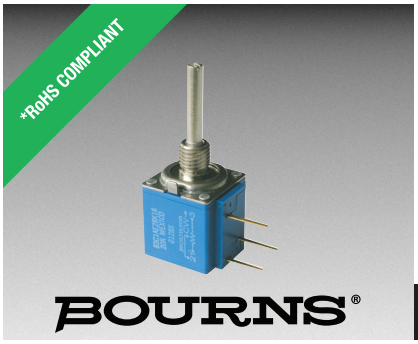


Features

- Compatible with other members of the Model 80 Series
- The only 10-turn precision potentiometer in a modular panel control package
- Up to 2 sections available
- RoHS compliant*

Additional Information

Click these links for more information:

PRODUCT | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

83/84 – 5/8 ″ Square 10-Turn Panel Control

Initial Electrical Characteristics[1]

	Wirewound Element (J Taper)	Hybritron® Element (K Taper)
Standard Resistance Range	200 to 100 K ohms	1 K to 100 K ohms
Total Resistance Tolerance	±5 %	±10 %
Independent Linearity	±0.25 %	±0.25 %
Absolute Minimum Resistance (J Taper)	1.0 ohm or 0.1 % (whichever is greater)	–
Effective Electrical Angle	3600 ° +10 °, -0 °	3600 ° +10 °, -0 °
Dielectric Withstanding Voltage (MIL-STD-202, Method 301)		
Sea Level	1,000 VAC minimum	1,000 VAC minimum
Insulation Resistance (500 VDC)	1,000 megohms minimum	1,000 megohms minimum
Power Rating (Voltage Limited By Power Dissipation or 350 VAC, Whichever Is Less)		
+70 °C	1 watt	1 watts
+125 °C	0 watt	0 watt
Theoretical Resolution	See table	Essentially infinite
End Voltage (K Taper)	–	0.2 % of applied voltage
Noise (J Taper)	100 ohms ENR maximum	–
Output Smoothness (K Taper)	–	0.15 % maximum

Environmental Characteristics[1]

Operating Temperature Range	+1 °C to +125 °C	+1 °C to +125 °C
Storage Temperature Range	-55 °C to +125 °C	-55 °C to +125 °C
Temperature Coefficient Over Storage Temperature Range	±50 ppm/°C	±100 ppm/°C
Vibration	15 G	15 G
Total Resistance Shift	±2 %	±2 %
Voltage Ratio Shift	±0.2 %	±0.2 %
Wiper Bounce	0.1 millisecond maximum	0.1 millisecond maximum
Shock	50 G	50 G
Total Resistance Shift	±2 %	±2 %
Voltage Ratio Shift	±0.2 %	±0.2 %
Wiper Bounce	0.1 millisecond maximum	0.1 millisecond maximum
Load Life	1,000 hours	1,000 hours
Total Resistance Shift	±2 % maximum	±5 % maximum
Rotational Life (No Load)	1,000,000 shaft revolutions	4,000,000 shaft revolutions
Total Resistance Shift	±5 % maximum	±5 % maximum
Moisture Resistance (MIL-STD-202, Method 103, Condition B)		
Total Resistance Shift	±2 % maximum	±5 % maximum
Insulation Resistance (500 VDC)	100 megohms minimum	100 megohms minimum
IP Rating	IP 40	IP 40

Mechanical Characteristics[1]

Stop Strength	33.90 N-cm (48.0 oz.-in.) minimum
Mechanical Angle	3600 ° +15 °, -0 °
Torque	
Starting	Running torque plus 0.7 N-cm (1.0 oz.-in.) maximum
Running (1 or 2 Section)	0.18 to 1.41 N-cm (0.25 to 2.0 oz.-in.)
Mounting (Torque on Bushing)	1.7-2.0 N-m (15-18 lb.-in.) maximum
Shaft Runout	0.15 mm (0.006 in.) T.I.R.
Shaft End Play	0.36 mm (0.014 in.) T.I.R.
Shaft Radial Play	0.13 mm (0.005 in.) T.I.R.
Weight (Single Section)	21 gm (0.75 oz.)
(Each Additional Section)	18 gm (0.65 oz.)
Terminals	Printed circuit terminals or solder lugs
Soldering Condition	Recommended hand soldering using Sn95/Ag5 no clean solder, 0.025 ″ wire diameter. Maximum temperature 399 °C (750 °F) for 3 seconds. No wash process to be used with no clean flux
Marking	Manufacturer's trademark, wiring diagram, date code and resistance, manufacturer's part number.
Ganging (Multiple Section Potentiometers)	2 cup maximum
Hardware	One lockwasher and one mounting nut is shipped with each potentiometer; locking bushing versions are shipped with one additional locking nut (Bushing A: H-37-2 & H-38-2; Bushing B: H-37-2, H-38-2 & H-38-4; Bushing C: H-37-1 & H-38-1; Bushing E: H-37-1, H-38-1 & H-38-3; Bushing J: H-37-2 & H-38-2; Bushing N: H-37-1 & H-38-1; Bushing R: H-37-4 & H-38-9; Bushing U: H-37-3 & H-38-8)

NOTE: Model 83/84 performance specifications do not apply to units subjected to printed circuit board cleaning procedures.

[1]Electrical specifications tested at 250 RPM, at room ambient: +25 °C nominal.

WARNING
Cancer and Reproductive Harm
www.P65Warnings.ca.gov

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

83/84 – 5/8 ″ Square 10-Turn Panel Control

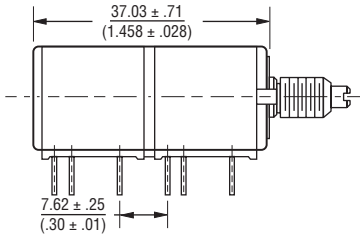
BOURNS®

Wirewound Resolution Table

Resistance (Ohms)	Resolution (Nom.) (%)
200	.048
500	.037
1 K	.032
2 K	.031
5 K	.023
10 K	.020
20 K	.015
50 K	.012
100 K	.010

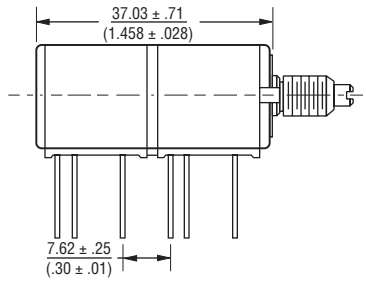
Dimensional Drawings

Dual Section Model 84 Solder Lugs



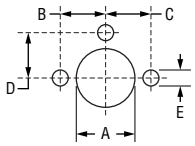
Note: The Models 83/84 dimensions for dual section assembly are for either single or dual concentric shaft styles.

Dual Section Model 83 PC Pins



DIMENSIONS: MM / (INCHES)

Suggested Panel Layout

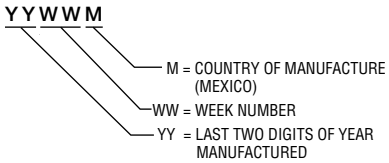


BUSHING	DIM A
A, B & J	9.91 (.39)
C, E & N	6.73 (.265)
R & S	10.5 (.413)
U	7.5 (.295)

DIMENSIONS: MM / (INCHES)

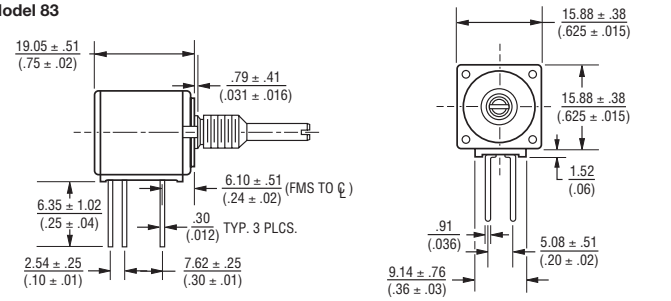
ANTI-ROTATION LUG	DIM B	DIM C	DIM D	DIM E
A	7.75 (.305)	N/A	N/A	2.49 (.098)
B	7.75 (.305)	7.75 (.305)	N/A	2.49 (.098)
C	N/A	7.75 (.305)	N/A	2.49 (.098)
E	13.49 (.531)	N/A	N/A	3.45 (.136)
F	N/A	N/A	7.75 (.305)	2.54 (.100)
J	9.53 (.375)	N/A	N/A	2.54 (.100)

Date Code Description

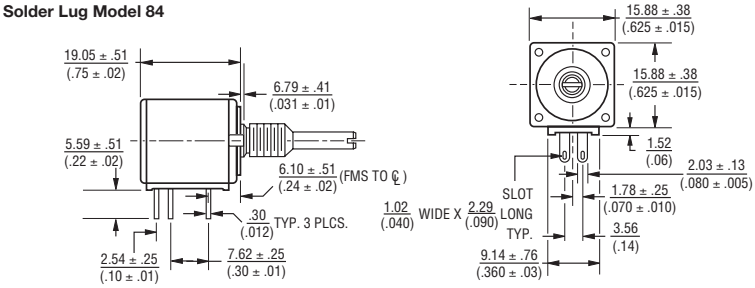


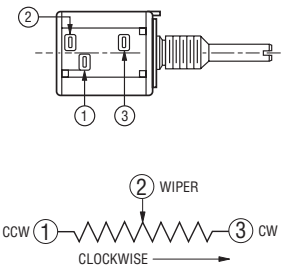
Product Dimensions

PC Pin Model 83

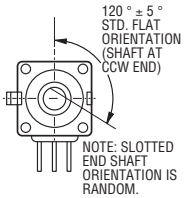


Solder Lug Model 84

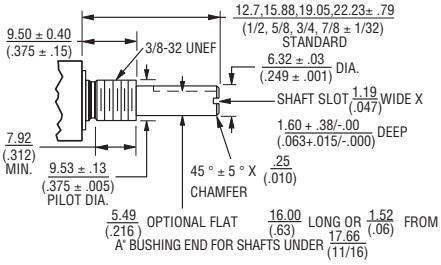




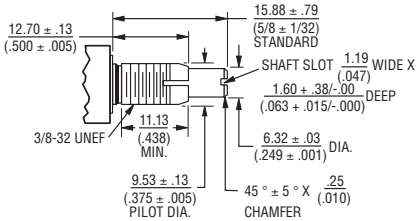
Shaft Flat Orientation



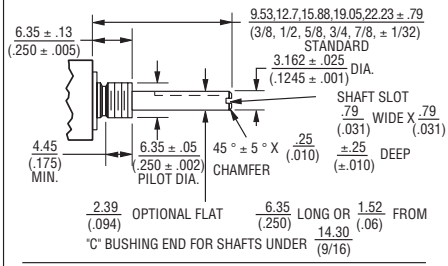
"A" Bushing
3/8 " (9.53 mm) Dia. Plain - Single Shaft



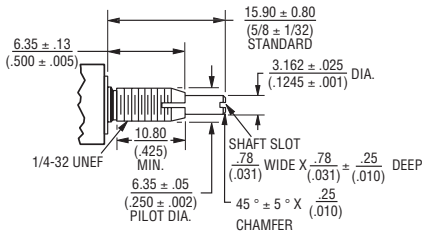
"B" Bushing
3/8 " (9.53 mm) Dia. Plain - Single Shaft



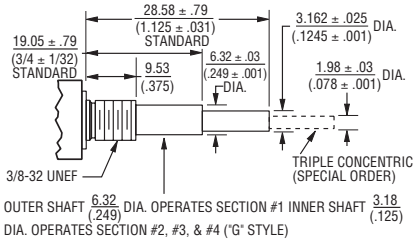
"C" Bushing
1/4 " (6.35 mm) Dia. Plain - Single Shaft



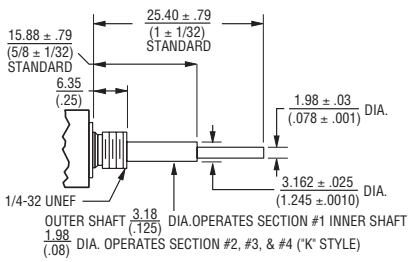
"E" Bushing
1/4 " (6.35 mm) Dia. Locking - Single Shaft



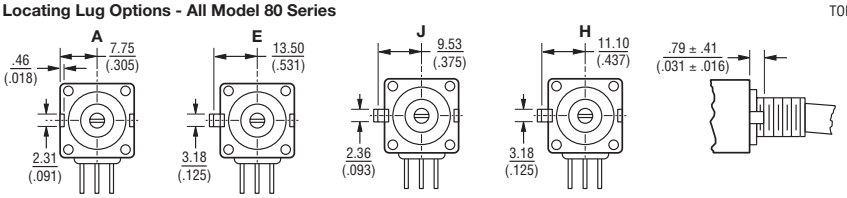
"A" Bushing
3/8 " (9.53 mm) Dia. Plain - Concentric Shaft



"C" Bushing
1/4 " (6.35 mm) Dia. Plain - Concentric Shaft



Locating Lug Options - All Model 80 Series



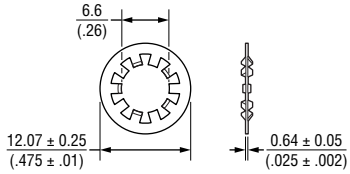
TOLERANCES EXCEPT AS SHOWN: DECIMALS .XXX ± .127 (.005)
.XX± .38 (.015)
ANGLE ± 5 °
FRACTIONS ± 1/64

DIMENSIONS: MM / (INCHES)

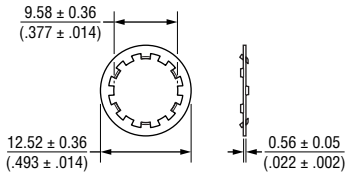
NOTE: "D" OPTION - NO A/R LUG. OTHER LOCATING LUG OPTIONS AVAILABLE. FOR DETAILS CONSULT FACTORY.

Hardware

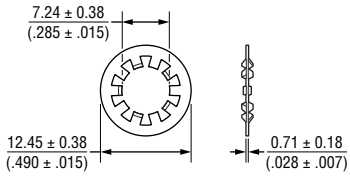
LOCKWASHER H-37-1



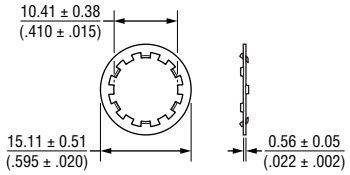
LOCKWASHER H-37-2



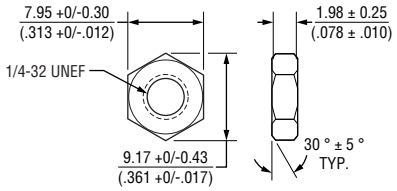
LOCKWASHER H-37-3



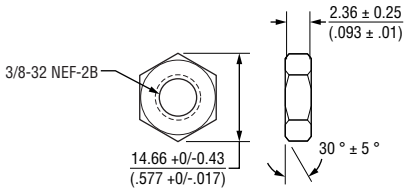
LOCKWASHER H-37-4



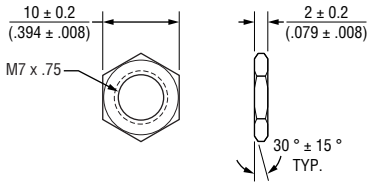
NUT H-38-1



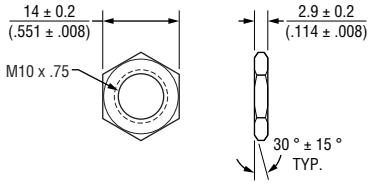
NUT H-38-2



NUT H-38-8

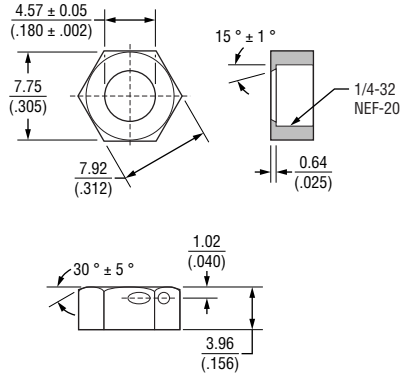


NUT H-38-9

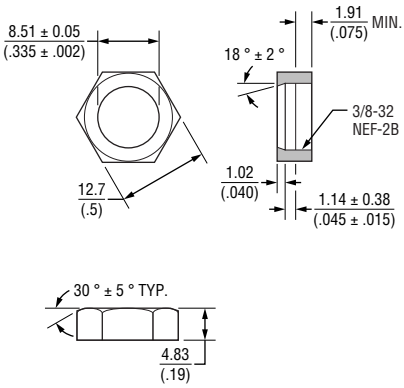


DIMENSIONS: MM / (INCHES)

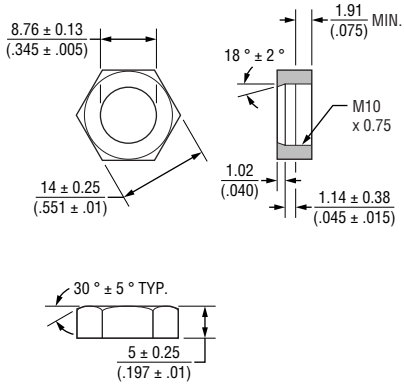
LOCKNUT H-38-3



LOCKNUT H-38-4



LOCKNUT H-38-10



83/84 – 5/8 ″ Square 10-Turn Panel Control

BOURNS®

How To Order

83	A	1	A	-	B	28	-	J	15	L

RoHS IDENTIFIER	
L	Compliant

ANTI-ROTATION LUG	
A	**Single .305 R, 90 °CW**
B	Double .305 R, 90 ° & 270 °CW
C	Single .305 R, 270 °CW
D	**No Lug**
E	Single .531 R, 90 °CW
F	Single .305 R, 180 °CW
J	Single .375 R, 90 °CW

# SECTIONS	
1	**Single**
2	**Double**
3	Triple

SHAFT LENGTH (FMS)		AVAILABLE ONLY IN BUSHING
Code	**Description**	**Code**
12	3/8 ” L	C, N, J
16	1/2 ” L	A, C, J, N
20	5/8 ” L	A, B, C, E, J, N
24	**3/4 ” L**	A, B, C, E, J, N
28	**7/8 ” L**	A, B, C, E, J, N
32	1 ” L	A, B, C, E, J, N
36	1-1/8 ” L	A, B, C, E, J, N
40	1-1/4 ” L	A, B, C, E, J, N
Metric		
10	10 mmL	U
13	13 mmL	U
16	16 mmL	R
19	19 mmL	R
22	**22 mmL**	R, U
30	30 mmL	R
42	42 mmL	R
50	50 mmL	R

ELEMENT TAPER TYPE/TOLERANCE		RESISTANCE CODE VALUE IN OHMS	
		J	K
(J)	**Linear Wirewound 10-Turn ±5 %**	**(06) - 200**	**(10) - 1 K**
		(08) - 500	(11) - 2 K
(K)	Linear Hybritron® Elements 10-Turn ±10 %	**(10) - 1 K**	(13) - 5 K
		(11) - 2 K	(15) - 10 K
		(13) - 5 K	(16) - 20 K
		(15) - 10 K	(18) - 50 K
		(16) - 20 K	(20) - 100 K
		(18) - 50 K	
		(20) - 100 K	

BUSHING	
A	**Plain 3/8 ” (9.53 mm) D x 3/8 ” (9.53 mm) L**
B	Locking 3/8 ” (9.53 mm) D x 1/2 ” (12.7 mm) L
C	**Plain 1/4 ” (6.35 mm) D x 1/4 ” (6.35 mm) L**
E	Locking 1/4 ” (6.35 mm) D x 1/2 ” (12.7 mm) L
J	Plain 3/8 ” (9.53 mm) D x 1/4 ” (6.35 mm) L
N	Plain 1/4 ” (6.35 mm) D x 3/8 ” (9.53 mm) L
R	**Plain 10 mm D x 9 mm L**
U	Plain 7 mm D x 6 mm L

MODEL	
83	**10-Turn, PC Pins**
84	**10-Turn, Solder Lugs**

SHAFT TYPE		AVAILABLE ONLY IN LENGTHS (CODE)	AVAILABLE ONLY IN BUSHINGS (CODE)
A	Single Plain 1/4 ” (6.35 mm) D	16,20,24,28	A, B, J
B	**Single Slotted 1/4 ” (6.35 mm) D**	**16,20,24,28**	**A, B, J**
C	Single Flatted 1/4 ” (6.35 mm) D	20,24,28	A, B, J
E	**Single Slotted 1/8 ” (3.18 mm) D**	**12,16,20,24,28**	**C, E, N**
F	Single Flatted 1/8 ” (3.18 mm) D	Consult Factory	C, N
G	Dual Concentric Plain 1/4 ” (6.35 mm) D - 1/8 ” (3.18 mm) D Outer Operates Section 1	36,40	A, J
K	Dual Concentric Plain 1/8 ” (3.18 mm) D - 5/64 ” (1.98 mm) D Outer Operates Section 1	32,36	C, N
L	Dual Concentric Plain 1/4 ” (6.35 mm) D - 1/8 ” (3.18 mm) D Outer Operates Section 1/2	36,40	A, J
M	Dual Concentric Plain 1/8 ” (3.18 mm) D - 5/64 ” (1.98 mm) D Outer Operates Section 1	32,36	C, N
N	Dual Concentric Plain 1/4 ” (6.35 mm) D - 1/8 ” (3.18 mm) D Outer Operates Section 1/2/3	36,40	A, J
P	Dual Concentric Plain 1/8 ” (3.18 mm) D - 5/64 ” (1.98 mm) D Outer Operates Section 1/2	32,36	C, N
R	**Single Slotted 6 mm D**	**16,19,22,50**	**R, S**
T	Single Slotted 4 mm D	10, 13, 22	U
V	Dual Concentric Plain 6 mm D - 3 mm D Outer Operates Section 1	30, 42	R

Boldface features are Bourns standard options.
All others are available with higher minimum order quantities.

REV. 04/25

Legal Disclaimer Notice

BOURNS®

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The characteristics and parameters of a Bourns® product set forth in its data sheet are based on laboratory conditions, and statements regarding the suitability of products for certain "typical" applications are based on Bourns' knowledge of typical requirements in generic applications. Bourns assumes that "typical" applications include failsafe/backup features to address critical risks to users and are designed to allow rework of Bourns® product to avoid scrap of a device solely due to malfunctioning Bourns® product. The characteristics and parameters of a Bourns® product in a user application may vary from the data sheet characteristics and parameters due to (i) the combination of the Bourns® product with other components in the user's application, or (ii) the environment of the user application itself. The characteristics and parameters of a Bourns® product also can and do vary in different applications and actual performance may vary over time. Thus, users should always verify the actual performance of the Bourns® product in their specific devices and applications and make their own independent judgments regarding the suitability of Bourns® product and the amount of additional test margin to design into their device or application to compensate for differences between laboratory and real-world conditions.

Unless Bourns has explicitly designated an individual Bourns® product as meeting the requirements of a particular industry standard (e.g., IATF 16949) or a particular qualification (e.g., UL listed or recognized), Bourns is not responsible for any failure of an individual Bourns® product to meet the requirements of such industry standard or particular qualification even if such industry standard or qualification is a "state of art". Users of Bourns® products are responsible for ensuring compliance with safety-related requirements and standards applicable to their devices or applications.

Bourns® products are not recommended, authorized or intended for use in applications where failure or malfunction may result in personal injury, death, or severe property or environmental damage, such as without limitation nuclear, life-critical medical and certain automotive and aviation applications. Except as set forth in the bullet points below or unless expressly and specifically approved in writing on a case-by-case basis by an authorized Bourns' representative, use of any Bourns® products in such unauthorized high-risk applications is at the user's sole risk.

- Bourns considers implantable/invasive devices and devices/procedures designed as life-supporting or life-sustaining by the U.S. Food and Drug Administration or equivalent organizations outside of the United States as "life-critical" medical applications. Bourns expressly identifies those Bourns® standard products that are suitable for use in typical medical applications that are not life-critical in its publication entitled "Bourns Medical Grade Component Guide."

- Bourns expressly identifies those Bourns® standard products that are suitable for use in typical automotive applications associated with any Automate Safety Integrity Level (ASIL) in its publication entitled "Bourns Automotive Grade Component Guide." Bourns' designation of Bourns® product as compliant with the AEC-Q standard does not by itself mean that Bourns has approved such product for use in an automotive application.

- Bourns expressly identifies Bourns® standard products that are suitable for use in the typical aviation applications/systems requiring System Design Assurance Level (RTCA DO-254 DAL) of C, D or E in its publication entitled "Bourns Civilian Aerospace/Aviation Grade Component Guide." Bourns does not test its products for compliance with United States Federal Aviation Administration standards or any other generally equivalent governmental organization standard applicable to products designed or manufactured for use in aviation applications. Use of Bourns® standard components in aviation applications associated with RTCA DO-254 DAL A or B without proper approval noted above shall be at the user's sole risk.

- Bourns will review and authorize on a case-by-case basis the use of Bourns® standard products which are at least AEC-Q compliant in space-related civil applications (rockets, satellites) with a negotiated cross-waiver and indemnity agreement.

The use and level of testing applicable to Bourns® custom products shall be negotiated on a case-by-case basis by Bourns and the user for which such Bourns® custom products are specially designed. Absent a written agreement between Bourns and the user regarding the use and level of such testing, the above provisions applicable to Bourns® standard products shall also apply to such Bourns® custom products.

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