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REVISIONS

LTR	ECN NUMBER	DATE	APPROVED
A	2351	2-28-77	AN
B	4015	10-13-80	RM

1. SCOPE

1.1 **Scope.** This specification covers the detail requirements for a precision potentiometer, New England Instrument Co. (hereinafter called NEI) type number 34FL2-128 equivalent to **BOWMAR PART NUMBER 771601 REV. B1**

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on the date of issue of the applicable NEI sales order forms part of this specification to the extent specified herein:


SPECIFICATIONS

NEW ENGLAND INSTRUMENT COMPANY

1216-0000

3. REQUIREMENTS

3.1 **General specifications.** The potentiometers shall be as specified in NEI specification 1216-0000 except as modified or elaborated on herein. In the event of any conflict between this specification and the general specification, this specification shall govern.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ± 1/64 DECIMALS ± .005 ANGLES ± 2'	DRAWN <i>C. Daly</i> 1978/12/29	DATE 12/29		NEW ENGLAND INSTRUMENT COMPANY NATICK, MASSACHUSETTS	
	CHECKED <i>M. Piant</i> 12/29/76	DATE 12/29/76		PRODUCT DEFINITION SPECIFICATION PRECISION POTENTIOMETER TYPE NO. 34FL2-128	
MFG APPROVED DATE	APPROVED <i>M. Piant</i> 12/29/76	DATE 12/29/76	SIZE A	CODE IDENT NO. 08815	DRAWING NUMBER 1216-0128-00
Q.C. APPROVED DATE	APPROVED FOR NEI	DATE	SCALE:	SHEET	OF 7
SALES APPROVED DATE	APPROVED FOR	DATE			



3.2 GENERAL CHARACTERISTICS			QA CLASS	
			Requirement Source	
	CHARACTERISTICS	REQUIREMENT		AQL
1.	NO. OF CUPS	2	0	A
2.	NO. OF SECTIONS	2	0	A
3.	ELEMENT TYPE	"Resistofilm" Conductive Plastic	0	Q
4.	BEARING TYPE	Ball	0	Q
5.	MATERIAL - MOUNTING PLATE	Anodized Aluminum	0	Q
6.	MATERIAL-HOUSING	Anodized Aluminum	0	Q
7.	MATERIAL-SHAFT	Stainless Steel	0	Q
8.	WEIGHT	N/R	-	-

3.3 MECHANICAL PARAMETERS			QA CLASS	
			Requirement Source	
	PARAMETER	REQUIREMENT		AQL
1.	LATERAL RUNOUT	0.001 TIR Max.	0	A
2.	PILOT SURFACE RUNOUT	0.0005TIR Max.	0	A
3.	SHAFT RUNOUT	0.0005TIR Max.	0	A
4.	END PLAY	0.005 Max.	0	A
5.	RADIAL PLAY	0.001 Max. WITH A 4 OZ. LOAD	0	A
6.	STARTING TORQUE	0.35 oz.-in. Max.	0	A
7.	RUNNING TORQUE	0.35 oz.-in. Max.	0	A
8.	MOMENT OF INERTIA	N/R	-	-
9.	STATIC STOP STRENGTH	N/A	-	-
10.	DYNAMIC STOP STRENGTH	N/A	-	-
11.	MECHANICAL TRAVEL	360° continuous	0	A

LEGEND:

Requirement Source --- N = NEI; O = OEM  
 Q.A. Class --- A = Acceptance Test;  
 P = Preproduction Test; Q = Qualification Test

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3.4 ELECTRICAL AND ELECTROMECHANICAL PARAMETERS

AQL

			QA CLASS	
			Requirement Source	
	PARAMETER	REQUIREMENT		
1.	DIELECTRIC WITH-STANDING VOLTAGE	750 VRMS @ 50 Hz.	0	A
2.	INSULATION RESISTANCE	10000 Megohms Min.	0	A
3.	RESISTANCE - TEMPERATURE CHARACTERISTIC	$\pm 400$ PPM/°C	0	Q
4.	POWER RATING	0.8 watts @ 70°C	0	Q
5.	EXCITATION FREQ. FOR AC CHARACTERISTICS	N/R	-	-
6.	QUADRATURE VOLTAGE	N/A	-	-
7.	PHASE SHIFT	N/A	-	-
8.	CONFORMITY OF IN-PHASE COMPONENT	N/A	-	-
9.	TOTAL INPUT IMPEDANCE	N/A	-	-
10.	OUTPUT SMOOTHNESS	0.1%	0	A
11.	Theoretical ELECTRICAL TRAVEL	319° (i.e. -159.5° to 159.5°)	0	A
12.	ELECTRICAL OVERTRAVEL	0° Min.	0	A
13.	MECHANICAL OVERTRAVEL	N/A	-	-
14.	CONTINUITY TRAVEL	358° Max.	0	A
15.	INDEX POINT	Section 1 @ $\theta=0^\circ$ Output Ratio Limits: -0.49800/0.50200	0	A
16.	CONFORMITY DEFINITION	Absolute	0	A
17.	PHASING	Simultaneous Conformity @ Sect. 2 O.R. = 0.50000; Sect. 10 R. Limits: 0.49900/0.50100	0	A
18.	TAP LOCATION	N/A	-	-
19.	EFFECTIVE TAP WIDTH	N/A	-	-
20.	BACKLASH	N/R	-	-
21.	RESOLUTION	Virtually infinite	0	Q
22.	MINIMUM VOLTAGE	N/R	-	-
23.	END VOLTAGE	N/R	-	-

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### 3.5 REQUIREMENTS OF INDIVIDUAL SECTIONS

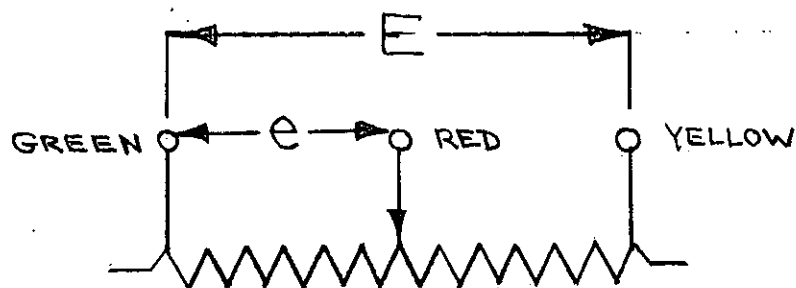
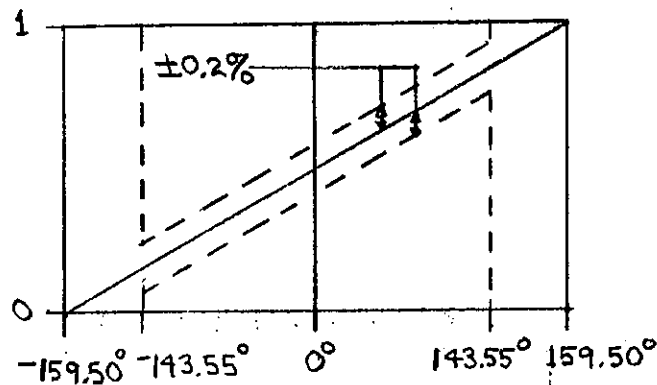
#### 3.5.1 Total Resistance

<u>Section</u>	<u>Resistance</u>
1	1930 to 2070 $\Omega$
2	1900 to 2100 $\Omega$

#### 3.5.2 Function Characteristics

The output ratio (e/E) when measured in accordance with the schematic diagram shall conform to the following function characteristic (Sections 1 & 2)

$\theta$  increases in a CCW direction



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	B	

SHAFT POSITION	O U T NOMINAL	P U T MINIMUM	R A T I O MEASURED	M A X I M U M
-143.55	.05000	.04800		.05200
-140.00	.06113	.05913		.06313
-130.00	.09248	.09048		.09448
-120.00	.12382	.12182		.12582
-110.00	.15517	.15317		.15717
-100.00	.18652	.18452		.18852
-90.00	.21787	.21587		.21987
-80.00	.24922	.24722		.25122
-70.00	.28056	.27856		.28256
-60.00	.31191	.30991		.31391
-50.00	.34326	.34126		.34526
-40.00	.37461	.37261		.37661
-30.00	.40596	.40396		.40796
-20.00	.43730	.43530		.43930
-10.00	.46865	.46665		.47065
.00	.50000	.49800		.50200
10.00	.53135	.52935		.53335
20.00	.56270	.56070		.56470
30.00	.59404	.59204		.59604
40.00	.62539	.62339		.62739
50.00	.65674	.65474		.65874
60.00	.68809	.68609		.69009
70.00	.71944	.71744		.72144
80.00	.75078	.74878		.75278
90.00	.78213	.78013		.78413
100.00	.81348	.81148		.81548
110.00	.84483	.84283		.84683
120.00	.87618	.87418		.87818
130.00	.90752	.90552		.90952
140.00	.93887	.93687		.94087
143.55	.95000	.94800		.95200

TABLE I

SIZE	CODE IDENT NO.	DRAWING NUMBER	
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3.6 Marking. The potentiometer shall be permanently and legibly marked as follows:

3.6.1 The size and color of the marking shall be as follows:

a) Size (height) -  $\frac{1}{16}$

b) Color - white

3.6.2 The markings on the cylindrical surface shall consist of the following:

a) NEI logotype and MFR 08815

b) NEI type number: 34FL2-128

c) O.E.M. Part Number as follows: *711601*

3.6.3 The markings on the rear circular surface shall consist of the following:

a) Electronic Industries Association date code

3.6.4 The index point (See para. 3.4 line 15) shall be marked on the cylindrical surface of section 1 as follows:

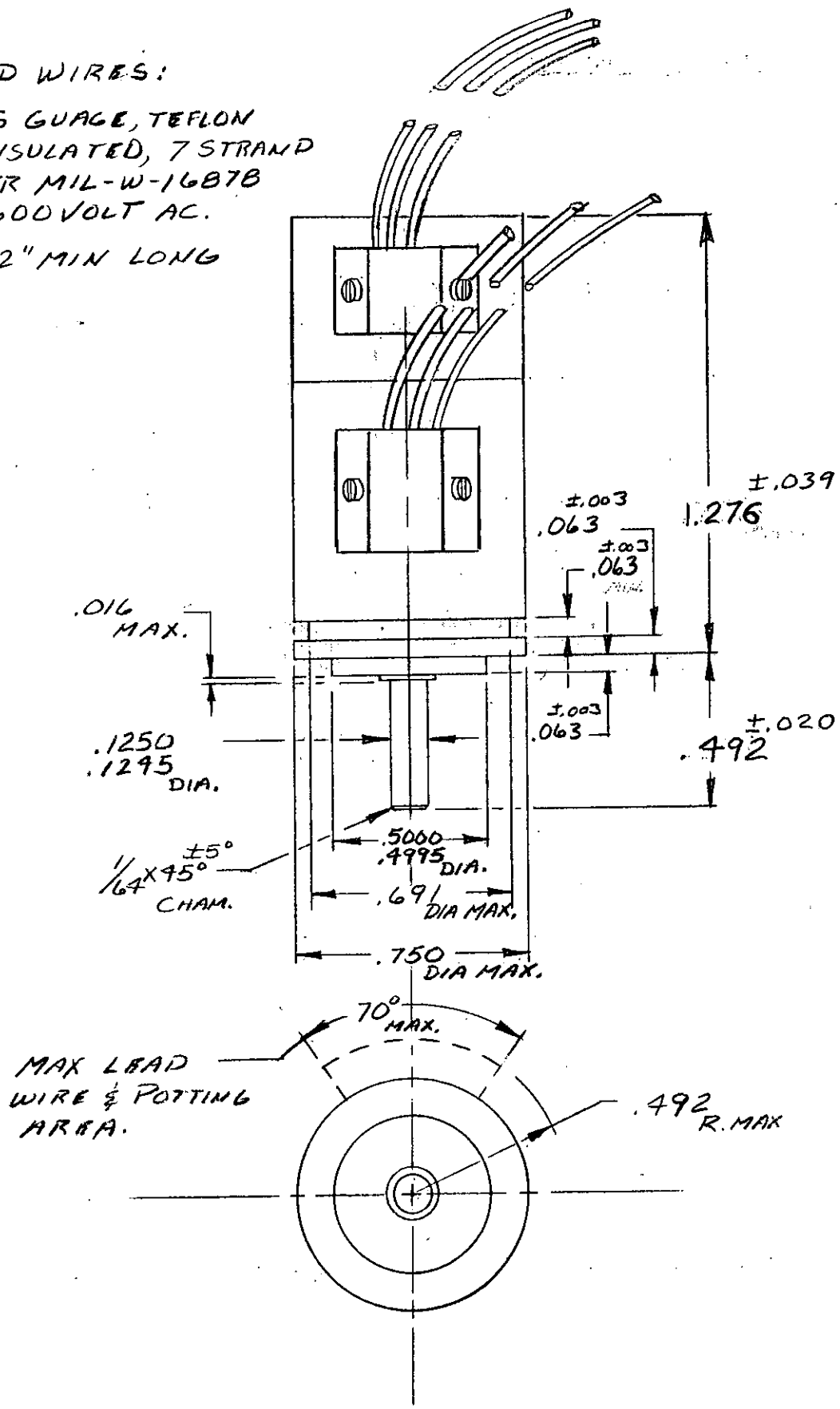
@  $\theta=0^\circ$ , O.R.=0:XXXXX

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LEAD WIRES:

26 GAUGE, TEFLON  
INSULATED, 7 STRAND  
PER MIL-W-1687B  
600VOLT AC.

12" MIN LONG



MAX LEAD  
WIRE & POTTING  
AREA.

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