MS3450 (944*) Series

MIL-DTL-5015 Rear Release Crimp

MIL-DTL-5015 Rear Release threaded connectors are used in environmental, high reliability and performance applications. Aluminum and steel shells for firewall with several plating options are available. Over 165 contact layouts are available from 1 to 85 contacts. The MIL-DTL-5015 (MIL-C-5015) layouts allow mixing of power and signal contacts, power only, or signal only. These connectors when mated are completely sealed to withstand moisture, condensation, vibration, and flash-over across a broad range of wire diameters.

Applications

- Mobile Equipment
- Sensors
- Engines
- Industrial Machinery

Features

Broad Operating Temperatures
The electroless nickel plating and stainless steel shell connectors will operate in temperature range from -75°F to +392°F (-55°C to 200°C). The cadmium olive drab plating connectors will operate in temperature range from -75°F to +347°F (-55°C to 175°C).

Environmental
These connectors will perform in the full range of operating conditions as defined in MIL-DTL-5015 and are recommended for conditions where vibration, moisture, pressure, and/or temperature are extreme.

Rugged Shell
The rugged aluminum alloy or steel shell are highly resistant to damage and corrosion with firewall capabilities. Shells are available in 4 different styles, like a self-locking coupling nut in different 17 sizes.

Wide Range of Wire Gauges and Current Carrying Capacitiy
Up to 150 amps for standard military contacts and wire gauges from size 20 to size 0 AWG.

Technical Specifications

MATERIALS & FINISHES

Shell	Aluminum alloy, steel and stainless steel
Plating	Olive drab chromate over cadmium per QQ-P-416, electroless nickel per ASTM B73 or black anodize for aluminum; olive drab chromate over cadmium or passivated steel
Contacts	Copper Alloy
Plating	Gold Plated
Insulator	Neoprene
Seals	Silicone

ELECTRICAL DATA

Operating Voltage/Test Voltage

	NOMINAL DISTANCE		OPERATING VOLTAGE*		STANDARD SEA LEVEL CONDITIONS		PRESSURE ALTITUDE† 50,000 FEET		PRESSURE ALTITUDE† 70,000 FEET	
MS SERVICE RATING	AIRSPACE	CREEPAGE	DC V	AC VRMS	MINIMUM FLASHOVER VOLTAGE AC (RMS)	TEST VOLTAGE AC (RMS)	MINIMUM FLASHOVER VOLTAGE AC (RMS)	TEST VOLTAGE AC (RMS)	MINIMUM FLASHOVER VOLTAGE AC (RMS)	TEST VOLTAGE AC (RMS)
I	1/32	1/16	250	200	1,400	1,000	550	400	325	260
A	1/16	1/8	700	500	2,800	2,000	800	600	450	360
D	1/8	3/16	1,250	900	3,600	2,800	900	675	500	400
E	3/16	1/4	1,750	1,250	4,500	3,500	1,000	750	550	440
B	1/4	5/16	2,450	1,750	5,700	4,500	1,100	825	600	480
C	5/16	1	4,200	3,000	8,500	7,000	1,300	975	700	560

* Each insulator has a specific service rating. These should be used by the designer only as a guide. The Service Ratings for each layout are listed on pages 64-85

† Not corrected for change in density resulting from variations in temperature

MS connectors show no evidence of breakdown when the test voltages given are applied between the two closest contacts and between the shell and the contacts closest to the shell for a period of one minute per MIL-STD-1344 Method 3001.

Current Rating & Contact Resistance

CONTACT SIZE	TEST CURRENT (AMPS)	POTENTIAL DROP (MILLIVOLTS)	CONTACT RESISTANCE (MILLIOHM) MAX.
16	13	49	6
12	23	42	3
8	46 (69*)	26 (20*)	1 (0.44*)
4	80 (80*)	23 (18*)	0.5 (0.23*)
0	150 (225*)	21 (27*)	0.2 (0.18*)

*Using non-military crimp Radsok contact

Maximum total current to be carried per connector in wire bundles as specified in MIL-W-5088. Contact resistance when tested to MIL-C-39029 will not exceed voltage drops listed in above table.

Wire Range Sizes	20 AWG – 0 AWG
Insulation Resistance	50,000 Megohms minimum at 77°F (25°C) 1,000 Megohm minimum at 392°F (200°C) Class L and 347°F (175°C) Class W

MECHANICAL

Operating	Classes L, LS and KS -75°F to 392°F (-55°C to +200°C) Temperature Classes W and KT -75°F to 347°F (-55°C to 175°C)

Wire Sealing Range

CONTACT SIZE	WIRE SEALING RANGE MIN.	WIRE SEALING RANGE MAX.
16/16S	0.053 (1.35)	0.103 (2.62)
12	0.085 (2.16)	0.158 (4.01)
8	0.132 (3.35)	0.255 (6.48)
4	0.237 (6.02)	0.370 (9.40)
0	0.360 (9.14)	0.550 (13.97)

All dimensions in inches (millimeters in parenthesis)

Technical Specifications

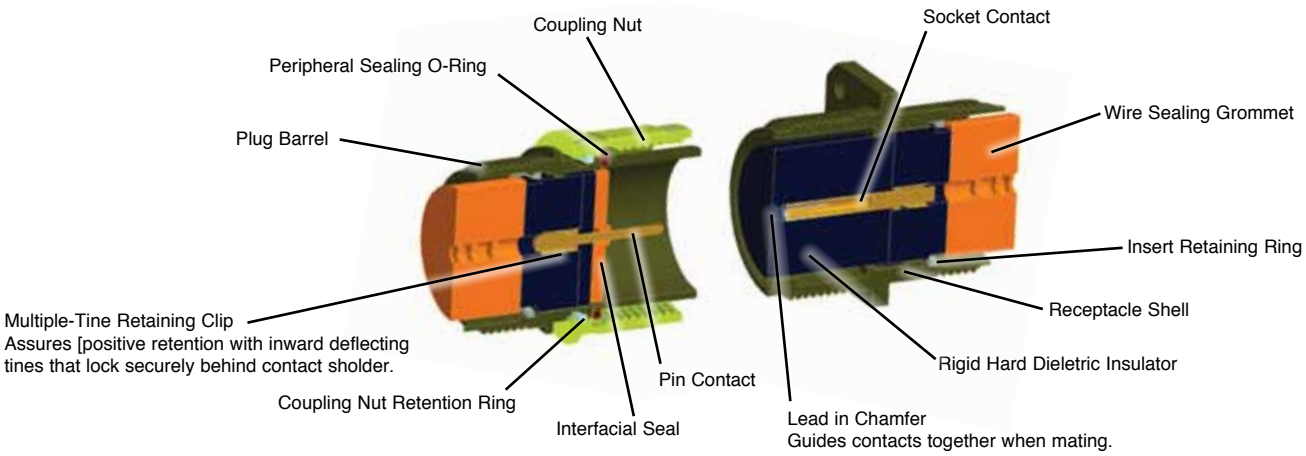
Insulation Strip Length

CONTACT SIZE	STRIP LENGTH
16/16S	.245 (6.2)
12	.245 (6.2)
8	.465 (11.8)
4	.465 (11.8)
0	.540 (13.7)

Mating Life	100 cycles minimum
Salt Spray	Class L & W 48 hours unmated; 48 hours mated per MIL-STD-1344 method 1001 condition letter A, paragraph 4.6.13.2 of MIL-DTL-5015, Class LS, KT, KS 952 hours mated, 48 hours unmated per MIL-STD-1344, method 1001 condition letter D, paragraph 4.6.13.3 of MIL-DTL5015
Heat	Class L, LS & KS, +392°F (+200°C); Class W, KT, +347°F (+175°C)
Chemical Resistance	20-hour full immersion unmated in hydraulic fluid and lubricating oil per MIL-DTL-5015 minimum
Vibration	10 to 2,000Hz (10g's) 10 microseconds maximum discontinuity to MIL-STD-1344 Method 2005, condition II per MIL-DTL-5015
Shock	50g 11millisecond duration, three major axes. 10 microseconds maximum discontinuity to MIL-DTL-5015 per MIL-STD-1344 method 2004, condition A, 3.13
Contact Type	Rear release crimp
Number of Circuits	1 to 85
Contact Insertion & Extraction	Insertion from rear of connector with simple plastic or high quality metal hand tool. Extraction from rear with plastic or high-quality metal hand tools
Contact Retention	Per MIL-DTL-5015,3.10.

CONTACT SIZE	AXIAL LOAD POUNDS MIN.
16	25
12	30
8	50
4	60
0	75

Polarization	Integral key and keyway plus optional rotational polarization. See pages 75-85 for valid rotations.
Approvals	MIL-DTL-5015 (MIL-C-5015)



All dimensions in inches (millimeters in parenthesis)

Create Your Part Number

STEP 1
Choose Shell Style – Receptacle or Plug

Receptacles

Wall Mount Receptacle +
MS3450
9440

Cable Mount Receptacle
MS3451
9441

Box Mount Receptacle
MS3452
9442

Jam Nut Receptacle +
MS3454
9444

MATES WITH

Plugs

Standard Plug +
MS3456
9446

Plug with Self-locking Coupling Nut +
MS3459
9816

\+ Most popular

STEP 2
Choose Finish

Military

- **L =** Electroless Nickel
- **W =** Olive Drab Chromate over Cadmium
- **LS =** Stainless Steel Shell, Passivated
- **KT** =** Steel Shell, Olive Drab Chromate over Cadmium, Firewall
- **KS** =** Stainless Steel Shell, Passivated, Firewall

** KT and KS finishes are not QPLD for styles MS3451, MS3452 and MS3454.

Commercial

- **A =** Black Anodize
- **F =** Electroless Nickel
- **W =** Olive Drab Chromate over Cadmium
- **FS =** Stainless Steel Shell, Passivated
- **RS =** Fluid Resistant Insert
- **KT =** Steel Shell, Olive Drab Chromate over Cadmium, Firewall
- **KS =** Stainless Steel Shell, Passivated, Firewall

Legend for Charts:
Olive Drab Type = Military
Dark Blue = Commercial
Dark Brown Type = Military & Commercial
= General info

Create Your Part Number

STEP 3

Choose Layout
(Listed by Shell Size)

For listing by # of contacts, see page 50-69.

8S-1	18-12	22-15*	28-16*	40-4*
10S-2	18-13	22-17*	28-17	40-5*
10SL-3	18-14*	22-18*	28-18*	40-6*
10SL-4	18-15*	22-19	28-19*	40-7*
12S-1*	18-16*	22-21	28-20	40-9
12S-2*	18-17*	22-22	28-21	40-10*
12S-3	18-18	22-23	28-22	40-11*
12S-4	18-19*	22-27*	32-1	40-56
12-5	18-22	22-30*	32-2*	40-62*
14S-1	18-23*	22-32*	32-3*	
14S-2	18-24*	22-36*	32-6	
14S-5	18-27*	24-1 P	32-7	
14S-6	18-28*	24-2	32-9	
14S-7	20-2	24-4*	32-13	
14S-9	20-4	24-5	32-15	
14S-10*	20-7	24-6*	32-16*	
14S-11*	20-8	24-7	32-17	
14S-12*	20-9*	24-10	32-19*	
14S-13*	20-14	24-11	32-20*	
14-3	20-15	24-12	32-22*	
16S-1	20-16	24-15*	32-63	
16S-3*	20-17	24-16*	32-73	
16S-4*	20-18	24-20	36-3	
16S-8	20-19	24-21*	36-5	
16-2*	20-21	24-22	36-6	
16-7*	20-22	24-24*	36-7	
16-9	20-24	24-27*	36-8	
16-10	20-27	24-28	36-9	
16-11	20-29	24-80*	36-10	
16-12	20-32*	28-1	36-11*	
16-13	20-33	28-2	36-12*	
18-1	22-2	28-3*	36-15	
18-4	22-4 S	28-4*	36-16*	
18-5 S	22-5	28-5*	36-17*	
18-6 S	22-6	28-8*	36-18*	
18-7*	22-7 P	28-9	36-21*	
18-8*	22-9*	28-10	36-52	
18-9	22-10*	28-11	36-66*	
18-10	22-11*	28-12	40-1	
18-11	22-14	28-13*	40-2*	
		28-15	40-3*	

*non-QPL, commercial only S QPL for sockets only P QPL for pins only.

STEP 4

Choose Contact

P = Pin
S = Socket
A = Less Pin Contacts (Military only)
B = Less Socket Contact (Military only)
The "A" and "B" designators are used only when other than power contacts (PCB, Coax, Thermocouple, or Fiber Optic contacts)

STEP 5

Choose Polarization
(omit for normal)

W
X
Y
Z

STEP 6

Choose Modifier

LC = Less Contacts (not marked on parts)

Commercial Only

189 = E-nut M85049/31
190 = Straight strain relief
191 = 90 degree strain relief

STEP 7

Example: Military Part Number Description

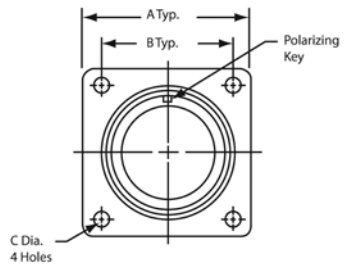
1 Shell Style	2 Finish	3 Layout	4 Contact	5 Polarization (omit for normal)	6 Modifier
MS3450	L	18-11	P	W	-LC

Example: Commercial Part Number Description

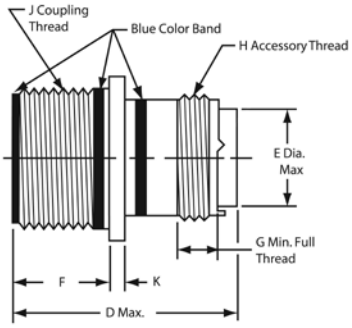
1 Shell Style	2 Finish	3 Layout	4 Contact	5 Polarization (omit for normal)	6 Modifier
9440	F	18-11	P	W	-190

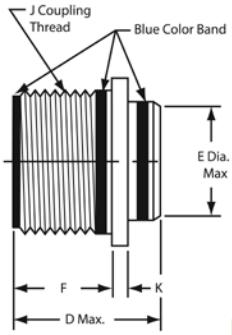
Dimensions

Receptacles



MS3450 (9440)





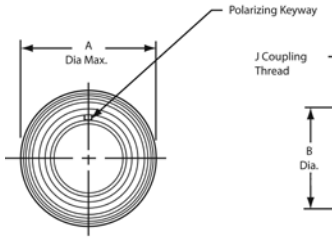
MS3452 (9442)

Shell Size	MS3450, MS3451, MS3452, MS3454	MS3450, MS3451, MS3454					MS3450, MS3451, MS3452	MS3450, MS3451		MS3450
		D Max.								
	J Thread Class 2A	Size 16, 12 Contacts	Size 8,4,0 Contacts	H Thread Class 2A	E Dia. Max.	G Min.	K	A ± .031	B	F Max./Min.
8S	.5000-20 UNEF	2.031	-	.5000-20 UNEF	0.305	0.290	0.083	0.875	0.594	.593/.562
10S	.6250-24 UNEF	2.031	-	.6250-24 UNEF	0.405	0.290	0.083	1.000	0.719	.593/.562
10SL	.6250-24 UNEF	2.031	-	.6250-24 UNEF	0.405	0.290	0.083	1.000	0.719	.593/.562
12	.7500-20 UNEF	2.125	-	.7500-20 UNEF	0.549	0.290	0.083	1.094	0.812	.781/.750
12S	.7500-20 UNEF	2.031	-	.7500-20 UNEF	0.549	0.290	0.083	1.094	0.812	.593/.562
14	.8750-20 UNEF	2.125	-	.8750-20 UNEF	0.665	0.290	0.083	1.188	0.906	.781/.750
14S	.8750-20 UNEF	2.031	-	.8750-20 UNEF	0.665	0.290	0.083	1.188	0.906	.593/.562
16	1.0000-20 UNEF	2.125	2.500	1.0000-20 UNEF	0.790	0.290	0.083	1.281	0.969	.781/.750
16S	1.0000-20 UNEF	2.031	-	1.0000-20 UNEF	0.790	0.290	0.083	1.281	0.969	.593/.562
18	1.1250-18 UNEF	2.125	2.500	1.0625-18 UNEF	0.869	0.290	0.125	1.375	1.062	.781/.750
20	1.2500-18 UNEF	2.125	2.500	1.1875-18 UNEF	0.994	0.290	0.125	1.500	1.156	.781/.750
22	1.3750-18 UNEF	2.125	2.500	1.3125-18 UNEF	1.119	0.290	0.125	1.625	1.250	.781/.750
24	1.5000-18 UNEF	2.125	2.500	1.4375-18 UNEF	1.244	0.290	0.125	1.750	1.375	.843/.812
28	1.7500-18 UNS	2.125	2.500	1.7500-18 UNS	1.465	0.467	0.125	2.000	1.562	.843/.812
32	2.0000-18 UNS	2.125	2.500	2.0000-18 UNS	1.715	0.467	0.125	2.250	1.750	.906/.875
36	2.2500-16 UN	2.125	2.500	2.2500-16 UN	1.930	0.467	0.125	2.500	1.938	.906/.875
40	2.5000-16 UN	2.125	2.500	2.5000-16 UN	2.145	0.467	0.125	2.750	2.188	.906/.875

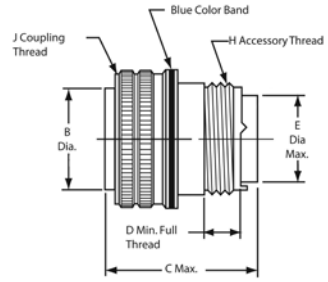
All dimensions in inches

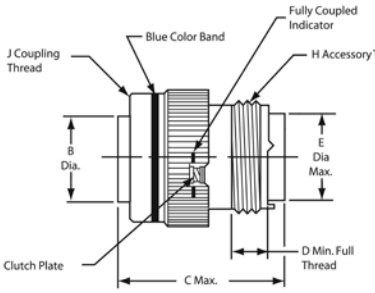
Plug

Shell Sizes 8S-16S



MS3456 (9446)





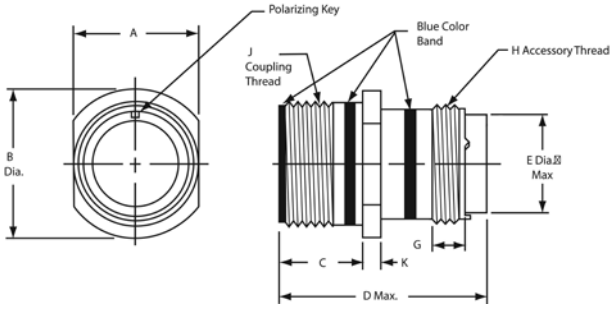
MS3459 (9816)

Shell Size	MS3456, MS3459						MS3456		MS3459	
							D Max.		D Max.	
	A Dia. Max.	B Dia. ± .031	D Min.	E Dia. Max.	H Thread Class 2A	J Thread Class 2A	Size 16, 12 Contacts	Size 8,4,0 Contacts	Size 16, 12 Contacts	Size 8,4,0 Contacts
8S	0.844	0.360	0.290	0.305	.5000-20 UNEF	.5000-20 UNEF	2.031	-	1.510	-
10S	0.969	0.435	0.290	0.405	.6250-24 UNEF	.6250-24 UNEF	2.031	-	1.510	-
10SL	0.969	0.441**	0.290	0.405	.6250-24 UNEF	.6250-24 UNEF	2.031	-	1.510	-
12	1.062	0.550	0.290	0.549	.7500-20 UNEF	.7500-20 UNEF	2.125	-	1.780	-
12S	1.062	0.550	0.290	0.549	.7500-20 UNEF	.7500-20 UNEF	2.031	-	1.510	-
14	1.156	0.670	0.290	0.665	.8750-20 UNEF	.8750-20 UNEF	2.125	-	1.780	-
14S	1.156	0.670	0.290	0.665	.8750-20 UNEF	.8750-20 UNEF	2.031	-	1.510	-
16	1.250	0.800	0.290	0.790	1.0000-20 UNEF	1.0000-20 UNEF	2.125	2.500	1.780	2.500
16S	1.250	0.800	0.290	0.790	1.0000-20 UNEF	1.0000-20 UNEF	2.031	-	1.510	-

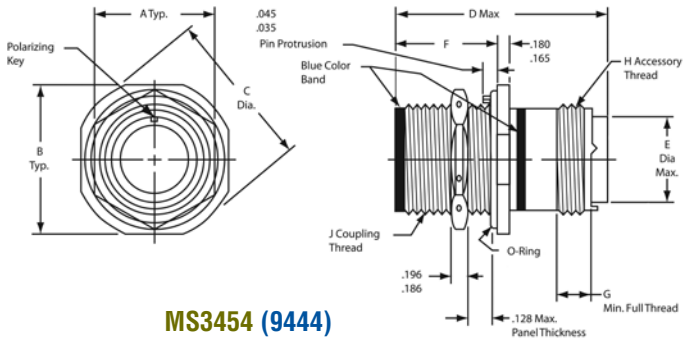
All dimensions in inches ** Tolerance on this dimension is +.000/-.006

Dimensions

Receptacles



MS3451 (9441)



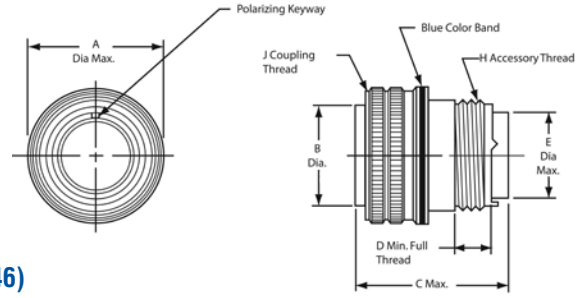
MS3454 (9444)

Shell Size	MS3452				MS3451			MS3454			
	F Max./Min.	D Max. Size 16, 12 Contacts	D Max. Size 8,4,0 Contacts	E Dia. ± .016	A Max./Min.	B Dia. ± .031	C Max./Min.	A ± .010	B ± .005	C Dia. ± .005	F ± .005
8S	.578/.562	1.662	-	0.500	.504/.496	0.729	.577/.562	0.687	1.187	1.272	0.720
10S	.578/.562	1.662	-	0.625	.629/.621	0.854	.577/.562	0.812	1.312	1.397	0.720
10SL	.578/.562	1.662	-	0.625	.629/.621	0.854	.577/.562	0.812	1.312	1.397	0.720
12	.765/.750	1.662	-	0.750	.754/.746	0.974	.765/.750	0.937	1.437	1.522	0.970
12S	.578/.562	1.662	-	0.750	.754/.746	0.974	.577/.562	0.937	1.437	1.522	0.720
14	.765/.750	1.662	-	0.875	.879/.871	1.099	.765/.750	1.125	1.562	1.647	0.970
14S	.578/.562	1.662	-	0.875	.879/.871	1.099	.577/.562	1.125	1.562	1.647	0.720
16	.765/.750	1.662	1.937	1.000	1.005/.996	1.224	.765/.750	1.250	1.687	1.772	0.970
16S	.578/.562	1.662	-	1.000	1.005/.996	1.224	.577/.562	1.250	1.687	1.772	0.720
18	.765/.750	1.662	1.937	1.062	1.131/1.121	1.349	.765/.750	1.375	1.812	1.897	0.970
20	.765/.750	1.662	1.937	1.187	1.256/1.246	1.474	.765/.750	1.500	1.937	2.022	0.970
22	.765/.750	1.662	1.937	1.312	1.381/1.371	1.599	.765/.750	1.625	2.156	2.241	0.970
24	.827/.812	1.662	1.937	1.437	1.506/1.496	1.715	.827/.812	1.750	2.281	2.366	0.970
28	.827/.812	1.662	1.937	1.750	1.756/1.746	1.974	.827/.812	2.000	2.531	2.616	0.970
32	.988/.875	1.662	1.937	2.000	2.007/1.996	2.224	.890/.870	2.375	2.781	2.866	0.970
36	.988/.875	1.662	1.937	2.250	2.257/2.246	2.474	.890/.870	2.625	3.031	3.116	0.970
40	.988/.875	1.662	1.937	2.500	2.511/2.456	2.724	.890/.870	2.875	3.281	3.366	0.970

All dimensions in inches

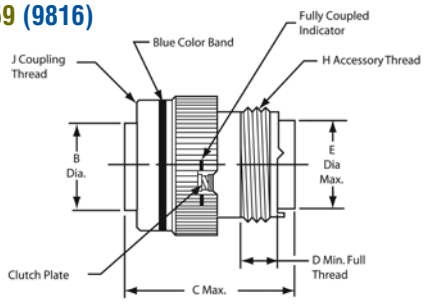
Plug

Shell Sizes 18-40



MS3456 (9446)

MS3459 (9816)

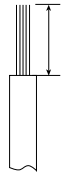


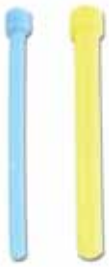
Shell Size	MS3456, MS3459						MS3456		MS3459	
							D Max.		D Max.	
	A Dia. Max.	B Dia. ± .031	D Min.	E Dia. Max.	H Thread Class 2A	J Thread Class 2A	Size 16, 12 Contacts	Size 8,4,0 Contacts	Size 16, 12 Contacts	Size 8,4,0 Contacts
18	1.344	0.925	0.290	0.869	1.0625-18 UNEF	1.1250-18 UNEF	2.125	2.500	1.850	2.500
20	1.469	1.045	0.290	0.994	1.1875-18 UNEF	1.2500-18 UNEF	2.125	2.500	1.850	2.500
22	1.594	1.170	0.290	1.119	1.3125-18 UNEF	1.3750-18 UNEF	2.125	2.500	1.850	2.500
24	1.719	1.295	0.290	1.244	1.4375-18 UNEF	1.5000-18 UNEF	2.125	2.500	1.850	2.500
28	1.969	1.515	0.467	1.465	1.7500-18 UNS	1.7500-18 UNS	2.125	2.500	1.850	2.500
32	2.219	1.765	0.467	1.715	2.0000-18 UNS	2.0000-18 UNS	2.125	2.500	1.850	2.500
36	2.469	1.975	0.467	1.930	2.2500-16 UN	2.2500-16 UN	2.125	2.500	1.850	2.500
40	2.719	2.225	0.467	2.145	2.5000-16 UN	2.5000-16 UN	2.125	2.500	1.850	2.500

All dimensions in inches

Contacts

Pins

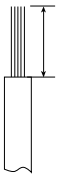


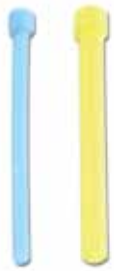


Head goes in first, trim excess

Contact Size	Wire Size Awg	Pin Contact Part Number	Color Bands			Wire Strip Lengths	Wire Insulation Range		Wire Hole Filler	Color
			1	2	3		Min.	Max.		
16S	16, 18 & 20	M39029/29-212	Red	Brown	Red	.245 (6.2)	.053 (1.35)	.103 (2.62)	MS27488-16-3	Blue
16	16, 18 & 20	M39029/29-212	Red	Brown	Red	.245 (6.2)	.053 (1.35)	.103 (2.62)	MS27488-16-3	Blue
12	12 & 14	M39029/29-213	Red	Brown	Orange	.245 (6.2)	.085 (2.16)	.158 (4.01)	MS27488-12-3	Yellow
8	8 & 10	M39029/29-214	Red	Brown	Yellow	.465 (11.8)	.132 (3.35)	.255 (6.48)	MS27488-8-3	Red
4	4 & 6	M39029/29-215	Red	Brown	Green	.465 (11.8)	.237 (6.02)	.370 (9.40)	MS27488-4-3	Blue
0	0 & 2	M39029/29-216	Red	Brown	Blue	.540 (13.7)	.360 (9.14)	.550 (13.97)	MS27488-0-3	Yellow

Sockets

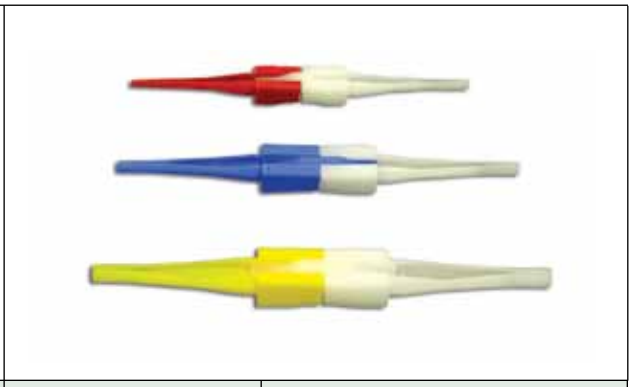




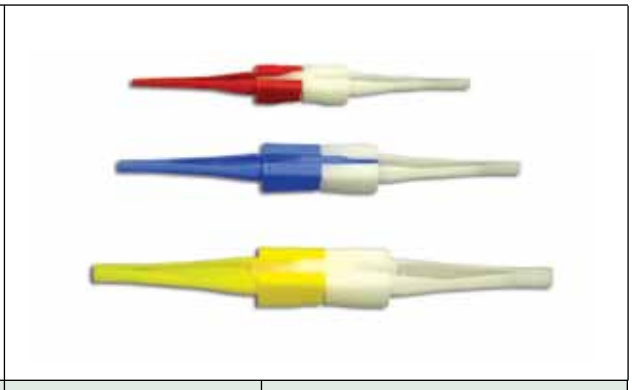
Head goes in first, trim excess

Contact Size	Wire Size Awg	Pin Contact Part Number	Color Bands			Wire Strip Lengths	Wire Insulation Range		Wire Hole Filler	Color
			1	2	3		Min.	Max.		
16S	16, 18 & 20	M39029/30-217	Red	Brown	Violet	.245 (6.2)	.053 (1.35)	.103 (2.62)	MS27488-16-3	Blue
16	16, 18 & 20	M39029/30-218	Red	Brown	Gray	.245 (6.2)	.053 (1.35)	.103 (2.62)	MS27488-16-3	Blue
12	12 & 14	M39029/30-219	Red	Brown	White	.245 (6.2)	.085 (2.16)	.158 (4.01)	MS27488-12-3	Yellow
8	8 & 10	M39029/30-220	Red	Red	Black	.465 (11.8)	.132 (3.35)	.255 (6.48)	MS27488-8-3	Red
4	4 & 6	M39029/30-221	Red	Red	Brown	.465 (11.8)	.237 (6.02)	.370 (9.40)	MS27488-4-3	Blue
0	0 & 2	M39029/30-222	Red	Red	Red	.540 (13.7)	.360 (9.14)	.550(13.97	MS27488-0-3	Yellow

All dimensions in inches (millimeters in parenthesis)



Hand Crimp Tool	Power Crimp Tool	Turret Heads	Use Locator Color	Metal		Plastic		
				Insertion Tool	Extraction Tool	Insertion/Extraction Tool	Insertion Tip Color	Extraction Tip Color
M22520/1-01	WA27F	M22520/1-02	Blue	DAK83-16B	DRK83-16B	M81969/14-03	Blue	White
M22520/1-01	WA27F	M22520/1-02	Blue	DAK83-16B	DRK83-16B	M81969/14-03	Blue	White
M22520/1-01	WA27F	M22520/1-02	Yellow	DAK83-12B	DRK83-12B	M81969/14-04	Yellow	White
-	M22520/23-01	M22520/23-02 die w/ M22520/23-09 locator	-	-	-	M81969/29-02	-	Red
-	M22520/23-01	M22520/23-04 die w/ M22520/23-11 locator	-	-	-	M81969/29-03	-	Blue
-	M22520/23-01	M22520/23-05 die w/ M22520/23-13 locator	-	-	-	M81969/29-04	-	Yellow



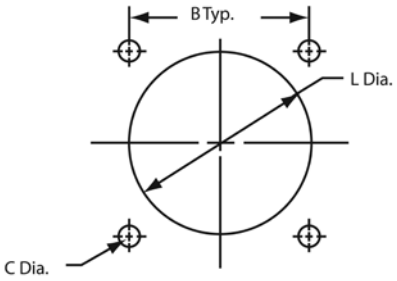
Hand Crimp Tool	Power Crimp Tool	Turret Heads	Use Locator Color	Metal		Plastic		
				Insertion Tool	Extraction Tool	Insertion/Extraction Tool	Insertion Tip Color	Extraction Tip Color
M22520/1-01	WA27F	M22520/1-02	Blue	DAK83-16B	DRK83-16B	M81969/14-03	Blue	White
M22520/1-01	WA27F	M22520/1-02	Blue	DAK83-16B	DRK83-16B	M81969/14-03	Blue	White
M22520/1-01	WA27F	M22520/1-02	Yellow	DAK83-12B	DRK83-12B	M81969/14-04	Yellow	White
-	M22520/23-01	M22520/23-02 die w/ M22520/23-09 locator	-	-	-	M81969/29-02	-	Red
-	M22520/23-01	M22520/23-04 die w/ M22520/23-11 locator	-	-	-	M81969/29-03	-	Blue
-	M22520/23-01	M22520/23-05 die w/ M22520/23-13 locator	-	-	-	M81969/29-04	-	Yellow

All dimensions in inches (millimeters in parenthesis)

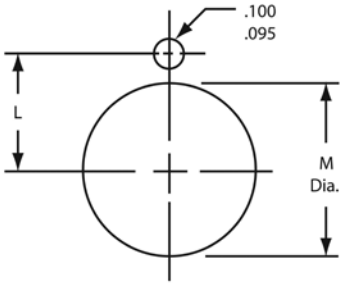
Panel Cutouts and Panel Thickness

Panel Cutouts

MS3450/9440
MS3452/9442



MS3454/9444

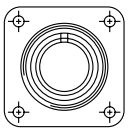


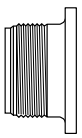
Shell Size	MS3450, MS3452 B	MS3450, MS3452 L Dia. +/-.010	MS3450, MS3452 C Dia. +.010/-.005	MS3450 Class K C Dia. +.010/-.005	MS3454 L +/-.005	MS3454 M Dia. +.015/-.000
8S	0.594	0.562	0.120	0.150	0.323	0.505
10S	0.719	0.688	0.120	0.150	0.385	0.630
10SL	0.719	0.688	0.120	0.150	0.385	0.630
12	0.812	0.812	0.120	0.150	0.448	0.755
12S	0.812	0.812	0.120	0.150	0.448	0.755
14	0.906	0.938	0.120	0.150	0.510	0.880
14S	0.906	0.938	0.120	0.150	0.510	0.880
16	0.969	1.062	0.120	0.150	0.573	1.005
16S	0.969	1.062	0.120	0.150	0.573	1.005
18	1.062	1.188	0.120	0.177	0.635	1.130
20	1.156	1.312	0.120	0.177	0.698	1.255
22	1.250	1.438	0.120	0.177	0.760	1.380
24	1.375	1.562	0.147	0.177	0.823	1.505
28	1.562	1.812	0.147	0.177	0.948	1.755
32	1.750	2.062	0.173	0.209	1.073	2.005
36	1.938	2.312	0.173	0.209	1.198	2.255
40	2.188	2.562	0.173	0.209	1.323	2.505

See page 109 for Gaskets. See page 334 for Nut Plates and Seal Screws.

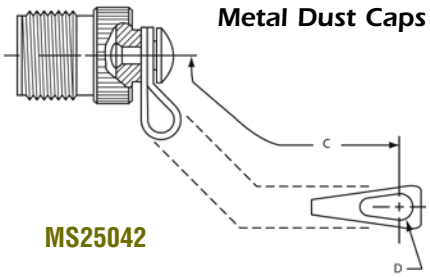
Dummy Receptacles & Metal Dust Caps

Dummy Receptacles

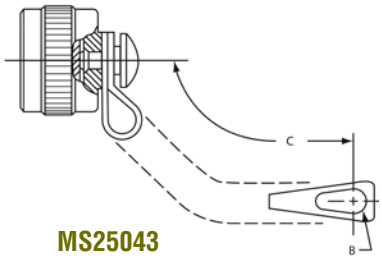




Metal Dust Caps



MS25042



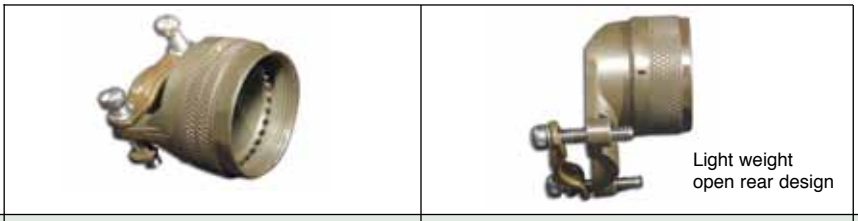
MS25043

Shell Size	Dummy Receptacles	Metal Dust Caps Plug	Metal Dust Caps Receptacle	C Approx.	D Dia. +.010/-.005	B Dia. +.010/-.005
8S	MS3105-8	MS25042-8DA	MS25043-8DA	4.000	0.156	0.140
10S, 10SL	MS3105-10	MS25042-10DA	MS25043-10DA	4.000	0.156	0.140
12, 12S	MS3105-12	MS25042-12DA	MS25043-12DA	4.500	0.156	0.140
14, 14S	MS3105-14	MS25042-14DA	MS25043-14DA	4.500	0.156	0.140
16S	MS3105-16S	MS25042-16DA	MS25043-16DA	4.500	0.156	0.140
16	MS3105-16	MS25042-16DA	MS25043-16DA	4.500	0.156	0.140
18	MS3105-18	MS25042-18DA	MS25043-18DA	4.500	0.156	0.140
20	MS3105-20	MS25042-20DA	MS25043-20DA	5.000	0.187	0.140
22	MS3105-22	MS25042-22DA	MS25043-22DA	5.000	0.187	0.140
24	MS3105-24	MS25042-24DA	MS25043-24DA	5.500	0.187	0.171
28	MS3105-28	MS25042-28DA	MS25043-28DA	7.750	0.187	0.171
32	MS3105-32	MS25042-32DA	MS25043-32DA	7.750	0.218	0.187
36	MS3105-36	MS25042-36DA	MS25043-36DA	7.750	0.218	0.187
40	MS3105-40	MS25042-40DA	MS25043-40DA	7.750	0.218	0.187

Note: Stainless steel dust caps and other lanyards available, please call.
Aluminum alloy with anodized plating is listed, call for other available dust cap materials.

All dimensions in inches

Standard Cable Clamps

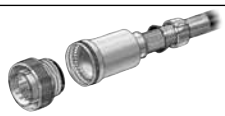


Light weight
open rear design

Shell Size	Straight Clamp		90°		Cable Entry	
	Low Cost	Self-Locking	Low Cost	Self-Locking	Max	Min
8	M85049/52-1-8*	M85049/52#8*	M85049/51-1-8*	M85049/51#8*	.204 (5.18)	.125 (3.18)
10	M85049/52-1-10*	M85049/52#10*	M85049/51-1-10*	M85049/51#10*	.286 (7.26)	.187 (4.75)
12	M85049/52-1-12*	M85049/52#12*	M85049/51-1-12*	M85049/51#12*	.416 (10.57)	.291 (7.39)
14	M85049/52-1-14*	M85049/52#14*	M85049/51-1-14*	M85049/51#14*	.476 (12.09)	.351 (8.92)
16	M85049/52-1-16*	M85049/52#16*	M85049/51-1-16*	M85049/51#16*	.625 (15.88)	.501 (12.72)
18	M85049/52-1-18*	M85049/52#18*	M85049/51-1-18*	M85049/51#18*	.706 (17.93)	.518 (13.16)
20	M85049/52-1-20*	M85049/52#20*	M85049/51-1-20*	M85049/51#20*	.831 (21.11)	.581 (14.76)
22	M85049/52-1-22*	M85049/52#22*	M85049/51-1-22*	M85049/51#22*	.956 (24.28)	.644 (16.36)
24	M85049/52-1-24*	M85049/52#24*	M85049/51-1-24*	M85049/51#24*	1.081 (27.46)	.706 (17.93)
28	M85049/52-1-28*	M85049/52#28*	M85049/51-1-28*	M85049/51#28*	1.187 (30.15)	.750 (19.05)
32	M85049/52-1-32*	M85049/52#32*	M85049/51-1-32*	M85049/51#32*	1.250 (31.75)	.875 (22.23)
36	M85049/52-1-36*	M85049/52#36*	M85049/51-1-36*	M85049/51#36*	1.375 (34.93)	.938 (23.83)
40	M85049/52-1-40*	M85049/52#40*	M85049/51-1-40*	M85049/51#40*	1.500 (38.10)	.938 (23.83)

# Select S
S = Self Locking with Detent

* Select plating code to match connector plating
N = Electroless Nickel plated Aluminum Alloy
W = Olive Drab Chromate over Cadmium over Electroless Nickel plated Aluminum Alloy
S = Stainless Steel

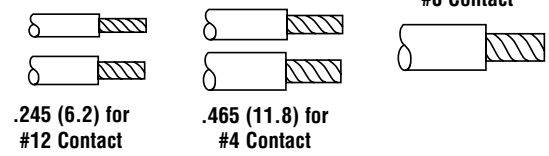
	Description	Part Number Prefix	Straight	90°	45°
	Heat Shrink Boot Adapter See pages 335-336	M85049/60	X		
	Environmental	M85049/7			X
		M85049/9		X	
		M85049/11	X		
	EMI/RFI Non Environmental	M85049/23			X
		M85049/24		X	
		M85049/25	X		
	EMI/RFI Environmental	M85049/6			X
		M85049/8		X	
		M85049/10	X		
	EMI/RFI Crimp Ring	M85049/26	X		
	EMI/RFI Banding	M85049/82			X
		M85049/83		X	
		M85049/84	X		
	Cable Tie	M85049/55		X	
		M85049/53	X		
		M85049/54			X
	Wire Seal Compression Nuts “E”	M85049/31	X		

Note: If Military Standard versions don’t fit or work for your applications, please call with your requirements. We will delight you with our design capabilities.

All dimensions in inches (millimeters in parenthesis)

Assembly

Wire Stripping and Contact Crimping



1. Strip wires. (See above for correct strip length for contact.) Insert wire into rear of contact. Wire insulation must butt against rear of contact. Wire must be visible thru inspection hole.

2. Use M22520/1-01 crimp tool with proper crimp locator M22520/1-02.

Contact Size	Color
16/16S	Blue
12	Yellow

See pages 52-53 for additional tooling.

3. Insert contact and wire into tool jaws. To crimp, squeeze handles together fully until ratchet releases and allows handles to expand; otherwise, contact cannot be extracted from tool jaws. Maintain slight insertion pressure on wire while crimping contact to wire.*

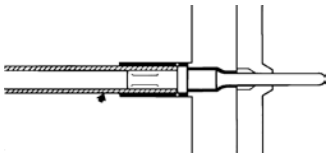
Contact Insertion

1. Remove backshell and put wired contacts thru cable clamp opening.

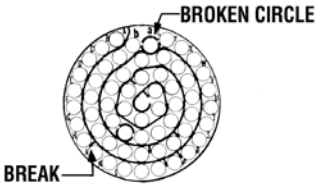
2. Use colored end of CIET tool for insertion. Place wire into tool at large opening. To facilitate contact insertion, a 6-in. min. free length of wire is recommended.

3. Slide back tool on wire while holding thumb against wire at opening. Wire will slip into tool.

4. With tool pressed against shoulder of contact, starting at the center cavity, insert wired contact and tool into properly identified cavity at rear of plug with firm, even pressure. Do not use excessive pressure.



5. When contact bottoms, a slight click can be heard as tines of metal retaining clip snap into place behind contact shoulder.



6. Check face of plug or receptacle for proper contact installation. In socket inserts with a large number of contact, cavities are identified in a spiral pattern. A projecting line from the spiral indicates omission of a letter; a broken circle around a cavity indicates transition between capitals and lower case and double letters.

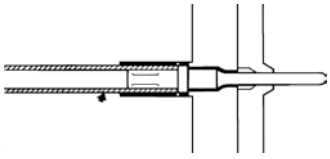
7. Withdraw tool from rear of plug. To be sure that contact is locked, pull back lightly on wire. Then remove tool from wire and proceed with other contacts.

8. After all contacts are inserted, fill unwired cavities with sealing plugs (insert head first and leave end protruding for ease of removal), assemble backshell on rear of connector.

See page 114 for endbell tightening tools.

Contact Extraction

1. Remove backshell and slide back along wires to allow access. To extract a contact, use white end of CIET tool. Place wire into tool at large opening. Slide back tool on wire while holding thumb against wire at opening. Wire will slip into tool.



2. Push tool into rear of plug until it bottoms. At this point, tool releases tines on retaining clip so that contact can be extracted.

3. While maintaining slight insertion force on tool, firmly hold wire against serrated shoulder at center of tool and extract both wired contact and tool from plug.

* **Important Note:** Microsection the contact to verify crimp quality.

Note: LJT Series shown.