

## SHV / MHV / 10 KV / 20 KV DESCRIPTION/SPECIFICATIONS

This section contains four high voltage connector series — SHV, MHV, 10 KV and 20 KV. While all four have a bayonet coupling, they are not intermateable. All four series are weatherproof.

The SHV series is manufactured in accordance with National Bureau of Standards specification ND-545, and MIL-PRF-39012 where applicable, and features an improved interface over the MHV series. The SHV outer contact ground connection is maintained through the center contact mating cycle. The center contacts are recessed to prevent shock hazards when the connectors are unmated. The SHV is rapidly replacing the MHV series in many areas. SHV to MHV adapters are listed for use when changeover to SHV is required.

The MHV series connector, forerunner of the SHV series, was designed for high voltage applications of BNC connectors (voltage greater than 500 vrms). MHV connectors are sometimes referred to as high voltage BNC, but are not intermateable with BNC connectors. MHV connectors are covered under MIL-PRF-39012.

Kings 10 KV and 20 KV connectors feature special high voltage interfaces, and are ideally suited for pulse applications.

Kings high voltage connectors are designed for use where the normal operating voltage of standard coaxial connectors is inadequate. They are commonly used in military and nuclear applications, as well as medical electronics. Major uses include research laboratories, manufacturers of nuclear control instrumentation and accelerator laboratories. The SHV series is used in both the NIM (Nuclear Instrumentation Module) and Camac programs.

### SPECIFICATIONS

ELECTRICAL	SHV	MHV	10 KV	20 KV
Nominal Impedance	Non-constant	Non-constant	Non-constant	Non-constant
Voltage Rating Operating	3500 vrms 5000VDC	3500 vrms 5000VDC	10 KVDC	20 KVDC
Test	5000 vrms 10000 VDC	5000 vrms 6500 VDC	15 KVDC	30 KVDC
Insulation Resistance	10 <sup>9</sup> megohms	5000 megohms	10 <sup>9</sup> megohms	10 <sup>9</sup> megohms

### ENVIRONMENTAL

Temperature Range	PTFE Insulators: -85 F to +329 F (-65 C to +165 C)  Rexolite Insulators: -67 F to +185 F (-55 C to +85 C)  Polyethylene Insulators: -67 F to +185 F (-55 C to +85 C)
Vibration	MIL-STD-202 Method 204, test condition A
Shock	MIL-STD-202 Method 213, test condition I
Corrosion (salt spray)	MIL-STD-202 Method 101, test condition B
Hermetic Seals	Leakage shall not exceed 1 x 10 <sup>-6</sup> cc/sec of tracer gas at atmospheric pressure.
Compression Seals	Gasketed units show no leakage at 50 psi.

### MECHANICAL

Mating	2 stud bayonet coupling  SHV and MHV — per MIL-PRF-39012 or MIL-STD-348 as applicable.
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### MATERIAL

Except as noted in connector listings

Bodies & Fittings	Brass, ASTM-B-6
Crimp Sleeves	Commercial Bronze, Alloy 220
Male Center Contacts	Brass, ASTM-B-6
Female Center Contacts	Beryllium Copper, ASTM-B-196
Outer Contacts	
SHV, 10 KV	Beryllium Copper, ASTM-B-196
MHV, 20 KV	Brass, ASTM-B-16
Insulators:	
MHV, SHV	PTFE, ASTM D-4894
10KV, 20 KV	Polyethylene High Density MIL-P-22748, Class B, Grade 5  As noted — Rexolite 1422 MIL-P-77, Type E-2
Gaskets & Seals	Silicone Rubber ZZ-R-765a, Class IIa Grade 50

### FINISHES

Contacts:	.00005" (.0012mm) min. hard gold plate per MIL-G-45204 over .00005 (.0012mm) min. nickel plate per QQ-N-290.
Bodies & Fittings and Outer Contacts:	
SHV, 10 KV, 20 KV	TR-5* — Kings tarnish resistant alloy electrodeposit finish.
MHV	0002" (.005mm) min. silver plate QQ-S-365A plus Kings TR-4* electrolytic chromate treatment.

CABLE GROUPS - RG/U, M17		
B	B-1	174, 188, 188A, 316, M17/119-RG174, M17/138-00001, M17/113-RG316
	B-2	179A, 179B, 187, 187A, M17/94-RG179, M17/136-00001
D		58", 58A", 58C, 141, 141A, M17/28-RG58, M17/111-RG303
E	E-1	55A, 142, 142A, 223, 400, M17/84-RG223, M17/60-RG142, M17/128-RG400
	E-2	55", 55B", 142B, M17/84-RG223, M17/60-RG142
G	G-1	59, 59A, 59B, 62, 62A, 62B, 62C, 210, M17/29-RG59, M17/30-RG62, M17/97-RG210
	G-2	71, 71A, 71B, M17/90-RG71
M	M-1	8, 9A, 213, M17/74-RG213
	M-2	11, 11A, M17/6-RG11
N	N-1	9, 9A, 9B, 214, M17/75-RG214
	N-2	13A, 216, M17/77-RG216
	N-3	225, M17/127-RG393

\*For these cables, crimping the center contact is not recommended when crimp contact is indicated.

Specifications are typical and may not apply to all connectors.



**PLUGS  
BULKHEAD JACKS**

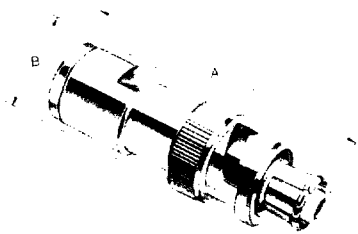


FIGURE 1

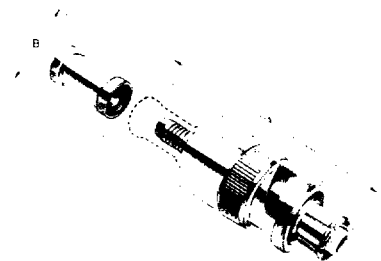


FIGURE 2

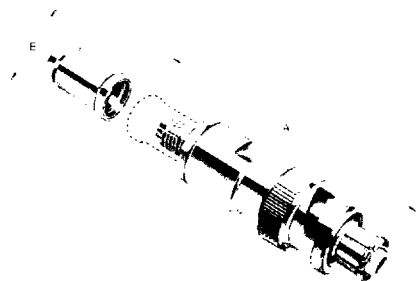


FIGURE 3

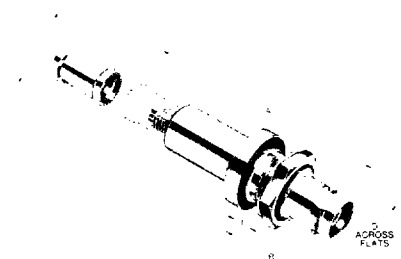
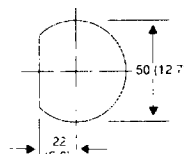


FIGURE 4



MTG. HOLE A

SHV

PLUGS – CONVENTIONAL CONSTRUCTION															
CABLE GROUP	KINGS PART NUMBER		FIG. NO.	NOTES	DIMENSIONS						CABLING				
	SILVER FINISH	TR-5 FINISH			A	B	C	D	t	MTG. HOLE	CBL. TRIM CODE	CRIMP DIE			
					in	mm	in	mm	in	mm	in	mm			
G		1705-14	1		1.81	46.0	0.81	20.6						1001.3	
PLUGS – WEATHERPROOF K-GRIP, JR. CONSTRUCTION															
D		1705-2	2	Crimp Contact	1.83	46.5	0.81	20.6						441	KTH-2061
G-1		1705-1	2	Crimp Contact	1.83	46.5	0.81	20.6						441	KTH-2062
PLUGS – PRE-ASSEMBLED WEATHERPROOF K-GRIP CONSTRUCTION															
B-1		1705-3	3	Crimp Contact	2.01	51.1	0.81	20.6						447	KTH-2071
BULKHEAD JACKS – WEATHERPROOF K-GRIP, JR. CONSTRUCTION															
G-1		1702-1	4	Crimp Contact, Rear Mtg.	2.20	55.9	0.81	20.6	0.69	17.5	0.227	5.8	A	441	KTH-2062

## BULKHEAD RECEPTACLES PANEL RECEPTACLES ADAPTERS WITHIN SERIES



FIGURE 5

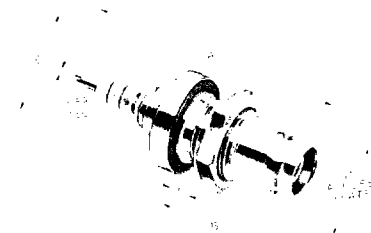


FIGURE 6



FIGURE 7

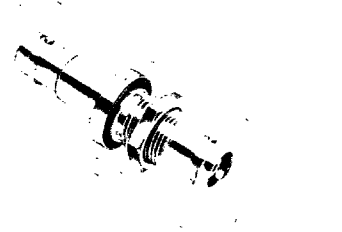


FIGURE 8

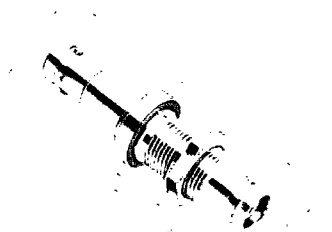


FIGURE 9

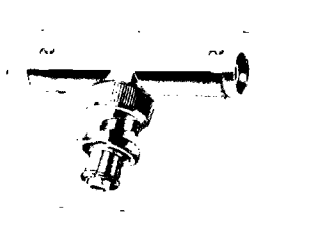


FIGURE 10

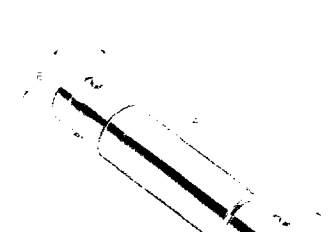


FIGURE 11

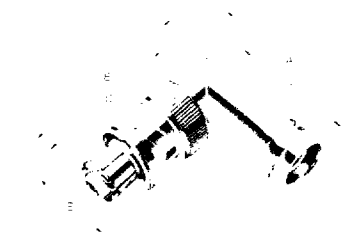
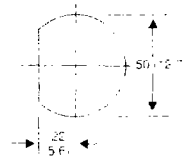
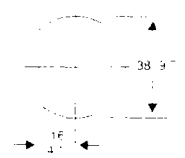


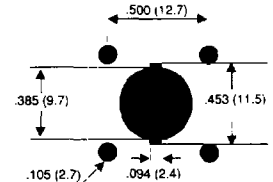
FIGURE 12



MTG. HOLE A



MTG. HOLE B



MTG. HOLE C

### BULKHEAD RECEPTACLES

KINGS PART NUMBER		MILITARY NUMBER (SILVER ONLY)	FIG. NO.	ADAPTER ENDS	NOTES	DIMENSIONS												
SILVER FINISH	TR-5 FINISH					A	B	C	D	E	t	MTG. HOLE						
						in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	
	1704-1		5		Front Mounting	1.79	45.5	0.75	19.3	0.50	12.7	0.50	12.7		0.182	4.6		B
	1704-2		6		Rear Mounting	1.79	45.5	0.81	20.6	0.69	17.5	0.53	13.5		0.236	6.0		A

### PANEL RECEPTACLES

	1707-1		7			1.79	45.5	0.47	22.1	0.35	8.9	0.44	11.2					C
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### ADAPTERS WITHIN SERIES

	1709-1		8	Jck-Jck		1.99	50.6	0.65	24.1	0.69	17.5	0.53	13.5		0.341	8.7		A
	1709-2		9	Jck-Jck	Hermetic Seal	2.25	57.2	1.15	29.2	0.69	17.5	0.53	13.5		0.571	14.5		A
	1709-3		10	Jck-Plg-Jck		1.71	43.4	1.26	32.3	0.56	14.2							
	1709-5		11	Jck-Jck		1.99	50.6	0.44	11.2									
	1709-12-M06		12	Jck-Plg		1.59	40.4	1.39	35.3	1.31	33.3	1.17	29.7	0.56	14.2			

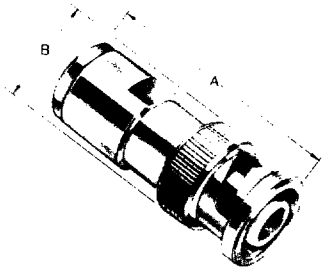


FIGURE 13

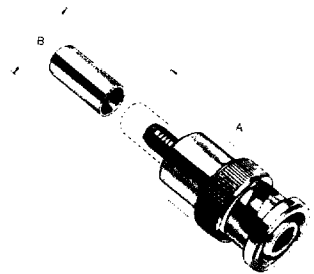


FIGURE 14

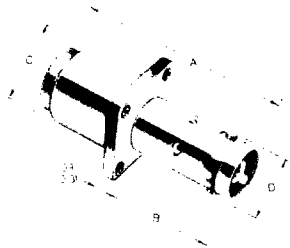
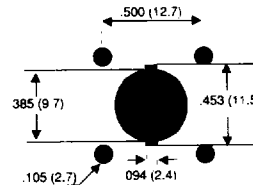


FIGURE 15



MTG. HOLE A

**MHV**

PLUGS – CONVENTIONAL CONSTRUCTION																
CABLE GROUP	KINGS PART NUMBER		MILITARY NUMBER (SILVER ONLY)	FIG. NO.	NOTES	DIMENSIONS								CABLING		
	SILVER FINISH	TR-5 FINISH				A	B		C		D		MTG. HOLE	CBL. TRIM CODE	CRIMP DIE	
						in	mm	in	mm	in	mm	in	mm			
B		KV-59-70		13	Center Contact	1.54	39.1	0.56	14.2						1002	
DE	<b>KV-59-84</b>			13		1.56	39.6	0.56	14.2						1002	
G	<b>UG-932A/U</b>	KV-59-26		13		1.56	39.6	0.56	14.2						1002	
PLUGS – K-GRIP, JR. CONSTRUCTION																
D	<b>KV-59-17</b>	KV-59-37		14		1.50	38.1	0.56	14.2						417	KTH-2001
G-1		KV-59-23		14	Crimp Contact	1.50	38.1	0.56	14.2						417	KTH-2002
PANEL JACKS – CONVENTIONAL CONSTRUCTION																
G	<b>UG-961A/U</b>			15	Rear Mount	1.50	38.1	0.77	19.6	0.56	14.2	0.89	2.3	A	1001	

## BULKHEAD RECEPTACLES PANEL RECEPTACLES

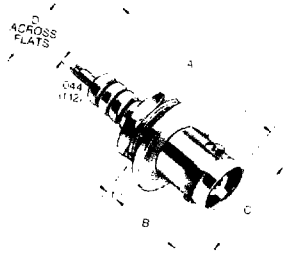


FIGURE 16

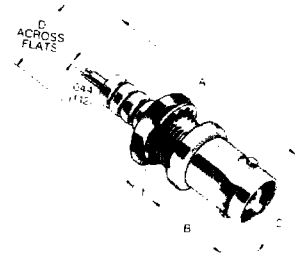
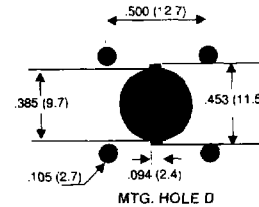
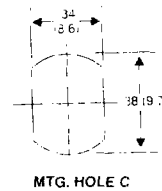
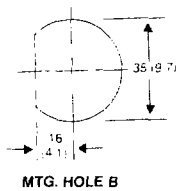


FIGURE 17



FIGURE 18



### BULKHEAD RECEPTACLES

KINGS PART NUMBER		MILITARY NUMBER (SILVER ONLY)	FIG. NO.	ADAPTER ENDS	NOTES	DIMENSIONS										
SILVER FINISH	TR-5 FINISH					A	B	C	D	t	MTG. HOLE					
in	mm	in	mm	in	mm	in	mm	in	mm							
KV-79-11			16		Front Mount	1.42	36.1	0.47	11.9	0.69	17.5	0.50	12.7	0.112	2.8	B
KV-79-16	KV-79-15		17		Front Mount	1.69	42.9	0.59	15.0	0.56	14.7	0.50	12.7	0.234	5.9	C
PANEL RECEPTACLES																
	KV-79-12		18			1.43	36.3	0.63	16.0	0.32	8.1	0.44	11.2			D

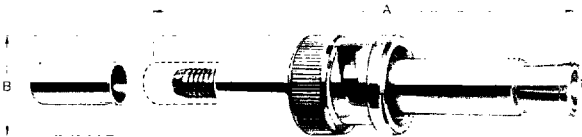


FIGURE 19

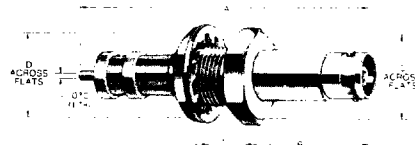
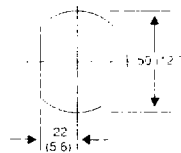


FIGURE 20



MTG. HOLE A

**10 KV**

**PLUGS – K-GRIP, JR. CONSTRUCTION**

CABLE GROUP	KINGS PART NO.	FIG. NO.	NOTES	DIMENSIONS					CABLING					
	TR-5 FINISH			A	B	C	D	t	MTG. HOLE	CBL TRIM CODE	CRIMP DIE			
				in	mm	in	mm	in	mm	in	mm			
RG-58C/U	1065-1	19		2.71	68.8	0.56	14.2						474	KTH-2001
LASL Type C-9Y19503	1065-2	19	Test Voltage – Note 1	2.71	68.8	0.56	14.2						419	KTH-2001

**BULKHEAD RECEPTACLES**

	1064-1	20	Front Mounting	2.50	63.5	1.06	27.4	0.75	19.1	0.75	19.1	0.28	7.1	A	
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Note 1 – Test voltage 20 KVDC at sea level, 15 KVDC at 8500 ft.

## PLUGS



FIGURE 21

### PLUGS – WEATHERPROOF K-GRIP, JR. CONSTRUCTION

CABLE GROUP	KINGS PART NO.	FIG. NO.	NOTES	DIMENSIONS										CABLING		
	TR-5 FINISH			A		B		C		D		t		MTG. HOLE	CBL. TRIM CODE	CRIMP DIE
				in	mm	in	mm	in	mm	in	mm	in	mm			
RG-213/U	1765-1	21		4.52	114.8	0.75	19.1							475	KTH-1079	