



Features

- Infinite resolution element
- Standard linearity: 1.0 %
- Extended temperature range: -65 °C to +125 °C
- Extended life version (6538)
- Output smoothness: 0.1 % standard

- Molded-in rear terminals
- Non-standard features and specifications available

BOURNS®

6537/6538 - 22 mm Precision Potentiometer

Electrical Characteristics ¹	6537	6538
Standard Resistance Range	1 K to 100 K ohms	1 K to 100 K ohms
Total Resistance Tolerance	±10 %	±10 %
Independent Linearity	±1 %	±1 %
Effective Electrical Angle	340 ° ±3 °	340 ° ±3 °
End Voltage	0.5 % maximum	0.5 % maximum
Output Smoothness	0.1 %	0.1 %
Dielectric Withstanding Voltage (MIL-STD-202, Method 301)		
Sea Level	750 VAC minimum	750 VAC minimum
Power Rating (Voltage Limited By Power Dissipation or 300 VAC, Whichever is Less)		
+70 °C	1 watt	1 watt
+125 °C	0 watt	0 watt
Insulation Resistance (500 VDC)		
	1,000 megohms minimum	1,000 megohms minimum
Resolution		
	Essentially infinite	Essentially infinite

Environmental Characteristics ¹		
Operating Temperature Range	-40 °C to +125 °C	-40 °C to +125 °C
Storage Temperature Range	-65 °C to +125 °C	-65 °C to +125 °C
Temperature Coefficient		
Over Storage Temperature Range	±500 ppm/°C maximum	±500 ppm/°C maximum
Vibration		
	15 G	15 G
Wiper Bounce		
	0.1 millisecond maximum	0.1 millisecond maximum
Total Resistance Shift		
	±5 % maximum	±5 % maximum
Voltage Ratio Shift		
	±0.5 % maximum	±0.5 % maximum
Shock		
	50 G	50 G
Wiper Bounce		
	0.1 millisecond maximum	0.1 millisecond maximum
Total Resistance Shift		
	±5 % maximum	±5 % maximum
Voltage Ratio Shift		
	±0.5 % maximum	±0.5 % maximum
Load Life		
	1,000 hours, 1 watt	1,000 hours, 1 watt
Total Resistance Shift		
	±10 % maximum	±10 % maximum
Rotational Life (No Load)		
	10,000,000 shaft revolutions	20,000,000 shaft revolutions
Total Resistance Shift		
	±10 % maximum	±10 % maximum
Moisture Resistance (MIL-STD-202, Method 106)		
	Total Resistance Shift ±15 % maximum	Total Resistance Shift ±10 % maximum
IP Rating		
	IP 40	IP 40

Mechanical Characteristics ¹		
Mechanical Angle	Continuous	Continuous
Torque (Starting & Running)	0.40 N-cm (0.5 oz.-in.) max.	0.18 N-cm (0.25 oz.-in.) max.
Shaft Runout	0.025 mm (0.001 in.) T.I.R.	0.025 mm (0.001 in.) T.I.R.
Lateral Runout	0.08 mm (0.003 in.) T.I.R.	0.08 mm (0.003 in.) T.I.R.
Shaft End Play	0.13 mm (0.005 in.) T.I.R.	0.13 mm (0.005 in.) T.I.R.
Shaft Radial Play	0.13 mm (0.005 in.) T.I.R.	0.08 mm (0.003 in.) T.I.R.
Pilot Diameter Runout	0.06 mm (0.0025 in.) T.I.R.	0.06 mm (0.0025 in.) T.I.R.
Backlash	0.1 ° maximum	0.1 ° maximum
Weight	18 gm	18 gm
Terminals		Molded-in rear turret type
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	
Marking	Manufacturer's name and part number, resistance value and tolerance, linearity tolerance, wiring diagram, and date code.	
Ganging (Multiple Section Pots.)	1 cup maximum	
Hardware	No hardware included	

Recommended Part Numbers

Part Number	Resistance (Ω)
6537S-1-102	1,000
6537S-1-502	5,000
6537S-1-103	10,000

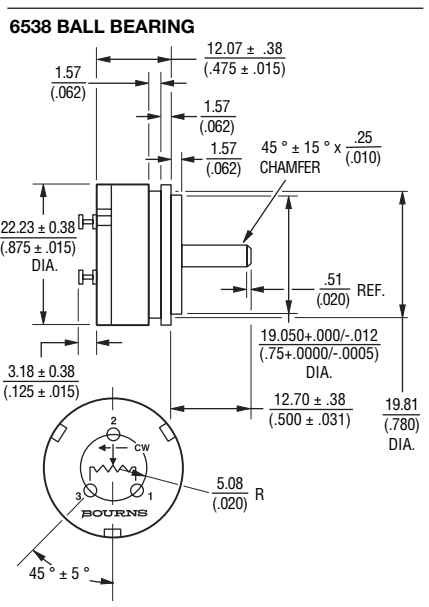
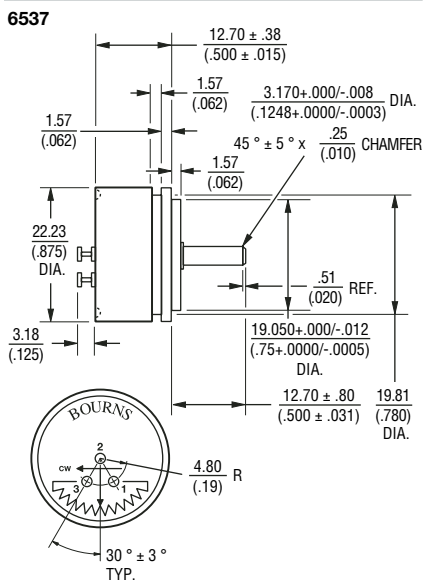
Part Number	Resistance (Ω)
6538S-1-102	1,000
6538S-1-202	2,000
6538S-1-502	5,000
6538S-1-103	10,000

BOLDFACE LISTINGS ARE IN STOCK AND READILY AVAILABLE THROUGH DISTRIBUTION.

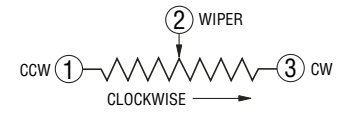
FOR OTHER OPTIONS CONSULT FACTORY.

¹At room ambient: +25 °C nominal and 50 % relative humidity, except as noted.

Product Dimensions



TOLERANCES: EXCEPT WHERE NOTED
 DECIMALS: .XX ± .25 (.020), .XXX ± .13 (.005)
 FRACTIONS: ±1/64
 DIMENSIONS: MM (IN.)





7/8", 15/16" ϕ SINGLE TURN BUSHING- OR SERVO MOUNT POTENTIOMETERS CONDUCTIVE PLASTIC ELEMENT

- Infinite resolution element
- Standard linearity: 1.0%
- Extended temperature range: -65°C to $+125^{\circ}\text{C}$
- Output smoothness: 0.1% standard
- Custom design capability available
- Molded-in rear terminals

STANDARD SPECIFICATIONS	7/8" ϕ MODEL 6537 MODEL 6637	7/8" ϕ MODEL 6538 MODEL 6638	15/16" ϕ MODEL 6657
Servo Mount			
Bushing Mount			
Electrical Characteristics			
Resistance Range	1 K Ω to 100 K Ω		
Resistance Tolerance	$\pm 10\%$		
Linearity (Independent)	$\pm 1.0\%$		
Resolution	Essentially infinite		
Effective Electrical Angle	$340^{\circ} \pm 3^{\circ}$		
End Voltage	0,5% max.		
Output Smoothness	0,1%		
Power Rating	70 $^{\circ}\text{C}$ 1,0 W	1,0 W	1,5 W
	125 $^{\circ}\text{C}$	0 W	
Dielectric Strength	Sea Level	750 V~ min.	
Insulation Resistance	500 V =	500 Meg. Ω min.	1000 Meg. Ω min.
Environmental Characteristics			
Operating Temperature Range	-65°C to $+125^{\circ}\text{C}$		
Vibration	15 G		
Wiper Bounce	0.1 millisecond max.		
Shock	50 G		
Wiper Bounce	0.1 millisecond max.		
Mechanical and Physical Characteristics			
Mechanical Angle	Continuous		
Shaft Runout	0.005 in. T. I. R.	0.001 in. T. I. R.	0.001 in. T. I. R.
Shaft End Play	0.005 in. T. I. R.		
Shaft Radial Play	0.005 in. T. I. R.	0.003 in. T. I. R.	0.003 in. T. I. R.
Backlash	0.1 $^{\circ}$ max.		
Pilot Diameter Runout (Servo)	0.0025 in. T. I. R.	0.0025 in. T. I. R.	—
Lateral Runout (Servo)	0,003 in. T. I. R.	0.003 in. T. I. R.	—
Rotational Life, shaft revolutions	10,000,000	20,000,000	10,000,000
Torque, Starting and Running	0.5 oz.-in. max.	0.25 oz.-in. max.	0.5 oz.-in. max.
Terminals	Rear turret type		
Ball Bearings	—	Front and rear	—
Markings	Manufacturer's name and part number, resistance value and tolerance, linearity tolerance, wiring diagram, date code.		

Specifications are subject to change without notice.

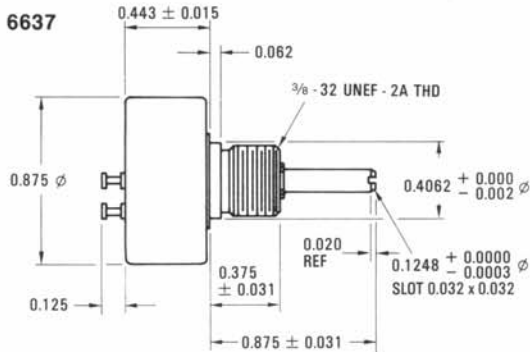
ORDERING INFORMATION

Resistance Ω	7/8" Servo Mount		7/8" Bushing Mount		15/16" Bushing Mount
1,000	● 6537S-1-102	● 6538S-1-102	● 6637S-1-102	● 6638S-1-102	● 6657S-1-102
2,000	6537S-1-202	6538S-1-202	6637S-1-202	6638S-1-202	6657S-1-202
5,000	● 6537S-1-502	6538S-1-502	● 6637S-1-502	6638S-1-502	● 6657S-1-502
10,000	● 6537S-1-103	● 6538S-1-103	● 6637S-1-103	● 6638S-1-103	● 6657S-1-103
20,000	6537S-1-203	6538S-1-203	6637S-1-203	6638S-1-203	6657S-1-203
50,000	6537S-1-503	6538S-1-503	6637S-1-503	6638S-1-503	6657S-1-503
100,000	6537S-1-104	6538S-1-104	6637S-1-104	6638S-1-104	6657S-1-104

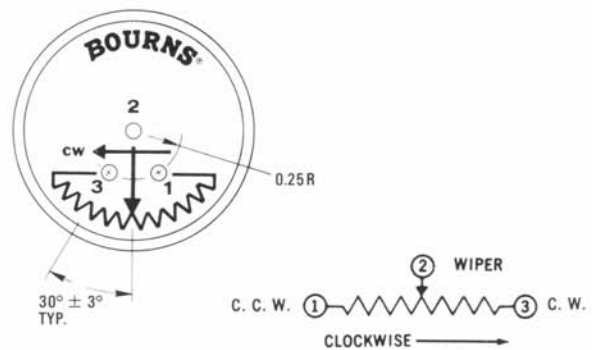
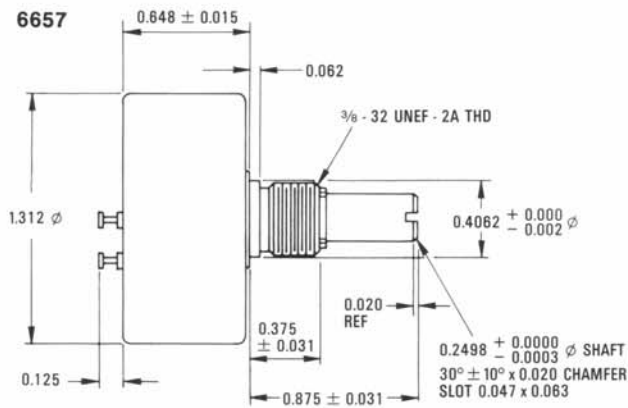
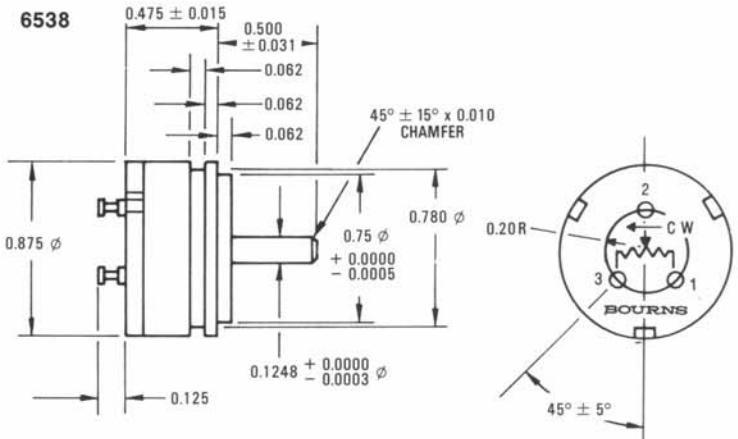
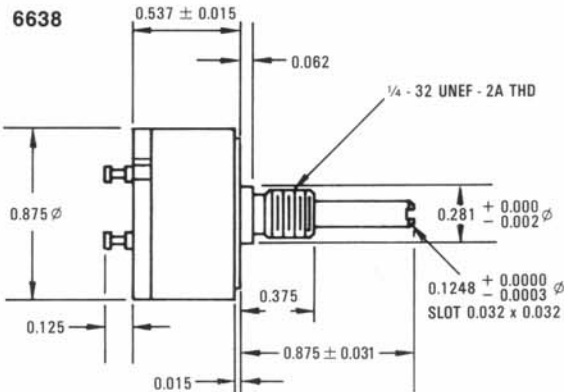
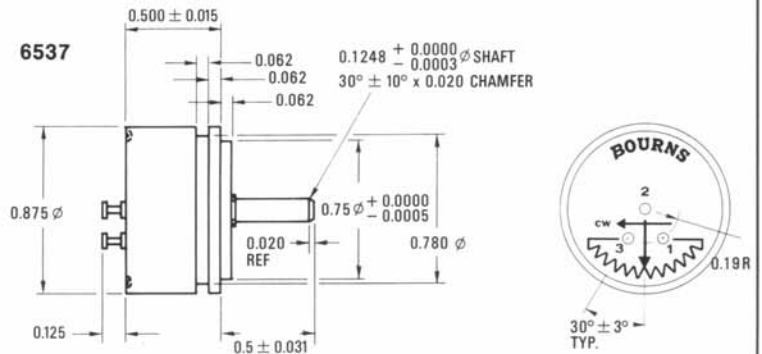
The last three digits of the part number represent the resistance in standard code.

● Preferred resistance values

DIMENSIONS (INCH)



6637S-004 = same shaft as 6657



Specifications are subject to change without notice.



BOURNS®

Features

- Infinite resolution element
- Standard linearity: 1.0%
- Extended temperature range: -65°C to +125°C
- Extended life version (6538)
- Output smoothness: 0.1% standard

- Molded-in rear terminals
- Non-standard features and specifications available

6537/6538 - 22mm Precision Potentiometer

Electrical Characteristics ¹	6537	6538
Standard Resistance Range.....	1K to 100K ohms	1K to 100K ohms
Resistance Tolerance	±10%	±10%
Independent Linearity.....	±1%	±1%
Resolution	Essentially infinite	Essentially infinite
Effective Electrical Angle	340° +3°	340° +3°
End Voltage	0.5% max	0.5% max
Output Smoothness	0.1%	0.1%
Power Rating (Voltage Limited By Power Dissipation or 300 VAC, Whichever is Less)		
+70°C.....	1 watt	1 watt
+125°C.....	0 watt	0 watt
Dielectric Withstanding		
Voltage.....	MIL-STD-202, Method 301	MIL-STD-202, Method 301
Sea Level	750 VAC min.	750 VAC min.
Insulation Resistance		
(500 VDC).....	500 megohms min.	1,000 megohms min.

Environmental Characteristics ¹	6537	6538
Operating Temperature		
Static Operation Temp Range.....	-65°C to +125°C	-65°C to +125°C
Dynamic Temp Range.....	+1°C to +125°C	+1°C to +125°C
Temperature Coefficient	±500ppm/°C max.	±500ppm/°C max
Moisture Resistance	MIL-STD-202, Method 106	MIL-STD-202, Method 106
Total Resistance Shift.....	±10% max.	±10% max
Vibration.....	15G	15G
Wiper Bounce	0.1 millisecond max	0.1 millisecond max
Total Resistance Shift.....	±5% max.	±5% max
Voltage Ratio Shift.....	±0.5% max.	±0.5% max
Shock.....	50G	50G
Wiper Bounce	0.1 millisecond max	0.1 millisecond max
Total Resistance Shift.....	±5% max.	±5% max
Voltage Ratio Shift.....	±0.5% max.	±0.5% max
Load Life.....	1,000 hours, 1 watt	1,000 hours, 1 watt
Total Resistance Shift.....	±10% max.	±10% max
Rotational Life (No Load).....	10,000,000 shaft rev's	20,000,000 shaft rev's
Total Resistance Shift.....	±10% max.	±10% max

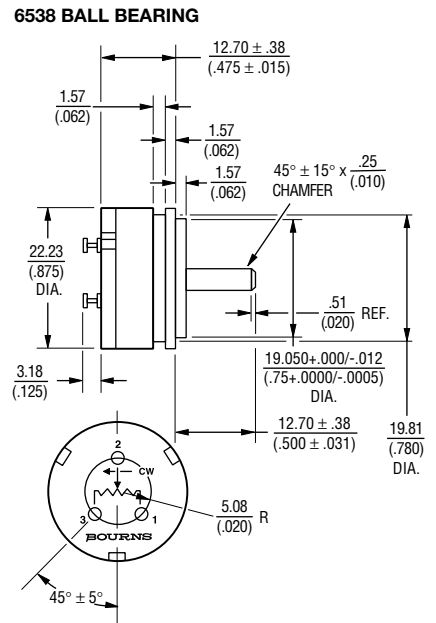
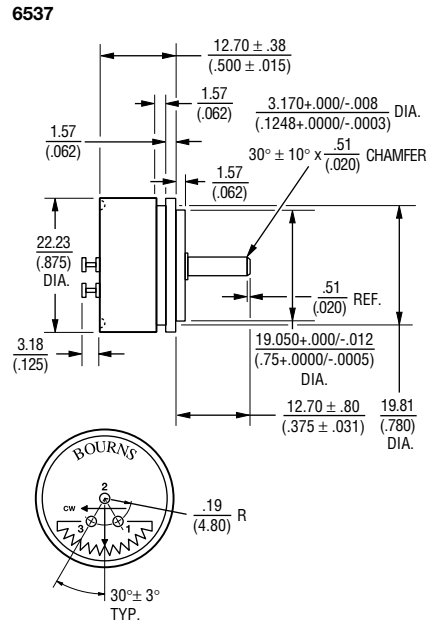
Mechanical Characteristics ¹	6537	6538
Mechanical Angle	Continuous	Continuous
Backlash	0.1° max	0.1° max
Shaft Runout.....	0.005 in. (0.13mm) T.I.R.	0.001 in. (0.025mm) T.I.R.
Shaft End Play	0.005 in. (0.13mm) T.I.R.	0.005 in. (0.13mm) T.I.R.
Shaft Radial Play	0.005 (0.13mm) T.I.R.	0.003 in. (0.08mm) T.I.R.
Pilot Diameter		
Runout	0.0025 in. (0.06mm) T.I.R.	0.0025 in. (0.06mm) T.I.R.
Lateral Runout.....	0.003 in. (0.08mm) T.I.R.	0.003 in. (0.08mm) T.I.R.
Torque (Starting & Running).....	0.5 oz.-in. (0.40 Ncm) max.	0.25 oz.-in. (0.18 Ncm) max.
Terminals.....	Molded-in rear	Molded-in rear

Recommended Part Numbers

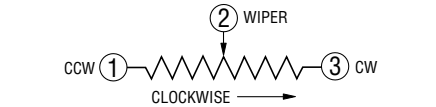
Part Number	Resistance (Ω)
6537S-1-103	10,000

BOLD-FACE LISTINGS ARE IN STOCK AND READILY AVAILABLE THROUGH DISTRIBUTION.
FOR OTHER OPTIONS CONSULT FACTORY.

Part Number	Resistance (Ω)
6538S-1-102	1,000
6538S-1-202	2,000
6538S-1-502	5,000
6538S-1-103	10,000



TOLERANCES: EXCEPT WHERE NOTED
 DECIMALS: .XX ± $\frac{.25}{.010}$, .XXX ± $\frac{.13}{.005}$
 FRACTIONS: ±1/64
 DIMENSIONS: $\frac{MM}{(IN.)}$



¹At room ambient: +25°C nominal and 50% relative humidity nominal, except as noted. Specifications are subject to change without notice.



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Features

- Infinite resolution element
- Standard linearity: 1.0 %
- Extended temperature range: -65 °C to +125 °C
- Extended life version (6538)
- Output smoothness: 0.1 % standard

- Molded-in rear terminals
- Non-standard features and specifications available

6537/6538 - 22 mm Precision Potentiometer

Electrical Characteristics¹

6537

6538

Standard Resistance Range	1 K to 100 K ohms	1 K to 100 K ohms
Total Resistance Tolerance	±10 %	±10 %
Independent Linearity	±1.5 %	±1 %
Effective Electrical Angle	340° ±3°	340° ±3°
End Voltage	0.5 % maximum	0.5 % maximum
Output Smoothness	0.1 %	0.1 %
Dielectric Withstanding Voltage (MIL-STD-202, Method 301)		
Sea Level	750 VAC minimum	750 VAC minimum
Power Rating (Voltage Limited By Power Dissipation or 300 VAC, Whichever is Less)		
+70 °C	1 watt	1 watt
+125 °C	0 watt	0 watt
Insulation Resistance (500 VDC)	1,000 megohms minimum	1,000 megohms minimum
Resolution	Essentially infinite	Essentially infinite

Environmental Characteristics¹

Operating Temperature Range	+1 °C to +125 °C	+1 °C to +125 °C
Storage Temperature Range	-65 °C to +125 °C	-65 °C to +125 °C
Temperature Coefficient		
Over Storage Temperature Range	±500 ppm/°C maximum	±500 ppm/°C maximum
Vibration	15 G	15 G
Wiper Bounce	0.1 millisecond maximum	0.1 millisecond maximum
Total Resistance Shift	±5 % maximum	±5 % maximum
Voltage Ratio Shift	±0.5 % maximum	±0.5 % maximum
Shock	50 G	50 G
Wiper Bounce	0.1 millisecond maximum	0.1 millisecond maximum
Total Resistance Shift	±5 % maximum	±5 % maximum
Voltage Ratio Shift	±0.5 % maximum	±0.5 % maximum
Load Life	1,000 hours, 1 watt	1,000 hours, 1 watt
Total Resistance Shift	±10 % maximum	±10 % maximum
Rotational Life (No Load)	10,000,000 shaft revolutions	20,000,000 shaft revolutions
Total Resistance Shift	±10 % maximum	±10 % maximum
Moisture Resistance (MIL-STD-202, Method 106)		
Total Resistance Shift	±15 % maximum	±10 % maximum
IP Rating	IP 40	IP 40

Mechanical Characteristics¹

Mechanical Angle	Continuous	Continuous
Torque (Starting & Running)	0.40 N-cm (0.5 oz.-in.) max.	0.18 N-cm (0.25 oz.-in.) max.
Shaft Runout	0.025 mm (0.001 in.) T.I.R.	0.025 mm (0.001 in.) T.I.R.
Lateral Runout	0.08 mm (0.003 in.) T.I.R.	0.08 mm (0.003 in.) T.I.R.
Shaft End Play	0.13 mm (0.005 in.) T.I.R.	0.13 mm (0.005 in.) T.I.R.
Shaft Radial Play	0.13 mm (0.005 in.) T.I.R.	0.08 mm (0.003 in.) T.I.R.
Pilot Diameter Runout	0.06 mm (0.0025 in.) T.I.R.	0.06 mm (0.0025 in.) T.I.R.
Backlash	0.1° maximum	0.1° maximum
Weight	18 gm	18 gm
Terminals	Molded-in rear turret type	
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 name and part number, resistance value and tolerance, linearity tolerance, wiring diagram, and date code.	
Ganging (Multiple Section Pots.)	1 cup maximum	
Hardware	No hardware included	

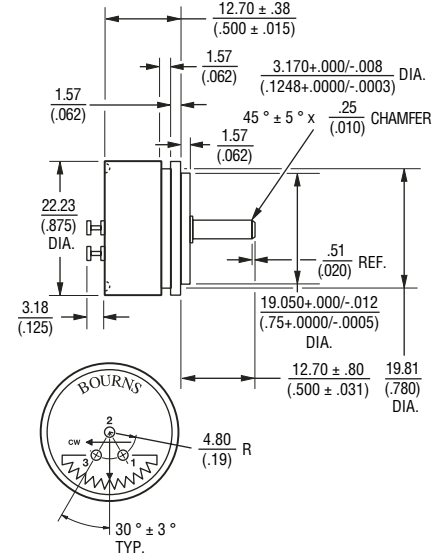
Recommended Part Numbers

Part Number	Resistance (Ω)
6537S-1-102	1,000
6537S-1-502	5,000
6537S-1-103	10,000

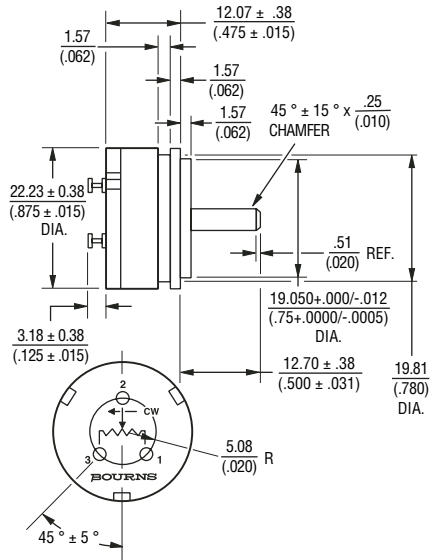
Part Number	Resistance (Ω)
6538S-1-102	1,000
6538S-1-202	2,000
6538S-1-502	5,000
6538S-1-103	10,000

Product Dimensions

6537



6538 BALL BEARING

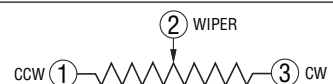


TOLERANCES: EXCEPT WHERE NOTED
 DECIMALS: .XX ± .25 (.020), .XXX ± .13 (.005)
 FRACTIONS: ±1/64
 DIMENSIONS: MM (IN.)

BOLDFACE LISTINGS ARE IN STOCK AND READILY AVAILABLE THROUGH DISTRIBUTION.

FOR OTHER OPTIONS CONSULT FACTORY.

¹At room ambient: +25 °C nominal and 50 % relative humidity, except as noted.



REV. 04/03

Specifications are subject to change without notice. Customers should verify actual device performance in their specific applications.