This drawing contains designs and other information which are the property of ROBERTSHAW CONTROLS COMPANY. Except for rights expressly granted by contract to the United States Government, this drawing may not, in whole or in part, be duplicated or disclosed or used for manufacture of the part disclosed herein without the prior written permission of ROBERTSHAW CONTROLS COMPANY.

REVISIONS			
LTR	ECN NUMBER	DATE	APPROVED
A	ECN-13249	9-21-01	GW

1. SCOPE

1.1 **Scope.** This specification covers the detail requirements for a precision potentiometer, Robertshaw Controls Company, New England Instrument Division (hereinafter called NEI) type number 116FL1-431 equivalent to Electronics & Space Corp. 881048-1 Rev A.

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

NEI	MILITARY
1228-0000	MIL-R-39023
2-1540	MIL-R-39023/2

3. REQUIREMENTS

3.1 **General specifications.** The potentiometers shall be as specified in NEI specification 1228-0000 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 M.A.COTE DATE 11-14-96	Robertshaw CONTROLS COMPANY	NEI DIVISION NATICK, MA 01760
	CHECKED DATE 1/13/97	PRODUCT DEFINITION SPECIFICATION PRECISION POTENTIOMETER TYPE NO. 116FL1-431	
MFG APPROVED DATE	APPROVED DATE 1/13/97		
Q C APPROVED DATE	APPROVED FOR NEI DATE	SIZE: A	CODE IDENT NO: 08815
SALES APPROVED DATE	APPROVED FOR DATE	DRAWING NUMBER: 1228-0431-00	
		SCALE:	SHEET 1 OF 6

Form 1009

3.2 GENERAL CHARACTERISTICS

	CHARACTERISTICS	REQUIREMENT	QA CLASS Requirement Source	QA CLASS	AQL
1.	NO. OF CUPS	1	O	A	
2.	NO. OF SECTIONS	1	O	A	
3.	ELEMENT TYPE	Conductive Plastic "Resistofilm"	N/O	Q	
4.	BEARING TYPE	Ball	N	Q	
5.	MATERIAL - MOUNTING PLATE	Anodized Aluminum	N	Q	
6.	MATERIAL-HOUSING	Anodized Aluminum	N	Q	
7.	MATERIAL-SHAFT	Stainless Steel	O	Q	
8.	WEIGHT	1.0 oz max	O	Q	

3.3 MECHANICAL PARAMETERS

	PARAMETER	REQUIREMENT	QA CLASS Requirement Source	QA CLASS	AQL
1.	LATERAL RUNOUT	0.001 TIR max	O	A	
2.	PILOT SURFACE RUNOUT	0.001 TIR max	O	A	
3.	SHAFT RUNOUT	0.001 TIR max	O	A	
4.	END PLAY	0.005 TIR max	O	A	
5.	RADIAL PLAY	0.001 TIR max	O	A	
6.	STARTING TORQUE	0.5 oz-in max	O	A	
7.	RUNNING TORQUE	0.4 oz-in max	O	A	
8.	MOMENT OF INERTIA	N/R	-	-	
9.	STATIC STOP STRENGTH	N/A	-	-	
10.	DYNAMIC STOP STRENGTH	N/A	-	-	
11.	MECHANICAL TRAVEL	360 deg. Continuous	O	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

	PARAMETER	REQUIREMENT	Requirement Source	QA CLASS	AQL
1.	DIELECTRIC WITH-STANDING VOLTAGE	750 Volts @ 60 HZ	O	A	
2.	INSULATION RESISTANCE	1000 Megohms @ 500 VDC	O	A	
3.	RESISTANCE - TEMPERATURE CHARACTERISTIC	MIL-R-39023 symbol A	O	Q	
4.	POWER RATING	1.25 Watts @ 70 deg. C derated linearity to 0 watts @ 125 deg. C	O	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	0.01 %	O	A	
11.	ELECTRICAL TRAVEL	338°	O	A	
12.	ELECTRICAL OVERTRAVEL	N/R	-	-	
13.	MECHANICAL OVERTRAVEL	N/R	-	-	
14.	CONTINUITY TRAVEL	358 max	N	A	
15.	INDEX POINT	N/R	-	-	
16.	CONFORMITY DEFINITION	Independent Linearity	O	A	
17.	PHASING	N/A	-	-	
18.	TAP LOCATION	N/R	-	-	
19.	EFFECTIVE TAP WIDTH	N/A	-	-	
20.	BACKLASH	0.1 deg. max	O	A	
21.	RESOLUTION	Virtually Infinite	N	Q	
22.	MINIMUM VOLTAGE	0.1 % max	O	A	
23.	END VOLTAGE	0.01 % min, 0.58 4% max.	O	A	

3.5 REQUIREMENTS OF INDIVIDUAL SECTIONS

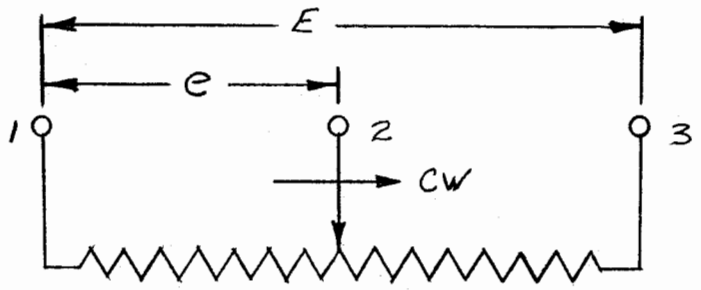
3.5.1 Total Resistance

4500 - 5500 Ω

3.5.2 Function Characteristic

When measured in accordance with the schematic diagram the output ratio e/E shall exhibit independent linearity ± 0.1% over the theoretical travel.

θ increases in a CW direction.



test using tape number 2-1540

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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) - 1/16
(B) Color - White

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

(A) NEI logotype and MFR 08815
(B) NEI type number: 116FL1-431
(C) Terminal identification (per figure 1)
(D) Electronic Industries Association date code
(E) E & S Corp 20418SOCN 881048-1

4.0 Quality Assurance Provisions

4.1 Test Data: Generic MIL-R-39023 group A test data form shall be supplied if required per applicable purchase order.

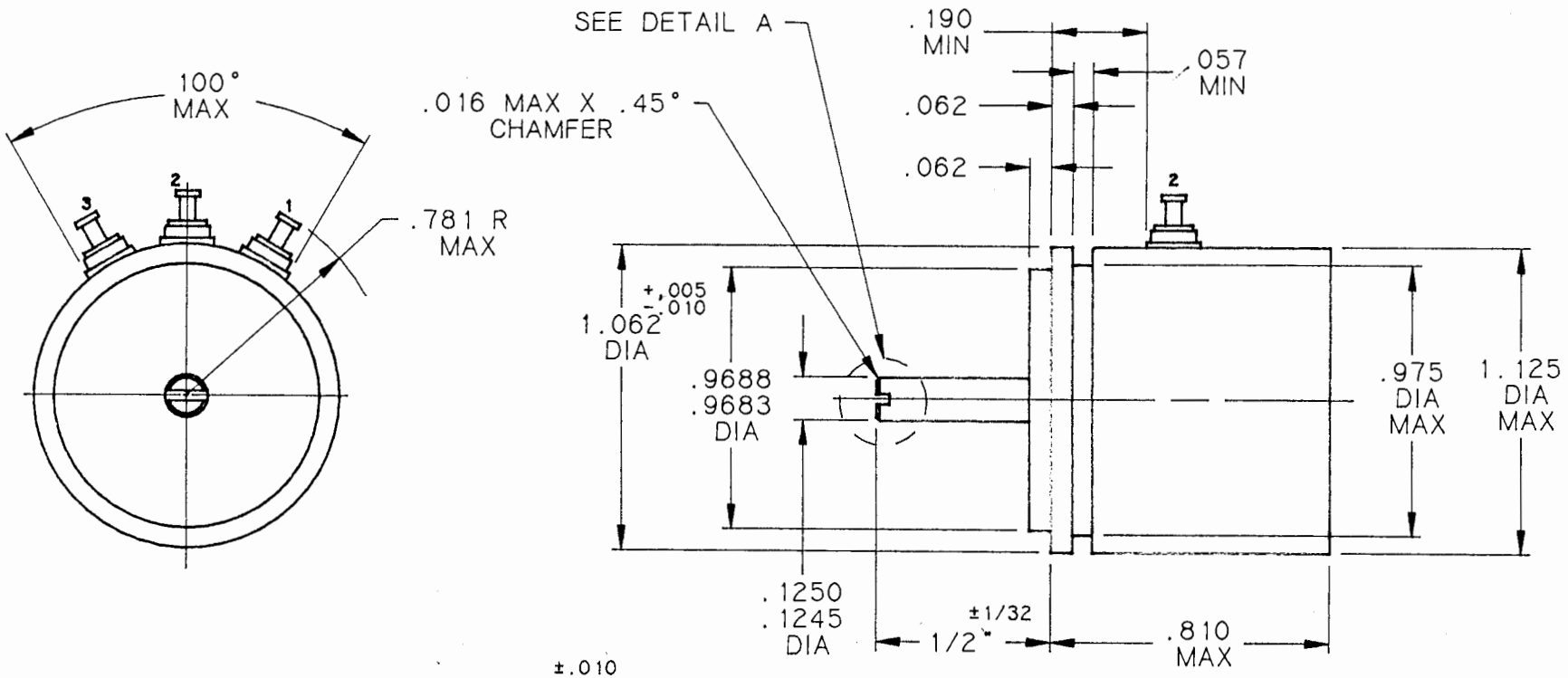
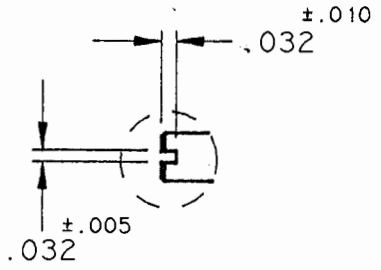


FIGURE 1



DETAIL A

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		SCALE: NTS	