

FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

Size 22 Signal and Thermocouple Contacts, Removable Crimp and **Printed Board Mount**

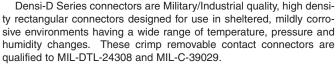
> Military/Industrial **Quality Connectors**

MIL-DTL-24308 and MIL-C-39029

U.L. Recognized File #E49351

CSA Recognized File #LR54219

Telecommunication U.L. File #14098



Densi-D Series connectors utilize precision machined contacts with closed barrel crimp terminations, solder cup terminations, straight and 90° printed board mount. All female contacts are of closed entry design, featuring a fluted stainless steel shroud.

Six standard contact variants are offered in arrangements of 15, 26. 44, 62, 78 and 104 contacts. Densi-D Series connectors are mateable



and compatible with other high density D-Subminiature connectors conforming to MIL-DTL-24308.

A wide assortment of mounting spacers, cable support hoods and locking systems is available from stock.



DENSI-D SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulators: Glass filled polyester per MIL-M-24519, UL

94V-0. blue color.

Male contacts - precision machined high Contacts:

tensile copper alloy. Female contacts – precision machined high tensile copper alloy with stainless steel shroud.

Contact Plating: Military performance - 0.000050 inch [1.27

microns gold over copper plate. Industrial performance - gold flash over nickel plate. Other finishes available upon request.

Steel with tin plate; zinc and cadmium plate Shells: with dichromate seal, stainless steel, pas-

sivated. Other materials and finishes avail-

able upon request.

Nvlon plastic and brass; zinc plate with **Mounting Spacers:** dichromate seal.

Phosphor bronze or beryllium copper with

tin plate. **Vibration Lock Systems:**

Slide lock and lock tabs, steel with nickel plate.

Jackscrew Systems: Steel with zinc plate and dichromate seal,

or clear zinc plate.

Hoods: Thermoplastic UL 94V-0. Composite, brass or steel with zinc plate and dichro-

mate seal.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 5 amperes nominal. **Initial Contact Resistance:** 0.005 ohms maximum.

Proof Voltage: 1000 V r.m.s. **Insulator Resistance:** 5 G ohms.

Clearance and Creepage

Push-On Fastener:

Distance [minimum]: 0.042 inch [1.06mm].

Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

Damp Heat, Steady State: 21 days.

MECHANICAL CHARACTERISTICS:

Insert contact to rear face of insulator and Removable Contacts:

release from rear face of insulator. Size 22 contacts, male – 0.030 inch [0.76mm] diameter; female – closed entry design

with stainless steel shroud.

Contact Retention In Insulator: 9 lbs. [40 N].

Closed barrel crimp, wire sizes 22 AWG [0.3mm²] through 30 AWG [0.05mm²] per **Contact Terminations:**

90° Printed Board Mount contact terminations. Shells:

Male shells may be dimpled for EMI/ESD

ground paths.

Polarization: Trapezoidally shaped shells and polarized

Mounting To Jackscrews and riveted fasteners with **Angle Brackets:**

0.120 inch [3.05mm] clearance hole, and threaded riveted fasteners with 4-40

threads and nvlon lock inserts.

Rapid installation push-on fasteners and Mounting To Printed Board:

mounting posts.

Locking Systems: Jackscrews and vibration locking systems. **Mechanical Operations:** 1000 operations minimum per IEC 512-5.

THERMOCOUPLE CONTACTS:

Size 22 crimp contacts are available, see page 49 for details.

PCB mount contacts are available, please contact Technical Sales for

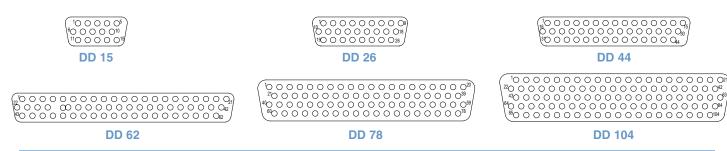
details.

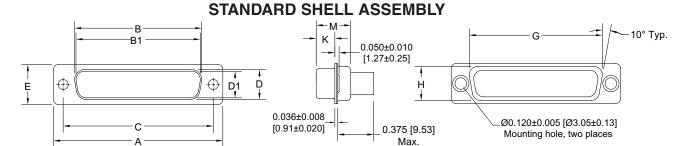


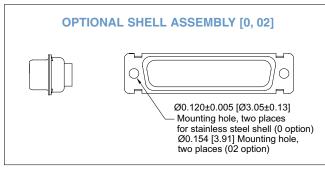
FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

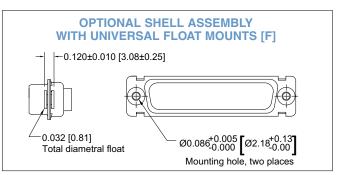
CONTACT VARIANTS

FACE VIEW OF MALE OR REAR VIEW OF FEMALE









CONNECTOR VARIANT SIZES	A <u>±0.015</u> [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D <u>±0.005</u> [0.13]	D1 ±0.005 [0.13]	E <u>±0.015</u> [0.38]	G <u>±0.010</u> [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M <u>±0.010</u> [0.25]
DD 15 M	1.213 [30.81]	[0.13]	0.666 [16.92]	0.984 [24.99]	[0.10]	0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
DD 15 F	1.213 [30.81]	<u>0.643</u> [16.33]		<u>0.984</u> [24.99]	<u>0.311</u> [7.90]		<u>0.494</u> [12.55]	<u>0.759</u> [19.28]	<u>0.422</u> [10.72]	<u>0.243</u> [6.17]	<u>0.429</u> [10.90]
DD 26 M	1.541 [39.14]		<u>0.994</u> [25.25]	1.312 [33.32]		<u>0.329</u> [8.36]	<u>0.494</u> [12.55]	1.083 [27.51]	<u>0.422</u> [10.72]	<u>0.233</u> [5.92]	<u>0.422</u> [10.72]
DD 26 F	1.541 [39.14]	<u>0.971</u> [24.66]		1.312 [33.32]	<u>0.311</u> [7.90]		<u>0.494</u> [12.55]	1.083 [27.51]	<u>0.422</u> [10.72]	<u>0.243</u> [6.17]	<u>0.429</u> [10.90]
DD 44 M	<u>2.088</u> [53.04]		1.534 [38.96]	1.852 [47.04]		<u>0.329</u> [8.36]	<u>0.494</u> [12.55]	1.625 [41.28]	<u>0.422</u> [10.72]	<u>0.230</u> [5.84]	<u>0.426</u> [10.82]
DD 44 F	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	<u>0.311</u> [7.90]		<u>0.494</u> [12.55]	1.625 [41.28]	<u>0.422</u> [10.72]	0.243 [6.17]	<u>0.429</u> [10.90]
DD 62 M	2.729 [69.32]		<u>2.182</u> [55.42]	2.500 [63.50]		<u>0.329</u> [8.36]	<u>0.494</u> [12.55]	<u>2.272</u> [57.71]	<u>0.422</u> [10.72]	0.230 [5.84]	<u>0.426</u> [10.82]
DD 62 F	2.729 [69.32]	2.159 [54.84]		<u>2.500</u> [63.50]	<u>0.311</u> [7.90]		<u>0.494</u> [12.55]	<u>2.272</u> [57.71]	<u>0.422</u> [10.72]	0.243 [6.17]	<u>0.429</u> [10.90]
DD 78 M	2.635 [66.93]		<u>2.079</u> [52.81]	<u>2.406</u> [61.11]		<u>0.441</u> [11.20]	<u>0.605</u> [15.37]	2.178 [55.32]	<u>0.534</u> [13.56]	<u>0.230</u> [5.84]	<u>0.426</u> [10.82]
DD 78 F	2.635 [66.93]	2.064 [52.43]		<u>2.406</u> [61.11]	<u>0.423</u> [10.74]		<u>0.605</u> [15.37]	2.178 [55.32]	<u>0.534</u> [13.56]	<u>0.243</u> [6.17]	<u>0.429</u> [10.90]
DD 104 M	<u>2.729</u> [69.32]		<u>2.212</u> [56.18]	<u>2.500</u> [63.50]		<u>0.503</u> [12.78]	<u>0.668</u> [16.97]	<u>2.302</u> [58.47]	<u>0.596</u> [15.14]	<u>0.230</u> [5.84]	<u>0.426</u> [10.82]
DD 104 F	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	<u>0.485</u> [12.32]		<u>0.668</u> [16.97]	2.302 [58.47]	<u>0.596</u> [15.14]	0.243 [6.17]	<u>0.429</u> [10.90]



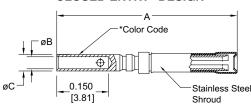
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FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

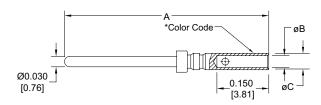
CRIMP CONTACTS

CLOSED CRIMP BARREL

FEMALE CONTACT "CLOSED ENTRY" DESIGN



MALE CONTACT



Part Number: FC8122D Part Number: MC8022D

Crimp contacts may be supplied kitted with connector or ordered separately.

PART NUMBER	WIRE SIZE AWG/[mm²]	А	ØВ	ØC
FC8022D	22 / 24 / 26 / 28 / 30	<u>0.518</u>	<u>0.035</u>	<u>0.047</u>
	[0.3/0.25/0.12/0.08/0.05]	[13.16]	[0.89]	[1.19]
*M39029/57-354	<u>22 / 24 / 26 / 28</u>	<u>0.518</u>	0.035	<u>0.047</u>
	[0.3/0.25/0.12/0.08]	[13.16]	[0.89]	[1.19]

PART NUMBER ØB AWG/[mm²] 22 / 24 / 26 / 28 / 30 0.531 0.035 0.047 MC8022D [0.3/0.25/0.12/0.08/0.05] [13.49] [0.89][1.19] 22 / 24 / 26 / 28 0.531 0.035 0.047 *M39029/58-360 [0.3/0.25/0.12/0.08] [13.49] [0.89] [1.19]

Material - Leaded nickel copper.

Plating - Gold flash over nickel or 0.000050 inch [1.27µ] gold over copper for military specification contacts.

*Color Code - ORANGE/GREEN/YELLOW for military specification contacts.

Material - Brass.

Plating - Gold flash over nickel or 0.000050 inch [1.27µ] gold over copper for military specification contacts.

*Color Code - ORANGE/BLUE/BLACK for military specification contacts.

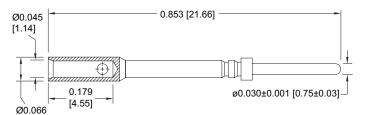
For contact crimp tool information see page 54.

Additional plating options available by adding suffix to part number icrons] gold over nickel add -50 for 0.000050 [1.27 microns] gold over copper

add -14 for 0.000030 [0.76 microns] gold over nickel Example: FC8022D-14

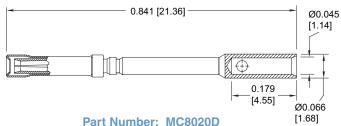
FC8022D-14 Example: MC8022D-50

FEMALE CONTACT



Part Number: FC8020D

MALE CONTACT



Crimp area extends above connector molding.

Crimp contacts may be supplied kitted with connector or ordered separately.

PART NUMBER	WIRE SIZE AWG/[mm²]	А	ØB	ØC
FC8020D	2 <u>0</u>	<u>0.852</u>	0.045	<u>0.066</u>
	[0.5] ^{max}	[21.64]	[1.14]	[1.68]

PART NUMBER	WIRE SIZE AWG/[mm²]	А	ØB	ØС
MC8020D	2 <u>0</u>	<u>0.853</u>	<u>0.045</u>	<u>0.066</u>
	[0.5] max	[21.66]	[1.14]	[1.68]

Material - Phosphor bronze Plating - Gold flash over nickel

Material - Brass

Plating - Gold flash over nickel

Additional plating options available by adding suffix to part number add -14 for 0.000030 [0.76 microns] gold over nickel Example: FC8120D-14 or MC8020D-14

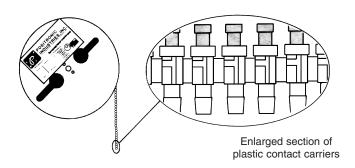
Thermocouple contacts are available, see page 49

[1.68]



FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

REELS FOR AUTOMATIC PNEUMATIC CRIMP TOOLS



Contacts may be supplied in plastic carriers, packaged in reels holding 2,000 contacts for use with the automatic pneumatic crimp tools, catalog part number 9550-1. The same type carrier is used for both male and female contacts.

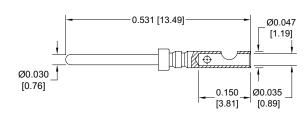
All male and female crimp contacts can be ordered in reels by adding letter "R" after the contact part number, such as MC8022DR for a male contact and FC8022DR for a female contact.

SOLDER CUP CONTACTS

FEMALE CONTACT "CLOSED ENTRY" DESIGN

Part Number: FS8022D

MALE CONTACT



Part Number: MS8022D

Material - Phosphor bronze. Plating - Gold flash over nickel.

Material - Brass.
Plating - Gold flash over nickel.

Solder contacts may be supplied kitted with connector or ordered separately.

Ø0.047

[1.19]



MILITARY QUALITY, REMOVABLE CONTACT, HIGH DENSITY SUBMINIATURE-D CONNECTORS

FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

SIZE 22 CRIMP THERMOCOUPLE CONTACTS

22 AWG [0.3mm²]

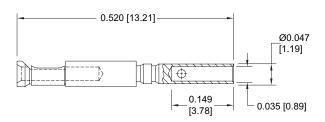
ø0.030±0.001 [0.75±0.03]

Ø0.035 [0.89]

-0.150 [3.81] **-**

MALE CONTACT

FEMALE CONTACT



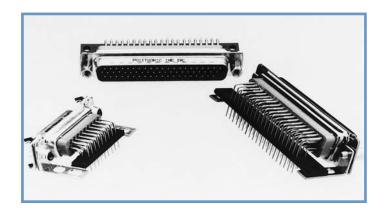
TYPE	MATERIAL	MALE PART NUMBER	FEMALE PART NUMBER	COLOR CODE	WIRE SIZE AWG [mm²]
К	CHROMEL (+)	MC8022DCH	FC8022DCH	WHITE	<u>22 / 24 / 26</u> [0.3 / 0.25 / 0.12]
,	ALUMEL (-)	MC8022DAL	FC8022DAL	GREEN	22 / 24 / 26 [0.3 / 0.25 / 0.12]
т	COPPER (+)	MC8022DCU	FC8022DCU	RED	22 / 24 / 26 [0.3 / 0.25 / 0.12]
'	CONSTANTAN (-)	MC8022DCO	FC8022DCO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]
E	CHROMEL (+)	MC8022DCH	FC8022DCH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	CONSTANTAN (-)	MC8022DCO	FC8022DCO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]

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For more information on the availability of Type J thermocouple contacts, please contact Technical Sales.

For more information about thermocouple contacts with PCB solder termination, please contact Technical Sales.

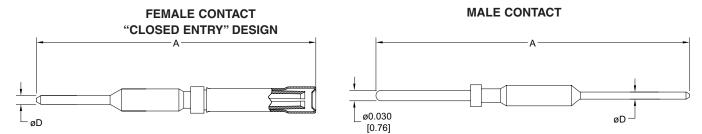
See page 54 for Crimp Tool information.





FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

STRAIGHT PRINTED BOARD MOUNT CONTACTS



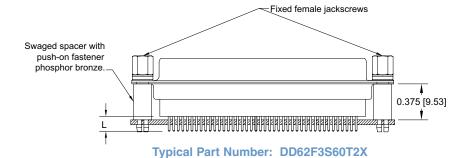
Straight printed board mount contacts are supplied in connector.

CODE NUMBER	4	ØD	A		
3	<u>0.150</u>	<u>0.020</u>	<u>0.725</u>		
	[3.81]	[0.51]	[18.42]		
32	<u>0.300</u>	<u>0.020</u>	<u>0.865</u>		
	[7.62]	[0.51]	[21.97]		

For straight printed board mount contacts specify code no. in step 4 of ordering information.

CODE NUMBER	٦	ØD	A		
3	<u>0.150</u>	0.020	<u>0.737</u>		
	[3.81]	[0.51]	[18.72]		
32	<u>0.300</u>	0.020	<u>0.877</u>		
	[7.62]	[0.51]	[22.28]		

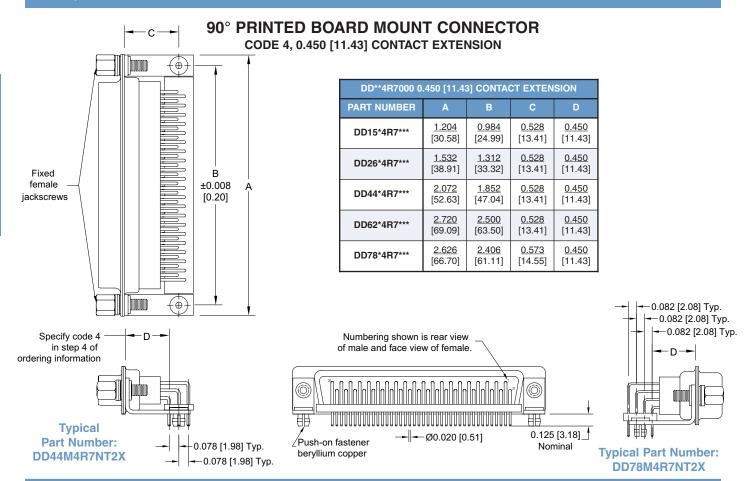
Material – Phosphor bronze or brass. Plating – Gold flash over nickel.



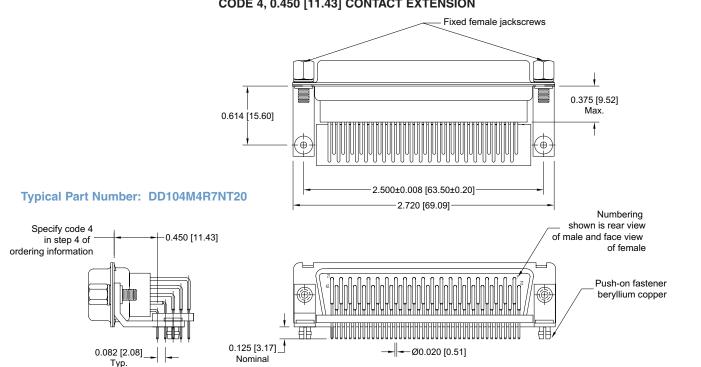




FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS



90° PRINTED BOARD MOUNT CONNECTOR, SIZE 104 CODE 4, 0.450 [11.43] CONTACT EXTENSION



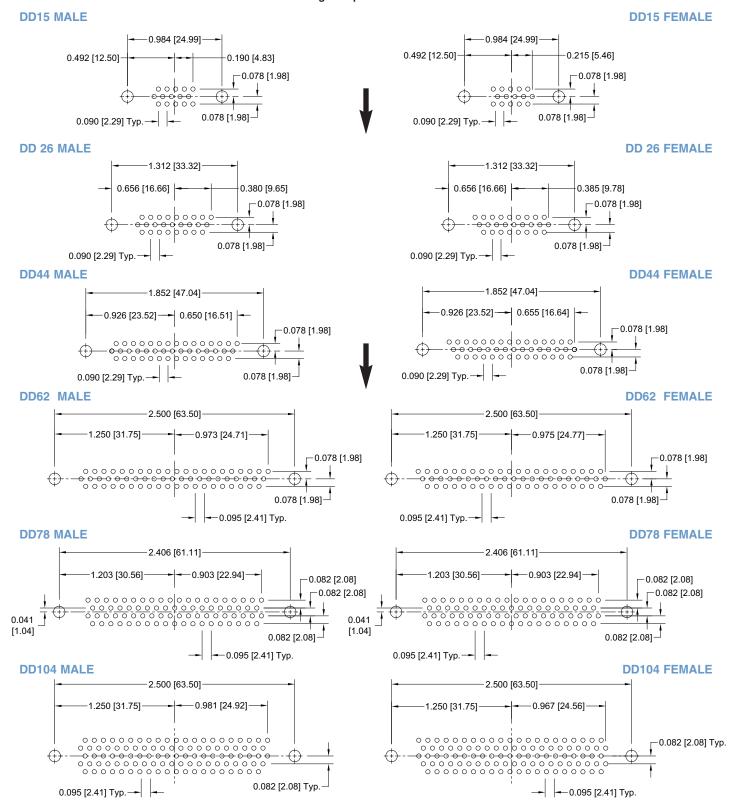
DD SERIES

MILITARY QUALITY, REMOVABLE CONTACT, HIGH DENSITY SUBMINIATURE-D CONNECTORS

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90° AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

Mount connector with mating face positioned to follow direction of arrows.





FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

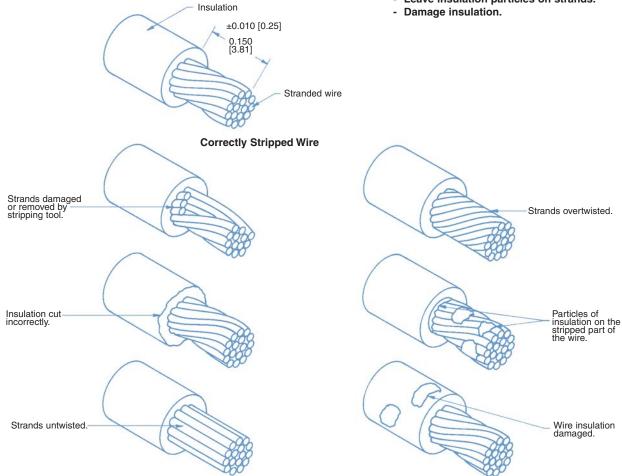
CRIMPING INFORMATION FOR DD AND ODD SERIES CRIMP CONTACTS

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

Step 1: Strip wire to indicated length.

Take Care Not To: - Damage or remove strands.

- Untwist or overtwist strands.
- Leave insulation particles on strands.



Examples of Stripping Faults

Step 2: Crimp wire to contact.

For Hand Crimp Tool: - Place contact into crimping tool.

- Insert wire into contact.

- Center contact by slowly closing the crimping tool until the crimp indenters make contact with the crimp barrel.

- Complete the cycle of the crimping tool in one smooth motion.

- Remove the crimped contact.

For Automatic Pneumatic Crimp Tool: -

- Insert the wire into the contact, positioned in the crimp tool by the plastic carrier.
- Depress the activating device of the crimping tool to start the crimping cycle.
- Remove the crimped contact.

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MILITARY QUALITY, REMOVABLE CONTACT, HIGH DENSITY SUBMINIATURE-D CONNECTORS



FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

CRIMPING INFORMATION FOR DD AND ODD CRIMP CONTACTS

Step 3: Inspect the crimp.

For All Tools: - Strands to be visible through the inspection hole. - Strands not to be visible beyond the insulation support. Crimped contact to meet recommended conductor tensile force shown in chart. Crimp to meet recommended tensile strength. - Check for peeled gold and bent contacts. Wire Insulation, Typical **Cross Section** of Correctly Crimped Contact **Correctly Crimped Contact** Stripped wires compressed for improved conduction. 8 Crimp indents Strands visible beyond insulation support. Strands not visible through inspection hole. Crimp indents too close to inspection hole.

Examples of Crimping Faults

Stripped part of the wire too short.

	Positronic Recommended Conductor Tensile Strength							
WIRE SIZE	<u>22</u>	<u>24</u>	<u>26</u>	<u>28</u>	<u>30</u>			
AWG/[mm²]	[0.3]	[0.25]	[0.12]	[0.08]	[0.05]			
AXIAL LOAD	<u>12</u>	<u>8</u>	<u>5</u>	<u>3</u>	<u>1.5</u>			
POUNDS/[N]	[53]	[36]	[22]	[13]	[6.7]			

Stripped part of the wire too long.

Conductor tensile strength values are derived using silver-tin plated copper wires.

Values may change depending upon what type of wire is used.

Positronic recommended tools for DD series contacts. For more information see contact crimp tools and accessories page.							
CRIMP TOOLS POSITIONERS FOR FC8022D POSITIONERS FOR MC8022D							
9507 HAND CRIMP TOOL	9502-3	9502-4					
9550-1 AUTOMATIC PNEUMATIC CRIMP TOOL	Supplied in reels	Supplied in reels					

Crimp indents incorrectly located.



FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

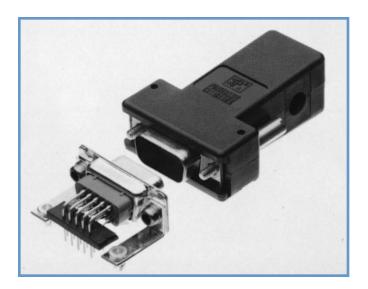
AUTOMATIC CRIMP TOOL, PNEUMATICALLY ACTUATED

Part No. 9550-1

This fast cycling automatic crimp tool produces an 8 indent crimp on wire sizes 20 AWG [0.5mm²] through 32 AWG [0.03mm²]. DD Series contacts must be ordered on reels.

To order, specify part number 9550-1. Foot control valve is supplied as a standard accessory.





MINIATURE STEP ADJUSTABLE TOOL

(M22520/2-01) Part No. 9507

This miniature step adjustable hand crimping tool produces an 8 indent crimp configuration and will crimp wire sizes 20 AWG [0.5mm²] through 32 AWG [0.03mm²].

To crimp FC8022D contacts, order contact positioner 9502-3. To crimp MC8022D contacts, order contact positioner 9502-4. To crimp MC8020D and FC8020D contacts, consult Technical Sales for contact positioners. Each positioner is equipped with a data plate which gives the correct crimp-depth setting for each wire size, and must be used with 9507 tool frame for best results when crimping Densi-D Series contacts.



INSERTION/REMOVAL TOOL

(M81969/1-04) Part No. 4811-2

One end of this tool is used to insert contacts into Densi-D Series connectors. The other end is used to extract contacts. This is accomplished by sliding the extraction tip down the wire into the connector until it bottoms against the contact. A slight rotation while pushing will release the contacts, which are then extracted by simultaneously pulling on the wire.



D-Sub

MILITARY QUALITY, REMOVABLE CONTACT, HIGH DENSITY SUBMINIATURE-D CONNECTORS



FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

		_			_				_		_
STEP	1	2	3	4	5	6	7	8		9	
EXAMPLE	DD	62	F	4	R7	N	T6	S	—		l
STEP 1 - BASIC SERIES DD Series STEP 2 - CONNECTOR VARIANTS 15, 26, 44, 62, 78, 104 STEP 3 - CONNECTOR GENDER M - Male F - Female								0 - Zind	CONTACT FOR OR THE FOR Other Sp. Straight a PCB	CT TECHNI DERING L LLOWING. Decial Requand Right A mount con	uirements. Angle Thermoco tacts
STEP 4 - CONTACT TERMINATION TYPE 0 - Ordered Without Contacts. 1 - Crimp, 22 AWG–30 AWG [0.3mm²–0.05mm²]. 2 - Solder cup, 22 AWG-30 AWG [0.3mm²–0.05mm²]. 3 - Solder, Straight Printed Board Mount with 0.150 [3.81] Tail Length. 32 - Solder, Straight Printed Board Mount with 0.300 [7.62] Tail Length. 4 - Solder, 90° Printed Board Mount with 0.450 [11.43] Contact Extension.						0 - I V3 - I V5 - I VL - I	X - Tin Z - Tin C - Cac P 7 -LOC SYS None. Lock Tab, (Lock Tab, (Lock Lever	Plated and dmium with EKING AN TEMS connector f connector r r, used with	Dimpled (m Dichromated properties of the propert	RIZING mounted. mounted.	
*STEP 5 - MOUNTING 0 - Mounting Hole, 0. 02 - Mounting Hole, 0. B3 - Bracket, Mounting B8 - Bracket, Mounting	.120 [3.05] .154 [3.91] g, 90° Meta	Ø. Ø. al with Cro			•		T2 - 1 T6 - 1 E - 1 E2 - 1 E3 - 1	Fixed Fem Fixed Male Rotating M Rotating M Rotating M	ale Jackscr ale Screw L ale wtih inte	rews. Ile Polarize ews. ocks. rnal hex for	ed Jackscrews. 3/32 hex drives ed Jackscrews.

- F Float Mounts, Universal.
- P Threaded Post, Brass, 0.375 [9.53] Length.
- P2 Threaded Post, Nylon, 0.375 [9.53] Length.
- R2 Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar.
- R6 Bracket, Mounting, 90° Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar.
- R7 Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar.
- R8 Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar.
- S Swaged Spacer, 4-40 Threads, 0.375 [9.53] Length.
- S2 Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length.
- S5 Swaged Locknut, 4-40 Threads.
- S6 Swaged Spacer with Push-on Fasteners, 4-40 Threads, 0.375 [9.53] Length.
- S7 Swaged Spacer with Push-on Fastener for use with Ferrite Inductor, 4-40 Threads, 0.515 [13.08] Length.



*STEP 6 - HOODS AND PUSH-ON FASTENERS

- 0 None.
- J Hood, Top Opening, Plastic.
- L Hood, Side Opening, Plastic.
- Hood, Top Opening, Plastic with Rotating Male Jackscrews. Available in size 78 and 104 only.
- Y6 Hood, Top Opening, Plastic with Rotating Male and Female Polarized Jackscrews. Available in size 78 and 104 only.
- Hood, Top or Side Opening, Robust and Extended Height, Composite and Plastic with Rotating Male Jackscrews. Available in size 15, 26, 44, 62, and 78 only.
- H Hood, Top Opening, Metal. Available in size 26, 44, 62, and 78 only.
- G Hood, EMI/RFI, Metal.
- Hood, Top or Side Opening, Plastic. Available in size 15, 26, and 44 only.
- N Push-on Fastener, for 90° Mounting Brackets.
- **F Ferrite Inductor

^{*}For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.

^{**}Ferrite inductor is available on contact type 32 only.