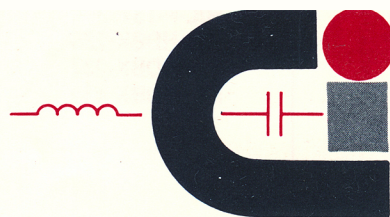
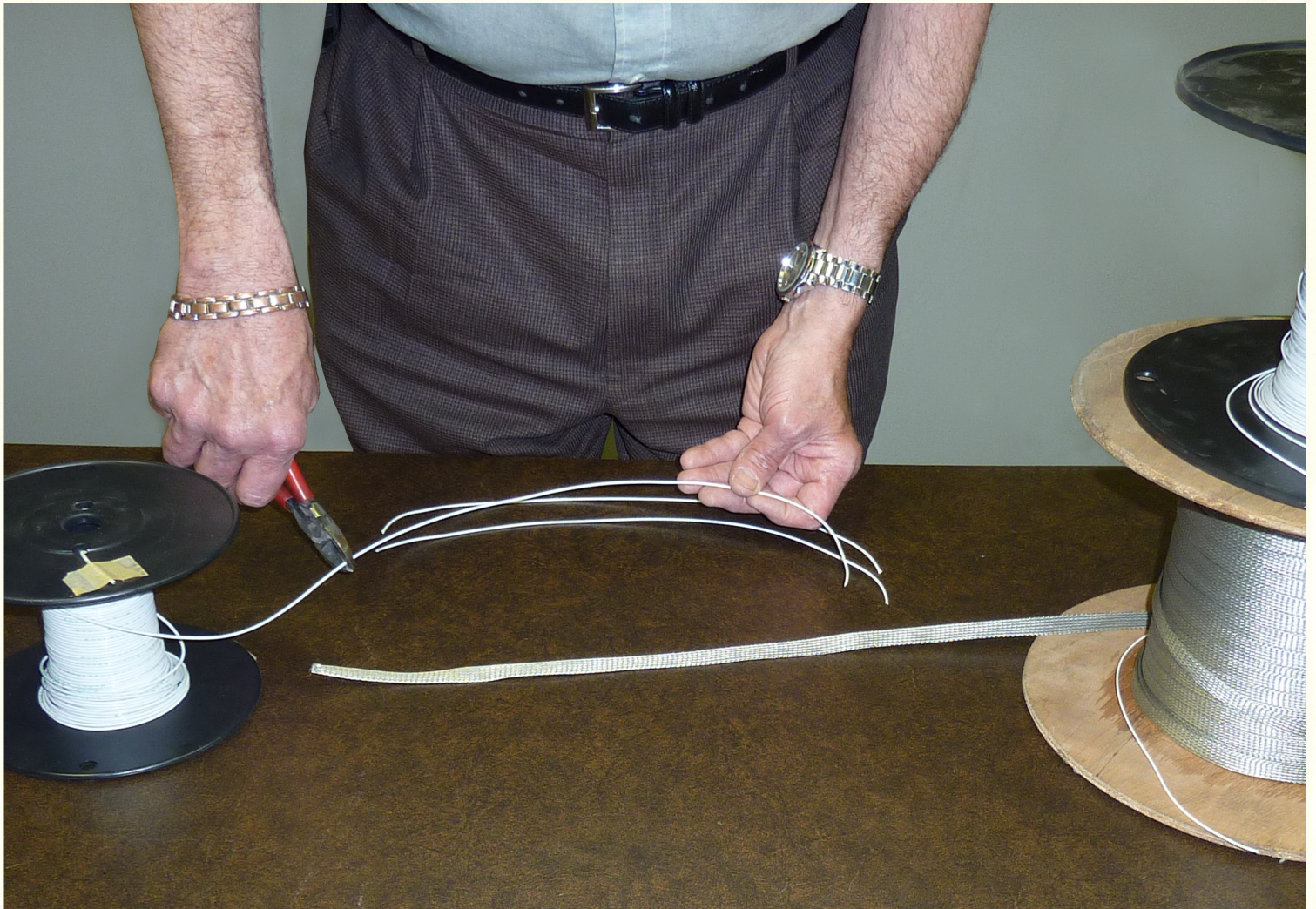


*a new concept in EMI suppression...*

**CAPCON<sup>®</sup>**  
**LOSSYLINE**  
**FLEXIBLE FILTER**



**CAPCON<sup>®</sup> INTERNATIONAL, INC.**

120 Craft Avenue  
Inwood, NY 11096-1708  
Tel: (516) 371-5600  
Fax: (516) 239-5481

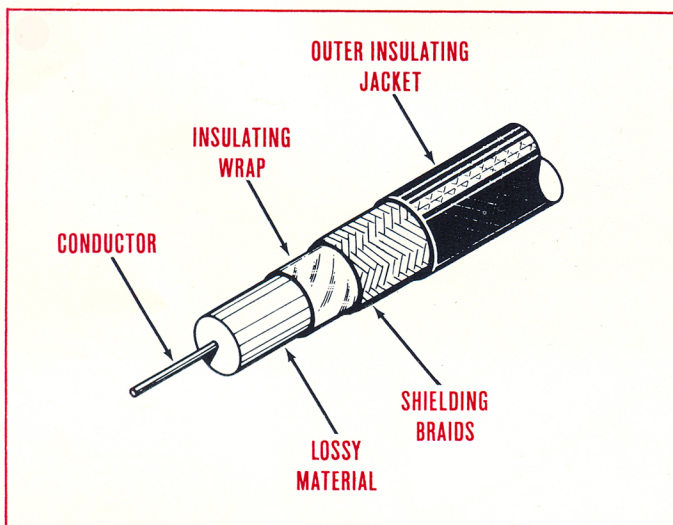


## FLEXIBLE FILTER

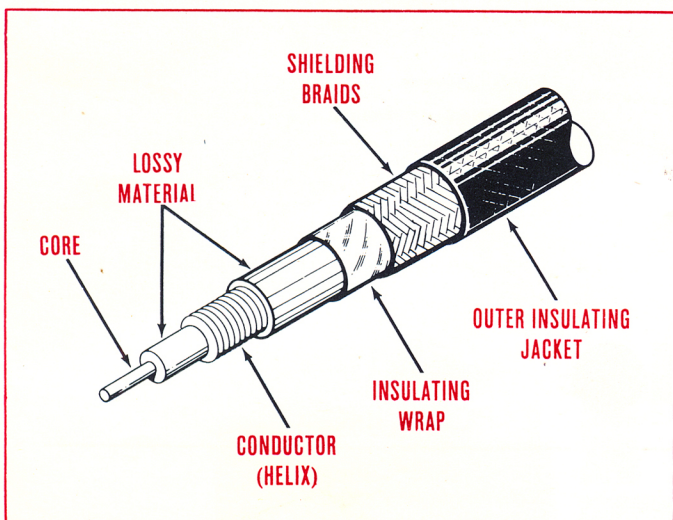
The "LossyLine" approach to EMI suppression is new and unique. The principle of the "LossyLine" approach is that unwanted RF energy travels through a "Lossy" medium surrounding the conductor, where it is absorbed and dissipated. The lossy medium is flexible with high RF attenuation and low Q. It is ideally suited for application as a microwave low-pass type electro-magnetic interference filter. The usual problems inherent in conventional reactive types of suppression filters, such as mismatch, reflections, grounding, and high VSWR, are eliminated. This approach has proven ideal for the elimination of undesired RF interference in high-frequency equipment, such as radar, countermeasures, telecommunications, telemetry, etc.

In most application, lengths of only two to five inches are adequate. These short lengths of flexible, small diameter, lightweight filter, are very easily installed and usually require no special fittings, connectors and housings. The net result is a low-cost, small size, lightweight suppression filter, effective to over 100GHz.

The "LossyLine" flexible filter can be readily installed in series or in conjunction with existing cables or harnesses. It is available in operating current ratings to 50 amperes, working voltages to 100KV, and temperatures from  $-67^{\circ}\text{C}$  to  $+250^{\circ}\text{C}$ .



Basic Construction Features of Single Conductor Flexible Filter



Basic Construction Features of Helix Conductor Flexible Filter

## FEATURES

1. An absorptive — dissipative low-pass filter
2. High RF attenuation; over 100dB at microwave frequencies
3. Low pass-band insertion loss
4. Low-pass cutoff (3dB) frequencies from 10MHz to 1GHz
5. Flexible: minimum bend radius of .75 inches
6. Lightweight and small size
7. Easy to install
8. Low cost
9. Necessity for costly, bulky or weighty connectors, fittings or terminations not required in most cases
10. Length can be trimmed to exact attenuation requirements
11. Offered in a variety of voltage, current and temperature ratings
12. Current ranges from .5 to 50 amps
13. Voltages to 100KV operating
14. Temperature ranges from  $-67^{\circ}\text{C}$  to  $+250^{\circ}\text{C}$
15. Supplied with or without shielding
16. Furnished in semi-flexible tubes of copper, brass, steel or other metal, if required
17. Provides suppression without shielding or grounding
18. Meets MIL-STD-220A



Single or helix conductor flexible filters can be provided with one or two shielding braids. A variety of outer insulating jackets and connectors can also be furnished as required.

## APPLICABLE SPECIFICATIONS

The use of LOSSYLINE FLEXIBLE FILTER Wire and Cable can be employed in applications where compliance with the latest issues of the following E<sup>3</sup> (Electromagnetic Environment Effects) specifications, as applicable, covering EMC, EMI, RFI, EMV, EMP, ECCM, HERO and/or RADHAZ.

MIL-STD-461B  
 MIL-STD-454  
 MIL-STD-1857  
 MIL-STD-220A  
 MIL-STD-202  
 MIL-B-5087  
 MIL-E-6051  
 MIL-F-15733  
 MIL-HDBK-235  
 MIL-HDBK-237  
 MIL-HDBK-419

FCC DOCKET 20780  
 FCC PART 15 & 18  
 FDA MDA-201-0004  
 FTZ/VDE 0871 to 0876  
 BRITISH STD BS6299  
 TEMPEST NACISM 5100  
 CISPR PUBL. 16  
 ANSI 95.1-1982  
 SAE  
 SAMA

ALSO CAN MEET THE ENVIRONMENTAL REQUIREMENT OF THE VARIOUS WIRE AND CABLE SPECIFICATIONS, SUCH AS:  
 MIL-W-5086, MIL-W-25038,  
 MIL-C-7078, MIL-W-50889, etc.



## TYPICAL APPLICATIONS

### S001-12K-20U

The Flexible Filter is being used by a leading microwave manufacturer of TWT's, magnetrons, klystrons and other microwave generating devices for use in radar, microwave transmitters, electronic countermeasures systems and microwave communications systems. Requirements for the filter are to provide attenuation of 100dB at frequencies above 1000MHz and to withstand temperatures of minus 67°C to plus 200°C. Only a five inch length is needed to obtain the required EMI suppression.

### S001-6K-15S

The Flexible Filter is presently being used by a leading radar equipment manufacturer in classified airborne equipment. The function of the filter is to provide EMI suppression of unwanted RF energy in the frequency range above 1500MHz. It is used in the output of the TWT and eliminates harmonics and spurious signals. The manufacturer has experienced a three-fold benefit by using the Flexible Filter: (1) material cost savings; (2) weight savings; and (3) labor cost savings due to ease of installation.

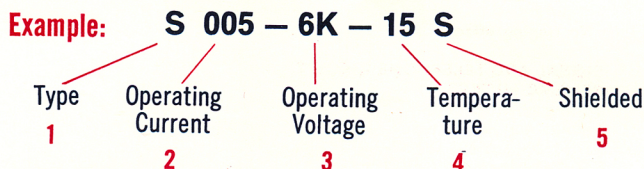
### H001-05K-10S

The Filter is now being used as part of a cable assembly by a leading manufacturer of microwave tubes and equipment. The high attenuation characteristics of this filter has enabled low-cost built-in EMI suppression of the power lines to microwave equipment with a resulting cost savings. Six-inch lengths, series-inserted in a cable harness, provides over 100dB of attenuation from 150MHz to above 45GHz.

- Suppression of EMI generated by TWT's, magnetrons, klystrons, microwave heating tubes and other microwave producing devices.
- EMI suppression occurring in electronic-communications equipment of all types, and by microwave heating equipment.
- Harmonic suppression in microwave systems such as radar, telecommunications, radio relay systems and transmitters.
- Line and in-circuit EMI suppression in power supplies, test equipment, instrumentation, amplifiers and subsystems.
- Radio noise suppression due to resonances, mutual coupling, undesired oscillations and spurious radio frequency energy.

## HOW TO SPECIFY

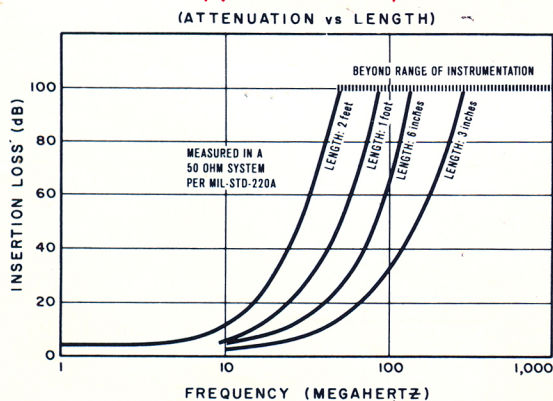
Part numbering system for ordering.



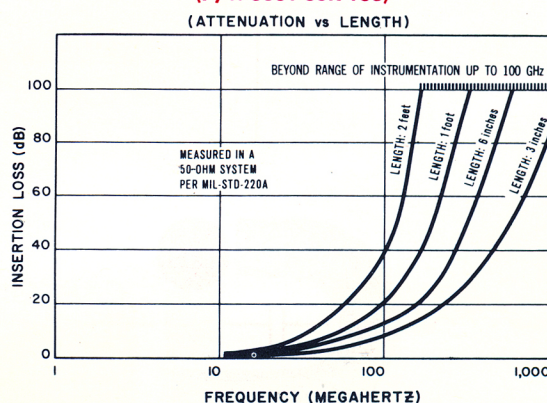
<b>1. TYPE:</b> based upon attenuation requirements.* H = Helix wound conductor (see figure 1) S = Straight conductor (see figure 2)	<b>3. OPERATING VOLTAGE:</b> 500-100,000 volts available Examples for specifying 500 volts = 05K 6,000 volts = 6K 15,000 volts = 15K
<b>2. OPERATING CURRENT (available):</b> 1 ampere = 001 5 amperes = 005 10 amperes = 010 25 amperes = 025 50 amperes = 050 100 amperes = 100	<b>4. TEMPERATURE REQUIREMENTS:</b> -67°C to +100°C = 10 -67°C to +150°C = 15 -67°C to +200°C = 20 -67°C to +250°C = 25
<b>5. SHIELDED = S</b> <b>UNSHIELDED = U</b>	

### Typical Attenuation Curves

**FIGURE 1. HELIX WOUND CONDUCTOR**  
(P/N H001-05K-10S)



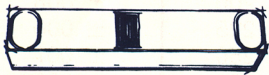
**FIGURE 2. STRAIGHT CONDUCTOR**  
(P/N S001-05K-10S)



\* Note: Attenuation characteristics vary slightly with different voltage ratings and shielding.



## OTHER CAPCON® Filters



### SCREEN ROOM FILTERS

Designed for use in high quality shielded screen rooms and shielded enclosures.

Hermetically sealed, corrosion resistant and manufactured for long life trouble-free operation.

Operating Currents: 25, 50, 100, 150 and 200 amperes

Operating Frequencies: DC, 60, 400 and 1000 Hz

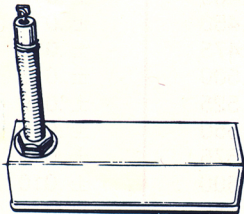
Operating Voltages: 125, 250 and 500 VACW

Filters with Attenuation of 100 dB from 14KHz to 45 GHz available.

Easy installation . . . filters not oil filled . . .

Minimum voltage drop . . . Negligible reactive current

No ringing effect



### SIGNAL AND TELEPHONE CIRCUIT

#### RFI/EMC FILTERS

0.1 to 2 amperes to 500 VDCW

Attenuation: From 1 KHz to 1000 MHz of 100 dB

For 50, 300 and 600 ohm circuit applications

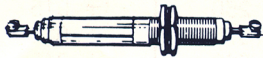
For: Telephone

Teletype

Digital and audio transmission lines

High speed data circuits

Can be custom engineered to specific requirements



### RFI SUPPRESSION FILTERS

Single or multiple sections

Leakproof

Attenuation of 100 dB from 14 KHz to 45 GHz

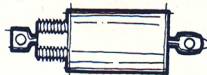
Minimum reactive current

To prevent conducted and radiated RF interference

Hermetically sealed. Corrosion resistant

From 0.1 to 100 amperes

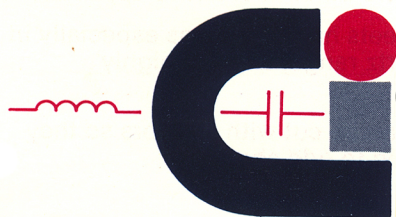
From 500 VDCW



### MINIATURE FILTERS

Complete line of RFI miniature filters

Pi, T, L Networks and Button types available in standard current and voltage ratings.



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