

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

1006320

REVISIONS 15327			
SYM	DESCRIPTION	DATE	APPROVAL

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING IN ACCORDANCE WITH THE STANDARDS PRESCRIBED BY MIL-D-70327.
- B. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 2.
- C. PREPARATION FOR DELIVERY SHALL BE IN ACCORDANCE WITH ND 1002215, CLASS I, CODE 1.
 - (1) MARKING OF SHIPPING CONTAINERS SHALL CONFORM TO THE MARKING OF UNIT AND INTERMEDIATE PACKAGES AND THE METHODS OF MARKING AS SPECIFIED IN ND 1002215.

2. ACCEPTANCE AND INSPECTION:

A. MECHANICAL PROPERTIES:

- (1) SURFACE QUALITY: CORE INSIDE DIAMETER SHALL HAVE A SURFACE ROUGHNESS AS DELINEATED AND THE PART SHALL HAVE NO SHARP EDGES OR BURRS.
- (2) SEALING COAT: A SUITABLE UNIFORM, HOMOGENOUS, CONTAMINANT-FREE COATING SHALL BE APPLIED TO EFFECT A SEAL CAPABLE OF WITHSTANDING THE FOLLOWING TEST (-001 ONLY SHALL BE TESTED).
 - (a) SUBMERGE THE CORES TO A DEPTH OF TWO INCHES MAXIMUM IN A HALF AND HALF GLYCERIN-ETHYLENE GLYCOL MIXTURE.
 - (b) APPLY A VACUUM, SUCH THAT A MERCURY COLUMN AT SEA LEVEL WILL DROP 25 INCHES, FOR 2 MINUTES MINIMUM.
 - (c) REJECT ANY UNIT THAT EXHIBITS BUBBLES.
 - (d) PERFORM A COMPLETE ELECTRICAL TEST ON UNITS AFTER THOROUGHLY WASHING IN RUNNING WATER AND ALLOWING TO DRY.

B. ELECTRICAL CHARACTERISTICS (MEASURED AT ROOM TEMPERATURE PER TEST METHOD BELOW, VALUES OF TABLE I OR II, AND AS DEFINED IN FIGURES 3 AND 4):

- (1) TIME TO PEAK (T_p) - MEASURED FROM START OF THE RAMP TO PEAK OF THE OUTPUT VOLTAGE. START OF THE RAMP CAN BE FOUND BY EXTENDING RAMP BACK TO CROSSING OF THE "ZERO CURRENT" AXIS.
- (2) SWITCHING TIME (T_s) - MEASURED AT 10% OF NOMINAL V₁ OUTPUT.
- (3) PEAK "ONE" OUTPUT (V₁) - MEASURED FROM ZERO TO THE PEAK OF THE OUTPUT WAVEFORM.
- (4) PEAK "ZERO" OUTPUT (V₀-V_{JIG}) - MEASURED INSTANTANEOUSLY BETWEEN INDUCED JIG VOLTAGE (V_{JIG}) AND PEAK "ZERO" VOLTAGE.

C. VENDOR SUPPLIED DATA: EACH SHIPMENT OF PARTS SHALL BE ACCOMPANIED BY THE FOLLOWING DOCUMENTATION.

- (1) CERTIFICATE OF COMPLIANCE WITH MATERIAL AND CONSTRUCTION REQUIREMENTS.
- (2) CERTIFICATE OF COMPLIANCE WITH ND 1015404, CLASS 2.
- (3) CERTIFICATE OF COMPLIANCE WITH SEAL TEST.

3. DESIGN:

A. OPERATING TEMPERATURE RANGE: -35°C TO +85°C.

B. CONSTRUCTION AND MATERIAL: PARTS SHALL BE A PERMALLOY TYPE RIBBON MATERIAL WOUND ON A BOBBIN, SLEEVED WITH AN INSULATING MATERIAL AND COATED EXTERNALLY WITH AN INSULATING COMPOUND TO EFFECT A HERMETIC SEAL.

- (1) BOBBIN: NON-MAGNETIC ANNEALED CORROSION-RESISTING STEEL.
- (2) CORE: 1/8 MIL NOMINAL THICKNESS MO-PERM RIBBON (OR EQUIVALENT).
- (3) SLEEVE (JACKET): .011 THICK PHENOLIC SLEEVE (OR EQUIVALENT).
- (4) CORE SHALL HAVE AN AIR SPACE OF 0.008 FROM THE TOP LAYER OF TAPE TO THE BOBBIN EDGE. COMPLIANCE SHALL BE CERTIFIED.

C. TEST METHOD:

(1) EQUIPMENT:

TEKTRONIX 530-340 SERIES OSCILLOSCOPE WITH TEKTRONIX TIME-MARK GENERATOR OR EQUIVALENT.
 ADAR CORE ANALYZER PLUG-IN (TYPE P1-A OR EQUIVALENT).
 A TEST UNIT CAPABLE OF SUPPLYING A "SET" PULSE SUFFICIENT IN AMPLITUDE AND DURATION TO SATURATE THE CORE UNDER TEST, THIS PULSE TO BE FOLLOWED BY AN ESSENTIALLY LINEAR RAMP WHOSE SLOPE MAY BE MEASURED.
 AT LEAST 5 STANDARD CORES TOGETHER WITH CALIBRATION DATA FOR EACH, SUPPLIED BY THE PROCURING AGENCY, TO BE USED FOR INSTRUMENT CALIBRATION

(2) CALIBRATION AND MEASUREMENT PROCEDURE:

EQUIPMENT SHALL BE CONNECTED TO A WELL REGULATED SUPPLY LINE AND ALLOWED TO STABILIZE FOR ONE HOUR PRIOR TO MEASUREMENT.
 CALIBRATE SCOPE SWEEP WITH TIME-MARK GENERATOR.
 USING THE CORE ANALYZER PLUG-IN, CALIBRATE THE VERTICAL SCOPE AMPLIFIER WITH A KNOWN VOLTAGE ± 1%. THE INTERNAL SCOPE CALIBRATOR MAY BE USED IF ITS ACCURACY HAS BEEN VERIFIED.
 ADJUST THE "SET" PULSE SO THAT AMPLITUDE AND DURATION ARE AT LEAST 0.5 AMPERES AND 10 MICROSECONDS RESPECTIVELY.
 ADJUST RAMP TO APPROXIMATELY 200, 400, OR 1000 MILLIAMPERES/MICROSECOND.
 USING ONE OF THE STANDARD CORES, ADJUST THE RAMP SLOPE FOR EITHER 200, 400, OR 1000 MA/USEC AS APPROPRIATE TO YIELD THE T_p, T_s, AND V₁ VALUES SUPPLIED WITH THE STANDARD.
 NOTE: WHEN CALIBRATING OR MEASURING FOR 1000 MA/USEC RAMP, DISCONNECT "SET" PULSE AND USE THE INTEGRATING CIRCUIT OF FIGURE 2.
 MEASURE ELECTRICAL PARAMETERS FOR CORES UNDER TEST, IN ACCORDANCE WITH TABLES I AND II, FOR EITHER 200, 400, OR 1000 MA/USEC.
 REPEAT THE CALIBRATION PROCEDURE AT LEAST EVERY HALF HOUR WHILE TESTING.

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

NOTES

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE NOTES
		HEAT TREATMENT
		NONE
		FINAL FINISH
		SEE NOTES
NEXT ASSY	USED ON	
		APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>T. Tope</i> DATE 30 Dec 64 CHECKED <i>R.T. D...</i> DATE 30 Dec 64		CORE, MAGNETIC	
APPROVAL <i>Ellen C. Hall</i> 30 Dec 64		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>W.D. R...</i> 6-68 MIT APPROVAL <i>W. J. ...</i>		CODE IDENT NO.	NASA DRAWING NO.
		SIZE	1006320
		SCALE NONE	SHEET 1 OF 2

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SYM DESCRIPTION DATE APPROVAL

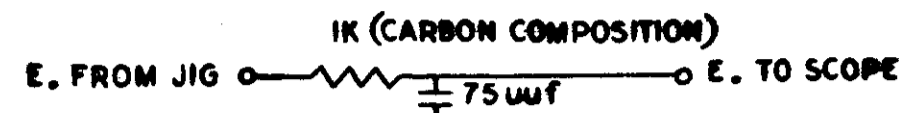


FIG 2. INTEGRATING CIRCUIT

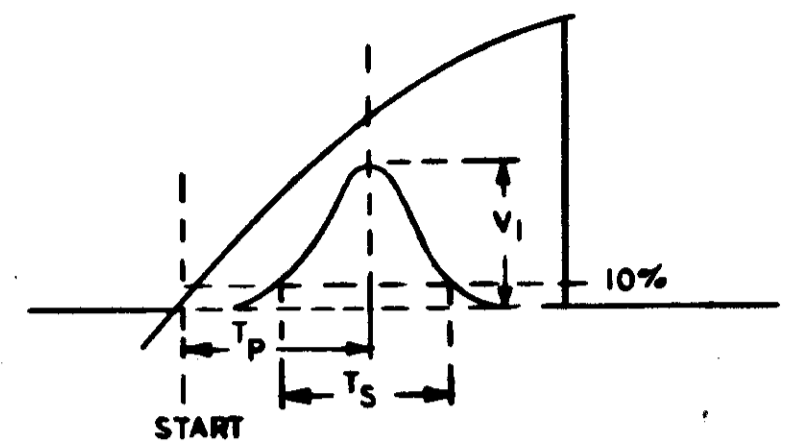


FIGURE 4

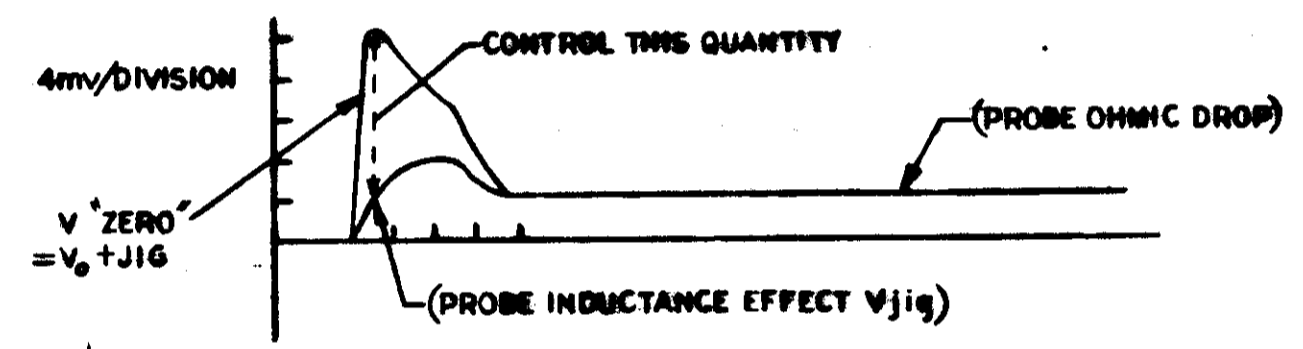


FIG 3 TYPICAL OUTPUT VOLTAGES AFTER INTEGRATION

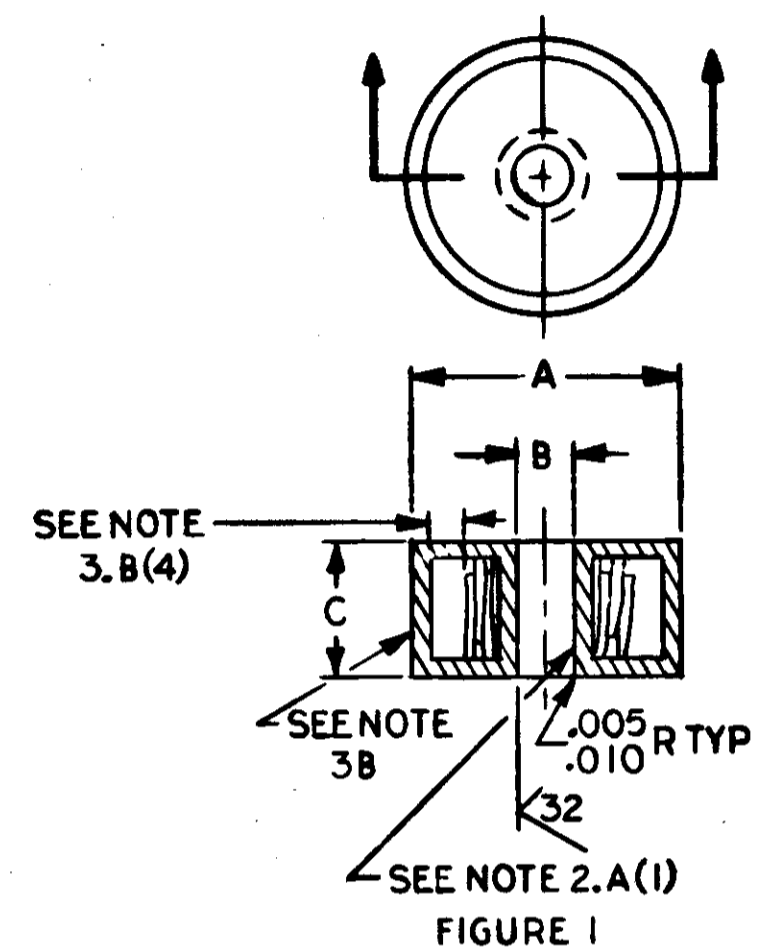


FIGURE 1

TABLE I
26 MAXWELL CORE
FUNCTIONAL CHARACTERISTICS

RAMP	Tp USEC	Ts USEC	V1 MV	V1 NOM	V0 MV
200 MA USEC	2.375 MIN 2.625 MAX	1.5 MIN 2.1 MAX	215 MIN 290 MAX	240 MV	—
400 MA USEC	1.4 MIN 1.6 MAX	1.3 MIN 1.5 MAX	325 MIN 430 MAX	360 MV	—
1000 MA USEC	—	—	—	—	15 MAX

TABLE II
11 MAXWELL CORE
FUNCTIONAL CHARACTERISTICS

RAMP	Tp USEC	Ts USEC	V1 MV	V1 NOM	V0 MV
200 MA USEC	2.09 MIN 2.31 MAX	1.5 MIN 2.1 MAX	100 MIN 130 MAX	110 MV	—
400 MA USEC	1.24 MIN 1.37 MAX	1.0 MIN 1.4 MAX	145 MIN 190 MAX	150 MV	—
1000 MA USEC	—	—	—	—	9 MAX

DASH NUMBER	DIM A	DIM B	DIM C	CHARACTERISTICS
-001	.249 .240	.140 MIN	.105 .090	TABLE I
-002	.187 .174	.100 MIN	.065 MAX	TABLE II

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ±	CONTRACT NO. <i>DA-28-044-MD-3000</i>	CORE, MAGNETIC
DO NOT SCALE THIS DRAWING	DRAWN <i>P. Winfield</i> 30 DEC 64	SPECIFICATION CONTROL DRAWING
MATERIAL SEE NOTES	CHECKED <i>R.T. Doolittle</i> 30 DEC 64	CODE IDENT NO. SIZE NASA DRAWING NO.
HEAT TREATMENT NONE	APPROVAL <i>Edmund Hall</i> 30 DEC 64	— C 1006320
FINAL FINISH SEE NOTES	NASA APPROVAL <i>W.J. Rhee</i> 1-6-65	SCALE NONE WT SHEET 2 OF 2
NEXT ASSY USED ON APPLICATION	MIT APPROVAL <i>W.J. Rhee</i>	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
CONTRACT NO. <i>DA-28-044-MD-3000</i>	CORE, MAGNETIC
DRAWN <i>P. Winfield</i> 30 DEC 64	SPECIFICATION CONTROL DRAWING
CHECKED <i>R.T. Doolittle</i> 30 DEC 64	CODE IDENT NO. SIZE NASA DRAWING NO.
APPROVAL <i>Edmund Hall</i> 30 DEC 64	— C 1006320
NASA APPROVAL <i>W.J. Rhee</i> 1-6-65	SCALE NONE WT SHEET 2 OF 2
MIT APPROVAL <i>W.J. Rhee</i>	
MIT APPROVAL	