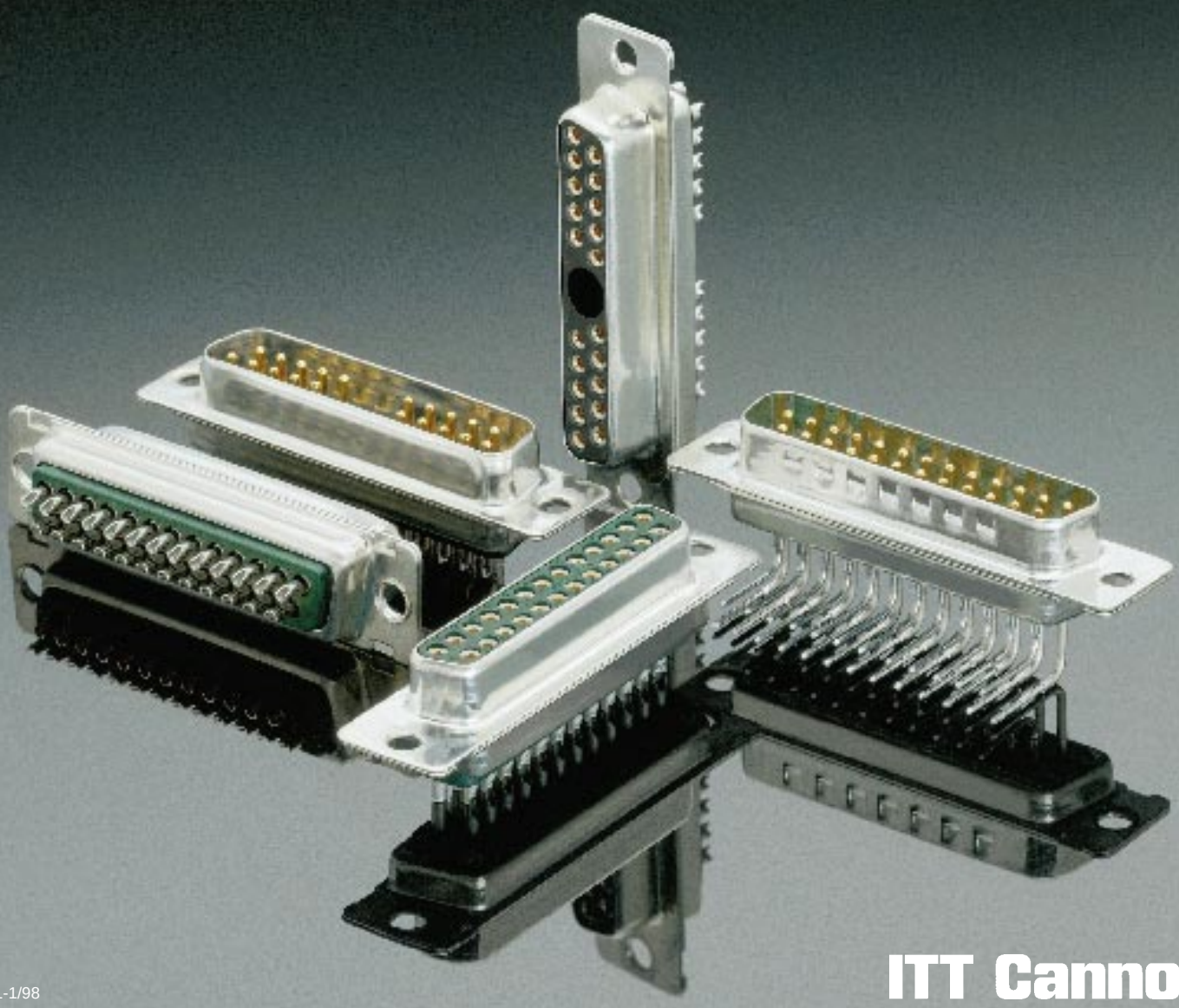
D SUBMINIATURE NON-MAGNETIC CONNECTORS



ITT Cannon

ITT Cannon Non Magnetic D Subminiature connectors are used in many industrial applications, including medical equipment, when non magnetic characteristics are required.

The Non Magnetic D Subminiature connectors are available with different configurations:

– fixed contacts, with solder cup, straight and right angle PC, Wire wrap post terminations, type D*M with standard and combination arrangements.

– removable crimp-style contacts, type D*MA with standard arrangements.

The Non Magnetic D Subminiature connectors are identified by the end-code FR163.

Product Features

- Suitable for a variety of cable and printed circuit board options
- 7.5 A current rating
- Machined contacts
- Star Clip female contacts
- Optional clinch nuts with # 4-40 thread
- Optional screwlock with # 4-40 thread
- Optional metal bracket with # 4-40 or M3 threaded insert (90° PC termination)
- Float mount options
- Solder cup version accomodate size 20 AWG maximum
- Crimp style contacts (D*MA) accomodate size 26–18 wire

Materials and Finishes

Male Contact Material Male Contact Finish	Copper Alloy 1.27 µm (50 minches) Gold over Copper
Female Contact Material Female Contact Finish	Copper Alloy for Body and Star Clip 5.0 µm (200 µinches) Tin-Lead over Copper for Body, contacts type D*M 1.27 µm (50 µinches) Gold over Copper for Body, contacts type D*MA 1.27 µm (50 µinches) Gold over Copper for Star Clip
Insulator	Thermoplastic UL 94 V-0, Colour green, for D*M standard arrangements Thermoplastic UL 94 V-0, Colour black, for D*M combination arrangements Diallylphtalate, Colour white, for D*MA standard arrangements
Shell Material Shell Finish	Copper alloy 5.6 µm (220 µinches) Tin over Copper
Screwlock Hardware Material Screwlock Hardware Finish	Copper Alloy 5.6 µm (220 µinches) Tin over Copper
Clinch Nut / Bracket Hardware Material Clinch Nut / Bracket Hardware Finish	Copper Alloy 5.6 µm (220 µinches) Tin over Copper
Float Mount Hardware Material Float Mount Hardware Finish	Copper Alloy 5.6 µm (220 µinches) Tin over Copper

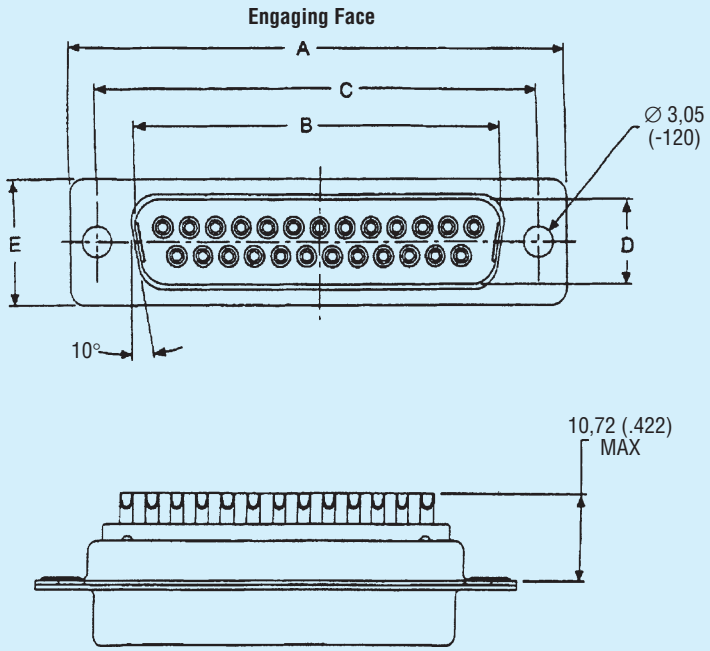
Performance Specifications

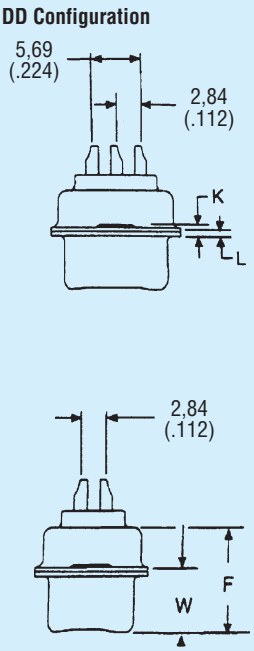
Current Rating	5 A (# 20 contacts)		
Temperature Rating	–55 / 125°C		
Contact Resistance	55 millivolts @ 7.5 A test current 65 millivolts max. @ 7.5 A test current, after salt spray 10 milliohm max. at low level current		
Dielectric Withstanding Voltage	1000 VAC at sea level 325 VAC at 21 336 m (70,000 Feet)		
Residual Magnetism	200 Gamma max. (level NMB)		
Relative Magnetic Permeability	1.0025 µm		
Mating / Unmating Force	Shell size	Max. Mating force	Max. Unmating force
	E	30 N (6.7 lbs)	20 N (4.5 lbs)
	A	50 N (11.2 lbs)	34 N (7.6 lbs)
	B	83 N (18.7 lbs)	55 N (12.3 lbs)
	C	123 N (27.7 lbs)	83 N (18.7 lbs)
	D	166 N (37.3lbs)	120 N (27.0 lbs)
Insulation Resistance	5000 Megohm min. 1 Megohm min. after humidity		
Durability	500 Mating / Unmating cycles		

Terminations

All existing terminations for D*M, standard and combination arrangements, are available.
In the Part Numbers (see pages 6 – 7), replace the asterik * by codes as follows:

Solder cup	– no code
Straight PC solder pin	– U. S. footprint: B; E; H; M; N; X: Z – European footprint: OL2; OL3; OL4
Right angle PC solder pin	– U. S. footprint: A; C; D; F; G; J; K; L; P; R; S; T; W – European footprint: 1A0N; 1B0N; 1A7N; 1B7N; 1A9N; 1B9N
Wire Wrap post	F179; F179A



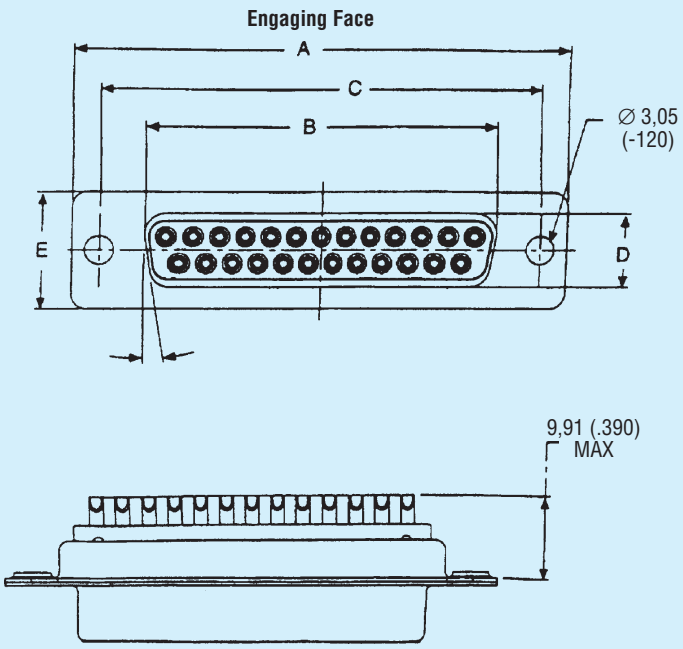


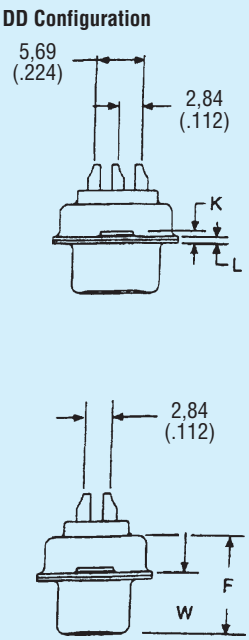
Plug

Dimensions mm (inches)

Shell	A	B	C	D	E	F	W	K	L
Size	±0,38 (.015)	±0,13 (.005)	±0,13 (.005)	±0,13 (.005)	±0,38 (.015)	±0.25 (.010)			±0,25 (.010)
DE	30,81 (1.213)	16,92 (.666)	24,99 (.984)	8,36 (.329)	12,55 (.494)	10,72 (.422)	6,69 (.264)*	1,21 (.048)*	0,76 (.030)
DA	39,14 (1.541)	25,25 (.994)	33,32 (1.312)	8,36 (.329)	12,55 (.494)	10,72 (.422)	6,69 (.264)*	1,21 (.048)*	0,76 (.030)
DB	53,04 (2.088)	38,96 (1.534)	47.04 (1.852)	8,36 (.329)	12,55 (.494)	10,82 (.426)	6,84 (.269)**	1,52 (.060)**	0,99 (.039)
DC	69,32 (2.729)	55,42 (2.182)	63,50 (2.500)	8,36 (.329)	12,55(.494)	10.82 (.426)	6,84 (.269)**	1,52 (.060)**	0,99 (.039)
DD	66,93 (2.635)	52,81 (2.079)	61,11 (2.406)	11,07 (.436)	15,37 (.605)	10,82 (.426)	6,84 (.269)**	1,52 (.060)**	0,99 (.039)

* ±0.37 (.015) * ±0,32 (.013)
** ±0,41 (.016) ** ±0,25 (.010)





Receptacle

Dimensions mm (inches)

Shell	A	B	C	D	E	F	W	K	L
Size	±0,38 (.015)	±0,13 (.005)	±0,13 (.005)	±0,13 (.005)	±0,38 (.015)	±0,25 (.010)	±0.37 (.015)	±0,32 (.013)	±0,25 (.010)
DE	30,81 (1.213)	16,33 (.643)	24,99 (.984)	7,90 (.311)	12,55 (.494)	10,90 (.429)	6,94 (.273)	1,21 (.048)	0,76 (.030)
DA	39,14 (1.541)	24.66 (.971)	33,32 (1.312)	7,90 (.311)	12,55 (.494)	10,90 (.429)	6,94 (.273)	1,21 (.048)	0,76 (.030)
DB	53,04 (2.088)	38,38 (1.511)	47.04 (1.852)	7,90 (.311)	12,55 (.494)	10,90 (.429)	6,94 (.273)	1,21 (.048)	0,76 (.030)
DC	69,32 (2.729)	54.84 (2.159)	63,50 (2.500)	7,90 (.311)	12,55 (.494)	10,90 (.429)	6,94 (.273)	1,21 (.048)	0,76 (.030)
DD	66,93 (2.635)	52,42 (2.064)	61,11 (2.406)	10,74 (.423)	15,37 (.605)	10,90 (.429)	6,94 (.273)	1,21 (.048)	0,76 (.030)

Part Numbers / Plug

Type	Shell Size	Layout	Through-hole 3,05 (.120)	Dual Float Mount	Clinch Nut # 4-40 UNC
D*M Standard Arrangements	DE **	9	DEM9PNMB*FR163	DEMY9PNMB*FR163	DEME9PNMB*FR163
	DA **	15	DAM15PNMB*FR163	DAMY15PNMB*FR163	DAME15PNMB*FR163
	DB **	25	DBM25PNMB*FR163	DBMY25PNMB*FR163	DBME25PNMB*FRT163
	DC **	37	DCM37PNMB*FR163	DCMY37PNMB*FR163	DCME37PNMB*FR163
	DD **	50	DDM50PNMB*FR163	DDMY50PNMB*FR163	DDME50PNMB*FR163
D*M Combination Arrangements	DE	5W1	DEM5W1PNMB*FR163	DEMY5W1PNMB*FR163	DEME5W1PNMB*FR163
	DA **	3W3	DAM3W3PNMB*FR163	DAMY3W3PNMB*FR163	DAME3W3PNMB*FR163
	DA	7W2	DAM7W2PNMB*FR163	DAMY7W2PNMB*FR163	DAME7W2PNMB*FR163
	DA	11W1	DAM11W1PNMB*FR163	DAMY11W1PNMB*FR163	DAME11W1PNMB*FR163
	DB **	5W5	DBM5W5PNMB*FR163	DBMY5W5PNMB*FR163	DBME5W5PNMB*FR163
	DB	9W4	DBM9W4PNMB*FR163	DBMY9W4PNMB*FR163	DBME9W4PNMB*FR163
	DB	13W3	DBM13W3PNMB*FR163	DBMY13W3PNMB*FR163	DBME13W3PNMB*FR163
	DB	17W2	DBM17W2PNMB*FR163	DBMY17W2PNMB*FR163	DBME17W2PNMB*FR163
	DB **	21W1	DBM21W1PNMB*FR163	DBMY21W1PNMB*FR163	DBME21W1PNMB*FR163
	DC	8W8	DCM8W8PNMB*FR163	DCMY8W8PNMB*FR163	DCME8W8PNMB*FR163
	DC	13W6	DCM13W6PNMB*FR163	DCMY13W6PNMB*FR163	DCME13W6PNMB*FR163
	DC **	17W5	DCM17W5PNMB*FR163	DCMY17W5PNMB*FR163	DCME17W5PNMB*FR163
	DC	21WA4	DCM21WA4PNMB*FR163	DCMY21WA4PNMB*FR163	DCME21WA4PNMB*FR163
	DC **	25W3	DCM25W3PNMB*FR163	DCMY25W3PNMB*FR163	DCME25W3PNMB*FR163
	DC	27W2	DCM27W2PNMB*FR163	DCMY27W2PNMB*FR163	DCME27W2PNMB*FR163
	DD	24W7	DDM24W7PNMB*FR163	DDMY24W7PNMB*FR163	DDME24W7PNMB*FR163
	DD **	36W4	DDM36W4PNMB*FR163	DDMY36W4PNMB*FR163	DDME36W4PNMB*FR163
	DD	43W2	DDM43W2PNMB*FR163	DDMY43W2PNMB*FR163	DDME43W2PNMB*FR163
	DD	47W1	DDM47W1PNMB*FR163	DDMY47W1PNMB*FR163	DDME47W1PNMB*FR163
D*MA Standard Arrangements	DE **	9	DEMA9PNMBFR163	DEMAY9PNMBFR163	DEMAE9PNMBFR163
	DA **	15	DAMA15PNMBFR163	DAMAY15PNMBFR163	DAMAE15PNMBFR163
	DB **	25	DBMA25PNMBFR163	DBMAY25PNMBFR163	DBMAE25PNMBFR163
	DC **	37	DCMA37PNMBFR163	DCMAY37PNMBFR163	DCMAE37PNMBFR163
	DD **	50	DDMA50PNMBFR163	DDMAY50PNMBFR163	DDMAE50PNMBFR163

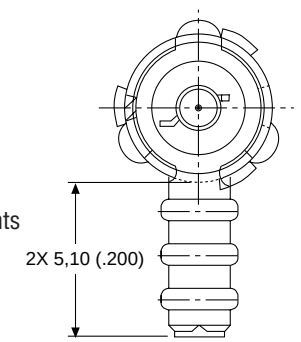
* to be replaced by termination code – see page 3
** selected arrangements

Part Numbers / Receptacle

Type	Shell Size	Layout	Through-hole 3,05 (.120)	Dual Float Mount	Clinch Nut # 4-40 UNC
D*M Standard Arrangements	DE **	9	DEM9SNMB*FR163	DEMY9SNMB*FR163	DEME9SNMB*FR163
	DA **	15	DAM15SNMB*FR163	DAMY15SNMB*FR163	DAME15SNMB*FR163
	DB **	25	DBM25SNMB*FR163	DBMY25SNMB*FR163	DBME25SNMB*FRT163
	DC **	37	DCM37SNMB*FR163	DCMY37SNMB*FR163	DCME37SNMB*FR163
	DD **	50	DDM50SNMB*FR163	DDMY50SNMB*FR163	DDME50SNMB*FR163
D*M Combination Arrangements	DE	5W1	DEM5W1SNMB*FR163	DEMY5W1SNMB*FR163	DEME5W1SNMB*FR163
	DA **	3W3	DAM3W3SNMB*FR163	DAMY3W3SNMB*FR163	DAME3W3SNMB*FR163
	DA	7W2	DAM7W2SNMB*FR163	DAMY7W2SNMB*FR163	DAME7W2SNMB*FR163
	DA	11W1	DAM11W1SNMB*FR163	DAMY11W1SNMB*FR163	DAME11W1SNMB*FR163
	DB **	5W5	DBM5W5SNMB*FR163	DBMY5W5SNMB*FR163	DBME5W5SNMB*FR163
	DB	9W4	DBM9W4SNMB*FR163	DBMY9W4PNMB*FR163	DBME9W4SNMB*FR163
	DB	13W3	DBM13W3SNMB*FR163	DBMY13W3SNMB*FR163	DBME13W3SNMB*FR163
	DB	17W2	DBM17W2SNMB*FR163	DBMY17W2SNMB*FR163	DBME17W2SNMB*FR163
	DB **	21W1	DBM21W1SNMB*FR163	DBMY21W1SNMB*FR163	DBME21W1SNMB*FR163
	DC	8W8	DCM8W8SNMB*FR163	DCMY8W8SNMB*FR163	DCME8W8SNMB*FR163
	DC	13W6	DCM13W6SNMB*FR163	DCMY13W6SNMB*FR163	DCME13W6SNMB*FR163
	DC **	17W5	DCM17W5SNMB*FR163	DCMY17W5SNMB*FR163	DCME17W5SNMB*FR163
	DC	21WA4	DCM21WA4SNMB*FR163	DCMY21WA4SNMB*FR163	DCME21WA4SNMB*FR163
	DC **	25W3	DCM25W3SNMB*FR163	DCMY25W3SNMB*FR163	DCME25W3SNMB*FR163
	DC	27W2	DCM27W2SNMB*FR163	DCMY27W2SNMB*FR163	DCME27W2SNMB*FR163
	DD	24W7	DDM24W7SNMB*FR163	DDMY24W7SNMB*FR163	DDME24W7SNMB*FR163
	DD **	36W4	DDM36W4SNMB*FR163	DDMY36W4SNMB*FR163	DDME36W4SNMB*FR163
	DD	43W2	DDM43W2SNMB*FR163	DDMY43W2SNMB*FR163	DDME43W2SNMB*FR163
	DD	47W1	DDM47W1SNMB*FR163	DDMY47W1SNMB*FR163	DDME47W1SNMB*FR163
D*MA Standard Arrangements	DE **	9	DEMA9SNMBFR163	DEMAY9SNMBFR163	DEMAE9SNMBFR163
	DA **	15	DAMA15SNMBFR163	DAMAY15SNMBFR163	DAMAE15SNMBFR163
	DB **	25	DBMA25SNMBFR163	DBMAY25SNMBFR163	DBMAE25SNMBFR163
	DC **	37	DCMA37SNMBFR163	DCMAY37SNMBFR163	DCMAE37SNMBFR163
	DD **	50	DDMA50SNMBFR163	DDMAY50SNMBFR163	DDMAE50SNMBFR163

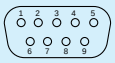
* to be replaced by termination code – see page 3

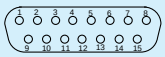
** selected arrangements

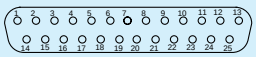


Standard Contact Arrangements for D*M and D*MA

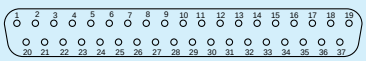
Face View Pin Insert

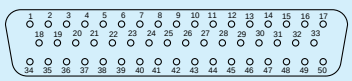






Shell size	E	A	B
Contacts	9	15	25
Contact size	20	20	20





Shell size	C	D
Contacts	37	50
Contact size	20	20

Note
Use preferably the selected contact arrangements marked **. Other contact arrangements are available on special request. Please consult factory.

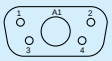
Selcted contact arrangements

D*MA standard contact arrangements	9, 15, 25, 37, 50
D*M standard contact arrangements	9, 15, 25, 37, 50
D*M combined contact arrangements	3W3, 5W5, 21W1, 17W5, 25W3, 36W4

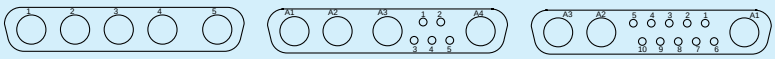
Combined Contact Arrangements for D*M

Note: Size 8 Cavities will accomodate Removable Coaxial, High Power and/or High Voltage Contacts

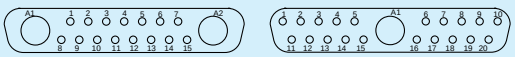
Face View Pin Insert



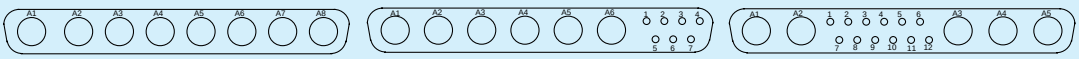
Shell size	E	A	A	A
Contact arrangement	5W1	3W3	7W2	11W1
Contact cavities size 20	4	0	5	10
Contact cavities size 8	1	3	2	1



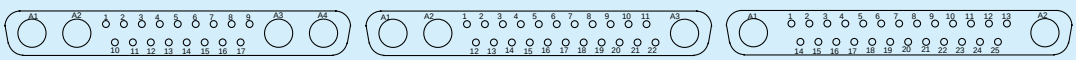
Shell size	B	B	B
Contact arrangement	5W5	9W4	13W3
Contact cavities size 20	0	5	10
Contact cavities size 8	5	4	3



Shell size	B	B
Contact arrangement	17W2	21W1
Contact cavities size 20	15	20
Contact cavities size 8	2	1

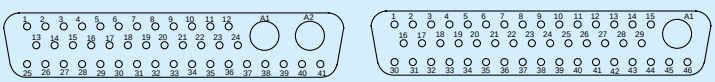


Shell size	C	C	C
Contact arrangement	8W8	13W6	17W5
Contact cavities size 20	0	9	12
Contact cavities size 8	8	6	5



Shell size	C	C	C
Contact arrangement	21WA4	25W3	27W2
Contact cavities size 20	17	22	25
Contact cavities size 8	4	3	2

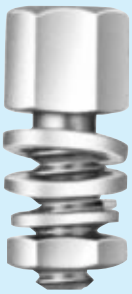
Shell size	D	D
Contact arrangement	24W7	36W4
Contact cavities size 20	17	32
Contact cavities size 8	7	4

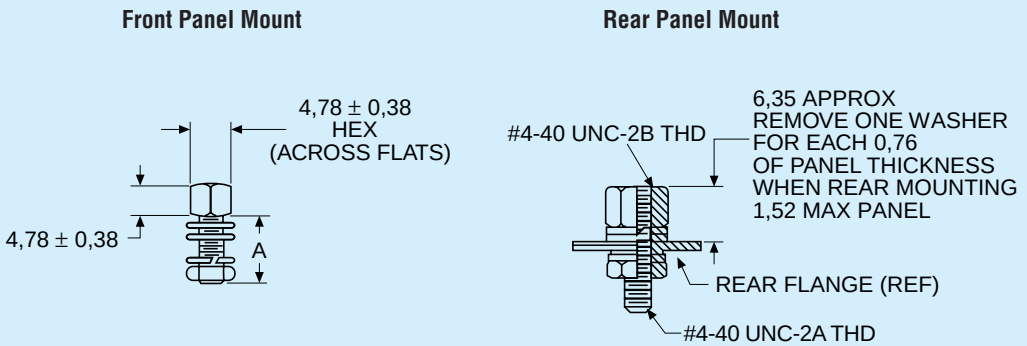


Shell size	D	D
Contact arrangement	43W2	47W1
Contact cavities size 20	41	46
Contact cavities size 8	2	1

Screw Lock Hardware

Female Screw Lock

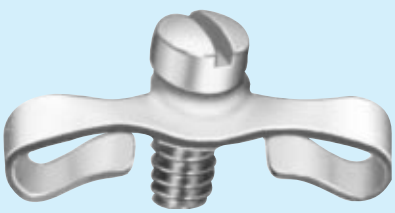


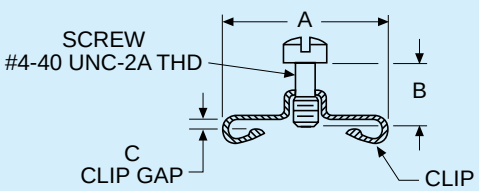


- Kit consists of 1 nut, 2 washers 1 lock washers, 1 hex nut
- Order 2 per connector

Designation	A ± 0,38 (.015)
D20418-2FR163	7,92 (.312)

Male Screw Lock



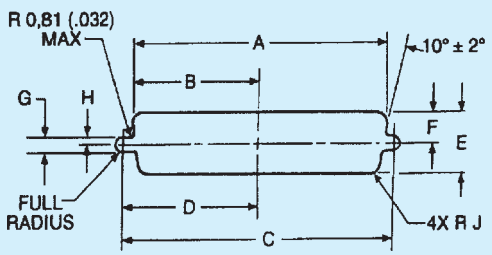


- Kit consists of 1 screw and 1 clip
- Order 2 per connector

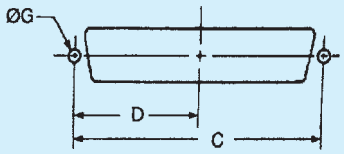
Shell Size	Designation	A ± 0,38 (.015)	B ± 0,25 (.010)	C ± 0,13 (.005)
DE, DA, DB, DC	D20419FR163	14,10 (.555)	6,35 (.250)	1,22 (.048)
DE, DA, DB, DC	D20419-18FR163	14,10 (.555)	7,14 (.281)	1,70 (.067)
DD	D20420FR163	16,66 (.656)	6,35 (.250)	1,22 (.048)
DD	D20420-13FR163	16,66 (.656)	7,14 (.281)	1,70 (.067)

Panel Cutouts

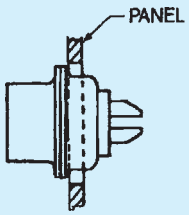
Standard Cutout



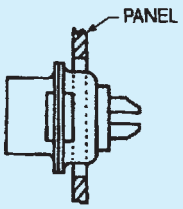
Rear Mounting Cutout (optional)



Front Panel Mounting

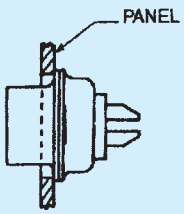


Standard Shell

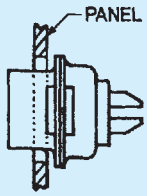


Dual Float Mount Shell

Rear Panel Mounting



Standard Shell



Dual Float Mount Shell

Standard Shell

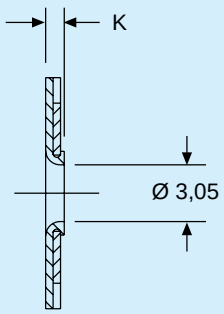
Shell Size	Mounting Method	A ±0,38 (.015)	B ±0,38 (.015)	C ±0,38 (.015)	D ±0,38 (.015)	E ±0,38 (.015)	F ±0,38 (.015)	G ±0,05 (.002)	H 0,05 (.002)	J ±0,05 (.002)
E	Front	22,19 (.874)	11,09 (.437)	24,99 (.984)	12,49 (.492)	13,03 (.513)	6,52 (.257)	3,04 (.120)	1,52 (.060)	2,10 (.083)
	Rear	20,47 (.806)	10,23 (.403)	24,99 (.984)	12,49 (.492)	11,40 (.449)	5,71 (.225)	3,04 (.120)	1,52 (.060)	3,35 (.132)
A	Front	30,53 (1.202)	15,26 (.601)	33,32 (1.312)	16,66 (.656)	13,03 (.513)	6,52 (.257)	3,04 (.120)	1,52 (.060)	2,10 (.083)
	Rear	28,80 (1.134)	14,40 (.567)	33,32 (1.312)	16,66 (.656)	11,40 (.449)	5,71 (.225)	3,04 (.120)	1,52 (.060)	3,35 (.132)
B	Front	44,27 (1.743)	22,14 (.872)	47,04 (1.852)	23,52 (.926)	13,03 (.513)	6,52 (.257)	3,04 (.120)	1,52 (.060)	2,10 (.083)
	Rear	42,51 (1.674)	21,25 (.837)	47,04 (1.852)	23,52 (.926)	11,40 (.449)	5,71 (.225)	3,04 (.120)	1,52 (.060)	3,35 (.132)
C	Front	60,73 (2.391)	30,37 (1.196)	63,50 (2.500)	31,75 (1.250)	13,03 (.513)	6,52 (.257)	3,04 (.120)	1,52 (.060)	2,10 (.083)
	Rear	59,08 (2.326)	29,54 (1.163)	63,50 (2.500)	31,75 (1.250)	11,40 (.449)	5,71 (.225)	3,04 (.120)	1,52 (.060)	3,35 (.132)
D	Front	58,34 (2.297)	29,18 (1.149)	61,11 (2.406)	30,55 (1.203)	15,82 (.623)	7,92 (.312)	3,04 (.120)	1,52 (.060)	2,10 (.083)
	Rear	56,33 (2.218)	28,16 (1.109)	61,11 (2.406)	30,55 (1.203)	14,09 (.555)	7,06 (.278)	3,04 (.120)	1,52 (.060)	3,35 (.132)

Dual Float Mount Shell

Shell Size	Mounting Method	A ±0,38 (.015)	B ±0,38 (.015)	C ±0,38 (.015)	D ±0,38 (.015)	E ±0,38 (.015)	F ±0,38 (.015)	G ±0,05 (.002)	H 0,05 (.002)	J ±0,05 (.002)
E	Front	23,01 (.906)	11,50 (.453)	24,99 (.984)	12,49 (.492)	13,84 (.545)	6,93 (.273)	2,23 (.088)	1,11 (.044)	2,10 (.083)
	Rear	21,28 (.838)	10,64 (.419)	24,99 (.984)	12,49 (.492)	12,21 (.481)	6,12 (.241)	2,23 (.088)	1,11 (.044)	3,35 (.132)
A	Front	31,34 (1.234)	15,67 (.617)	33,32 (1.312)	16,66 (.656)	13,84 (.545)	6,93 (.273)	2,23 (.088)	1,11 (.044)	2,10 (.083)
	Rear	29,61 (1.166)	14,80 (.583)	33,32 (1.312)	16,66 (.656)	12,21 (.481)	6,12 (.241)	2,23 (.088)	1,11 (.044)	3,35 (.132)
B	Front	45,08 (1.775)	22,55 (.888)	47,04 (1.852)	23,52 (.926)	13,84 (.545)	6,93 (.273)	2,23 (.088)	1,11 (.044)	2,10 (.083)
	Rear	43,33 (1.706)	21,66 (.853)	47,04 (1.852)	23,52 (.926)	12,21 (.481)	6,12 (.241)	2,23 (.088)	1,11 (.044)	3,35 (.132)
C	Front	61,54 (2.423)	30,78 (1.212)	63,50 (2.500)	31,75 (1.250)	13,84 (.545)	6,93 (.273)	2,23 (.088)	1,11 (.044)	2,10 (.083)
	Rear	59,79 (2.354)	29,89 (1.177)	63,50 (2.500)	31,75 (1.250)	12,21 (.481)	6,12 (.241)	2,23 (.088)	1,11 (.0440)	3,35 (.132)
D	Front	59,15 (2.329)	29,59 (1.165)	61,11 (2.406)	30,55 (1.203)	16,63 (.655)	8,33 (.328)	2,23 (.088)	1,11 (.044)	2,10 (.083)
	Rear	57,15 (2.250)	28,57 (1.125)	61,11 (2.406)	30,55 (1.203)	14,90 (.587)	7,46 (.294)	2,23 (.088)	1,11 (.044)	3,35 (.132)

Hardware Views

Through Hole (Eyelet)



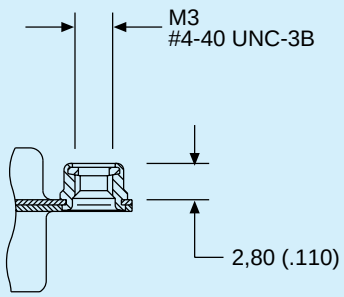
Dimensions – Plug

Shell Size	K ± 0,318 (.0125)	K ± 0,25 (.010)
E	1,206 (.0475)	–
A	1,206 (.0475)	–
B	–	1,52 (.060)
C	–	1,52 (.060)
D	–	1,52 (.060)

Dimensions – Receptacle

Shell Size	K ± 0,318 (.0125)
E	1,206 (.0475)
A	1,206 (.0475)
B	1,206 (.0475)
C	1,206 (.0475)
D	1,206 (.0475)

Clinch Nut (E)



Dual Float Mount (Y)