



Features

- Wirewound and Hybritron® elements
- High rotational life
- Optional 0.1 % linearity
- Optional A/R lug
- RoHS compliant*
- Suitable for use under some side load conditions
- Designed for HMI and MMI applications
- Dual gang option
- Servo mount option
- Dual ball bearing option

3549 - 10-Turn Precision Potentiometer

Electrical Characteristics ¹	Wirewound Element	Hybritron® Element
Standard Resistance Range.....	100 to 100K ohms.....	1K to 100K ohms
Total Resistance Tolerance.....	±3 %.....	±10 %
Independent Linearity.....	±0.2 %.....	±0.2 %
Independent Linearity (Maximum Practical).....	±0.1 %.....	±0.1 %
Effective Electrical Angle.....	3600 ° +10 °, -0 °.....	3600 ° +10 °, -0 °
Absolute Minimum Resistance/End Voltage.....	1 ohm or 0.1 % maximum.....	0.2 % maximum
(whichever is greater)		
Noise/Output Smoothness.....	100 ohms maximum.....	0.10 % maximum
Max. Wiper Current @ 5K ohms.....	20 mA.....	10 mA
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
Resolution.....	See How to Order chart.....	Essentially infinite
Power Rating (Voltage Limited By Power Dissipation)		
+70 °C.....	2 watts.....	2 watts
+125 °C.....	0 watt.....	0 watt

Environmental Characteristics ¹		
Operating Temperature Range		
Dynamic.....	-40 °C to +125 °C.....	-40 °C to +125 °C
Static.....	-55 °C to +125 °C.....	-55 °C to +125 °C
Temperature Coefficient (Over Static Temperature Range).....	±50 ppm/°C.....	±100 ppm/°C
Temperature Cycling (5 Cycles Over Static Temperature Range).....	±2 % TR shift max.....	±4 % TR shift max.
Vibration (15 Gs, 10 Hz to 2 kHz)		
Wiper Bounce.....	0.1 ms max.....	0.1 ms max.
Shock (100 Gs, 6 ms sawtooth)		
Wiper Bounce.....	0.1 ms max.....	0.1 ms max.
Load Life (1,000 hours @ 70 °C).....	±2 % TR shift.....	±5 % TR shift max.
Rotational Life		
No Load or Powered.....	2,000,000 shaft revolutions.....	5,000,000 shaft revolutions
No Load or Powered (Dual Ball Bearing).....	N/A.....	10,000,000 shaft revolutions
Moisture Resistance (Mil-Std-202, Method 103).....	±2 % TR shift max.....	±5 % TR shift max.
IP Rating.....	IP 50.....	IP 50

Mechanical Characteristics ¹		
Mechanical Angle.....	3600 ° +10 °, -0 °	
Backlash.....	1.0 ° max.	
Stop Strength.....	53 N-cm (75 oz-in.) min.	
Torque		
Starting.....	0.5 N-cm (0.7 oz-in.) max.	
Running.....	0.5 N-cm (0.7 oz-in.) max.	
Clutch.....	1.0 to 4.2 N-cm (1.5 to 6.0 oz-in.)	
Mounting.....	170-200 N-cm (15-18 in.-lb.) max.	
Shaft Runout T.I.R.....	0.08 mm (0.003 in.)	
Lateral Runout T.I.R.....	0.13 mm (0.005 in.)	
Shaft End Play T.I.R.	0.15 mm (0.006 in.)	
Shaft Radial Play T.I.R.....	0.08 mm (0.003 in.)	
Pilot Diameter Runout T.I.R.....	0.08 mm (0.003 in.)	
Weight		
Single.....	20 gm (0.7 oz.) typ.	
Dual.....	36 gm (1.27 oz) typ.	
Shaft Side Load (Max. Allowable)		
Nickel Plated Brass Shaft w/Brass Bushing.....	50 gm (1.7 oz)	
Stainless Steel Shaft w/Bronze Bushing.....	250 gm (8.8 oz)	
Terminals.....	Gold-plated solder lugs	
Soldering Condition		
Manual Soldering.....	96.5Sn/3.0Ag/0.5Cu solid wire or no-clean rosin cored wire, 370 °C (700 °F) max. for 3 seconds	
Wave Soldering.....	96.5Sn/3.0Ag/0.5Cu solder with no-clean flux, 260 °C (500 °F) max. for 5 seconds	
Wash processes.....	Not recommended	
Mounting Hardware.....	One lockwasher and one mounting nut is shipped with each potentiometer	
Recommended Panel Thickness (Bushing Mount).....	2.46-3.81 mm (0.097-0.150 in.)	
Marking.....	Manufacturer's symbol, model number, product code and date code	
Standard Packaging.....	Plastic trays (5 pcs./tray)	

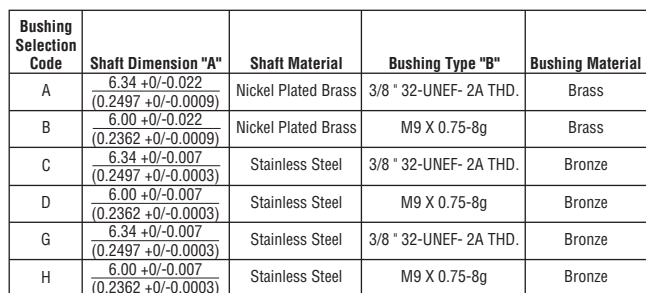
¹At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.
For other options, please consult factory.

*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.
Specifications are subject to change without notice.

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BOURNS®

Single Gang, Bushing Mount



Technical drawing of a motor assembly, showing side and front views with dimensions in inches and millimeters.

Side View Dimensions:

- Overall length: 40.259 ± 0.762 (1.585 $\pm$.030)
- Distance from left end to center of first motor: 34.798 ± 0.762 (1.370 $\pm$.030)
- Distance from left end to center of second motor: 26.467 ± 0.762 (1.042 $\pm$.030)
- Distance from left end to center of third motor: 18.796 ± 0.381 (.740 $\pm$.015)
- Distance from left end to center of fourth motor: 14.351 ± 0.381 (.565 $\pm$.015)
- Distance from left end to center of fifth motor: 6.02 ± 0.381 (.237 $\pm$.015)
- Distance from left end to center of sixth motor: $10.287 \pm 0.00/-0.05$ (.405 $\pm$.002)
- Distance from left end to center of seventh motor: 7.92 ± 0.381 (.312 $\pm$.015)
- Distance from left end to center of eighth motor: 20.643 ± 0.787 (.813 $\pm$.031)
- Distance from left end to center of ninth motor: 2.52 (.106)
- Distance from left end to center of tenth motor: 1.52 (.060)
- Distance from left end to center of eleventh motor: 0.813 (.032)
- Distance from left end to center of twelfth motor: 0.813 ± 0.004 (.032 $\pm$.010)
- Distance from left end to center of thirteenth motor: 0.813 (.032)
- Distance from left end to center of fourteenth motor: 0.813 (.032)
- Distance from left end to center of fifteenth motor: 0.813 (.032)
- Distance from left end to center of sixteenth motor: 0.813 (.032)
- Distance from left end to center of seventeenth motor: 0.813 (.032)
- Distance from left end to center of eighteenth motor: 0.813 (.032)
- Distance from left end to center of nineteenth motor: 0.813 (.032)
- Distance from left end to center of twentieth motor: 0.813 (.032)
- Distance from left end to center of twenty-first motor: 0.813 (.032)
- Distance from left end to center of twenty-second motor: 0.813 (.032)
- Distance from left end to center of twenty-third motor: 0.813 (.032)
- Distance from left end to center of twenty-fourth motor: 0.813 (.032)
- Distance from left end to center of twenty-fifth motor: 0.813 (.032)
- Distance from left end to center of twenty-sixth motor: 0.813 (.032)
- Distance from left end to center of twenty-seventh motor: 0.813 (.032)
- Distance from left end to center of twenty-eighth motor: 0.813 (.032)
- Distance from left end to center of twenty-ninth motor: 0.813 (.032)
- Distance from left end to center of thirtieth motor: 0.813 (.032)
- Distance from left end to center of thirty-first motor: 0.813 (.032)
- Distance from left end to center of thirty-second motor: 0.813 (.032)
- Distance from left end to center of thirty-third motor: 0.813 (.032)
- Distance from left end to center of thirty-fourth motor: 0.813 (.032)
- Distance from left end to center of thirty-fifth motor: 0.813 (.032)
- Distance from left end to center of thirty-sixth motor: 0.813 (.032)
- Distance from left end to center of thirty-seventh motor: 0.813 (.032)
- Distance from left end to center of thirty-eighth motor: 0.813 (.032)
- Distance from left end to center of thirty-ninth motor: 0.813 (.032)
- Distance from left end to center of fortieth motor: 0.813 (.032)
- Distance from left end to center of forty-first motor: 0.813 (.032)
- Distance from left end to center of forty-second motor: 0.813 (.032)
- Distance from left end to center of forty-third motor: 0.813 (.032)
- Distance from left end to center of forty-fourth motor: 0.813 (.032)
- Distance from left end to center of forty-fifth motor: 0.813 (.032)
- Distance from left end to center of forty-sixth motor: 0.813 (.032)
- Distance from left end to center of forty-seventh motor: 0.813 (.032)
- Distance from left end to center of forty-eighth motor: 0.813 (.032)
- Distance from left end to center of forty-ninth motor: 0.813 (.032)
- Distance from left end to center of fiftieth motor: 0.813 (.032)
- Distance from left end to center of fifty-first motor: 0.813 (.032)
- Distance from left end to center of fifty-second motor: 0.813 (.032)
- Distance from left end to center of fifty-third motor: 0.813 (.032)
- Distance from left end to center of fifty-fourth motor: 0.813 (.032)
- Distance from left end to center of fifty-fifth motor: 0.813 (.032)
- Distance from left end to center of fifty-sixth motor: 0.813 (.032)
- Distance from left end to center of fifty-seventh motor: 0.813 (.032)
- Distance from left end to center of fifty-eighth motor: 0.813 (.032)
- Distance from left end to center of fifty-ninth motor: 0.813 (.032)
- Distance from left end to center of sixtieth motor: 0.813 (.032)
- Distance from left end to center of sixty-first motor: 0.813 (.032)
- Distance from left end to center of sixty-second motor: 0.813 (.032)
- Distance from left end to center of sixty-third motor: 0.813 (.032)
- Distance from left end to center of sixty-fourth motor: 0.813 (.032)
- Distance from left end to center of sixty-fifth motor: 0.813 (.032)
- Distance from left end to center of sixty-sixth motor: 0.813 (.032)
- Distance from left end to center of sixty-seventh motor: 0.813 (.032)
- Distance from left end to center of sixty-eighth motor: 0.813 (.032)
- Distance from left end to center of sixty-ninth motor: 0.813 (.032)
- Distance from left end to center of seventieth motor: 0.813 (.032)
- Distance from left end to center of seventy-first motor: 0.813 (.032)
- Distance from left end to center of seventy-second motor: 0.813 (.032)
- Distance from left end to center of seventy-third motor: 0.813 (.032)
- Distance from left end to center of seventy-fourth motor: 0.813 (.032)
- Distance from left end to center of seventy-fifth motor: 0.813 (.032)
- Distance from left end to center of seventy-sixth motor: 0.813 (.032)
- Distance from left end to center of seventy-seventh motor: 0.813 (.032)
- Distance from left end to center of seventy-eighth motor: 0.813 (.032)
- Distance from left end to center of seventy-ninth motor: 0.813 (.032)
- Distance from left end to center of eightieth motor: 0.813 (.032)
- Distance from left end to center of eighty-first motor: 0.813 (.032)
- Distance from left end to center of eighty-second motor: 0.813 (.032)
- Distance from left end to center of eighty-third motor: 0.813 (.032)
- Distance from left end to center of eighty-fourth motor: 0.813 (.032)
- Distance from left end to center of eighty-fifth motor: 0.813 (.032)
- Distance from left end to center of eighty-sixth motor: 0.813 (.032)
- Distance from left end to center of eighty-seventh motor: 0.813 (.032)
- Distance from left end to center of eighty-eighth motor: 0.813 (.032)
- Distance from left end to center of eighty-ninth motor: 0.813 (.032)
- Distance from left end to center of ninetieth motor: 0.813 (.032)
- Distance from left end to center of ninety-first motor: 0.813 (.032)
- Distance from left end to center of ninety-second motor: 0.813 (.032)
- Distance from left end to center of ninety-third motor: 0.813 (.032)
- Distance from left end to center of ninety-fourth motor: 0.813 (.032)
- Distance from left end to center of ninety-fifth motor: 0.813 (.032)
- Distance from left end to center of ninety-sixth motor: 0.813 (.032)
- Distance from left end to center of ninety-seventh motor: 0.813 (.032)
- Distance from left end to center of ninety-eighth motor: 0.813 (.032)
- Distance from left end to center of ninety-ninth motor: 0.813 (.032)
- Distance from left end to center of one hundredth motor: 0.813 (.032)

Front View Dimensions:

- Overall diameter: 16.256 (.640) MAX.
- Distance from top center to center of first motor: 6.86 ± 0.25 (.270 $\pm$.010)
- Distance from top center to center of second motor: 12.7 ± 0.254 (.500 $\pm$.010)
- Distance from top center to center of third motor: 12.649 ± 0.254 (.498 $\pm$.010)
- Distance from top center to center of fourth motor: 22.479 ± 0.812 (.885 $\pm$.032)
- Distance from top center to center of fifth motor: 22.479 ± 0.812 (.885 $\pm$.032)
- Distance from top center to center of sixth motor: 22.479 ± 0.812 (.885 $\pm$.032)
- Distance from top center to center of seventh motor: 22.479 ± 0.812 (.885 $\pm$.032)
- Distance from top center to center of eighth motor: 22.479 ± 0.812 (.885 $\pm$.032)
- Distance from top center to center of ninth motor: 22.479 ± 0.812 (.885 $\pm$.032)
- Distance from top center to center of tenth motor: 22.479 ± 0.812 (.885 $\pm$.032)
- Distance from top center to

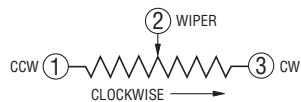
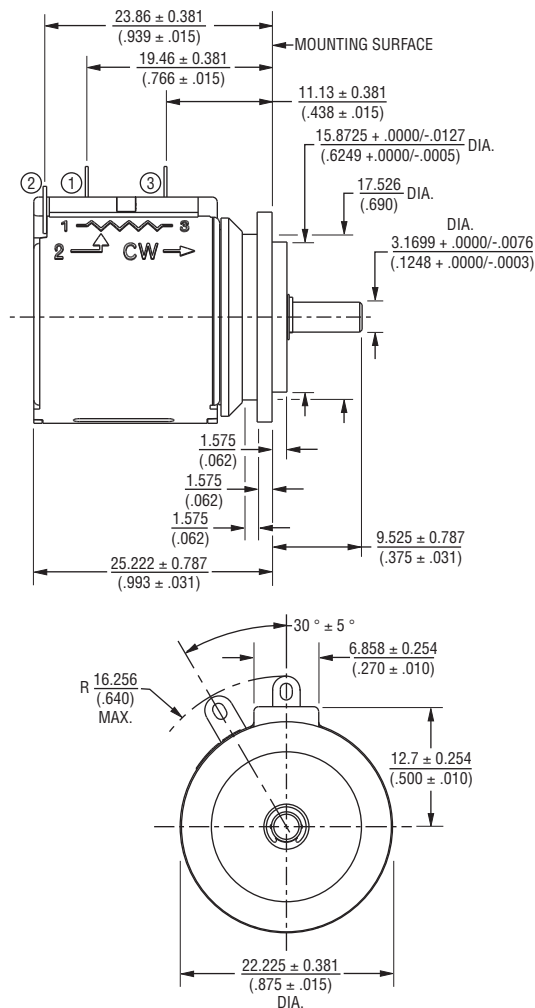
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3549 - 10-Turn Precision Potentiometer

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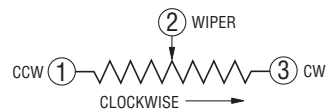
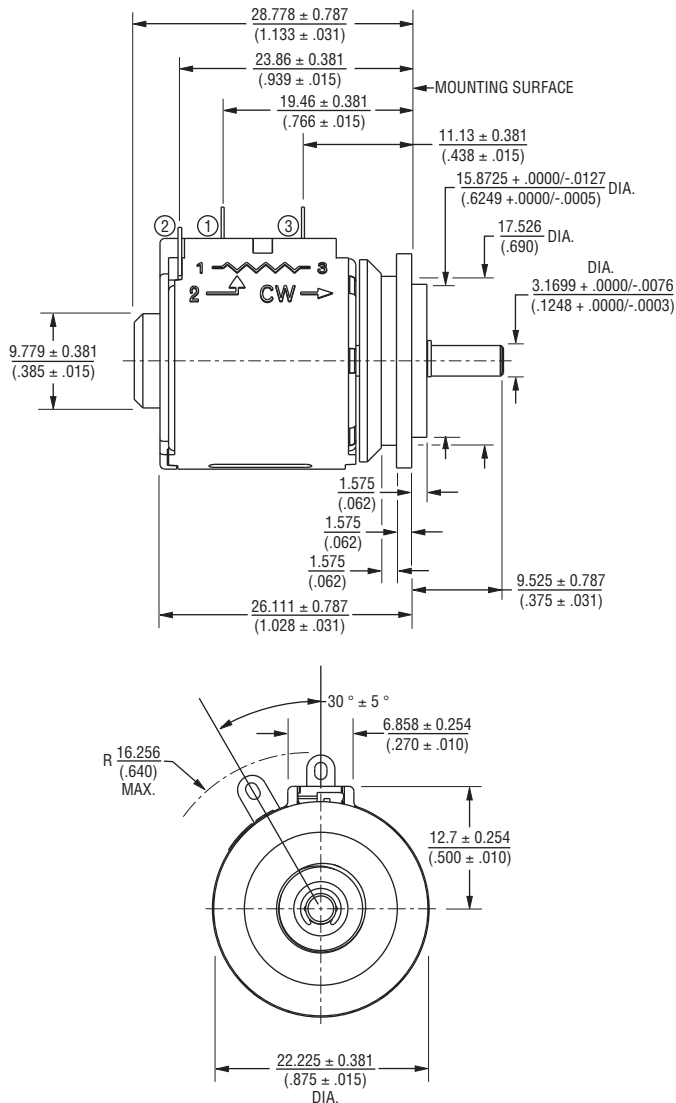
Product Dimensions

Single Gang, Servo Mount



TOLERANCES: EXCEPT WHERE NOTED
 DECIMALS: .XX ± .50 (0.02) .XXX ± .127 (0.005) .XXXX ± .0127 (0.0005)
 DIMENSIONS: $\frac{\text{MM}}{(\text{IN})}$

Single Gang, Servo Mount, Dual Ball Bearing



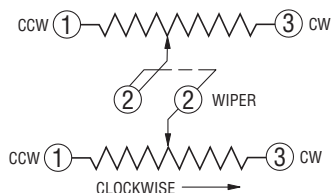
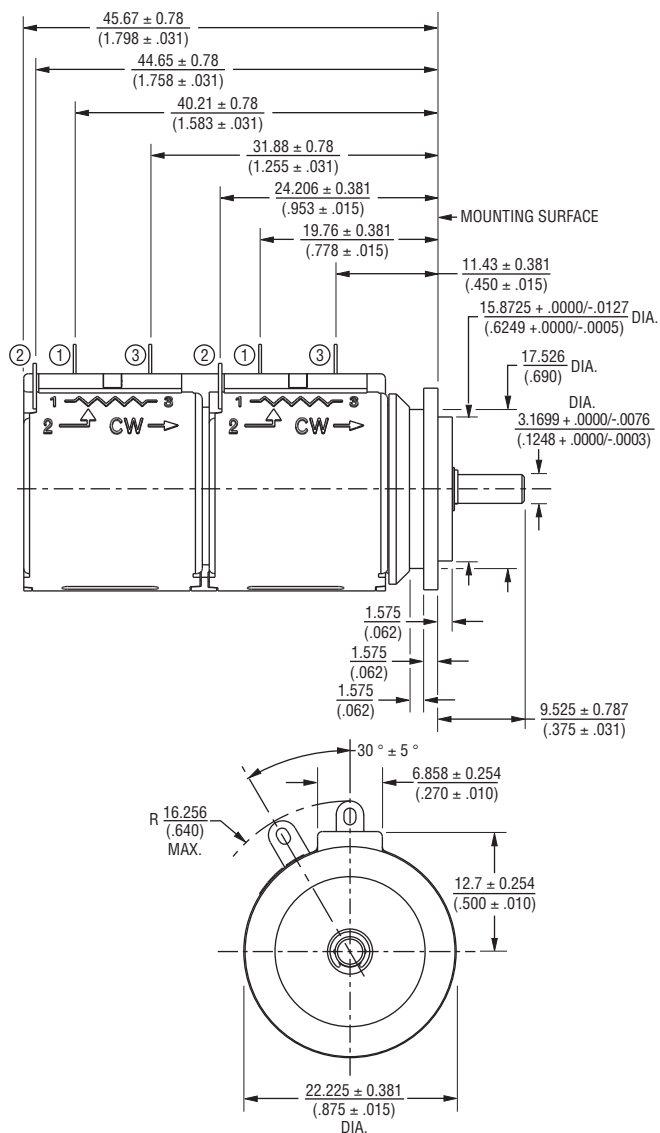
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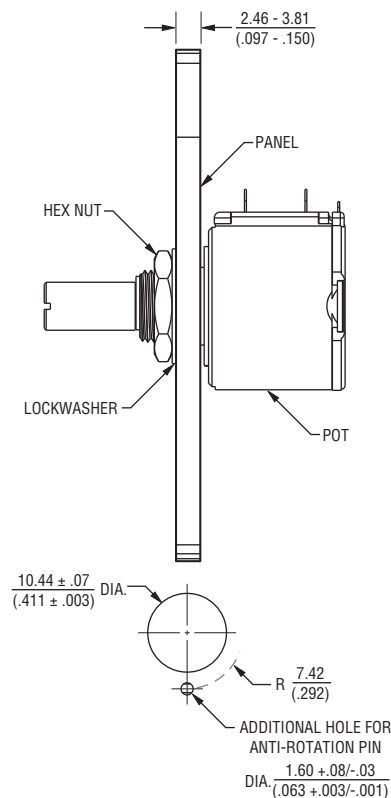
Product Dimensions

Dual Gang, Servo Mount



Panel Thickness Dimensions

(For Bushing Mount Only)



Anti-rotation pin hole is shown at six o'clock position for reference only. The actual location is determined by the customer's application. Refer to the front view of the potentiometer to see the location of the optional A/R pin.

Panel thickness and hole diameters are recommended for best fit. However, customers may adjust the dimensions to suit their specific application.

DIMENSIONS: $\frac{\text{MM}}{(\text{INCHES})}$ TOLERANCES: $\pm \frac{0.127}{(.005)}$

3549 - 10-Turn Precision Potentiometer

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How To Order

3	5	4	9	S	-	2	A	A	-	1	0	3	/	1	0	3	A
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MODEL DESIGNATOR	
Code	Description
3549	10-Turn

ELEMENT TYPE	
Code	Description
H	Hybritron®
S	Wirewound

NO. OF SECTIONS	
Code	Description
1	Single
2	Dual

ANTI-ROTATION LUG	
Code	Description
A	None
B	180 °

* Anti-rotation lug is not available for servo mount versions.

INDEPENDENT LINEARITY	
Code	Description
A	0.20 %
B	0.10 %

RESISTANCE**		
Code	Element Type	Resolution (%)
102 (1K ohms)	Hybritron®	—
202 (2K ohms)	Hybritron®	—
502 (5K ohms)	Hybritron®	—
103 (10K ohms)	Hybritron®	—
203 (20K ohms)	Hybritron®	—
503 (50K ohms)	Hybritron®	—
104 (100K ohms)	Hybritron®	—
101 (100 ohms)	Wirewound	0.055
201 (200 ohms)	Wirewound	0.042
501 (500 ohms)	Wirewound	0.031
102 (1K ohms)	Wirewound	0.027
202 (2K ohms)	Wirewound	0.021
502 (5K ohms)	Wirewound	0.016
103 (10K ohms)	Wirewound	0.019
203 (20K ohms)	Wirewound	0.014
503 (50K ohms)	Wirewound	0.011
104 (100K ohms)	Wirewound	0.008

** For Single gang, use only first three digits.
For Dual gang, use six digits separated by a "/".

BUSHING MOUNT						
Code	Shaft FMS	Shaft Dia.	Shaft Material	Bushing Dia.	Bushing Material	Slip Clutch
A	13/16 "	1/4 "	Nickel Plated Brass	3/8 "	Brass	N/A
B	20.6 mm	6 mm	Nickel Plated Brass	9 mm	Brass	N/A
C	13/16 "	1/4 "	Stainless Steel	3/8 "	Bronze	N/A
D	20.6 mm	6 mm	Stainless Steel	9 mm	Bronze	N/A
G	13/16 "	1/4 "	Stainless Steel	3/8 "	Bronze	Yes***
H	20.6 mm	6 mm	Stainless Steel	9 mm	Bronze	Yes***

SERVO MOUNT				
Code	Shaft FMS	Shaft Dia.	Shaft Material	Ball Bearings
E	3/8 "	1/8 "	Stainless Steel	N/A
F	3/8 "	1/8 "	Stainless Steel	Front & Rear****

*** Not available in dual gang version.

**** Available in Hybritron® version only and limited to single section.

REV. 10/14

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