

# Amphenol® 97 Series Connectors

provide the interconnection solution for low cost, general duty applications

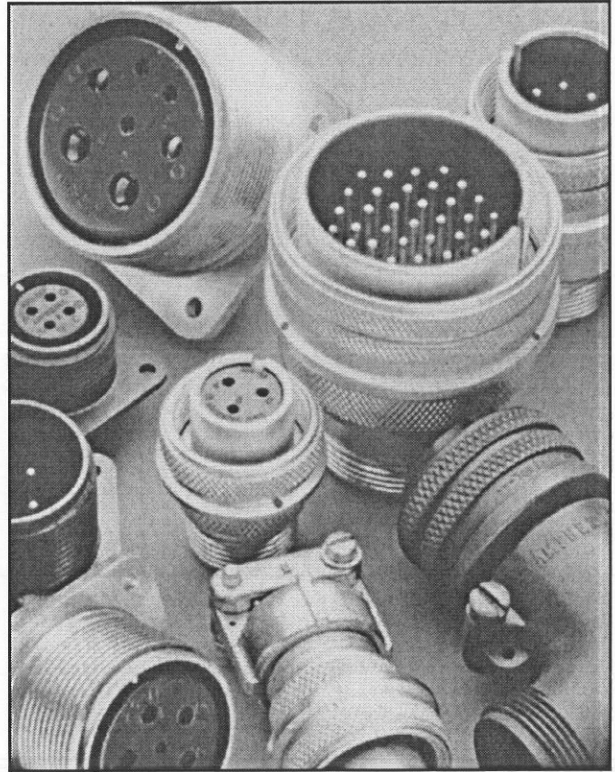
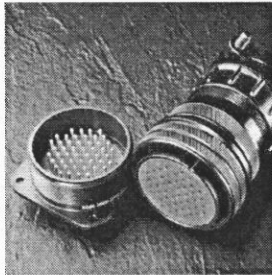
Amphenol offers the 97 Series Connector Family - A general duty standard cylindrical connector, MIL-5015 style.

The 97 Series is a widely used connector series for the automotive, robotics, machine tool and welding industries, as well as numerous other commercial applications from heavy equipment to ECG monitoring cables.

Shell components are fabricated from high grade aluminum alloy to provide strength and environmental protection. This family of connectors offers a wide variety of shell styles, contact patterns and accessory options.

The Amphenol® 97 Series design features and benefits:

- Low cost, general duty non-environmental
- Environmental capability with the 417 suffix plus 9767 cable clamp (see page 34)
- Solder or crimp termination
- UL Recognized, CSA Recognized
- Wide selection of shell styles and insert patterns
- Wide selection of connector finishes - cadmium or non-cadmium (environmentally friendly zinc alloy)
- Threaded coupling, hard dielectric inserts
- Solid or split shell construction
- Accessories for both individual wire seal and jacketed cable



**RoHS COMPLIANT PRODUCT**  
AVAILABLE – Consult  
Amphenol Industrial Operations.

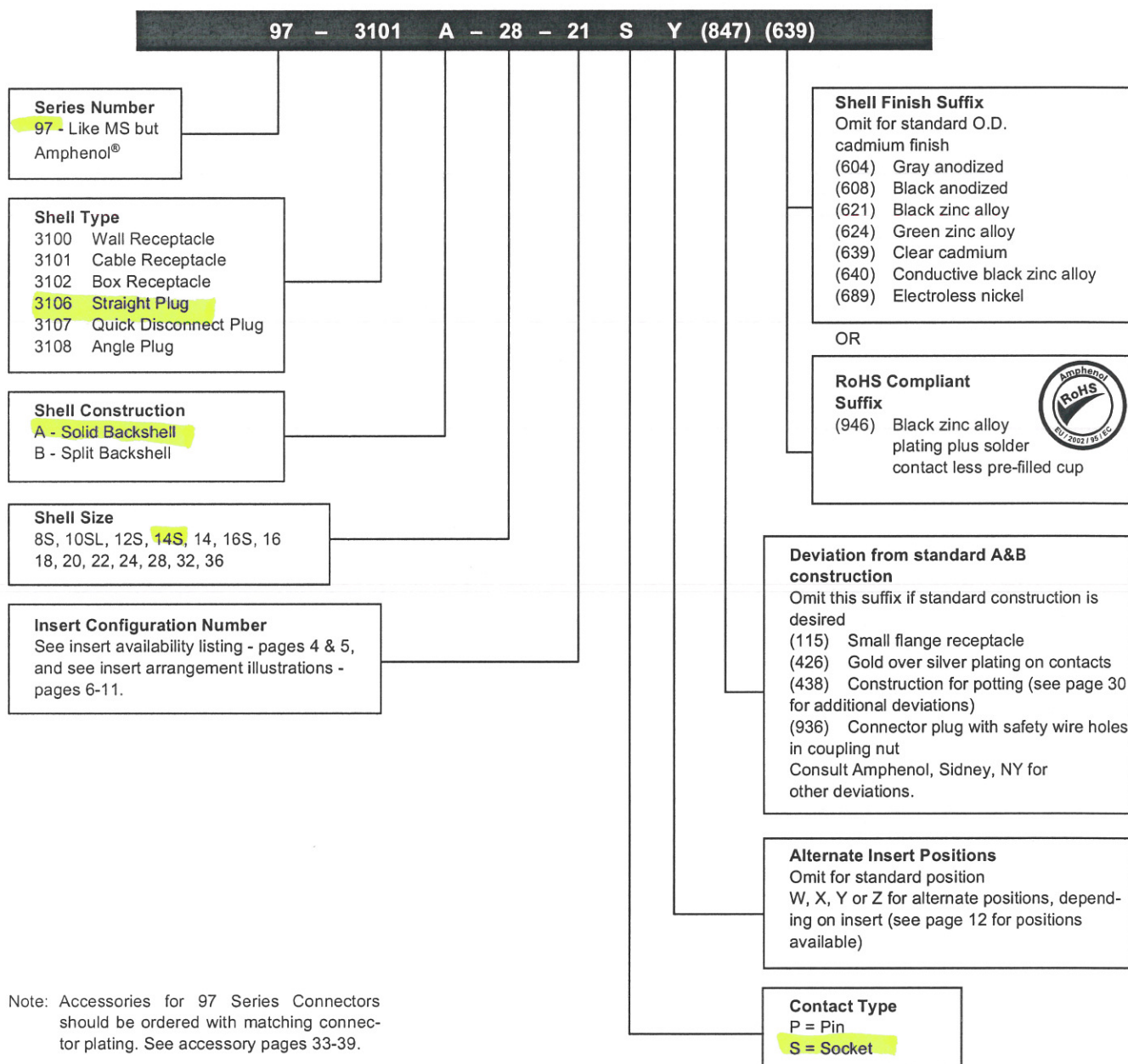


For additional information on Amphenol® 97 Series connectors, or for special application requirements, contact your local Amphenol sales office, authorized distributor, or -

Amphenol Corporation  
Amphenol Industrial Operations  
40-60 Delaware Avenue  
Sidney, New York 13838-1395  
Telephone: 607-563-5011  
Fax: 607-563-5157  
Web site: [www.amphenol-industrial.com](http://www.amphenol-industrial.com)

# 97 series solder type how to order

Example of part number for solder type connectors is given below.



Note: Accessories for 97 Series Connectors should be ordered with matching connector plating. See accessory pages 33-39.

# Amphenol® 97 Series Connectors with solder contacts



## DESIGN CHARACTERISTICS

- Medium to heavy weight cylindrical
- Durable, field-proven design
- Single key/keyway polarization
- Threaded coupling, hard dielectric inserts
- Non-rotating contacts
- Operating temperatures from  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Cost effective
- Intermateable and intermountable with existing 97 Series and MIL-5015 connectors
- Underwriters Laboratories approved recognition File E115497
- Canadian Standards Association Certification File LR69183

## CUSTOMER OPTIONS

- Solid or split shell construction
- Six shell styles
- 128 contact arrangements, from 1 to 52 circuits
- Alternate insert positioning
- High temperature and potting constructions
- Special plating finishes including black and green zinc alloy
- Optional gold plating on MS contacts
- Thermocouple arrangements available

Connector components are fabricated from high grade aluminum alloy, with a conductive cadmium plate finish and an olive drab chromate after-treatment. Some cable clamps are a zinc alloy with an olive drab/green chromate finish. See how to order page 19 for other finish variations.

Contacts are silver plated with pre-tinned solder cups. Optional gold over silver plating is also available. Inserts for solder style contacts are diallyl-phthalate.

Users should be aware that classes "A" and "B" of MIL-5015 have been cancelled, and these products are no longer qualified.

# 97 series solder type insert availability

Insert Number	Total Contacts	Mechanical Spacing		Service Rating	Contact Size				
		Inches	mm		0	4	8	12	16
8S-1+	1	1/16	1.57	INST.					1
10SL-3	3	1/16	1.57	A					3
10SL-4	2	1/16	1.57	A					2
12SL-844+*	4	1/16	1.57	A					4
12S-3	2	1/16	1.57	A					2
12-5+	1	1/8	3.18	D				1	
12S-6+*	2	1/16	1.57						2 Thermo-couple
14S-1†	3	1/16	1.57	A					3
14S-2	4			INST.					4
14S-4+†	1	1/8	3.18	D					1
14S-5	5			INST.					5
14S-6	6			INST.					6
14S-7	3	1/16	1.57	A					3
14S-9†	2	1/16	1.57	A					2
16S-1	7	1/16	1.57	A					7
16S-4+	2	1/8	3.18	D					2
16S-5	3	1/16	1.57	A					3
16S-6+†	3	1/16	1.57	A					3
16-7	3	1/16	1.57	A			1		2
16S-8	5	1/16	1.57	A					5
16-9	4	1/16	1.57	A				2	2
16-10	3	1/16	1.57	A				3	
16-11+†	2	1/16	1.57	A				2	
16-12	1	1/16	1.57	A		1			
16-13	2	1/16	1.57	A				2 Thermo-couple	
18-1	10	1/16	1.57	A					4
				INST.					6
18-3†	2	1/8	3.18	D				2	
18-4	4	1/8	3.18	D					4
18-5+	3	1/8	3.18	D				2	1
18-8	8	1/16	1.57	A				1	7
18-9+	7			INST.				2	5
18-10†	4	1/16	1.57	A				4	
18-11	5	1/16	1.57	A				5	
18-12†	6	1.16	1.57	A					6
18-13	4	1/16	1.57	A			1	3	
18-16	1	5/16	7.92	C				1	
18-19†	10	1/16	1.57	A					10
18-20	5	1/16	1.57	A					5
18-22†	3	1/8	3.18	D					3
18-29+†	5	1/16	1.57	A					5
18-420*	1							1 Hi-Voltage**	
20-3†	3	1/8	3.18	D				3	

Insert Number	Total Contacts	Mechanical Spacing		Service Rating	Contact Size				
		Inches	mm		0	4	8	12	16
20-4	4	1/8	3.18	D				4	
20-6†	3	1/8	3.18	D					3
20-7	8	1/8	3.18	D					4
		1/16	1.57	A					4
20-8	6			INST.			2		4
20-11†	13			INST.					13
20-14	5	1/16	1.57	A			2	3	
20-15	7	1/16	1.57	A				7	
20-16	9	1/16	1.57	A				2	7
20-17	6	1/16	1.57	A				5	1
20-18	9	1/16	1.57	A				3	6
20-19†	3	1/16	1.57	A			3		
20-21	9	1/16	1.57	A				1	8
20-23	2	1/16	1.57	A				2	
20-24	4	1/16	1.57	A				2	2
20-27	14	1/16	1.57	A					14
20-29	17	1/16	1.57	A					17
20-33	11	1/16	1.57	A					11
22-1†	2	1/8	3.18	D				2	
22-2	3	1/8	3.18	D				3	
22-4†	4	1/16	1.57	A				2	2
22-5	6	1/8	3.18	D				2	4
22-8†	2	3/16	4.75	E				2	
22-9	3	3/16	4.75	E				3	
22-10	4	3/16	4.75	E					4
22-11	2	1/4	6.35	B					2
22-12	5	1/8	3.18	D				2	3
22-13†	5	1/8	3.18	D					1
		1/16	1.57	A				4	
22-14	19	1/16	1.57	A					19
22-15	6	3/16	4.75	E					1
		1/16	1.57	A				5	
22-16†	9	1/16	1.57	A				3	6
22-18	8	1/8	3.18	D					5
		1/16	1.57	A					3
22-19	14	1/16	1.57	A					14
22-20†	9	1/16	1.57	A					9
22-22	4	1/16	1.57	A				4	
22-23	8	1/8	3.18	D					1
		1/16	1.57	A					7

Not all insert arrangements are currently available for environmental individual wire seal. Consult Amphenol, Sidney, NY for availability.

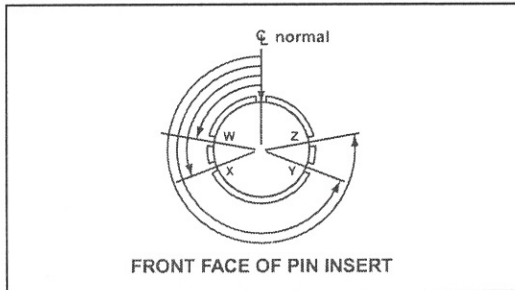
† Inactive for new military design, but available for replacement or for non-military purposes.

\* "MS" number not assigned. Use "97" prefix in place of "MS" in completing catalog number. See how to order, page 19.

\*\* Hi-Voltage = 17KVAC/24KVDC

◆ Molded-in pin (MIP) insert requires (910) deviation. See how to order, pg. 19.

# 97 series solder type alternate insert positioning



Insert Arrangement	Degrees			
	W	X	Y	Z
12S-3	70	145	215	290
14S-2	-	120	240	-
14S-5	-	110	-	-
14S-7	90	180	270	-
14S-9	70	145	215	290
16S-1	80	-	-	280
16S-4	35	110	250	325
16S-5	70	145	215	290
16S-6	90	180	270	-
16-7	80	110	250	280
16S-8	-	170	265	-
16-9	35	110	250	325
16-10	90	180	270	-
16-11	35	110	250	325
16-13	35	110	250	325
18-1	70	145	215	290
18-3	35	110	250	325
18-4	35	110	250	325
18-5	80	110	250	280
18-8	70	-	-	290
18-9	80	110	250	280
18-10	-	120	240	-
18-11	-	170	265	-
18-12	80	-	-	280
18-13	80	110	250	280
18-19	-	120	240	-
18-20	90	180	270	-
18-22	70	145	215	290
18-29	90	180	270	-
20-3	70	145	215	290
20-4	45	110	250	-
20-6	70	145	215	290
20-7	80	110	250	280
20-8	80	110	250	280
20-14	80	110	250	280
20-15	80	-	-	280
20-16	80	110	250	280
20-17	90	180	270	-
20-18	35	110	250	325
20-19	90	180	270	-
20-21	35	110	250	325
20-23	35	110	250	325
20-24	35	110	250	325
20-27	35	110	250	325
20-29	80	-	-	280

Insert Arrangement	Degrees			
	W	X	Y	Z
22-1	35	110	250	325
22-2	70	145	215	290
22-4	35	110	250	325
22-5	35	110	250	325
22-8	35	110	250	325
22-9	70	145	215	290
22-10	35	110	250	325
22-11	35	110	250	325
22-12	80	110	250	280
22-13	35	110	250	325
22-14	80	110	250	280
22-15	80	110	250	280
22-16	80	110	250	280
22-18	80	110	250	280
22-19	80	110	250	280
22-20	35	110	250	325
22-22	-	110	250	-
22-23	35	-	250	-
22-27	80	-	250	280
22-28	80	-	-	280
22-34	80	110	250	280
24-2	80	-	-	280
24-5	80	110	250	280
24-6	80	110	250	280
24-7	80	110	250	280
24-9	35	110	250	325
24-10	80	-	-	280
24-11	35	110	250	325
24-12	80	110	250	280
24-16	80	110	250	280
24-20	80	110	250	280
24-21	80	110	250	280
24-22	45	110	250	-
24-27	80	-	-	280
24-28	80	110	250	280
28-1	80	110	250	280
28-2	35	110	250	325
28-3	70	145	215	290
28-6	70	145	215	290
28-8	80	110	250	280
28-9	80	110	250	280
28-10	80	110	250	280
28-11	80	110	250	280
28-12	90	180	270	-
28-15	80	110	250	280
28-16	80	110	250	280
28-17	80	110	250	280
28-18	70	145	215	290
28-19	80	110	250	280
28-20	80	110	250	280
28-21	80	110	250	280
32-5	35	110	250	325
32-6	80	110	250	280
32-7	80	125	235	280
32-8	80	125	235	280
32-13	80	110	250	280
32-17	45	110	250	-
32-414*	80*	110*	250*	280*
36-1	80	110	250	280
36-5	-	120	240	-
36-6	35	110	250	325
36-7	80	110	250	280
36-8	80	110	250	280
36-9	80	125	235	280
36-10	80	125	235	280
36-15	60	125	245	305

\*Rotates opposite above illustration.

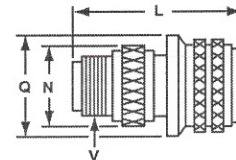
# 97 series solder type plugs with solid shells

## MS3106A

Connector Size	L Max.		N Ref.		Q Max.		V	
	Inch	mm	Inch	mm	Inch	mm	Fitting Threads	
8S	1-1/4	31.75	17/32	13.49	3/4	19.05	1/2-28	
10S	1-5/16	33.32	5/8	15.88	7/8	22.23	1/2-28	
10SL	1-3/8	34.93	3/4	19.05	7/8	22.23	5/8-24	
12S	1-7/16	36.50	25/32	19.84	1	25.40	5/8-24	
12	1-7/8	47.63	25/32	19.84	1	25.40	5/8-24	
12SL	1-31/64	37.69	7/8	22.23	1	25.40	3/4-20	
14S	1-15/32	37.13	7/8	22.23	1-1/8	28.58	3/4-20	
14	1-7/8	47.47	7/8	22.23	1-1/8	28.58	3/4-20	
16S	1-15/32	37.13	1	25.40	1-1/4	31.75	7/8-20	
16	1-7/8	47.47	1	25.40	1-1/4	31.75	7/8-20	
18	1-31/32	49.88	1-1/8	28.57	1-11/32	34.11	1 -20	
20	1-7/8	47.50	1-1/4	31.75	1-15/32	37.29	1-3/16-18	
22	1-31/32	49.88	1-3/8	34.93	1-19/32	40.46	1-3/16-18	
24	2-1/4	57.15	1-1/2	38.10	1-23/32	43.64	1-7/16-18	
28	2-1/4	57.15	1-3/4	44.45	1-31/32	49.99	1-7/16-18	
32	2-3/8	60.33	2-1/32	51.59	2-7/32	56.34	1-3/4-18	
36	2-3/8	60.33	2-1/4	57.15	2-15/32	62.69	2 -18	

### MS3106A straight plug

Sturdy, simple to assemble. Coupling ring machined from solid aluminum bar stock for high tensile strength. Mates with all types of MS receptacles. Front shell includes polarizing keyway. Back shell is threaded for standard MS/AN fittings.

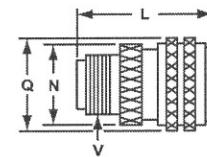


## MS3107A

Connector Size	L Max.		N Ref.		Q Max.		V	
	Inch	mm	Inch	mm	Inch	mm	Fitting Threads	
10S	1-5/16	33.32	5/8	15.88	7/8	22.23	1/2-28	
10SL	1-3/8	34.92	3/4	19.05	7/8	22.23	5/8-24	
12S	1-7/16	36.50	25/32	19.84	1	25.40	5/8-24	
12	1-7/8	47.63	25/32	19.84	1	25.40	5/8-24	
14S	1-15/32	37.13	7/8	22.23	1-1/8	38.58	3/4-20	
14	1-7/8	47.47	7/8	22.23	1-1/8	28.58	3/4-20	
16S	1-15/32	37.13	1	25.40	1-1/4	31.75	7/8-20	
16	1-7/8	47.47	1	25.40	1-1/4	31.75	7/8-20	
18	1-31/32	49.88	1-1/8	28.58	1-11/32	34.11	1 -20	
20	1-7/8	47.50	1-1/4	31.75	1-15/32	37.29	1-3/16-18	
22	1-31/32	49.88	1-3/8	34.93	1-19/32	40.46	1-3/16-18	
24	2-1/4	57.15	1-1/2	38.10	1-23/32	43.64	1-7/16-18	
28	2-1/4	57.15	1-3/4	44.45	1-31/32	49.99	1-7/16-18	

### MS3107A quick-disconnect plug

For fast connect/disconnect applications. Front shell has polarizing keyway. Mates with all types of MS receptacles. Back shell is threaded for standard MS/AN fittings.

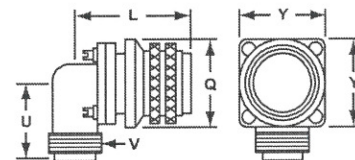


## MS3108A

Connector Size	L Ref.		Q Max.		U Ref.		V	Y Ref.	
	Inch	mm	Inch	mm	Inch	mm		Inch	mm
10S	1-1/4	31.75	7/8	22.23	7/8	22.23	1/2-28	25/32	19.84
10SL	1-5/16	33.32	7/8	22.23	1	25.40	5/8-24	1-1/16	26.97
12S	1-3/8	34.93	1	25.40	1	25.40	5/8-24	1-1/16	26.97
12SL	1-3/8	34.93	1	25.40	1	25.40	3/4-20	1-1/16	26.97
12	1-13/64	30.56	1	25.40	1	25.40	5/8-24	1-1/16	26.97
14S	1-3/8	34.93	1-1/8	28.58	1	25.40	3/4-20	1-1/16	26.97
14	1-13/16	46.02	1-1/8	28.58	1	25.40	3/4-20	1-1/16	26.97
16S	1-1/2	38.10	1-1/4	31.75	1-1/8	28.58	7/8-20	1-5/16	33.32
16	1-15/16	49.20	1-1/4	31.75	1-1/8	28.58	7/8-20	1-5/16	33.32
18	1-15/16	49.20	1-11/32	34.11	1-1/8	28.58	1 -20	1-5/16	33.32
20	2-1/16	52.37	1-15/32	37.29	1-5/16	33.32	1-3/16-18	1-5/8	42.28
22	2-1/16	52.37	1-19/32	40.46	1-5/16	33.32	1-3/16-18	1-5/8	42.28
24	2-15/32	62.69	1-23/32	43.64	1-1/2	38.10	1-7/16-18	2	50.80
28	2-15/32	62.69	1-31/32	49.99	1-1/2	38.10	1-7/16-18	2	50.80

### MS3108A angle plug

For use where space in front of panel or wall is at a premium. Swivel ring and plate combination allow cable take off at any angle relative to front shell polarizing key. Back shell is threaded for standard MS/AN fittings.



# 97 series solder type availability and weight reference

Insert Number	Wall Receptacles MS3100	Cable Receptacles MS3101	Box Receptacles MS3102	Straight Plugs MS3106		Quick Disconnect Plugs MS3107		Angle Plugs MS3108		Total Contacts
	Solid Shell	Solid Shell	Solid Shell	Solid Shell	Split Shell	Solid Shell	Split Shell	Solid Shell	Split Shell	
	A	A	A	A	B	A	B	A	B	
8S-1	.02	.01	.01	.02						1
10SL-3P	.03	.03	.02							3
10SL-3S				.03		.03		.06	.05	3
10SL-4P†	.02	.02	.02							2
10SL-4S†				.03		.03		.06	.05	2
12S-3	.04	.03	.03	.03		.03		.07	.07	2
12S-5	.05	.04	.03	.06		.06		.09	.08	1
12S-6*	.04	.03	.03	.04		.04		.07	.08	2
12SL-844P*			.03							4
12SL-844S*				.05		.06		.08		4
14S-1†	.05	.04	.03	.06	.06	.06	.06	.08	.08	3
14S-2	.05	.04	.03	.06	.06	.06	.06	.08	.08	4
14S-4†	.05	.04	.03	.06	.06	.06	.06	.08	.08	1
14S-5	.05	.04	.04	.06	.06	.06	.06	.08	.08	5
14S-6	.05	.04	.04	.06	.06	.06	.06	.08	.08	6
14S-7	.05	.04	.03	.06	.06	.06	.06	.08	.08	3
14S-9†	.05	.04	.03	.06	.06	.07	.06	.08	.08	2
16S-1	.06	.05	.05	.07	.07	.08	.07	.14	.11	7
16S-4	.06	.05	.04	.07	.07	.07	.07	.12	.10	2
16S-5†	.06	.05	.04	.07	.07	.07	.07	.12	.10	3
16S-6†	.06	.05	.04	.07	.07	.09	.07	.12	.10	3
16-7	.08	.08	.07	.09		.07		.15	.14	3
16S-8	.06	.05	.04	.07	.07	.09	.07	.12	.10	5
16-9	.08	.07		.09		.09	.10	.12	.13	4
16-10	.08	.08	.07	.09		.09		.15	.14	3
16-11†	.08	.07	.07	.09		.11		.14	.13	2
16-12	.10	.09	.08	.11		.08		.16	.15	1
16-13	.07	.07	.06	.08		.11		.14	.13	2
18-1	.10	.10	.08	.11	.13	.12	.13	.16	.15	10
18-3†	.10	.10	.08	.12	.13	.11	.13	.16	.15	2
18-4	.09	.09	.07	.11	.13	.12	.13	.16	.15	4
18-5	.10	.10	.08	.12	.13	.13	.13	.16	.15	3
18-8	.10	.10	.08	.12	.14	.12	.14	.16	.15	8
18-9	.11	.10	.09	.12	.14	.13	.14	.17	.16	7
18-10†	.11		.09	.13	.14	.13	.14	.17	.16	4
18-11	.11	.11	.09	.13	.15	.11	.15	.18	.17	5
18-12†	.10	.09	.08	.11	.13	.13	.13	.16	.15	6
18-13	.12	.12	.10	.13	.15	.13	.15	.18	.17	4
18-16	.09	.09	.07	.11	.13	.11	.13	.15	.14	1
18-19†	.10	.10	.08	.11	.13	.11	.13	.16	.15	10
18-20†	.09	.09	.07	.11	.13	.11	.13	.15	.15	5
18-22†	.09	.09	.07	.11	.13		.13	.16	.15	3
18-29†	.10		.08	.11	.13	.11	.13	.16	.15	5
18-420†*	.10	.10	.08	.12	.13	.12	.13	.16	.16	1
20-3†	.14	.13	.10	.15	.16	.15	.16	.24	.19	3

Where no weight is shown, insert is not available in that shell type.

† Inactive for new military design, but available for replacement or for non-military purposes.

\* "MS" number not assigned. Use "97" prefix in place of "MS" in completing catalog number.

Weights are for connectors with socket contacts. Connectors with pin contacts weigh slightly less.

If a weight appears in the column, the shell is available.

Weight is shown in lbs.