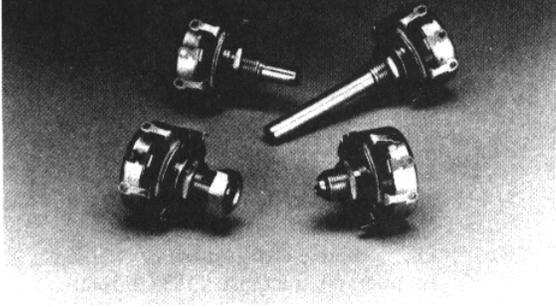


Series 43 and  
**1 1/8 in. Diameter, 2 and 4 Watt**  
 Wirewound Potentiometers



**Features**

- *Economical*
- *Versatile - various mounts, terminal & shaft configurations*
- *High torque available*
- *Shaft & mounting seals available*
- *Multiple gangs available*
- *Concentric shafts available*
- *Printed circuit terminals*
- *High voltage standoffs*
- *Non-metallic shaft*
- *Backlash construction (venier application)*

**Description**

**Series 43**

1 1/8 in. diameter, 2 watt, wirewound potentiometers

**Series 43M/RA20**

Military version of the 43 series meeting strict military standard MIL-R-19

**Series A43**

Pick-A-Shaft version of the 43 series.

~~**Series 45**~~

~~4 watt power rating version of the 43 series, all other specifications as indicated.~~

**Series 43 Electrical Specifications**

|                              |   |
|------------------------------|---|
| <i>Resistance Range</i>      | 1Ω to 50KΩ linear; please consult Factory for non-linear.                               |
| <i>Resistance Tolerance</i>  | ±10% standard; ±5% to ±1% special* (please consult Factory).                            |
| <i>Power Rating (Watts)</i>  | Single section: 2 @ 40°C; 0 @ 105°C.<br>Each additional section: 1.5 @ 40°C; 0 @ 105°C. |
| <i>Watts/Degree</i>          | .0071 watt per degree of effective rotation maximum                                     |
| <i>Effective Rotation</i>    | 280° ±5° without switch; less than 280°, special; 260° ±5° with switch                  |
| <i>Electrical Rotation</i>   | 300° ±5° with and without switch  |
| <i>Tapers</i>                | 90Ω per degree maximum  |
| <i>Independent Linearity</i> | ±5% standard; ±1% special*  |

**Series 45 Electrical Specifications**

|                              |   |
|------------------------------|---|
| <i>Resistance Range</i>      | 1Ω to 10KΩ linear; please consult Factory for non-linear.                             |
| <i>Resistance Tolerance</i>  | ±10% standard; ±5% to ±1% special* (please consult Factory).                          |
| <i>Power Rating (Watts)</i>  | Single section: 4 @ 40°C; 0 @ 135°C.<br>Each additional section: 3 @ 40°C; 0 @ 135°C. |
| <i>Watts/Degree</i>          | .014 watt per degree of effective rotation maximum                                    |
| <i>Effective Rotation</i>    | 280° ±5° without switch; less than 280°, special; 260° ±5° with switch                |
| <i>Electrical Rotation</i>   | 300° ±5° with and without switch  |
| <i>Tapers</i>                | 36Ω per degree maximum  |
| <i>Independent Linearity</i> | ±5% standard; ±1% special*  |

*Electrical specifications continued, next page*

|  |   |   |
|--|---|---|
| <b>End Resistance</b>                  | 1 to 50 $\Omega$ - 0.3 $\Omega$ ; 51 to 100 $\Omega$ - 0.5 $\Omega$ .<br>Over 100 $\Omega$ - 0.2% of total or 1 $\Omega$ ,<br>whichever is greater.         | 1 to 50 $\Omega$ - 0.3 $\Omega$ ; 51 to 100 $\Omega$ - 0.5 $\Omega$ .<br>Over 100 $\Omega$ - 0.2% of total or 1 $\Omega$ ,<br>whichever is greater.         |
| <b>Dielectric Withstanding Voltage</b> | 1000 Vac for 60 seconds @ ATM.<br>450 Vac for 60 seconds @ 3.4 in. Hg.  | 1000 Vac for 60 seconds @ ATM.<br>450 Vac for 60 seconds @ 3.4 in. Hg.  |
| <b>Working Voltage</b>                 | 310 volts maximum   | 350 volts maximum   |
| <b>Switches</b>                        | S.P.S.T., S.P.D.T., D.P.S.T.,<br>See Figure 3, page 78 for switch<br>characteristics.   | S.P.S.T., S.P.D.T., D.P.S.T.,<br>See Figure 3, page 78 for switch<br>characteristics.   |
| <b>Location of Tap and Tolerance</b>   | One available any position of effective<br>rotation; tap tolerance $\pm 10\%$ of total<br>resistance. Specify electrical or angular<br>position and limits. | One available any position of effective<br>rotation; tap tolerance $\pm 10\%$ of total<br>resistance. Specify electrical or angular<br>position and limits. |
| <b>Insulation Resistance</b>           | 100 Megohms minimum   | 100 Megohms minimum   |

**Series 43 Mechanical Specifications**

**Mechanical Rotation**  
300°  $\pm 5^\circ$  with and without switch; 360° special

**Stop Torque**  
8 lbs. in. maximum

**Torque Range**  
0.5 to 6 oz. in.; 15 oz. in. increase for switch actuation.  
Locking type bushing: 25 oz. in. minimum with jam nut  
tightened to 10 lb. in.

**Maximum Number of Sections**  
Two recommended, three available

**Weight**  
Single .077 lb. without switch.  
Additional section 0.041 lb.; .087 lb. with switch.

**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. (0.56mm) thick.  
(c) Jam hex nut 1/2 in. (12.7mm) across flats, 7/32 in.  
(5.56mm) thick, supplied on locking type bushing.

**Marking**  
Will appear on rear surface without switch. On  
periphery when switch is used. Unless otherwise  
specified, marking will consist of  
(a) Customer part number or Clarostat part number,  
(b) EIA source and date code.

**Series 43 Operational Specifications**

Potentiometers per MIL-R-19 specifications, Style  
RA20 (43 series only)

**Resistance Range**  
3 $\Omega$  to 15K $\Omega$  A taper. For C and E tapers, please consult  
Factory.

**Operating Temperature Range**  
-55°C to 105°C

\*Dependent on design parameters.

NOTE: SPECIFICATIONS SUBJECT TO CHANGE  
WITHOUT NOTICE.

**Figure 1  
Resolution Graph**

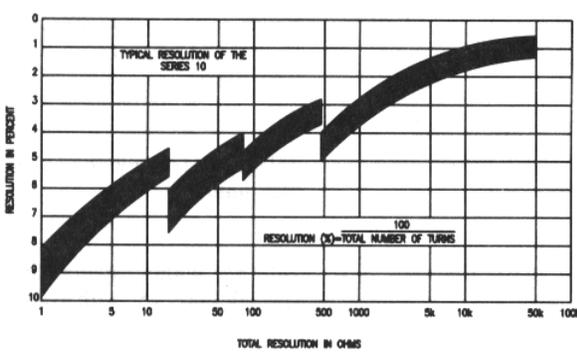


Figure 2

Chart A

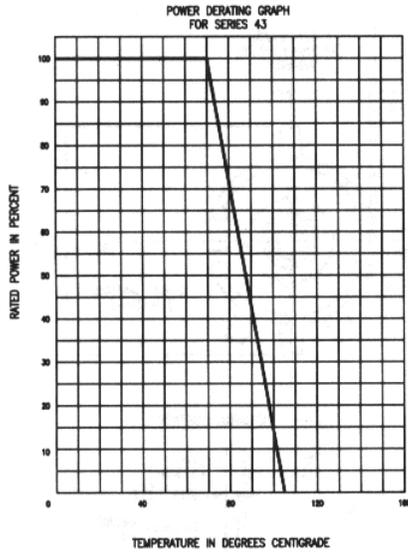
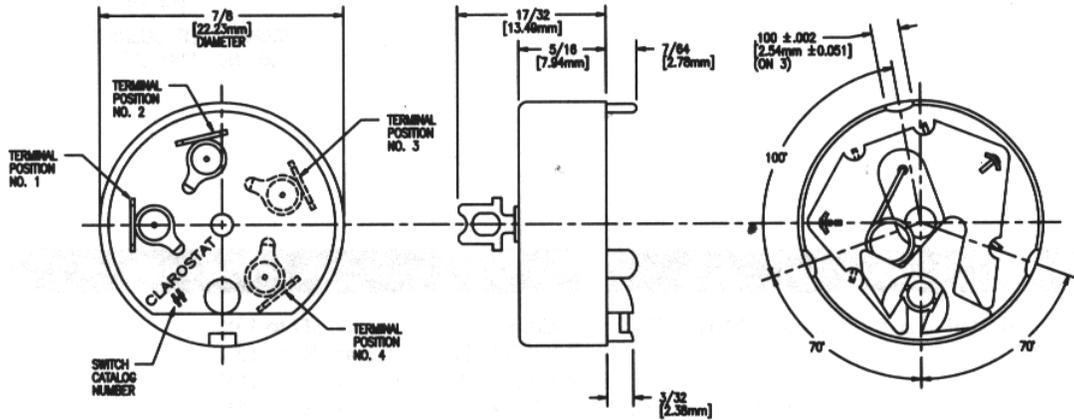


Figure 3

AE Switch Dimensions



| Type Number | Switch   | Variations   | Terminal Positions | Max. Operating Torque-Oz.In. |
|-------------|----------|--|--------------------|------------------------------|
| AE-10       | S.P.S.T. | 1a, 250V;<br>3a, 125V (ac or dc)                       | 1-2                | 12                           |
| AE-11       | S.P.S.T. | 1a, 250V;<br>3a, 125V with bussing terminal (ac or dc) | 1-2-4              | 12                           |
| AE-13       | S.P.S.T. | 15a, 10V (dc only)                                     | 1-4                | 16                           |
| *AE-20      | D.P.S.T. | 1a, 250V;<br>3a, 125V (ac or dc)                       | 1-2-3-4            | 16                           |
| AE-21       | D.P.     | 1 pole on, 1 pole off-1a, 250V; 3a, 125V (ac or dc)    | 1-2-3-4            | 16                           |
| AE-23       | D.P.S.T. | 15a, 10V (dc only)                                     | 1-2-3-4            | 16                           |
| *AE-24      | D.P.S.T. | 1a, 250V; 3a, 125V (ac or dc) Reverse action           | 1-2-3-4            | 16                           |
| AE-25       | D.P.S.T. | 250 ma. 24 Vdc (dry circuit)                           | 1-2-3-4            | 12                           |
| AE-30       | S.P.D.T. | 1a, 250V; 3a, 125V (ac or dc)                          | 2-3-4              | 16                           |

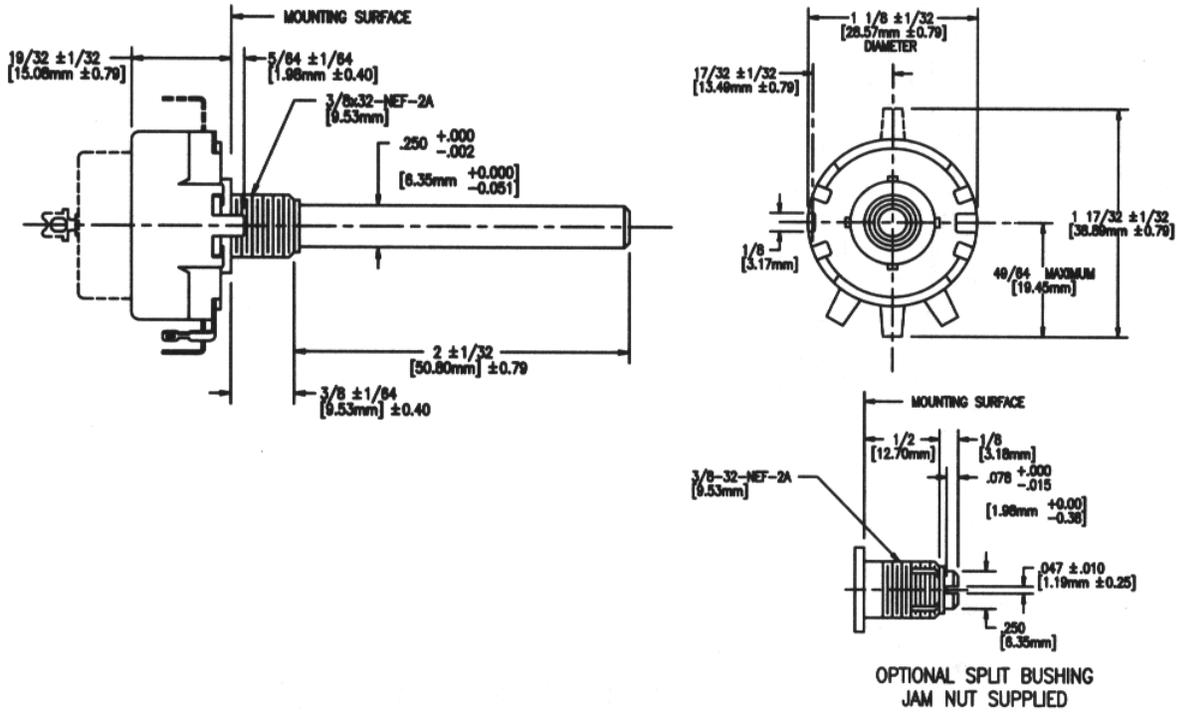
\*May be employed as a single pole, single throw, two circuit switch. To designate this application add an "A" to the end of switch type.

Example: AE-20A.

Design details may change without notice; certified drawing available on request.

\*Unless Otherwise Specified

Figure 4  
Series 43 Dimensions



### Series 43 Standard Resistance Values

Stock values fabricated in accordance with MIL-R-19 where applicable.

|    |     |      |      |     |
|----|-----|------|------|-----|
| 5  | 75  | 500  | 4000 | 30K |
| 10 | 100 | 750  | 5000 | 40K |
| 20 | 150 | 1000 | 7500 | 50K |
| 25 | 200 | 1500 | 10K  |     |
| 30 | 250 | 2000 | 15K  |     |
| 40 | 300 | 2500 | 20K  |     |
| 50 | 400 | 3000 | 25K  |     |

### Series 43 How To Order

Example: **43C1-5000**

#### 43C1

##### Series Catalog Number

43C1 = 2 in. (50.8mm) round shaft FMS;  
3/8 in. (9.53mm) long bushing  
with 3/8-32-NEF-2A thread.

43C2 = 5/8 in. (15.88mm) screwdriver slotted shaft FMS;  
with a 1/2 in. (12.7mm) split locking bushing  
with 3/8 in. (9.53mm)-32-NEF-2A thread.

#### 5000

##### Resistance Value (Ohms)

### Series 43M/RA20 Standard Styles & Values

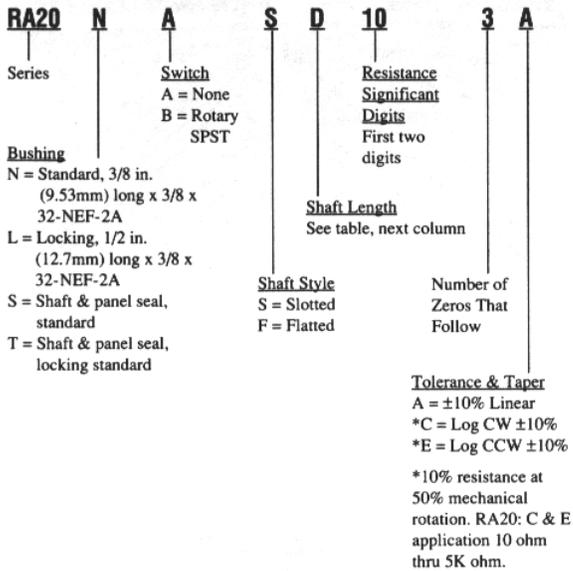
RA20NASA: Linear, 3Ω to 15K  
RA20NASD: Linear, 3Ω to 15K  
RA20LASB: Linear, 3Ω to 15K  
RA20LASD: Linear, 3Ω to 15K

### Ordering Codes

|      |      |      |
|------|------|------|
| 30A  | 151A | 351A |
| 60A  | 152A | 352A |
| 80A  | 153A | 500A |
| 100A | 200A | 501A |
| 101A | 201A | 502A |
| 102A | 202A | 750A |
| 103A | 250A | 751A |
| 150A | 350A | 752A |

## Series 43M/RA20 How To Order

Example: **RA20-N-A-S-D-10-3-A**



## Shaft Length from Mounting Surface

| Shaft Length Code | Bushing N & S       | Bushings L & T      |
|-------------------|---------------------|---------------------|
| A                 | 1/2 in (12.7mm)     | N/A                 |
| B                 | N/A                 | 5/8 in. (15.88mm)   |
| D                 | 7/8 in. (22.23mm)   | 7/8 in. (22.23mm)   |
| G                 | 1 1/4 in. (31.75mm) | 1 1/4 in. (31.75mm) |
| K                 | 2 1/2 in. (63.5mm)  | N/A                 |

N/A = Not available

## Series 45 How To Order

Series 45 available as special order only. Consult Factory for pricing, delivery and minimums.

Series A43/A43S

2 Watt

Pick-A-Shaft, Wirewound Potentiometer

Description

“Pick-A-Shaft” controls take any shaft listed on the next page including high voltage coupler and insulated shaft. Your choice of one of the 13 shafts listed (this does not include insulated shaft) with each control. If shaft is not specified, it will be supplied with RS-2. “A-43” is without switch while “A43S” has factory attached SPST switch. Tolerance  $\pm 10\%$  all values. All controls linear. Items not listed are special; prices and information on request. Controls with other than SPST switches are special; prices and information supplied upon request.

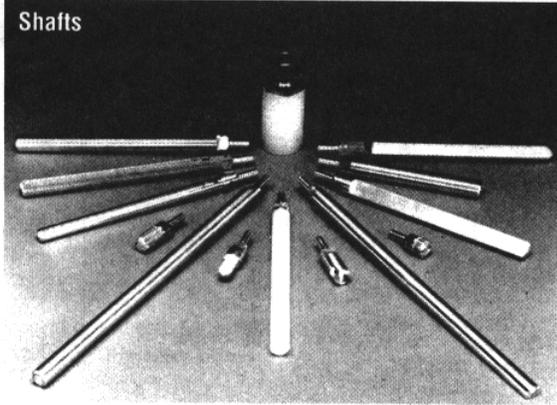
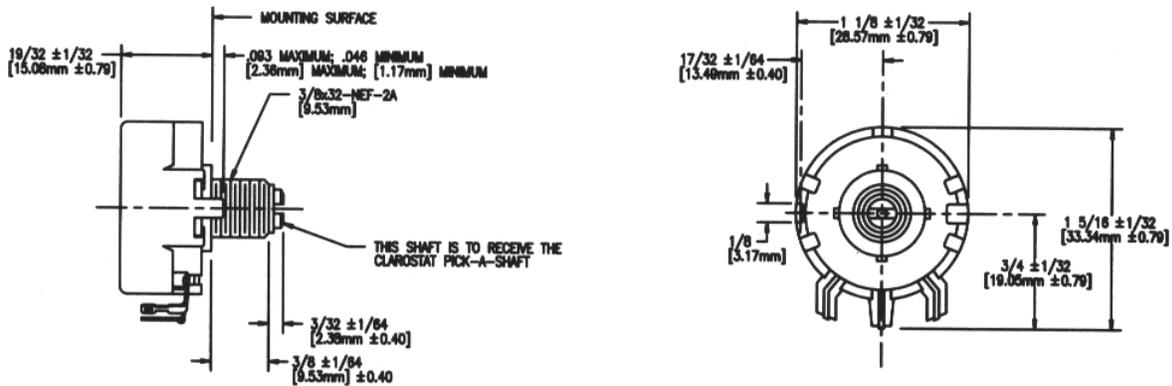


Figure 5

Series A43 Dimensions



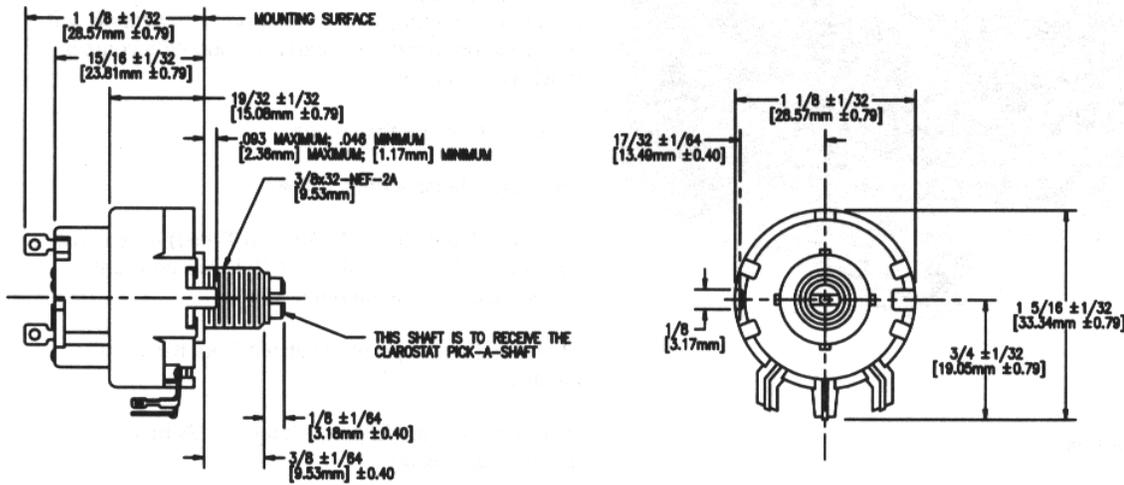
Series A43 Standard Resistance Values

Stock Values

|         |          |          |
|---------|----------|----------|
| A43-5   | A43-200  | A43-4000 |
| A43-10  | A43-250  | A43-5000 |
| A43-20  | A43-300  | A43-7500 |
| A43-25  | A43-400  | A43-10K  |
| A43-30  | A43-500  | A43-15K  |
| A43-40  | A43-750  | A43-20K  |
| A43-50  | A43-1000 | A43-25K  |
| A43-75  | A43-1500 | A43-30K  |
| A43-100 | A43-2000 | A43-40K  |
| A43-150 | A43-3000 | A43-50K  |

Figure 6

Series A43S Dimensions



Series A43S Standard Resistance Values

Stock Values

|         |           |           |
|---------|-----------|-----------|
| A43S-5  | A43S-100  | A43S-1500 |
| A43S-10 | A43S-150  | A43S-2000 |
| A43S-20 | A43S-200  | A43S-2500 |
| A43S-25 | A43S-300  | A43S-3000 |
| A43S-30 | A43S-400  | A43S-4000 |
| A43S-40 | A43S-500  | A43S-5000 |
| A43S-50 | A43S-750  | A43S-7500 |
| A43S-75 | A43S-1000 | A43S-10K  |

For use with all Clarostat "Pick-A-Shaft" controls either conductive plastic, or wirewound resistive element. Your choice of shaft furnished, at no extra charge, with each "Pick-A-Shaft" control.

Shafts

| Catalog Number | Description   |
|----------------|---|
| (1) SS-3/8     | 3/8 in. (9.53mm) long (Male) to takefemale fitting                  |
| (2) RS-2       | Round shaft, 2 in. (50.8mm)long                                     |
| (3) RS-3/16    | Round slotted shaft 3/16 in. (4.76mm) diameter, 3 in. (76.2mm) long |
| (4) KSS-3      | Knurled, split shaft, 3 in. (76.2mm) long                           |
| (5) RS-5       | Round shaft, 5 in. (127mm) long                                     |
| (6) FS-5       | Flatted shaft, 5 in. (127mm) long                                   |
| (7) KSS-5      | Knurled, split shaft, 5 in. (127mm) long                            |
| (8) FS-3       | Flatted shaft, 3 in. (76.2mm) long                                  |
| (9) RS-3       | Round shaft, 3 in. (76.2mm) long                                    |
| (10) DFS-1/2   | Double-flatted, Philco-type, 1/2 in. (12.7mm) long                  |
| (11) FKS-1/4   | Fine-knurled, slotted shaft, 1/4 in. (6.35mm) long                  |
| (12) KFS-3     | Knurled, flatted shaft, 3 in. (76.2mm) long                         |
| (13) FKS-1/2   | Fine-knurled, slotted shaft, 1/2 in. (12.7mm) long                  |

Catalog Number 59-186 — Spacer and Bushing Assemble. Catalog Number RN-3 — Non-Metallic Shaft Round 3 in. (76.2mm) long. High voltage shaft for operation up to 10K volts. Attaches to any Clarostat "Pick-A-Shaft" control.

Series A43/A43S How To Order

Series + Resistance value

Example: **A43-100**

**A43**  
Series 43 Pick-A-Shaft  
A43 = Without switch  
A43S = With SPST switch

**100**  
Resistance Value  
(Ohms)

How To Order/Shafts

Example: **RS-2**

**RS**  
Catalog Number  
See: Shafts (above)

**2**  
Length of Shaft  
Inches