

# D-SUBMINIATURE CONNECTORS

AMPHENOL® DIN 41612 TWO-PIECE  
PRINTED CIRCUIT BOARD CONNECTORS  
SHORT FORM CATALOG



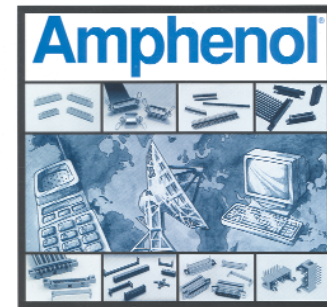
**DIN 41612  
Circuit Board Connectors**



**FCC Filtered  
Connectors**

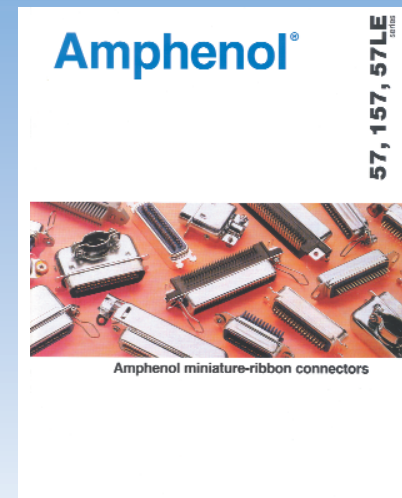


**RJ Modular  
Jacks**



HEADERS & SOCKETS  
AND  
MASS-TERMINATED  
IDC CONNECTORS

**IDC  
Connectors**



**Miniature  
Ribbon Connectors**

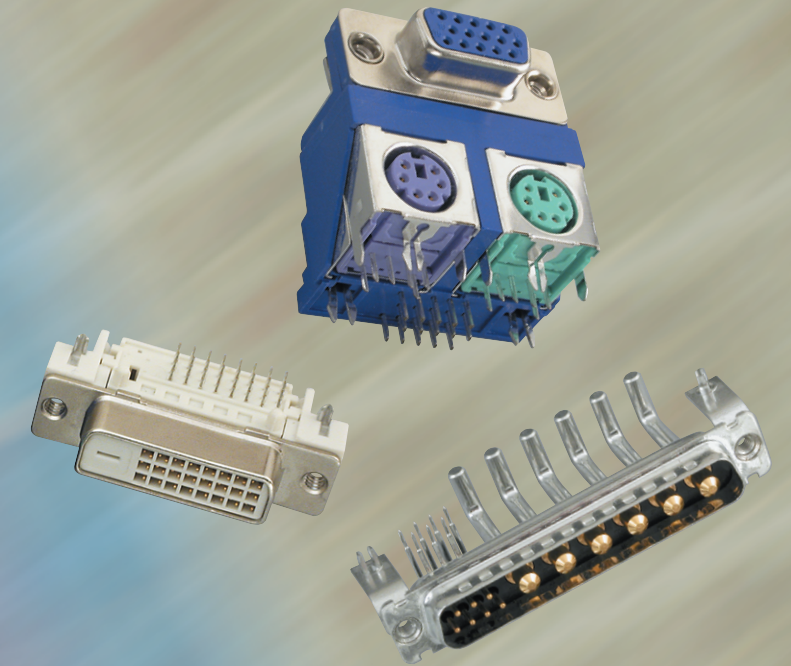
# Amphenol®

*Data / Telecom Products*

20 Melford Drive  
Scarborough, Ontario  
Canada M1B 2X6

Telephone: (416) 754-5656  
Facsimile: (416) 754-8668  
Email: sales@amphenolcanada.com  
Website: www.amphenolcanada.com

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Designed by K Jasper Marketing Communications Inc.



# Amphenol®

ACCESSORIES

STANDARD DENSITY

SURFACE MOUNT RECEPTACLES

HIGH DENSITY



#### GENERAL DESCRIPTION:

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Amphenol's line of D-Subminiature rack and panel connectors is part of an industry standard for applications requiring reliable, rugged, connectors. These connectors are designed to accommodate rack and panel, cable to panel and cable to cable applications. D-Subminiature connectors are pin and socket devices that employ contacts encased in a molded dielectric insert surrounded by a "D" shaped shell for polarization.

#### MARKETS:

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Amphenol D-Subminiature connectors can be used in commercial, industrial or military markets. We offer a broad selection of dielectric materials and contact styles and configurations to meet all of your design requirements.

#### APPLICATIONS INCLUDE:

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- Business equipment
- Electronic office systems
- Data communications
- Medical equipment
- Mobile communications
- Consumer electronics

#### AMPHENOL D-SUB FEATURES:

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- Industry standard interfacing RS232 and RS449 mating configurations per EIA standards.
- UL Component Recognition File number E64911 (617, 841, 17, 17D, 17HD, ED, 17RR, 17SD, 117DF, 17BH, 17TW)
- Variations available:
  - Solder cup
  - Straight pc mount solder
  - Right angle pc mount solder
  - Solderless wire wrap
  - Crimp
  - High Density Right Angle
  - High Density Straight
  - Stacked Right Angle PC mount
  - Surface mount
- Five shell sizes offer widest choice of contact positions: 9, 15, 25, 37 and 50 in standard density and 15, 26, 44, 62 and 78 positions in high-density.
- Inserts are flame-retardant thermoplastic.
- Accessories for all applications are available including strain reliefs, cable clamps, shielded backshells, mating hardware and connector to pc board mounting hardware.
- Automatic and manual tooling is available for both crimp and IDC versions.
- Contact Amphenol for lease information.

High Density

SPECIFICATIONS:

MATERIALS AND PLATINGS

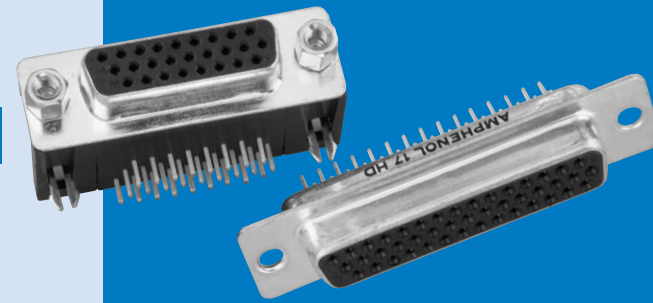
Shells	Steel, tin plated, grounding indents on plug.
Contact Material	Copper alloy
Contact Plating	Engagement area: gold (see ordering information).
Termination End	150µ" (3.81µm) tin/lead
Nickel Underplate	50µ" (1.27µm) entire contact

ELECTRICAL DATA

Current Rating	3 Amps maximum per contact
Voltage Rating	125 VAC
Dielectric Withstanding Voltage	1000 VAC (minimum)
Dielectric	Glass filled thermoplastic, black, UL 94 VO
Insulation Resistance	5,000 Megaohms (minimum)
Contact Resistance	15 Milliohms (maximum)

CLIMATIC DATA

Operating Temperature	-67°F (-55°C) to 221°F (105°C)
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17E BH/HD SERIES

Amphenol's High Density D-Subminiature connectors complement Amphenol's extensive D-Subminiature connector line. This line of connectors offers many superior features, high performance level and low installation cost.

The connector configurations are available in 15, 26, 44, 62 and 78 positions.

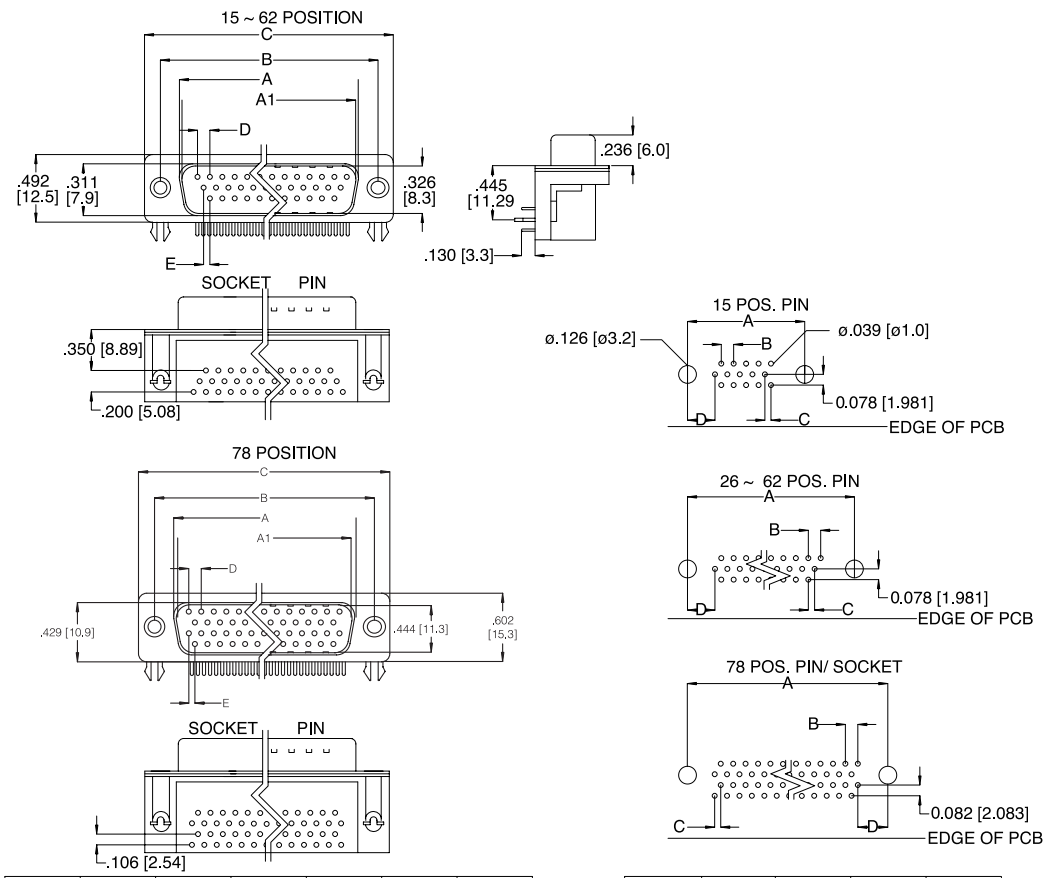
The product offering includes PCB mount connectors in both straight or right angle termination styles. Straight PCB mount are available in both Fixed Screw Machine and Stamped and Formed contacts, while Right Angle PCB mount are only available with Stamped and Formed contacts.

A cable mount version with solder terminations is also available, which can be combined with Amphenol's standard line of shielded or unshielded backshells.

- Industrial
- Telecom
- Any industry standard I / O connections

INCHES (MM)

DIMENSIONS FOR 15 - 62 POSITION (3 ROW)(SHOWN WITH FIXED FEMALE SCREWLOCKS) DIMENSIONS FOR THE 78 POSITION (4 ROW)



CONTACTS	A SOCKET	A1 PIN	B	C	D	E
15	.642 [16.30]	.666 [16.92]	.984 [25.0]	1.213 [30.8]	.090 [2.29]	.045 [1.145]
26	.969 [24.6]	.994 [25.25]	1.311 [33.3]	1.543 [39.2]	.090 [2.29]	.045 [1.145]
44	1.508 [38.3]	1.534 [38.96]	1.854 [47.1]	2.091 [53.1]	.090 [2.29]	.045 [1.145]
62	2.157 [54.8]	2.182 [55.42]	2.50 [63.5]	2.732 [69.4]	.095 [2.41]	.047 [1.205]
78	2.05 [52.20]	2.079 [52.81]	2.40 [61.0]	2.638 [67.0]	.095 [2.41]	.047 [1.205]

CONTACTS	A	B	C	D
15	.984 [25.0]	.090 [2.29]	.045 [1.145]	.277 [7.04]
26	1.311 [33.3]	.090 [2.29]	.045 [1.145]	.271 [6.88]
44	1.854 [47.1]	.090 [2.29]	.045 [1.145]	.271 [6.88]
62	2.50 [63.5]	.095 [2.41]	.047 [1.205]	.275 [7.00]
78	2.402 [61.0]	.095 [2.41]	.047 [1.205]	.300 [7.63]

ORDERING INFORMATION

17EBH Series High Density D-Sub

Front Metal Shell, Right-Angle PC Mount

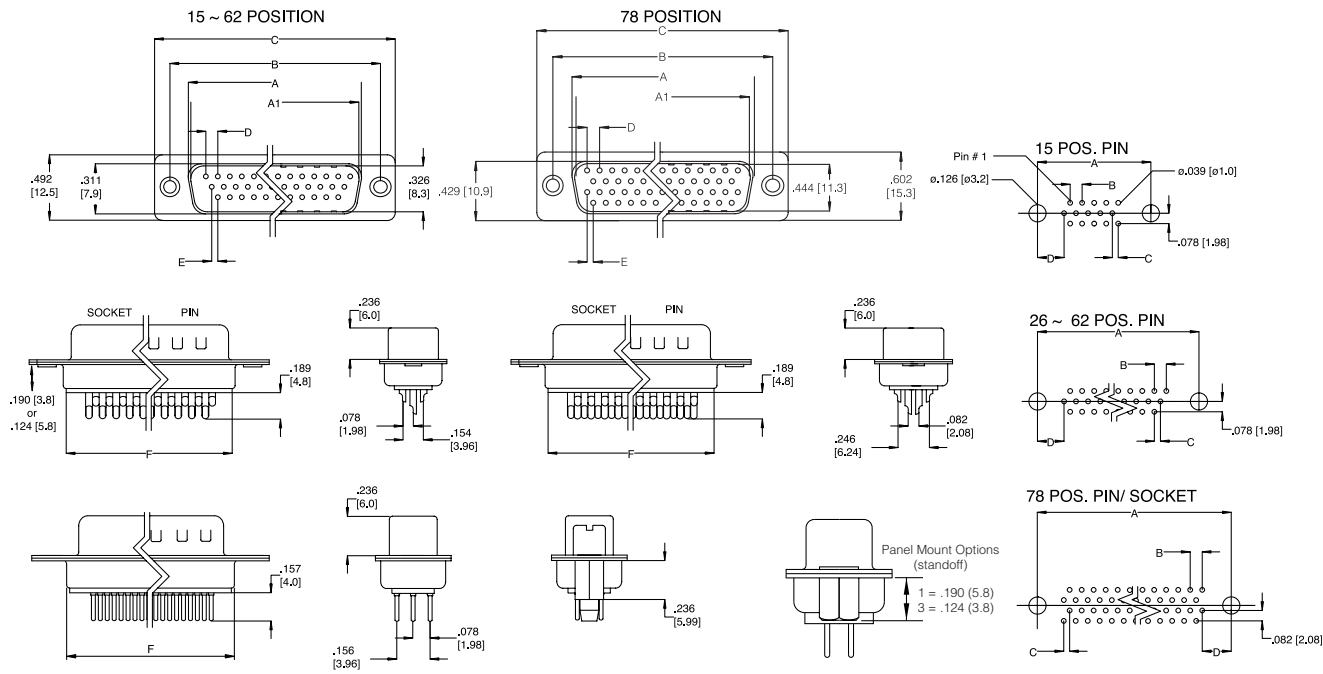
17EBH 0XX X XX X XX

Series  
Number Of Positions  
15, 26, 44, 62, 78  
Type  
P Pin (male)  
S Socket (female)

PCB Mount Options  
00 Clear hole  
10 Arrowhead Board  
Panel Mounting Options  
0 .120 (3.05) Clear Hole  
1 #4-40 Threaded Hole  
2 #4-40 Fixed Female Screw  
Plating Code  
AA Gold Flash over Nickel  
AM 30µ\* (.76µm) Gold over Nickel



**DIMENSIONS**



CONTACTS	A SOCKET	A1 PIN	B	C	D	E	F
15	.642 [16.30]	.666 [16.92]	.984 [25.0]	1.213 [30.8]	.090 [2.29]	.045 [1.145]	.756 [19.2]
26	.969 [24.6]	.994 [25.25]	1.311 [33.3]	1.543 [39.2]	.090 [2.29]	.045 [1.145]	1.071 [27.2]
44	1.508 [38.3]	1.534 [38.96]	1.854 [47.1]	2.091 [53.1]	.090 [2.29]	.045 [1.145]	1.618 [41.1]
62	2.157 [54.8]	2.182 [55.42]	2.50 [63.5]	2.732 [69.4]	.095 [2.41]	.047 [1.205]	2.256 [57.3]
78	2.05 [52.20]	2.079 [52.81]	2.40 [61.0]	2.638 [67.0]	.095 [2.41]	.047 [1.205]	2.169 [55.1]

CONTACTS	A	B	C	D
15	.984 [25.0]	.090 [2.29]	.045 [1.145]	.277 [7.04]
26	1.311 [33.3]	.090 [2.29]	.045 [1.145]	.277 [7.04]
44	1.854 [47.1]	.090 [2.29]	.045 [1.145]	.277 [7.04]
62	2.50 [63.5]	.095 [2.41]	.047 [0.120]	0.699
78	2.402 [61.0]	.095 [2.41]	.047 [0.120]	0.699

**ORDERING INFORMATION**

**17E HD Series High Density D-Sub**

*Solder Cup & Straight P.C. Mount, Front Metal Shell Fixed Contact*

**17EHD 0XX X XX X XX**

Series  
 Number Of Positions  
 15, 26, 44, 62, 78  
 Type  
 P Pin (male)  
 S Socket (female)

**Termination Types:**  
 00 Solder Cup  
 30 Board-mount, Vertical  
 32 Board-mount, Vertical with Boardlocks  
 33 Board-mount, Vertical with standoff,  
 no boardlock

**Panel Mounting Options:**  
 0 .120 (3.05) Clear Hole  
 1 #4-40 Threaded Hole .190 (5.8)  
 2 #4-40 Fixed Female Screwlock  
 3 #4-40 Threaded Hole .124 (3.8)

**Plating Code:**  
 AA Gold Flash over Nickel  
 AM 30µ\* (.76µm) Gold over Nickel

INCHES (MM)

**Right-Angle Board Mount Connectors  
Front Metal Shell**

**SPECIFICATIONS:**

**MATERIALS AND PLATINGS**

Shells	Steel, tin plated
Contacts	Precision formed copper alloy
Contact Plating	Gold over nickel
Contact Forces	Engagement: 12 oz. max. (340.2 g) Separation: .75 oz. min. (21.26 g)

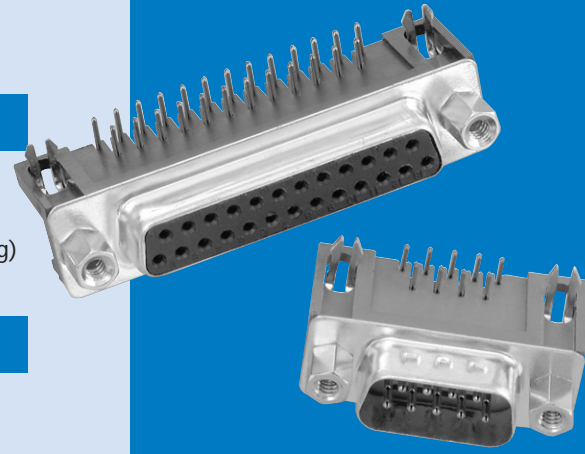
**ELECTRICAL DATA**

Current Rating	5 amps
Dielectric Withstanding Voltage	1000 VAC/60 sec.
Dielectric	Glass filled thermoplastic, black, UL 94 VO
Contact Resistance	15 milliohms max.

**CLIMATIC DATA**

Temperature Range	-67°F (-55°C) to 221°F (105°C)
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**6E17 SERIES**

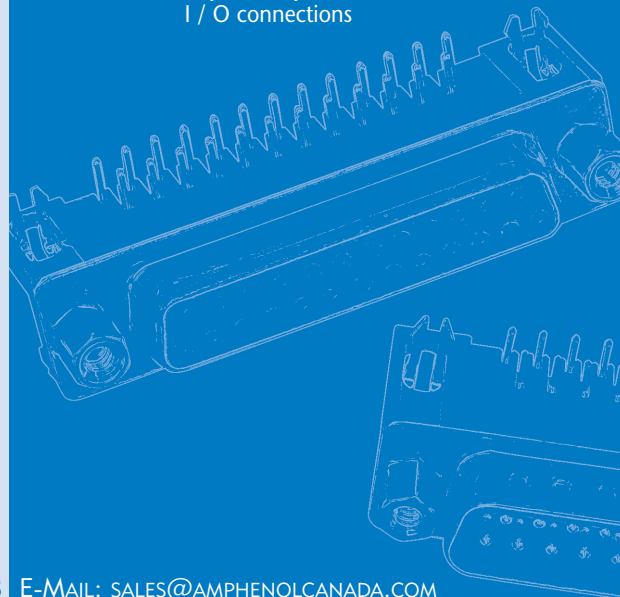


Amphenol's 6E17 series of right angle commercial connectors provide high performance at competitive prices.

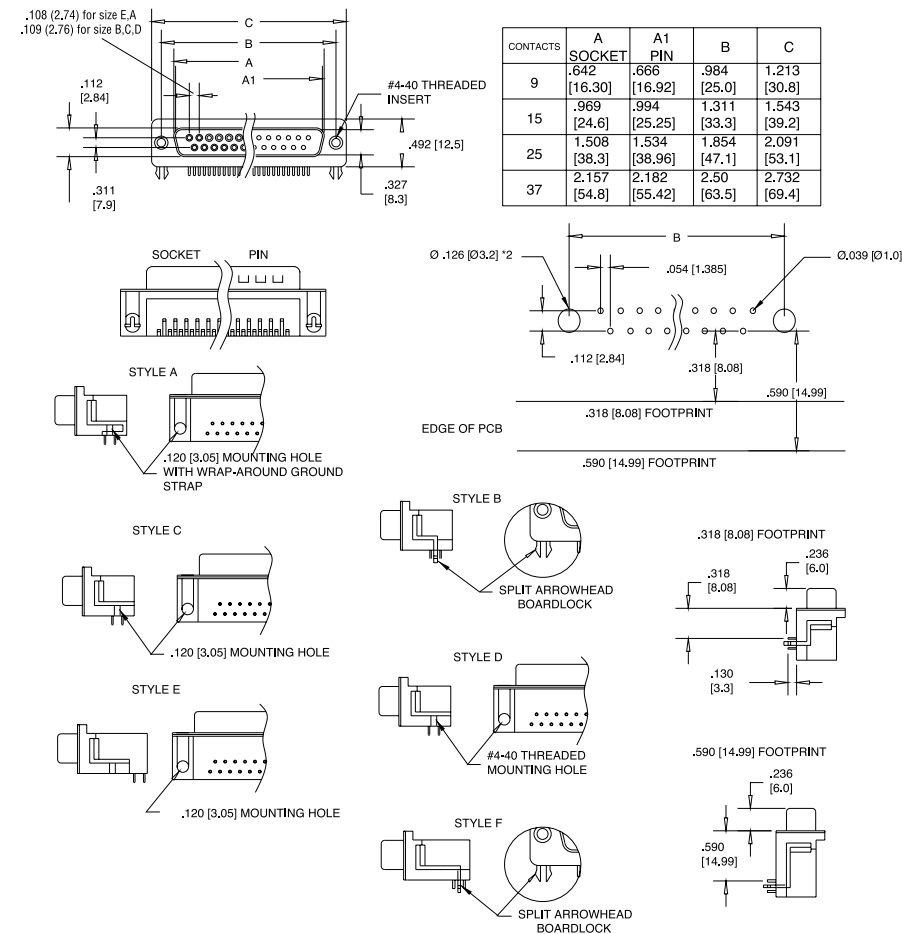
The front metal shell helps to provide reduced EMI/ RFI emissions, and the contacts are selectively plated to provide additional high performance. The 6E17 series are available in a variety of board mounting and grounding options including arrowhead boardlocks and #4-40 threaded inserts.

Front mounting holes are also available threaded, un-threaded and with installed female hex screwlocks.

- Industrial
- Telecom
- Any industry standard I / O connections



**DIMENSIONS**



**ORDERING INFORMATION**

Series: **6E17 X**    **0XX**    **X**    **XX**    **X**    **XX**    **X**

Number of Contacts: 09, 15, 25, 37

.318 (8.08) Footprint	.590 (14.99) Footprint	Description of PC Board Mounting Characteristics	Style
A		.120 (3.05) diameter mtg hole with wrap-around ground strap	A
C		split arrowhead boardlock	B
D	U	.120 (3.05) diameter mtg hole	C&E
J		#4-40 threaded mtg hole	D
	Y	split arrowhead boardlock	F

**Code**  
P Pin (male)  
S Socket (female)

**Contact Type**  
Pin (male)  
Socket (female)

**Contact**  
20 Tin plated receptacle  
21 Tin plated plug with grounding indents

**Code**  
0 .120 (3.05) clear hole  
1 #4-40 threaded hole  
2 #4-40 threaded hole with female screwlock  
4 Fixed female round screwlock

**Code**  
BF **Contact Plating**  
Engagement area 3µ" (.076µm) gold flash, terminal end area 100µ"/200µ" (2.54µm/5.08µm) tin/lead underplate of 50µ" (1.27µm) nickel  
CF Engagement area 15µ" (.381µm) gold flash, terminal end area 100µ"/200µ" (2.54µm/5.08µm) tin/lead underplate of 50µ" (1.27µm) nickel  
AJ Engagement area 30µ" (.76µm) gold, terminal end area 100µ"/200µ" (2.54µm/5.08µm) tin/lead underplate of 50µ" (1.27µm) nickel

Variation Code: E for U & Y Footprint

**Panel Mounting Options**  
0 .120 (3.05) clear hole  
1 #4-40 threaded hole  
2 #4-40 threaded hole with female screwlock  
4 Fixed female round screwlock

**Contact Plating**  
BF Engagement area 3µ" (.076µm) gold flash, terminal end area 100µ"/200µ" (2.54µm/5.08µm) tin/lead underplate of 50µ" (1.27µm) nickel  
CF Engagement area 15µ" (.381µm) gold flash, terminal end area 100µ"/200µ" (2.54µm/5.08µm) tin/lead underplate of 50µ" (1.27µm) nickel  
AJ Engagement area 30µ" (.76µm) gold, terminal end area 100µ"/200µ" (2.54µm/5.08µm) tin/lead underplate of 50µ" (1.27µm) nickel

For filtered version, see page 56.



Dual Port Connectors

SPECIFICATIONS:

MATERIALS AND PLATINGS

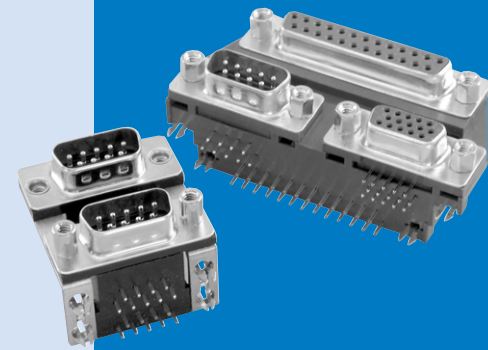
Shells	Steel, tin plated
Contacts	Precision formed copper alloy
Contact Plating	Gold over nickel
Contact Forces	Engagement: 12 oz. max. (340.2 g) Separation: .75 oz. min. (21.26 g)

ELECTRICAL DATA

Current Rating	5 amps
Dielectric Withstanding Voltage	1000 VAC/60 sec.
Dielectric	Glass filled thermoplastic, black, UL 94 VO
Contact Resistance	15 milliohms max.

CLIMATIC DATA

Temperature Range	-67°F (-55°C) to 221°F (105°C)
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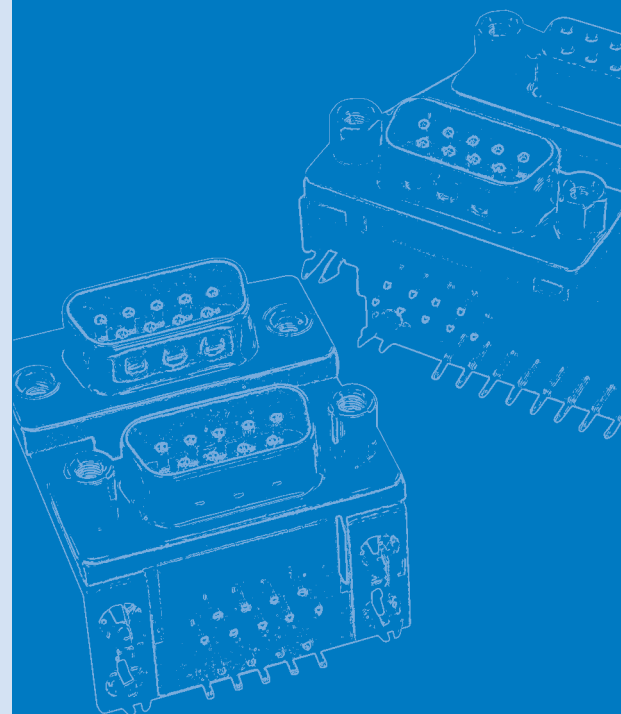
6E17 H SERIES

Amphenol's 61E7 series dual port connectors are a state of the art design. The front metal shell helps reduce EMI/RFI emissions.

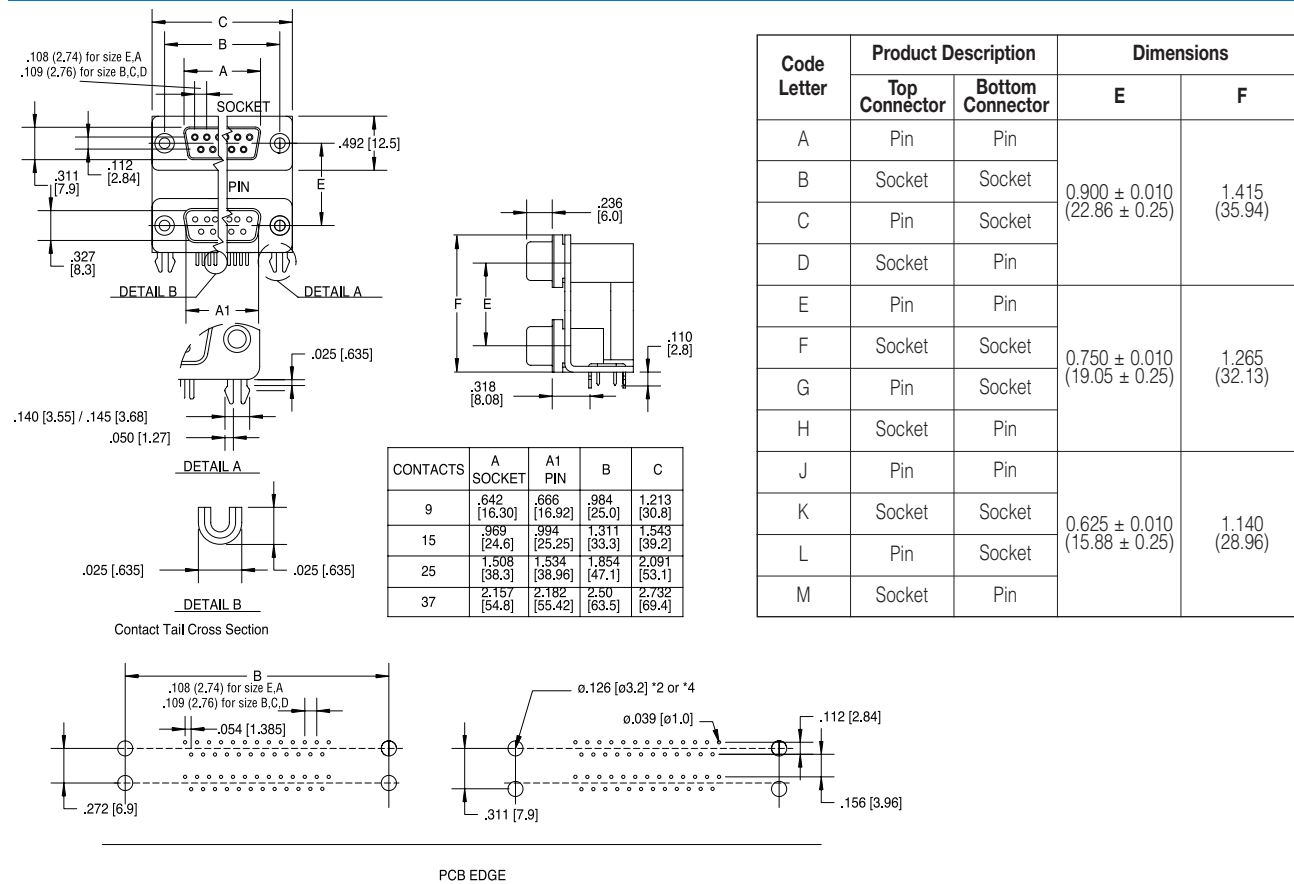
Contacts are selectively plated for high performance at a low cost.

Designed to save PC board space, Amphenol's dual port "D" provides two input output connectors in a minimal amount of board space.

These connectors are available with various stacking options: same gender, mixed gender and multiple pin counts.



**DIMENSIONS**



Code Letter	Product Description		Dimensions	
	Top Connector	Bottom Connector	E	F
A	Pin	Pin	0.900 ± 0.010 (22.86 ± 0.25)	1.415 (35.94)
B	Socket	Socket		
C	Pin	Socket		
D	Socket	Pin	0.750 ± 0.010 (19.05 ± 0.25)	1.265 (32.13)
E	Pin	Pin		
F	Socket	Socket		
G	Pin	Socket	0.625 ± 0.010 (15.88 ± 0.25)	1.140 (28.96)
H	Socket	Pin		
J	Pin	Pin		
K	Socket	Socket		
L	Pin	Socket		
M	Socket	Pin		

**ORDERING INFORMATION**

**6E17H X XX X XX X XX X**

**Series** 6E17H Dual port; right angle solder tail

**Code Boardlock**  
C Boardlock option  
O No PC boardlock

**Code Number of Contacts**  
18 2 x 9      15 15 over blank  
30 2 x 15      34 9 / 25  
50 2 x 25      43 25 / 9+9  
74 2 x 37      H15A VGA / Triple Audio  
40 15 / 25

**Variation Code**  
L for .311 (7.89) Footprint

**Code Housing Characteristics**  
00 Steel shell, tin plated receptacles without grounding dimples (options B, F, K)  
01 Steel shells, tin plated plugs with grounding dimples (options A, E, J)  
03 Steel shells, tin plated, plug shell with grounding dimples and receptacle shell without dimples (options C, G, L, D, H, M)

**Code Panel Mounting Options**  
0 120° clear hole  
1 #4-40 threaded hole  
2 #4-40 threaded hole with female screwlock

**Code Contact Plating**  
BF Engagement area 3µ (.076µm) gold flash, terminal end area 100µ/200µ tin/lead, (2.54µm/5.08µm) tin/lead underplate of 50µ (1.27µm) nickel  
CF Engagement area 15µ (.381µm) gold flash, terminal end area 100µ/200µ (2.54µm/5.08µm) tin/lead underplate of 50µ (1.27µm) nickel  
AJ Engagement area 30µ (.76µm) gold, terminal end area 100µ/200µ (2.54µm/5.08µm) tin/lead underplate of 50µ (1.27µm) nickel

Consult factory for other available configurations

58.064 (22.86) Spacing	48.388 (19.05) Spacing	40.31 (15.87) Spacing	Product Description	
A	E	J	Top Connector	Bottom Connector
A	E	J	Pin	Pin
B	F	K	Socket	Socket
C	G	L	Pin	Socket
D	H	M	Socket	Pin

For filtered version, see page 55.

**High Temperature  
Straight Board Mount Connectors**

**SPECIFICATIONS:**

**MATERIALS AND PLATINGS**

Shells	Steel/nickel plated
Contacts	Precision formed copper alloy
Contact Plating	Gold over nickel

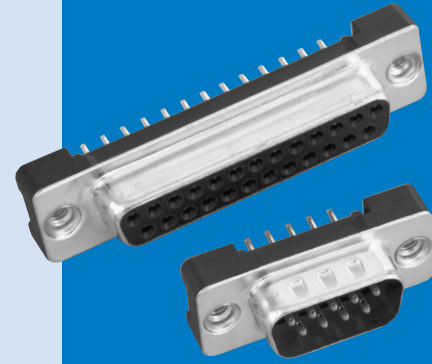
**ELECTRICAL DATA**

Current Rating	5 amps
Voltage Rating	600 V
Dielectric	Glass filled thermoplastic, black, UL 94 VO
Contact Resistance	10 milliohms (max.)

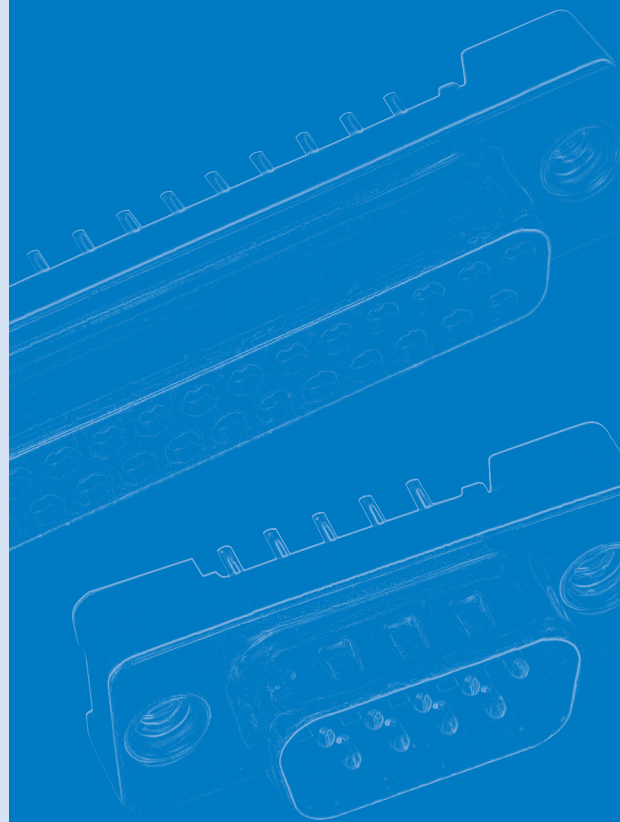
**CLIMATIC DATA**

Temperature Range	Environmental: -67°F (-55°C) to 302°F (150°C)
Process Compatibility	IR-Air Convection 500°F (260°C) for 20 seconds

**6E17S SERIES**

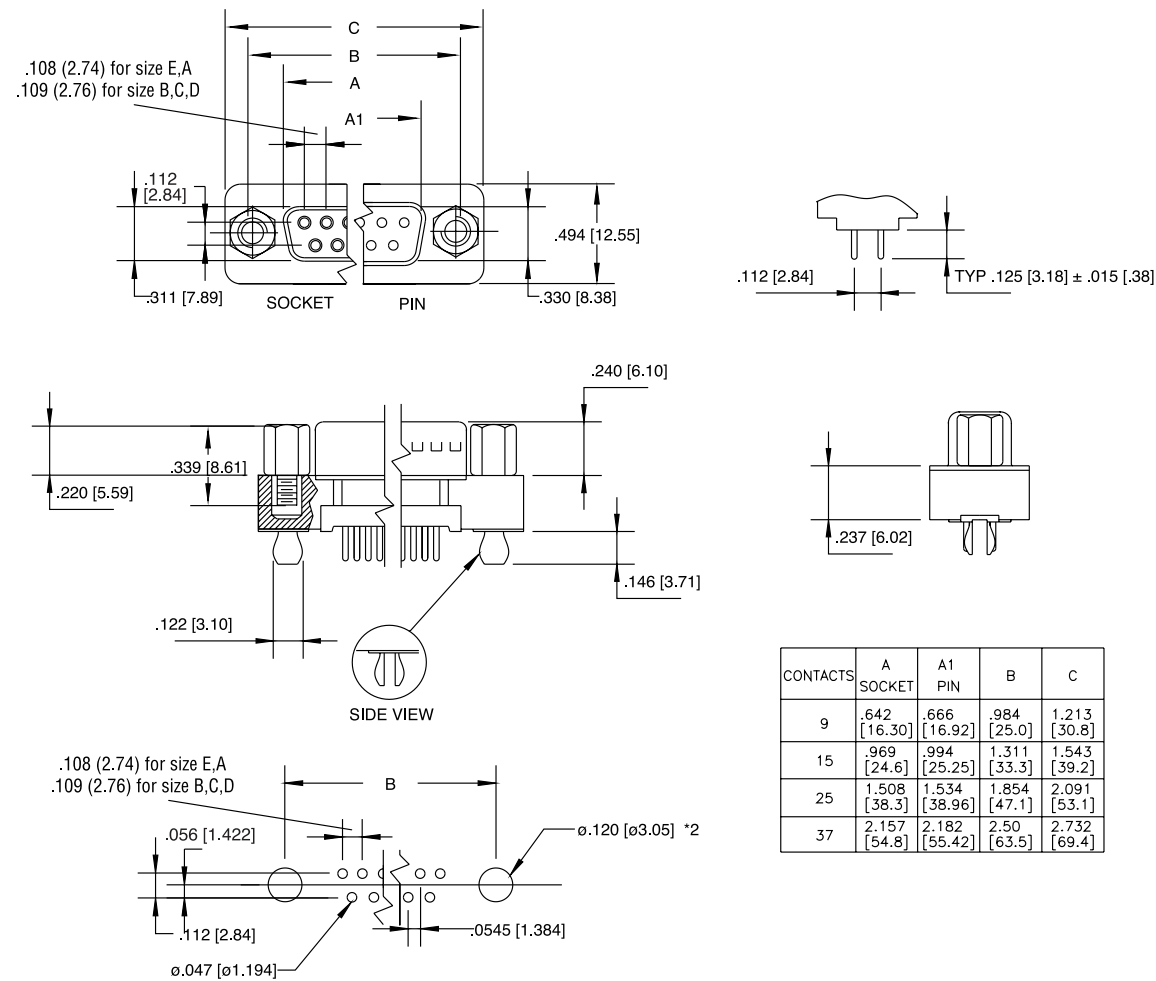


Amphenol's high temperature, low profile D-Sub connector gives you a high quality, reliable commercial connector to meet today's market demands.





**DIMENSIONS**



**ORDERING INFORMATION**

**6E17S C 0XX X XX X XX**

**Series** —————

**Code Boardlock** —————

C Split arrowhead boardlock  
O No boardlock

**Number of contacts** —————

9, 15, 25 or 37

**Code Gender** —————

P Pin (male)  
S Socket (female)

**Code Contact Plating** —————

BJ Engagement area 10µ" (2.54µ) gold,  
terminal end area 100µ"200µ" (2.54µ/5.08µ)  
-tin/lead, underplate of 50µ" (1.27µ) nickel

AJ Engagement area 30µ" (.76µ) gold,  
terminal end area 100µ"200µ" (2.54µ/5.08µ)  
-tin/lead, underplate of 50µ" (1.27µ) nickel

**Code Housing Characteristics**

20 Tin plated receptacle  
21 Tin plated

**Code Panel Mounting Options**

1 #4-40 threaded hole  
2 #4-40 threaded hole with female screwlock  
3 M-3 threaded hole

# ED-EHD

D-Sub connectors - Screw-machined contacts

## STANDARD AND HIGH DENSITY WATERPROOF CONNECTORS



CHARACTERISTICS

Materials and Platings	
<b>Shells</b>	Steel 2.5µm(100µ") min tin over 1.25µm(50µ") min nickel
<b>Body</b>	Glass-filled thermoplastic Flame retardant to UL94 V-0 Color Black
<b>Contacts</b>	Copper alloy(Brass for plug, Phosphor bronze for socket) gold over 1.25µm(50µ") min nickel
<b>Boardlock</b>	Copper alloy, 100µ" min. sn over 50µ" min. nickel.
<b>Standoff</b>	Copper alloy, 100µ" min. sn over 50µ" min. nickel.

Electrical Data	
<b>Current rating</b>	5.0A
<b>Voltage rating</b>	300V rms at 50Hz
<b>Insulation resistance</b>	>5000MΩ
<b>Contact resistance</b>	20mΩ Max.

Climatic Data	
<b>Operating temperature</b>	-55°C to +85°C
<b>Salt spray</b>	48 hours
<b>Waterproof rating</b>	IP 67 minimum

Mechanical Data					
<b>Mating and unmating force</b> Unit: kg (lb)					
No. of Cts		ED		EHD	
ED	EHD	Mate (max)	Unmate (min)	Mate (max)	Unmate (min)
9	15	3.05 (6.74)	0.36 (0.79)	3.81 (8.42)	0.52 (1.14)
15	26	5.09 (11.24)	0.46 (1.01)	5.95 (13.16)	1.05 (2.32)
25	44	8.44 (18.66)	0.81 (1.80)	9.26 (20.46)	1.37 (3.02)
<b>Mating cycles</b>		Gold flash : 100 cycles 0.76µm (30µ") : 500 cycles			

DESCRIPTION

The 17ED and 17EHD series are suitable for waterproof applications.

The machined contacts provide robustness and reliability.

This series offers:

- Panel mount connectors with solder cup, straight and right angle PCB terminations.

Connectors are waterproof unmated.

*Harsh environment connectors*

APPLICATIONS

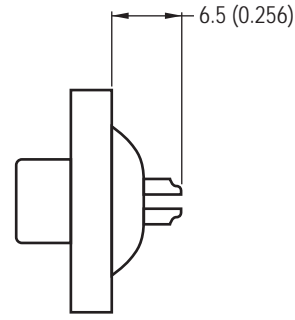
- Marine electronic devices
- Industrial electrical
- Security Monitoring
- Robotics
- Lighting systems

ED-EHD

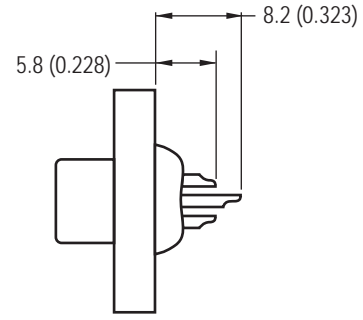


Amphenol

Solder cup (blank) :

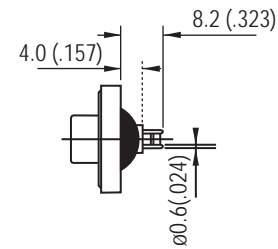


Standard density

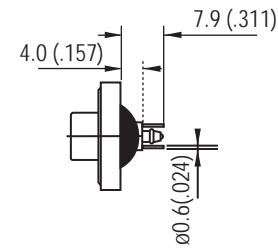


High density

Straight PCB with standoff and boardlocks:

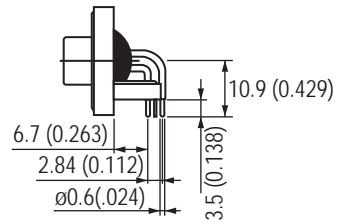


Standard density

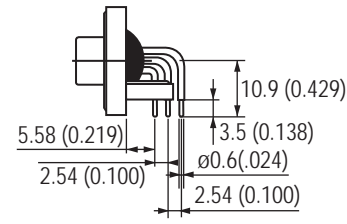


High density

Right angle PCB with brackets and boardlocks:

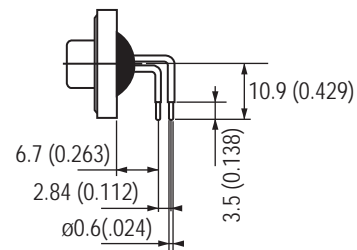


Standard density

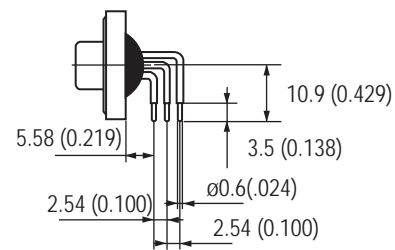


High density

Right angle PCB without brackets and boardlocks:



Standard density

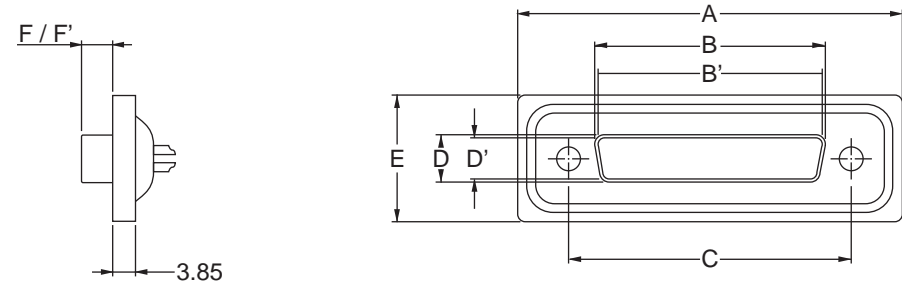


High density



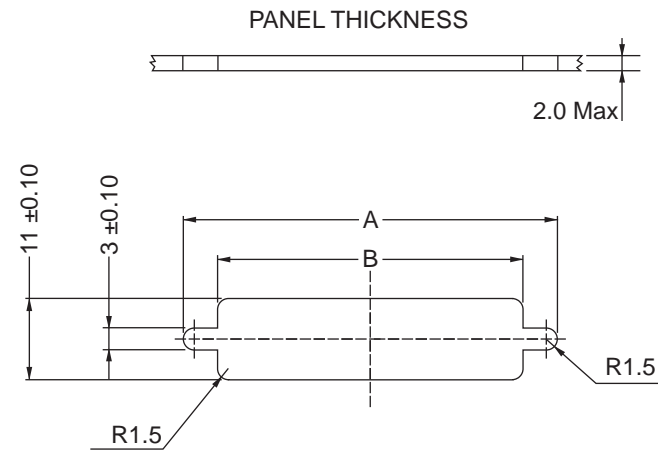


Shell Size Dimensions

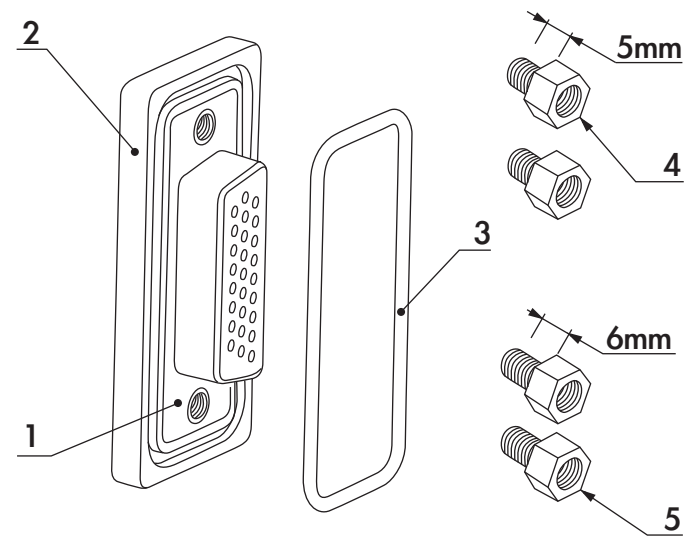


SHELL SIZE	Contact P: pin S: socket	A	B	B'	C	D	D'	E	F	F'
		±0.25 (±.010)	0 / -0.20 (0/- .008)	+0.20 / 0 (+.008/0)	±0.10 (±.004)	0 / -0.25 (0/- .010)	+0.25 / 0 (+.010/0)	±0.25 (±.010)	+0.10/-0.20 (+.004/- .008)	±0.10 (±.004)
E	P	39.4		16.8(0.661)	25.0		8.2(0.325)	21.0		5.9(0.232)
	S	(1.551)	16.4(0.646)		(0.984)	8.0(0.315)		(0.827)	6.2(0.244)	
A	P	47.7		25.1(0.988)	33.3		8.2(0.325)	21.0		5.9(0.232)
	S	(1.878)	24.8(0.976)		(1.311)	8.0(0.315)		(0.827)	6.2(0.244)	
B	P	64.5		28.8(1.528)	47.0		8.2(0.325)	21.0		5.9(0.232)
	S	(2.539)	38.5(1.513)		(1.850)	8.0(0.315)		(0.827)	6.2(0.244)	

Panel cutouts

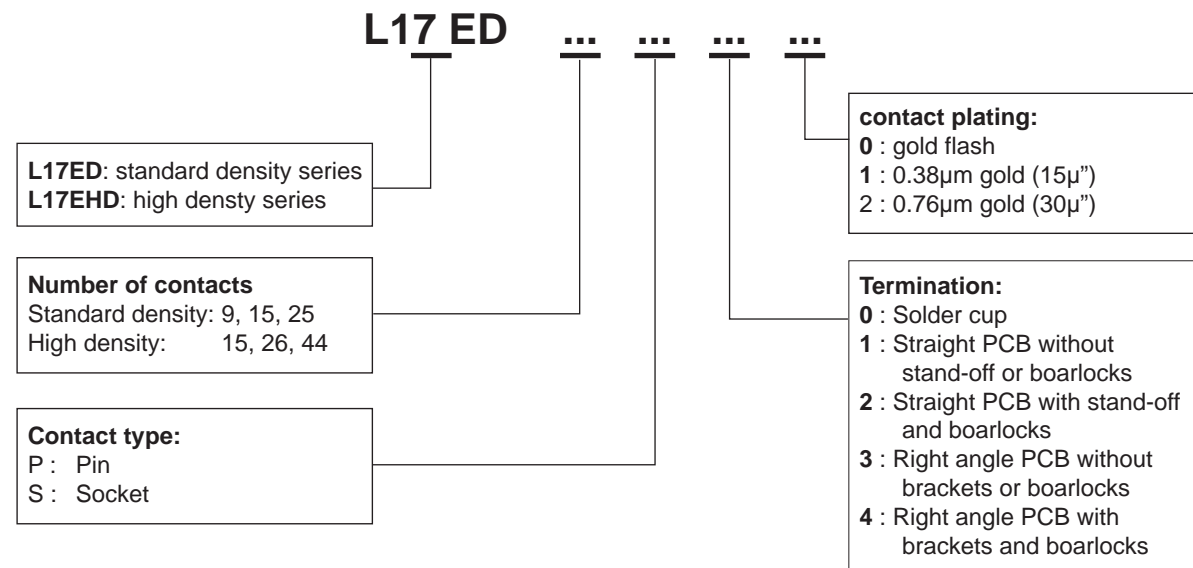


SHELL SIZE	A	B
	±0.10(±.004)	0 / -0.10(0 / -.004)
E	28.8 (1.111)	20.0 (0.788)
A	36.5 (1.438)	28.0 (1.103)
B	51.0 (2.009)	41.5 (1.635)



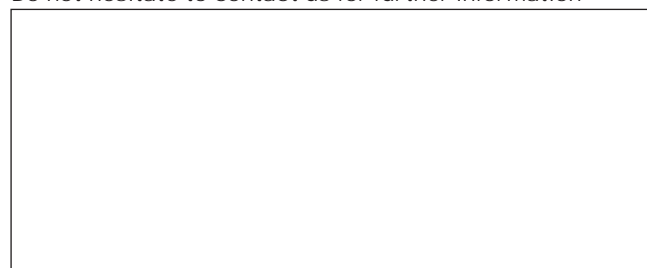
NO	Description	Material	Qty
2	Housing	Black thermoplastic UL 94-VO	1
1	Front shell	Steel tin plated	1
3	Ring	Silicone	1
4	#4-40 Front screw lock	Brass tin plated	2
5	#4-40 Front screw lock	Brass tin plated	2

### How to order



*For special request, please consult factory*

Do not hesitate to contact us for further information



## Amphenol

### Amphenol IT & Communication Products

Block A3/A4, The 4th Industrial District of  
Industrial Headquarters, Dong Keng Road  
Gong Ming Town, Shen Zhen China  
Fax: +86(0)755 2754 9955

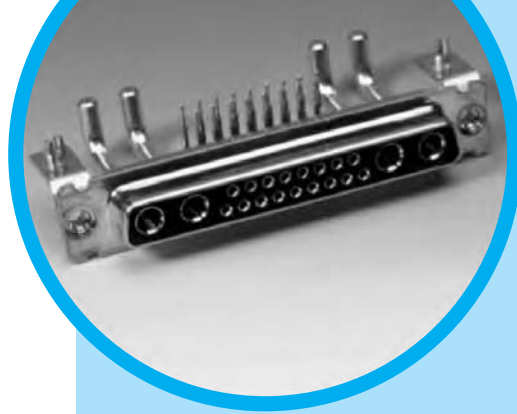
#### Technical Support

Tel: +86(0)755 2717 7945  
Info-dsub@amphenol.com.cn  
<http://www.dsubconnector.com>



# TW

## Hybrid D'Sub series



CONTENT

### Specifications

- Connectors according to: MIL C24308 - NFC93425 - HE507

Materials and platings		Electrical Data	
Shells	Steel-Tin plating	Current rating	
Insulators	High temperature black thermoplastic	Signal contacts	7.5 A. with 10 A. peaks
Signal contacts	Female: machined bronze	Power contacts	
Material	Male: machined brass	PCB terminations	10 to 40 A.
Plating finish	16µ "Au over 79µ" Ni min.	Solder cup terminations	10 to 40 A.
Or	30µ "Au over 79µ" Ni min.	Crimp terminations	10 to 40 A.
Shielded contacts	Female: machined bronze	Shielded contacts	0.5 A.
Material	Male: machined brass	Voltage rating	
Plating		Signal and power contacts	300 V.R.M.S. at 50 Hz
Inner conductor	16µ "Au or 30µm Au over 79µ" Ni	Shielded contacts	150 V.R.M.S. at 50 Hz
Outer ring	10µ "Au over 79µ" Ni	Shielded contacts	
Terminations	Tinned	Frequency range	0-1 GHz
Except solder cup and crimp terminations	gold flash	Attenuation	0.2dB
Power contacts	Female: machined bronze	V. S. W. R.	1.4(+0.04/GHz)
Material	Male: machined brass	Characteristic impedance	50 Ohms
Plating		Dielectric withstanding voltage	≥ 1000 V.R.M.S. at 50Hz
Contacts	16µ "Au or 30µ" Au over 79µ" Ni	Insulation resistance	≥ 5000 M Ohms at 500 VDC
Terminations	Tinned	Contact resistance	≤ 5m Ohms
Except solder cup and crimp terminations	gold flash	Shell resistance (electrical grounding)	≤ 1m Ohm
Brackets	Steel-Tin plating		
Front jackscrews	Brass-Tin plating		
Rear clinch nuts	Brass-Tin plating		
Boardlocks	Bronze-Tin plating		
Stand-off	Brass-Tin plating		

Climatic Data		Mechanical data	
Operating temperature	-55°C + 155°C (with peaks up to 180°C)	Shells	With or without dimples
Damp heat	56 days (40°C - 95% HR)	Contact retention force in dielectric material	> 40N
Salt spray	48 hours	Maximum mating and unmating force	
		With dimples	E size = 70 N A size = 80 N B size = 100 N C size = 150 N D size = 180 N
		Without dimples	E size = 30 N A size = 50 N B size = 80 N C size = 120 N D size = 160 N
		Compatible with process	
		IR - Air convectioned	260° for 20 s.
		Resistance to solder iron heat	260°C for 30 s.
		Mating cycles	≥ 200 (classe II) or 500 (classe I)
		Blind mating system	Available upon request
		Polarization	Available with locking accessories Consult factory



DESCRIPTION

Amphenol D'Sub TW Hybrid Series permits a mix of contacts including signal, power, shielded, high voltage and fiber optics in the same housing with 18 different contacts arrangements.

This economic series was first developed from our military series, and has improved features:

- new contacts
- new high temperature black thermoplastic insert
- PCB configurations come preloaded with fixed contacts and brackets.

These connectors are supplied with screw machined contacts which are fixed in the insulator.

A complete range of housings are also available for cable application.

*A full range of arrangements compatible with reflow process*

APPLICATIONS

- Commercial
- Medical
- Industrial
- Telecom
- Any application requiring optimization of space

TW / E1



**Amphenol**



**CLASS II**

0.4µm (16µ") Au contacts gold plating  
200 mating cycles

Types	Shells and plating
77 TW	Tin plated shell <i>*Male and female</i>
717 TW	Tin plated shell with dimples <i>Male only</i>








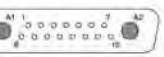


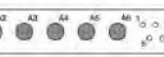







**CLASS I**

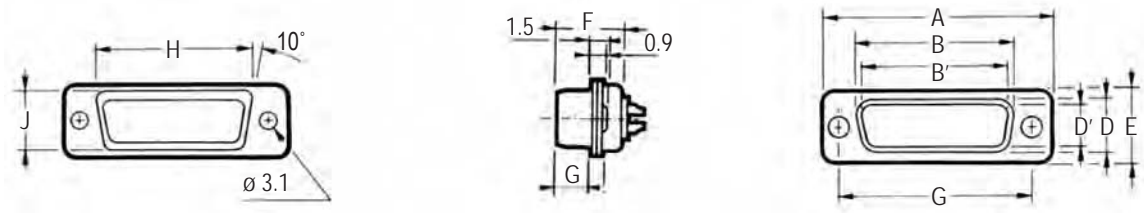
0.76µm (30µ") Au contacts gold plating  
500 mating cycles

Types	Shells and plating
177 TW	Tin plated shell <i>*Male and female</i>
777 TW	Tin plated shell with dimples <i>Male only</i>

*Housing arrangements*

**Male front view**

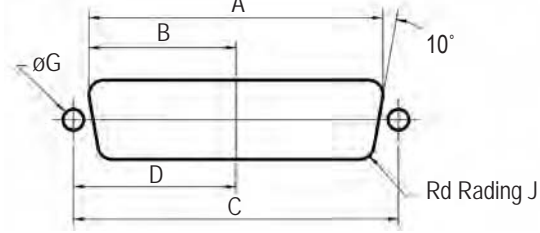
Arrangement ..... Shell size .....	 5W1 E	 7W2 A	 11W1 A
Arrangement ..... Shell size .....	 3W3 A	 5W5 B	 9W4 B
Arrangement ..... Shell size .....	 13W3 B	 17W2 B	 21W1 B
Arrangement ..... Shell size .....	 27W2 C	 13W6 C	 17W5 C
Arrangement ..... Shell size .....	 21W4 C	 8W8 C	 25W3 C
Arrangement ..... Shell size .....	 24W7 D	 36W4 D	 43W2 D



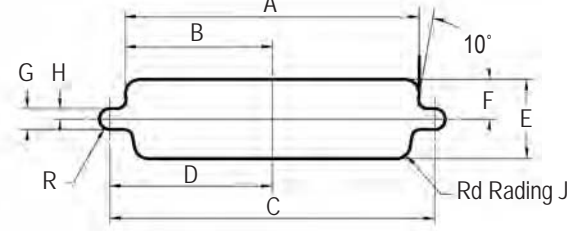
Shell size	Contact P: Pin S: Socket	A ±0.25 (±.010)	B 0/-0.20 (0/-0.008)	B' +0.20/0 (+.008/0)	C ±0.10 (±.004)	D 0/-0.25 (0/-0.010)	D' +0.25/0 (+.010/0)	E ±0.20 (±.008)	F +0.05/-0.20 (+.002/-0.008)	F' +0.10/-0.20 (+.004/-0.008)	G +0.10/-0.20 (±.004)	G' ±0.10 (±.004)	H +0.10/-0.40 (+.004/-0.016)	J 0/-0.50 (0/-0.020)
E	P	30.7 (1.209")		16.8 (.661")	25.0 (.984")		8.2 (.323")	12.4 (.488")		10.9 (.429")		5.9 (.232")	19.4 (.764")	11.0 (.433")
	S		16.4 (.646")			8.0 (.315")			11.1 (.437")		6.2 (.244")			
A	P	39.0 (1.535")		25.1 (.988")	33.3 (1.311")		8.2 (.323")	12.4 (.488")		10.9 (.429")		5.9 (.232")	27.7 (1.091")	11.0 (.433")
	S		24.8 (.976")			8.0 (.315")			11.1 (.437")		6.2 (.244")			
B	P	52.9 (2.083")		38.8 (1.528")	47.0 (1.850")		8.2 (.323")	12.4 (.488")		11.0 (.433")		5.8 (.228")	41.4 (1.630")	11.0 (.433")
	S		38.5 (1.513")			8.0 (.315")			11.1 (.437")		6.2 (.244")			
C	P	69.2 (2.724")		55.3 (2.177")	63.5 (2.500")		8.2 (.323")	12.4 (.488")		11.0 (.433")		5.8 (.228")	57.9 (2.280")	11.0 (.433")
	S		54.9 (2.161")			8.0 (.315")			11.1 (.437")		6.2 (.244")			
D	P	66.8 (2.630")		52.7 (2.075")	61.1 (2.406")		11.0 (.433")	15.2 (.598")		11.0 (.433")		5.8 (.228")	55.5 (2.185")	13.8 (.543")
	S		52.5 (2.067")			10.9 (.429")			11.1 (.437")		6.2 (.244")			

Panel cutouts

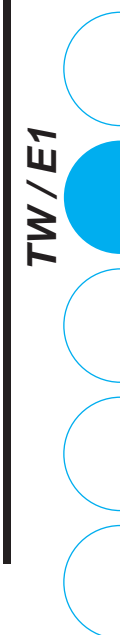
Optimal cutout for rear mounting



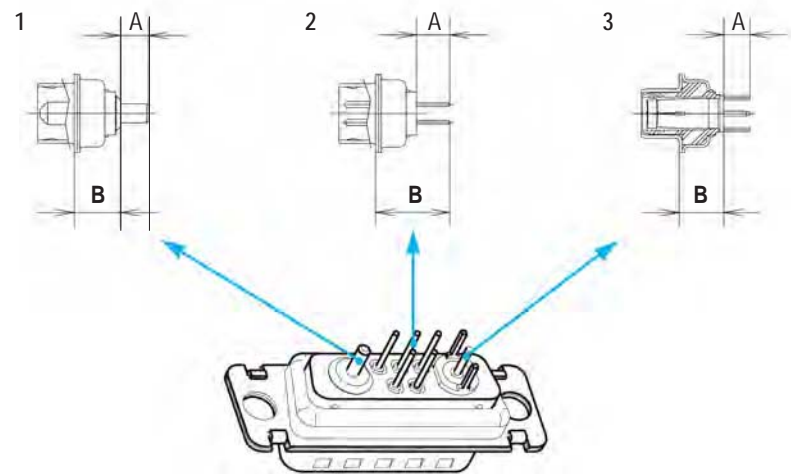
Standard cutout



Shell size	Mounting method	A ±0.20 (±.008)	B ±0.20 (±.008)	C ±0.20 (±.008)	D ±0.20 (±.008)	E ±0.20 (±.008)	F ±0.20 (±.008)	G ±0.20 (±.008)	H ±0.20 (±.008)	J ±0.20 (±.008)
E	Front	22.2 (.874")	11.1 (.437")	25.0 (.984")	12.5 (.492")	13.0 (.512")	6.5 (.256")	3.0 (.118")	1.5 (.059")	2.1 (.083")
	Rear	20.5 (.807")	10.2 (.402")			11.4 (.449")	5.7 (.224")			3.4 (.134")
A	Front	30.5 (1.201")	15.3 (.602")	33.3 (1.311")	16.7 (.657")	13.0 (.512")	6.5 (.256")	3.0 (.118")	1.5 (.059")	2.1 (.083")
	Rear	28.8 (1.134")	14.4 (.567")			11.4 (.449")	5.7 (.224")			3.4 (.134")
B	Front	44.3 (1.744")	22.1 (.870")	47.0 (1.850")	23.5 (.925")	13.0 (.512")	6.5 (.256")	3.0 (.118")	1.5 (.059")	2.1 (.083")
	Rear	42.5 (1.673")	21.3 (.839")			11.4 (.449")	5.7 (.224")			3.4 (.134")
C	Front	60.7 (2.390")	30.4 (1.197")	63.5 (2.500")	31.7 (1.248")	13.0 (.512")	6.5 (.256")	3.0 (.118")	1.5 (.059")	2.1 (.083")
	Rear	59.1 (2.327")	29.5 (1.161")			11.4 (.449")	5.7 (.224")			3.4 (.134")
D	Front	58.3 (2.295")	29.2 (1.150")	61.1 (2.406")	30.6 (1.205")	15.8 (.622")	7.9 (.311")	3.0 (.118")	1.5 (.059")	2.1 (.083")
	Rear	56.3 (2.217")	28.2 (1.110")			14.1 (.555")	7.1 (.280")			3.4 (.134")



Straight connector footprint



Signal tail 0.6 mm Dia. (.0236")  
 1.6 mm (.063")PCB  
 For other PCB thickness: consult factory.

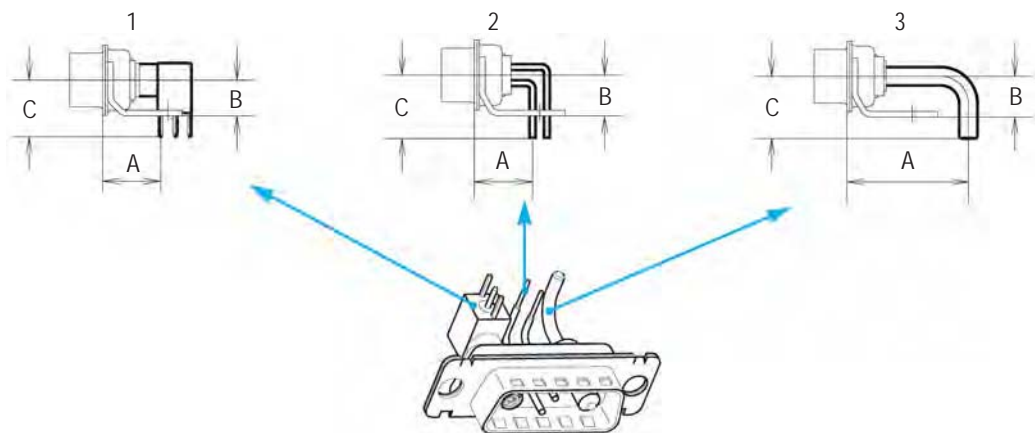
Description		Dimensions	
		a	b
Power (.126" tail dia.)	1	4.80 mm (.198")	7.2 mm (.283")
Power (.0787" tail dia.)	1	4.80 mm (.198")	7.2 mm (.283")
Shielded	3	4.00 mm (.157")	7.2 mm (.283")
Signal	2	5.00 mm (.196")	11.50 mm (.453")

Straight contact combinations

Arrangement with signal contacts

Arrangement without signal contacts  
 3W3 - 5W5 - 8W8

See above dimensions	Size 8 and 20 Contacts	See above dimensions	Size 8 Contacts
P 3SY	Power 3.2 mm DIA. (.126") (20 to 40 A) and signal	P 3Y	Power only 3.2 mm DIA. (.126") (20 to 40 A)
P 2SY	Power 2 mm DIA. (.0787") (10 to 20 A) and signal	P 2Y	Power only 2 mm DIA. (.0787") (10 to 20 A)
CSY	Shielded and signal	CY	Shielded only
SY	Signal only		
No reference	Signal (Size 20) with solder cup terminations <i>Housing preloaded with contacts</i>		



Signal tail 0.6 mm Dia. (.0236")  
 1.6 mm (.063") PCB  
 For other PCB thickness: consult factory.

	Europe			Mix			MIL		
	<b>HE 5 pattern =</b> - Europ. height - Europ. footprint pitch between 2 rows: .100"			<b>Mixed pattern =</b> - MIL height - Europ. footprint pitch between 2 rows: .100"			<b>MIL pattern =</b> - MIL height - MIL footprint pitch between 2 rows: .112"		
Description	a	b	c	a	b	c	a	b	c
Shielded 1	-	-	-	10.30mm (.406")	6.30mm (.248")	10.00mm (.394")	10.30mm (.406")	6.30mm (.248")	10.00mm (.394")
Signal 2	10.30mm (.406")	7.20mm (.283")	11.20mm (.441")	10.30mm (.406")	6.30mm (.248")	9.50mm (.374")	8.10mm (.319")	6.30mm (.248")	9.50mm (.374")
Power (.0787" tail dia.) 3	11.57mm (.456")	7.20mm (.283")	10.50mm (.413")	11.57mm (.456")	6.30mm (.248")	9.50mm (.374")	9.52mm (.375")	6.30mm (.248")	9.50mm (.374")
Power (.126" tail dia.) 3	21.46mm (.845")	7.20mm (.283")	10.50mm (.413")	21.46mm (.845")	6.30mm (.248")	9.50mm (.374")	21.46mm (.845")	6.30mm (.248")	9.50mm (.374")

Note: above dimensions correspond to sizes E to C. Consult factory for D sizes.  
 Connector comes equipped with contacts and brackets.

### Right angle contacts combinations

Arrangement with signal contacts

Arrangement without signal contacts  
 3W3 - 5W5 - 8W8

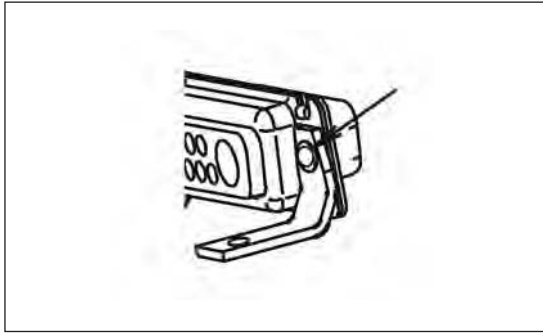
European footprint	Mixed footprint	MIL (U.S.) footprint	Size 8 and 20 Contacts	European footprint	Mixed footprint	MIL (U.S.) footprint	Size 8 contacts only
↓	↓	↓		↓	↓	↓	
EP3SV	HP3SV	MP3SV	Power 3.2 mm DIA. (.126") (20 to 40 A) and signal	EP3V	HP3V	MP3V	Power only 3.2 mm DIA. (.126") (20 to 40 A)
EP2SV	HP2SV	MP2SV	Power 2 mm DIA. (.0787") (10 to 20 A) and signal	EP2V	HP2V	MP2V	Power only 2.0 mm DIA. (.0787") (10 to 20 A)
-	HCSV	MCSV	Shielded and signal	-	HCV	MCV	Shielded only
ESV	HSV	MSV	Signal only				

TW/E1

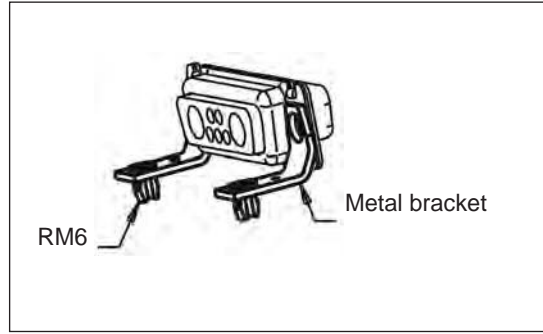


**Right angle version**  
**Connectors come equipped with metal brackets**

**BLANK:** 3.10mm (.122") dia mounting hole

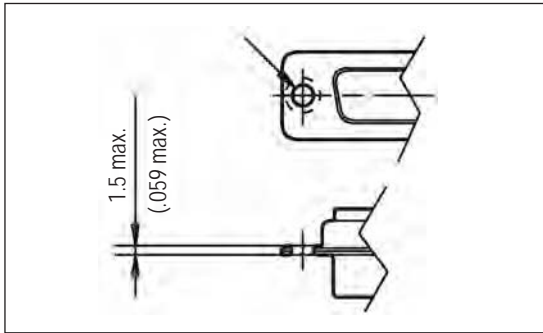


**RM6:** metal brackets + boardlock

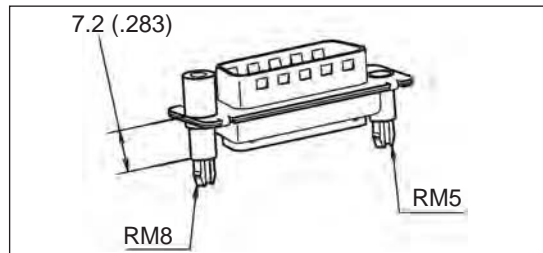


**Straight version**

**BLANK:** 3.10mm (.122") dia mounting hole

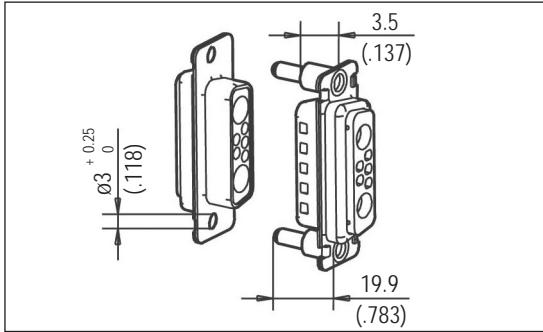


**RM54:** RM5 4.40 threaded  
**RM53:** RM5 M3 threaded

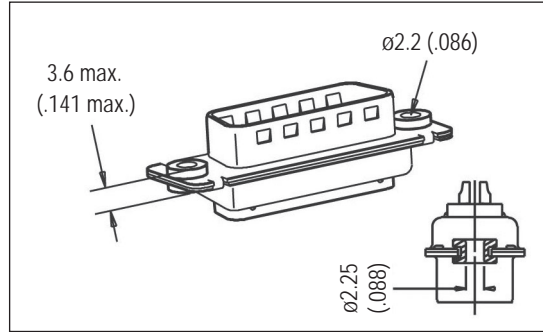


**RM84:** RM8 4.40 threaded  
**RM83:** RM8 M3 threaded

**A514:** blind mating system

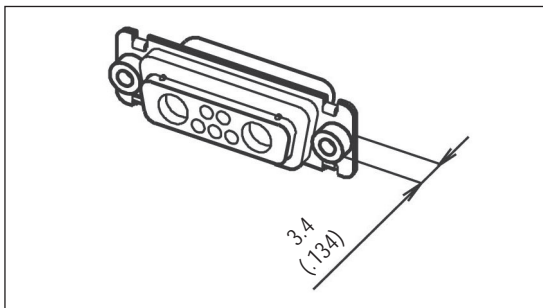


**FM:** float mounting system

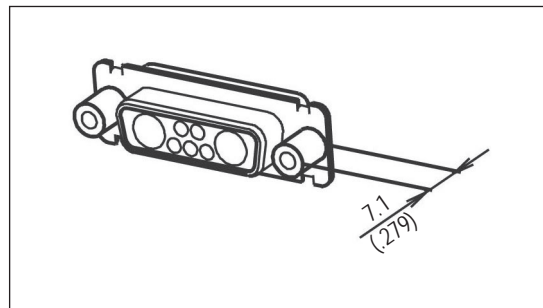


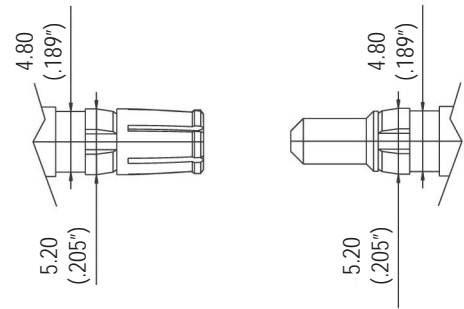
**Straight and right angle version**

**4R:** 4.40 rear nut  
**3R:** M3 rear nut

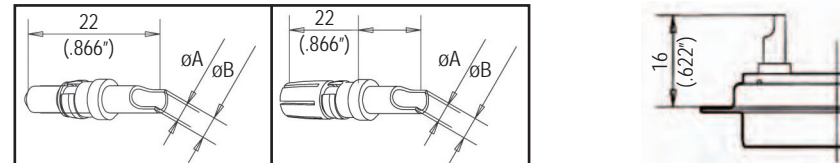


**4F:** 4.40 front female screwlock  
**3F:** M3 front female screwlock





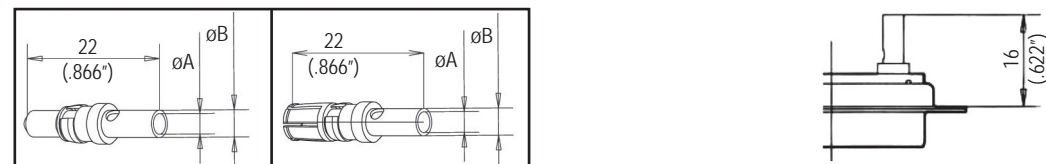
Solder cup version



P/N		Current	Dimensions	
Plug	Socket		A mm (inch)	B mm (inch)
L 17DM 53745-8	L 17DM 53744-7	10 to 20 Amp.	1.80 (.071")	2.55 (.100")
L 17DM 53745-7	L 17DM 53744-6	20 to 30 Amp.	2.80 (.110")	3.70 (.145")
L 17DM 53745-1	L 17DM 53744-1	30 to 40 Amp.	4.80 (.189")	5.60 (.220")

Trim dimensions: 7.5 mm (.295")

Crimp version



P/N		Current	Dimensions	
Plug	Socket		A mm (inch)	B mm (inch)
L 17DM 53745-208	L 17DM 53744-207	10 to 20 Amp.	1.80 (.071")	2.55 (.100")
L 17DM 53745-207	L 17DM 53744-206	20 to 30 Amp.	2.80 (.110")	3.70 (.145")
L 17DM 53745-201	L 17DM 53744-201	30 to 40 Amp.	4.80 (.189")	5.60 (.220")

Trim dimensions: 7.5 mm (.295")

Crimping tool for all sizes  
L17D479SP

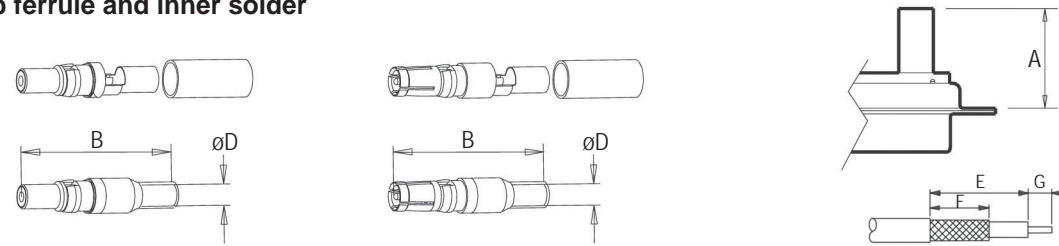


Extraction tool for sizes 8 cts



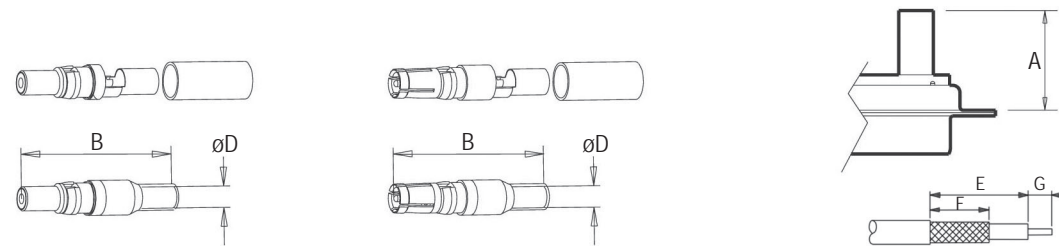
TW/E1

**Crimp ferrule and inner solder**

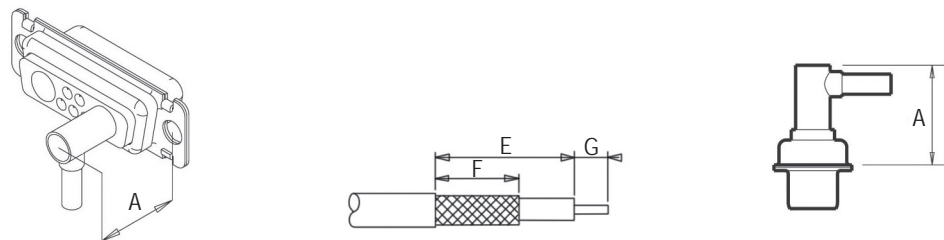


Type	P/N	Dimensions (inch)			Cable - RG	Trim dimensions (inch)		
		A Max	B	D		E	F	G
plug	L17DM 53740	18.8 (740")	23.6 (.929")	1.0 (.039")	178 B/U	7.9 (.311")	6.3 (.248")	2 (.078")
plug	L17DM 53740-1	18.8 (740")	23.6 (.929")	1.7 (.066")	179 B/U 316 B/U	7.9 (.311")	6.3 (.248")	2 (.078")
plug	L17DM 53740-3	21.5 (846")	23.6 (.929")	2.8 (.110")	180 B/U	9.5 (.374")	7.9 (.311")	2 (.078")
plug	L17DM 53740-5	21.5 (846")	23.6 (.929")	3.2 (.126")	58 C/U	9.5 (.374")	7.9 (.311")	2 (.078")
socket	L17DM 53742	18.8 (740")	23.6 (.929")	1.0 (.039")	178 B/U	7.9 (.311")	6.3 (.248")	2 (.078")
socket	L17DM 53742-1	18.8 (740")	23.6 (.929")	1.7 (.066")	179 B/U 316 B/U	7.9 (.311")	6.3 (.248")	2 (.078")
socket	L17DM 53742-3	21.5 (846")	23.6 (.929")	2.8 (.110")	180 B/U	9.5 (.374")	7.9 (.311")	2 (.078")
socket	L17DM 53742-5	21.5 (846")	23.6 (.929")	3.2 (.126")	58 C/U	9.5 (.374")	7.9 (.311")	2 (.078")

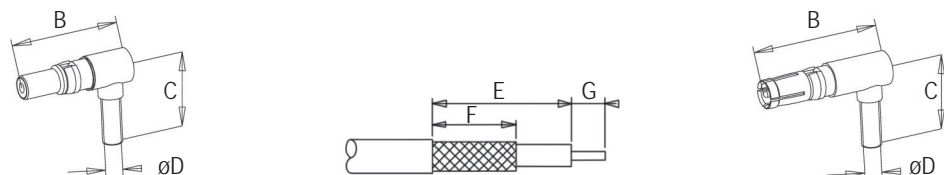
**Ferrule and inner solder**



Type	P/N	Dimensions (inch)			Cable - RG	Trim dimensions (inch)		
		A Max	B	D		E	F	G
short plug	L17DM 53740-5000	17.0 (669")	21.8 (.858")	1.0 (.039")	178 B/U	7.9 (.311")	6.3 (.248")	2 (.078")
plug	L17DM 53740-5001	18.8 (740")	23.6 (.929")	1.7 (.066")	179 B/U 316 B/U	7.9 (.311")	6.3 (.248")	2 (.078")
plug	L17DM 53740-5002	21.5 (846")	26.3 (1.035")	2.8 (.110")	180 B/U	9.5 (.374")	7.9 (.311")	2 (.078")
plug	L17DM 53740-5005	21.5 (846")	26.3 (1.035")	3.2 (.126")	58 C/U	9.5 (.374")	7.9 (.311")	2 (.078")
plug	L17DM 53740-5008	18.8 (740")	23.6 (.929")	1.0 (.039")	178 B/U	7.9 (.311")	6.3 (.248")	2 (.078")
short socket	L17DM 53742-5000	17.0 (669")	21.8 (.858")	1.0 (.039")	178 B/U	7.9 (.311")	6.3 (.248")	2 (.078")
socket	L17DM 53742-5001	18.8 (740")	23.6 (.929")	1.7 (.066")	179 B/U 316 B/U	7.9 (.311")	6.3 (.248")	2 (.078")
socket	L17DM 53742-5002	21.5 (846")	26.3 (1.035")	2.8 (.110")	180 B/U	9.5 (.374")	7.9 (.311")	2 (.078")
socket	L17DM 53742-5004	21.5 (846")	26.3 (1.035")	3.2 (.126")	58 C/U	9.5 (.374")	7.9 (.311")	2 (.078")
socket	L17DM 53742-50060	18.8 (740")	23.6 (.929")	1.0 (.039")	178 B/U	7.9 (.311")	6.3 (.248")	2 (.078")

**Crimp ferrule and inner solder**

Type	P/N	Dimensions (inch)			Cable - RG	Trim dimensions (inch)		
		A Max	B	D		E	F	G
plug	L17DM 53741	13.5 (.531")	18.6 (.732")	1.0 (.039")	178 B/U	9.5 (.374")	5.9 (.232")	1.6 (.062")
plug	L17DM 53741-1	13.5 (.531")	18.6 (.732")	1.7 (.066")	179 B/U 316 B/U	9.5 (.374")	5.9 (.232")	1.6 (.062")
plug	L17DM 53741-3	13.5 (.531")	18.6 (.732")	2.8 (.110")	180 B/U	10.7 (.421")	7.9 (.311")	2.4 (.094")
plug	L17DM 53741-4	13.5 (.531")	18.6 (.732")	3.2 (.126")	58 C/U	10.7 (.421")	7.9 (.311")	2.4 (.094")
socket	L17DM 53743-2	13.5 (.531")	18.6 (.732")	1.0 (.039")	178 B/U	9.5 (.374")	5.9 (.232")	1.6 (.062")
socket	L17DM 53743-3	13.5 (.531")	18.6 (.732")	1.7 (.066")	179 B/U 316 B/U	9.5 (.374")	5.9 (.232")	1.6 (.062")
socket	L17DM 53743-5	13.5 (.531")	18.6 (.732")	2.8 (.110")	180 B/U	10.7 (.421")	7.9 (.311")	2.4 (.094")
socket	L17DM 53743-6	13.5 (.531")	18.6 (.732")	3.2 (.126")	58 C/U	10.7 (.421")	7.9 (.311")	2.4 (.094")

**Ferrule and inner solder**

Type	P/N	Dimensions (inch)			Cable - RG	Trim dimensions (inch)		
		A Max	B	D		E	F	G
plug	L17DM 53741-5000	13.5 (.531")	18.6 (.732")	1.0 (.039")	178 B/U	9.5 (.374")	5.9 (.232")	1.6 (.062")
plug	L17DM 53741-5001	13.5 (.531")	18.6 (.732")	1.7 (.066")	179 B/U 316 B/U	9.5 (.374")	5.9 (.232")	1.6 (.062")
plug	L17DM 53741-5003	13.5 (.531")	18.6 (.732")	2.8 (.110")	180 B/U	10.7 (.421")	7.9 (.311")	2.4 (.094")
plug	L17DM 53741-5004	13.5 (.531")	18.6 (.732")	3.2 (.126")	58 C/U	10.7 (.421")	7.9 (.311")	2.4 (.094")
socket	L17DM 53743-5000	13.5 (.531")	18.6 (.732")	1.0 (.039")	178 B/U	9.5 (.374")	5.9 (.232")	1.6 (.062")
socket	L17DM 53743-5001	13.5 (.531")	18.6 (.732")	1.7 (.066")	179 B/U 316 B/U	9.5 (.374")	5.9 (.232")	1.6 (.062")
socket	L17DM 53743-5003	13.5 (.531")	18.6 (.732")	2.8 (.110")	180 B/U	10.7 (.421")	7.9 (.311")	2.4 (.094")
socket	L17DM 53743-5004	13.5 (.531")	18.6 (.732")	3.2 (.126")	58 C/U	10.7 (.421")	7.9 (.311")	2.4 (.094")

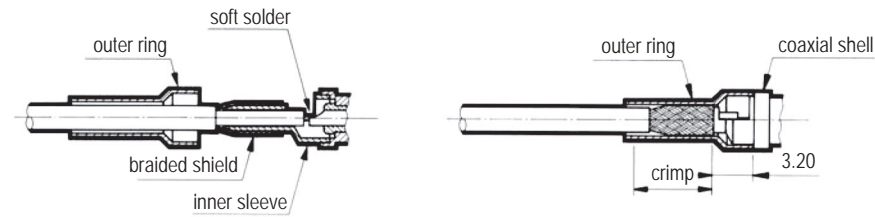
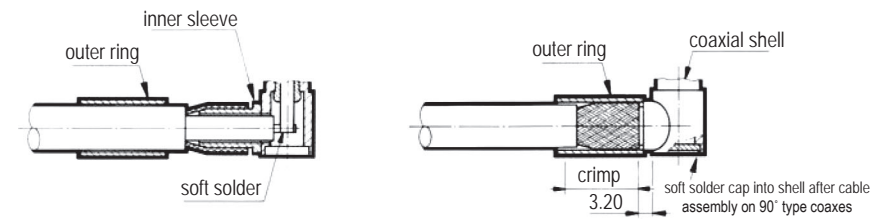
**Crimping tool****Hand crimp tool**

227-0944 (without dies) (M 22 520/5-01)

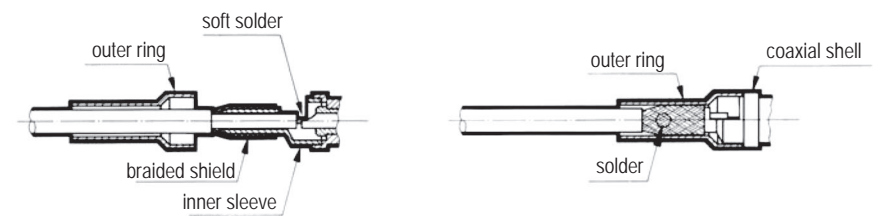
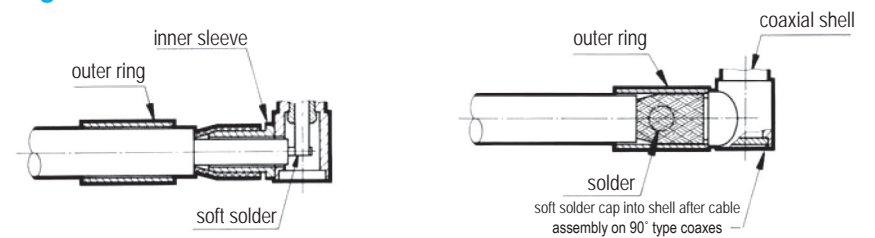
RG cables	MIL reference	Amphenol P/N	dim. between 2 flat surface	
			cavity A	cavity B
RG 58 C/U	M 22 520/5-05	227 1221-05	5.41	-
RG 178 B/U	M 22 520/5-03	227 1221-03	-	2.67
RG 179 B/U	M 22 520/5-03	227 1221-03	3.25	-
RG 180 B/U	M 22 520/5-05	227 1221-05	-	4.52

**Extraction tool**Extraction tool for sizes 8 cts  
L17D429SP



**Straight crimp shielded contacts:****inner solder contact  
outer crimp contact****Right angle crimp shielded contacts:****inner solder contact  
outer crimp contact****Assembly method**

- Slide the outer ring over the cable jacket. Trim the cable according to the recommended dimensions.
- Insert the cable dielectric and the center conductor inside the inner sleeve.
- Solder the central conductor to the shielded center contacts.
- Slide the outer ring towards the inner sleeve and recover the braid.
- Using crimp hand tool equipped with the appropriate dies, crimp in the area defined.

**Solder straight shielded contacts:****Solder right angle shielded contacts:****Assembly method**

- Slide the outer ring over the cable jacket. Trim the cable according to the recommended dimensions.
- Insert the cable dielectric and the center conductor inside the inner sleeve.
- Solder the central conductor to the shielded center contacts.
- Slide the outer ring towards the inner sleeve and recover the braid.
- Solder by introducing metal through the outer ring hole.

**L**

**... TW ...**

RoHS Compliant

Contacts and Shell		
Contact Plating	Shell	
	Tinned	Tinned & Indents; Plug only
0.4µm(16µ") Au	77	717
0.76µm(30µ") Au	177	777

Shell size and Configuration:  
E5W1, A3W3, A7W2, A11W1, B5W5, B9W4, B13W3,  
B17W2, B21W1, C8W8, C13W6, C17W5, C21WA4  
C25W3, C27W2, D24W7, D36W4, D43W2

Gender:  
P: Pin  
S: Socket

Contacts:

**For straight**

BLANK: Solder-cup signal contacts only  
P3SY: 20-40 Amp power & signal mix  
P2SY: 10-20 Amp power & signal mix  
CSY: Coax & signal mix  
SY: Signal only  
P3Y: 20-40 Amp power only (3W3, 5W5, 8W8)  
P2Y: 10-20 Amp power only (3W3, 5W5, 8W8)  
CY: Coax only (3W3, 5W5, 8W8)

**For right angle**

MP3SV: US Footprint, 20-40 Amp power & signal mix  
MP2SV: US Footprint, 10-20 Amp power & signal mix  
MCSV: US Footprint, Coax & signal mix  
MSV: US Footprint, Signal only  
MP3V: US Footprint, 20-40 Amp power only (3W3, 5W5, 8W8)  
MP2V: US Footprint, 10-20 Amp power only (3W3, 5W5, 8W8)  
MCV: US Footprint, Coax only (3W3, 5W5, 8W8)  
EP3SV: European Footprint, 20-40 Amp power & signal mix  
EP2SV: European Footprint, 10-20 Amp power & signal mix  
ESV: European Footprint, Signal only  
EP3V: European Footprint, 20-40 Amp power only (3W3, 5W5, 8W8)  
EP2V: European Footprint, 10-20 Amp power only (3W3, 5W5, 8W8)  
HP3SV: Mixed Footprint, 20-40 Amp power & signal mix  
HP2SV: Mixed Footprint, 10-20 Amp power & signal mix  
HCSV: Mixed Footprint, Coax & signal mix  
HSV: Mixed Footprint, Signal only  
HP3V: Mixed Footprint, 20-40 Amp power only (3W3, 5W5, 8W8)  
HP2V: Mixed Footprint, 10-20 Amp power only (3W3, 5W5, 8W8)  
HCV: Mixed Footprint, Coax only (3W3, 5W5, 8W8)

Special Deviations  
Please consult factory

**Board Mounting Options  
For Straight**

**Blank:** .120"(3.05mm) Clear Hole

**RM53:** M3 Threaded (panel side)

standoff with boardlock

**RM54:** 4-40UNC Threaded (panel side)

standoff with boardlock

**RM84:** Non-Removable M3 screwlock,

with standoff and boardlock

**For Right Angle**

**RM6:** Metal bracket with boardlocks

**Panel Mounting Options  
For right angle & cable mount**

**Blank:** .120"(3.05mm) Clear Hole

**3F:** M3 Front Screwlock

**3R:** M3 Rear Threaded Insert

**4F:** #4-40 Front Screwlock

**4R:** #4-40 Threaded Rear Insert

**FM:** Float mount system

**A514:** Blind Mate Guide Pin



## SURFACE MOUNT CONNECTORS

CHARACTERISTICS

### Specifications

- Connectors according to MIL C24308 - NFC 93425-HE5

Materials and Platings	
<b>Shells</b>	Steel with tin plating
<b>Insulator</b>	High temperature (peak at 260°C) glass-filled thermoplastic, UL 94V-0
<b>Socket contact</b>	Stamped and formed brass, selected gold in mating area; 2.54µm (100µ") min. tin on termination area, with entire contact under-plated 1.27µm (50µ") min. nickel
<b>Rear insert</b>	Brass, 3µm up to 5µm (118µ" up to 197µ") tinned over nickel 2µm up to 3µm (78µ" to 118µ")
<b>Boardlock</b>	Tin plating 4µm up to 6µm (157µ" up to 236µ") over nickel 2µm up to 3µm (78µ" up to 118µ"), insertion force: Low Insertion Force = LIF (bronze) Zero Insertion Force = ZeFo (bronze)
<b>Screwlock</b>	Brass, 6µm up to 10µm (236µ" up to 394µ") tinned over nickel 2µm up to 3µm (78µ" up to 118µ")
<b>Grounding</b>	Grounding strap: brass, 4µm up to 6µm tin plating over nickel 2µm up to 3µm (78µ" up to 118µ")

Electrical Data	
<b>Current rating</b>	3A
<b>Voltage rating</b>	300V AC/rms 50Hz
<b>Withstanding voltage</b>	1000V AC/rms 50Hz for one minute
<b>Insulation resistance</b>	5000MΩ
<b>Contact resistance</b>	10mΩ max

Climatic Data	
<b>Operating temperature</b>	85°C, peak at 105°C
<b>Damp heat</b>	56 days (40°C - 95% HR)

Mechanical Data	
<b>Single contact insertion force</b>	1.2N < F < 2.5N
<b>Single contact withdrawal force</b>	0.4N min
<b>LIF boardlock</b>	8N max per connector
<b>Coplanarity of contacts</b>	0.2mm (.008") max

**Mating and unmating force**  
Unit: N

No. of Cts	Mate (max)	Unmate (min)
9 (size E)	30	3.5
15 (size A)	50	4.5
25 (size B)	83	8.0

DESCRIPTION

Amphenol SMT D-Sub is offered in right angle, receptacle with brackets, as an industry standard for I / O connections.

Boardlock features:

-LIF (Low Insertion Force) boardlock especially designed to be fully compatible with pick and place machine.

-ZeFo (Zero Force Insertion) boardlock has been designed so that once placed and expanded, secures a safe locking.

*Designed for  
Pick and Place  
SMT process*

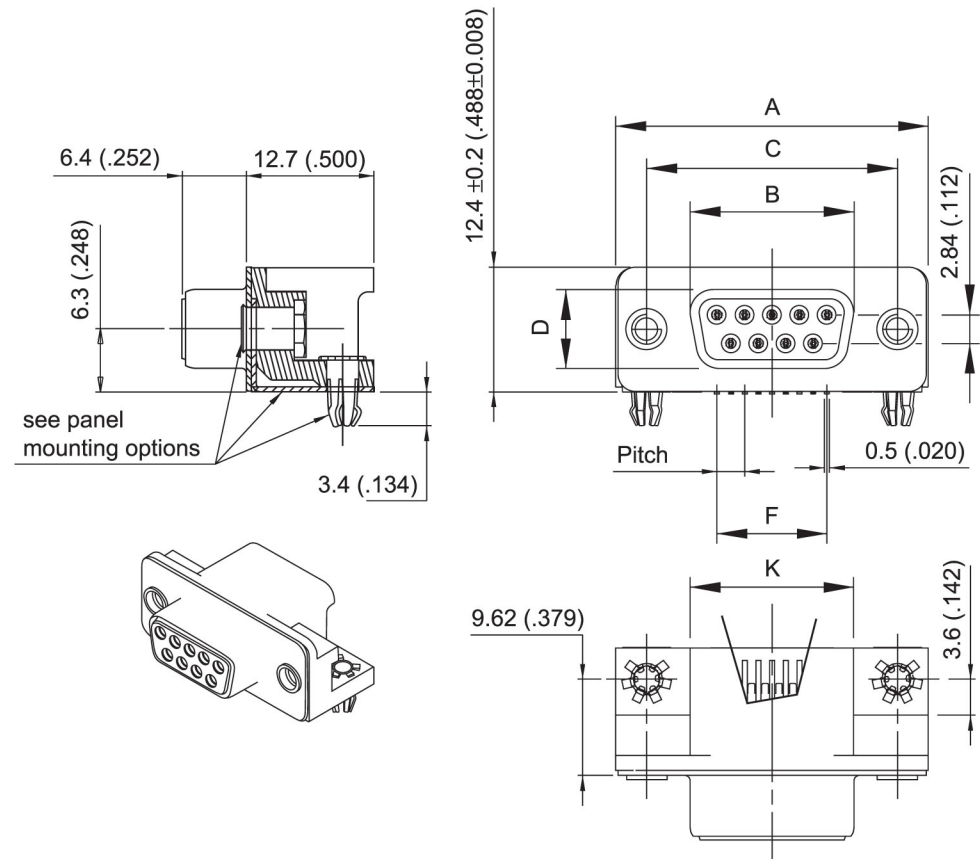
APPLICATIONS

- Industrial
- Telecom
- Any industry standard I / O connections

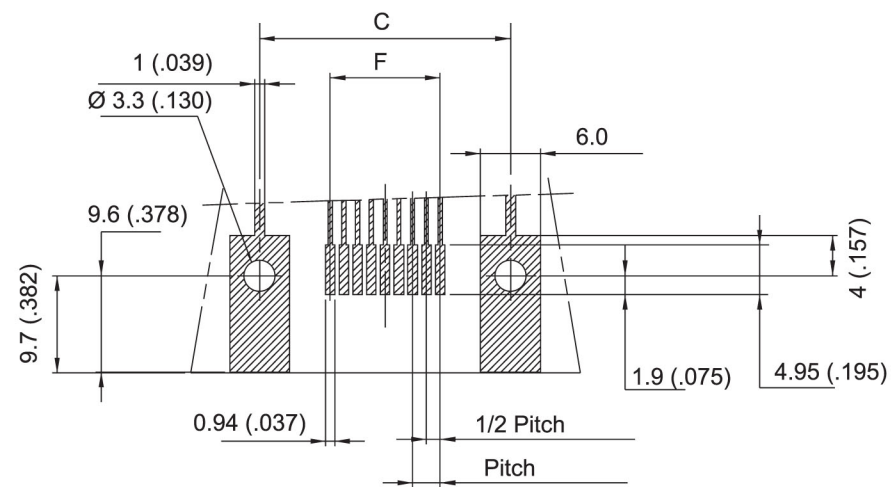
SM2 / E2



**Amphenol**



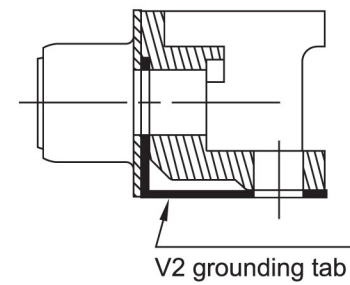
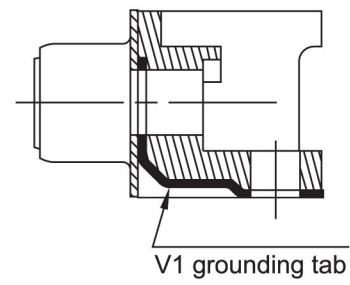
PCB LAYOUT



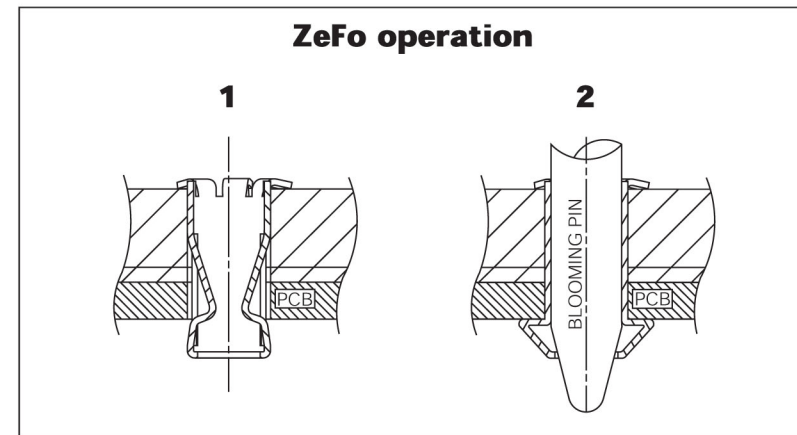
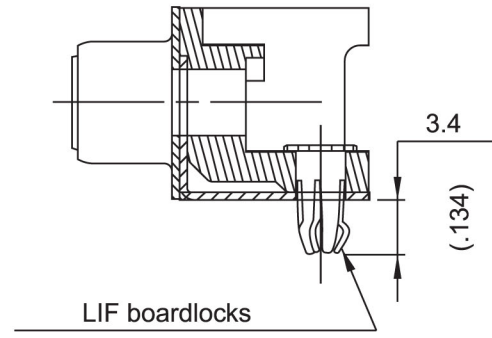
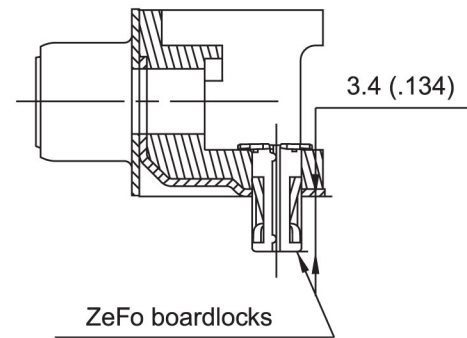
SHELL SIZE	mm (inch)						
	A	B	C	D	PITCH	F	K
	+0.05 (.002) -0.1 (.004)	0 -0.2 (.008)	±0.1 (.004)	0 -0.25 (.01)			
E	31.15 (1.226)	16.4 (.645)	25 (.984)	8.03 (.316)	2.74 (.1078)	10.97 (.432)	16.3 (.642)
A	39.4 (1.551)	24.8 (.976)	33.3 (1.311)	8.03 (.316)	2.74 (.1078)	19.2 (.756)	24.6 (.968)
B	53.3 (2.098)	38.5 (1.515)	47 (1.850)	8.03 (.316)	2.76 (.1086)	33.12 (1.304)	38.3 (1.508)



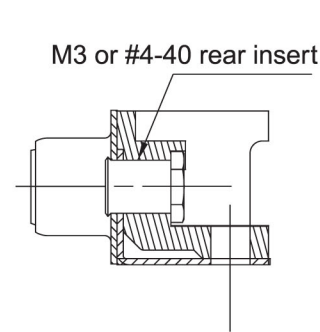
**GROUNDING TABS:**



**BOARDLOCKS:**

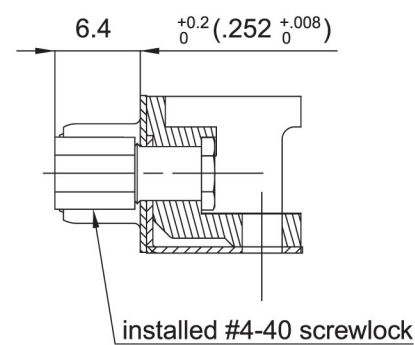


**FLANGES ACCESSORIES:**



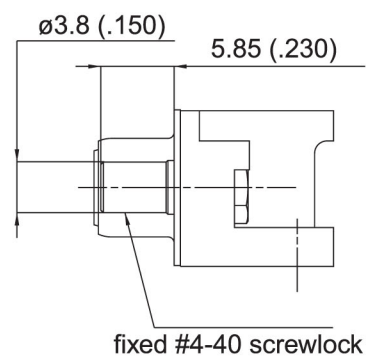
Threaded Rear

**1/2**



Installed Front Female

**5**

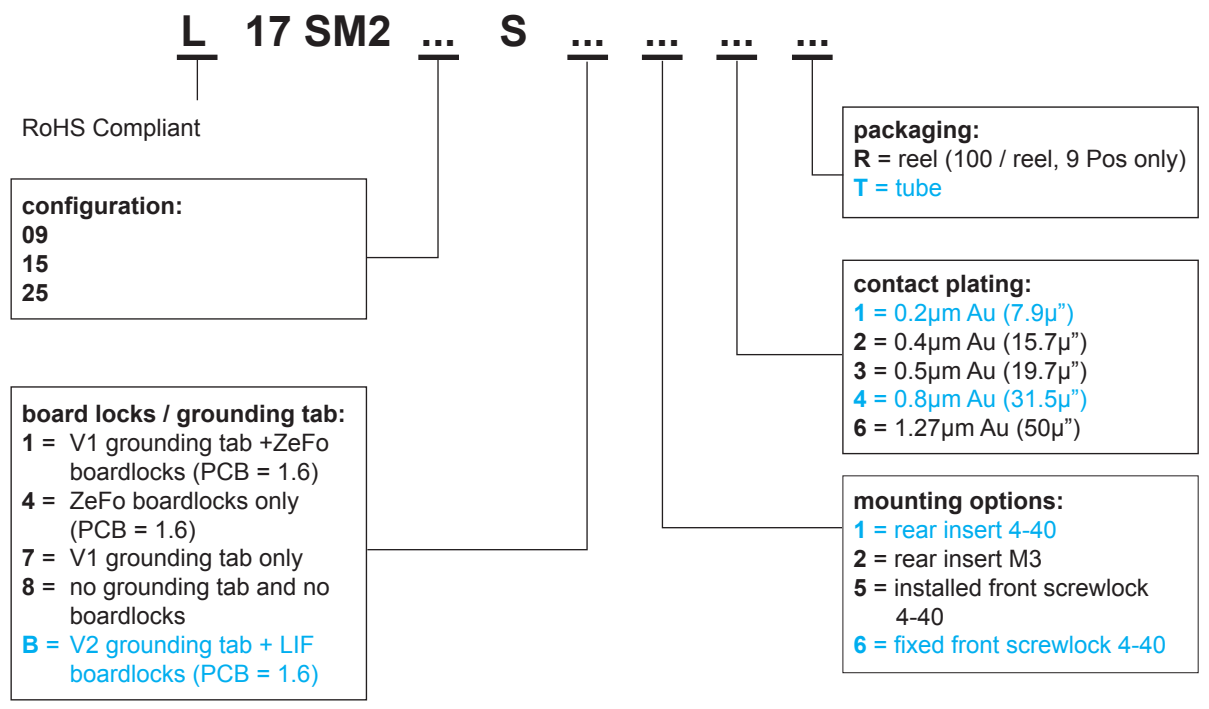


Fixed Front Female

**6**



How to order



■ : Standard options

*For special request, please consult factory*

**Memo**

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Do not hesitate to contact us for further information

**Amphenol**  
**Amphenol IT & Communication Products**  
 Block A3/A4, The 4th Industrial District of  
 Industrial Headquarters, Dong Keng Road  
 Gong Ming Town, Shen Zhen China  
 Fax:+86(0)755 2754 9955  
**Technical Support**  
 Tel:+86(0)755 2717 7945  
 Info-dsub@amphenol.com.cn  
 http://www.dsubconnector.com

**Stamped And Formed Contacts  
Solder-Cup And Straight PCB Termination**

Standards: UL File: E149426  
Connectors according to: MIL C24308 - NFC 93425-HE5

**SPECIFICATIONS:**

**MATERIALS AND PLATINGS**

Shells	Steel
Insulator	Glass-filled thermoplastic, UL 94V-0
Pin Contact	Brass, selected gold in mating area; 100µ" (2.54µm) min. tin-lead on termination area over 50µ" (1.27µm) min. nickel
Socket Contact	Phosphor bronze, selected gold in mating area; 100µ" (2.54µm) min. tin-lead on termination area over 50µ" (1.27µm) min. nickel
Rear Insert	Brass, 100µ" (2.54µm) min. nickel plated
Boardlock	Brass, 100µ" (2.54µm) min. nickel plated
Screwlock	Brass, 100µ" (2.54µm) min. nickel plated

**ELECTRICAL DATA**

Current Rating	Standard Density: 5A per contact
Voltage Rating	250V AC/ rms 50Hz
Withstanding Voltage	1000V AC/ rms 50Hz for one minute
Insulation Resistance	1000MΩ at 500V DC
Contact Resistance	20 mΩ max.

**CLIMATIC DATA**

Operating Temperature -67°F (-55°C) to +257°F (125°C)

**MECHANICAL DATA**

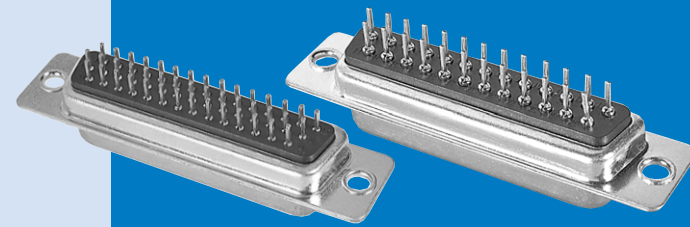
Single Contact Insertion Force	1.19 lb. (0.54 kg.) max.
Single Contact Withdrawal Force	0.13 lb. (0.06 kg.) min.

Mating and Unmating Force  
Unit: lb. (kg.)

No. of Pos	SD	
	Mate (max.)	Unmate (min.)
9	3.05 (6.74)	0.36 (0.79)
15	5.09 (11.24)	0.46 (1.01)
25	8.44 (18.66)	0.81 (1.8)
37	12.51 (27.65)	1.1 (2.47)
50	14.65 (32.38)	1.6 (3.56)

- Standard plating thicknesses
- gold flash
  - 15µ" (0.381µm) gold
  - 30µ" (0.76 µm) gold

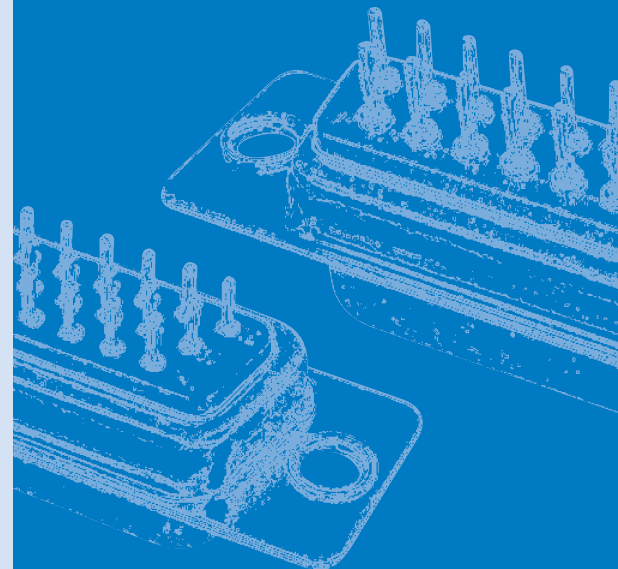
**SD SERIES**



Amphenol's SD series, features precision stamped and formed contacts with closed entry contact cavities in insulator.

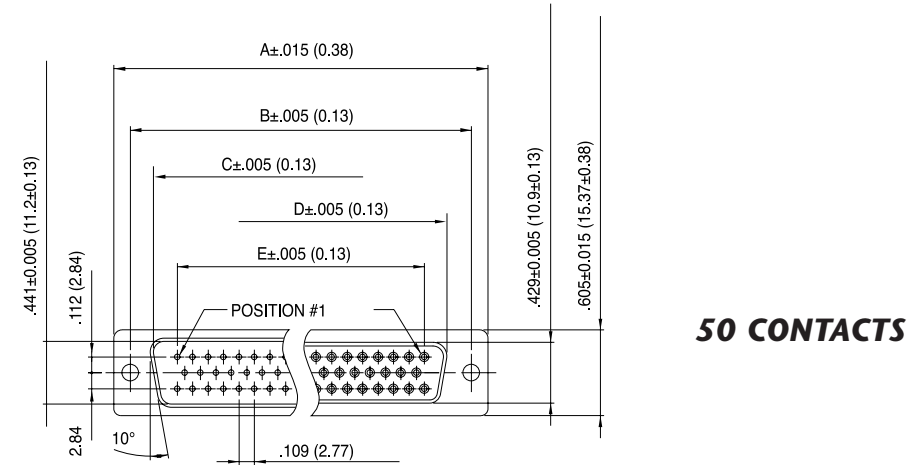
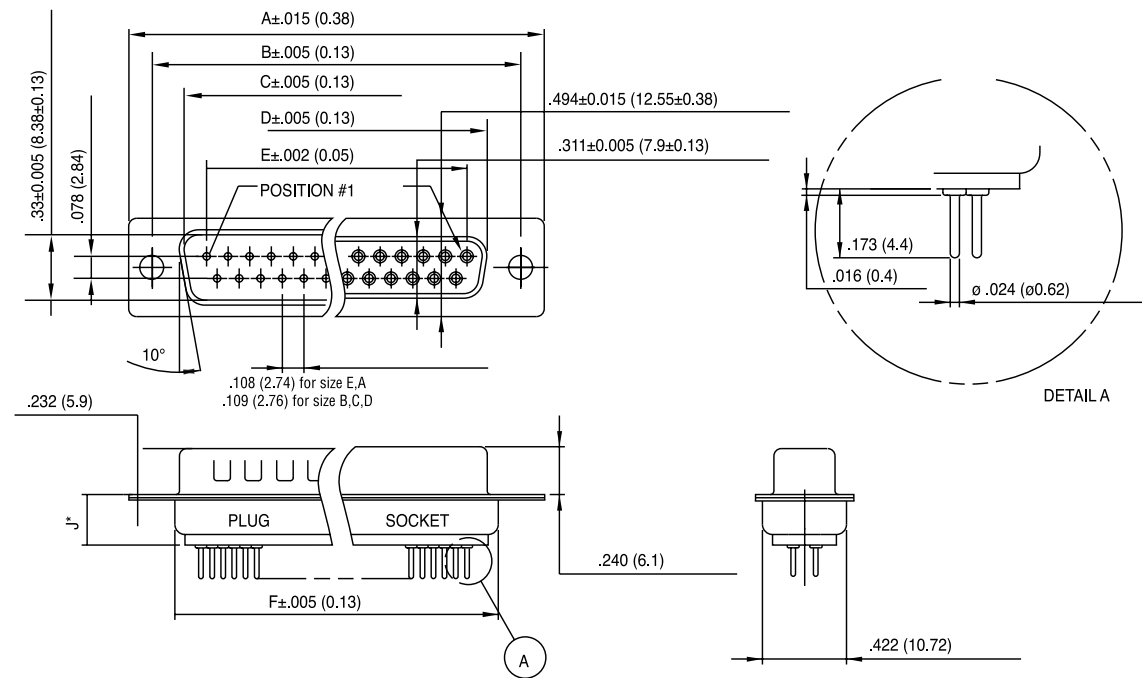
This series provides Amphenol's high standard of quality and reliability, to meet all of your commercial requirements.

- Industrial
- Telecom
- Any industry standard I / O connections



INCHES (MM)

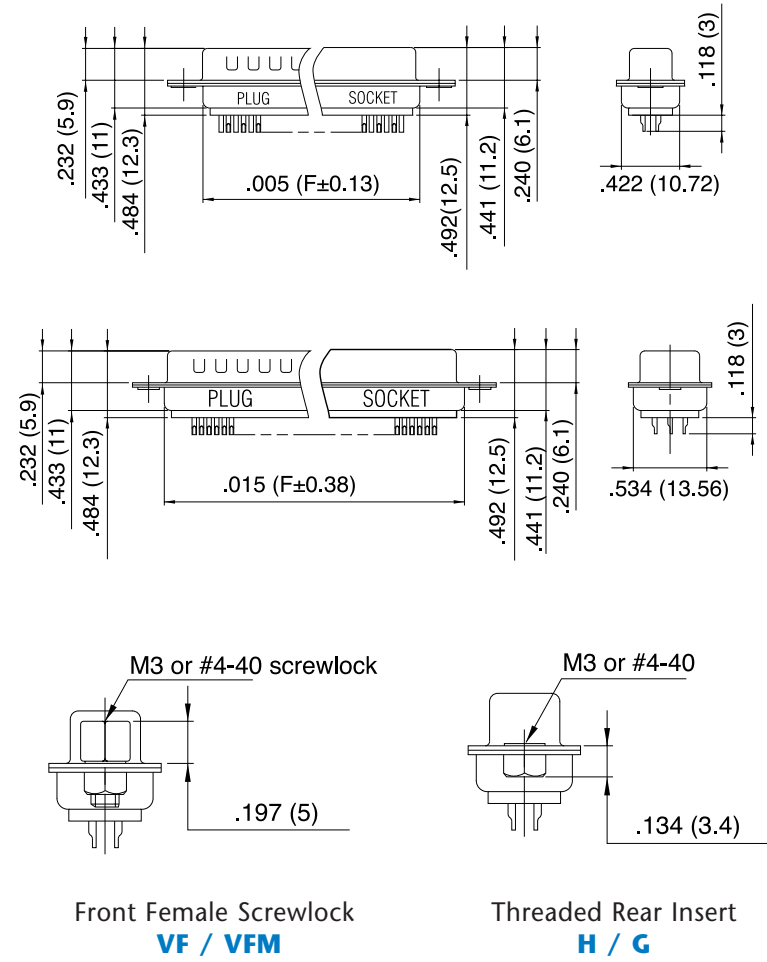
DIMENSIONS



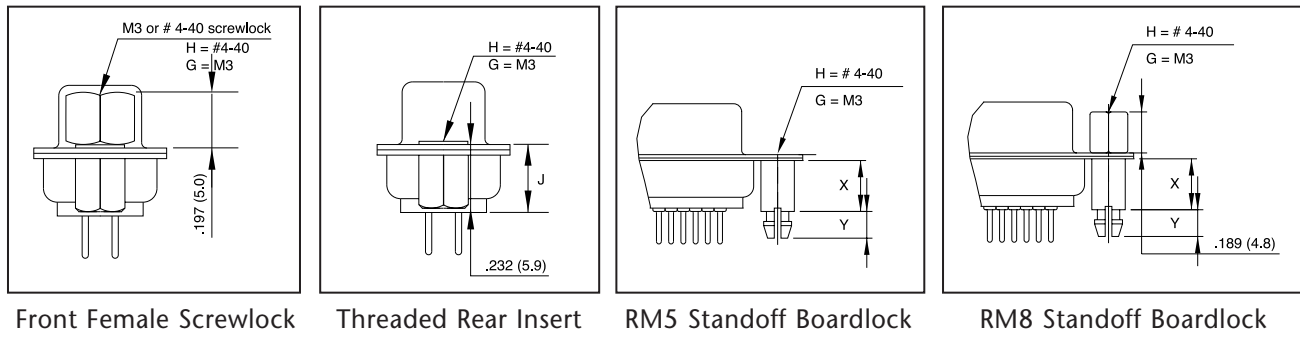
**50 CONTACTS**

No. of Contacts	Dimensions					
	A	B	C	D	E	F
9	1.21 (30.84)	.98 (24.99)	.67 (16.92)	.64 (16.24)	.44 (11.09)	.76 (19.28)
15	1.54 (39.24)	1.31 (33.32)	.972 (24.7)	.97 (24.56)	.76 (19.39)	1.08 (27.51)
25	2.09 (53.04)	1.85 (47.04)	1.53 (38.96)	1.51 (38.38)	1.31 (33.24)	1.63 (41.30)
37	2.73 (69.32)	2.50 (63.50)	2.18 (55.42)	2.16 (54.76)	1.96 (49.86)	2.27 (57.71)
50	2.64 (67.06)	2.41 (61.11)	2.08 (52.86)	2.06 (52.34)	1.75 (44.32)	2.18 (55.3)

50 CONTACTS



PANEL MOUNTING OPTION      PRINTED CIRCUIT BOARD TERMINATIONS



	RM5 RM8	RM5G RM8G
X	.236 (6.0)	.500 (12.7)
Y	.126 (4.2)	.126 (3.2)
J	.244 (6.2)	.465 (11.8)



**ORDERING INFORMATION**

XXX - XX - X - X - XX - X - XXX - XXX - 309

Gold Flash	<p><b>77:</b> tinned shell for receptacle</p> <p><b>717:</b> tinned shell + dimples for plug</p>	<p><b>177:</b> tinned shell for receptacle</p> <p><b>777:</b> tinned shell + dimples for plug</p>	<p><b>Plating Option:</b> valid only for 30µ" (0.76µm)</p> <p>77 C309 or 717 C309</p>	<p><b>Grounding Tabs*:</b> RM5 boardlock RM8 boardlock + front screwlock <i>*not available with s-cup</i></p>	<p><b>Termination</b> Straight for PCB = OL2 Blank = solder cup</p>
15µ" (0.4µm)			<p><b>Termination</b> Straight for PCB = OL2 Blank = solder cup</p>	<p><b>Contact Type:</b> P pin S socket</p>	<p><b>Configuration:</b> SD 9, 15, 25, 37, 50</p>

**SD:** standard density

**Shell size:** E, A, B, C, D

**Mounting Type:**

H	rear insert 4-40
G	rear insert M3
blank	standard rivet .120 (3.05)

H,G must also be used to specify the threading of RM5 or RM8 grounding tabs.

For Filtered D-Sub, see page 56.

**Fixed Machined Contact Connector**

- Standards: • UL File: E119881  
 • Connectors according to MIL C24308

**SPECIFICATIONS:**

**MATERIALS AND PLATINGS**

<b>Shells</b>	Steel yellow chromated over zinc or tinned steel with or without dimples on plug connector
<b>Insulator</b>	Glass-filled thermoplastic, UL 94V-0
<b>Rear Insert</b>	Brass, 118µ" up to 197µ" (3µm up to 5µm) tinned over nickel 78µ" up to 118µ" (2µm up to 3µm)
<b>Boardlock</b>	Tin-lead plating 157µ" up to 236µ" (4µm up to 6µm) over nickel 78µ" up to 118µ" (2µm up to 3µm)
<b>Screwlock</b>	Brass, 236µ" up to 394µ" (6µm up to 10µm) tinned over nickel 78µ" up to 118µ" (2µm up to 3µm)
<b>Contacts</b>	D: brass DF: pin = brass Socket = copper alloy
<b>Right Angle Version</b>	Selective gold in mating area over 78µ" up to 118µ" (2µm up to 3µm) nickel; 118µ" up to 197µ" (3µm up to 5µm) tin-lead on termination area over 78µ" up to 118µ" (2µm up to 3µm) nickel
<b>Straight Version</b>	Full gold plating over 78µ" up to 118µ" (2µm up to 3µm) nickel

**ELECTRICAL DATA**

<b>Current Rating</b>	7.5 A
<b>Voltage Rating</b>	300 V AC/rms 50Hz
<b>Withstanding Voltage</b>	1000V AC/rms 50Hz for one minute
<b>Insulation Resistance</b>	5000MΩ
<b>Contact Resistance</b>	D: 8.5mΩ max. DF: 5mΩ max.

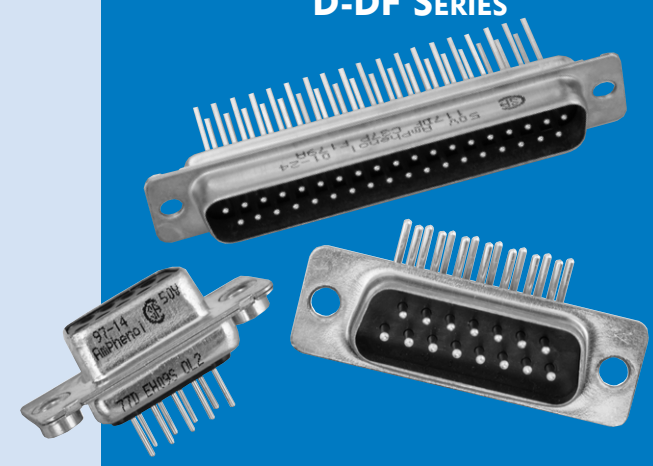
**CLIMATIC DATA**

<b>Operating Temperature</b>	D: -67°F (-55°C) to +185°F (85°C), peak at 257°F (125°C) DF: -67°F (-55°C) to + 257°F (125°C)
------------------------------	--

**MECHANICAL DATA**

No. of Contacts	Mate (max.)	Unmate (min.)
9 (size E)	6.74 (3.05)	0.79 (0.36)
15 (size A)	11.24 (5.09)	1.01 (0.46)
25 (size B)	18.66 (8.44)	1.8 (0.81)
37 (size C)	27.65 (12.51)	2.47 (1.1)
50 (size D)	32.38 (14.65)	3.56 (1.6)

**D-DF SERIES**



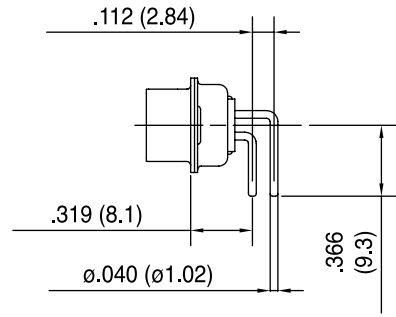
The Amphenol SD series features precision formed contacts, and 4 finger boardlocks.

This series gives you Amphenol's high standards of quality and reliability to meet all of your commercial requirements.

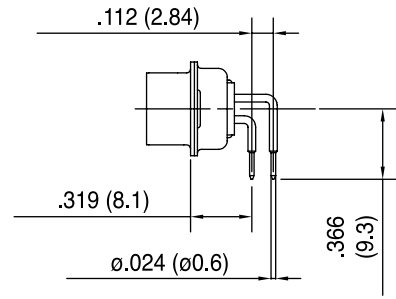
- Industrial
- Telecom
- Any industry standard I / O connections

INCHES (MM)

Without bracket

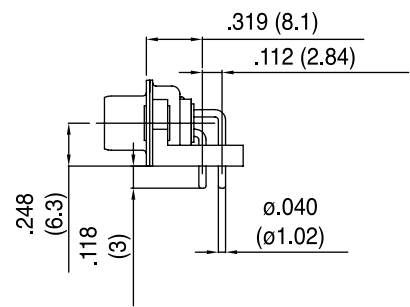


C

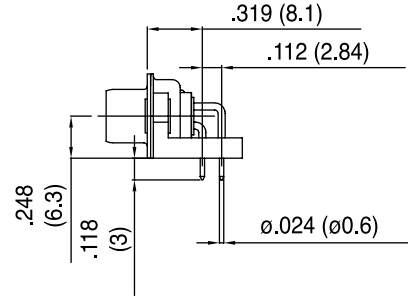


A4

Plastic bracket

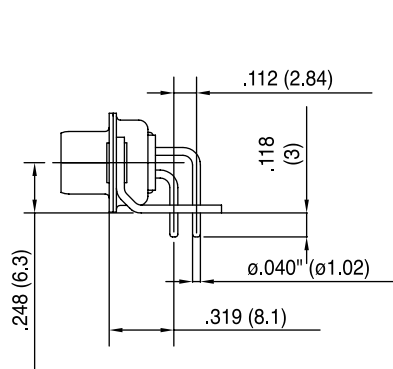


AJ3

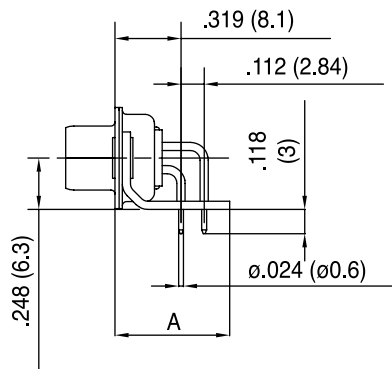


AJ4

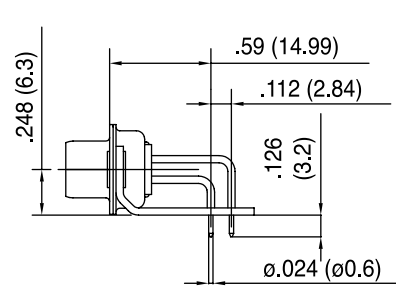
Metal bracket



A

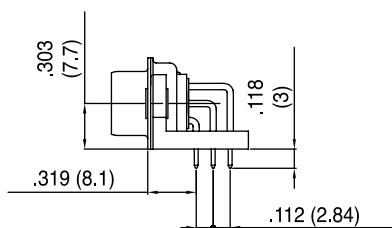


AM4 : A=.519 (13.2)  
AZ4 : A=.453 (11.5)

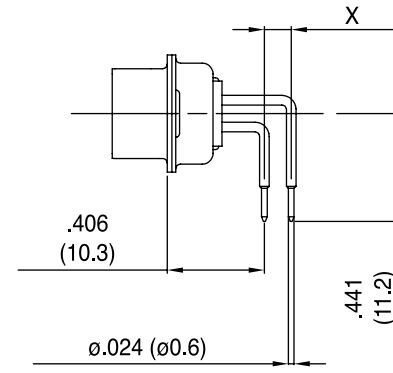


AM4B

50 contacts

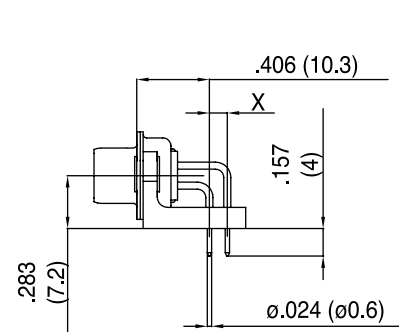


Without bracket

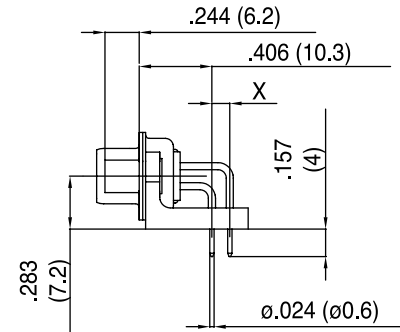


**1AON : X= .100 (2.54)**  
**1BON : X= .112 (2.84)**

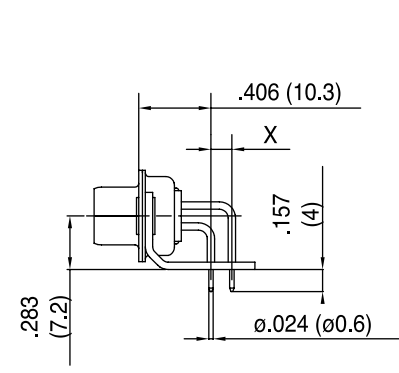
Plastic bracket



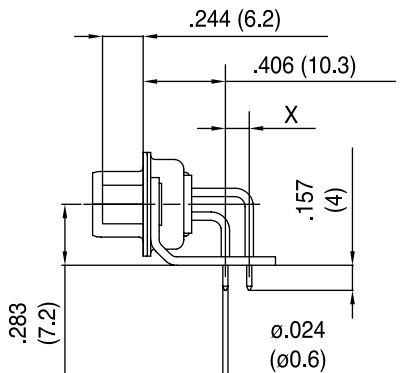
**1APN : X= .100 (2.54)**  
**1BPN : X= .112 (2.84)**



**1AUN : X= .100 (2.54)**  
**1BUN : X= .112 (2.84)**

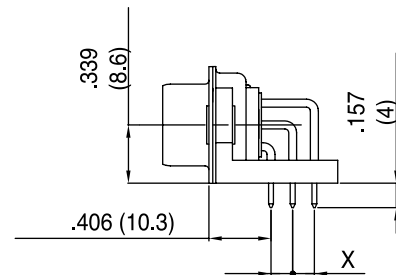


**1AMN : X= .100 (2.54)**  
**1BMN : X= .112 (2.84)**



**1ATN : X= .100 (2.54)**  
**1BTN : X= .112 (2.84)**

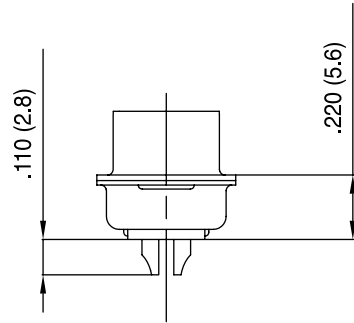
50 contacts



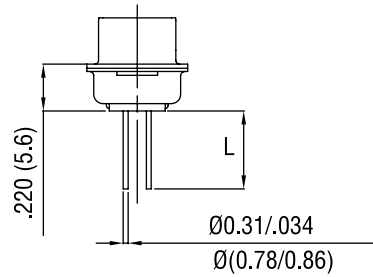
INCHES (MM)



Solder cup

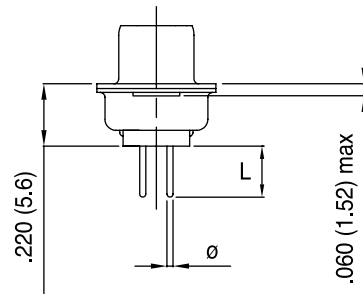


Wire Wrap



Termination	Nb of wraps	L
F179	2	.378 (9.6)
F179A	3	.512 (13)

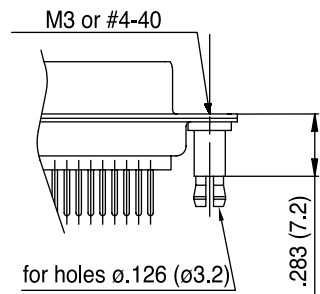
Straight PCB



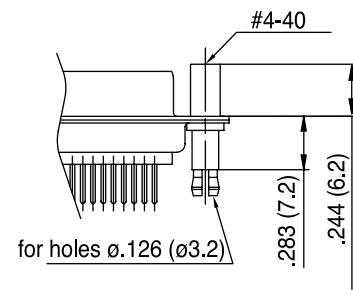
Termination	Ø	L
U	.024 (0.6)	.126 (3.2)
V	.040 (1.02)	.095 (2.4)
T	.024 (0.6)	.157 (4)
OL2	.02 (0.6)	.217 (5.5)

Grounding tabs

For straight termination

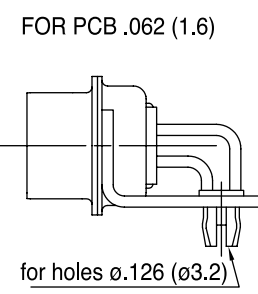


RM5



RM8

For R/A termination

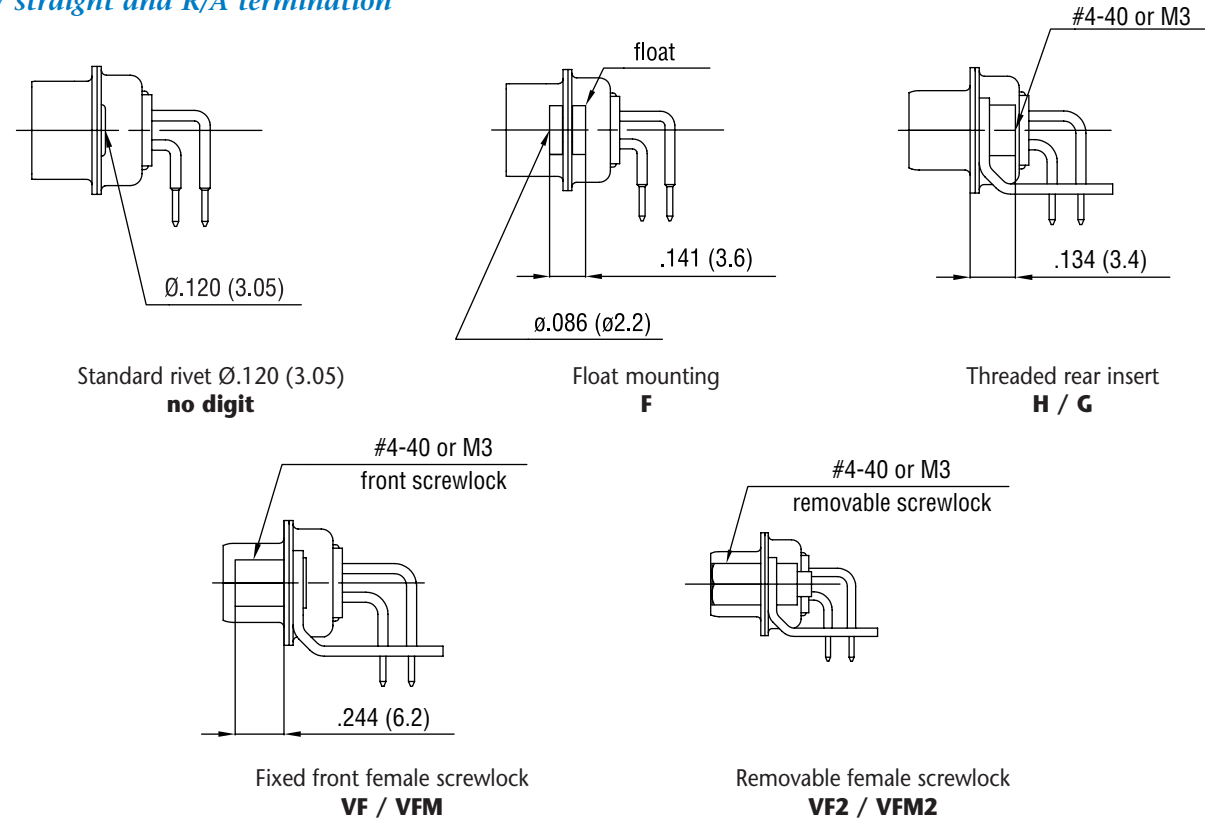


RM6

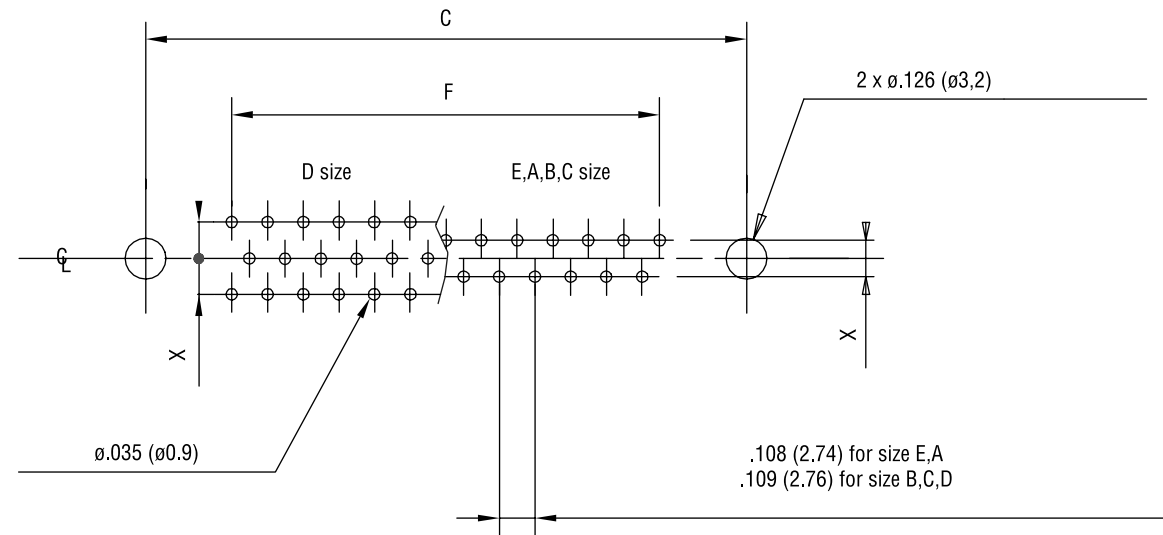
**Screw-Machined Contacts**  
**Fixed Machined Contact Connector**

**D-DF SERIES**

*For straight and R/A termination*



**RECOMMENDED PCB LAYOUT**



For straight PCB: X = .112 (2.84)  
 For right angle PCB: MIL: X = .112 (2.84)  
 European: X = .100 (2.54), .112 (2.84) in option

	size E	size A	size B	size C	size D
<b>C ± .004 (0.1)</b>	.984 (25)	1.311 (33.3)	1.85 (47)	2.5 (63.5)	2.406 (61.1)
<b>F ± .002 (0.05)</b>	.431 (10.96)	.755 (19.18)	1.304 (33.12)	1.956 (49.68)	1.74 (44.2)

INCHES (MM)

**ORDERING INFORMATION**

XXXXX X X XX X XXXXX XXXX X

8µ" (0.2µm)	<b>17D:</b> yellow chromated shell <b>77D:</b> tinned shell for receptacle <b>717D:</b> tinned shell + dimples for plug
20µ" (0.5µm)	<b>17DF:</b> yellow chromated shell <b>77DF:</b> tinned shell for receptacle <b>717DF:</b> tinned shell + dimples for plug
30µ" (0.76µm)	<b>117DF:</b> yellow chromated shell <b>177DF:</b> tinned shell for receptacle <b>777DF:</b> tinned shell + dimples for plug

**Shell size:** E, A, B, C, D

**Mounting Options:**

- H rear insert 4-40
- G rear insert M3
- F float mounting
- no digit standard rivet .122 (ø 3.1)

\*H, G must also be used to specify the threading of RM5 grounding tabs.

**Configuration:** 09, 15, 25, 37, 50

**Contact type:**

- P pin
- S socket

**For specific product**

**Grounding tabs:**

- RM5 for straight PCB mounting\*
- RM8 for straight PCB mounting + female lock
- RM6 for right angle PCB mounting
- VF front screwlock 4-40
- VFM front screwlock M3
- VF2 removable screwlock 4-40
- VFM2 removable screwlock M3

**Termination:**

solder cup: no digit

**Wire Wrap:**

- F179 length .378 (9.6)
- F179A length .512 (13)

**Straight PCB:**

- U length .126 (3.2) tail ø.024 (ø0.6)
- V length .094 (2.4) tail ø.040 (ø1.02)
- T length .157 (4) tail ø.024 (ø0.6)
- OL2 length .216 (5.5) tail ø.024 (ø0.6)

**Right Angle Connector:**

MIL footprint

without bracket:

- C tail ø.040 (ø1.02)
- A4 tail ø.024 (ø0.6)

plastic bracket:

- AJ3 tail ø.040 (ø1.02)
- AJ4 tail ø.024 (ø0.6)

metal bracket:

- A tail ø.040 (ø1.02)
- AM4 A ø.519 (13.2)
- AZ4 A ø.453 (11.5)
- AM4B footprint ø.590 (14.99)

European footprint

without bracket:

- 1AON X .100 (2.54)
- 1BON X .112 (2.84)

plastic bracket:

- 1APN X .100 (2.54)
- 1BPN X .112 (2.84)
- 1AUN X .100 (2.54)
- 1BUN X .112 (2.84)

metal bracket:

- 1AMN X .100 (2.54)
- 1BMN X .112 (2.84)
- 1ATN X .100 (2.54)
- 1BTN X .112 (2.84)

■ : Standard options

For special request, please consult factory

For Filtered D-Sub, see page 56.

**Screw Termination**

**SPECIFICATIONS:**

**MATERIALS AND PLATINGS**

Shells	Steel Tin plated
Insulator	Glass filled thermoplastic, UL94V-0
Contacts	Machined brass, full gold

**ELECTRICAL DATA**

Current Rating	7,5 A max.
Voltage Rating	300 V RMS at 50 Hz
Withstanding Voltage	1000 V RMS at 50 Hz
Insulation Resistance	> 5000 $\Omega$ at 500 V DC
Contact Resistance	< 5 $\Omega$

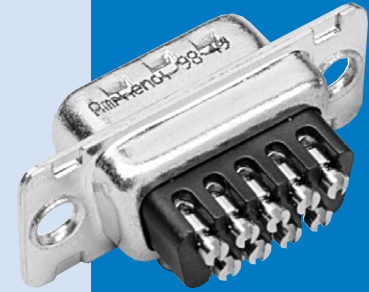
**CLIMATIC DATA**

Operating Temperature	-67°F (-55°C) to +185°F (85°C), peak at 257°F (125°C)
Damp Heat	21 days 219°F(104°C - 95% HR)
Salt Spray	48 hours

**MECHANICAL DATA**

Cable Type	Solid or stranded
Cable Gauge	0,75 mm <sup>2</sup> max. (AWG 18) - For bigger wire, please consult factory
Screw Torque	0,05 mN max.
Mating Cycles	100 (class II) or 500 (class I)

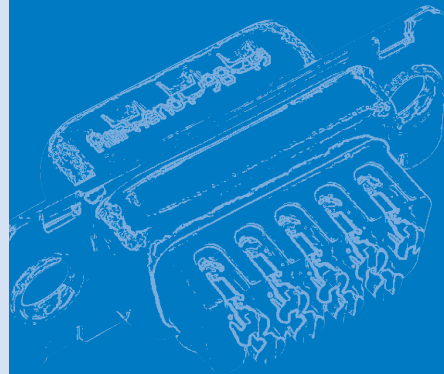
**D-ST SERIES**

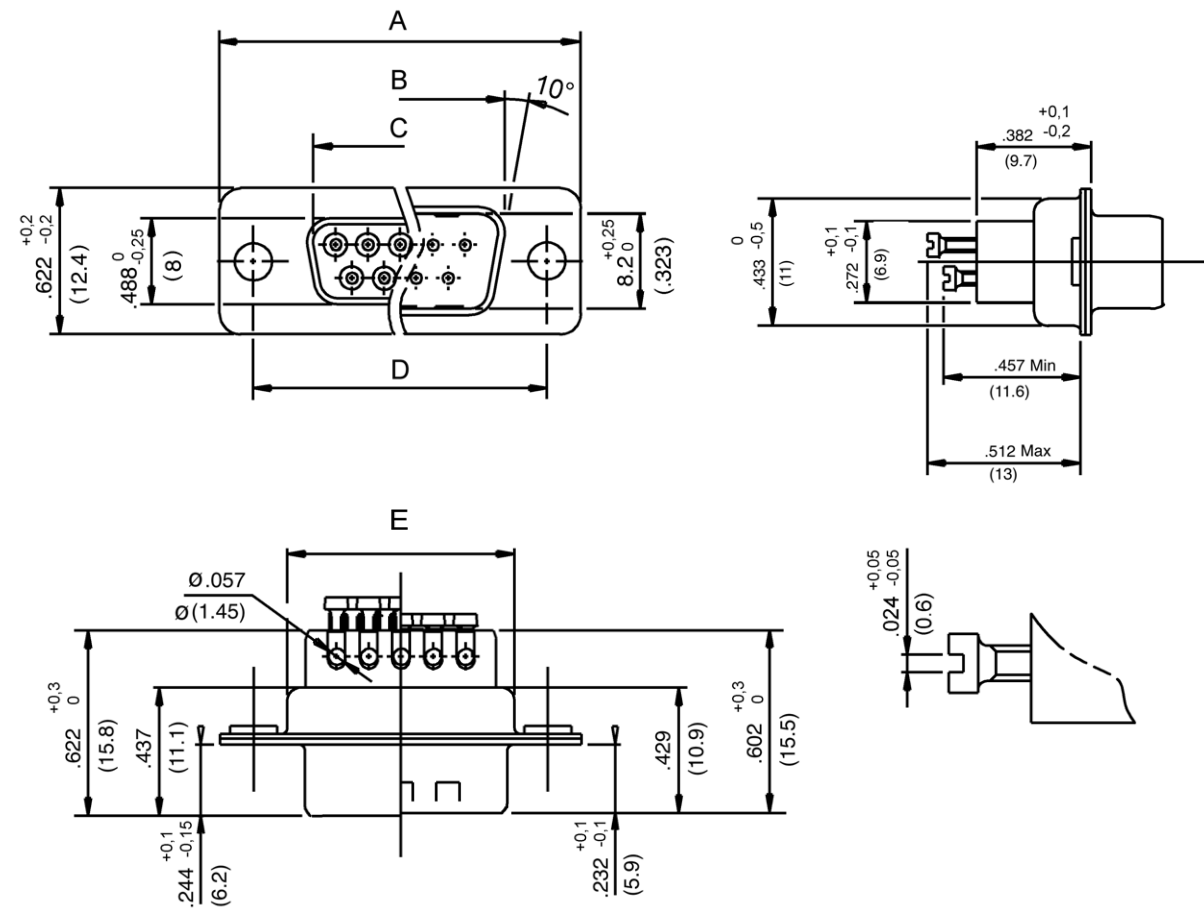


The Amphenol Screw Termination D-Sub series is especially designed for field applications.

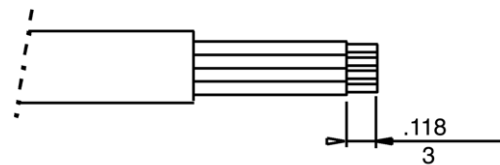
These new connectors permit easy wiring without any specific tool; only a standard electrician's screwdriver is required. Due to their reduced overall dimensions, these connectors are compatible with all standard hoods and accessories.

- Industry - control of speed variators and calculators.
- Houses and public buildings - control of heating, air conditioning, lighting, shutters and fire safety.
- Infrastructures - fluids control, motorway tolls and street lighting.





Cable stripping



SIZE	A +.010 (0.25) -.010 (0.25)	B 0 -.008 (0.2)	C +.008 (0.2) 0	D +.004 (0.1) -.004 (0.1)	E +.004 (0.1) -.016 (0.4)
9	1.209 (30.7)	.646 (16.4)	.661 (16.8)	.984 (25)	.370 (19.4)
15	1.535 (39)	.976 (24.8)	.988 (25.1)	1.311 (33.3)	1.091 (27.7)
25	2.083 (52.9)	1.516 (38.5)	1.528 (38.8)	1.850 (47)	1.630 (41.4)
37	2.724 (69.2)	2.161 (54.9)	2.177 (55.3)	2.500 (63.5)	2.280 (57.9)



**ORDERING INFORMATION**

**717D - E09 - P - ST - 1**

<p><b>Class II:</b> 77D Female connector 717D Male connector, shells with dimples</p> <p><b>Class I:</b> 177D Female connector 777D Male connector, shells with dimples</p> <p><b>Size and number of contacts:</b> E09, A15, B25, C37</p> <p><b>Type of contact:</b> P Male S Female</p>	<p><b>Kit connector + hood option:</b> (See following description)</p> <p>1 DPPK hood 2 DSSK hood 3 DTZK hood 4 DVZK hood</p> <p><b>Contact termination:</b> ST Screw termination</p>
--	---

**PLASTIC HOODS**

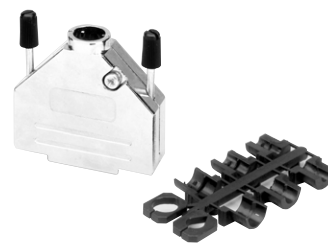


DPPK Straight cable entry

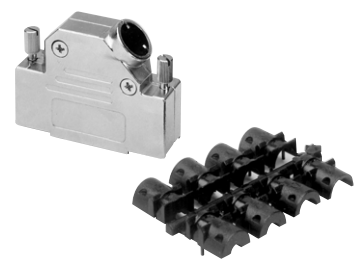


DSSK Angled cable entry

**METALLIC HOODS**

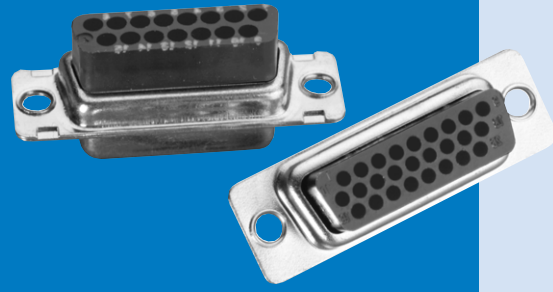


DTZK Straight cable entry



DVZK Angled cable entry

## RR-HR SERIES



Designed for high volume production, Amphenol's rear release crimp connector and contacts provide significant cost savings.

- EMI / RFI shell configuration.
- Removable, reusable contacts.
- Automatic and manual tooling available.

- Industrial
- Telecom
- Any industry standard I / O connections

## Stamped And Formed Contacts Rear Release Crimp Connectors

- Standards:
- RR: UL File : E64911
  - HR: UL File : E149426
  - Connectors according to MIL C24308

### SPECIFICATIONS:

#### MATERIALS AND PLATINGS

<b>Shells</b>	Steel yellow chromated over zinc or tinned steel with or without dimples on plug connector
<b>Insulator</b>	Black glass-filled thermoplastic, UL 94V-0
<b>Rear Insert</b>	Brass, 118µ" up to 197µ" (3µm up to 5µm) tinned over nickel 78µ" up to 118µ" (2µm up to 3µm)
<b>Screwlock</b>	Brass, 236µ" up to 394µ" (6µm up to 10µm) tinned over nickel 78µ" up to 118µ" (2µm up to 3µm)

Contacts	Under plating	Crimp side
8µ" (0.2µm) gold	78µ" (2µm) nickel	gold flash or tin
20µ" (0.5µm) gold	78µ" (2µm) nickel	gold flash or tin
30µ" (0.76µm) gold	78µ" (2µm) nickel	gold flash or tin

#### ELECTRICAL DATA

<b>Current Rating</b>	5A
<b>Voltage Rating</b>	500V AC/rms 50Hz
<b>Withstanding Voltage</b>	RR: 1000V AC/rms 50Hz for 1 minute HR: 1000V AC/rms 60Hz for 1 minute
<b>Insulation Resistance</b>	RR: 5000MΩ HR: 1000MΩ
<b>Contact Resistance</b>	10mΩ max.
<b>Wire Size</b>	20-28 AWG max. insulation out .05 (Ø1.27)

#### CLIMATIC DATA

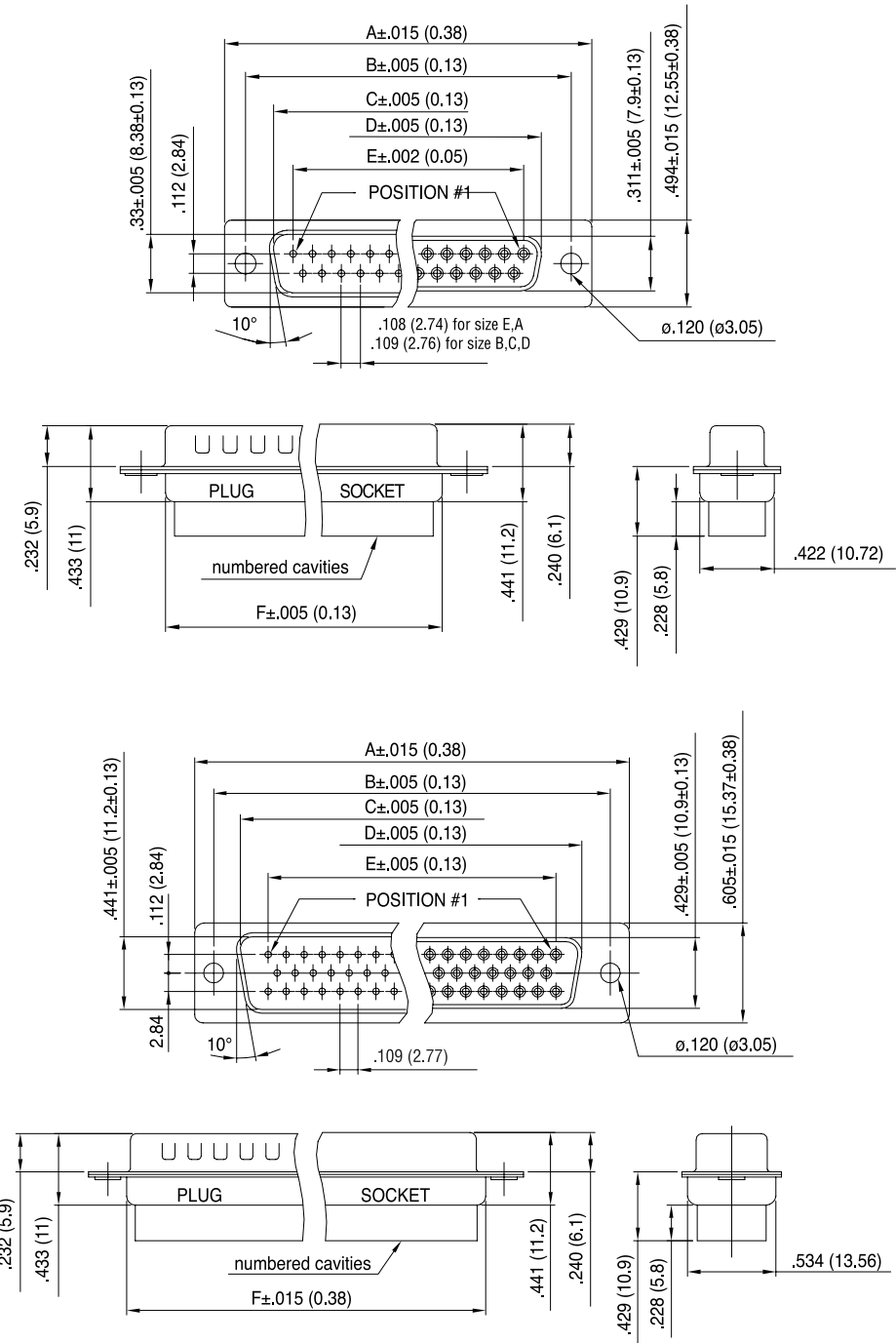
<b>Operating Temperature</b>	67°F to 221°F (-55°C to +105°C)
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#### MECHANICAL DATA

**Mating and Unmating Force**  
Unit: lb. (kg.)

No. of Contacts		Mate (max.)		Unmate (min.)	
RR	HR	RR	HR	RR	HR
9 (size E)	15 (size E)	6.74 (3.05)	8.42 (3.81)	0.79 (0.36)	1.14 (0.52)
15 (size A)	26 (size A)	11.24 (5.09)	13.16 (5.95)	1.01 (0.46)	2.32 (1.05)
25 (size B)	44 (size B)	18.66 (8.44)	20.46 (9.26)	1.8 (0.81)	3.02 (1.37)
37 (size C)	62 (size C)	27.65 (12.51)	29.78 (13.48)	2.47 (1.1)	3.88 (1.76)
50 (size D)	78 (size D)	32.38 (14.65)	34.96 (15.82)	3.56 (1.6)	4.46 (2.02)

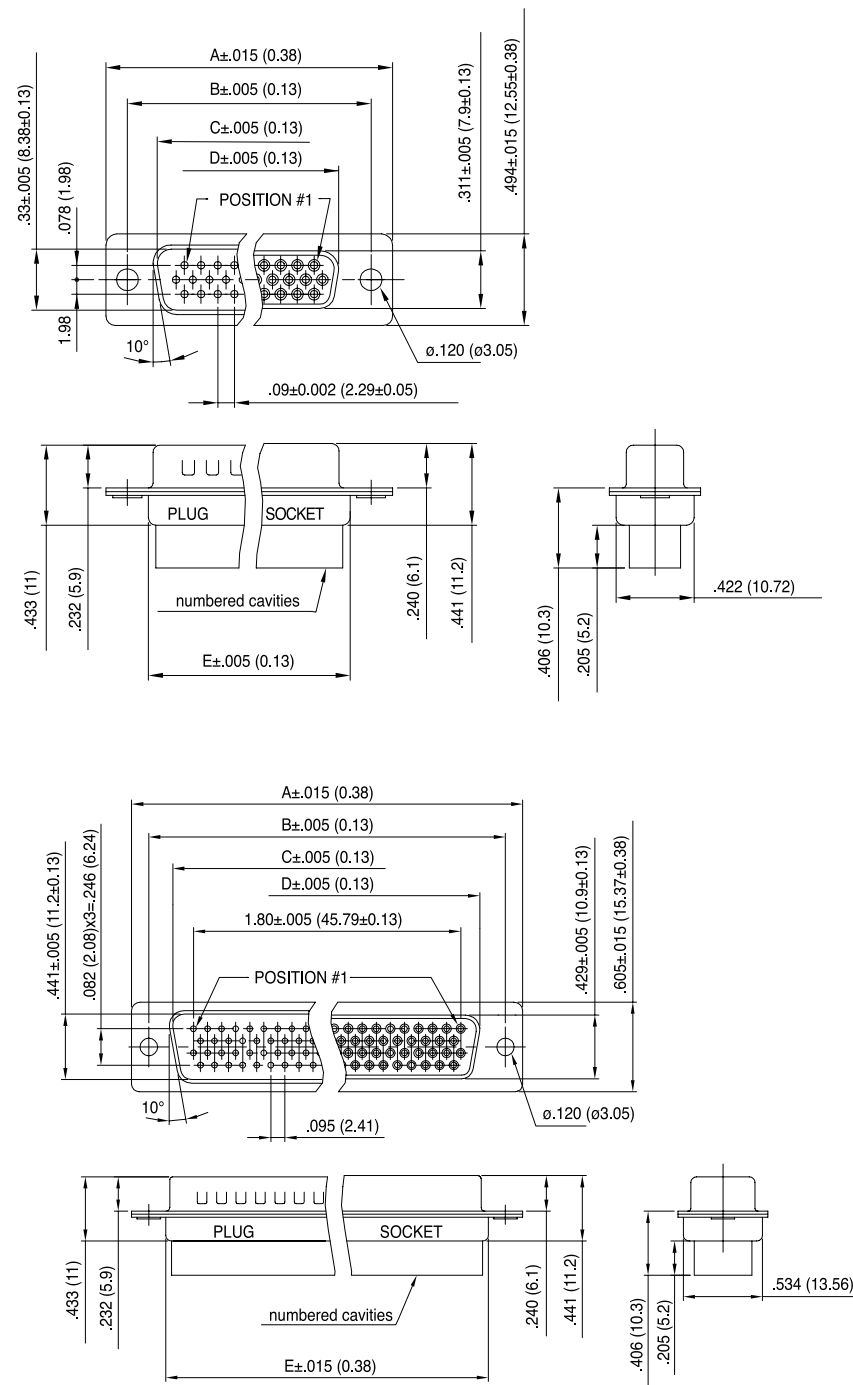
STANDARD DENSITY RR



No. of Contacts	Dimensions					
	A	B	C	D	E	F
9	1.21 (30.84)	.98 (24.99)	.67 (16.92)	.64 (16.24)	.44 (11.09)	.76 (19.28)
15	1.54 (39.24)	1.31 (33.32)	.972 (24.7)	.97 (24.56)	.76 (19.39)	1.08 (27.51)
25	2.09 (53.04)	1.85 (47.04)	1.53 (38.96)	1.51 (38.38)	1.31 (33.24)	1.63 (41.30)
37	2.73 (69.32)	2.50 (63.50)	2.18 (55.3)	2.16 (54.76)	1.96 (49.86)	2.27 (57.71)
50	2.64 (67)	2.41 (61.11)	2.08 (52.86)	2.06 (52.34)	1.75 (44.32)	2.18 (55.3)

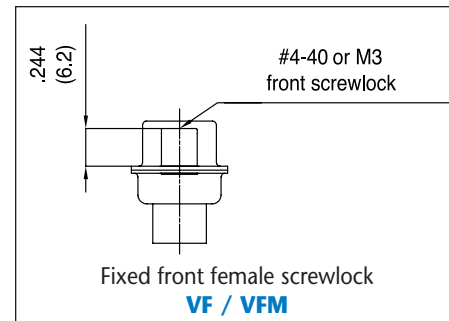
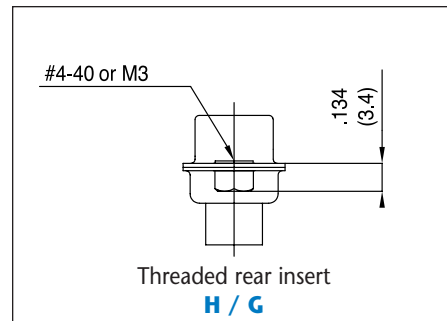
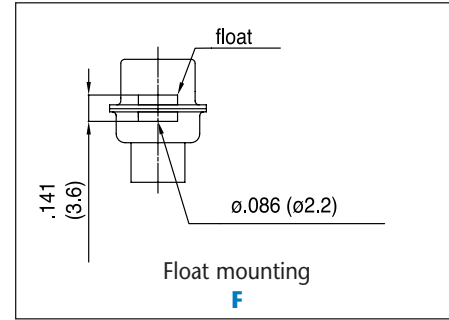
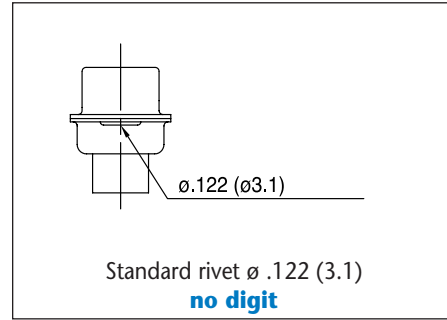
INCHES (MM)

**HIGH DENSITY HR**

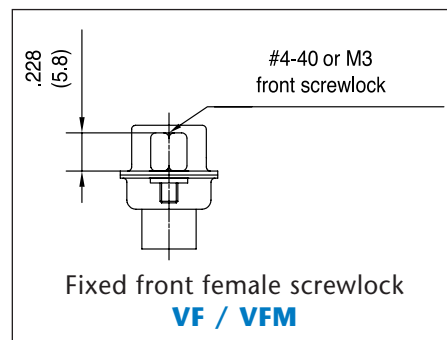
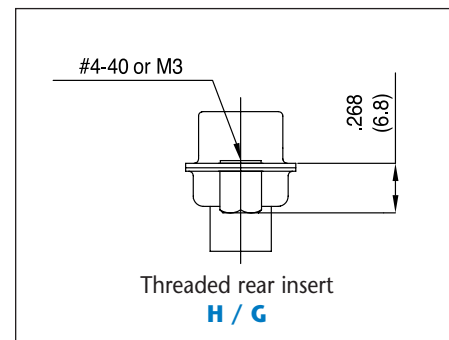
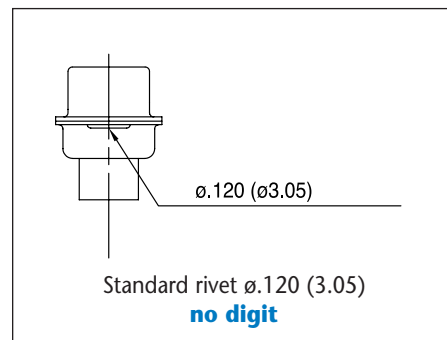


No. of Contacts	Dimensions				
	A	B	C	D	E
15	1.21 (30.84)	.98 (24.99)	.67 (16.92)	.64 (16.24)	.76 (19.28)
26	1.54 (39.24)	1.31 (33.32)	.972 (24.7)	.97 (24.56)	1.08 (27.51)
44	2.09 (53.04)	1.85 (47.04)	1.53 (38.96)	1.51 (38.38)	1.63 (41.30)
62	2.73 (69.32)	2.50 (63.50)	2.18 (55.42)	2.16 (54.76)	2.27 (57.71)
44	2.64 (67)	2.41 (61.11)	2.08 (52.86)	2.06 (52.34)	2.18 (55.3)

PANEL MOUNTING OPTION



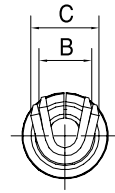
HIGH DENSITY



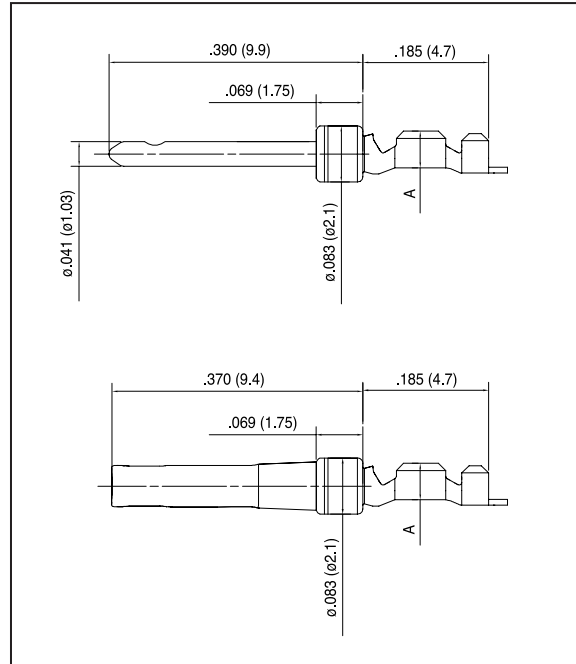


CONTACTS

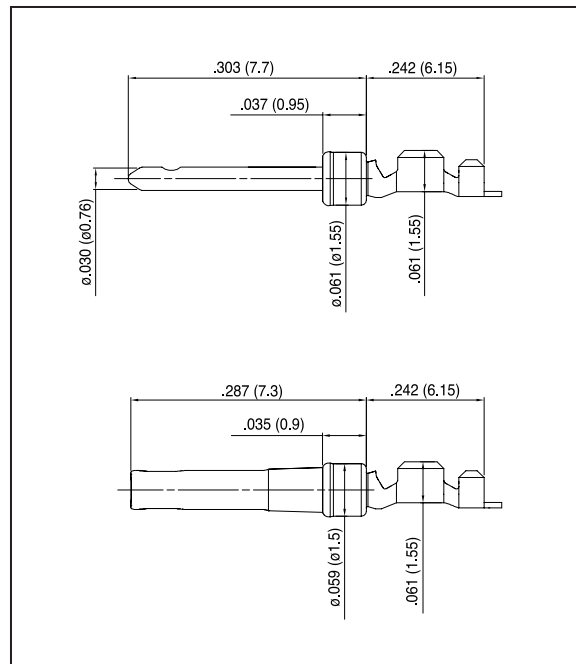
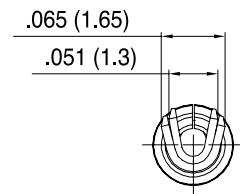
Standard density



AWG	A	B	C
20-24	.071 (1.8)	.075 (1.9)	.098 (2.5)
24-28	.055 (1.4)	.059 (1.5)	.066 (1.7)



High density



**ORDERING INFORMATION - RR (STANDARD DENSITY)**

*Housings*

**XXX - RR - X - X - XX - X - XXX**

**Shell Size:** E, A, B, C, D

**Rear Mounting Type :**

- H** rear insert 4-40
- G** rear insert M3
- no digit** standard rivet  $\phi$ .120 (3.05)
- F** float mounting

**Front Mounting Type :**

- VF** front screwlock 4-40
- VFM** front screwlock M3

**Contact Type:**

- P** pin
- S** socket

**Configuration:**  
09, 15, 25, 37, 50

**117:** yellow chromated shell  
**177:** tinned shell for receptacle  
**777:** tinned shell + dimples for plug

*Contacts*

**17 - RR - XX - X - XX - XXX**

**Wire Size:**

- D1:** 20 to 24 AWG
- D2:** 24 to 28 AWG

**Contact Type:**

- M** male
- F** female

**Packaging :**

- 100** bulkpack unit (100 cts)
- 400** reel of 400 cts
- 2K** reel of 2000 cts
- 10K** reel of 10000 cts (right feed reel)
- 10G** reel of 10000 cts (left feed reel)


**Full Gold Plating:**

- 01** 8 $\mu$ \* (0.2 $\mu$ m)
- 02** 20 $\mu$ \* (0.5 $\mu$ m)
- 04** 30 $\mu$ \* (0.76 $\mu$ m)

**Selective Gold Plating:**

- 11** 8 $\mu$ \* (0.2 $\mu$ m) Au + 78 $\mu$ \* (2 $\mu$ m) SnPb
- 12** 20 $\mu$ \* (0.5 $\mu$ m) Au + 78 $\mu$ \* (2 $\mu$ m) SnPb
- 14** 30 $\mu$ \* (0.76 $\mu$ m) Au + 78 $\mu$ \* (2 $\mu$ m) SnPb

REEL WINDING DIRECTION



Left to right feed reel: **G**      Right to left feed reel: **K**

***For special request, please consult factory***

**ORDERING INFORMATION - HR (HIGH DENSITY)**

*Housings*

**XXX - HR - X - X - XX - X - XXX**

**117:** yellow chromated shell  
**177:** tinned shell for receptacle  
**777:** tinned shell + dimples for plug

**Shell Size:** E, A, B, C, D

**Rear Mounting type :**  
**H** rear insert 4-40  
**G** rear insert M3  
**no digit** standard rivet ø.120 (3.05)

**Front Mounting Type :**  
**VF** front screwlock 4-40  
**VFM** front screwlock M3

**Contact Type:**  
**P** pin  
**S** socket

**Configuration:**  
 15, 26, 44, 62, 78

*Contacts*

**17 - HR - D2 - X - XX - XXX**

**Wire Size:**  
24 to 28 AWG

**Contact Type:**  
**M** male  
**F** female

**Full Gold Plating:**


**01** 8µ\*(0.2µm)  
**02** 20µ\*(0.5µm)  
**04** 30µ\*(0.76µm)

**Selective Gold Plating:**

**11** 8µ\*(0.2µm) Au  
 + 78µ\*(2µm) SnPb  
**12** 20µ\*(0.5µm) Au  
 + 78µ\*(2µm) SnPb  
**14** 30µ\*(0.76µm) Au  
 + 78µ\*(2µm) SnPb

**Packaging :**  
**5K** reel of 5000 cts (right feed reel)  
**5G** reel of 5000 cts (left feed reel)  
**10K** reel of 10000 cts (right feed reel)  
**10G** reel of 10000 cts (left feed reel)

REEL WINDING DIRECTION



Left to right feed reel: **G**      Right to left feed reel: **K**

**For special request, please consult factory**

**TOOLING FOR CRIMP CONTACTS**

For standard density crimp contacts: 17RR series

- |   |             |
|---|-------------|
| • Contact insertion and removal tool                          | 17D 438 SP  |
| • Hand crimp tool for single contacts AWG 20 to 28            | 17D 440 SP  |
| • Hand crimp tool for reels of 400 contacts                   | FA 0000 762 |
| crimp dies: AWG 20 to 24                                      | FA 0000 104 |
| crimp dies: AWG 24 to 28                                      | FA 0000 102 |
| • Stripping box   | FE 0400     |
| • Automatic crimp machine for reels of 2000 to 10000 contacts | 970 MC      |
| crimp dies: AWG 20 to 24                                      | 968 MC      |
| crimp dies: AWG 24 to 28                                      | 972 MC      |

For high density crimp contacts: 17HR series

- |   |        |
|---|--------|
| • Automatic crimp machine for reels of 2000 to 10000 contacts | 970 MC |
| crimp dies: AWG 24 to 28                                      | 973 MC |

# SD308



For Sea, Air or Land, these connectors are SEALED! Amphenol's SD308 Sealed D-Subminiature Connectors are available in the full range of standard density and hi-density insert arrangements, pin and socket contacts. These connectors are supplied with fixed screw machine contacts and are available in Solder Cup, Straight PCB, and Right Angle PCB terminations.

- Ruggedized Computers and Peripheral Equipment
- Industrial Controllers
- 21st Century Soldier
- Ideal For Retrofit Applications Or Late Design-In

## Sealed D-Sub Connectors

### SPECIFICATIONS:

#### PRODUCT FEATURES

- One piece machined Aluminum Shell
- Gold Plated Screw Machine Contacts
- Hi Grade Thermoplastic Inserts -67°F to +257°F (-55°C to +125°C)
- Integrated Blind Panel Mounts
- Supplied with Conductive Panel Seal Gasket

#### MATERIALS AND PLATINGS

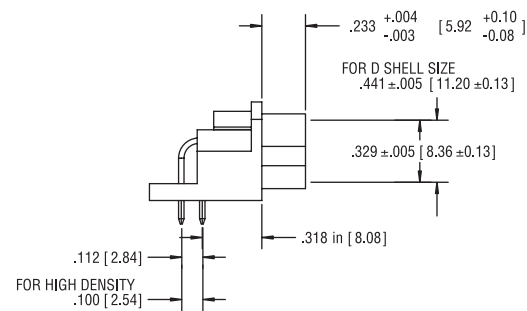
**Shells** Machined aluminum alloy, tin plated  
**Inserts** High temperature resistant polyethersulfone per mil-p-46185  
**Contacts** Copper alloy, 20µ" (0.51µm) gold plated over nickel.  
**Seal** Silicone elastomer with nickel plated graphite flake

#### ELECTRICAL DATA

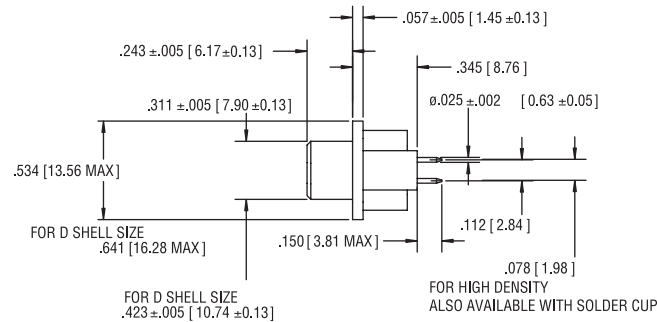
**Current Rating** 5A  
**Insulation Resistance** 5 GIGOHM @ 500 VDC  
**Working Voltage** 120 VAC  
**D.W.V.** 1,000 VAC pin to pin & pin to shell

#### CLIMATIC DATA

**Operating Temperature** -67°F to +257°F (-55°C to +125°C)



PLUG - SIDE VIEW



RECEPTACLE - SIDE VIEW

### SD308 - E09 - S - A - 1 - 000

**Series Designation**

**Shell Size & Number Of Contacts**

STD Density E09, A15, B25, C37, D50  
 HIGH Density E15, A26, B44, C62, D78, 6106

**Contact Type**

S=Socket Contact P= Pin Contact

**000** = Standard part  
 other deviations as required

**Mounting Type**

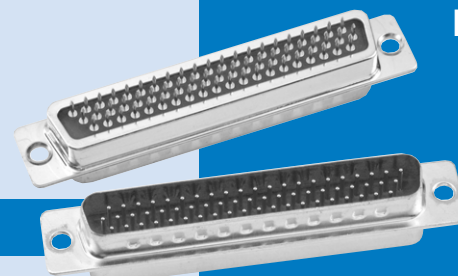
1 = 4-40 Blind Nut  
 2 = 4-40 Blind Nut with R/A Mounting Bracket

**Termination Style**

A = Right Angle pcb B = Vertical pcb  
 C = Solder Cup



**Filtered D-Sub Connectors, Ruggedized**



**FD308**

**SPECIFICATIONS:**

**DESCRIPTION**

- Hi reliability filtering in multi row arrangements
- Stamped and Formed shells
- Screw Machine Contacts and Hi Reliability inserts
- Available in all Hi-Density insert patterns

**MATERIALS AND PLATINGS**

**Shells** Stamped steel shell, tin plated  
**Inserts** High temperature resistant polyethersulfone per MIL-P-46185  
**Contacts** Machined copper alloy, 20µ" (0.51µm) gold plated over nickel  
**Capacitor** Barium titanate ceramic array

**ELECTRICAL DATA**

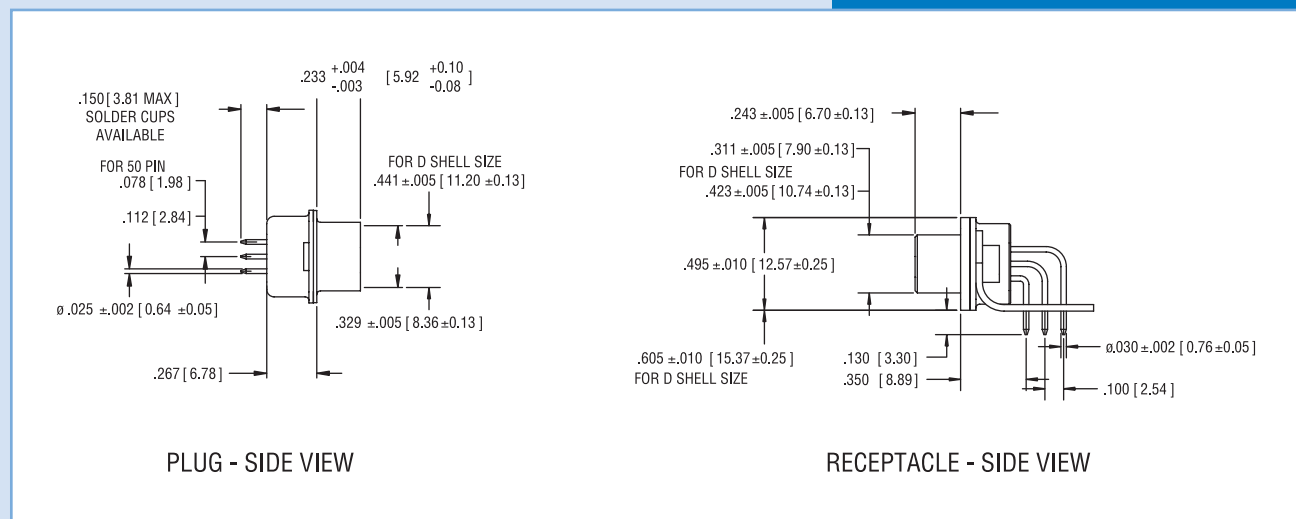
**Current Rating** 5 A  
**Insulation Resistance** 5 GIGOHM @ 500 VDC  
**Working Voltage** 200 VDC  
**D.W.V.** 500 VDC pin to pin & pin to shell  
**Capacitance** +/- 20% ( see P/N description )

**CLIMATIC DATA**

**Operating Temperature** -67°F to +257°F (-55°C to +125°C)

For 50 position and all high density versions. Amphenol's FD308 Filtered D-Subminiature connectors are available in the full range of hi-density insert arrangements, pin and socket contacts, plus the 50 position standard density. These connectors are supplied with fixed screw machine contacts and are available in Straight and Right Angle PCB terminations and Solder Cup.

- Computers and Peripheral Equipment
- Avionics Systems Ideal For Retrofit Applications Or Late Design-In



**FD308 - B44 - S - A - 1 - A2 - 000**

**Series Designation** FD308

**Size & Number Of Contacts** B44  
 STD Density E09, A15, B25, C37, D50  
 High Density E15, A26, B44, C62, D78, 6104

**Contact Type** S = Socket Contact P = Pin Contact

**Termination Style** A = Right Angle pcb  
 B = Vertical pcb  
 C = Solder Cup

**000** = Standard part  
 other deviations as required

**Capacitance Code**  
 A2 = 200 PF    02 = 2000 PF  
 A4 = 400 PF    05 = 5000 PF  
 01 = 1000 PF

**Mounting Type**  
 1 = 4-40 Clinch Nut  
 2 = Ø.120 (3.05) Hole  
 3 = R/A Mounting Bracket  
 4 = 4-40 Clinch Nut with R/A Mounting Bracket

**ORDERING INFORMATION - IDC**

**FCC17 - E09 - S - W - 4 - 8 - 0 - G**

<p><b>Series Designation</b></p> <p><b>Size and Configuration</b> 15 &amp; 25 Size Consult Factory.</p> <p><b>Connector Type</b> S: Socket P: Pin Consult Factory.</p> <p><b>Termination Type</b> W: IDC *</p> <p><b>Mounting</b> 2: .120 (3.05) Diameter Through Hole 4: 4-40 Threaded Inserts 6: M3 Threaded Inserts</p>	<p><b>Special</b> G: 50 Micro Inches Gold</p> <p><b>Modifier</b> 0: Standard Product x: Special or Custom Versions</p> <p><b>Capacitance Value</b> D: 50 pF    5: 1,000 pF 0: 180 pF    E: 2,200 pF F: 330 pF    9: 5,600 pF 1: 470 pF    8: 47,000 pF 4: 820 pF</p> <p>Other Capacitance values available. Consult Factory.</p>
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**ORDERING INFORMATION - FILTERED PRESS FIT**

**FCC17 - B25 - S - R - 4 - 8 - 0 - G**

<p><b>Series Designation</b></p> <p><b>Size and Configuration *</b></p> <p><b>Connector Type</b> S: Socket P: Pin Consult Factory.</p> <p><b>Termination Type</b> R: Press Fit</p> <p><b>Mounting</b> 2: .120 (3.05) Diameter Through Hole 3: 4-40 Self Locking Threaded Insert 4: 4-40 Threaded Inserts 5: 4-40 Threaded Standoff 6: M3 Threaded Inserts E: Code 4 with 4-40 Hex Jack Socket</p>	<p><b>Special</b> G: 50 Micro Inches Gold</p> <p><b>Modifier</b> 0: Standard Product x: Special or Custom Versions</p> <p><b>Capacitance Value</b> D: 50 pF    5: 1,000 pF 0: 180 pF    E: 2,200 pF F: 330 pF    9: 5,600 pF 1: 470 pF    8: 47,000 pF 4: 820 pF</p> <p>Other Capacitance values available. Consult Factory.</p>
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**ORDERING INFORMATION - STACKED D-SUB**

**FCC17 - 2 - BP - BS - 4 - 5 - 5 - X**

<p><b>Series Designation</b></p> <p><b>Vertical Mounting Dimension Between Connectors</b> 1 = .625 (15.88) 2 = .750 (19.05)</p> <p><b>Upper Connector Configuration (Size and Style)</b> EP: 9 pin    BP: 25 pin ES: 9 socket    BS: 25 socket AP: 15 pin    CP: 37 pin AS: 15 socket    CS: 37 socket</p> <p><b>Lower Connector Configuration</b> (Size and Style) same as Upper Connector Configuration</p> <p><b>Mounting</b> 2: .120 (3.05) Diameter Through Hole on Flanges 4: 4-40 Threaded Inserts on Flanges E: 4-40 Hex Jack Sockets (supplied loose)</p>	<p><b>Modifier</b> 0: Standard Product x: Special or Custom Versions</p> <p><b>Lower Connector Filter Capacitance</b> same as Upper Connector Filter Capacitance Designation</p> <p><b>Upper Connector Filter Capacitance</b> D: 50 pF    5: 1,000 pF 0: 180 pF    E: 2,200 pF F: 330 pF    7: 1,200 pf 1: 470 pF    9: 5,600 pF 4: 820 pF    8: 47,000 pF</p> <p>* For Additional Mounting Options and Filter Capacitance - Consult Factory</p>
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### ORDERING INFORMATION - D-SUB

FCC17 - B25 - S - C - 4 - 4 - 0 - G

**Series Designation** \_\_\_\_\_

**Size** \_\_\_\_\_  
E09, A15, B25, C37

**Connector type** \_\_\_\_\_  
A - Adapter P - Pin S - Socket

**Termination Type** \_\_\_\_\_  
A - Right Angle PC Tail, .318 (8.08) Footprint E - Vertical Mount PC Tail  
B - Right Angle PC Tail, .405 (10.29) Footprint M - Solder Cup  
C - Right Angle PC Tail, .590 (14.99) Footprint N - Vertical Mount PC Tail - Long Body  
D - Pin/Socket Adapter

**Mounting options\***

A: 4-40 Threaded PC Tail Standoffs with Boardlock, Vertical Mount Only	3: Self-Locking 4-40 Threaded Inserts
E: 4-40 Hex Jack Sockets (supplied loose)	4: 4-40 Threaded Inserts (Standard)
F: 4-40 Round Fixed Jack Sockets	5: 4-40 Threaded Stand-Offs, Vertical Mount
2: .120 (3.05) diameter Through hole	6: M3 Threaded inserts

**Specials**  
No Digit: Standard 15µ\* (0.38µm) gold  
G: 50µ\* (1.27µm) gold  
K: 30µ\* (0.76µm) gold  
L: Standard Connector with added ferrite block

**Modifier**  
0 = Standard Product (Boardlocks on Right Angle D-Subs)  
B = Metal Mounting Brackets, for Right Angle D-Subs  
D = .315 (8.00) to Boardlock for .590 (14.99) footprint  
E = Plastic Bracket - No Boardlock  
F = No Boardlock, No plastic or metal Bracket - Alignment Strip Only  
X = Specials or Custom Versions

**Filter Capacitance (pF)\***

D: 50 pF	5: 1,000 pF
B: 100 pF	7: 1,200 pF
0: 180 pF	E: 2,200 pF
F: 330 pF	9: 5,600 pF
1: 470 pF	8: 47,000 pF
4: 820 pF	

\* For Additional Mounting Options and Filter Capacitance - Consult Factory

### ORDERING INFORMATION - COMBO D-SUB

FCC17 - A - 3W3 - P - M - 4 - 5 - 0 - G

**Series Designation** \_\_\_\_\_

**Shell Size** \_\_\_\_\_  
A, B, C, D, E

**Arrangement** \_\_\_\_\_

**Connector type** \_\_\_\_\_  
A = Adapter, P = Pin, S = Socket

**Termination type** \_\_\_\_\_  
D = Pin/Socket Adapter  
E = Power PC Tail - 40A - .126 (3.20) Dia., .175 (4.44) Lg.  
K = Power Solder Cup - 10A - Wire Size 16  
L = Power Solder Cup - 20A - Wire Size 12  
M = Power Solder Cup - 40A - Wire Size 8  
R = Power Press Fit - 20A - .145 (3.68) Lg. - .126 (3.20) Dia. Hole

**Mounting Options**

2 = .120 (3.05) dia. mounting holes	5 = 4-40 Standoffs - PC tail only
3 = 4-40 Threads Self locking	6 = M3 Threads
4 = 4-40 Threads	E = 4-40 Hex Jack Sockets (supplied loose)

**Plating Option**  
Blank = Standard 30µ\* (0.76µm) gold  
G = 50µ\* (1.27µm) gold

**Modifier**  
0 = Standard  
X = Specials or Custom versions (Consult Factory)

**Filter Capacitance (pF)**

D: 50 pF	5: 1000 pF
B: 100 pF	7: 1200 pF
o: 180 pF	E: 2200 pF
f: 330 pF	9: 5600 pF
l: 470 pF	8: 47000 pF
4: 820 pF	

\* For Additional Mounting Options and Filter Capacitance - Consult Factory

## ACCESSORIES

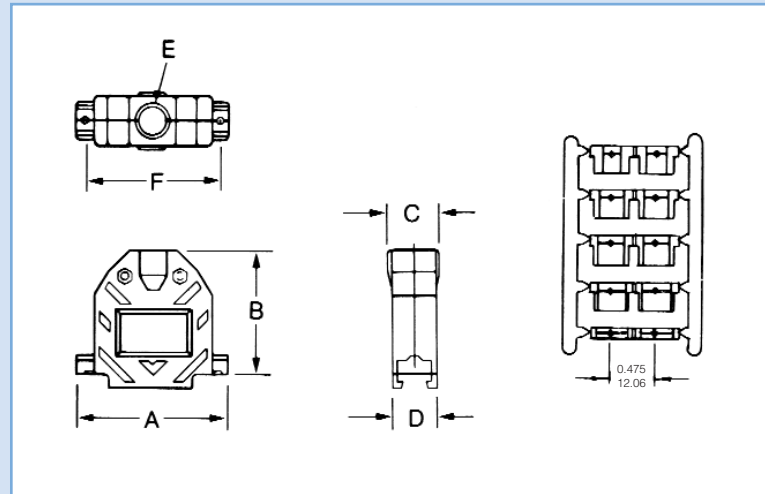


Amphenol's black plastic backshell accommodates most standard and high-density D-Subminiature connectors and is appropriate for most cable assemblies. This version is economical and highly durable. The split-grommet insert provides cable strain relief while making it easy to assemble.

## Plastic Backshell

### SPECIFICATIONS:

**Housing Material:** Styrene (UL 94 VO)  
**Grommet Material:** Polypropylene  
**Mounting Hardware:** Steel, clear zinc finish \*RoHS Compliant



### DIMENSIONS AND ORDERING INFORMATION

Shell Size	Standard # of Contacts	Hi-Density # of Contacts	Part #	Dimensions						Cable Diameter Range	
				A	B	C	D	E	F	Minimum	Maximum
E	9	15	17E-1724-1	1.217 (30.91)	1.547 (39.29)	0.640 (16.26)	0.640 (16.26)	0.400 (10.16)	0.984 (24.99)	0.210 (5.33)	0.350 (8.89)
A	15	26	17E-1725-1	1.545 (39.24)	1.505 (38.23)	0.640 (16.26)	0.640 (16.26)	0.400 (10.16)	1.312 (33.32)	0.210 (5.33)	0.350 (8.89)
B	25	44	17E-1726-1	2.090 (53.08)	1.655 (42.04)	0.710 (18.03)	0.640 (16.26)	0.522 (13.26)	1.857 (47.17)	0.230 (5.84)	0.450 (11.43)
C	37	62	17E-1727-1	2.734 (69.44)	1.830 (46.48)	0.906 (23.01)	0.640 (16.26)	0.726 (18.44)	2.500 (63.50)	0.350 (8.89)	0.640 (16.26)
D	50	78	17E-1728-1	2.645 (67.18)	1.855 (47.12)	0.940 (23.88)	0.770 (19.56)	0.726 (18.44)	2.406 (61.11)	0.350 (8.89)	0.640 (16.26)

AMPHENOL D-SUBMINIATURE

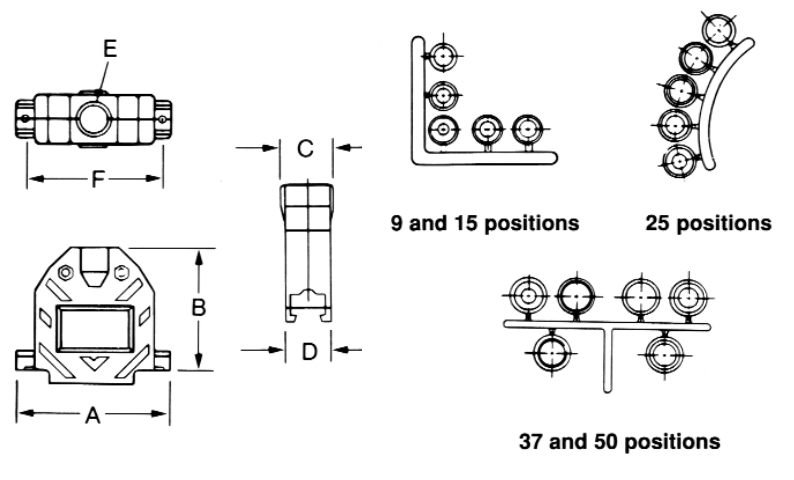
**Plated Plastic Backshell**

**SPECIFICATIONS:**

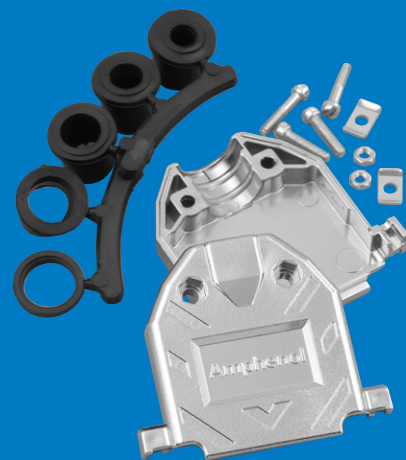
**Housing Material:** ABS Polymer  
**Plating:** Nickel over copper  
**Grommet Material:** PVC (UL 94 VO)  
**Mounting Hardware:** Steel, clear zinc finish \*RoHS Compliant

**ASSEMBLY INSTRUCTIONS**

1. Select the tightest insert that will fit over the cable and thread the cable through it, placing the end with the smaller O.D. (the end without the washer) towards the connector.
2. Cut the jacket, fold the shielding back over the outside of the insert and cut it just short of the washer.
3. Install jackscrews and connector.
4. Place the washer in the outermost depression in the exit area of the hood and screw the cover closed.



**ACCESSORIES**



Amphenol's plated plastic backshell accommodates most standard and high-density D-Subminiature connectors and is appropriate for cable assemblies requiring compliance to FCC 20780. This version is highly durable and provides EMI/RFI protection. The rubber grommet compression insert forces the cable's shielding against the inside of the cable exit area, assuring shielding.

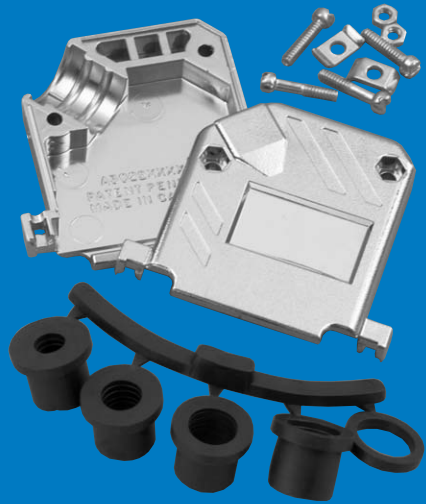
**DIMENSIONS AND ORDERING INFORMATION**

Shell Size	Standard # of Contacts	Hi-Density # of Contacts	Part #	Dimensions						Cable Diameter Range	
				A	B	C	D	E	F	Minimum	Maximum
E	9	15	17E-1724-2	1.217 (30.91)	1.547 (39.29)	0.640 (16.26)	0.640 (16.26)	0.400 (10.16)	0.984 (24.99)	0.210 (5.33)	0.320 (8.13)
A	15	26	17E-1725-2	1.545 (39.24)	1.505 (38.23)	0.640 (16.26)	0.640 (16.26)	0.400 (10.16)	1.312 (33.32)	0.210 (5.33)	0.320 (8.13)
B	25	44	17E-1726-2	2.000 (50.8)	1.655 (42.04)	0.710 (18.03)	0.640 (16.26)	0.522 (13.26)	1.857 (47.17)	0.230 (5.84)	0.450 (11.43)
C	37	62	17E-1727-2	2.730 (69.34)	1.830 (46.48)	0.906 (23.01)	0.640 (16.26)	0.726 (18.44)	2.500 (63.50)	0.350 (8.89)	0.650 (16.51)
D	50	78	17E-1728-2	2.645 (67.18)	1.855 (47.12)	0.940 (23.88)	0.440 (11.18)	0.726 (18.44)	2.406 (61.11)	0.350 (8.89)	0.650 (16.51)

INCHES (MM)



## ACCESSORIES



Amphenol's plated plastic backshell accommodates most standard and high-density D-Subminiature connectors and is appropriate for cable assemblies requiring compliance to FCC 20780. This version is highly durable and provides EMI/RFI protection. The rubber grommet compression insert forces the cable's shielding against the inside of the cable exit area, assuring shielding. The 45° cable exit helps save space behind equipment.

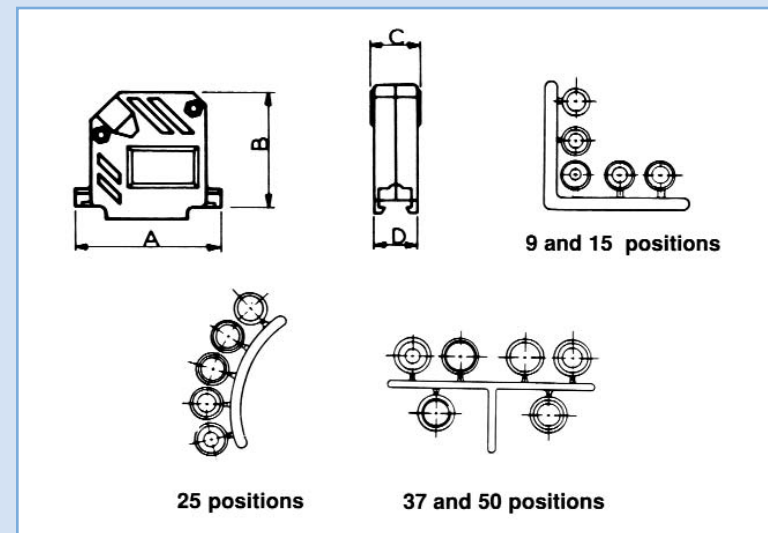
## 45° Plated Plastic Backshell

### SPECIFICATIONS:

<b>Housing Material:</b>	ABS Polymer
<b>Plating:</b>	Nickel over copper
<b>Grommet Material:</b>	PVC (UL 94 VO)
<b>Mounting Hardware:</b>	Steel, clear zinc finish *RoHS Compliant

### ASSEMBLY INSTRUCTIONS

1. Select the tightest insert that will fit over the cable and thread the cable through it, placing the end with the smaller O.D. (the end without the washer) towards the connector.
2. Cut the jacket, fold the shielding back over the outside of the insert and cut it just short of the washer.
3. Install jackscrews and connector.
4. Place the washer in the outermost depression in the exit area of the hood and screw the cover closed.



### DIMENSIONS AND ORDERING INFORMATION

Shell Size	Standard # of Contacts	Hi-Density # of Contacts	Part #	Dimensions						Cable Diameter Range	
				A	B	C	D	E	F	Minimum	Maximum
E	9	15	17E-1824-2	1.217 (30.91)	1.430 (36.32)	0.640 (16.26)	0.640 (16.26)	0.400 (10.16)	0.984 (24.99)	0.210 (5.33)	0.320 (8.13)
A	15	26	17E-1825-2	1.545 (39.24)	1.568 (39.83)	0.640 (16.26)	0.640 (16.26)	0.400 (10.16)	1.312 (33.32)	0.210 (5.33)	0.320 (8.13)
B	25	44	17E-1826-2	2.090 (53.09)	1.735 (44.07)	0.710 (18.03)	0.640 (16.26)	0.522 (13.26)	1.857 (47.17)	0.230 (5.84)	0.450 (11.43)
C	37	62	17E-1827-2	2.734 (69.44)	1.976 (50.19)	0.906 (23.01)	0.640 (16.26)	0.726 (18.44)	2.500 (63.5)	0.350 (8.89)	0.650 (16.51)

## Two-Piece Die Cast Shielded Backshells

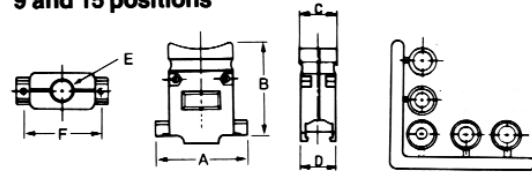
### SPECIFICATIONS:

Housing Material: Die cast zinc  
 Grommet Material: PVC (UL 94 VO)  
 Mounting Hardware: Steel, clear zinc finish \*RoHS Compliant

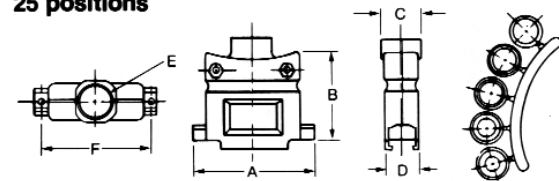
### ASSEMBLY INSTRUCTIONS

1. Select the tightest insert that will fit over the cable and thread the cable through it, placing the end with the smaller O.D. (the end without the washer) towards the connector.
2. Cut the jacket, fold the shielding back over the outside of the insert and cut it just short of the washer.
3. Install jackscrews and connector.
4. Place the washer in the outermost depression in the exit area of the hood and screw the cover closed.

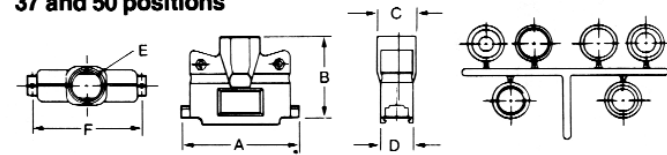
#### 9 and 15 positions



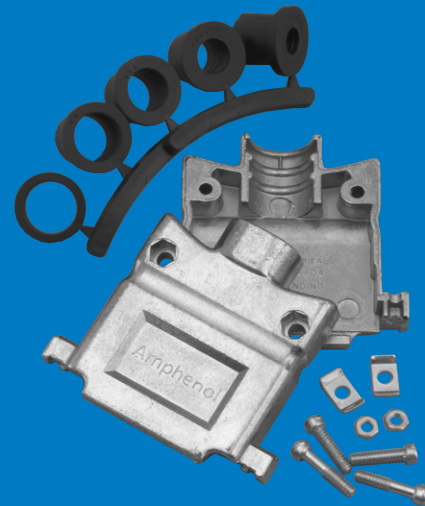
#### 25 positions



#### 37 and 50 positions



## ACCESSORIES



Amphenol's metal backshell accommodates most standard and high-density D-Subminiature connectors and is appropriate for cable assemblies requiring compliance to FCC 20780. This version is highly durable and provides EMI/RFI protection. The rubber grommet compression insert forces the cable's shielding against the inside of the cable exit area, assuring shielding.

### DIMENSIONS AND ORDERING INFORMATION

Shell Size	Standard # of Contacts	Hi-Density # of Contacts	Part #	Dimensions						Cable Diameter Range	
				A	B	C	D	E	F	Minimum	Maximum
E	9	15	17E-1657-09	1.217 (30.91)	1.430 (36.32)	0.640 (16.26)	0.640 (16.26)	0.400 (10.16)	0.984 (24.99)	0.210 (5.33)	0.320 (8.13)
A	15	26	17E-1657-15	1.545 (39.24)	1.568 (39.83)	0.640 (16.26)	0.640 (16.26)	0.400 (10.16)	1.312 (33.32)	0.210 (5.33)	0.320 (8.13)
B	25	44	17E-1657-25	2.090 (53.09)	1.735 (44.07)	0.710 (18.03)	0.640 (16.26)	0.522 (13.26)	1.857 (47.17)	0.230 (5.84)	0.450 (11.43)
C	37	62	17E-1657-37	2.734 (69.44)	1.976 (50.19)	0.906 (23.01)	0.640 (16.26)	0.726 (18.44)	2.500 (63.5)	0.350 (8.89)	0.640 (16.26)

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