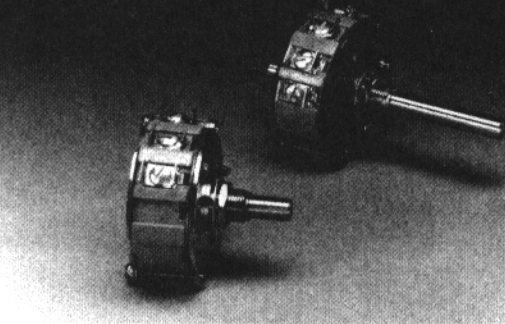


Series 42

3 and 5 Watt

Single-turn, Wirewound Potentiometer



Description

The Series 42 potentiometer is precision designed to control from 1 to 20 circuits simultaneously - with high accuracy. It is readily adaptable for many applications in the close tolerance, high-performance assemblies of servo-mechanisms, range-finders, fire control systems and calculating devices. This series has been designed purposely for modification versatility. Individual units are housed in high-dielectric plastic cases, held rigidly by threaded rods connecting metal end-plates.

There are two additional versions of Series 42 - 42JA and 42-900. 42JA is a standard distributor stock number. It is identical to Series 42 except it has continuous rotation (360°). See figure 6, page 111. 42-900 has continuous rotation as well. It also has a shaft extension through the rear of the unit and a center tap for greater electrical versatility. See figure 7, page 112. Specifications for 42, 42JA and 42-900 are identical except where noted.

These units are manufactured in accordance with applicable sections of MIL-R-19 and MIL-R-12934.

Features

- **High accuracy**
- **Adaptable**
- **Close tolerance**
- **Long life**

Additional Features

- **Locking bushings**
- **Bridged "T" pads**
- **Various servo plates**
- **Power switches**
- **Micro-switches**
- **Rear shaft extensions**
- **Shaft and bushing seals**
- **High torques**
- **Detent action**
- **Spring return**
- **Encapsulated**
- **Customized attenuators**
- **"L" pads**
- **"T" pads**

Series 42 Electrical Specifications

Working Voltage

350 Volts maximum (Power not to exceed rating.)

Resistance Range*

10 Ω to 100K Ω

Total Resistance Tolerance

$\pm 5\%$ standard; $\pm 1\%$ special

Linearity (Absolute)**

$\pm 1\%$ standard; $\pm 15\%$ special, (independent)
(% of total applied voltage)

Non -Linear Output

350 Ω per degree maximum

Power Rating (Watts)

3 @ 40°C derated to 0 @ 105°C, standard

5 @ 40°C derated to 0 @ 105°C, special

Electrical Rotation

291° $\pm 3^\circ$, standard; 359° maximum, special

42JA: 330° $\pm 5^\circ$, standard

42-900: 340° $\pm 5^\circ$, standard

Effective Rotation

280° $\pm 2^\circ$, standard

357° maximum or 360° continuous, special

42JA and 42-900: 310° nominal

Over-Travel

5° reference each end, standard

Noise

100 Ω maximum

Dielectric Withstanding Voltage

1000 Vac for 60 seconds

Insulation Resistance

1000 Megohms minimum

Rated Temperature Coefficient

Specify

Series 42 Mechanical Specifications

Number of Taps***

Series 42C: 1 standard

Series 42B: Up to 5, standard; up to 7, special

Mechanical Rotation

291° $\pm 3^\circ$ standard or 360° continuous.

Stops are available limiting rotation to angles of up to 345° maximum.

42JA and 42-900: 360° continuous without stop

Stop Torque

8 lb. in., standard; 12 lb. in., special

Mechanical Specifications continued, next page

Mechanical Specifications continued

Ganging

Up to 20 cups on a common shaft

Torque Range

Single 1.5 oz. in. maximum

1.0 oz. in. maximum additional cup

Maximum Speed of Rotation

90 RPM

Weight

3.2 oz. single section

1.2 oz. per each additional cup

Moment of Inertia

4.4 gm cm²

Shaft End Play

.015 in. (.381mm) maximum

Bearings

Sleeve bearings

Housing

Molded plastic

Hardware

Must be ordered separately.

(a) Hex mounting nut, 3/8 in. (9.53mm) x 32 thread, 1/2 in. (12.7mm) across flats, 3/32 in. (2.38mm) thick.

(b) Internal tooth lockwasher 11/16 in. (17.46mm) O.D. x .022 in (.56mm) thick.

Shafts

Centerless-ground, stainless steel

Marking

Customer part number or Clarostat part number, resistance and EIA source and date code or as requested on rear plate. (Multi-gang resistance marked on each cup.)

*Depends upon design parameters.

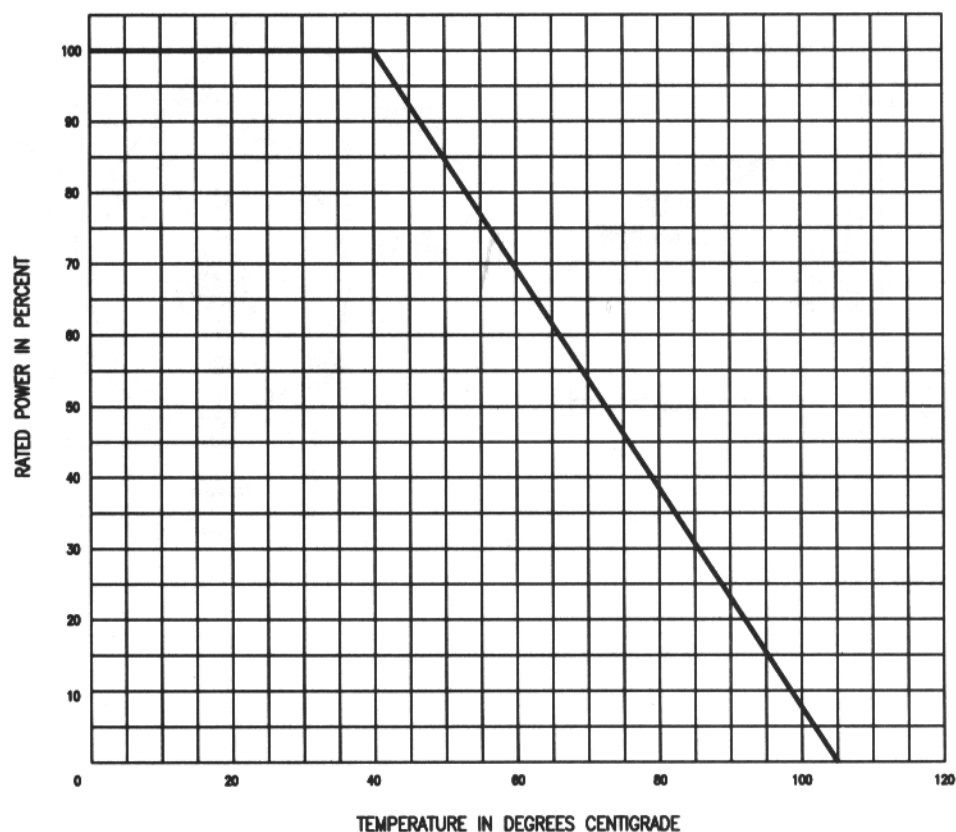
**Dependent on total resistance, effective rotation and temperature coefficient.

***42C furnished as standard control, 42B available for multi-taps requirements.

NOTE: SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

Figure 1

Power Derating Graph



NOTE: MOUNTED ON STEEL PANEL 4 x 4 x .050

Series 42 Operational Specifications

Rotational Life

250,000 standard; 1,000,000 special

Operating Temperature

105°C maximum

Figure 2

Bushing Mount

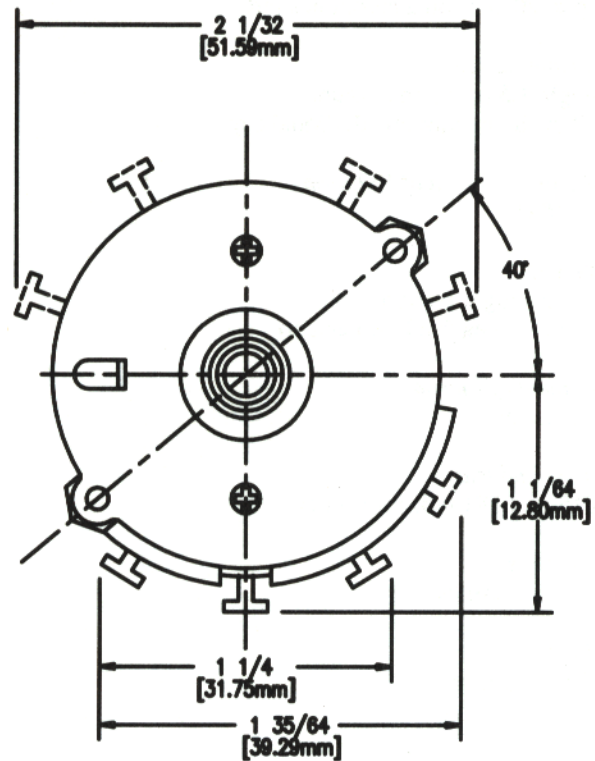


Figure 3

Series 42 Tap Option

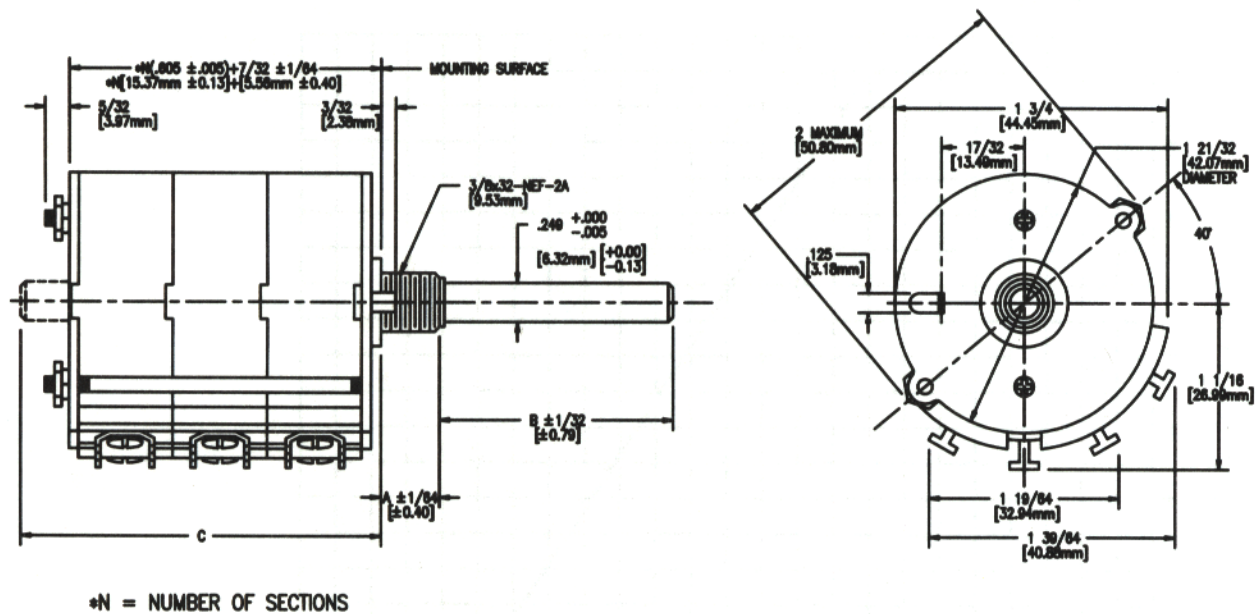


Figure 4
 Series 42 Stud Mount

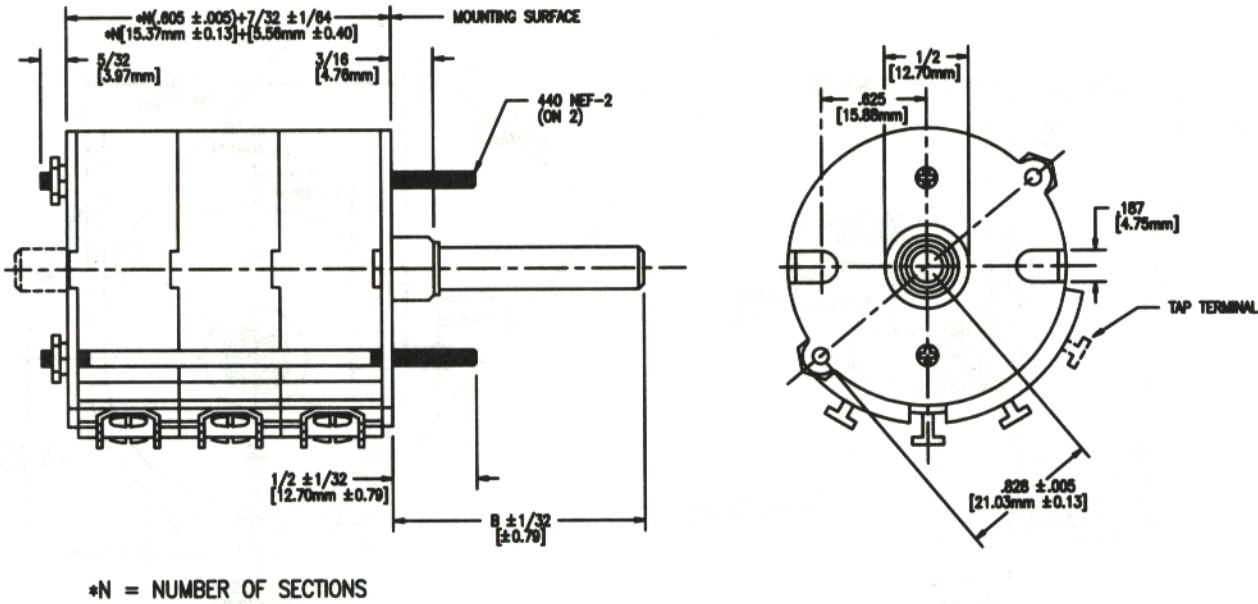
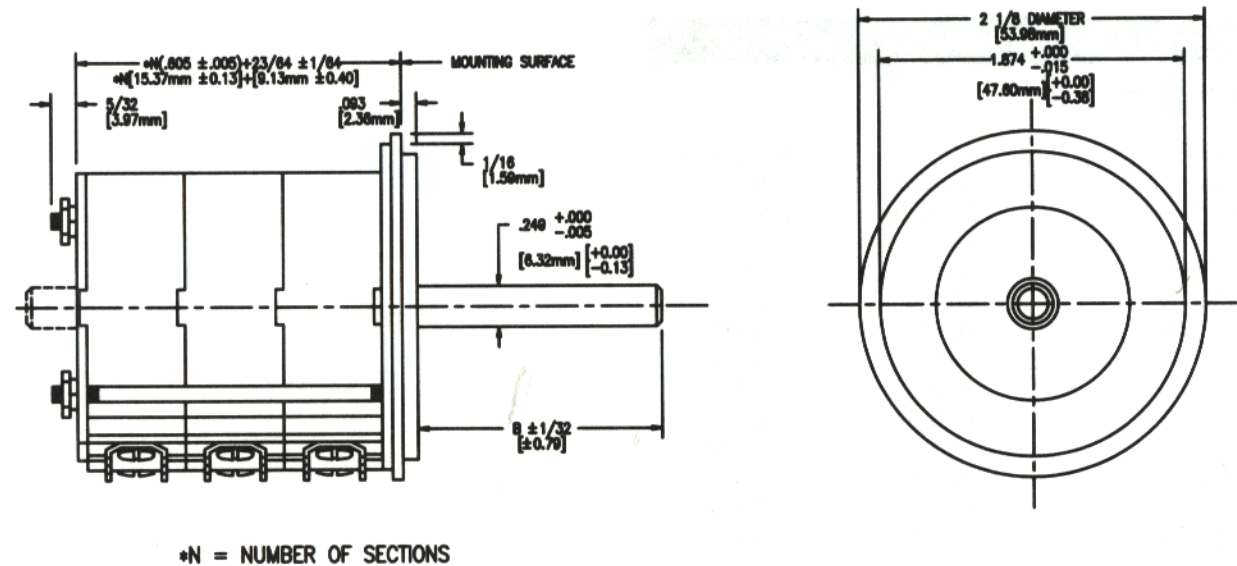


Figure 5
 Series 42 Servo Mount



Series 42JA Control Dimensions

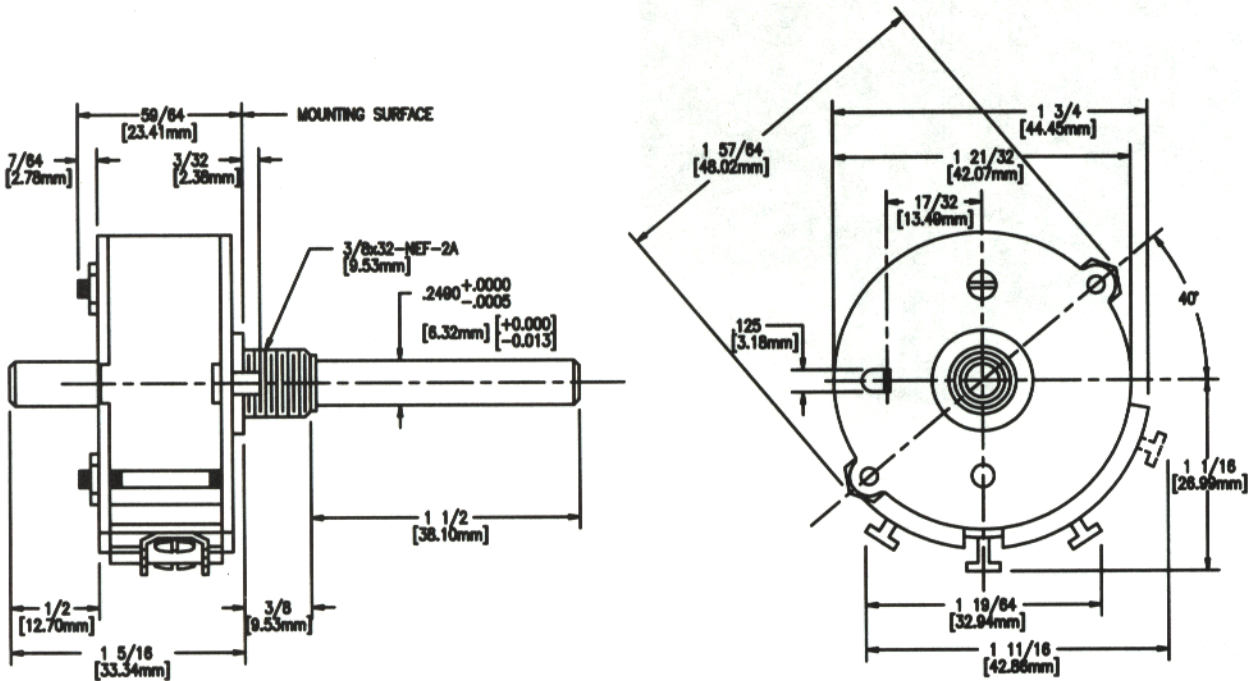


<i>Stock Values Res Ohms</i>	<i>*** Absolute Linearity</i>	<i>Resolution 100/ Total Turns</i>
100000	+0.5%	.015%
50000	+0.5%	.074%
20000	+0.5%	.100%
10000	+0.5%	.120%
5000	+0.5%	.170%
2500	+0.5%	.140%
1000	+0.5%	.190%
500	+0.5%	.180%
100	+0.1%	.280%
50	+1.0%	.350%

Series 42JA How To Order

111

Figure 7
 Series 42-900 Control Dimensions



Series 42-900 Standard Resistance Values

Stock Values

Stock Values Res Ohms	*** Terminal Linearity	Resolution 100/ Total Turns	Temperature Coefficient of Wire
100000	±0.25%	.053%	+.00002Ω/Ω °C
50000	±0.25%	.056%	+.00002Ω/Ω °C
20000	±0.25%	.105%	+.00002Ω/Ω °C
10000	±0.25%	.125%	+.00002Ω/Ω °C
5000	±0.25%	.167%	+.00002Ω/Ω °C
2500	±0.50%	.148%	+.00002Ω/Ω °C
1000	±0.50%	.191%	+.00002Ω/Ω °C
500	±0.50%	.174%	.00017Ω/Ω °C
100	±0.25%	.351%	.00017Ω/Ω °C
50	±0.50%	.435%	.00017Ω/Ω °C

*** The maximum deviation of the actual output characteristic from a straight reference line extending between zero and the total applied voltage over the theoretical effective rotation.

Series 42-900 How To Order

Example: **42-900-50**

42	900	50
Series	Version	Resistance Value (Ohms)
	JA = Continuous rotation	
	900 = Continuous rotation with rear shaft extension	