

INCH-POUND

MIL-PRF-15733/49L  
31 March 2015  
SUPERSEDING  
MIL-PRF-15733/49K  
23 April 2009

PERFORMANCE SPECIFICATION SHEET

FILTERS AND CAPACITORS, RADIO FREQUENCY INTERFERENCE,  
HERMETICALLY SEALED, STYLE FL93

This specification sheet is approved for use by all Departments and  
Agencies of the Department of Defense.

Part or Identifying Numbers (PIN's) M15733/49-0002, 0003, 0004, and 0005 are inactive for new design after 6 October 1980. As of 15 March 1993, PIN M15733/49-0006 is inactive for new design. PINs M15733/49-0001 and M15733/49-0007 are inactive for new design after 23 April 2009. For new design see table III for supersession data.

The complete requirements for acquiring the filters described herein shall consist of this specification sheet and [MIL-PRF-15733](#).

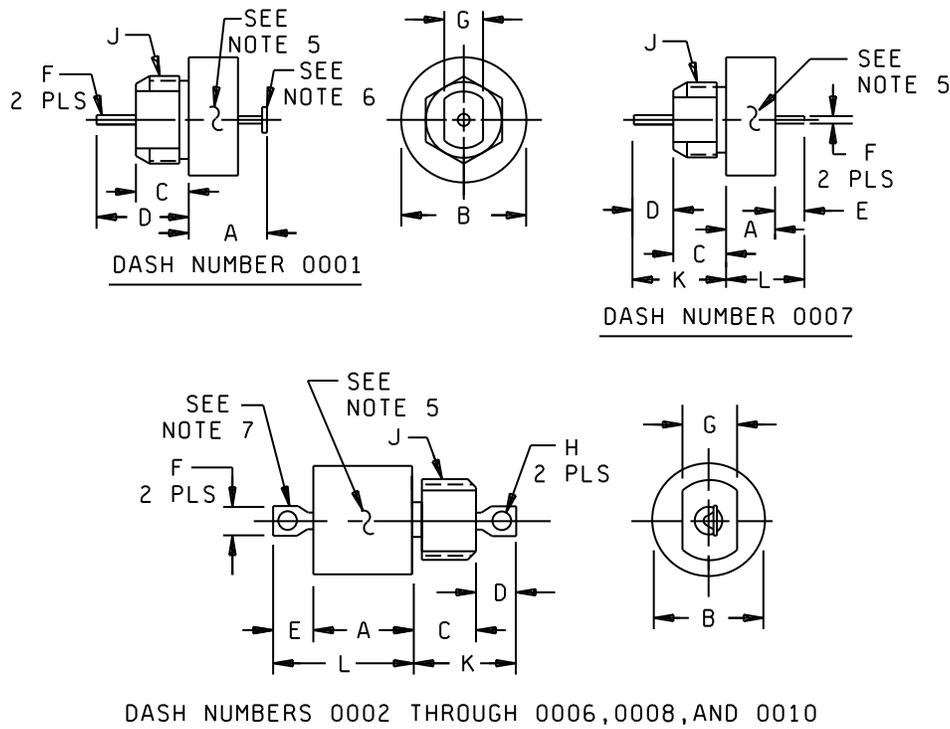


FIGURE 1. Case dimensions and circuit diagrams.



Dash no.	A		B		C		D		E		F	G		H	J	K	L
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Typ	Min	Max	Slot or hole ±.010	Mounting thread	Max	Max
0001 <u>2/</u>	.257 (6.53)	.319 (8.10)	----	.416 (10.57 )	.177 (4.50)	.197 (5.00)	.281 (7.14)	.343 (8.71)	----	----	.040 (1.02)	.190 (4.83)	.210 (5.33)	----	.250-28 UNF-2A	----	----
0002 <u>2/</u>	.560 (14.2 2)	----	----	.385 (9.78)	.177 (4.50)	.197 (5.00)	.100 (2.54)	----	.140 (3.56)	----	.105 (2.67)	.190 (4.83)	.210 (5.33)	Slot .050 (1.27)	.250-28 UNF-2A	.387 (9.83)	.740 (18.80)
0003 <u>2/</u>	.160 (4.06)	----	----	.385 (9.78)	.177 (4.50)	.197 (5.00)	.140 (3.56)	----	.100 (2.54)	----	.105 (2.67)	.190 (4.83)	.210 (5.33)	.060 dia. <u>1/</u> (1.52) both ends	.250-28 UNF-2A	.357 (9.07)	.370 (9.40)
0004 <u>2/</u>	.160 (4.06)	----	----	.385 (9.78)	.177 (4.50)	.197 (5.00)	.140 (3.56)	----	.100 (2.54)	----	.105 (2.67)	.190 (4.83)	.210 (5.33)	.060 dia. <u>1/</u> (1.52) both ends	.250-28 UNF-2A	.357 (9.07)	.370 (9.40)
0005 <u>2/</u>	.210 (5.33)	----	----	.385 (9.78)	.302 (7.67)	.322 (8.18)	.140 (3.56)	----	.100 (2.54)	----	.105 (2.67)	.190 (4.83)	.210 (5.33)	.050 x .070 (1.27) x (1.78) or .070 (1.78) dia.	.250-28 UNF-2A	.482 (12.24)	.420 (10.67)
0006 <u>2/</u>	.160 (4.06)	----	.365 (9.27)	.385 (9.78)	.177 (4.50)	.197 (5.00)	.140 (3.56)	----	.100 (2.54)	----	.105 (2.67)	.190 (4.83)	.210 (5.33)	.050 x .070 (1.27) x (1.78) or .070 (1.78) dia.	.250-28 UNF-2A	.357 (9.07)	.370 (9.40)
0007 <u>2/</u>	.160 (4.06)	----	.365 (9.27)	.385 (9.78)	.177 (4.50)	.197 (5.00)	.250 (6.35)	----	.250 (6.35)	----	.040 (1.02)	.190 (4.83)	.210 (5.33)	----	.250-28 UNF-2A	.467 (11.86)	.450 (11.43)
0008	.406 (10.3 1)	----	----	.400 (10.16 )	.180 (4.57)	.200 (5.08)	.140 (3.56)	----	.140 (3.56)	----	----	.190 (4.83)	.210 (5.33)	.050 x .070 (1.27) x (1.78) or .070 (1.78) dia.	.250-28 UNF-2A	.360 (9.14)	.576 (14.63)
0010	.500 (12.7 0)	----	----	.400 (10.16 )	.180 (4.57)	.200 (5.08)	.140 (3.56)	----	.140 (3.56)	----	----	.190 (4.83)	.210 (5.33)	.050 x .070 (1.27) x (1.78) or .070 (1.78) dia.	.250-28 UNF-2A	.360 (9.14)	.680 (17.27)

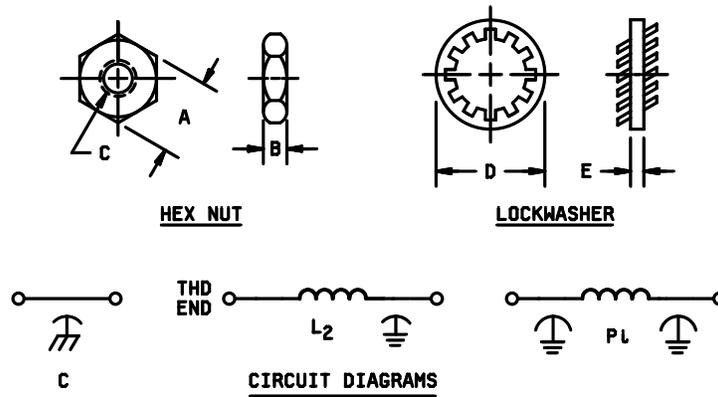
1/ Slot optional.

2/ Inactive for new design.

FIGURE 1. Case dimensions and circuit diagrams - Continued.

MIL-PRF-15733/49L

2



Filter dash no.	Hex nut					Lockwasher			
	A		B		C	D		E	
	Min	Max	Min	Max	Thread	Min	Max	Min	Max
0001	.302 (7.67)	3.22 (8.18)	.085 (2.16)	.095 (2.41)	.250-28 UNF-2B	.396 (10.06)	.408 (10.36)	.017 (0.43)	.027 (0.69)
0002	.307 (7.80)	.317 (8.05)	.088 (2.24)	.098 (2.49)	.250-28 UNF-2B	.396 (10.06)	.408 (10.36)	.017 (0.43)	.027 (0.69)
0003	.307 (7.80)	.317 (8.05)	.088 (2.24)	.098 (2.49)	.250-28 UNF-2B	.396 (10.06)	.408 (10.36)	.017 (0.43)	.027 (0.69)
0004	.307 (7.80)	.317 (8.05)	.088 (2.24)	.098 (2.49)	.250-28 UNF-2B	.396 (10.06)	.408 (10.36)	.017 (0.43)	.027 (0.69)
0005	.307 (7.80)	.317 (8.05)	.088 (2.24)	.098 (2.49)	.250-28 UNF-2B	.396 (10.06)	.408 (10.36)	.017 (0.43)	.027 (0.69)
0006	.302 (7.67)	.322 (8.18)	.085 (2.16)	.095 (2.41)	.250-28 UNF-2B	.396 (10.06)	.408 (10.36)	.017 (0.43)	.027 (0.69)
0007	.302 (7.67)	.322 (8.18)	.085 (2.16)	.095 (2.41)	.250-28 UNF-2B	.396 (10.06)	.408 (10.36)	.017 (0.43)	.027 (0.69)
0008	.307 (7.80)	.317 (8.05)	.088 (2.24)	.098 (2.49)	.250-28 UNF-2B	.396 (10.06)	.408 (10.36)	.017 (0.43)	.027 (0.69)
0010	----	.317 (8.05)	----	.098 (2.49)	.250-28 UNF-2B	.396 (10.06)	.408 (10.36)	.017 (0.43)	.027 (0.69)

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Circuit diagrams are for information only.
4. All filters shall be supplied with mounting hardware.
5. Terminal identification. The case shall be marked at the threaded end of the filter, with the symbol "L" for dash numbers 0001, 0003, 0004, 0006, and 0007.
6. Turret head is optional.
7. Flag terminals shall be aligned within 10° of the vertical (threaded bushing flats).

FIGURE 1. Case dimensions and circuit diagrams - Continued.

MIL-PRF-15733/49L

TABLE I. Electrical characteristics.

Dash no.	Circuit diagram	Max rated current (amps)	Rated voltage (volts)		Max voltage drop (volts,dc)	Minimum insertion loss (dB) in accordance with MIL-STD-220 at +25°C <u>1/</u>										Cap -0 +100% (μF) <u>8/</u>
			DC	AC <u>6/</u>		30 kHz	150 kHz	300 kHz	1 MHz	10 MHz	100 MHz	1 GHz	5 GHz	10 GHz		
0001 <u>2/</u>	L <sub>2</sub>	15	50 <u>4/</u>	---	.15	8	20	28	38	55	70	70	70	70	0.68	
0002 <u>2/</u>	Pi	3	150 <u>7/</u>	---	.15	---	7	24	54	80	80	80	---	80	---	
0003 <u>2/</u>	L <sub>2</sub>	10	50 <u>7/</u>	---	.08	15	28	33	44	60	---	70	---	---	---	
0004 <u>2/</u>	L <sub>2</sub>	10	50 <u>3/</u>	---	.08	15	28	33	44	60	---	70	---	---	---	
0005 <u>2/</u>	Pi	15	50 <u>5/</u>	---	.09	70 dB from 420 MHz to 1.0 GHz, inclusive										---
0006 <u>2/</u>	L <sub>2</sub>	15	50 <u>4/</u>	---	.15	15	28	33	44	60	---	70	---	70	1.2	
0007 <u>2/</u>	L <sub>2</sub>	15	50 <u>4/</u>	---	.15	15	28	33	44	60	---	70	---	70	1.2	
0008	C	15	50 <u>7/</u>	---	.06	---	33	40	50	65	---	70	---	---	2.1	
0010	C	15	330 <u>7/</u>	125	.06	---	6	11	21	41	---	70	---	---	0.062 <u>8/</u>	

1/ Insertion loss measurements shall be made under full load over the frequency range of 150 kHz to 10 MHz. Insertion loss measurements above or below this frequency range shall be made under no load.

2/ Inactive for new design.

3/ Voltage rating at +125°C (Note - derated from 80 V dc at +85°) for dash number 0004.

4/ Voltage rating at +125°C (Note- derated from 100 V dc at +85°C) for dash numbers 0001, 0006, and 0007.

5/ Voltage rating at +85°C.

6/ AC voltage rating shall be dc to 400 Hz.

7/ Voltage rating at +125°C.

8/ Capacitance tolerance on -0010 is -0, +150 percent.

REQUIREMENTS:

Dimensions and configuration: See figure 1.

Weight: 8.5 grams, maximum.

Case: Metal, silver-plated finish for -0001; metal, tin-plated or electro-tin fused except the minimum lead content shall be 3 percent (pure tin finish is prohibited) or, tin-lead plated or hot-solder dipped (40 percent to 60 percent tin) for -0002 through -0008, and -0010. Pure tin is prohibited as specified in [MIL-PRF-15733](#).

Seal: Glass-to-metal.

Terminals: Solderable (see figure 1).

Dielectric: Ceramic.

Operating temperature range: -55°C to +125°C, except -0005 shall be -55°C to +85°C.

Rated voltage: See table I.

Rated current: See table I.

Insertion loss (at 25°C): In accordance with [MIL-PRF-15733](#) and as specified in table I.  
(at -55°C and 125°C): Insertion loss shall be as specified in table I except a degradation of 4 dB shall be allowed up to 10 MHz.

Voltage conditioning (applicable to -0001, conformance inspection only): Prior to group A inspection, 100 percent of each lot of filters shall be subjected to voltage conditioning as follows:

Test temperature: +125°C +4°C, -0°C.

Test voltage: 140 percent of the rated dc voltage.

Points of application of test voltage: Between the case and either terminal.

Duration of exposure to test voltage: 250 hours, minimum.

Measurements at +25°C after the test:

Dielectric withstanding voltage: 140 percent of rated dc voltage shall be applied for 1 minute.

Insulation resistance: Shall be not less than 500 megohms.

Insertion loss; Shall meet the initial requirements.

A reject shall be defined as a filter that fails the dielectric withstanding voltage test, insulation resistance requirements, or insertion loss. If the total rejects from any particular lot exceed 10 percent, the entire lot shall be rejected.

MIL-PRF-15733/49L

Radiographic inspection (applicable to -0001, conformance inspection only): Following group A inspection, 100 percent of each lot of filters shall be subjected to radiographic inspection as follows:

Filters shall be X-rayed in one plane at 90-degree rotation (perpendicular to the filter longitudinal axis). Any evidence of poor capacitor mounting or uneven soldering of capacitor to case shall be cause for rejection. Rejected units shall be dissected and examined for poor workmanship or uneven soldering. Magnification during visual examination shall be two-power minimum. Any defects noted shall require corrective action prior to acceptance of any future lots.

Seal: In accordance with [MIL-PRF-15733](#).

Capacitance to ground: In accordance with [MIL-PRF-15733](#) and table I.

Capacitance tolerance: +100 percent, -0 percent except -0010 shall be +150 percent, -0 percent.

Temperature rise: +25°C, maximum.

Dielectric withstanding voltage: In accordance with [MIL-PRF-15733](#) and the following:

Test voltage: 125 percent of rated voltage (-0001); 370 V dc (-0002); 200 V dc (-0005); and 200 percent of rated voltage (-0003, -0004, -0006, -0007, -0008, and -0010) applied between terminals and case for 1 minute; polarity of the test voltage shall then be reversed and the voltage shall be applied for 1 minute.

Insulation resistance: In accordance with [MIL-PRF-15733](#); the following details and exceptions shall apply:

Test temperature: +25°C.

Test potential: Rated dc voltage or 100 V dc whichever is less.

Insulation resistance shall be not less than:

Dash numbers	Megohms
0001	500
0002 through 0005, 0008	100
0006, 0007, and 0010	1,000

Dissipation factor (-0008 and -0010): 3 percent maximum.

Voltage drop: See table I.

Overload: In accordance with [MIL-PRF-15733](#). The following exception shall apply:

Measurements after test: Insulation resistance (+25°) only shall be measured and shall meet initial requirements.

Terminal strength: In accordance with [MIL-PRF-15733](#) and [method 211, MIL-STD-202](#); test condition A (pull):

Applied force: 5 pounds (-0001 through -0007)  
4.5 pounds +3, -0 ounces (-0008 and -0010).

MIL-PRF-15733/49L

Thermal shock and immersion: In accordance with [MIL-PRF-15733](#) and the following:

Measurements after final cycling shall include:

Capacitance change: Not more than  $\pm 20$  percent for dash numbers -0008 and -0010.

Shock (specified pulse): In accordance with [MIL-PRF-15733](#) and [method 213 of MIL-STD-202](#), test condition I (-0001, -0002, -0003, -0004, -0006 through -0008, and -0010); and test condition A (-0005).

Vibration, high frequency: In accordance with [MIL-PRF-15733](#) and [method 204, MIL-STD-202](#). The following details and exceptions shall apply:

Test condition: D (20 g's).

Temperature conditioning (-0002 through -0005 only): Prior to vibration in each plane, filters shall be placed in an oven and heated to +125°C plus one-half the temperature rise (-0002 through -0004) and to +85°C plus one-half the temperature rise (-0005). Vibration in each plane shall begin within 5 minutes after removal of the filters from the oven.

Moisture resistance: In accordance with [MIL-PRF-15733](#) and the following:

Polarization voltage: 50 volts dc.

Measurements after 24-hour drying period shall be as specified in [MIL-PRF-15733](#) and for -0008 and -0010 the capacitance shall change no more than  $\pm 20$  percent from initial measured value.

Life: In accordance with [MIL-PRF-15733](#) and [method 108, MIL-STD-202](#). The following details shall apply:

Test condition:

For qualification inspection: D (1,000 hours).

For group C inspection: B (250 hours) for -0001, -0003 through -0008, and -0010; D (1000 hours) for -0002.

Marking: Filters shall be marked in accordance with [MIL-PRF-15733](#). The following details shall apply:

Minimum marking (-0001): Filters shall be marked with the PIN and terminal identification, as a minimum. The full marking specified in [MIL-PRF-15733](#) shall be marked on the unit package.

Full marking (-0002): Filters shall be marked with the full marking specified in [MIL-PRF-15733](#).

Minimum marking (-0003 through -0008, and -0010): Filters shall be marked with the PIN, source code, date code, and terminal identification. The full marking specified in [MIL-PRF-15733](#) shall be marked on the unit package.

Part or Identifying Number (PIN): M15733/49-(dash number from table I).

MIL-PRF-15733/49L

Initial qualification to MIL-PRF-15733/49 may be granted based on qualification to [MIL-PRF-28861/1](#) as indicated in table II. Extension of qualification from [MIL-PRF-28861/1](#) is permissible under the following provisions:

- a. The MIL-PRF-15733/49 parts use the same design and dielectric characteristics as the comparable [MIL-PRF-28861/1](#) parts.
- b. The [MIL-PRF-28861/1](#) data verifies that the physical and electrical characteristics of the MIL-PRF-15733/49 parts are satisfied.

TABLE II. Extension of qualification.

Qualification to <a href="#">MIL-PRF-28861/1</a>	Will qualify MIL-PRF-15733/49		Qualification to MIL-PRF-15733/49	Will qualify MIL-PRF-15733/49
-001	-0003		-0006	-0001
-001	-0004		-0006	-0007
-001	-0006		-0006	-0008
-001	-0007			
-001	-0008			
-002	-0008			

Supersession data: See table III.

TABLE III. Supersession data.

Inactive PIN	For new design use PIN
M83439/02-001	M15733/49-0008
M83439/02-003	M15733/49-0010
M15733/49-0001	M28861/01-001TB
M15733/49-0002	M28861/03-015TB
M15733/49-0003	M28861/01-001TB
M15733/49-0004	M28861/01-001TB
M15733/49-0005	M15733/38-0007
M15733/49-0006	M28861/01-001
M15733/49-0007	M28861/01-001TB

PIN M15733/49-0009 has been deleted. For new design, use M28861/01-010 of [MIL-PRF-28861/1](#).

NOTES:

Cataloging information: Dash numbers 0008 and 0010 shall be cataloged under FSC 5910 as feed-through ceramic capacitors. Dash numbers 0001 through 0007 shall be cataloged under FSC 5915 as radio frequency interference filters.

Referenced documents: In addition to [MIL-PRF-15733](#), this specification sheet references the following documents:

[MIL-PRF-28861/1](#)  
[MIL-STD-202](#)  
[MIL-STD-220](#)

The margins of this specification are marked with vertical lines to indicate where modifications from this revision were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations

Custodians:

Army - CR  
Navy - EC  
Air Force - 85  
DLA - CC

Preparing activity:  
DLA - CC

(Project 59GP-2015-045)

Review activities:

Army - AT  
Navy - AS, MC, OS, SH  
Air Force - 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil/>.