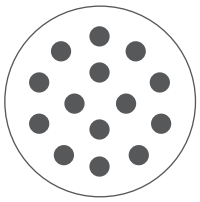
18 SHELL SIZE CONFIGURATIONS



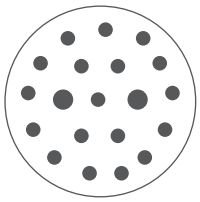
18-6
2 size 4 & 4 size 16
N, **E**



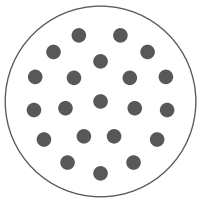
18-8
8 size 12
N, **E**



18-14
14 size 16
N, **T**, **E**

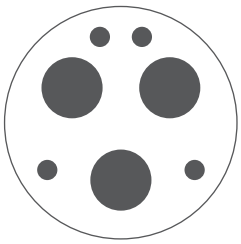


18-20
2 size 16 & 18 size 20
N, **E**

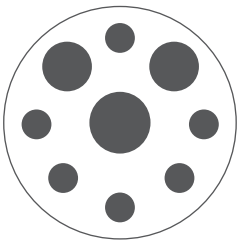


18-21
21 size 20
N

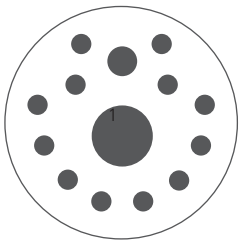
24 SHELL SIZE CONFIGURATIONS



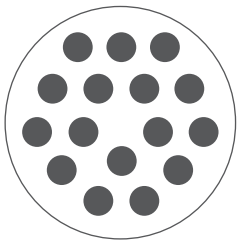
24-7(-C038 only)
3 size 4† & 4 size 16
N



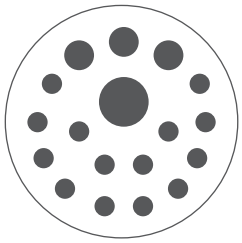
24-9
1 size 4, 2 size 8 & 6 size 12
N, **E**



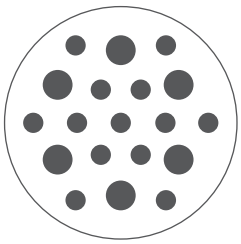
24-14
1 size 4, 1 size 12 & 12 size 16
N, **E**



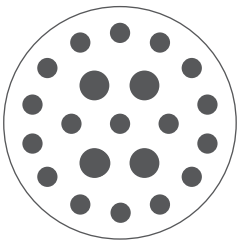
24-16
16 size 12
N, **E**



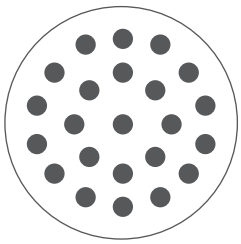
24-18
1 size 8, 3 size 12 & 14 size 16
N, **E**



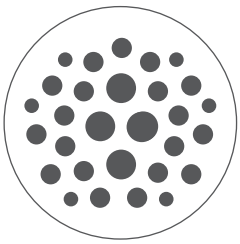
24-19
6 size 12 & 13 size 16
N, **E**



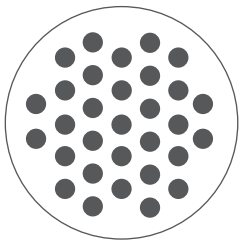
24-21
4 size 12 & 17 size 16
N, **E**



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

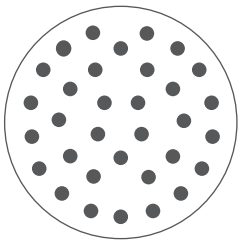


24-29
4 size 12, 19 size 16 & 6 size 20
E*

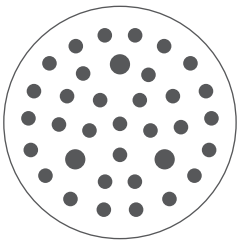


24-31
31 size 16
T*, **E***

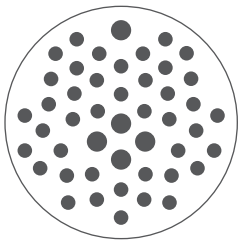
†Requires size 4 contact part numbers, 5960-203-04**(pin) and 5962-203-04**(socket) *Modified seal, see drawing.



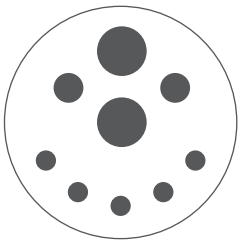
24-33
33 size 20
N



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

HD30 SERIES PART NUMBERING SYSTEM

Part Number
HD* 36 - 24 - 21 S * - ***

Series

Options

B	Breakaway plug
N	Non-environmental

Style

4	Receptacle
6	Plug

Shell Size

18	**24**

Configuration

Special Modifications

059	Cable Clamp/Adapter
072	Threaded Adapter

Wire Seals

N	Normal Position Wire Seals (green ring)
T	Thin Wall Wire Seals (gray ring)
E	Extra Thin Wall Wire Seals (blue ring)

Contacts

P	Pin
S	Socket

Note

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

HDP20 SERIES PART NUMBERING SYSTEM

Part Number
HDP 26 - 24 - 21 S * - **

Series

Style

4	Receptacle
6	Plug

Shell Size

18	**24**

Configuration

Contacts

P	Pin
S	Socket

Special Modifications

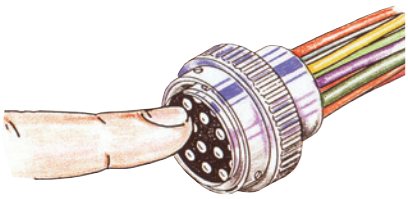
L015	Threaded Adapter
L017	Ring Adapter
L024	Wide Threaded Adapter

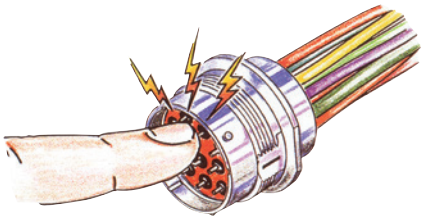
Wire Seals

N	Normal Position Wire Seals (green ring)
T	Thin Wall Wire Seals (gray ring)
E	Extra Thin Wall Wire Seals (blue ring)

helpful hint

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





ORDERING INFORMATION

Here are some of the common part numbers in the HD30 &HDP20 series. Several additional connectors may be available.

Shell Sz-Position	Series	Plug Standard Dia. Seal	Receptacle Standard Dia. Seal	Plug Reduced Dia. Seal	Receptacle Reduced Dia. Seal
18-6	HDP20	HDP26-18-6SN	HDP24-18-6PN	HDP26-18-6SE	HDP24-18-6PE
	HD30	HD36-18-6SN	HD34-18-6PN	HD36-18-6SE	HD34-18-6PE
18-8	HDP20	HDP26-18-8SN	HDP24-18-8PN	HDP26-18-8SE	HDP24-18-8PE
	HD30	HD36-18-8SN	HD34-18-8PN	HD36-18-8SE	HD34-18-8PE
18-14	HDP20	HDP26-18-14SN	HDP24-18-14PN	HDP26-18-14SE	HDP24-18-14PE
	HD30	HD36-18-14SN	HD34-18-14PN	HD36-18-14SE	HD34-18-14PE
18-20	HDP20	HDP26-18-20SN	HDP24-18-20PN	HDP26-18-20SE	HDP24-18-20PE
	HD30	HD36-18-20SN	HD34-18-20PN	HD36-18-20SE	HD34-18-20PE

ORDERING INFORMATION (CONTINUED)

Shell Sz-Position	Series	Plug Standard Dia. Seal	Receptacle Standard Dia. Seal	Plug Reduced Dia. Seal	Receptacle Reduced Dia. Seal
18-21	HDP20	HDP26-18-21SN	HDP24-18-21PN	HDP26-18-21SE	HDP24-18-21PE
	HD30	HD36-18-21SN	HD34-18-21PN	HD36-18-21SE	HD34-18-21PE
24-7	HDP20	HDP26-24-7SN	HDP24-24-7PN	HDP26-24-7SE	HDP24-24-7PE
	HD30	HD36-24-7SN	HD34-24-7PN	HD36-24-7SE	HD34-24-7PE
24-91-P064	HDP20	HDP26-24-91SN-P064	HDP24-24-91PN-P064	-	-
24-9	HDP20	HDP26-24-9SN	HDP24-24-9PN	HDP26-24-9SE	HDP24-24-9PE
	HD30	HD36-24-9SN	HD34-24-9PN	HD36-24-9SE	HD34-24-9PE
24-14	HDP20	HDP26-24-14SN	HDP24-24-14PN	HDP26-24-14SE	HDP24-24-14PE
	HD30	HD36-24-14SN	HD34-24-14PN	HD36-24-14SE	HD34-24-14PE
24-16	HDP20	HDP26-24-16SN	HDP24-24-16PN	HDP26-24-16SE	HDP24-24-16PE
	HD30	HD36-24-16SN	HD34-24-16PN	HD36-24-16SE	HD34-24-16PE
24-18	HDP20	HDP26-24-18SN	HDP24-24-18PN	HDP26-24-18SE	HDP24-24-18PE
	HD30	HD36-24-18SN	HD34-24-18PN	HD36-24-18SE	HD34-24-18PE
24-19	HDP20	HDP26-24-19SN	HDP24-24-19PN	HDP26-24-19SE	HDP24-24-19PE
	HD30	HD36-24-19SN	HD34-24-19PN	HD36-24-19SE	HD34-24-19PE
24-21	HDP20	HDP26-24-21SN	HDP24-24-21PN	HDP26-24-21SE	HDP24-24-21PE
	HD30	HD36-24-21SN	HD34-24-21PN	HD36-24-21SE	HD34-24-21PE
24-23	HDP20	HDP26-24-23SN	HDP24-24-23PN	HDP26-24-23SE	HDP24-24-23PE
	HD30	HD36-24-23SN	HD34-24-23PN	HD36-24-23SE	HD34-24-23PE
24-29	HDP20	HDP26-24-29SN	HDP24-24-29PN	HDP26-24-29SE	HDP24-24-29PE
	HD30	HD36-24-29SN	HD34-24-29PN	HD36-24-29SE	HD34-24-29PE
24-31	HDP20	HDP26-24-31SN	HDP24-24-31PN	HDP26-24-31SE	HDP24-24-31PE
	HD30	HD36-24-31SN	HD34-24-31PN	HD36-24-31SE	HD34-24-31PE
24-33	HDP20	HDP26-24-33SN	HDP24-24-33PN	HDP26-24-33SE	HDP24-24-33PE
	HD30	HD36-24-33SN	HD34-24-33PN	HD36-24-33SE	HD34-24-33PE
24-35	HDP20	HDP26-24-35SN	HDP24-24-35PN	HDP26-24-35SE	HDP24-24-35PE
	HD30	HD36-24-35SN	HD34-24-35PN	HD36-24-35SE	HD34-24-35PE
24-47	HDP20	HDP26-24-47SN	HDP24-24-47PN	HDP26-24-47SE	HDP24-24-47PE
	HD30	HD36-24-47SN	HD34-24-47PN	HD36-24-47SE	HD34-24-47PE

Note

Undersize wire insulation is a major cause for leakage.

WIRE SEALING RANGE

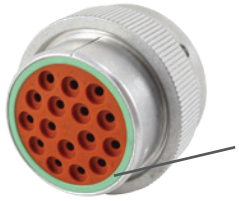
The wire sealing range is the recommended outside diameter of the wire insulation required to maintain an environmental seal in the rear connector cavities.

Contact Size	N-Seal Green Ring	T-Seal Gray Ring	T-Seal Modified*	E-Seal Blue Ring	E-Seal Modified*
20 14-22 AWG (2.5-0.35mm²)	.040-.095 (1.02-2.41)	.040-.095 (1.02-2.41)	-	.040-.095 (1.02-2.41)	.040-.083 (1.01-2.10)
16 14-20 AWG (2.0-0.5mm²)	.100-.134 (2.54-3.40)	.088-.134 (2.23-3.40)	.088-.106 (2.24-2.69)	.053-.120 (1.35-3.05)	.053-.103 (1.35-2.62)
12 10-14 AWG (6.0-2.0mm²)	.134-.170 (3.40-4.32)	.113-.170 (2.87-4.32)	-	.097-.158 (2.46-4.01)	.097-.158 (2.46-4.01)
8 8-10 AWG (10.0-5.0mm²)	.190-.240 (4.83-6.10)	.170-.240 (4.32-6.10)	-	.135-.220 (3.43-5.59)	-
4 6 AWG (16.0-13.0mm²)	.280-.292 (7.11-7.42)	.261-.292 (6.63-7.42)	-	.261-.292 (6.63-7.42)	-
4 4 AWG (25.0-21.0mm²)	.311-.420 (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.

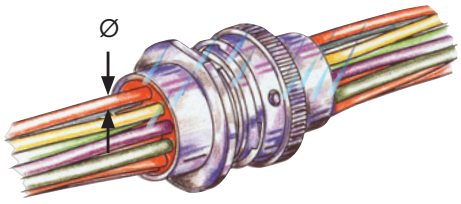
Color code is visible from the rear of the receptacle or plug.

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



helpful hint

Proper wire outside diameters help provide water tight seals.



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

L024
Wide Threaded
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.

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.

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 Suffix	Description
-072	Adapter only
-059	Adapter and cable clamp assembly with drain holes
-L006	Adapter and cable clamp assembly without drain holes

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

Exclusive to LADD Distribution

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

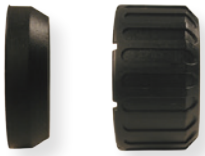
STRAIN RELIEF

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.



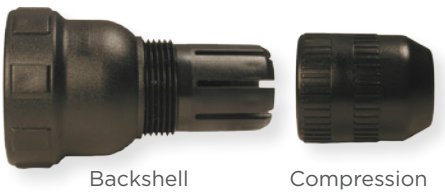
Seal Ring | Cap Nut

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

BACKSHELLS FOR L015 MODIFICATION

Exclusive to LADD Distribution

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

Shell Size	Cable Diameter	HDP20 Series L015 Backshell Part Number	HDP20 Series L015 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

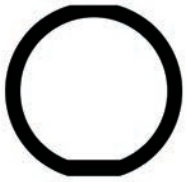
The DEUTSCH HDP20 series backshells are designed to screw onto connectors with the L024 modification, which adds a wide threaded adapter. The rigid, durable backshells offer a high level of protection, provide strain relief, and improve aesthetics.

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

GASKETS

Exclusive to LADD Distribution

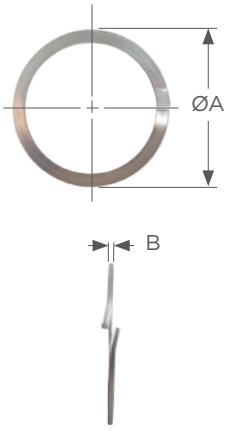
Moisture, dirt, salt, sand, and road debris can all work their way into electrical panels through unsealed mounting flanges. Rated to operate in environments from -70°F to +225°F (-56°C to +107°C), these rugged high quality neoprene gaskets form a tight seal between the panel face and connector flange 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

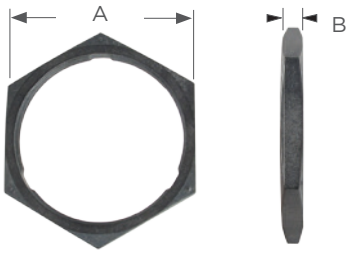
MOUNTING HARDWARE

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



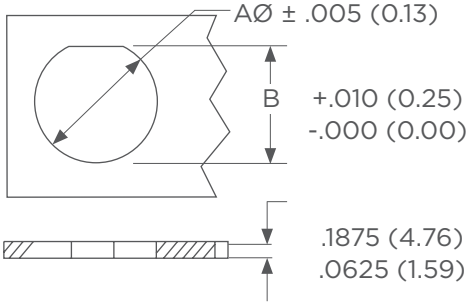
Panel Nut Mounting Torque	
HD30 series 18 shell size	260-280 IN. LB. (29.4-31.6 N.M.)
HDP20 series 18 shell size	45-55 IN. LB. (5.1-6.1 N.M.)
HD30 series 24 shell size	350-375 IN. LB. (39.5-42.6 N.M.)
HDP20 series 24 shell size	65-75 IN. LB. (7.4-8.4 N.M.)

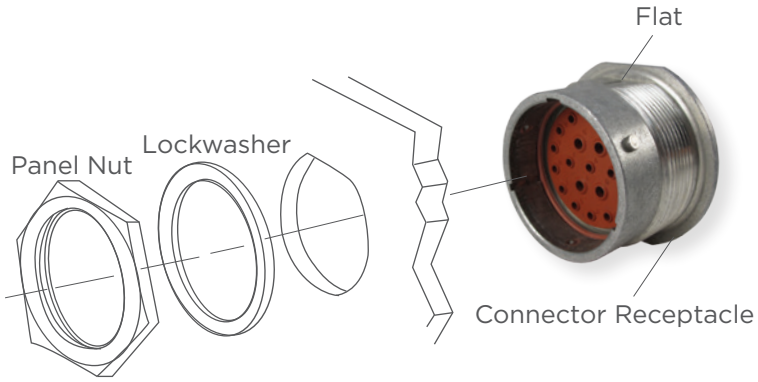
Shell Size	Series	Panel Nut Part Number	Material	A	B
18	HDP20	2411-002-1805	Plastic	1.685 (42.80)	.250 (6.35)
	HD30	114020-90	Metal		.178 (4.52)
24	HDP20	2411-001-2405	Plastic	1.875 (47.63)	.250 (6.35)
	HD30	112263-90	Metal		.178 (4.52)

Dimensions are for reference only

Mounting

RECEPTACLE MOUNTING





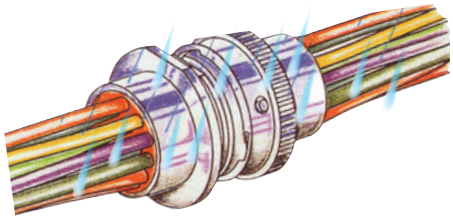
Recommended Size of Mounting Hole

Shell Size	ØA	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

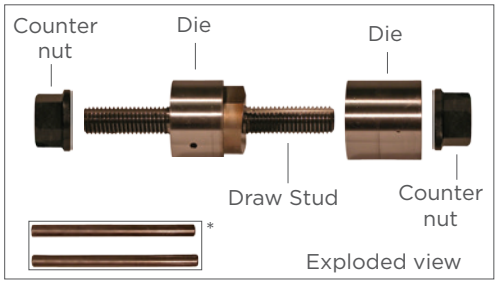
Mounting connectors horizontally allows proper water drainage.



D HOLE PUNCH

Exclusive to LADD Distribution

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.



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

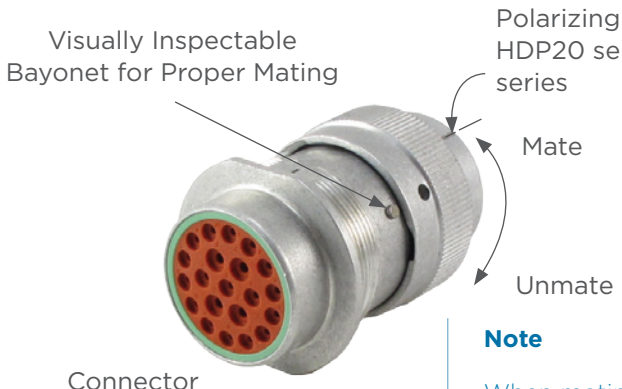
- Punchable Material: Up to .078" mild steel or aluminum. Up to .1875" plastic, wood, paneling, or other soft material.
- Tool Material: A2 material heat treated to a Rockwell hardness of 60 to 62.
- Tool Size: (rough dimensions) 5.5"L x 2"H x 2"D
- Sharpening: The tool can be sharpened as needed.
-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

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

How To Instructions

MATING INSTRUCTIONS

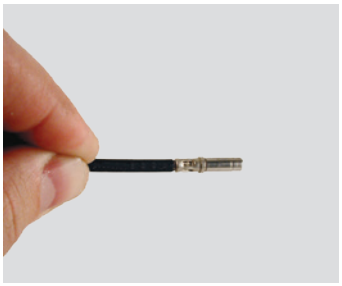
To mate the plug and the receptacle, line up the index groove on the plug with the flat surface on the receptacle, turn 1/4 turn clockwise. You will feel and hear the pieces snap into the locked position. To unmate the plug and receptacle, release the coupling ring by turning it counter-clockwise.



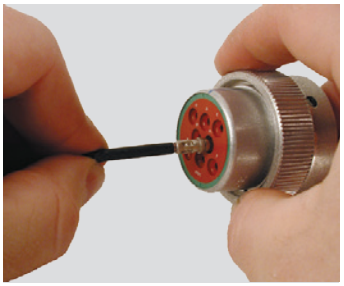
Note

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

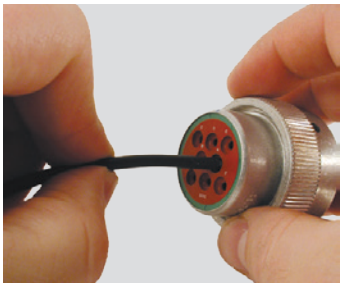
CONTACT INSERTION



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

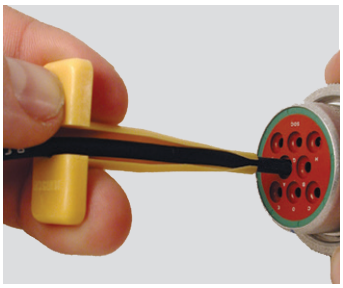


Step 2:
Hold connector with the rear grommet facing you.

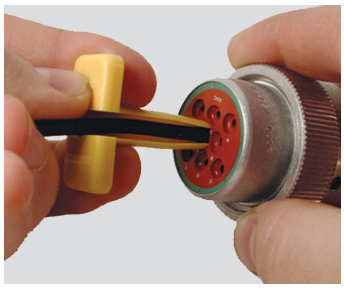


Step 3:
Push contact straight into connector grommet until a positive stop is felt. A slight tug will confirm that it is properly locked in place.

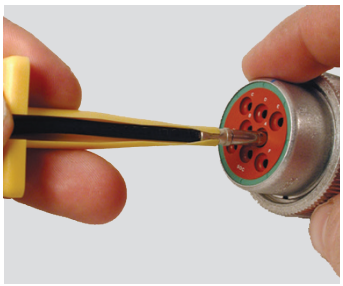
CONTACT REMOVAL



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.