

MIL-C-38999 SERIES IV

BREECH-LOK[®] CONNECTORS
G&H TECHNOLOGY, INC.



BREECH-LOK[®] PRODUCT GROUP
G&H Technology, Inc.

BL SERIES SPECIFICATIONS

TEST DESCRIPTION

PARAMETERS

Durability

500 cycles of mating and unmating.

Temperature Range

Class F, C, K, Y & N: -65°C (-85°F) to +200°C (392°F)
Class W: -65°C (-85°F) to +175°C (347°F)

Vibration

Mated connectors with weights attached to simulate rear accessory loads, withstand the following vibration levels:

- Sine vibration per MIL-STD 202, Method 204, Condition G
- Random vibration per MIL-STD-1344, Method 2005, Condition VI, Letter "J".

Shielding Effectiveness

Class F & N: EMI leakage attenuation, greater than 90dB at 100MHz, and greater than 65dB at 10GHz. Shell-to-Shell conductivity, 1.0 millivolt maximum voltage drop.

Class W: EMI leakage attenuation, greater than 90dB at 100MHz, and greater than 50dB at 10GHz. Shell-to-Shell conductivity, 2.5 millivolt maximum voltage drop.

Class K & Y: EMI leakage attenuation, greater than 80dB at 100MHz, and greater than 45dB at 10GHz. Shell-to-Shell conductivity, 10.0 millivolt maximum voltage drop.

Corrosion Resistance

Class C, W, K & Y withstand 500 hours Salt Spray.
Class F & N withstand 48 hours Salt Spray.

Fluid Immersion

Connectors withstand specified immersions in various fuels, solvents, coolants and oils, per MIL-STD-1344, Method 1016.

Pin-to-Pin Mating Protection

A plug and receptacle will not mate with connectors having the same contact gender.

Scoop-Proof Design

Pin contacts are recessed to prevent damage due to scooping by the mating connector shell.

Grounding Before Contact

Complete grounding between connector halves occurs 0.050 inch (1.27mm) before engagement of the electrical contacts.

MATERIALS AND FINISH DATA

COMPONENT	MACHINED OR EXTRUDED ALUMINUM			STAINLESS STEEL		
	CLASS C	CLASS F	CLASS W	CLASS Y	CLASS N	CLASS K
RECEPTACLE SHELL	ANODIZE PER MIL-A-8625	NICKEL PER MIL-C-26704 CLASS 3 OR 4	CAD/OD PER QQ-P-416	PASSIVATE PER QQ-P-35	NICKEL PER QQ-N-290 CLASS 2	PASSIVATE QQ-P-35
PLUG, INNER SHELL	ANODIZE PER MIL-A-8625	NICKEL PER MIL-C-26704 CLASS 3 OR 4	CAD/OD PER QQ-P-416			PASSIVATE QQ-P-35
PLUG, COUPLING RING	ANODIZE PER MIL-A-8625	ANODIZE PER MIL-C-8625	CAD/OD PER QQ-P-416			PASSIVATE QQ-P-35

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Class F & N: EMI leakage attenuation, greater than 90dB at 100MHz, and greater than 65dB at 10GHz. Shell-to-Shell conductivity, 1.0 millivolt maximum voltage drop.

Class W: EMI leakage attenuation, greater than 90dB at 100MHz, and greater than 50dB at 10GHz. Shell-to-Shell conductivity, 2.5 millivolt maximum voltage drop.

Class K & Y: EMI leakage attenuation, greater than 80dB at 100MHz, and greater than 45dB at 10GHz. Shell-to-Shell conductivity, 10.0 millivolt maximum voltage drop.

Corrosion Resistance

Class C, W, K & Y withstand 500 hours Salt Spray.
Class F & N withstand 48 hours Salt Spray.

Fluid Immersion

Connectors withstand specified immersions in various fuels, solvents, coolants and oils, per MIL-STD-1344, Method 1016.

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RECEPTACLE SHELL	ANODIZE PER MIL-A-8625	NICKEL PER MIL-C-26704 CLASS 3 OR 4	CAD/OD PER QQ-P-416	PASSIVATE PER QQ-P-35	NICKEL PER QQ-N-290 CLASS 2	PASSIVATE QQ-P-35
PLUG, INNER SHELL	ANODIZE PER MIL-A-8625	NICKEL PER MIL-C-26704 CLASS 3 OR 4	CAD/OD PER QQ-P-416			PASSIVATE QQ-P-35
PLUG, COUPLING RING	ANODIZE PER MIL-A-8625	ANODIZE PER MIL-C-8625	CAD/OD PER QQ-P-416			PASSIVATE QQ-P-35

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CONTACT PART NUMBER CROSS REFERENCE

	CONTACT SIZE	G & H PART NUMBER	MILITARY PART NUMBER
PIN	22D	5034-2400-0220	M39029/58-360
	20	5034-2400-0200	M39029/58-363
	16	5034-2400-0160	M39029/58-364
	12	5034-2400-0120	M39029/58-365
	10	Call Factory	M39029/58-528
	12 COAX	5034-2428-12P00	M39029/28-211*
	8TWINAX	5034-2507-08P00	M39029/90-529
SOCKET	22D	5034-2600-0220	M39029/56-348
	20	5034-2600-0200	M39029/56-351
	16	5034-2600-0160	M39029/56-352
	12	5034-2600-0120	M39029/56-353
	10	5034-2600-0100	M39029/56-527
	12 COAX	5034-2711-12S00	M39029/75-416*
	8TWINAX	5034-2703-08S00	M39029/91-530

*RECOMMENDED USE WITH RG174, RG136 AND RG179 CABLE

CONTACT DATA

	CRIMP WELL DATA		RECOMMENDED CONTACT RATING (AMPS)									
CONTACT SIZE	WELL DIAMETER	MINIMUM WELL DEPTH	WIRE SIZE (AWG)									
			28	26	24	22	20	18	16	14	12	10
22D	.0345 ± .001	.141	1.5	2.0	3.0	5.0						
20	.047 ± .001	.209			3.0	5.0	7.5					
16	.067 ± .001	.209					7.5	10.0	13.0			
12	.100 ± .002	.209								20.0	23.0	
10	.137 ± .003	.355									23.0	33.0

CONTACT SERVICE RATING

SERVICE RATING	SUGGESTED OPERATING VOLTAGE (SEA LEVEL)		TEST VOLTAGE (SEA LEVEL)	TEST VOLTAGE 50,000 FT.	TEST VOLTAGE 70,000 FT.	TEST VOLTAGE 100,000 FT.
	AC (RMS)	DC				
I	600	850	1800 V RMS	600 V RMS	400 V RMS	200 V RMS
II	900	1250	2300 V RMS	800 V RMS	500 V RMS	200 V RMS
M	400	550	1300 V RMS	550 V RMS	350 V RMS	200 V RMS
N	230	270	1000 V RMS	400 V RMS	260 V RMS	200 V RMS

CRIMP TOOLS AND POSITIONERS

CONTACT STYLE	CONTACT SIZE	CRIMP TOOL PART NUMBER	POSITIONER PART NUMBER
PIN	22D	M22520/2-01	M22520/2-09
	20	M22520/1-01	M22520/1-04
	16	M22520/1-01	M22520/1-04
	12	M22520/1-01	M22520/1-04
SOCKET	22D	M22520/2-01	M22520/2-07
	20	M22520/1-01	M22520/1-04
	16	M22520/1-01	M22520/1-04
	12	M22520/1-01	M22520/1-04

SEAL PLUGS

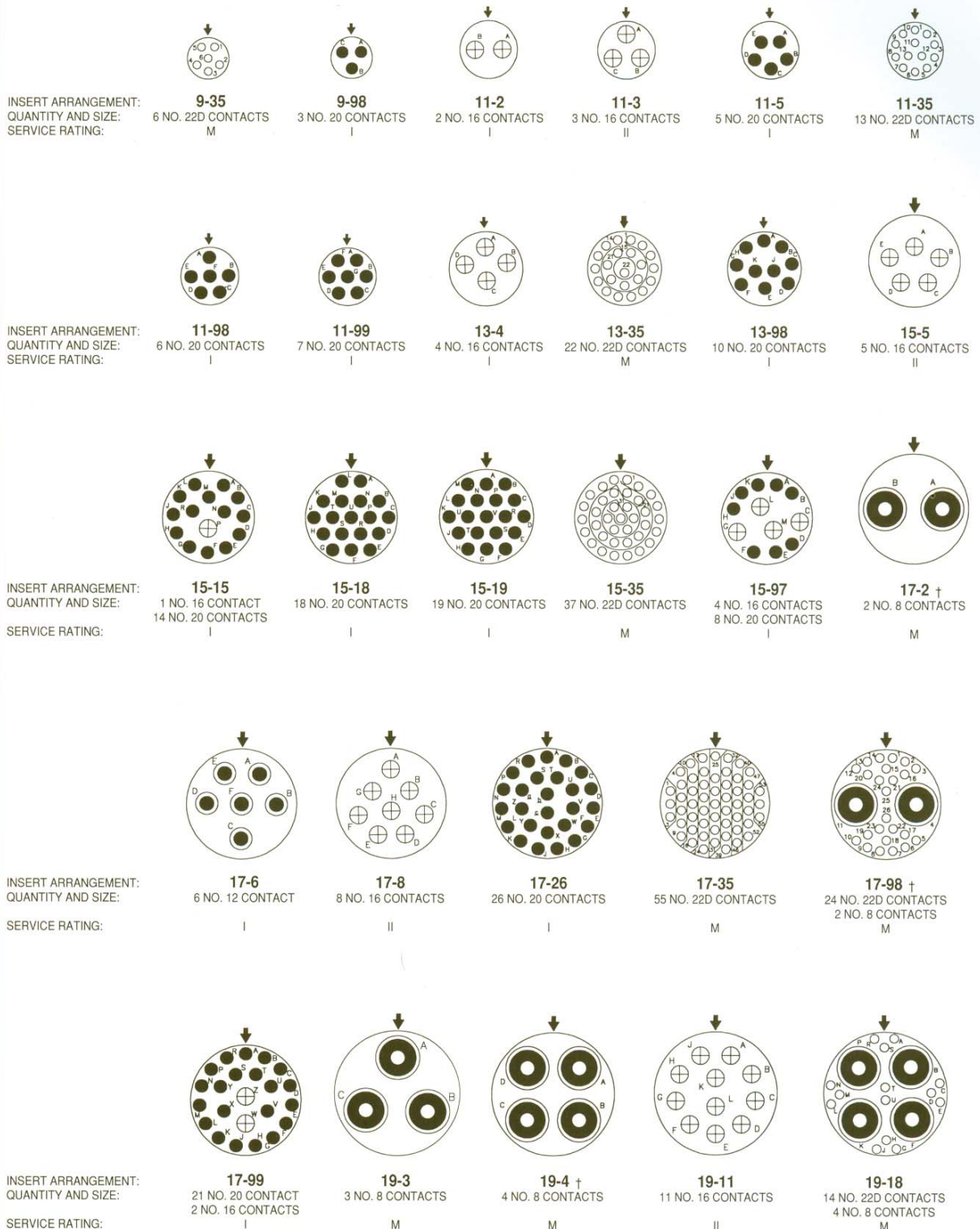
SIZE	G & H PART NUMBER	MILITARY PART NUMBER
22D	—	MS27488-22
20	—	MS27488-20
16	—	MS27488-16
12	—	MS27488-12
8	5043-3407-08000	—

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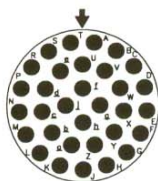
BL SERIES - INSERT ARRANGEMENTS

(FRONT FACE OF PIN INSERT SHOWN)



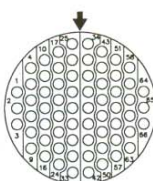
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(FRONT FACE OF PIN INSERT SHOWN)

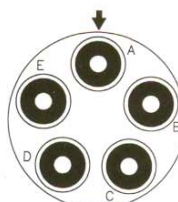


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QUANTITY AND SIZE:
SERVICE RATING:

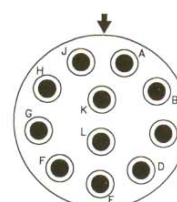
19-32
32 NO. 20 CONTACTS
I



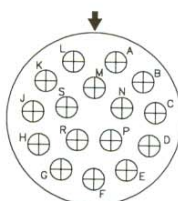
19-35
66 NO. 22D CONTACTS
M



21-5
5 NO. 8 CONTACTS
M

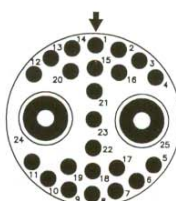


21-11
11 NO. 12 CONTACTS
I

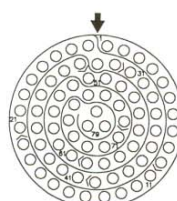


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SERVICE RATING:

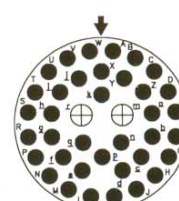
21-16
16 NO. 16 CONTACTS
M



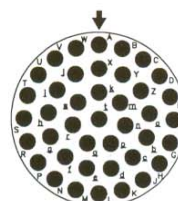
21-26 †
23 NO. 20 CONTACTS
2 NO. 8 CONTACTS
M



21-35
79 NO. 22D CONTACTS
M

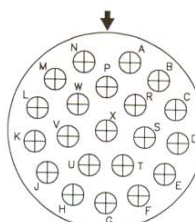


21-39
37 NO. 20 CONTACTS
2 NO. 16 CONTACTS
I

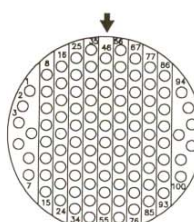


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SERVICE RATING:

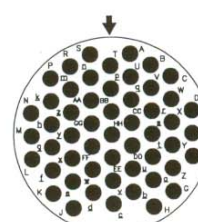
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41 NO. 20 CONTACTS
I



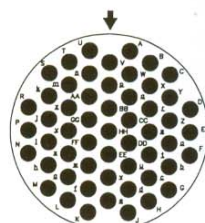
23-21
21 NO. 16 CONTACTS
II



23-35
100 NO. 22D CONTACTS
M

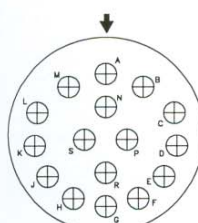


23-53
53 NO. 20 CONTACTS
I

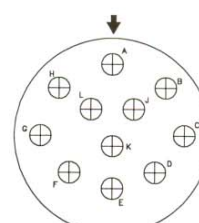


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QUANTITY AND SIZE:
SERVICE RATING:

23-55
55 NO. 20 CONTACTS
I



23-97
16 NO. 16 CONTACTS
II



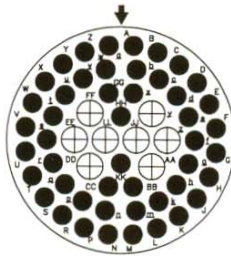
23-99
11 NO. 16 CONTACTS
II

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BL SERIES - INSERT ARRANGEMENTS

(FRONT FACE OF PIN INSERT SHOWN)

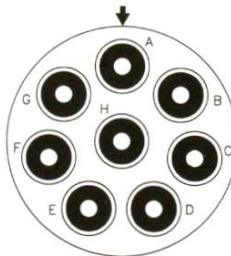


INSERT ARRANGEMENT:
QUANTITY AND SIZE:
SERVICE RATING:

25-4

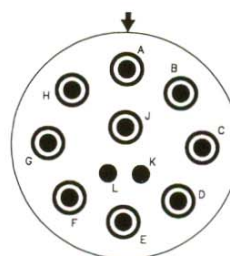
48 NO. 20 CONTACTS
8 NO. 16 CONTACTS

I



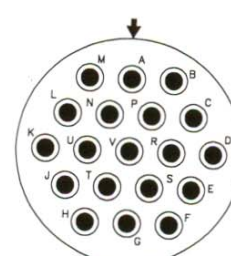
25-8
8 NO. 8 CONTACTS

M



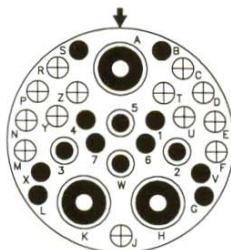
25-11
2 NO. 20 CONTACTS
9 NO. 10 CONTACTS

M



25-19
19 NO. 12 CONTACTS

I

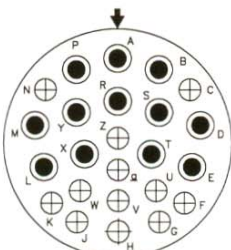


INSERT ARRANGEMENT:
QUANTITY AND SIZE:
SERVICE RATING:

25-20

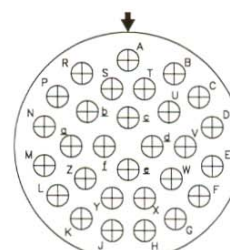
10 NO. 20 CONTACTS
13 NO. 16 CONTACTS
4 NO. 12 CONTACTS
3 NO. 8 CONTACTS

I



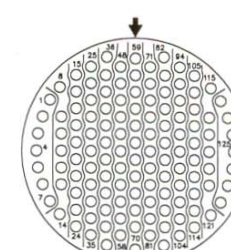
25-24
12 NO. 16 CONTACTS
12 NO. 12 CONTACTS

I



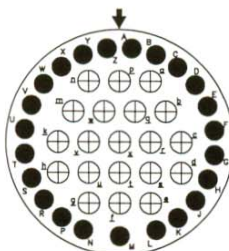
25-29
29 NO. 16 CONTACTS

I



25-35
128 NO. 22D CONTACTS

M

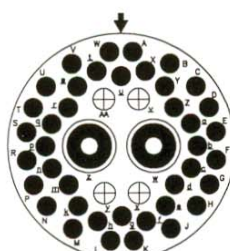


INSERT ARRANGEMENT:
QUANTITY AND SIZE:
SERVICE RATING:

25-43

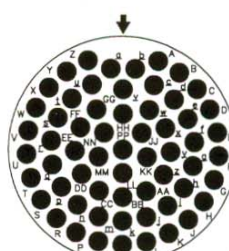
23 NO. 20 CONTACTS
20 NO. 16 CONTACTS

I



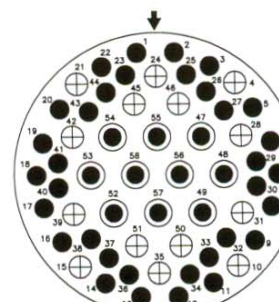
25-46
40 NO. 20 CONTACTS
4 NO. 16 CONTACTS
2 NO. 8 CONTACTS

I



25-61
61 NO. 20 CONTACTS

I



33-58 †
34 NO. 20 CONTACTS
14 NO. 16 CONTACTS
10 NO. 12 CONTACTS

I

LEGEND:

CONTACT SIZE



NO. 8
(TWIN AX)



NO. 10



NO. 12



NO. 16



NO. 20



NO. 22D

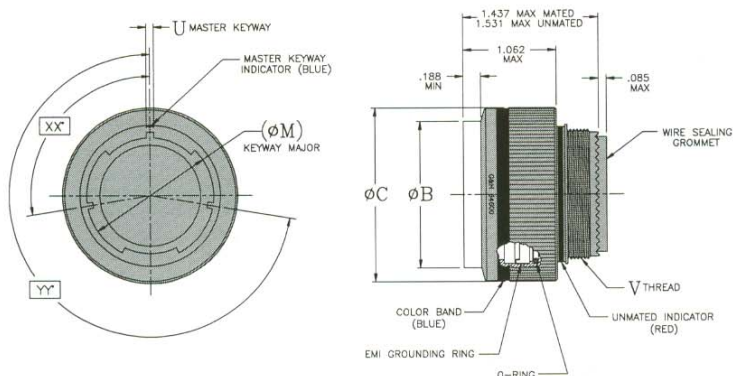
† = NOT MIL-STANDARD

STRAIGHT PLUG - EMI

(BLG6) REF: D38999/46

STRAIGHT PLUG - NON EMI

(BL06) REF: D38999/47



G & H PART NUMBER DEVELOPMENT

BREECH-LOK®
MIL-C-38999, Series IV Configuration

SHELL TYPE

CLASS -

SHELL SIZE

(SEE TABLE II)

INSERT ARRANGEMENT

(SEE PAGES 4-6)

CONTACT STYLE

POLARIZATION

(SEE TABLE I)

CALL FACTORY FOR MODIFICATIONS

BL G6 F 17 - 35 P N

TABLE I
POLARIZATION CHART

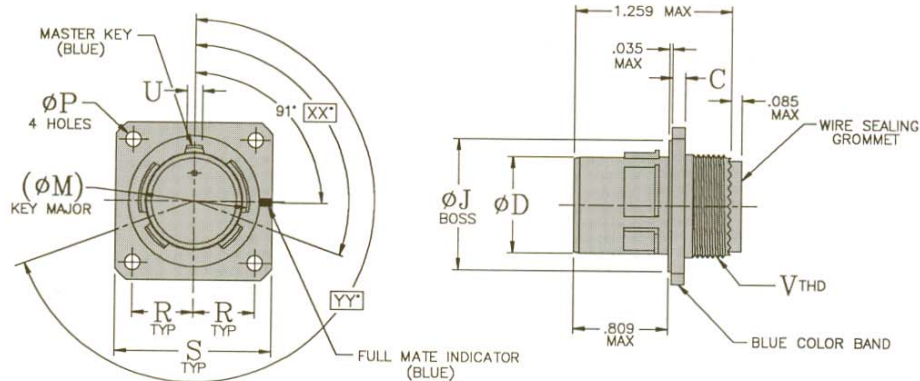
KEY POSITION	XX°	YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

CONSULT FACTORY FOR ADDITIONAL
POLARIZATION POSITIONS

TABLE II

SHELL SIZE	U REF		V THREAD METRIC	øB MAX	øC MAX	øM REF
	SOCKET	PIN				
9	.116	.076	M12x1.0-6g-0.1R	.650	.935	.523
11	.112	.072	M15x1.0-6g-0.1R	.775	1.054	.644
13	.117 .113	.077 .073	M18x1.0-6g-0.1R	.901	1.226	.765
15	.137 .133	.097 .093	M22x1.0-6g-0.1R	1.039	1.351	.889
17			M25x1.0-6g-0.1R	1.149	1.476	1.014
19	.157 .153	.117 .113	M28x1.0-6g-0.1R	1.275	1.586	1.094
21			M31x1.0-6g-0.1R	1.401	1.711	1.219
23	.177 .173	.137 .133	M34x1.0-6g-0.1R	1.527	1.836	1.348
25			M37x1.0-6g-0.1R	1.649	1.964	1.475
33	.233 .229	.181 .178	M47x1.0-6g-0.1R	2.200	2.515	1.908

WALL MOUNT RECEPTACLE
REF: D38999/40



G & H PART NUMBER DEVELOPMENT

BREECH-LOK® **BL 00 F 11 - 35 P N**
MIL-C-38999, Series IV Configuration

SHELL TYPE: Wall Mount Receptacle

CLASS

SHELL SIZE
(SEE TABLE II)

INSERT ARRANGEMENT
(SEE PAGES 4-6)

CONTACT STYLE

POLARIZATION
(SEE TABLE I)

CALL FACTORY FOR MODIFICATIONS

**TABLE I
POLARIZATION CHART**

KEY POSITION	XX°	YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

CONSULT FACTORY FOR ADDITIONAL
POLARIZATION POSITIONS

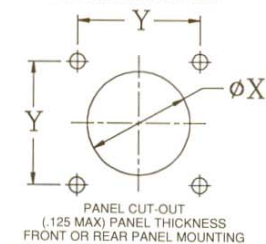
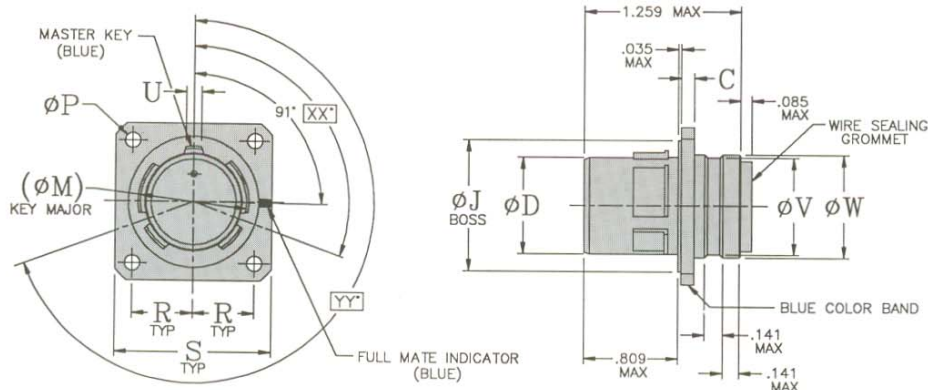


TABLE II

SHELL SIZE	C MAX REF	øD MAX	øJ BOSS MAX	øM REF	øP MIN	R BSC	S MAX	U REF		V THREAD	øX ±.005	Y ±.005
								SOCKET	PIN			
9	.102	.384	.668	.464	.122	.328	.948	.065	.105	M12x1.0-6g-0.1R	.681	.656
11	.102	.509	.793	.589	.122	.406	1.051			M15x1.0-6g-0.1R	.806	.812
13	.102	.634	.919	.720	.122	.453	1.146			M18x1.0-6g-0.1R	.932	.906
15	.102	.759	1.044	.844	.122	.4845	1.240	.085	.125	M22x1.0-6g-0.1R	1.057	.969
17	.102	.885	1.170	.969	.122	.531	1.335			M25x1.0-6g-0.1R	1.183	1.062
19	.102	1.009	1.294	1.088	.122	.578	1.461	.105	.145	M28x1.0-6g-0.1R	1.307	1.156
21	.133	1.134	1.419	1.213	.122	.625	1.583			M31x1.0-6g-0.1R	1.432	1.250
23	.133	1.259	1.544	1.342	.142	.6875	1.709	.125	.165	M34x1.0-6g-0.1R	1.557	1.375
25	.133	1.386	1.669	1.469	.142	.750	1.835			M37x1.0-6g-0.1R	1.682	1.500
33	.133	1.811	2.220	1.902	.142	1.000	2.356	.165	.217	M47x1.0-6g-0.1R	2.233	2.000

BOX MOUNT RECEPTACLE

REF: D38999/42



G & H PART NUMBER DEVELOPMENT

BREECH-LOK®
MIL-C-38999, Series IV Configuration

SHELL TYPE: Box Mount Receptacle

CLASS

SHELL SIZE
(SEE TABLE II)

INSERT ARRANGEMENT
(SEE PAGES 4-6)

CONTACT STYLE

POLARIZATION
(SEE TABLE I)

CALL FACTORY FOR MODIFICATIONS

BL 02 F 11 - 35 P N

TABLE I POLARIZATION CHART

KEY POSITION	XX°	YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

CONSULT FACTORY FOR ADDITIONAL
POLARIZATION POSITIONS

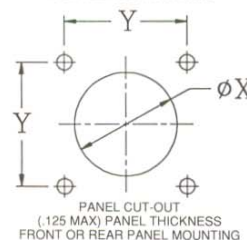
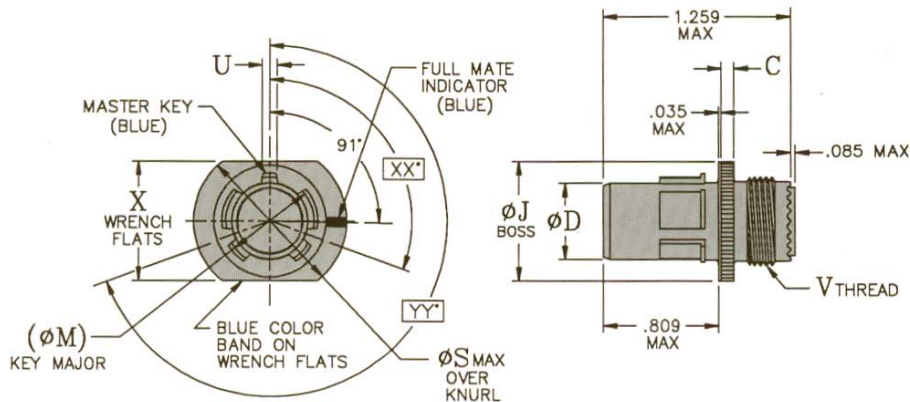


TABLE II

SHELL SIZE	C MAX REF	ØD MAX	ØJ BOSS MAX	ØM REF	ØP MIN	R BSC	S MAX	U REF		ØV MAX	ØW MAX	ØX ±.005	Y ±.005
								SOCKET	PIN				
9	.102	.384	.668	.464	.122	.328	.948	.065	.105	.412	.453	.681	.656
11	.102	.509	.793	.589	.122	.406	1.051	.060	.100	.535	.578	.806	.812
13	.102	.634	.919	.720	.122	.453	1.146			.649	.692	.932	.906
15	.102	.759	1.044	.844	.122	.4845	1.240	.085	.125	.771	.818	1.057	.969
17	.102	.885	1.170	.969	.122	.531	1.335	.080	.120	.897	.944	1.183	1.062
19	.102	1.009	1.294	1.088	.122	.578	1.461	.105	.145	1.003	1.051	1.307	1.156
21	.133	1.134	1.419	1.213	.122	.625	1.583	.100	.140	1.129	1.173	1.432	1.250
23	.133	1.259	1.544	1.342	.142	.6875	1.709	.125	.165	1.255	1.299	1.557	1.375
25	.133	1.386	1.669	1.469	.142	.750	1.835	.120	.160	1.377	1.425	1.682	1.500
33	.133	1.811	2.220	1.902	.142	1.000	2.356	.165 .160	.217 .212	1.839	1.925	2.233	2.000

IN-LINE RECEPTACLE

REF: D38999/49



G & H PART NUMBER DEVELOPMENT

BREECH-LOK[®] MIL-C-38999, Series IV Configuration

SHELL TYPE: In-Line Receptacle

CLASS

SHELL SIZE (SEE TABLE II)

INSERT ARRANGEMENT (SEE PAGES 4-6)

CONTACT STYLE

POLARIZATION (SEE TABLE I)

CALL FACTORY FOR MODIFICATIONS

BL 03 F 11 - 35 P N

**TABLE I
POLARIZATION CHART**

KEY POSITION	XX°	YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

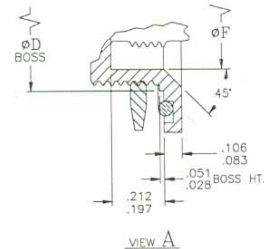
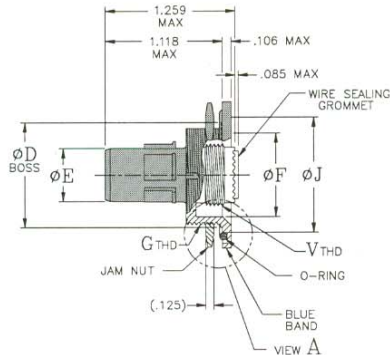
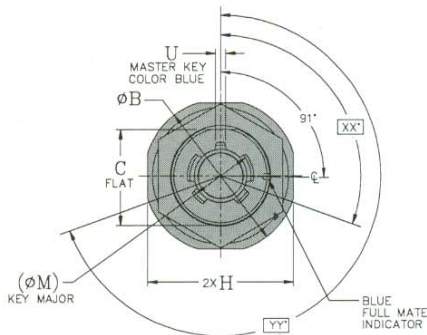
CONSULT FACTORY FOR ADDITIONAL POLARIZATION POSITIONS

TABLE II

SHELL SIZE	C MAX REF	φD MAX	φJ MAX	φM REF	φS MAX REF	U REF		V THREAD	X MAX WRENCH FLATS
						SOCKET	PIN		
9	.102	.384	.668	.461	.968	.065	.105	M12x1.0-6g-0.1R	.668
11	.102	.509	.793	.589	1.054	.060	.100	M15x1.0-6g-0.1R	.793
13	.102	.634	.919	.720	1.226			M18x1.0-6g-0.1R	.919
15	.102	.759	1.044	.844	1.351	.085	.125	M22x1.0-6g-0.1R	1.044
17	.102	.885	1.170	.969	1.476	.080	.120	M25x1.0-6g-0.1R	1.170
19	.133	1.009	1.294	1.088	1.586	.105	.145	M28x1.0-6g-0.1R	1.294
21	.133	1.134	1.419	1.213	1.711	.100	.140	M31x1.0-6g-0.1R	1.419
23	.133	1.259	1.544	1.342	1.836	.125	.165	M34x1.0-6g-0.1R	1.544
25	.133	1.386	1.669	1.469	1.964	.120	.160	M37x1.0-6g-0.1R	1.669
33	.133	1.811	2.220	1.902	2.520	.165 .160	.217 .212	M47x1.0-6g-0.1R	2.220

JAM NUT RECEPTACLE

REF: D38999/44



G&H PART NUMBER DEVELOPMENT

BREECH-LOK® **BL 07 F 17 - 35 P N**
MIL-C-38999, Series IV Configuration

SHELL TYPE: Jam Nut Receptacle

CLASS

SHELL SIZE
(SEE TABLE II)

INSERT ARRANGEMENT
(SEE PAGES 4-6)

CONTACT STYLE

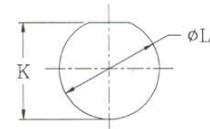
POLARIZATION
(SEE TABLE I)

CALL FACTORY FOR MODIFICATIONS

TABLE I POLARIZATION CHART

KEY POSITION	XX°	YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

CONSULT FACTORY FOR ADDITIONAL POLARIZATION POSITIONS



PANEL CUT-OUT
(.125 MAX) PANEL THICKNESS
REAR PANEL MOUNTING

TABLE II

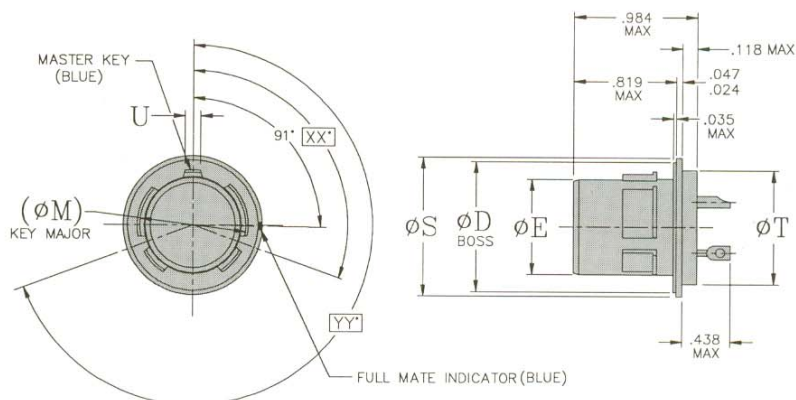
SHELL SIZE	U REF	REF	ØB MAX	G THREAD METRIC	C FLAT MAX	ØD BOSS MAX	ØE MAX	ØF MIN	H FLAT MAX	V THREAD METRIC	JAM NUT D38999/28 DASH NO.	O-RING MS9068 DASH NO.	ØJ MAX	K MAX	ØL MAX	ØM REF
9			1.195	M17x1.0-6g-0.1R	.651	.680	.381	.674	1.073	M12x1.0-6g-0.1R	-2	-018	.783	.661	.683	.461
11	.065	.105	1.520	M25x1.0-6g-0.1R	.942	1.000	.509	.794	1.394	M15x1.0-6g-0.1R	-3	-024	1.096	.955	1.017	.589
13	.060	.100	1.642	M28x1.0-6g-0.1R	1.066	1.125	.634	.918	1.520	M18x1.0-6g-0.1R	-4	-026	1.221	1.084	1.144	.720
15	.085	.125	1.768	M31x1.0-6g-0.1R	1.191	1.250	.759	1.036	1.642	M22x1.0-6g-0.1R	-5	-028	1.346	1.208	1.269	.844
17	.080	.120	1.957	M34x1.0-6g-0.1R	1.321	1.375	.885	1.172	1.799	M25x1.0-6g-0.1R	-7	-029	1.483	1.333	1.394	.969
19	.105	.145	2.035	M38x1.0-6g-0.1R	1.441	1.500	1.009	1.286	1.909	M28x1.0-6g-0.1R	-9	-030	1.608	1.459	1.517	1.088
21	.100	.140	2.157	M41x1.0-6g-0.1R	1.566	1.625	1.134	1.412	2.035	M31x1.0-6g-0.1R	-10	-031	1.733	1.576	1.644	1.213
23	.125	.165	2.283	M44x1.0-6g-0.1R	1.691	1.750	1.259	1.536	2.157	M34x1.0-6g-0.1R	-11	-032	1.858	1.701	1.769	1.342
25	.120	.160	2.409	M47x1.0-6g-0.1R	1.816	1.875	1.384	1.662	2.283	M37x1.0-6g-0.1R	-12	-033	1.983	1.826	1.894	1.469
33	.165 .160	.217 .212	3.015	M57x1.5-6g-0.1R	2.208	2.264	1.808	2.056	2.737	M47x1.0-6g-0.1R	-	-037	2.466	2.218	2.285	1.903

G&H Technology, Inc.

750 West Ventura Boulevard • Camarillo, California 93010 • (805) 484-0543 • FAX: (805) 987-5062

SOLDER MOUNT RECEPTACLE - HERMETIC

REF: D38999/45



G & H PART NUMBER DEVELOPMENT

BREECH-LOK® **BL** **H1** **N** **11 - 35** **P** **N-1**
MIL-C-38999, Series IV Configuration

SHELL TYPE: Solder Mount - Hermetic

CLASS

SHELL SIZE
(SEE TABLE II)

INSERT ARRANGEMENT
(SEE PAGES 4-6)

CONTACT STYLE

POLARIZATION
(SEE TABLE I)

CALL FACTORY FOR MODIFICATIONS

**TABLE I
POLARIZATION CHART**

KEY POSITION	XX°	YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

CONSULT FACTORY FOR ADDITIONAL
POLARIZATION POSITIONS



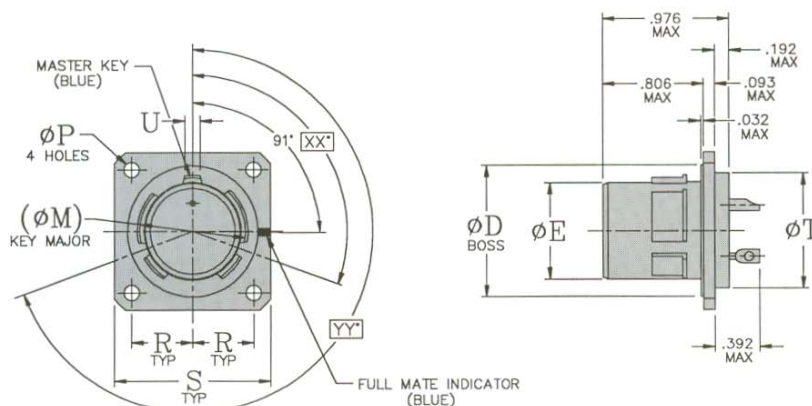
PANEL CUT-OUT
(.125 MAX) PANEL THICKNESS
FRONT OR REAR PANEL MOUNTING

TABLE II

SHELL SIZE	øD BOSS MAX	øE MAX	øM REF	øS MAX	øT	U PIN REF	øX MAX
9	.668	.384	.464	.734	.655 .650		.681
11	.793	.509	.589	.862	.783 .776	.105 .100	.806
13	.919	.634	.720	.988	.909 .901		.932
15	1.044	.759	.844	1.110	1.035 1.026	.125	1.057
17	1.170	.885	.969	1.236	1.157 1.151	.120	1.183
19	1.294	1.009	1.088	1.330	1.251 1.245	.145	1.307
21	1.419	1.134	1.213	1.456	1.377 1.370	.140	1.432
23	1.544	1.259	1.342	1.582	1.503 1.495	.165	1.557
25	1.669	1.384	1.469	1.704	1.629 1.620	.160	1.682

BOX MOUNT RECEPTACLE - HERMETIC

REF: D38999/41



G & H PART NUMBER DEVELOPMENT

BREECH-LOK® **BL** **H2** **N** **11 - 35** **P** **N-1**
MIL-C-38999, Series IV Configuration

SHELL TYPE: Box Mount - Hermetic

CLASS

SHELL SIZE
(SEE TABLE II)

INSERT ARRANGEMENT
(SEE PAGES 4-6)

CONTACT STYLE

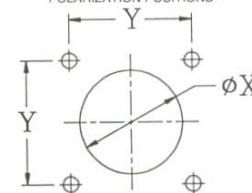
POLARIZATION
(SEE TABLE I)

CALL FACTORY FOR MODIFICATIONS

**TABLE I
POLARIZATION CHART**

KEY POSITION	XX°	YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

CONSULT FACTORY FOR ADDITIONAL POLARIZATION POSITIONS



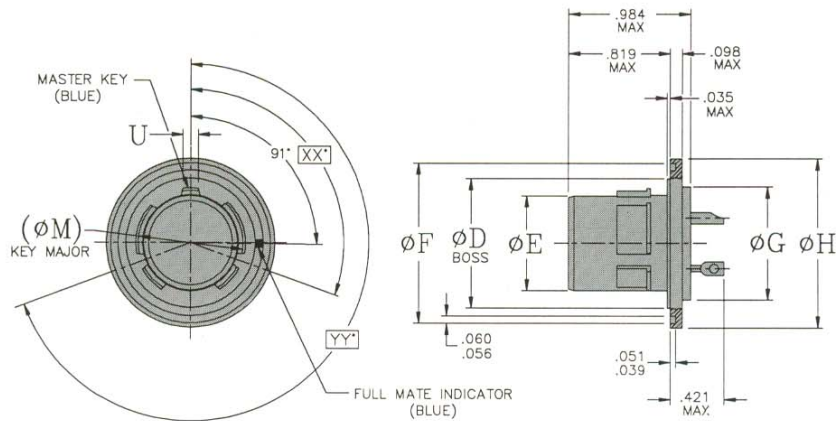
PANEL CUT-OUT
(.125 MAX) PANEL THICKNESS
FRONT OR REAR PANEL MOUNTING

TABLE II

SHELL SIZE	øD MAX	øE MAX	øM REF	øP MIN	R BSC	S MAX	øT MAX	U PIN REF	øX ±.005	Y ±.005
9	.668	.384	.464	.122	.328	.945	.496	.105	.681	.656
11	.793	.509	.589	.122	.406	1.051	.625	.100	.806	.812
13	.919	.634	.720	.122	.453	1.146	.750	.125	.932	.906
15	1.044	.759	.844	.122	.4845	1.240	.906	.120	1.057	.969
17	1.170	.885	.969	.122	.531	1.335	1.016	.145	1.183	1.062
19	1.294	1.009	1.088	.122	.578	1.461	1.141	.140	1.307	1.156
21	1.419	1.134	1.213	.122	.625	1.583	1.266	.165	1.432	1.250
23	1.544	1.259	1.342	.142	.6875	1.709	1.375	.160	1.557	1.375
25	1.669	1.384	1.469	.142	.750	1.835	1.484		1.682	1.500

WELD MOUNT RECEPTACLE - HERMETIC

REF: D38999/48



G & H PART NUMBER DEVELOPMENT

BREECH-LOK[®] **BL H4 N 11 - 35 P N-1**
MIL-C-38999, Series IV Configuration

SHELL TYPE: Weld Mount - Hermetic

CLASS

SHELL SIZE
(SEE TABLE II)

INSERT ARRANGEMENT
(SEE PAGES 4-6)

CONTACT STYLE

POLARIZATION
(SEE TABLE I)

CALL FACTORY FOR MODIFICATIONS

**TABLE I
POLARIZATION CHART**

KEY POSITION	XX°	YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

CONSULT FACTORY FOR ADDITIONAL
POLARIZATION POSITIONS



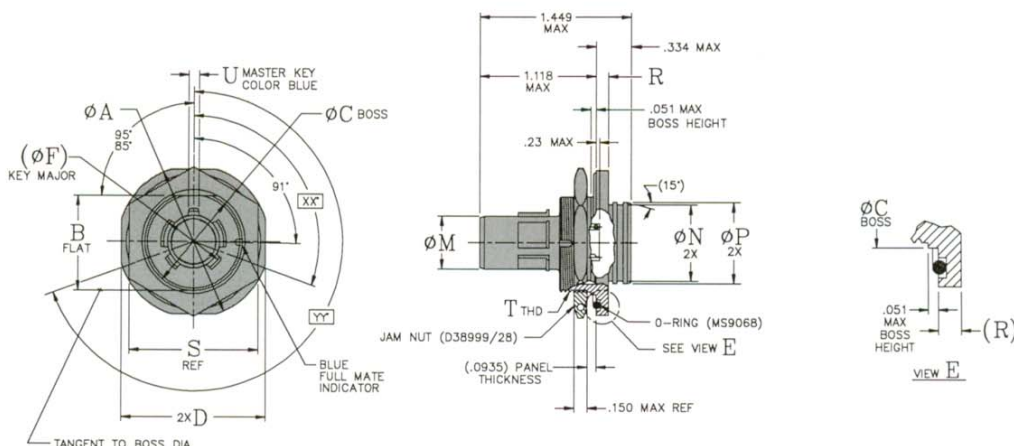
PANEL CUT-OUT
(.125 MAX) PANEL THICKNESS
FRONT OR REAR PANEL MOUNTING

TABLE II

SHELL SIZE	ØD BOSS MAX	ØE MAX	ØF REF	ØG MAX	ØH MAX	ØM REF	U PIN REF	ØX MAX
9	.668	.384	.909 .898	.496	.980	.474		.681
11	.793	.509	1.035 1.024	.625	1.106	.589	.105 .100	.806
13	.919	.634	1.161 1.150	.750	1.232	.720		.932
15	1.044	.759	1.287 1.275	.906	1.358	.844	.125	1.057
17	1.170	.885	1.374 1.362	1.016	1.445	.969	.120	1.183
19	1.294	1.009	1.520 1.508	1.141	1.590	1.088	.145	1.307
21	1.419	1.134	1.661 1.650	1.266	1.732	1.213	.140	1.432
23	1.544	1.259	1.827 1.815	1.375	1.898	1.342	.165	1.557
25	1.669	1.384	1.913 1.902	1.483	1.984	1.469	.160	1.682

JAM NUT RECEPTACLE - HERMETIC

REF: D38999/43



G & H PART NUMBER DEVELOPMENT

BREECH-LOK[®]
MIL-C-38999, Series IV Configuration

SHELL TYPE: Jam Nut Mount - Hermetic

CLASS

SHELL SIZE
(SEE TABLE II)

INSERT ARRANGEMENT
(SEE PAGES 4-6)

CONTACT STYLE

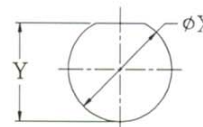
POLARIZATION
(SEE TABLE I)

CALL FACTORY FOR MODIFICATIONS

TABLE I
POLARIZATION CHART

KEY POSITION	XX°	YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

CONSULT FACTORY FOR ADDITIONAL
POLARIZATION POSITIONS



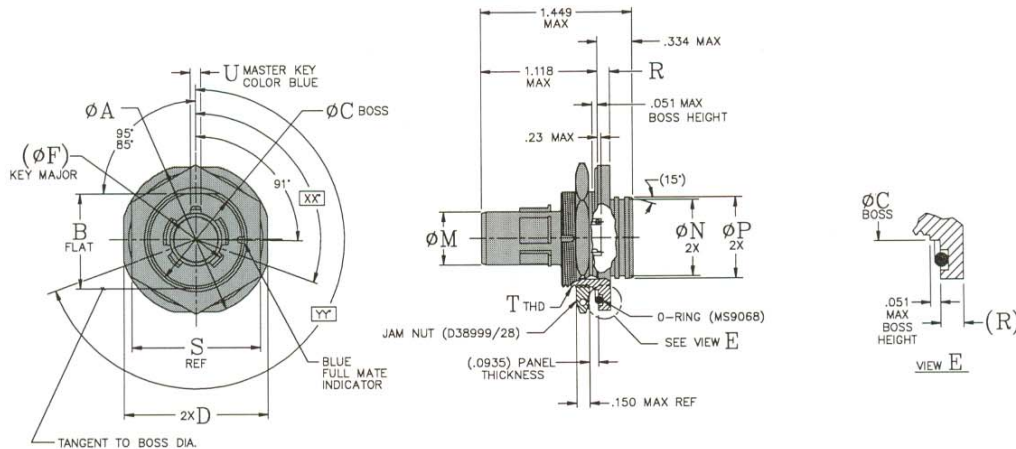
PANEL CUT-OUT
(.125 MAX) PANEL THICKNESS
REAR PANEL MOUNTING

TABLE II

SHELL SIZE	øA MAX	B FLAT MAX	øC BOSS MAX	øD MAX	F REF	øM MAX	øN MAX	øP MAX	R MAX	S MAX	T THREAD METRIC	øX MAX	Y MAX	O-RING MS9068
9	1.201	.655	.689	1.079	.464	.385	.606	.660	.118	.945	M17x1,0-6g-0,1R	.710	.670	-019
11	1.386	.755	.815	1.268	.589	.509	.732	.779		1.036	M20x1,0-6g-0,1R	.832	.769	-022
13	1.512	.942	1.004	1.394	.720	.634	.858	.909		1.230	M25x1,0-6g-0,1R	1.017	.955	-024
15	1.638	1.066	1.126	1.520	.844	.759	.984	1.035		1.387	M28x1,0-6g-0,1R	1.144	1.084	-026
17	1.764	1.191	1.259	1.642	.969	.885	1.110	1.157		1.429	M32x1,0-6g-0,1R	1.269	1.208	-028
19	1.949	1.316	1.384	1.831	1.088	1.009	1.236	1.283	.150	1.586	M35x1,0-6g-0,1R	1.394	1.333	-128
21	2.075	1.442	1.507	1.957	1.213	1.134	1.358	1.409		1.783	M38x1,0-6g-0,1R	1.517	1.459	-130
23	2.201	1.565	1.626	2.079	1.342	1.259	1.484	1.535		1.941	M41x1,0-6g-0,1R	1.644	1.575	-132
25	2.327	1.692	1.752	2.205	1.469	1.384	1.610	1.657		2.017	M44x1,0-6g-0,1R	1.769	1.709	-134

JAM NUT RECEPTACLE - HERMETIC

REF: D38999/43



G & H PART NUMBER DEVELOPMENT

BREECH-LOK® **BL** **H7** **N** **17-35** **P** **N-1**
MIL-C-38999, Series IV Configuration

SHELL TYPE: Jam Nut Mount - Hermetic

CLASS

SHELL SIZE
(SEE TABLE II)

INSERT ARRANGEMENT
(SEE PAGES 4-6)

CONTACT STYLE

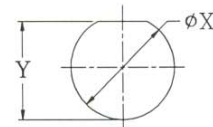
POLARIZATION
(SEE TABLE I)

CALL FACTORY FOR MODIFICATIONS

**TABLE I
POLARIZATION CHART**

KEY POSITION	XX°	YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

CONSULT FACTORY FOR ADDITIONAL
POLARIZATION POSITIONS



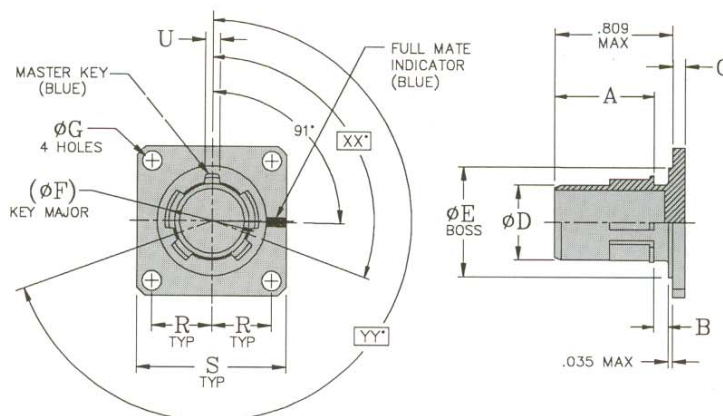
PANEL CUT-OUT
(.125 MAX) PANEL THICKNESS
REAR PANEL MOUNTING

TABLE II

SHELL SIZE	ØA MAX	B FLAT MAX	ØC BOSS MAX	ØD MAX	F REF	ØM MAX	ØN MAX	ØP MAX	R MAX	S MAX	T THREAD METRIC	ØX MAX	Y MAX	O-RING MS9068
9	1.201	.655	.689	1.079	.464	.385	.606	.660	.118	.945	M17x1,0-6g-0,1R	.710	.670	-019
11	1.386	.755	.815	1.268	.589	.509	.732	.779		1.036	M20x1,0-6g-0,1R	.832	.769	-022
13	1.512	.942	1.004	1.394	.720	.634	.858	.909		1.230	M25x1,0-6g-0,1R	1.017	.955	-024
15	1.638	1.066	1.126	1.520	.844	.759	.984	1.035		1.387	M28x1,0-6g-0,1R	1.144	1.084	-026
17	1.764	1.191	1.259	1.642	.969	.885	1.110	1.157		1.429	M32x1,0-6g-0,1R	1.269	1.208	-028
19	1.949	1.316	1.384	1.831	1.088	1.009	1.236	1.283	.150	1.586	M35x1,0-6g-0,1R	1.394	1.333	-128
21	2.075	1.442	1.507	1.957	1.213	1.134	1.358	1.409		1.783	M38x1,0-6g-0,1R	1.517	1.459	-130
23	2.201	1.565	1.626	2.079	1.342	1.259	1.484	1.535		1.941	M41x1,0-6g-0,1R	1.644	1.575	-132
25	2.327	1.692	1.752	2.205	1.469	1.384	1.610	1.657		2.017	M44x1,0-6g-0,1R	1.769	1.709	-134

DUMMY RECEPTACLE - STOWAGE

REF: D38999/50



G&H PART NUMBER DEVELOPMENT

BREECH-LOK® _____ **BL** **DR** **C** **11** **N**
MIL-C-38999, Series IV Configuration
SHELL TYPE: Dummy Receptacle _____
CLASS _____
SHELL SIZE _____
(SEE TABLE II)
POLARIZATION (UNIVERSAL IF NOT SPECIFIED) _____
(SEE TABLE I)
CALL FACTORY FOR MODIFICATIONS

**TABLE I
POLARIZATION CHART**

KEY POSITION	XX°	YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

CONSULT FACTORY FOR ADDITIONAL POLARIZATION POSITIONS

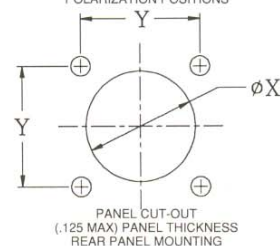
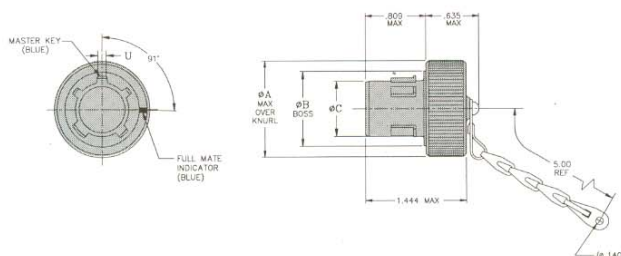


TABLE II

SHELL SIZE	A REF	B REF	C REF	øD MAX	øE MAX	øF REF	øG REF	R BSC	S MAX	U REF	øX ±.005	Y ±.005
9				.384	.668	.461		.328	.950		.681	.656
11				.509	.793	.589		.406	1.051	.065	.806	.812
13	.675	.099	.102	.634	.919	.720		.453	1.145	.060	.932	.906
15	.669	.094	.083	.759	1.044	.844	.137	.4845	1.240	.085	1.057	.969
17				.885	1.170	.969	.122	.531	1.334	.080	1.183	1.062
19				1.009	1.294	1.088		.578	1.460	.105	1.307	1.156
21				1.134	1.419	1.213		.625	1.582	.100	1.432	1.250
23	.665	.109	.133	1.259	1.544	1.342		.6875	1.708	.125	1.557	1.375
25	.659	.104	.114	1.384	1.669	1.469	.157	.750	1.834	.120	1.682	1.500
33				1.811	2.169	1.905	.142	1.00	2.345	.165 .160	2.175	2.000

PROTECTIVE COVER - PLUG



G & H PART NUMBER DEVELOPMENT

BREECH-LOK®
MIL-C-38999, Series IV Configuration

SHELL TYPE: Protective cover - Plug

CLASS

SHELL SIZE
(SEE TABLE II)

CALL FACTORY FOR MODIFICATIONS

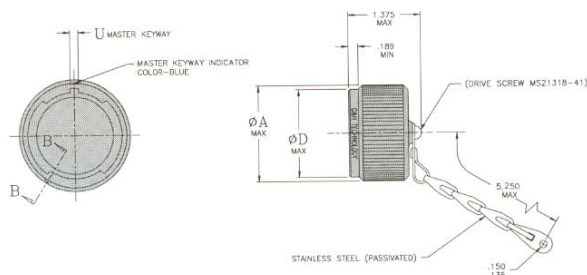
NOTE: UNIVERSAL KEY/KEYWAYS, FIT ALL POLARIZATIONS

BL PC F 11

TABLE II

SHELL SIZE	ØA MAX	ØB BOSS MAX	ØC MAX	U REF
9	1.250	.668	.384	.065
11	1.380	.793	.509	.060
13	1.570	.919	.634	
15	1.660	1.044	.759	.085
17	1.790	1.170	.885	.080
19	1.920	1.294	1.009	.105
21	2.060	1.419	1.134	.100
23	2.250	1.544	1.259	.125
25	2.380	1.669	1.384	.120
33	2.880	2.220	1.811	.165 .160

PROTECTIVE COVER - RECEPTACLE



G & H PART NUMBER DEVELOPMENT

BREECH-LOK®
MIL-C-38999, Series IV Configuration

SHELL TYPE: Protective cover - Receptacle

CLASS

SHELL SIZE
(SEE TABLE II)

CALL FACTORY FOR MODIFICATIONS

NOTE: UNIVERSAL KEY/KEYWAYS, FIT ALL POLARIZATIONS

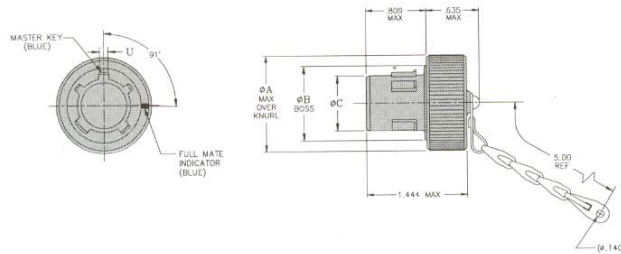
BL RC C 11

TABLE II

SHELL SIZE	ØA MAX	ØD MAX	U MIN
9	.880	.650	
11	.922	.775	.113
13	1.047	.900	
15	1.219	1.040	.133
17	1.344	1.150	
19	1.469	1.275	.153
21	1.579	1.400	
23	1.704	1.525	.173
25	1.829	1.650	
33	2.329	2.200	.231

G&H Technology, Inc.

PROTECTIVE COVER - PLUG



G & H PART NUMBER DEVELOPMENT

BREECH-LOK®
MIL-C-38999, Series IV Configuration

SHELL TYPE: Protective cover - Plug

CLASS

SHELL SIZE
(SEE TABLE II)

CALL FACTORY FOR MODIFICATIONS

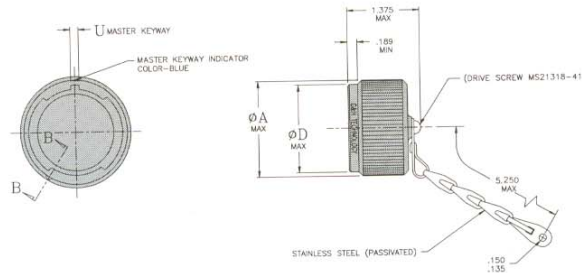
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BL PC F 11

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33	2.880	2.220	1.811	.165 .160

PROTECTIVE COVER - RECEPTACLE



G & H PART NUMBER DEVELOPMENT

BREECH-LOK®
MIL-C-38999, Series IV Configuration

SHELL TYPE: Protective cover - Receptacle

CLASS

SHELL SIZE
(SEE TABLE II)

CALL FACTORY FOR MODIFICATIONS

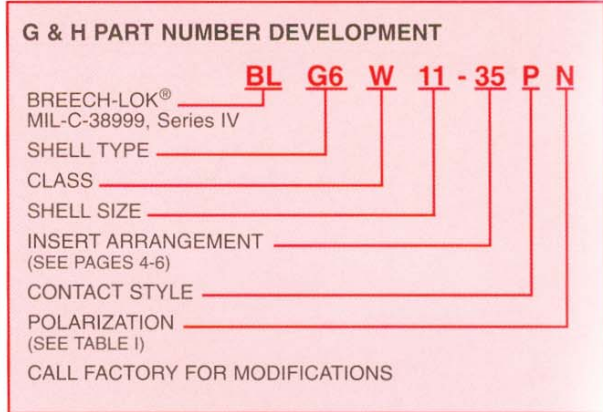
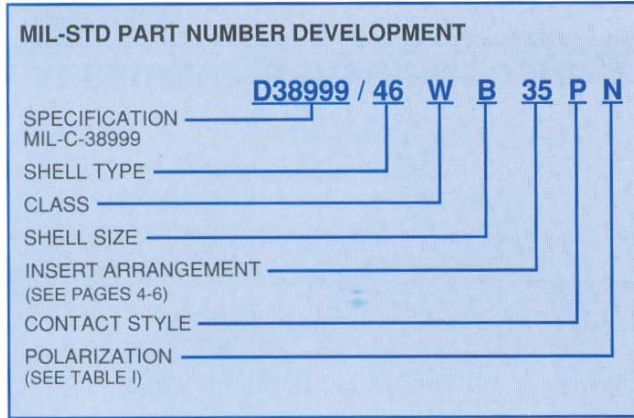
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21	1.579	1.400	
23	1.704	1.525	.173
25	1.829	1.650	
33	2.329	2.200	.231

CROSS REFERENCE



MIL-STD DESIGNATION	Breech-Lok® DESIGNATION	SHELL TYPE DESCRIPTION	FOR DIAGRAM AND DIMENSIONS SEE:
/40	00	WALL MOUNT RECEPTACLE	PAGE 8
/42	02	BOX MOUNT RECEPTACLE	PAGE 9
/49	03	IN-LINE RECEPTACLE	PAGE 10
/47	06	STRAIGHT PLUG (NON-EMI)	PAGE 7
/44	07	JAM NUT RECEPTACLE	PAGE 11
/46	G6	STRAIGHT PLUG (EMI)	PAGE 7
/45	H1	SOLDER MOUNT - HERMETIC	PAGE 12
/41	H2	BOX MOUNT - HERMETIC	PAGE 13
/48	H4	WELD MOUNT - HERMETIC	PAGE 14
/43	H7	JAM NUT MOUNT - HERMETIC	PAGE 15
/50	DR	DUMMY RECEPTACLE - STOWAGE	PAGE 16
	PC	PROTECTIVE COVER - PLUG	PAGE 17
	RC	PROTECTIVE COVER - RECEPTACLE	PAGE 17
	05	BULKHEAD FEED THRU	PAGE 18
	CS	CONNECTOR SAVER	PAGE 19

SHELL SIZES AND INSERT ARRANGMENTS

Breech-Lok®	9	11	13	15	17	19	21	23	25	33
MIL-STD	—	B	C	D	E	F	G	H	J	—
INSERT ARRANGEMENTS	35	2	4	5	2	4	11	21	4	58
	98	3	35	15	6	11	16	35	11	
		5	98	18	8	18	26	53	19	
		35		19	26	32	35	55	20	
		99		35	35	35	39	97	24	
		98		97	98	3	41	99	29	
					99		5		35	
									43	
									46	
									61	
									8	

POLARIZATION CHART

KEY POSITION	XX°	YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

CONSULT FACTORY
FOR ADDITIONAL
POLARIZATION POSITIONS

CLASS	FINISH	OPERATING TEMPERATURE RANGE
C	ANODIZE	-65°C (85°F) TO +200°C (392°F)
F	NICKEL PLATE	-65°C (85°F) TO +200°C (392°F)
W	O.D. CADMIUM/NICKEL	-65°C (85°F) TO +175°C (347°F)
K	CRES (PASSIVATED)	-65°C (85°F) TO +200°C (392°F)
N	NICKEL PLATE	-65°C (85°F) TO +200°C (392°F)
Y	PASSIVATED	-65°C (85°F) TO +200°C (392°F)

CONTACT STYLE DESIGNATOR

P	PIN
S	SOCKET
X	PIN (EYELET)
A	PIN, NON STANDARD
B	SOCKET, NON STANDARD

THE G&H TECHNOLOGY FAMILY OF CONNECTORS

Our comprehensive range of Military Specification connectors, including the famed Breech-Lok® line of cylindrical connectors, includes:

MIL-C-38999 Series III & IV Connectors

- Standard
- Custom Modifications, including space-rated types

MIL-C-38999 Series III & IV Lanyard Connectors

MIL-C-28840 Connectors

- Standard
- Custom Modifications

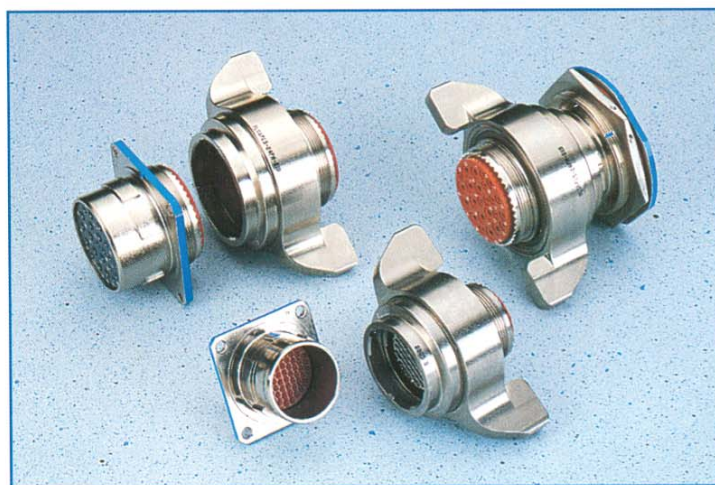
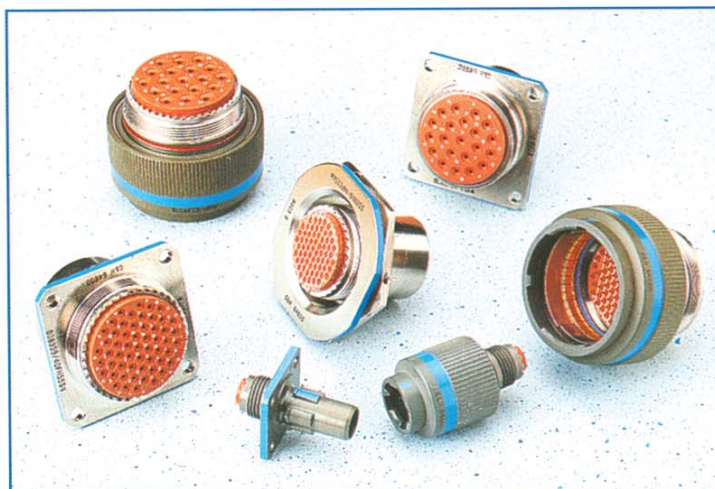
Space Grade & Other Special Application Connectors

- 1553B Data Bus Connectors
- Filter Connectors
- NBC Compatible Connectors
- Fiber Optic Connectors
- Printed Circuit Tail Connectors

Custom Interconnection Products

- Launch Umbilicals
- Vehicle Staging Connectors
- Wing Pylon Connectors
- Cryogenic Connectors
- Fiber Optic Connectors
- Hybrid (a fiber optic and electrical connector)

Product literature is also available on our Non-Explosive Actuators and EMI Filtered Connectors as well as a comprehensive booklet on our Electrical Interconnect Products and Capabilities. For more information or to request copies, please contact us.



G&H Technology, Inc.

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