ELECTRICAL INTERCONNECTIONS FOR HEAVY DUTY EQUIPMENT

The heavy duty connector industry is in the most dynamic and challenging time in its history. Computerized sensors, monitoring devices and expanding electronics in trucks, buses, off-road equipment and farm machinery are requiring design objectives. These objectives must not only address the electrical requirements, but give heavy consideration to the future maintenance and service of these new high technology systems.

Deutsch DRC Series Design

The DRC Series is designed with a higher number of terminal counts. Insert arrangements of 24, 40, 50, 60, 70, 76 and 80 contacts are tooled and available. The use of size 12, 16 and 20 crimp type contacts common to the other Deutsch product lines simplifies the design effort required to accomplish electrical and mechanical criteria.

By utilizing a rectangular shape, the DRC is best suited to be compatible with 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°C to +125°C continuous operation at rated current for engine service.

Available in high density pin counts of 24, 40, 50, 60, 70, 76 and 80, meeting most electronic design demands.

The Crimp-type, nickel or gold plated solid or stamped and formed 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.

The Challenge

Increasingly intricate electronic systems will continue to drive the demand for heavy duty interconnections well into the next century. Most notable are: engine, controls, transmission controls, electronic panels, ABS, traction controls, navigation and electrical load management. Designers of these new systems must address difficult design criteria for connector selection, these include:

- 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 continues to be a major supplier of electrical interconnections for the heavy duty equipment industry. 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.

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PART NUMBERING SYSTEM

DRC 14 - 40 P A X - XXXX

Designates Deutsch Rectangular Connector Type
1 = Accepts Size 16 Contacts
2 = Accepts Size 20 Contacts
3 = 90° Receptacle FC Termination* 4 = Receptacle - Inline
6 = Plug
8 = Keyed Plug 40 pin size 16 only

Special Modifications
Wire Seals:
Blank = Standard Seal
T = Thin Wall Seal (Size 16 only)
E = Extra Thin Wall Seal (Size 16 only)
Keying Position A, B, C, D
Shell: Thermoplastic
Threaded: Shell size and insert layout

Thermal Cycle:
No cracking, chipping or leaking after 20 test cycles
from -55°C to +125°C

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

WIRE SEPARATION RANGE

<table>
<thead>
<tr>
<th>SEPARATION RANGE</th>
<th>MIN. CONTACT RETENTION</th>
<th>MAX. CONTACT RETENTION</th>
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* Standard Wire Caps  ** A & B Wire Ring on Cap

Solid Contacts

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<th>PIN</th>
<th>SIZE</th>
<th>SOCKET</th>
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<tr>
<th>DATUM</th>
<th>STAMPED &amp; FORMED CONTACT PART NUMBERS</th>
<th>CARRIER INSULATION IDENTIFICATION</th>
<th>WIRE SIZE AWG (mm²)</th>
<th>WIRE SIZE O.D. RANGE</th>
<th>RECOMMENDED STEP LENGTH (INCHES (mm))</th>
<th>MIN CONTACT RETENTION LBS (N)</th>
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** E-Seal: Blue Strip on Cap
* T Seal: Brown Caps

NOTE: The above tables are for reference only. Consult factory for more information.

CONTACTS AND APPLICATION DATA

DRC Series Technical Manual

DRC Series Technical Manual
GLOSSARY OF TERMS

Backshell: A plastic protective covering that either snaps-on or threads to the rear of a connector providing aesthetics, protection and strain relief.

Blocked Cavities: A modification to the rear connector grommet that includes all or selected cavities permanently sealed for unused cavities.

Boot: A protective covering designed to fit on the rear of the connector providing aesthetics, protection and strain relief.

Cavity: A defined hole in the connector grommet and housing into which the contact must fit.

Contact: The conductive element in a termination assembly which is crimped onto a wire with a corresponding contact for the purpose of transferring electricity.

Contact Rating: The maximum specified amperage to be passed through a contact.

Dust Cover: A cap or cover to protect the connector interface when either the plug or receptacle are unmated.

E-seal: A smaller grommet seal to accommodate very thin wire insulation. Contact sales for insulation ranges.

Flange: A projection extending on the connector used for strength or having holes that provide for mounting to a panel.

Flange Seal: Environmental seal between the connector flange and panel.

Front Seal: Environmental seal between the entire mating interface of plug and receptacle seal. The seal itself is usually found on the plug. Also referred to as interface seal.

Grommet: An integral rubber seal used on the cable side (rear) of a connector to provide an environmental seal.

Inline: A term used for connectors that do not have the capability for use for mounting or PCB applications.

Interface: The two surfaces of a mating pair of connectors that face each other when assembled.

Internal Seal: An internal environmental seal which provides sealing when a plug and receptacle are fully mated.

Key: A projection which engages with a keyway to guide a connector during mating. Prevents mis-mating.

N-Seal: Normal seal. Refers to grommet cavity diameter. Contact sales for insulation ranges.

PCB Mount: Term used for receptacle connector designed specifically for printed circuit board applications.

Pin: Male contact. Pins are usually housed by the receptacle.

Plug: One half of a mated pair of connections which mates with the receptacle. This half always has the mating locking mechanism. Plugs usually house the socket contact.

Receptacle: One half of a mated pair of connections which mates with the plug. Receptacles usually house the pin contact.

Removal Tool: A tool designed to remove contacts from the connector. Size and color may vary to match wire gauge.

Sealing Plug: A solid plastic rod designed to be inserted into an unused grommet cavity to maintain an environmental seal.

Sterling: Contacts manufactured using a precision stamping machine. Designed for heavy duty applications. Sold in bulk. Solid contacts have a closed crimp barrel.

T-Seal: Thin wall seal. Refers to grommet cavity diameter. Contact sales for insulation ranges.

Wire Router: Protective piece attached to a connector rear. Used for wire bundle strain relief.