

## **FILTER ADAPTER KIT**

### **CAPACITIVELY DECOUPLED UNIVERSAL FILTER ADAPTER FOR USE WITH 0.5" D-HOLE MOUNTING CONNECTORS WITH AN O-RING GROOVE**

U.S. Patent No. 5249984

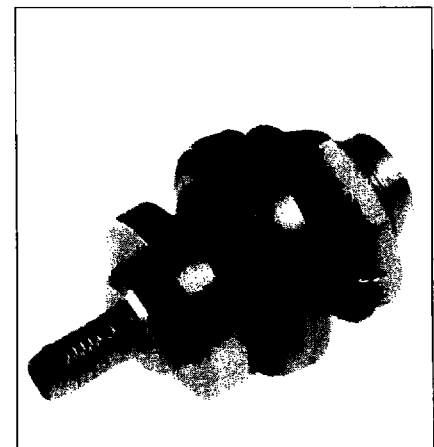
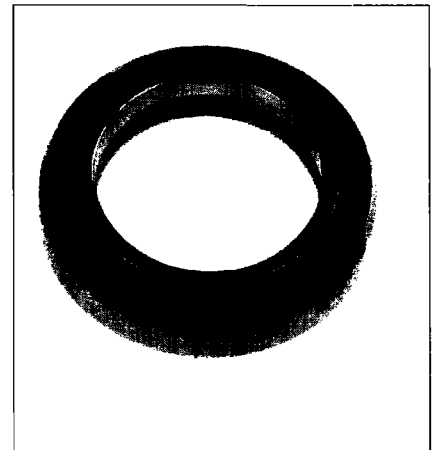
The Kings Electronics capacitively decoupled filter adapter provides the design engineer with an inexpensive and versatile method of eliminating ground loops and reducing noise. As the speed of today's circuits continue to increase, and the rise times of the pulses decrease, emissions are generated that can interfere with nearby circuits. Ground loops can be a problem when interconnecting different parts of a circuit that are at different potentials. Previously, ground loop problems were solved by the use of an insulating bushing mounted around the connector. This would effectively eliminate the loop and when circuit speeds were slow, this technique was sufficient. However, as high frequency problems surfaced, it became necessary to use a capacitor to shunt the noise signals to ground.

There are two different types of designs being utilized today. The first style integrates the capacitor directly into the structure of the connector. While this generally results in a package with less parts, it requires the user to buy costly, specially made connectors. Kings has opted for the second style which uses an external filter adapter that is mounted on a standard bulkhead connector using a .5 inch D-Hole mounting. This method allows the designer to choose the best connector for the application, usually an off the shelf, standard design. All styles of connectors from right angle PC mounts to cable connectors can utilize the Kings 8000 Series filter adapter.

In order to achieve the desired filtering action, two styles of capacitor are generally used: chip and ring. The chip technique, while initially successful, no longer operates effectively as frequencies continue to rise. The utilization of multiple chips in parallel can help to solve the problem, but assembly costs start to become prohibitive. The ring capacitor eliminates the problems of the chip. However, the usual method of attachment to the ring capacitor involves the use of a wave washer which result in contact at only three points. This effectively reduces the net capacitance and minimizes the filtering action, resulting in a higher reactance and lower insertion loss.

Kings has solved all of these shortcomings with the use of a patented compensating spring design which makes 360 degree contact with the ring capacitor. This results in a high insertion loss and low impedance over a very wide bandwidth. The unique design of the spring also compensates for any mechanical tolerance build-up.

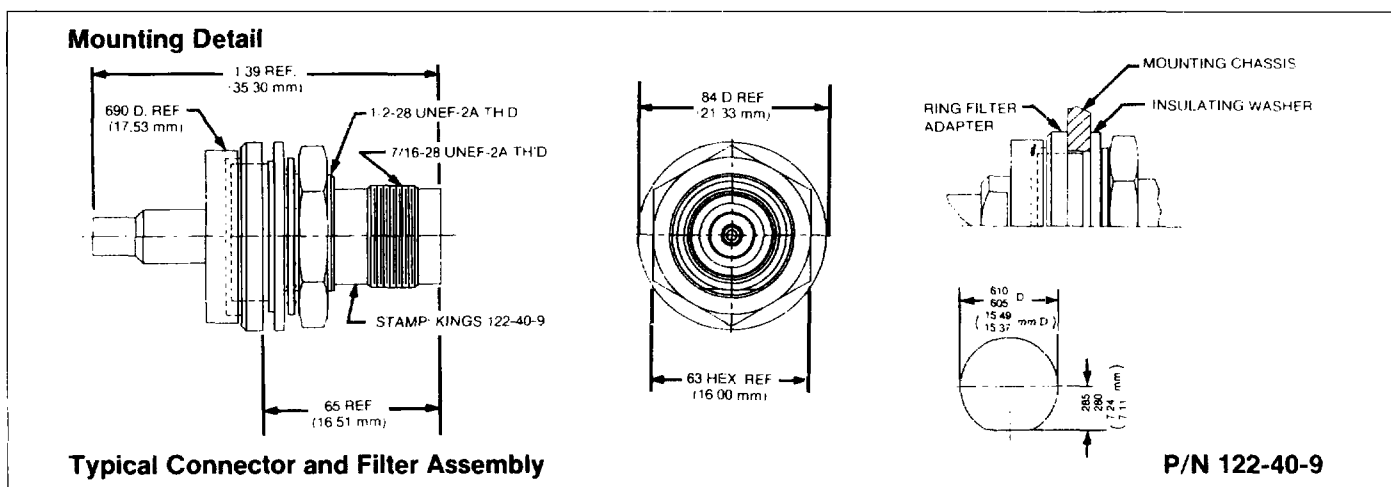
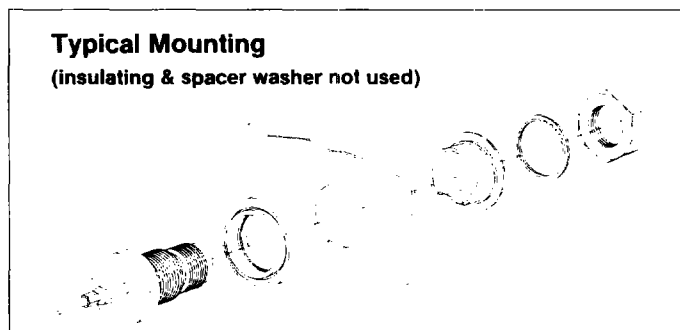
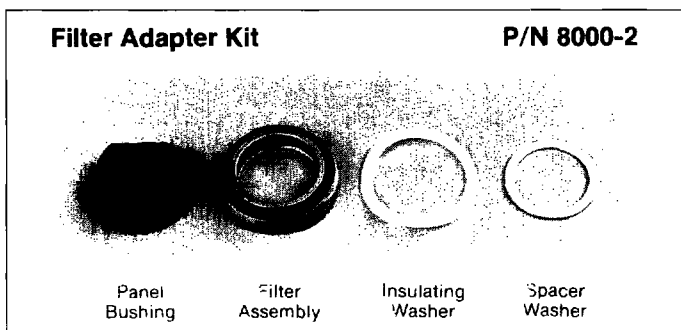
The 8000-2 is supplied with a 7000 pf capacitor. The impedance of the assembly is a measure of how much of the interfering signal is filtered out. The lower the impedance, the better the filtering action. The 8000-2 is less than 2 ohms at 100 MHz and it will operate to 1 GHz with an impedance of less than  $2 + .015 \times F(\text{MHz})$  Ohms.



# FILTER ADAPTER KIT



## 8000 SERIES



### SPECIFICATIONS

#### ELECTRICAL:

**Capacitance:** 7000 pf  
**Frequency Range:** 0 to 1 GHz  
**Impedance:**  $2 + .015 \times F(\text{MHz})$  ohms, max.

#### Dielectric:

**Withstanding Voltage:** 200 VRMS

**Emission Levels:** Meets or exceeds EMI/RFI emissions requirements of FCC Part 15 Level A, CISPR Level B (more stringent than FCC Level B), and IEC 801-3.

#### MECHANICAL:

**Mounting:** For use with Bulkhead Connectors with .500 inch D-Hole mounting threads.

**Recommended connector flange:** .687 inch diameter or .687 inch hex. When used with .687 diameter flange, insulating washer and spacer are not used.

**Recommended connector O-ring groove:** OD .653 inch  
ID .497 inch  
Depth .048 inch

**Maximum panel thickness:** .118 inch

**Mounting torque:** 12 to 15 in-lbs

**Operating temperature:** -55°C to +85°C

### TYPICAL KINGS BULKHEAD CONNECTORS FOR USE WITH 8000 SERIES FILTER ADAPTER KIT

Part Number	Description
122-39-9	TNC Bulkhead Jack for RG58/U (includes 8000-2 filter)
122-40-9	TNC Bulkhead Jack for RG316/U (includes 8000-2 filter)
KA-19-171	TNC Bulkhead Jack, RG174, 188, 316
KA-19-42	TNC Bulkhead Jack, RG174, 188, 316
KC-19-323-M06	BNC Bulkhead Jack, RG174, 188, 316
KC-19-187	BNC Bulkhead Jack, RG223
KC-19-110	BNC Bulkhead Jack, RG178, 196
KC-79-74	BNC Bulkhead Receptacle

**Note:** Filter is adaptable to other connector series such as SMA. Other panel configurations and capacitance values are also available. Consult factory for information.