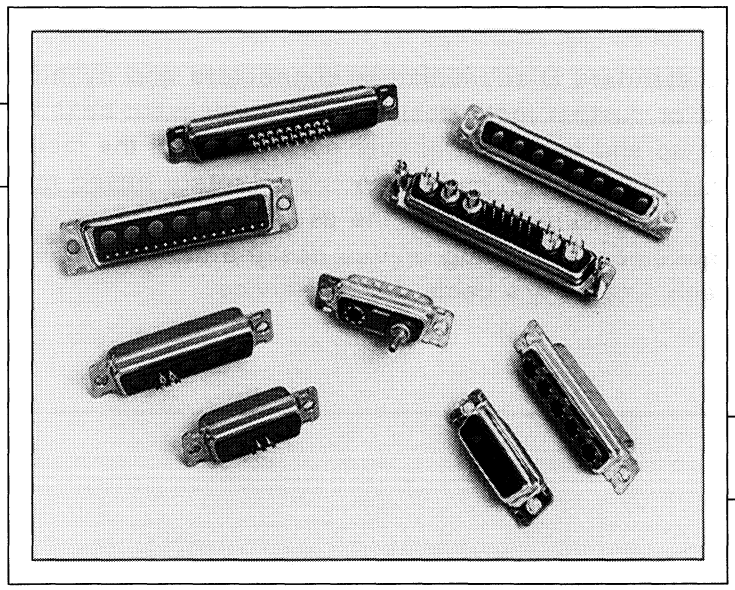
D-SUBMINIATURE COMBINATION CONNECTORS



D-Subminiature Combination Connector Housings

D – SUBMINIATURE COMBINATION CONNECTORS

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

CONNECTOR IS COMPATIBLE WITH THE REQUIREMENTS OF MIL–C–24308, LATEST REVISION.

MATERIALS

HOUSING

Machined Contacts: Copper Alloy per ASTM B 140.

Stamped and Formed Contacts:
Beryllium Copper per QQ–C–533 or Phosphor Bronze per QQ–B–750.

Insert: Thermoplastic Type GPT–30F per MIL–M– 24519.

Shells: Cold Drawn Steel per ASTM A 568 and A 620.

HARDWARE

Threaded Inserts / Standoffs: Brass per ASTM B 16 or Steel per ASTM A 108.

Brackets: Cold Rolled Steel per ASTM A 568.

Push On Fasteners: Copper Alloy per QQ–B–750.

Ground Straps: Beryllium Copper per QQ–C–530.

FINISHES/COLORS

HOUSING

Machined 20 Gage Signal Pins:
Commercial Grade: Gold 0.000030 Thick or
Military Grade: 0.000050 Thick per MIL–G–45204 over Nickel per QQ–N–290.

Stamped and Formed 20 Gage Signal Pins:
Flash: Gold 0.000010 Thick
Commercial Grade 0.000030 Thick or
Military Grade: 0.000050 Thick per MIL–G–45204 over Nickel per QQ–N–290 with 90/10 Tin/Lead per MIL–T–10727 on Tail Section.

Insulator Color: Black.

Shells: Yellow Chromate over Zinc per ASTM B 633 or Yellow Chromate over Cadmium per QQ–P–416 or Tin per ASTM B 545.

HARDWARE

Threaded Inserts / Standoffs: Nickel per QQ–N–290.

Brackets: Yellow Chromate over Zinc per QQ–Z–325 or Yellow Chromate over Cadmium per QQ–P–416.

Ground Straps: None.

Push On Fasteners: Tin per ASTM B 545.

ELECTRICAL

Dielectric Strength: 500 V RMS Minimum at Sea Level. 200 V RMS Minimum at 70,000 Feet.

Insulation Resistance: 1 Megohm Minimum.

Current Rating:
Solder Cup 7.5 Amps.
P.C. Tail 0.040 (1.02) Dia. 7.5 Amps.
P.C. Tail 0.030 (.76) Dia. 5.0 Amps.
P.C. Tail 0.024 (.61) Dia. 2.5 Amps.

MECHANICAL

Operating Temperature: –65° F to 250° F
(–54° C to 121° C).

Durability: 500 Mating Cycles per MIL–STD 1344 Method 2016.

ENGAGEMENT/SEPARATION FORCES

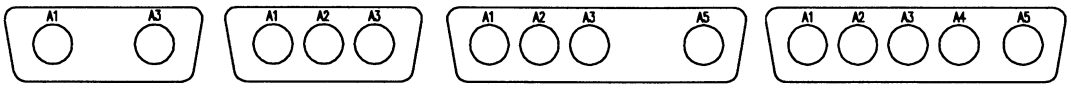
Maximum Individual Engagement Force: 18 Oz.
(Using Maximum Diameter Pin).

Minimum Separation Force: .7 Oz.
(Using Minimum Diameter Pin).

ENVIRONMENTAL

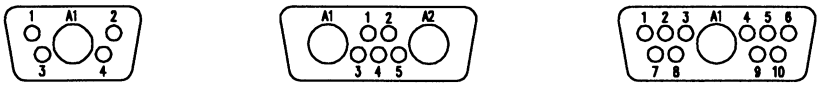
Humidity per MIL–STD–1344, Condition II Method 1002.
Temperature Cycling per MIL–STD–1344, Condition A, Method 1003.
Salt Spray per MIL–STD–1344, Condition B, Method 1001.
Vibration per MIL–STD–1344, Condition 4, Method 2005.
Shock per MIL–STD–1344, Condition E, Method 2004.

SIZE 8



Shell Size	A	A	B	B
Arrangement	2W2	3W3	4W4	5W5
Insulator Type Modifier	22	33	44	55
Coax or HV Cavities	2	3	4	5

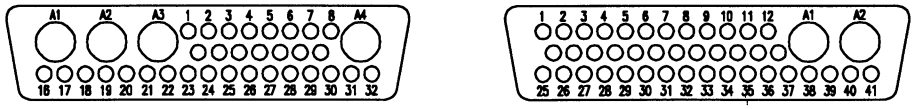
COMBINATIONS



Shell Size	E	A	A
No. of Size 20 Contacts	4	5	10
Arrangement	5W1	7W2	11W1
Insulator Type Modifier	51	72	111
Coax or HV Cavities	1	2	1

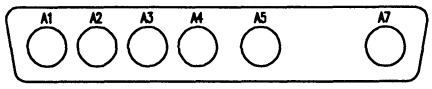
Shell Size	B	C
No. of Size 20 Contacts	20	7
Arrangement	21W1	13W6
Insulator Type Modifier	211	136
Coax or HV Cavities	1	6

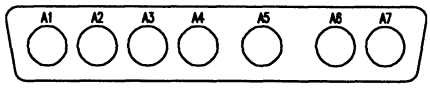
Shell Size	C	C
No. of Size 20 Contacts	17	22
Arrangement	21W4	25W3
Insulator Type Modifier	214	253
Coax or HV Cavities	4	3

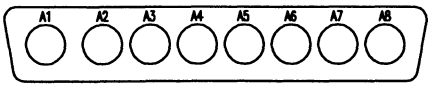


Shell Size	D	D
No. of Size 20 Contacts	32	41
Arrangement	36W4	43W2
Insulator Type Modifier	364	432
Coax or HV Cavities	4	2

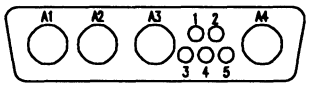
D-SUBMINIATURE SELECTION GUIDE

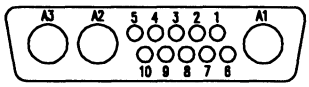


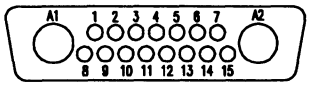




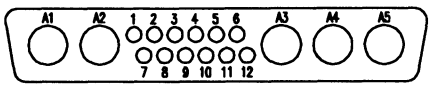
C	C	C
6W6	7W7	8W8
66	77	88
6	7	8

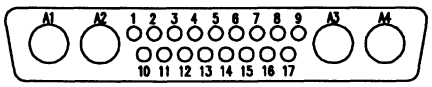




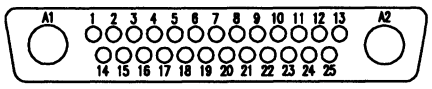


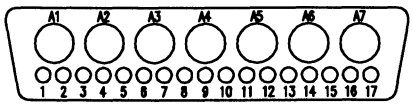
B	B	B
5	10	15
9W4	13W3	17W2
94	133	172
4	3	2



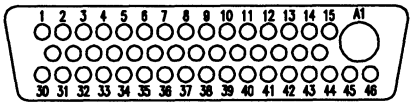


C	C
12	17
17W5	21WA4
175	2A4
5	4





C	D
25	17
27W2	24W7
272	247
2	7



CUSTOM COMBINATIONS AVAILABLE

D	All Sizes
46	Please Contact Factory
47W1	
471	
1	

PART NUMBER SELECTION SYSTEM

To order a combination connector, please fill in the blanks to determine your part number.

Series Prefix
P = Monoblock Insulator
B = Double Block Insulator with Close Entry for Coax and 20 Gage Signal Contacts
C = Crimp Removable Insulator
D = Double Block Insulator (Excludes Right Angle Style)
E = EMI Insulator (Size 8 Only)
H = High Temperature Thermoplastic Insulator
N = Non-Magnetic D-Sub

Insulator Type Modifier
(Enter Two or Three Characters)
See D-Subminiature Selection Guide
Examples: 33 = 3W3 2A4 = 21WA4
214 = 21W4 etc.

Connector Style Modifier
P = Plug Connector with Pin Signal Contacts
R = Receptacle Connector with Socket Signal Contacts
D = Dimpled (Indented) Shell (Plug Only)

Signal Contact Modifier
S = Solder Cup (Standard)
Blank if none required (i.e. 3W3, 5W5, 8W8 etc.)
See Table (Opposite Page)

Signal Finish Code Modifier
Blank if no signal is used (i.e. 3W3, 5W5, 8W8 etc.)
Machined 20 Gage Signal Contacts:
A = 0.000050 Gold over Nickel (Military)
Blank = 0.000030 Gold over Nickel (Standard)
C = 0.000050 Gold over Copper
D = 0.000030 Gold over Copper
H = Non-Magnetic 0.000050 Gold over Copper
Stamped and Formed 20 Gage Signal Contacts
X = 0.000050 Gold over Nickel
Y = 0.000030 Gold over Nickel (Standard)
Z = 0.000010 Gold Flash over Nickel

Shell Finish Modifier
1 = Yellow Chromate over Zinc (Standard)
2 = Yellow Chromate over Cadmium
3 = Tin
4 = Non-Magnetic (Should use "H" Contact Finish Modifier for Signal and Size 8 Contacts)

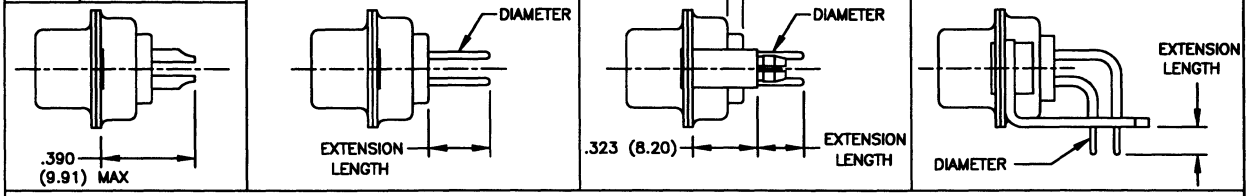
Size 8 Contact Modifier
(Enter two characters)
Blank if none required
See Table (Opposite Page)

Size 8 Contact Finish Modifier
D = 0.000030 Gold over Copper (Standard)
Blank if no coax is used
A = 0.000050 Gold over Nickel
B = 0.000030 Gold over Nickel
(Only plating option available for Stamped and Formed Contacts)
C = 0.000050 Gold over Copper
H = Non-Magnetic 0.000050 Gold over Copper
F = Flash Plating 0.000010 Gold over Nickel

Mounting Hardware Modifier
For unique hardware requirements, please consult factory.
Blank = 0.120 Diameter Through Hole (Rivet, Standard)
A = 0.165 Through Hole (Tab)
B = #4-40 Clinch Nut
C = Straight #4-40 Swaged Standoff Fastener
D = Dual Float Mount
E = #4-40 Standoff, Right Angle Bracket with 0.420 Hole Location
F = #4-40 Standoff, Right Angle Bracket with 0.340 Hole Location
G = #4-40 Standoff, Right Angle Bracket with 0.420 Hole Location and Push-On Fastener Board Lock
H = #4-40 Standoff, Right Angle Bracket with 0.340 Hole Location and Push-on Fastener Board Lock
J = Internal D-Sub Guide Pin with Straight #4-40 Swaged Standoff Fastener (Mates with K, L, M, N)
K = Internal D-Sub Guide Bushing with Right Angle Bracket with 0.420 or 0.395 Hole Location
L = Internal D-Sub Guide Bushing with Right Angle Bracket with 0.340 Hole Location
M = Internal D-Sub Guide Bushing with Right Angle Bracket with 0.420 or 0.395 Hole Location and Push-on Fastener Board Lock
N = Internal D-Sub Guide Bushing with Right Angle Bracket with 0.340 Hole Location and Push-on Fastener Board Lock
P = Screw Lock Kit Male (Screw Retainer)
Q = Screw Lock Kit (Female Screw Lock)
R = Ground Strap (Refer to Succeeding Pages)
S = Loaded Guide Pin Plate (Refer to Succeeding Pages)
T = Loaded Reversed Guide Pin Plate (Refer to Succeeding Pages)

Signal Contact Modifiers

Contact Listing By Board Thickness		STRAIGHT				RIGHT ANGLE	
		WITHOUT STANDOFFS		WITH STANDOFFS		WITHOUT STANDOFFS	
CODE	DIAMETER	EXTENSION LENGTH	BOARD THICKNESS	EXTENSION LENGTH	BOARD THICKNESS	EXTENSION LENGTH	BOARD THICKNESS
L	0.030 (0.76)	0.093 (2.36)	0.062 (1.57)	–	–	–	–
E	0.030 (0.76)	0.125 (3.18)	0.093 (2.36)	–	–	–	–
B	0.040 (1.02)	0.125 (3.18)	0.093 (2.36)	–	–	–	–
M	0.030 (0.76)	0.156 (3.96)	0.125 (3.18)	–	–	–	–
H	0.040 (1.02)	0.156 (3.96)	0.125 (3.18)	–	–	–	–
Z	0.030 (0.76)	0.184 (4.67)	0.156 (3.96)	–	–	–	–
X	0.040 (1.02)	0.184 (4.67)	0.156 (3.96)	–	–	–	–
J	0.030 (0.76)	0.204 (5.18)	0.184 (4.67)	0.089 (2.26)	0.062 (1.57)	–	–
A	0.040 (1.02)	0.265 (6.73)	0.250 (6.35)	0.150 (3.81)	0.125 (3.18)	–	–
F	0.030 (0.76)	–	–	–	–	0.093 (2.36)	0.062 (1.57)
G	0.024 (0.61)	–	–	–	–	0.156 (3.96)	0.125 (3.18)
S	SOLDER CUP						



Notes:
Stamped and Formed contacts are available in 0.030 (0.76) & 0.040 (1.02) equivalent diameters.
Consult factory for 20 gage contact modifier for unique lengths and bends.

Size 8 Contact Modifiers

4 Modifier– 50 Ohm Coax (0.030" Center Pin)
- 4A – Straight PC
- 4B – Right Angle PC 0.370 from Flange
- 4D – Right Angle PC 0.270 from Flange

5 Modifier – Standard Coax Modifier (0.040" Center Pin)
- 5A – Straight PC
- 5B – Right Angle PC 0.370 from Flange
- 5C – Right Angle PC Receptacle Stamped and Formed (Not Available on D Size Shell)
- 5D – Right Angle PC 0.270 from Flange

6 Modifier – PkZ Coax
- 6A – Straight PC
- 6B – Right Angle PC 0.370 from Flange
- 6D – Right Angle PC 0.270 from Flange

7 Modifier – 75 Ohm Coax
- 7A – T.B.A.
- 7B – T.B.A.
- 7C – Right Angle PC Receptacle Stamped and Formed (Not Available on D Size Shell)
- 7D – Right Angle PC Receptacle Stamped and Formed 0.203 Extension (Not Available on D Size Shell)

8 Modifier – High Voltage
- 8A – Straight Cable
- 8B – Right Angle Cable

9 Modifier – High Power
- 9A – Straight PC 10/20 Amp
- 9B – Straight PC 40 Amp
- 9C – Right Angle PC 10/20 Amp (0.570 Extension)
- 9D – Right Angle PC 40 Amp (0.570 Extension)
- 9E – T.B.A.
- 9F – Right Angle PC 40 Amp (0.810 Extension)
- 9G – Straight Solder Cup 10/20 Amp
- 9H – Straight Solder Cup 40 Amp
- 9J – Right Angle Solder Cup 10/20 Amp
- 9K – Right Angle Solder Cup 40 Amp

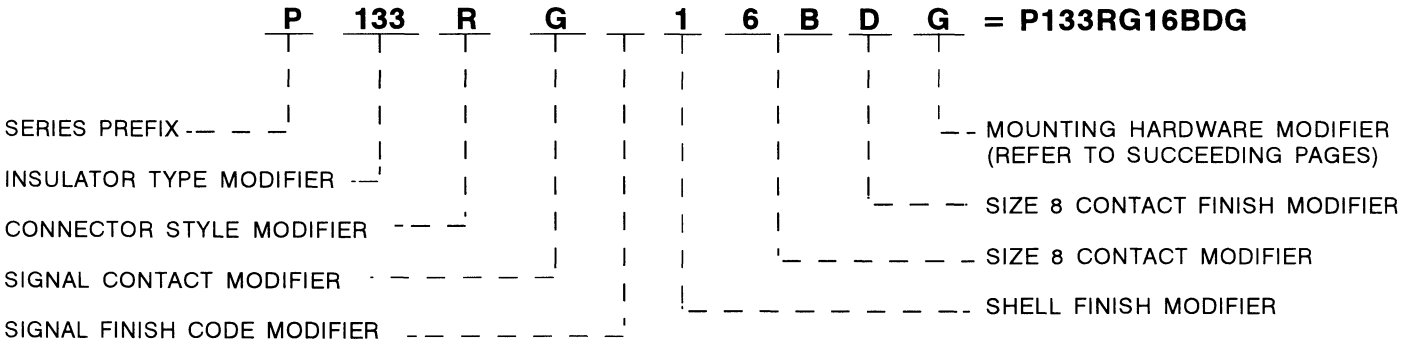
Notes:
For mixed Size 8 combinations (i.e. Coax with Power) – please consult factory.
Coaxial contacts are ordered separately due to crimping requirements.

PART NUMBER EXAMPLE

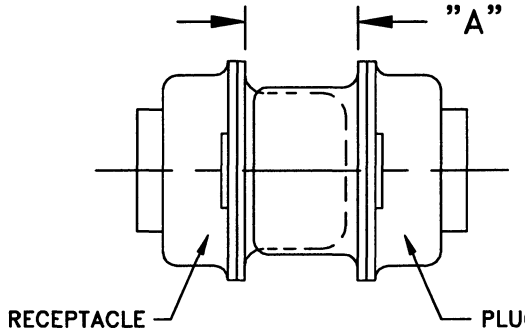
Description of D-Sub Requirement

Connectors with a 13W3 insulator configuration are required. The connectors are to have right angle female (socket) signal contacts and 75 ohm right angle stamped and formed size 8 contacts. These connectors will ultimately be mounted on .125 inch thick PC boards with board locks (push-ons) attached to right angle brackets. The finish on the signal contacts and the size 8 contacts is to be 30 microinches of gold over nickel. Shell finish is to be yellow chromate over zinc.

Requirement	Digit By Digit Part Number Creation
■ Standard Series Connector	SERIES PREFIX: P
■ 13W3 Insulator	INSULATOR TYPE MODIFIER: 133
■ Receptacle (Socket Signal Contacts)	CONNECTOR STYLE MODIFIER: R
■ Right Angle Signal Contacts for .125 thick PC Board	SIGNAL CONTACT MODIFIER: G
■ Standard .000030 Gold over Nickel on Signal Contacts	SIGNAL FINISH CODE MODIFIER: BLANK
■ Standard Yellow Chromate over Zinc on Shell	SHELL FINISH MODIFIER: 1
■ Right Angle PC Receptacles, PKZ	SIZE 8 CONTACT MODIFIER: 6B
■ Standard Plating .000030 Gold over copper	SIZE 8 CONTACT FINISH MODIFIER: D
■ #4-40 Standoffs with Right Angle Brackets & Push-On Fasteners	MOUNTING HARDWARE MODIFIER: G

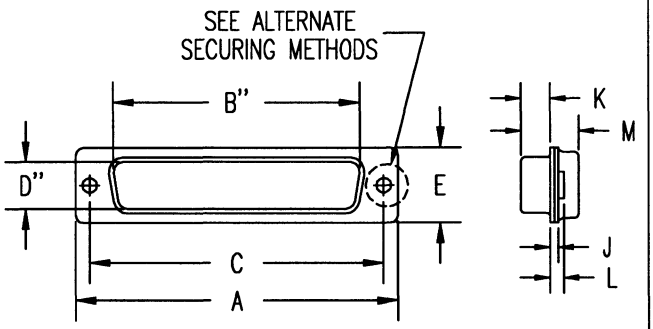


MATING INTERFACE

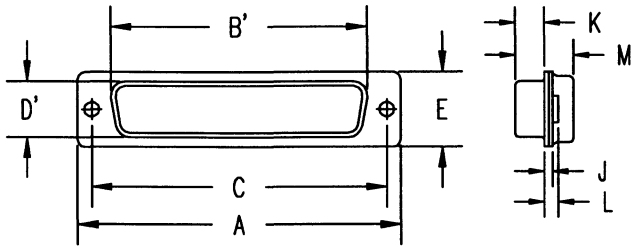


Shell Size	"A" Dimension
E,A	.265±.015
B,C,D	.256±.015

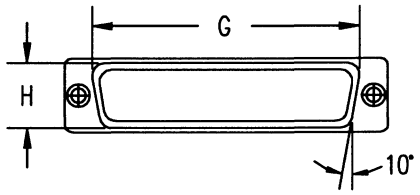
PLUG SHELL



RECEPTACLE SHELL

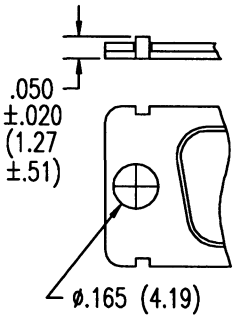


BACK SHELL (PLUG AND RECEPTACLE)

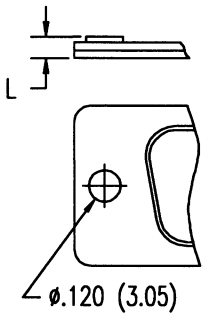


ALTERNATE SECURING METHODS

TAB



RIVET



Shell Size	Gender	A ±.015 (±.38)	B' ±.005 (±.13)	B" ±.005 (±.13)	C ±.005 (±.13)	D' ±.005 (±.13)	D" ±.005 (±.13)	E ±.015 (±.38)	G ±.010 (±.25)	H ±.010 (±.25)	J ±.010 (±.25)	K	L	M ±.010 (±.25)
E	P	1.213 (30.81)	– –	.666 (16.92)	.984 (24.99)	– –	.329 (8.36)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (.76)	.229/.238 (5.82/6.05)	.035/.060 (.89/1.52)	.422 (10.72)
E	R	1.213 (30.81)	.643 (16.33)	– –	.984 (24.99)	.311 (7.90)	– –	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (.76)	.238/.248 (6.05/6.30)	.035/.060 (.89/1.52)	.429 (10.90)
A	P	1.541 (39.14)	– –	.994 (25.25)	1.312 (33.32)	– –	.329 (8.36)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (.76)	.229/.238 (5.82/6.05)	.035/.060 (.89/1.52)	.422 (10.72)
A	R	1.541 (39.14)	.971 (24.66)	– –	1.312 (33.32)	.311 (7.90)	– –	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (.76)	.238/.248 (6.05/6.30)	.035/.060 (.89/1.52)	.429 (10.90)
B	P	2.088 (53.04)	– –	1.534 (38.96)	1.852 (47.04)	– –	.329 (8.36)	.494 (12.55)	1.625 (41.28)	.422 (10.72)	.039 (.99)	.224/.236 (5.69/5.99)	.050/.070 (1.27/1.78)	.426 (10.82)
B	R	2.088 (53.04)	1.511 (38.38)	– –	1.852 (47.04)	.311 (7.90)	– –	.494 (12.55)	1.625 (41.28)	.422 (10.72)	.030 (.76)	.238/.248 (6.05/6.30)	.035/.060 (.89/1.52)	.429 (10.90)
C	P	2.729 (69.32)	– –	2.182 (55.42)	2.500 (63.50)	– –	.329 (8.36)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.039 (.99)	.224/.236 (5.69/5.99)	.050/.070 (1.27/1.78)	.426 (10.82)
C	R	2.729 (69.32)	2.159 (54.84)	– –	2.500 (63.50)	.311 (7.90)	– –	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.030 (.76)	.238/.248 (6.05/6.30)	.035/.060 (.89/1.52)	.429 (10.90)
D	P	2.635 (66.93)	– –	2.079 (52.81)	2.406 (61.11)	– –	.441 (11.20)	.605 (15.37)	2.178 (55.32)	.534 (13.56)	.039 (.99)	.224/.236 (5.69/5.99)	.050/.070 (1.27/1.78)	.426 (10.82)
D	R	2.635 (66.93)	2.064 (52.43)	– –	2.406 (61.11)	.423 (10.74)	– –	.605 (15.37)	2.178 (55.32)	.534 (13.56)	.030 (.76)	.238/.248 (6.05/6.30)	.035/.060 (.89/1.52)	.429 (10.90)

Gender: P: Plug (Pin Signal Contacts) R: Receptacle (Socket Signal Contacts)

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