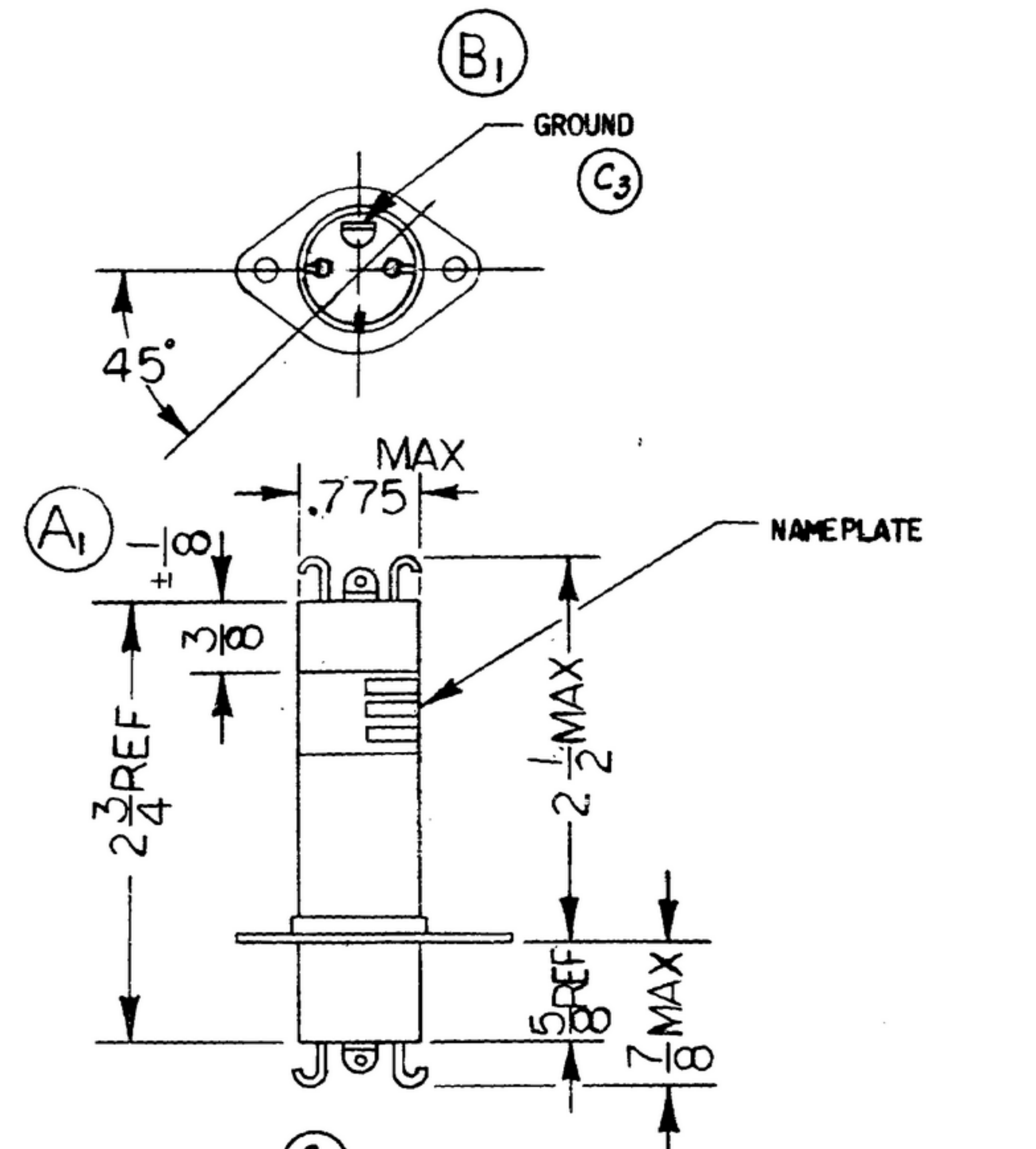


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NOTE: DATA MARKED BY AN ASTERISK (*) ARE FOR INFORMATION ONLY, CONTRACTOR MAY, AT HIS OPTION, DEVIATE FROM THESE DETAILS

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A ₂	A ₁ - 3/8 WAS 7/16; A ₂ - ADDED APPL SM-D-343620	19 OCT 59	42428-PC-59-A1-51
	RETRACED, NO CHANGE	12 AUG 62	21582-PC-61
B	CHANGED LOCATION OF GROUND LUG AND PICTURE TO AGREE WITH PART	23 MAY 63	21582-PC-61 REV'D PNE
C ₃	(1) NOTE 1, TYPE NO. REV (2) DIM. WAS 1 1/8 (3) GED TERM. REV	22 SEP 65	P.N. EDB R.P.



C₁ NOTES:

1. PART MAY BE TYPE NO F455N-40 (*526 9160 009) AS SUPPLIED BY COLLINS RADIO CO., CEDAR RAPIDS, IOWA, OR EQUAL, PROVIDING IT MEETS THE FOLLOWING REQUIREMENTS AND DIMENSIONS SHOWN.
ELECTRICAL REQUIREMENTS (AT +25 °C):

ELECTRICAL CHARACTERISTICS		NOM	TOL
A	CENTER FREQ KC	455	
B	FREQUENCY RESPONSE KC		
	BANDWIDTH 6 DB ATTENUATION	4.0	±.40
	BANDWIDTH 60 DB ATTENUATION	8.5	MAX
C	PASSBAND PER CENT		
D	PASSBAND RESPONSE VARIATION DB	2	MAX
E	TERMINAL IMPEDANCE, K OHMS	17	---
F	TRANSFER IMPEDANCE, K OHMS	6.75	±30%
G	RESONATING CAPACITY UUF	130	--
H	TRANSMISSION LOSS DB	8	--
J	SPURIOUS RESPONSE DB	-60	MAX

FREQ KC	DB	TOL
453.4	6	MAX.
456.6	6	MAX.

TOLERANCE IN SAME UNITS AS NOMINAL VALUE UNLESS OTHERWISE INDICATED.
CENTER FREQUENCY, BY DEFINITION IS 455 KC, SEE TABLE 1A.
PASSBAND, BY DEFINITION IS THE FREQUENCY BAND BETWEEN 453.7 KC AND 456.3 KC, SEE TABLE 1C.
TERMINAL IMPEDANCE: THE MECHANICAL FILTER MAY BE DRIVEN AND LOADED IN ANY COMBINATION OF PARALLEL OR SERIES RESONANCE; THE IMPEDANCE LISTED IN TABLE 1E IS THE INPUT AND OUTPUT VALUE MEASURED AT 455 KC UNDER PARALLEL RESONANT CONDITIONS UNLESS OTHERWISE SPECIFIED.
TRANSFER IMPEDANCE IS DEFINED AS THE RATIO OF THE SIGNAL VOLTAGE ACROSS THE OUTPUT TERMINALS TERMINATED ONLY WITH RESONATING CAPACITY, TO THE INPUT SIGNAL CURRENT, MEASURED AT 455 KC. THE MECHANICAL FILTER IS VIRTUALLY SYMMETRICAL WITH RESPECT TO TERMINAL CHARACTERISTICS PERMITTING ARBITRARY DESIGNATIONS OF INPUT AND OUTPUT TERMINALS, SEE TABLE 1F.
RESONATING CAPACITANCE IS THE TOTAL EXTERNAL CAPACITANCE INCLUDING TUBE, STRAY, AND WIRING CAPACITANCE REQUIRED TO RESONATE THE INPUT AND OUTPUT TRANSDUCER COILS FOR PROPER OPERATION. DEVIATIONS FROM THE PROPER CAPACITANCE WILL ALTER THE ELECTRICAL CHARACTERISTICS OF TABLE I. THE VALUE SPECIFIED IS NOMINAL; FILTERS MUST BE RESONATED AT 455 KC FOR OPTIMUM PERFORMANCE. FILTERS WILL RESONATE IN THE RANGE 110 TO 150 UUF. SEE TABLE 1G.

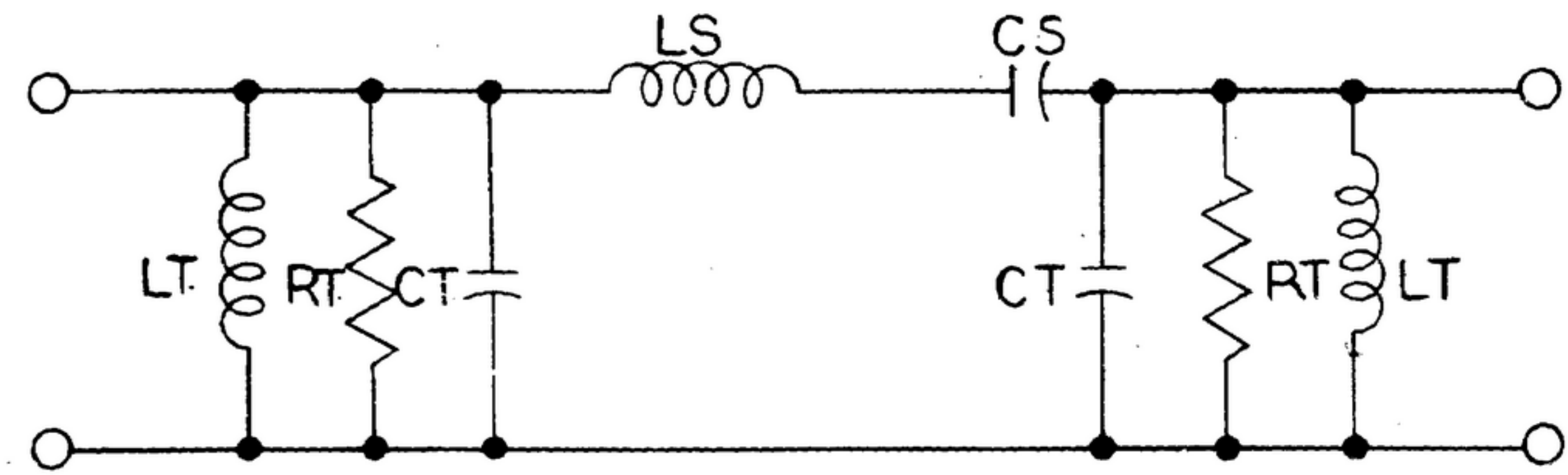
TRANSMISSION LOSS IS DEFINED AS 20 LOG (E_{IN}/E_{OUT}); MEASUREMENT MADE AT 455 KC, DRIVEN FROM A CONSTANT CURRENT SOURCE AND WITH THE MECHANICAL FILTER OUTPUT TERMINATED IN THE PROPER RESONATING CAPACITY ONLY, SEE TABLE 1H.
DIELECTRIC STRENGTH: UNIT SHALL WITHSTAND A POTENTIAL OF 500 VOLTS RMS FROM TRANSDUCER COILS TO FRAME FOR A PERIOD OF NOT LESS THAN FIVE SECONDS AND NOT MORE THAN ONE MINUTE. DIELECTRIC TESTS SUBSEQUENT TO PRIME CONTRACTORS COMPONENT PRODUCTION INSPECTION TEST SHALL BE PERFORMED AT 90 PER CENT OF THE SPECIFIED VALUE.

RECOMMENDED OPERATING PARAMETERS:
SIGNAL INPUT VOLTAGE: 0 TO 7 VOLTS RMS
DIRECT CURRENT: SHUNT FEED IS NECESSARY TO ELIMINATE DC CURRENT IN TRANSDUCER COILS. DC CURRENT IN TRANSDUCER COILS WILL ALTER THE ELECTRICAL CHARACTERISTICS OF TABLE I.

DC VOLTAGE: 300 VDC MAXIMUM POTENTIAL ON TRANSDUCER COILS
SIGNAL SOURCE AND LOAD IMPEDANCE: MECHANICAL FILTERS ARE NORMALLY USED INTERSTAGE, PLATE TO GRID. IT IS DESIRABLE TO DRIVE THE FILTER FROM A CONSTANT CURRENT SOURCE AND WORK IT INTO A HIGH LOAD IMPEDANCE SUCH AS A GRID INPUT, UNDER PARALLEL RESONANT CONDITIONS.

ENVIRONMENTAL REQUIREMENTS
OPERATING TEMPERATURE RANGE: -40 °C TO +85 °C. ELECTRICAL CHARACTERISTICS DEVIATIONS FROM SPECIFIED +25 °C LIMITS OF ELECTRICAL REQUIREMENTS ARE AS FOLLOWS:
CENTER FREQUENCY ± 10 PPM/°C
BANDWIDTH ± 5 PER CENT
PASSBAND RESPONSE VARIATION 1 DB INCREASE
TRANSFER IMPEDANCE ± 10 PER CENT
TEMPERATURE RANGE, NON-OPERATING: -65 °C TO +105 °C.

ALTITUDE: UP TO 50,000 FEET
VIBRATION: UNIT SHALL MEET THE ELECTRICAL REQUIREMENTS SUBSEQUENT TO VIBRATION TEST IN ACCORDANCE WITH MIL-STD-202, METHOD 201, TEST CONDITION B. MOTION SHALL BE APPLIED IN EACH OF THE THREE MUTUALLY PERPENDICULAR PLANES.
SHOCK: UNIT SHALL BE CAPABLE OF WITHSTANDING A TOTAL OF 18 IMPACT SHOCKS OF 15 G'S IN ACCORDANCE WITH MIL-STD-202, METHOD 202. THE IMPACT SHOCKS SHALL BE APPLIED ALONG THE PRINCIPAL AXES, THREE SHOCKS IN EACH DIRECTION ALONG EACH AXIS. UNIT SHALL THEN MEET THE ELECTRICAL REQUIREMENTS.
MOISTURE RESISTANCE: UNIT SHALL MEET THE ELECTRICAL REQUIREMENTS AND THERE SHALL BE NO SIGNS OF EXTERNAL PHYSICAL DETERIORATION SUBSEQUENT TO TEN DAY HUMIDITY TEST IN ACCORDANCE WITH MIL-STD-202, METHOD 106.
CORROSION RESISTANCE: UNIT SHALL WITHSTAND SALT SPRAY IN ACCORDANCE WITH MIL-STD-202, METHOD 101, TEST CONDITION B. AT THE COMPLETION OF TEST AND SUBSEQUENT TO GENTLE RINSING IN TAP WATER (37.8 °C MAX TEMP) AND A LIGHT BRUSHING IF NECESSARY, THE EXTERIOR SURFACES SHALL SHOW NO SIGNS OF EXCESSIVE CORROSION AND ALL MARKINGS SHALL REMAIN LEGIBLE.
MECHANICAL REQUIREMENTS:
CONSTRUCTION: HERMETICALLY SEALED.
CASE: CARTRIDGE BRASS, SEE DRAWING FOR DIMENSIONAL DETAILS.
FINISH: M352 PER SPEC MIL-F-14072.
NAMEPLATE: A SUITABLE METAL FOIL OR DECALCOMANIA NAMEPLATE SHALL BE ATTACHED TO THE FILTER AND SHALL INCLUDE THE FOLLOWING DATA:
CONTRACTORS TYPE
SERIAL NUMBER OR DATE CODE STAMP
CONTRACTORS PART NUMBER
SILK SCREENING OR RUBBER STAMPED IDENTIFICATION DATA MAY BE USED IN LIEU OF A NAMEPLATE. THE NAMEPLATE SHALL REMAIN FIRMLY ATTACHED AND LEGIBLE AFTER SUBJECTION TO THE ENVIRONMENTAL REQUIREMENTS. MARKINGS SHALL MEET THE TEST REQUIREMENTS OF SPEC MIL-M-13231.
* PRODUCTION TEST REQUIREMENTS: BY THE PRIME CONTRACTOR, SHALL CONSIST OF THE FOLLOWING PRODUCTION INSPECTION AND TYPE TESTS:
* PRODUCTION INSPECTION TESTS: ALL UNITS SHALL BE TESTED FOR THE FOLLOWING:
A - VISUAL INSPECTION FOR MECHANICAL REQUIREMENTS AND WORKMANSHIP
B - ELECTRICAL REQUIREMENTS
* PRODUCTION TYPE TESTS: A SMALL PERCENTAGE OF UNITS TO BE DETERMINED BY QUALITY CONTROL DEPARTMENT OF THE PRIME CONTRACTOR MAY BE SUBJECTED TO THE FOLLOWING TESTS IN ADDITION TO THE ELECTRICAL REQUIREMENTS TO EVALUATE THE QUALITY OF THE COMPONENT:
A - OPERATING TEMPERATURE RANGE
B - VIBRATION
C - SHOCK
D - MOISTURE RESISTANCE
E - CORROSION RESISTANCE



REQD	PART NO.	DESCRIPTION	QTY	UNIT SPEC
LIST OF MATERIAL				
UNLESS OTHERWISE SPECIFIED			60LLMPE-RAD10-00 6020M-RAD10-00	
DIMENSIONS ARE IN INCHES			4214-PH-51-93	
TOLERANCES ON FRACTIONS DECIMALS ANGLES			SIGNAL CORPS	
±1/64 ±.005 ±10			REVIEWED PNE	
DRAWN BY U-6			APPROVED PNE	
DATE			PNE	
CHECKED BY			DATE 18 MAR 58	
APPROVED BY			SCALE 1/1	

REQD	PART NO.	DESCRIPTION	QTY	UNIT SPEC
LIST OF MATERIAL				
UNLESS OTHERWISE SPECIFIED				
DIMENSIONS ARE IN INCHES				
TOLERANCES ON FRACTIONS DECIMALS ANGLES				
±1/64 ±.005 ±10				
DRAWN BY U-6				
DATE				
CHECKED BY				
APPROVED BY				

FILTER-MECHANICAL

DEPARTMENT OF THE ARMY
U. S. ARMY SIGNAL MATERIEL
SUPPORT AGENCY
FORT MONMOUTH NEW JERSEY
SM-D-248860
CODE 80063

A₂

WHEN REFERRING TO THIS DRAWING STATE DRAWING NO., APPLICABLE ISSUE SYMBOL, IF ANY, AND DATE.