

# ITT Cannon KJL Series MIL-DTL-38999 Series I Connectors



## INTERMATEABLE WITH SOURIAU CONNECTORS & ALL MIL-DTL-38999 SERIES I

ITT Cannon KJL series MIL-DTL-38999 series I connectors offer high-density contact arrangements in a light-weight miniature circular connector. ITT Cannon KJL series connectors are an industry standard for military and aerospace applications. The KJL series has quick-mating, three-point bayonet coupling, is environmentally-sealed, and operates across a wide temperature range. KJL series connectors are intermateable with Souriau connectors and all MIL-DTL-38999 series I connectors. A variety of D38999 backshells are available for these mil spec ITT Cannon plugs. Mil spec part number prefixes include: MS27466, MS27467, MS27468, MS27496, MS27505, and MS27656. For full details on ITT Cannon MIL-DTL-38999 series I connectors, please see the product specifications below.

## APPLICATIONS

- High performance military aircraft
- Commercial airlines
- Communications equipment
- Armored personnel carriers & tanks
- Missiles
- Shipboard
- Medical instrumentation
- High-reliability test equipment

## FEATURES

### QUICK-MATING

A three-point bayonet coupling system not only makes the KJLs quick-mating but also provides an audible and tactile “click,” along with visual verification of mating via a sighting hole and high-visibility, bright blue bayonet pins.

### SHIELDED INTERCONNECT

KJL plugs feature high-quality grounding springs that provide 360-degrees of EMI/RFI-shielding protection. These springs ground the barrel of the KJL plugs to the inside wall of the KJL receptacles with a wiping action that offers effective protection from reception or transmission of electronic noise.

### MANY CONTACT LAYOUTS AND STYLES

KJL connectors come in a wide variety of contact sizes and layouts up to 128 contacts. Printed circuit board, fiber optic, thermocouple, and coax style contacts are available for special applications.

### UTILIZES HIGH-QUALITY MILITARY CONTACTS

For standard applications, KJLs come with crimp-style military contacts designed to resist bending and provide reliable performance under the most rigorous conditions.

### CORROSION-RESISTANT

KJLs are available with cadmium over nickel plating that has met and passed the 500 hour military salt spray corrosion tests.

### FULL METAL CONTACT RETENTION CLIPS

Cannon’s KJL connectors utilize full metal retention clips in their insulators, which assures the highest level of serviceability and unparalleled contact retention.

**MATERIALS & FINISHES**

Shell	Aluminum alloy
Bayonet Pins	Passivated stainless steel per QQ-S-763
Plating	A-Clear chromate over cadmium over electroless nickel per QQ-P-416 B-Olive drab chromate over cadmium over electroless nickel per QQ-P-416 F-Electroless nickel per QQ-N-290 (N - Commercial)
Contacts	Copper alloy
Platings	Gold plate, 50 microinches per MIL-G-45204 type II, grade C, class 1
Insulator	Hard plastic wafer which contains metal retention tines for high-reliability retention of crimp contacts
Grommet & Seals	Silicone-based elastomer
Grommet & Springs	Beryllium copper (grounded plug only)

**ELECTRICAL DATA**

TEST VOLTAGES	SERVICE RATING			
	N	M	I	II
SEA LEVEL	1000	1300	1800	2300
100,000 FEET	200	200	200	200

Current Rating by contact size and wire accommodation (Test Amps)

WIRE SIZE	22D	22M*	22*	20	16	12
28	1.5	1.5	-	-	-	-
26	2.0	2.0	2.0	-	-	-
24	3.0	3.0	3.0	3.0	-	-
22	5.0	-	5.0	5.0	-	-
20	-	-	-	7.5	7.5	-
18	-	-	-	-	10.0	-
16	-	-	-	-	13.0	-
14	-	-	-	-	-	17.0
12	-	-	-	-	-	23.0

Contact Resistance of mated contacts end-to-end

CONTACT SIZE / WIRE SIZE	MAXIMUM MILLIVOLT DROP
22D	73
22M*	45
22*	73
20	55
16	49
12	42

**MECHANICAL**

Operating Temperature A Plating -65°C to 150°C (-85°F to 302°F)  
B Plating -65°C to 175°C (-85°F to 347°F)  
F (N) Plating -65°C to 200°C (-85°F to 392°F)

Sealing Against sand, dust per MIL-STD-202 & ice

Wire Sealing Range

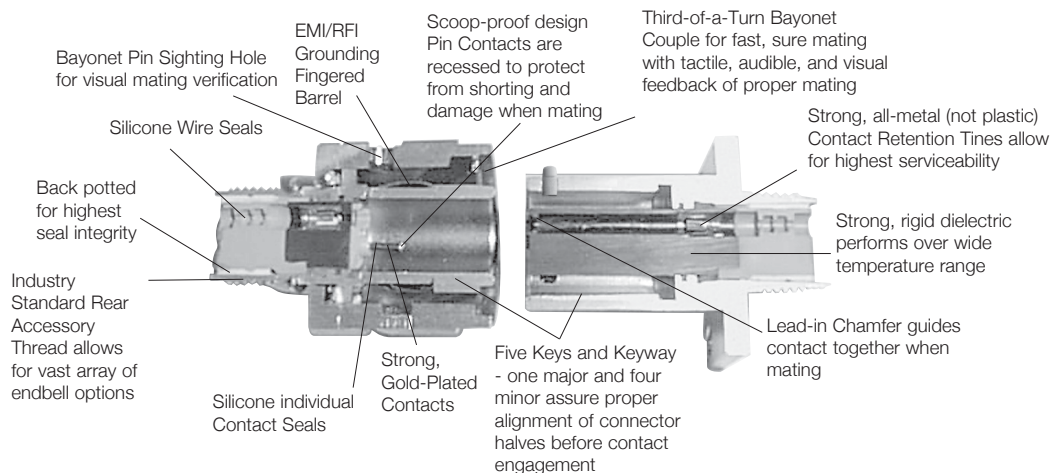
CONTACT SIZE	MINIMUM (INCHES)	MAXIMUM (INCHES)	MINIMUM (MM)	MAXIMUM (MM)
22D	0.030	0.054	0.76	1.37
22M*	0.030	0.050	0.76	1.27
22*	0.034	0.060	0.86	1.52
20	0.040	0.083	1.02	2.11
16	0.065	0.109	1.65	2.77
12	0.097	0.142	2.46	3.61

\* Inactive for new designs

TECH SPECS

Insulation Strip Lengths:	<b>CONTACT SIZE</b>	<b>STRIP LENGTH INCHES (MM)</b>	
	22*, 22D OR 22M*	.125 (3.18)	
	20	.188 (4.77)	
	16	.188 (4.77)	
	12	.188 (4.77)	
Mating Life	500 cycles minimum		
Salt Spray	Finish A: 48 hour per MIL-STD-1344A method 1001 condition B Finish B: 500 hour per MIL-STD 1344A method 1001 condition C Finish F: 48 hour per MIL-STD-1344A method 1001 condition B		
Heat	Finish A: 150°C (302°F) Finish B: 175°C (347°F) Finish F: 200°C (392°F) 1000 hours to MIL-STD-1344 method 1005		
Chemical Resistance	Lubricating oils, hydraulic fluids, coolants, deicing fluids per MIL-STD-1344A Method 1016 condition a-1		
Sine Vibration	30g at ambient temperature with simulated accessory load		
Random Vibration	49.5 grms at ambient temperatures		
Shock	300g ±15% half sine wave magnitude for 3 ±1 milliseconds		
EMI Shielding Effectiveness	100 MHz to 10 GHz - minimum attenuation of 50dB effectiveness		
Contact Type	Crimp, fiber optic, coax, twinax, or printed circuit		
Number of Circuits	3 to 128		
Contact Insertion	Insertion from rear of connector with simple plastic or high-quality metal hand tool. Extraction from rear with simple plastic or high-quality metal hand tools.		
Contact Retention	Per MIL-DTL-38999 tested to MIL-STD-1344A method 2007		
	<b>CONTACT SIZE</b>	<b>AXIAL LOAD NEWTONS ±10%</b>	<b>AXIAL LOAD POUNDS ±10%</b>
	22*, 22D OR 22M*	44	10
	20	67	15
	16	112	25
	12	111	25
Polarization	Five keyways with optional minor keyways rotation (Note insert and main keyway remain fixed)		
Approvals/Specifications	• MIL-DTL-38999		

CROSS SECTION



CREATE PART NUMBER

1	2	3A	4	3B	5	6	7
<b>MS27468</b>	<b>T</b>	<b>25</b>	<b>F</b>	<b>35</b>	<b>P</b>		<b>-LC</b>
SHELL STYLE	CLASS	SIZE	PLATING	LAYOUT	CONTACT	POLARIZATION	MODIFIER

(Military example)


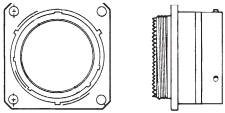
1	2	3A	4	3B	5	6	7
<b>KJL7</b>	<b>T</b>	<b>25</b>	<b>F</b>	<b>35</b>	<b>P</b>	<b>N</b>	<b>L</b>
SHELL STYLE	CLASS	SIZE	PLATING	LAYOUT	CONTACT	POLARIZATION	MODIFIER

(Commercial example)


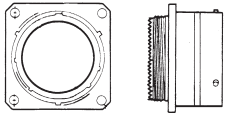
**STEP 1: CHOOSE STYLE**

**RECEPTACLES**


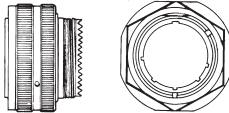
**PLUGS**

**MS27466  
KJL0**  
Front mount with rear accessory threads.


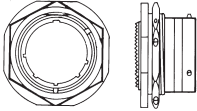



**MS27656  
KJL3**  
Rear mount with rear accessory threads.\*


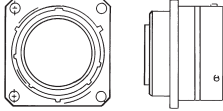



**MS27467  
KJL6\***


← Mates with →

**MS27468  
KJL7**  
Jam Nut with rear accessory threads.\*

**MS27505E  
KJL5E**  
Rear mount without rear accessory threads.  
(E class only)



Available with PC pins.  
Contact us for more details.

**STEP 2: CHOOSE CLASS**

- T** = No Rear Accessories
- P** = Potting Ring & Cup

- F** = Straight Strain Relief (KJL only, not MIL Spec)
- E** = No Rear Accessories used on MS27505 & KJL5 only

\* Most popular

## STEP 3: CHOOSE LAYOUT

(Listed by Shell Size)

For listing by # of contacts, → See pages 214 - 215.

LAYOUT NUMBER	SERVICE RATING	CONTACTS							
		TOTAL NUMBER	22D	22M	22	20	16	12	8
9-6+	M	6	-	6	-	-	-	-	-
9-35	M	6	6	-	-	-	-	-	-
9-98	I	3	-	-	-	3	-	-	-
11-4	I	4	-	-	-	4	-	-	-
11-5	I	5	-	-	-	5	-	-	-
11-13+	M	13	-	13	-	-	-	-	-
11-35	M	13	13	-	-	-	-	-	-
11-98	I	6	-	-	-	6	-	-	-
11-99	I	7	-	-	-	7	-	-	-
13-4	I	4	-	-	-	-	4	-	-
13-8	I	8	-	-	-	-	8	-	-
13-22+	M	22	-	22	-	-	-	-	-
13-35	M	22	22	-	-	-	-	-	-
13-98	I	10	-	-	-	10	-	-	-
15-5	II	5	-	-	-	-	5	-	-
15-15	I	15	-	-	-	14	1	-	-
15-18	I	18	-	-	-	18	-	-	-
15-19	I	19	-	-	-	19	-	-	-
15-35	M	37	37	-	-	-	-	-	-
15-37+	M	37	-	37	-	-	-	-	-
15-97	I	12	-	-	-	8	4	-	-
17-6	I	6	-	-	-	-	-	6	-
17-8	II	8	-	-	-	-	8	-	-
17-26	I	26	-	-	-	26	-	-	-
17-35	M	55	55	-	-	-	-	-	-
17-55+	M	55	-	55	-	-	-	-	-
17-99	I	23	-	-	-	21	2	-	-
19-11	II	11	-	-	-	-	11	-	-
19-28	I	28	-	-	-	26	2	-	-
19-30	I	30	-	-	-	29	1	-	-
19-32	I	32	-	-	-	32	-	-	-
19-35	M	66	66	-	-	-	-	-	-
19-66+	M	66	-	66	-	-	-	-	-
21-1+	M	79	-	79	-	-	-	-	-
21-11	I	11	-	-	-	-	-	11	-
21-16	II	16	-	-	-	-	16	-	-
21-35	M	79	79	-	-	-	-	-	-
21-39	I	39	-	-	-	37	2	-	-
21-41	I	41	-	-	-	41	-	-	-
21-75	M**	4	-	-	-	-	-	-	4**
23-1+	M	100	-	100	-	-	-	-	-
23-2+	M	85	-	-	85	-	-	-	-
23-21	II	21	-	-	-	-	21	-	-
23-32	I	21	-	-	-	32	-	-	-
23-35	M	100	-	100	-	-	-	-	-
23-53	I	53	-	-	-	53	-	-	-
23-55	I	55	-	-	-	55	-	-	-
25-1+	M	128	-	128	-	-	-	-	-
25-2+	M	100	-	-	100	-	-	-	-
25-4	I	56	-	-	-	48	8	-	-
25-19	I	19	-	-	-	-	-	19	-
25-24	I	24	-	-	-	-	12	12	-
25-29	I	29	-	-	-	-	-	29	-
25-35	M	128	-	128	-	-	-	-	-
25-37	I	37	-	-	-	-	-	37	-
25-43	I	43	-	-	-	23	20	-	-
25-49	I*	46	-	-	-	40	4	-	2*
25-8	COAX*	8	-	-	-	-	-	-	8***
25-20	N**	30	-	-	-	10	13	4*	3**
25-42	I, COAX	42	-	-	-	38	-	-	4*
25-61	I	61	-	-	-	61	-	-	-
25-64	I	64	40	-	-	8	10	6	-
25-66	I	66	53	-	-	2	11	-	-

When Choosing Layout: First Number = Step 3A – Shell Size

Dash = Step 4 – Plating Second Number = 3B – Layout

+ = Inactive for new designs

\*Coax \*\*Twinax \*\*\*Coax/Twinax

**NOTE:** Coaxial type contacts are only rated for 175°C (347°F).

## STEP 4: CHOOSE PLATING

MILITARY	COMMERCIAL	
<b>B</b>	<b>B</b>	Olive Drab Chromate over Cadmium over Electroless Nickel -65°C to 175°C (-85°F to 347°F)
<b>F</b>	<b>N</b>	Electroless Nickel -65°C to 200°C (-85°F to 392°F)
<b>A</b>	<b>A</b>	Clear Chromate over Cadmium over Electroless Nickel -65°C to 150°C (inactive) (-85°F to 302°F)

## STEP 5: CHOOSE CONTACT

See Step 6 if you are not ordering contacts with part.

**P** = Pin  
**S** = Socket

**A** = Less Pin Contacts  
**B** = Less Socket Contact

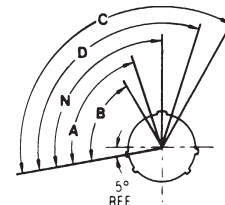
May be used for special contact types (PC Pin, Thermocouple, Fiber optic).

## STEP 6: CHOOSE POLARIZATION

**N** = Normal Standard (omit on Military part number)  
**A** = Next Most Popular

**B** = Limited Availability  
**C** = Check for Availability  
**D** = Check for Availability

SHELL SIZE	N	A	B	C	D
9	95	77	-	-	113
11	95	81	67	123	109
13	95	75	63	127	115
15	95	74	61	129	116
17	95	77	65	125	113
19	95	77	65	125	113
21	95	77	65	125	113
23	95	80	69	121	110
25	95	80	69	121	110



Mating Face of Receptacle

## STEP 7: CHOOSE MODIFIER

Omit for standard contacts

**-LC** = For use with standard contacts, but supplied without contacts, seal plugs or tools (PO must state Less Contacts)

**L** = Supplied without contacts, seal plugs or tools. (Commercial only)




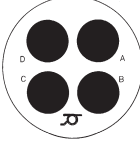

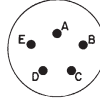



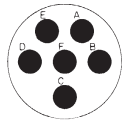


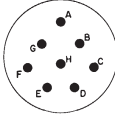
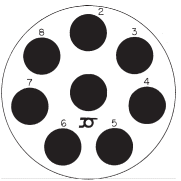

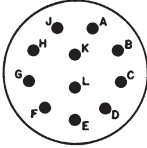
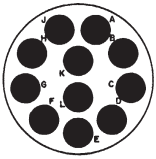
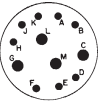



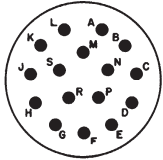

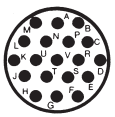
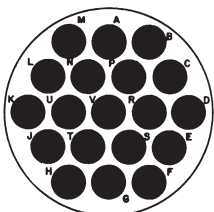
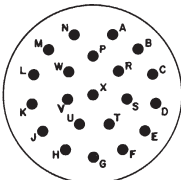


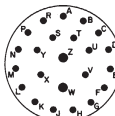
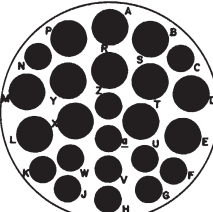

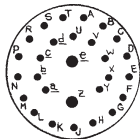
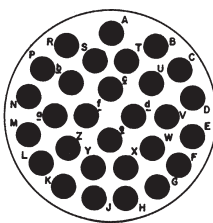
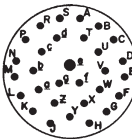
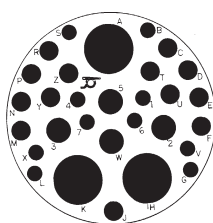

**-16** = Outgassed NASA Space Grade (Commercial only)

**-27** = Outgassed Standard Connector (Commercial only)

Note: -LC is not marked on part

For other commercial modification, i.e., less tools, with PC contact or with endbell, contact us

## LAYOUTS BY NUMBER OF CONTACTS

	3	4				5	6 CONTACTS					
												
LAYOUT	9-98	11-4	13-4	21-75	11-5	15-5	9-6	9-35	11-98	17-6		
# OF CONTACTS	3-#20	4-#20	4-#16	4-#8	5-#20	5-#16	6-#22M	6-#22D	6-#20	6-#12		
SERVICE RATING	I	I	I	M**	I	II	M	M	I	I		
	8 CONTACTS					10				11		
												
LAYOUT	11-99	13-8	17-8	25-8	13-98	19-11	21-11					
# OF CONTACTS	7-#20	8-#20	8-#16	8-#8	10-#20	11-#16	11-#12					
SERVICE RATING	I	I	II	COAX***	I	II	I					
	13 CONTACTS				15		16		18		19	
												
LAYOUT	15-97	11-13	11-35	15-15	21-16	15-18	15-19					
# OF CONTACTS	8-#20 4-#16	13-#22M	13-#22D	14-#20 1-#16	16-#16	18-#20	19-#20					
SERVICE RATING	I	M	M	I	II	I	I					
19 CONTACTS		21		22		23		24				
			Inactive. Use 13-35									
LAYOUT	25-19	23-21			13-22	13-35	17-99	25-24				
# OF CONTACTS	19-#12	21-#16			22-#22M	22-#22D	21-#22 2-#16	12-#16 12-#12				
SERVICE RATING	I	II			M	M	I	I				
26		28		29		30 CONTACTS		32				
												
LAYOUT	17-26	19-28	25-29	19-30	25-20	19-32						
# OF CONTACTS	26-#20	26-#20 2-#16	29-#16	29-#20 1-#16	10-#20 13-#16 4-#12* 3-#8**	32-#20						
SERVICE RATING	I	I	I	I	N	I						

Drawing not to scale; Mating-Face view of pin insert shown (socket view is opposite)

\*Coax \*\*Twinax \*\*\*Coax/Twinax

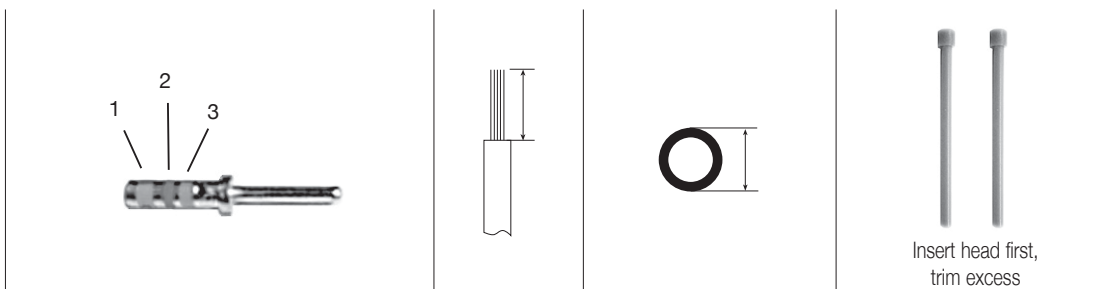
# LAYOUTS BY NUMBER OF CONTACTS

	32	37 CONTACTS			39	41
	Pin Insert Only		Inactive. Use 15-35			
LAYOUT	23-32	15-35	15-37	25-37	21-39	21-41
# OF CONTACTS	32-#20	37-#22D	37-#22M	37-#16	37-#20 2-#16	41-#20
SERVICE RATING	I	M	M	I	I	I
	42	43	46	53	55	
LAYOUT	25-42	25-43	25-46	23-53	17-35	
# OF CONTACTS	38-#20 4-#8*	23-#20 20-#16	40-#20 4-#16 2-#8*	53-#20	55-#22D	
SERVICE RATING	I, COAX	I	I	I	M	
	55 CONTACTS		56	61	64	
	Inactive. Use 17-35					
LAYOUT	17-55	23-55	25-4	25-61	25-64	
# OF CONTACTS	55-#22M	55-#20	48-#20 8-#16	61-#20	40-#22D 8-#20 10-#16 6-#12	
SERVICE RATING	M	I	I	I	M	
	66 CONTACTS			79	85	
	Inactive. Use 19-35	Inactive. Use 19-35	Inactive. Use 19-35	Inactive. Use 21-35	Inactive. No Replacement	
LAYOUT	19-35	19-66	25-66	21-1	21-35	
# OF CONTACTS	66-#22D	66-#22M	53-#22D 2-#20 11-#16	79-#22M	79-#22D	
SERVICE RATING	M	M	I	M	M	
	100 CONTACTS		128 CONTACTS			
	Inactive. Use 23-35	Inactive. No Replacement	Inactive. Use 25-35			
LAYOUT	23-1	23-35	25-2	25-1	25-35	
# OF CONTACTS	100-#22D	100-#22D	100-#22	128-#22M	128-#22D	
SERVICE RATING	M	M	M	M	M	

\*Coax \*\*Twinax \*\*\*Coax/Twinax

CONTACTS

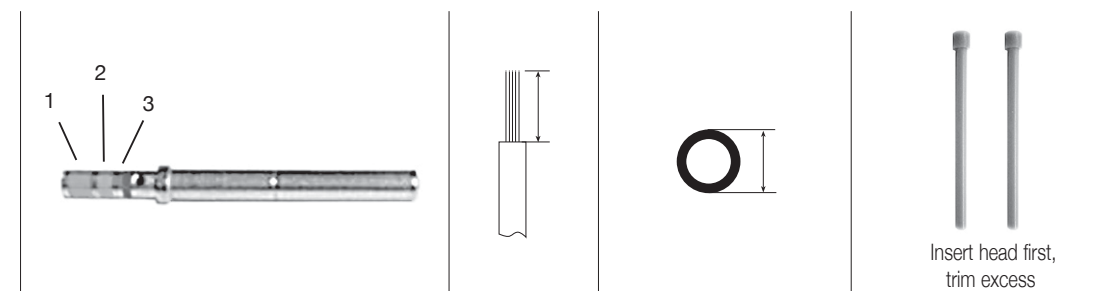
PINS



CONTACT SIZE	WIRE SIZE AWG	PIN CONTACT PART NUMBER	COLOR BANDS			WIRE STRIP LENGTHS	WIRE SEALING RANGE		WIRE HOLE FILTER	COLOR
			1	2	3		MIN	MAX		
22D	28,26,24&22	M39029/58-360	ORANGE	BLUE	BLACK	.125 (3.18)	.030 (0.76)	.054 (1.37)	MS27488-22-2	BLACK
*22M	28,26&24	M39029/58-361	ORANGE	BLUE	BROWN	.125 (3.18)	.030 (0.76)	.050 (1.27)	MS27488-22-2	BLACK
*22	26,24&22	M39029/58-362	ORANGE	BLUE	RED	.125 (3.18)	.034 (0.86)	.060 (1.52)	MS27488-22-2	BLACK
20	20,22&24	M39029/58-363	ORANGE	BLUE	ORANGE	.188 (4.77)	.040 (1.02)	.083 (2.11)	MS27488-20-2	RED
16	16,18&20	M39029/58-364	ORANGE	BLUE	YELLOW	.188 (4.77)	.065 (1.65)	.109 (2.77)	MS27488-16-2	BLUE
12	12&14	M39029/58-365	ORANGE	BLUE	GREEN	.188 (4.77)	.097 (2.46)	.142 (3.61)	MS27488-12-2	YELLOW
8	COAX+	-	-	-	-	-	.135 (3.43)	.155 (3.94)	MS27488-8-3	-

+For Printed Circuit, Coax, Fiber Optic (MIL-T-29504/4 for size 16 contacts) or Thermocouple Contacts, contact us.

SOCKETS




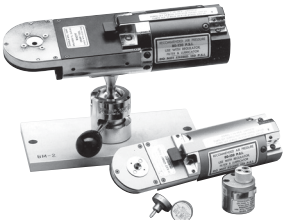



CONTACT SIZE	WIRE SIZE AWG	PIN CONTACT PART NUMBER	COLOR BANDS			WIRE STRIP LENGTHS	WIRE SEALING RANGE		WIRE HOLE FILTER	COLOR
			1	2	3		MIN	MAX		
22D	22,26,24&22	M39029/56-348	ORANGE	YELLOW	GRAY	.125 (3.18)	.030 (0.76)	.054 (1.37)	MS27488-22-2	BLACK
20	20,22&24	M39029/56-351	ORANGE	GREEN	BROWN	.188 (4.77)	.040 (1.02)	.083 (2.11)	MS27488-20-2	RED
16	16,18&20	M39029/56-352	ORANGE	GREEN	RED	.188 (4.77)	.065 (1.65)	.109 (2.77)	MS27488-16-2	BLUE
12	12&14	M39029/56-353	ORANGE	GREEN	ORANGE	.188 (4.77)	.097 (2.46)	.142 (3.61)	MS27488-12-2	YELLOW
8	COAX+	-	-	-	-	-	.135 (3.43)	.155 (3.94)	MS27488-8-3	-

+For Printed Circuit, Coax, Fiber Optic (MIL-T-29504/5 for size 16 contacts), or Thermocouple Contacts, contact us.

\* Contact us for more information.


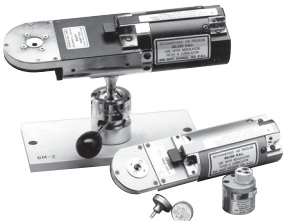



All dimensions in inches (millimeters in parentheses) unless otherwise stated.



											
HAND CRIMP TOOL	POWER CRIMP TOOL	TURRET HEADS	USE LOCATOR COLOR	PLASTIC INSERTION/EXTRACTION TOOL	INSERTION TIP COLOR	EXTRACTION TIP COLOR	METAL INSERTION TOOL	COLOR BAND	METAL EXTRACTION TOOL	COLOR BAND	
										1	2
M22520/2-01	CBT565	M22520/2-09	-	M81969/14-01	GREEN	WHITE	MS27495A22M	BLACK	MS27495R22M	BLACK	WHITE
M22520/2-01	CBT565	M22520/2-09	-	M81969/14-01	GREEN	WHITE	MS27495A22M	BLACK	MS27495R22M	BLACK	WHITE
M22520/2-01	CBT565	M22520/2-09	-	M81969/14-01	GREEN	WHITE	MS27495A22M	BLACK	MS27495R22M	BLACK	WHITE
M22520/1-01	CBT530	M22520/1-04	RED	M81969/14-10	RED	ORANGE	MS27495A20	RED	MS27495R20	RED	WHITE
M22520/1-01	CBT530	M22520/1-04	BLUE	M81969/14-03	BLUE	WHITE	MS27495A16	BLUE	MS27495R16	BLUE	WHITE
M22520/1-01	CBT530	M22520/1-04	YELLOW	M81969/14-04	YELLOW	WHITE	DAK95-12B	-	DRK95-12B	-	-
-	-	-	-	-	-	-	-	-	-	-	-

**D38999-22 TOOL KIT / D38999-20 TOOL KIT CONTAINS:**

- Crimp tool
- Locator(s)
- Metal insertion tool
- Metal extraction tool
- Instructions
- Carrying case

											
HAND CRIMP TOOL	POWER CRIMP TOOL	TURRET HEADS	USE LOCATOR COLOR	PLASTIC INSERTION/EXTRACTION TOOL	INSERTION TIP COLOR	EXTRACTION TIP COLOR	METAL INSERTION TOOL	COLOR BAND	METAL EXTRACTION TOOL	COLOR BAND	
										1	2
M22520/2-01	CBT565	M22520/2-07	-	M81969/14-01	GREEN	WHITE	MS27495A22M	BLACK	MS27495R22M	BLACK	WHITE
M22520/1-01	CBT530	M22520/1-04	RED	M81969/14-10	RED	ORANGE	MS27495A20	RED	MS27495R20	RED	WHITE
M22520/1-01	CBT530	M22520/1-04	BLUE	M81969/14-03	BLUE	WHITE	MS27495A16	BLUE	MS27495R16	BLUE	WHITE
M22520/1-01	CBT530	M22520/1-04	YELLOW	M81969/14-04	YELLOW	WHITE	DAK95-12B	-	DRK95-12B	-	-
-	-	-	-	-	-	-	-	-	-	-	-

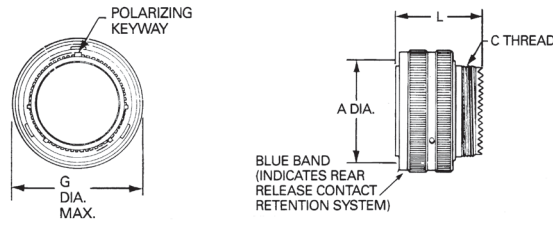
**D38999-22 TOOL KIT / D38999-20 TOOL KIT CONTAINS:**

- Crimp tool
- Locator(s)
- Metal insertion tool
- Metal extraction tool
- Instructions
- Carrying case

## DIMENSIONS

### PLUGS

#### MS27467/KJL6

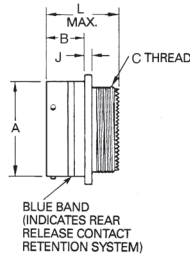


SHELL SIZE	A DIA. MAX.	G DIA. MAX.	L MAX. OVERALL LENGTH		C REAR THREAD UNEF-2A
			T CLASS	P CLASS	
9	.585 (14.86)	.859 (21.82)	1.234 (31.34)	1.671 (42.44)	7/16-28
11	.717 (18.21)	.984 (24.99)	1.234 (31.34)	1.671 (42.44)	9/16-24
13	.866 (22.00)	1.156 (29.36)	1.234 (31.34)	1.671 (42.44)	11/16-24
15	.990 (25.15)	1.281 (32.54)	1.234 (31.34)	1.671 (42.44)	13/16-20
17	1.115 (28.32)	1.406 (35.71)	1.234 (31.34)	1.671 (42.44)	15/16-20
19	1.222 (31.04)	1.516 (38.51)	1.234 (31.34)	1.671 (42.44)	1-1/16-18
21	1.347 (34.21)	1.641 (41.68)	1.234 (31.34)	1.766 (44.86)	1-3/16-18
23	1.472 (37.39)	1.766 (44.86)	1.234 (31.34)	1.766 (44.86)	1-5/16-18
25	1.597 (40.56)	1.891 (48.03)	1.234 (31.34)	1.766 (44.86)	1-7/16-18

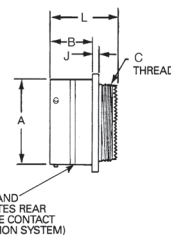
→ See page 334 for Endbell Tightening tools.

### RECEPTACLES

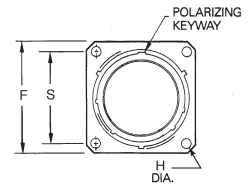
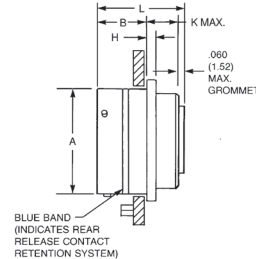
#### MS27466/KJL0



#### MS27656/KJL3



#### MS27505/KJL5



SHELL SIZE	A DIA. MAX	L MAX OVERALL LENGTH			B MAX		C REAR THREAD UNEF-2A KJL0 KJL3	J MAX	F MAX	S (T.P.)	H MAX
		MS27466/ KJL0**	MS27656/ KJL3††	MS27505/ KJL5	MS27466 KJL0	KJL3 KJL5					
9	.573 (14.55)	1.240 (31.50)	1.247 (31.67)	1.099 (27.91)	.632 (16.05)	.820 (20.83)	7/16-28	.100 (2.54)	.958 (24.33)	.719 (18.26)	.138 (3.51)
11	.701 (17.81)	1.240 (31.50)	1.247 (31.67)	1.099 (27.91)	.632 (16.05)	.820 (20.83)	9/16-24	.100 (2.54)	1.051 (26.70)	.812 (20.62)	.138 (3.51)
13	.851 (21.62)	1.240 (31.50)	1.247 (31.67)	1.099 (27.91)	.632 (16.05)	.820 (20.83)	11/16-24	.100 (2.54)	1.145 (29.08)	.906 (23.01)	.138 (3.51)
15	.976 (24.79)	1.240 (31.50)	1.247 (31.67)	1.099 (27.91)	.632 (16.05)	.820 (20.83)	13/16-20	.100 (2.54)	1.239 (31.47)	.969 (24.61)	.138 (3.51)
17	1.101 (27.97)	1.240 (31.50)	1.247 (31.67)	1.099 (27.91)	.632 (16.05)	.820 (20.83)	15/16-20	.100 (2.54)	1.332 (33.83)	1.062 (26.97)	.138 (3.51)
19	1.208 (30.68)	1.240 (31.50)	1.247 (31.67)	1.099 (27.91)	.632 (16.05)	.820 (20.83)	1-1/16-18	.100 (2.54)	1.458 (37.03)	1.156 (29.36)	.138 (3.51)
21	1.333 (33.86)	1.240 (31.50)	1.247 (31.67)	1.100 (27.94)	.602 (15.29)	.790 (20.07)	1-3/16-18	.130 (3.30)	1.582 (40.18)	1.250 (31.75)	.138 (3.51)
23	1.458 (37.03)	1.240 (31.50)	1.247 (31.67)	1.100 (27.94)	.602 (15.29)	.790 (20.07)	1-5/16-18	.130 (3.30)	1.708 (43.38)	1.375 (34.93)	.157 (3.99)
25	1.583 (40.21)	1.240 (31.50)	1.247 (31.67)	1.100 (27.94)	.602 (15.29)	.790 (20.07)	1-7/16-18	.130 (3.30)	1.832 (46.53)	1.500 (38.10)	.157 (3.99)

Note: K = .219 (5.56) for sizes 9-19, .250 (6.35) for sizes 21-25

→ See page 325 for Nut Plates and Sealing Screws.

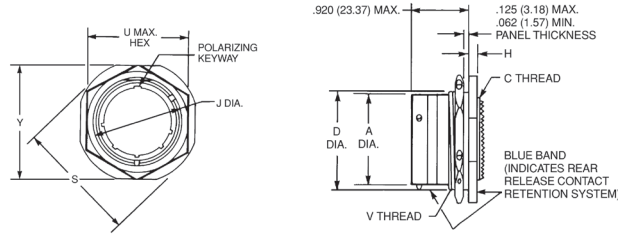
†† Most Popular

\*\* Least Popular

All dimensions in inches (millimeters in parentheses) unless otherwise stated.

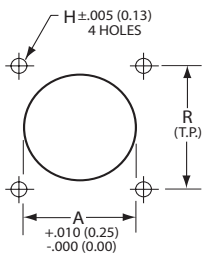
RECEPTACLES

MS27468/KJL7



SHELL SIZE	A DIA. MAX.	D DIA. MAX.	H MAX.	OVERALL LENGTH		U MAX JAM NUT FLATS	S MAX.	Y MAX.	J MAX.	V JAM NUT THREAD	C REAR THREAD UNEF-2A
				CLASS T	CLASS P						
9	.573 (14.55)	.655 (16.64)	.120 (3.05)	1.358 (34.50)	1.451 (36.86)	.892 (22.66)	1.204 (30.58)	1.062 (26.97)	.662 (16.81)	11/16-24UNEF	7/16-28
11	.701 (17.81)	.755 (19.18)	.120 (3.05)	1.358 (34.50)	1.451 (36.86)	1.017 (25.83)	1.391 (35.33)	1.250 (31.75)	.810 (20.57)	13/16-24UNEF	9/16-24
13	.851 (21.62)	.942 (23.93)	.120 (3.05)	1.358 (34.50)	1.451 (36.86)	1.205 (30.61)	1.516 (38.51)	1.375 (34.93)	.960 (24.38)	1-20UNEF	11/16-24
15	.976 (24.79)	1.066 (27.08)	.120 (3.05)	1.358 (34.50)	1.451 (36.86)	1.329 (33.76)	1.641 (41.68)	1.500 (38.10)	1.085 (27.56)	1-1/8-18UNEF	13/16-20
17	1.101 (27.97)	1.191 (30.25)	.120 (3.05)	1.358 (34.50)	1.451 (36.86)	1.455 (39.96)	1.766 (44.86)	1.625 (41.28)	1.210 (30.73)	1-1/4-18UNEF	15/16-20
19	1.208 (30.68)	1.316 (33.43)	.151 (3.84)	1.358 (34.50)	1.451 (36.86)	1.579 (40.11)	1.954 (49.63)	1.812 (46.02)	1.317 (33.45)	1-3/8-18UNEF	1-1/16-18
21	1.333 (33.86)	1.441 (36.60)	.151 (3.84)	1.358 (34.50)	1.451 (36.86)	1.705 (43.31)	2.078 (52.78)	1.938 (49.23)	1.442 (36.63)	1-1/2-18UNEF	1-3/16-18
23	1.458 (37.03)	1.566 (39.78)	.151 (3.84)	1.358 (34.50)	1.451 (36.86)	1.829 (46.46)	2.204 (55.98)	2.062 (52.37)	1.567 (39.80)	1-5/8-18UNEF	1-5/16-18
25	1.583 (40.21)	1.691 (42.95)	.151 (3.84)	1.358 (34.50)	1.451 (36.86)	2.017 (51.23)	2.328 (59.13)	2.188 (55.58)	1.692 (42.98)	1-3/4-18UNS	1-7/16-18

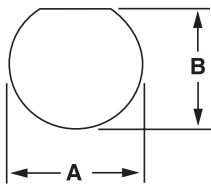
KJL FLANGED PANEL CUTOUTS



SHELL SIZE	A DIA. +.010-.00(+.25-.00)	H DIA.	R (T.P.)	SCREW SIZE
9	.665 (16.89)	.125 (3.18)	.719 (18.26)	#4
11	.812 (20.62)	.125 (3.18)	.812 (20.62)	#4
13	.965 (24.51)	.125 (3.18)	.906 (23.01)	#4
15	1.085 (27.55)	.125 (3.18)	.969 (24.61)	#4
17	1.210 (30.73)	.125 (3.18)	1.062 (26.97)	#4
19	1.322 (33.57)	.125 (3.18)	1.156 (29.36)	#4
21	1.447 (36.75)	.125 (3.18)	1.250 (31.75)	#4
23	1.569 (39.85)	.152 (3.86)	1.375 (34.93)	#6
25	1.703 (43.25)	.152 (3.86)	1.500 (38.10)	#6

➔ See page 325 for Nut Plates and Sealing Screws.

KJL JAM NUT PANEL CUTOUTS



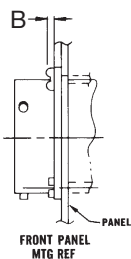
SHELL SIZE	A DIAMETER +.010 -.000 (+.25 -.00)	B DIAMETER +.010 -.000 (+.25 -.00)
9	.693 (17.60)	.657(16.70)
11	0.825 (20.96)	0.770 (19.59)
13	1.010 (25.65)	0.955 (24.26)
15	1.135 (28.83)	1.085 (27.56)
17	1.260 (32.00)	1.210 (30.73)
19	1.385 (35.18)	1.335 (33.91)
21	1.510 (38.35)	1.460 (37.08)
23	1.635 (41.53)	1.585 (40.26)
25	1.760 (44.70)	1.710 (43.43)

PANEL THICKNESS

MS27466/KJL0

FRONT PANEL MOUNT

(NOT RECOMMENDED FOR REAR MOUNTING)

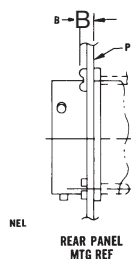


MS27656/KJL3

MS27505E/KJLE

REAR PANEL MOUNT

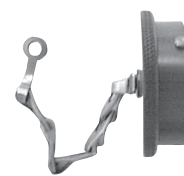
(INCLUDING HARDWARE)



SIZE	A DIAMETER +.010 -.000 (+.25 -.00)	SIZE	B MAX PANEL SCREW HEAD
9	.234 (5.94)	9	MIN .062 (1.57) MAX .125 (3.18)
11			
13			
15			
17			
19	.204 (5.18)	19	
21			
23			
25			
25	.193 (4.90)	25	

All dimensions in inches (millimeters in parentheses) unless otherwise stated.

ACCESSORIES



KJL	DUMMY RECEPTACLES	RECEPTACLE DUST CAPS		PLUG CAP
		FOR FLANGED	FOR JAM NUT	
9	M38999/9-9B	MS27502**9C	MS27502**9N	MS27501**9C
11	M38999/9-11B	MS27502**11C	MS27502**11N	MS27501**11C
13	M38999/9-13B	MS27502**13C	MS27502**13N	MS27501**13C
15	M38999/9-15B	MS27502**15C	MS27502**15N	MS27501**15C
17	M38999/9-17B	MS27502**17C	MS27502**17N	MS27501**17C
19	M38999/9-19B	MS27502**19C	MS27502**19N	MS27501**19C
21	M38999/9-21B	MS27502**21C	MS27502**21N	MS27501**21C
23	M38999/9-23B	MS27502**23C	MS27502**23N	MS27501**23C
25	M38999/9-25B	MS27502**25C	MS27502**25N	MS27501**25C

\*\* Select code for plating

B = Olive Drab Chromate over Cadmium over Nickel (500 Hour Salt Spray)

F = Electroless Nickel (Fluid Resistant)

A = Gold Iridite over Cadmium over Nickel

C = Hard Anodize



KJL	ENDBELLS		CABLE RANGE	
	STRAIGHT, LOW COST	RIGHT-ANGLE, LOW COST	MIN	MAX
9	M85049/49-2-8**	M85049/47-**8	.098 (2.50)	.234 (5.94)
11	M85049/49-2-10**	M85049/47-**10	.153 (3.80)	.234 (5.94)
13	M85049/49-2-12**	M85049/47-**12	.190 (4.80)	.328 (8.33)
15	M85049/49-2-14**	M85049/47-**14	.260 (6.60)	.457 (11.61)
17	M85049/49-2-16**	M85049/47-**16	.283 (7.20)	.614 (15.60)
19	M85049/49-2-18**	M85049/47-**18	.325 (8.30)	.634 (16.10)
21	M85049/49-2-20**	M85049/47-**20	.343 (8.70)	.698 (17.73)
23	M85049/49-2-22**	M85049/47-**22	.381 (9.70)	.823 (20.90)
25	M85049/49-2-24**	M85049/47-**24	.418 (10.60)	.853 (21.67)

\*\* Select code for plating selection

W = Olive Drab Chromate over Cadmium over Nickel (1000-Hour Salt Spray)

N = Electroless Nickel (Fluid Resistant)

A = Black Anodize






All dimensions in inches (millimeters in parentheses) unless otherwise stated.



KJL	SELF LOCKING ENDBELLS		CLAMP RANGE	
	STRAIGHT	RIGHT-ANGLE	MIN	MAX
9	M85049/49-2-8**	M85049/47-**8	.098 (2.50)	.234 (5.94)
11	M85049/49-2-10**	M85049/47-**10	.153 (3.80)	.234 (5.94)
13	M85049/49-2-12**	M85049/47-**12	.190 (4.80)	.328 (8.33)
15	M85049/49-2-14**	M85049/47-**14	.260 (6.60)	.457 (11.61)
17	M85049/49-2-16**	M85049/47-**16	.283 (7.20)	.614 (15.60)
19	M85049/49-2-18**	M85049/47-**18	.325 (8.30)	.634 (16.10)
21	M85049/49-2-20**	M85049/47-**20	.343 (8.70)	.698 (17.73)
23	M85049/49-2-22**	M85049/47-**22	.381 (9.70)	.823 (20.90)
25	M85049/49-2-24**	M85049/47-**24	.418 (10.60)	.853 (21.67)

# Add S for Self-Locking:  
S = Self-Locking with Detent

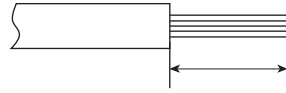
\*\* Select code for connector plating  
W = Olive Drab Chromate over Cadmium over Nickel (1,000 Hour Salt Spray)  
N = Electroless Nickel (Fluid Resistant)  
S = 300 Series Steel, Passivated

	SEALED	EMI/RFI	ORIENTATION S=STRAIGHT A=90° B=45°	ENDBELL TYPES	DESCRIPTION
 M85049/69	Y	N	S	Heat Shrink Boot Adapters	Designed for use with straight or right angle shrink boots. A knurled rear section with a boot groove provide an excellent surface for the boot to grab the metal endbell. Available with lock wire and drain holes. See heat shrink boot on <a href="#">pages 324 - 329</a> .
 M85049/21	N	N	S	Extender Backshell	Non-environmental, designed for use with jacketed cable, allows extra space to break out the wires and still provide stain relief clamping to the outside of the cable jacket. Used with M85049/38 or 39.
 M85049/18	Y	Y	S	Extender Backshell	This EMI/RFI-shielding, environmentally-sealing endbell features a standard style cable clamp with gland seal at the end of an extender-style backshell.
 M85049/19	N	Y	S	Extender Backshell	This EMI/RFI-shielding, non-environmentally-sealing endbell features a standard style cable clamp.
 BANDING M85049/88 M85049/89 M85049/90	Y	Y	S B A	Banding Adapter	Banding adapters utilize a band of metal that fastens and grounds cable shields to the outside of endbells. This method of terminating shields has advantages in that they typically use tools to tighten and trim the bands. These tools make the termination tight, repeatable, reworkable (if you make a mistake, just cut the band off and start again) and facilitates service. Banding adapters help lower the total applied cost by having simpler designs that have fewer parts with uncomplicated assembly procedures.
CUSTOM			SAB	Custom Designs Contact us	If the Military Standard endbells don't fit your needs, contact us and we will customize an endbell solution. Most of these customized endbells are typically assembled in 4-8 weeks or sooner!
M85049/14S	N	N	S	E NUT	Wire seal compression nut

All dimensions in inches (millimeters in parentheses) unless otherwise stated.

### WIRE STRIPPING

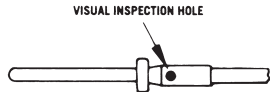
Strip insulation from end of wire to be crimped. (See table for proper stripping dimensions.) Do not cut or damage wire strands.



CONTACT SIZE	STRIP LENGTH
22D	.125 (3.18)
20	.188 (4.77)
16	.188 (4.77)
12	.188 (4.77)

All dimensions in inches (millimeters in parentheses) unless otherwise stated.

### CONTACT CRIMPING

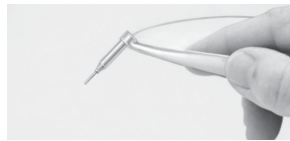


**STEP 1:** Insert stripped wire into contact crimp pot. Wire must be visible through inspection hole.

**STEP 2:** Using correct crimp tool and locator, cycle the tool once to be sure the indentors are open. Insert contact and wire into locator. Squeeze tool handle firmly and completely to ensure a proper crimp. The tool will not release unless the crimp indentors in the tool head have been fully actuated.

**STEP 3:** Release crimped contact and wire from tool. Be certain the wire is visible through inspection hole in contact.

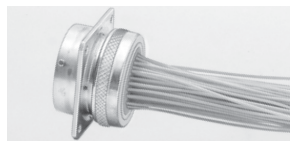
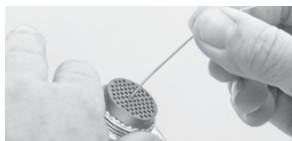
### CONTACT INSERTION



**STEP 1:** Remove hardware from plug or receptacle and slip over wire bundle in proper order for reassembly.

**STEP 2:** Using proper plastic or metal insertion tool for corresponding contact, position wire in tip of the tool so that the tool tip presses against the contact shoulder.

**STEP 3:** Press tool against contact shoulder and, with firm and even pressure, insert wired contact and tool tip into center contact cavity. A slight click may be heard as metal retaining tines snap into place behind contact shoulder.

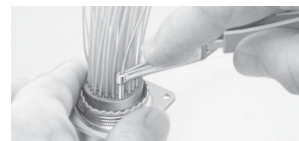


**STEP 4:** Remove tool and pull back lightly on wire to make sure contact is properly seated. Repeat operation with remainder of contacts to be inserted, beginning with the center cavity and working outward in alternating rows.

**STEP 5:** After all contacts are inserted, fill any empty cavities with wire sealing plugs. Reassemble plug or receptacle hardware.

CRIMP KITS
D38999-22 TOOL KIT
D38999-20 TOOL KIT

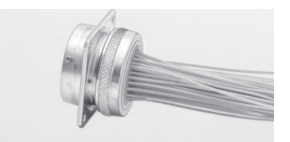
### CONTACT EXTRACTION



**STEP 1:** Remove hardware from plug or receptacle and slide hardware back along wire bundle.

**STEP 2:** Using plastic or metal extraction tool with proper color code corresponding to contact size, place wire in tool.

**STEP 3:** Insert tool into contact cavity until tool tip bottoms against the contact shoulder, expanding clip retaining tines.



**STEP 4:** Hold wire firmly in tool and extract wired contact and tool. Repeat operation for all contacts to be extracted.

**STEP 5:** Fill any empty cavities with wire sealing plugs. Reassemble plug or receptacle hardware.

Note: KJ Series shown.