

# QWL

## thermocouple contacts

Available from Amphenol is a complete line of cylindrical connectors featuring thermocouple contact insert arrangements. The design of these contacts is such that standard shell components and resilient inserts are used in the assemblies. Thermocouple contacts are available in all arrangements which contain size 12 and 16 pins and sockets, and feature probe-proof, closed entry design for the socket contacts. MS-approved and other commercial arrangements may be ordered with thermocouple contacts substituted for the standard contacts. All thermocouple contact layouts may contain either iron, alumel, chromel, constantan, standard (copper) or brass (dummy) contacts. The resulting assembly will be identified with an Amphenol® part number.

### IDENTIFICATION

For the purpose of wiring identification, thermocouple contacts are marked in accordance with the following color code which agrees with the wire code.

**Chromel. . . . . White**  
**Alumel . . . . . Green**  
**Iron . . . . . Black**  
**Constantan . . . . . Yellow**

This identification is made by means of small dots of stain on solder well end of the contact and is in accordance with the listing shown above.

### WIRE WELL DATA

Contact Size		12	16
Well Inside Diameter	+ .004 - .002	.125	.094
Well Depth	+ .031 - .000	.250	.188
Solder Well Barrel Outside Diameter		.166±.003	.125 <sup>+ .002</sup> - .004

### RECOMMENDED WIRE:

- I Chromel – Alumel: Use wire in accordance with AN-W-29
- II Iron – Constantan: Use wire in accordance with AN-W-8b

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## thermocouple arrangements

Military connector specifications do not provide for thermocouple contact usage in established MS inserts. Amphenol® has established a series of insert arrangements containing thermocouple contacts. Some inserts have been rotated into positions outside those covered by MS

drawings to prevent cross plugging. Available thermocouple arrangements are tabulated on the following pages. Please contact your local sales office or Sidney, NY for additional information regarding thermocouple arrangements particular to your application.

The following abbreviations are used in the contact material column:

Abbreviation	Ir.	Con.	Cu.	Ch.	Al.	Dummy
Material	Iron	Constantan	Copper	Chromel	Alumel	Brass

Shell Size and Arrg.†	Similar To MS Arrg.	Total Contacts	Contact Size		Pin Insert Rotation C/W	Contact Material
			12	16		
12S-51	12S-3	2		2	315°	A = Ch.; B = Al.
12S-54	12S-3	2		2	315°	A = Ir.; B = Con.
12S-55	12S-3	2		2	45°	A = Cu.; B = Con.
12S-56	12S-3	2		2	None	A = Al.; B = Ch.
12S-57	12S-3	2		2	60°	A = Ch.; B = Al.
12S-58	12S-3	2		2	120°	A = Ir.; B = Con.
12S-59	12S-3	2		2	None	A = Ir.; B = Con.
12S-60	12S-3	2		2	None	A = Cu.; B = Con.
12S-61	12S-3	2		2	None	A = Ch.; B = Con.
12S-62	12S-3	2		2	None	A = Ch.; B = Al.
12S-64	12S-3	2		2	315°	A = Cu.; B = Con.
12S-65	12S-3	2		2	None	A = Con.; B = Ir.
14S-51	14S-9	2		2	90°	A = Al.; B = Ch.
14S-52	14S-2	4		4	45°	A, B = Cu.; C = Al.; D = Ch.
14S-53	14S-9	2		2	90°	A = Ir.; B = Con.
14S-54	14S-6	6		6	45°	A, C, E = Ir.; B, D, F = Con.
14S-55	14S-2	4		4	45°	A, C = Ir.; B, D = Con.
14S-56	14S-2	4		4	45°	A = Ir.; B = Con.; C, D = Cu.
14S-57	14S-2	4		4	45°	A, C = Al.; B, D = Ch.
14S-58	14S-7	3		3	45°	A = Al.; B = Ch.; C = Cu.
14S-59	14S-9	2		2	90°	A = Cu.; B = Con.
14S-60	14S-9	2		2	*	A = Al.; B = Ch.
14S-61	14S-6	6		6	45°	A = Al.; B = Ch.; C = Ir.; D = Con.; E, F = Cu.
14S-63	14S-6	6		6	*	A, C = Al.; B, D = Ch.; E = Ir.; F = Con.
14S-64	14S-2	4		4	*	A, C = Con.; B, D = Cu.
14S-65	14S-6	6		6	*	A, C, E = Cu.; B, D, F = Con.
14S-67	14S-6	6		6	*	A = Al.; B = Ch.; Bal = Cu.
14S-68	14S-2	4		4	45°	A = Ch.; B = Con.; C, D = Cu.
14S-69	14S-7	3		3	*	A = Con.; B = Ch.; C = Cu.
14S-70	14S-2	4		4	*	A, D = Ch.; B, C = Al.
14S-71	14S-2	4		4	*	A, B, D = Cu.; C = Con.
14S-72	14S-9	2		2	*	A = Con.; B = Cu.
14S-73	14S-2	4		4	*	A, B = Cu.; C = Al.; D = Ch.

†Insert arrangements including the letter "S" are available in QWL Series Connectors only.\*No rotation required.

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## thermocouple arrangements (Cont'd.)

Shell Size and Arrg.†	Similar To MS Arrg.	Total Con-tacts	Contact Size		Pin Insert Rotation C/W	Contact Material
			12	16		
14S-74	14S-2	4		4	*	A, B = Ch.; C, D = Al.
14S-75	14S-2	4		4	*	A, B = Cu.; C, D = Con.
14S-76	14S-2	4		4	*	A, C = Al.; B, D = Ch.
14S-77	14S-2	4		4	*	A, D = Al.; B, C = Ch.
14S-78	14S-9	2		2	*	A = Ch.; B = Al.
14S-79	14S-5	5		5	*	A, B, E = Cu.; C = Al.; D = Ch.
14S-80	14S-9	2		2	*	A = Cu.; B = Con.
14S-81	14S-9	2		2	*	A = Al.; B = Cu.
14S-82	14S-2	4		4	*	A = Ir.; B = Con.; C = Ch.; D = Al.
14S-83	14S-6	6		6	*	A, C = Ir.; B, D = Con.; E, F = Cu.
14S-84	14S-6	6		6	*	A, B = Al.; Bal = Cu.
14S-85	14S-7	3		3	*	A = Ch.; B = Al.; C = Cu.
14S-86	14S-6	6		6	*	A, F = Ir.; B, E = Con.; C, D = Cu.
14S-87	14S-6	6		6	*	A, B, C, D = Ir.; E, F = Con.
14S-88	14S-9	2		2	90°	A = Ch.; B = Con.
14S-89	14S-7	3		3	*	A = Ir.; B = Cu., C = Con.
14S-90	14S-6	6		6	*	A = Al.; C = Ch.; Bal. = Cu.
14S-91	14S-2	4		4	*	A = Al.; B = Ch.; Bal. = Cu.
14S-93	14S-6	6		6	*	A, B, F = Al.; D, C, E = Ch.
14-59	14-53	6		6	*	A = Al.; B = Ch.; C = Ir.; D = Con.; E, F = Cu.
16S-52	16S-4	2		2	*	A = Ch.; B = Al.
16S-54	16S-1	7		7	*	A = Al.; B = Ch.; Bal. = Cu.
16S-55	16S-1	7		7	*	A = Con.; Bal. = Cu.
16S-56	16S-1	7		7	*	A = Al.; D = Ch.; Bal. = Cu.
16S-57	16S-1	7		7	*	A, B = Al.; C, D = Ch.; Bal. = Cu.
16S-58	16S-1	7		7	*	A, G = Al.; Bal. = Ch.
16S-59	16S-1	7		7	*	A, C = Ir.; B, D = Con.; Bal. = Cu.
16S-60	16S-1	7		7	*	A = Ir.; B = Con.; Bal. = Cu.
16S-61	16S-1	7		7	*	G = Al.; Bal. = Ch.
16-52	16-11	2	2		90°	A = Al.; B = Ch.
16-53	16-9	4	2	2	70°	A = Al.; C = Ch.; B, D = Cu.
16-55	16-10	3	3		45°	A = Al.; B = Ch.; C = Cu.
16-56	16-13	2	2		90°	A = Con.; B = Cu.
16-57	16-10	3	3		*	A = Al.; B = Cu.; C = Ch.
16-58	16-10	3	3		*	A = Con.; B, C = Cu.
16-60	16-13	2	2		*	A = Al.; B = Ch.
16-62	16-11	2	2		*	A = Con.; B = Cu.
16-67	16-11	2	2		*	A = Al.; B = Ch.;
16-68	16-9	4	2	2	*	A, B, C = Ch.; D = Al.
18-51	18-12	6		6	*	A = Ir.; B, E = Con.; D = Cu.; C, F = Dummy
18-52	18-11	5	5		*	A = Ir.; B = Con.; C = Ch.; D = Al.; E = Dummy
18-53	18-12	6		6	*	A, D = Ir.; B, E = Con.; C, F = Dummy
18-54	18-15	4	4		*	A, C = Al.; B, D = Ch.
18-56	18-1	10		10	45°	A, C, E, G, I = Ir.; B, D, F, H, J = Con.
18-57	18-12	6		6	45°	A, C, E = Al.; B, D, F = Ch.
18-59	18-12	6		6	45°	A, C = Ir.; B, E, F = Con.; D = Cu.

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\*No rotation required.

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## thermocouple arrangements (Cont'd.)

Shell Size and Arrg.†	Similar To MS Arrg.	Total Con-tacts	Contact Size		Pin Insert Rotation C/W	Contact Material
			12	16		
18-60	18-11	5	5		45°	A, D = Al.; B, C = Ch.; E = Al.
18-61	18-12	6		6	*	A, C = Ir.; B, D = Con.; E = Ch.; F = Al.
18-62	18-12	6		6	*	A, B, C = Ir.; D, E, F = Con.
18-63	18-15	4	4		*	A, C = Con.; B, D = Cu.
18-65	18-12	6		6	*	A = Ir.; B = Con.; Bal. = Cu.
18-66	18-1	10		10	*	A, C, E, G, I = Cu.; B, D, F, H, J = Con.
18-67	18-12	6		6	*	A, C, E = Cu.; B, D, F = Con.
18-68	18-11	5	5		*	A, D = Al.; B, C = Ch.; E = Cu.
18-69	18-1	10		10	*	A = Al.; B = Ch.; Bal. = Cu.
18-70	18-11	5	5		*	A = Ir.; B = Con.; C = Ch.; D = Al.; E = Cu.
18-71	18-15	4	4		*	A = Con.; Bal. = Cu.
18-72	18-15	4	4		*	D = Con.; Bal. = Cu.
18-73	18-9	7	2	5	*	A = Al.; D = Ch.; Bal. = Cu.
18-74	18-12	6		6	*	A = Ch.; B = Al., D = Ir.; E = Cu.; C, F = Con.
18-76	18-1	10		10	*	A, C, E, G, I = Al.; B, D, F, H, J = Ch.
18-77	18-1	10		10	*	A, C, E, G = Al.; B, D, F, H = Ch.; Bal. = Cu.
18-78	18-1	10		10	*	A = Al.; B = Ch.; D, F, H, J = Con.; Bal. = Cu.
18-79	18-12	6		6	*	A, F = Ir.; B, E = Con.; C, D = Cu.
18-80	18-15	4	4		*	A, C = Cu.; B, D = Con.
18-81	18-1	10		10	*	E, G = Con.; Bal. = Cu.
18-82	18-1	10		10	*	E, G = Con.; F, H = Ir.; Bal. = Cu.
20-52	20-4	4	4		315°	A = Ir.; B = Con.; C = Ch.; D = Al.
20-56	20-7	8		8	45°	A, B, G, H = Ir.; C, D, E, F = Con.
20-60	20-7	8		8	45°	D = Ch.; E = Al.; Bal. = Cu.
20-61	20-29	17		17	45°	A, B, M = Cu.; Bal. = Con.
20-62	20-15	7	7		80°	A, C, E = Al.; B, D, F = Ch.; G = Cu.
20-64	20-27	14		14	*	A = Al.; C = Ch.; Bal. = Cu.
20-65	20-27	14		14	*	A, B, C, D, E, F, G = Ir.; H, I, J, K, L, M, N = Con.
20-67	20-16	9	2	7	*	H = Al.; I = Ch.; Bal. = Cu.
20-68	20-7	8		8	*	A, B, G, H = Con.; C, D, E, F = Cu.
20-69	20-27	14		14	*	A, B, C, D, E, F, G = Cu.; H, I, J, K, L, M, N = Con.
20-70	20-29	17		17	*	A, C, E, G, J, L, N, R, T = Ir.; B, D, F, H, K, M, P, S = Con.
20-71	20-29	17		17	*	S = Al.; R = Ch.; Bal. = Cu.
20-74	20-29	17		17	*	A, C, E, G, J, L, N, R = Ir.; B, D, F, H, K, M, P, S = Con.; T = Cu.
20-75	20-15	7	7		*	G = Al.; Bal = Ch.
20-77	20-16	9	2	7	*	A = Con.; Bal. = Std.
20-80	20-27	14		14	*	A, C, E, G, I, K, M = Cu.; B, D, F, H, J, L, N = Con.
20-81	20-27	14		14	*	A, C, E, G, I, K, M = Ch.; B, D, F, H, J, L, N = Al.
20-82	20-29	17		17	*	A, C, E, G, J, L, N, R = Al.; B, D, F, H, K, M, P, S = Ch.; T = Cu.
20-85	20-33	11		11	*	K, L = Al.; Bal. = Ch.
20-87	20-29	17		17	*	A, C, E, G, J, L, N, R = Con.; Bal. = Cu.
20-88	20-27	14		14	*	A, C, E = Al.; B, D, F = Ch.; G, H, K, N = Con.; Bal. = Cu.
20-89	20-27	14		14	*	B, D, F, H, J, L = Al.; A, C, E, G, I, K = Ch.; M, N = Cu.
20-90	20-27	14		14	*	C, G, I = Ch.; K, L, M = Al.; Bal. = Cu.
20-91	20-27	14		14	*	I = Ch.; K = Al.; Bal. = Cu.

\*No rotation required.

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## thermocouple arrangements (Cont'd.)

Shell Size and Arrg.	Similar To MS Arrg.	Total Con-tacts	Contact Size		Pin Insert Rotation C/W	Contact Material
			12	16		
20-92	20-7	8		8	*	A = Al.; H = Cu.; Bal. = Ch.
20-93	20-27	14		14	*	A = Ch.; B = Al.; Bal. = Cu.
20-94	20-15	7	7		*	A, C, E = Al.; B, D, F = Ch.; G = Cu.
20-99	20-33	11		11	*	A = Al.; Bal. = Ch.
22-57	22-14	19		19	45°	A, C, E, G, J, L, N, R = Ir.; B, D, F, H, K, M, P, S = Con.; T, U, V = Cu.
22-60	22-14	19		19	45°	U = Al.; N = Ch.; Bal. = Cu.
22-62	22-23	8	8		60°	A, B, F, G = Al.; C, D, E, H = Ch.
22-68	22-19	14		14	45°	A, C, E, G, J, L, M = Ir.; B, D, F, H, K, P, N = Con.
22-69	22-19	14		14	45°	A, C, E, G, J, L, M = Cu.; B, D, F, H, K, P, N = Con.
22-71	22-14	19		19	*	V = Al., U = Ch.; Bal. = Cu.
22-72	22-5	6	2	4	*	B = Al.; E = Ch.; Bal. = Cu.
22-73	22-5	6	2	4	*	E = Al.; B = Ch.; Bal. = Cu.
22-74	22-23	8	8		*	A, C, E, G = Ir.; B, D, F, H = Con.
22-75	22-23	8	8		*	A = Al.; B, D, G, H = Cu.; C = Ch.; E = Ir.; F = Con.
22-76		21		21	*	W = Con.; Bal. = Cu.
22-77	22-19	14		14	*	B, D, F, H, J, K, M, P = Cu.; A, E, L = Ir.; C, G, N = Con.
22-78	22-14	19		19	*	A, C, E, G, H, K, M, P, R, T = Con.; Bal. = Cu.
22-79	22-10	4		4	*	A, C = Con.; B, D = Cu.
22-82	22-14	19		19	*	A, C, E, G, J, L, N, R, T = Ir.; B, D, F, H, K, M, P, S, U = Con.; V = Cu.
22-83	22-18	8		8	*	A, C, E, G = Al.; B, D, F, H = Ch.
22-84	22-14	19		19	*	A, C, S = Ch.; B, D, T = Al.; Bal. = Cu.
22-85	22-19	14		14	*	A, C, E, G, J, L, N = Al.; B, D, F, H, K, M, P = Ch.
22-89	22-28	7	7		*	A, C, E = Ir.; B, D, F = Con.; G = Cu.
24-56	24-20	11	2	9	45°	E = Al.; F = Ch.; Bal. = Cu.
24-57	24-28	24		24	45°	A, C, J, V, Y, W, K, E, H, U, S, M = Ch.; Bal. = Al.
24-62	24-28	24		24	*	A, C, E, G = Ir.; B, D, F, H = Con.; R, T = Ch.; S, U = Al.; Bal. = Cu.
24-63	24-28	24		24	*	A, C, E, G, J, L, K, N, S, U, W, Y = Cu.; B, D, F, H, Q, R, M, P, T, V, X, Z = Con.
24-64	24-5	16		16	*	A, B, C, D, E, F, G, H = Ir.; J, K, L, M, N, P, R, S = Con.
24-68	24-28	24		24	*	D = Con.; Bal. = Cu.
24-81	24-7	16	2	14	*	A, C, E, G, I, K, M, N, P = Cu.; B, D, F, H, J, L, O = Con.
24-88	24-28	24		24	*	A, B, C, D, E, F, G, H, J, K, L, M = Con.; Bal. = Ir.
24-91	24-5	16		16	*	A, B, C, D, E, F, G, H = Al.; J, K, L, M, N, P, R, S = Ch.
28-53	28-11	22	4	18	45°	J, L = Al.; K, M = Ch.; Bal. = Cu.
28-58	28-20	14	10	4	45°	A, C, E, G, K, M = Al.; B, D, F, H, L, N = Ch.; J, P = Cu.
28-61	28-21	37		37	45°	A, C, J, Z, m, r, n, a, K, F, H, X, k, h, T, M, N, d = Ir.; Bal. = Con.
28-63	28-20	14	10	4	45°	A, C, E, G, J = Al.; B, D, F, H, P = Ch.; Bal. = Cu.
28-64	28-15	35		35	*	A, d = Al.; B, j = Ch.; C, D, E, F, G, N, P, R, S, H, J, K, L, M, W, X, Y, Z = Con.; Bal. = Cu.
28-65	28-12	26		26	*	A, C, E, G, J, L, N, R, T, V = Ir.; X, Z = Al.; B, D, F, H, K, M, P, S, U, W = Con.; Y, a = Ch.; b, d = Cu.
28-67	28-16	20		20	*	U = Con.; Bal. = Cu.
28-68	28-15	35		35	45°	T = Al.; U = Ch.; Bal. = Cu.
28-69	28-11	22	4	18	*	G = Al.; R = Ch.; Bal. = Cu.
28-70	28-11	22	4	18	*	A = Al.; B = Ch.; Bal. = Cu.
28-77	28-11	22	4	18	*	J = Con.; Bal. = Cu.

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## thermocouple arrangements (Cont'd.)

Shell Size and Arrg.	Similar To MS Arrg.	Total Con-acts	Contact Size		Pin Insert Rotation C/W	Contact Material
			12	16		
28-81	28-21	37		37	*	A, D, S, Z, n, s = Ir.; B, J, K, f, g, r, = Con.; G, L, P, b, e, j = Al.; F, H, T, X, h, k = Ch.; Bal. = Cu.
28-85	28-11	22	4	18	45°	K, M = Al.; J, L = Ch.; Bal. = Cu.
28-91	28-9	12	6	6	*	M = Ir.; L = Con.; Bal. = Cu.
28-94	28-12	26		26	*	B, D, F, H, K, M, P, S, U, W, Y, a, d = Al.; Bal. = Ch.
28-98	28-21	37		37	*	M = Al.; F = Ch.; Bal. = Cu.
28-99	28-12	26		26	*	B, D, F, H, K, M, P, S, U, W, Y, a = Con.; Bal. = Cu.
28-AC	28-16	20		20	*	A, C, E, G, J, L = Ir.; B, D, F, N, K, M = Con.; Bal. = Cu.
28-AD	28-21	37		37	45°	A, C, F, H, J, K, M, N, T, X, Z, a, d, h, k, m, n, r = Cu.; Bal. = Con.
28-AE	28-21	37		37	*	A, C, E, G, J, L, N, R, T, V, X, a, c, e, g, j, m, p, s = Cu.; Bal. = Con.
28-AF	28-18	12		12	*	A, C, E, G, J, L = Ch.; Bal. = Al.
28-AG	28-12	26		26	*	A, C, E, G, J, L, N, R = Al.; B, D, F, H, K, M, P, S = Ch.; Bal. = Cu.
28-AK	28-21	37		37	*	A, B, C, D, J, K, L, M, N, P, X, a, b, c, d, e, m, p = Ch.; n = Cu.; Bal. = Al.
32-51	32-8	30	6	24	90°	M = Ch.; N = Al.; Bal. = Cu.
32-55	32-8	30	6	24	125°	M, N, = Ch.; O, P = Al.; Bal. = Cu.
32-91	32-64	54		54	*	A, C, E, G, J, L, N, P, S, U, W, Y, a, c, e, g, j, m = Ir.; B, D, F, H, K, M, O, R, T, V, X, Z, b, d, f, h, k, n = Con.; Bal. = Cu.
36-53	36-7	47	7	40	45°	u, v, w = Al.; x, y, z = Ch.; Bal. = Cu.
36-56	36-10	48		48	*	A, C, E, G, L, J, H, P, R, T, V, X, Z, b, d, f, h, k, q, n, m, u, w, y = Con.; Bal. = Cu.
36-57	36-8	47	1	46	*	W = Al.; f = Ch.; Bal. = Cu.
36-58	36-15	35		35	*	H = Al.; G = Ch.; Bal. = Cu.
36-61	36-15	35		35	*	A, C, E, J, K, L, M, N, P, R, T, V, f, X, Y, h, j, c = Con.; Bal. = Cu.
36-62	36-10	48		48	*	A, C, E = Al.; B, D, F = Ch.; Bal. = Cu.
36-82	36-52††	52		52	*	v, g = Ir.; p, y, c = Con.; x = Ch.; Bal. = Cu.
36-86	36-10	48		48	*	A, C, E, G, J, L, N, P, R, T, V, X = Al.; B, D, F, H, K, M, O, Q, S, U, W, Y = Ch.; z, b, d, f, h, k, n, q, s, u, w, y = Con.; a, c, e, g, j, m, p, r, t, v, x, z = Cu.
36-88	36-52	52		52	*	A, C, E, H, K, M, P, S, U, W, Y, a, c, f, h, j, m, p, r, t, v, x, z, AB, AD, AF = Cu.; Bal. = Con.
40-58	40-56††	85		85	*	A, C, E, H, K, M, P, S, U, W, Y, a, c, f, h, j, m, p, r, t, v, x, z, AB, AD, AF, AJ, AL, AN, AP, AS, AU, AW, AY, BA, BC, BE, BH, BK, BM, BP, BS, BU = Ir.; Bal. = Con.
40-59	40-56††	85		85	*	B = Ch.; C = Con.; Bal. = Cu.
40-77	40-53††	60		60	*	55, 60 = Ir.; 57, 58, 59 = Con.; 56 = Ch.; Bal. = Cu.
40-78	40-53††	60		60	*	50, 51 = Ir.; 27, 28, 29, 31, 32, 34, 36, 37, = Con.; 25, 39, 40, 41 = Al.; 43, 44, 45, 46, 47, 48, 49, 52, 53, 54 = Ch.; Bal. = Cu.
40-88	40-53	60		60	*	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59 = Con.; Bal. = Cu.
40-AA	40-56	85		85	*	A, C, E, H, K, M, P, S, U, W, Y, a, c, f, h, j, m, p, r, t, v, x, z, AB, AD, AF, AJ, AL, AN, AR, AT = Cu.; B, D, F, J, L, N, R, T, V, X, Z, b, d, g, i, k, n, q, s, u, w, y, AA, AC, AE, AH, AK, AM, AP, AS = Con.; AU, AW, AY, BA, BC, BE, BH, BK, BM, BP, BS, BU = Ch.; AV, AX, AZ, BB, BD, BF, BJ, BL, BN, BR, BT, BV = Al.
44-57	44-52	104		104	*	A, C, E, G, J, L, etc. = Cu.; B, D, F, H, K, M, etc. = Con.
44-59	44-52	104		104	*	34 = Con.; 70 = Cu.
44-60	44-52	104		104	*	A, C, E, etc. = Ch., (52); B, D, F, etc. = Al. (52)
44-62	44-52	104		104	*	BY, BZ, CA, CB, CC, CD, CE, CR = Al.; CH, CJ, CK, CL, CM, CN, CP CS = Ch.; Bal. = Cu.

††Amphenol® arrangement\*No rotation required.