

# Model P160 Series



## 16 mm Panel Potentiometer

### Features:

- Conductive Plastic Element
- 100,000 Cycle Life
- Metal Bushing/Shaft
- Single or Dual Gang
- Rotary Switch Option



All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU)2015/863

### Applications:

- Electric Guitars
- Audio Amplifiers and Mixers
- Drum Machines
- Synthesizers

### Model Styles Available

|          |                                     |
|----------|-------------------------------------|
| P160KN   | Side Adjust, PC Pins                |
| P160KN2  | Side Adjust, Long PC Pins           |
| P160KNP  | Side Adjust, Solder Lugs            |
| P160KNPD | Rear Adjust, PC Pins                |
| P160KS   | Side Adjust, Rotary Switch, PC Pins |
| P160KG   | Side Adjust, Dual Gang, PC Pins     |

### Electrical

|                                |                                                       |
|--------------------------------|-------------------------------------------------------|
| Resistance Range               | 500 $\Omega$ – 1M $\Omega$                            |
| Resistance Tolerance           | $\pm 20\%$<br>500 $\Omega$ & 1M $\Omega$ : $\pm 30\%$ |
| Resistance Tapers <sup>1</sup> | A, B, C, D                                            |
| Maximum Operating Voltage      | Linear Taper: 200 VAC<br>Other Tapers: 150 VAC        |
| Rated Power                    | Linear Taper: 0.2W<br>Other Tapers: 0.1W              |
| Rotational Noise               | < 100mV                                               |
| Insulation Resistance          | > 100M $\Omega$ at 500 VDC                            |
| Dielectric Withstand Strength  | 1 minute at 500 VAC                                   |
| Residual Resistance            | < 20 $\Omega$                                         |
| Nominal Electrical Travel      | 260°                                                  |
| Gang Error (Dual Unit)         | $\pm 3\text{dB}$ (-40dB to 0db)                       |
| Switch Circuit                 | SPST                                                  |
| Switch Power Rating            | 1A at 12 V AC/DC                                      |
| Switch Contact Resistance      | < 50 m $\Omega$                                       |

<sup>1</sup>See Tapers Section

#### General Note

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### Mechanical

|                         |                          |
|-------------------------|--------------------------|
| Rotation                | 300° ±10°                |
| Rotational Torque       | 20 gf.cm – 100 gf.cm     |
| Static Stop Strength    | 7.0Kgf.cm minimum        |
| Push-Pull Strength      | 8.0Kgf minimum           |
| Detents                 | 0, Center, 11, 21, or 41 |
| Detent Torque           | 100 - 300 gf.cm          |
| Switch Rotational Angle | 35° ±10°                 |
| Switch Torque           | 70 – 250 gf.cm           |
| Nut Tightening Force    | 8.0Kgf.cm minimum        |

### Environmental

|                                     |                                                                                              |
|-------------------------------------|----------------------------------------------------------------------------------------------|
| Operating temperature range         | -10°C to +70°C                                                                               |
| Rotational Life                     | 100,000 cycles minimum                                                                       |
| Switch Life                         | 15,000 cycles minimum                                                                        |
| Ingress protection rating (IP code) | IP40                                                                                         |
| Soldering Condition                 | Wave Soldering: 260°C maximum for 1-3 seconds<br>Hand Soldering: 350°C maximum for 3 seconds |

### Ordering Information

|                                                                                                                                                                                                                   | P160 | KN | - | 0 | Q | C | 20 | B | 100K |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----|---|---|---|---|----|---|------|
| <b>Part Family</b>                                                                                                                                                                                                |      |    |   |   |   |   |    |   |      |
| <b>Style</b>                                                                                                                                                                                                      |      |    |   |   |   |   |    |   |      |
| KN = Side Adjust, PC Pins<br>KN2 = Side Adjust, Long PC Pins<br>KNP = Side Adjust, Solder Lugs<br>KNPD = Rear Adjust, PC Pins<br>KS = Side Adjust, Rotary Switch, PC Pins<br>KG = Side Adjust, Dual Gang, PC Pins |      |    |   |   |   |   |    |   |      |
| <b>Detent</b>                                                                                                                                                                                                     |      |    |   |   |   |   |    |   |      |
| 0 = No Detents<br>1 = Center Detent<br>2 = 11 Detents<br>3 = 21 Detents<br>4 = 41 Detents                                                                                                                         |      |    |   |   |   |   |    |   |      |
| <b>Shaft Type</b>                                                                                                                                                                                                 |      |    |   |   |   |   |    |   |      |
| E = Slotted Shaft<br>F = Flatted Shaft<br>P = Plain Shaft<br>Q = Knurled Shaft                                                                                                                                    |      |    |   |   |   |   |    |   |      |
| <b>Full CCW Shaft Position</b>                                                                                                                                                                                    |      |    |   |   |   |   |    |   |      |
| See Full CCW Positions Section                                                                                                                                                                                    |      |    |   |   |   |   |    |   |      |
| <b>Shaft Length</b>                                                                                                                                                                                               |      |    |   |   |   |   |    |   |      |
| See Shaft Type and Lengths Section                                                                                                                                                                                |      |    |   |   |   |   |    |   |      |
| <b>Tapers</b>                                                                                                                                                                                                     |      |    |   |   |   |   |    |   |      |
| A = Audio (15A)<br>B = Linear (Single Unit: 1B)<br>(Dual Unit: 3B)<br>C = Reverse Audio (15C)<br>D = Audio (10A)                                                                                                  |      |    |   |   |   |   |    |   |      |
| <b>Total Resistance</b>                                                                                                                                                                                           |      |    |   |   |   |   |    |   |      |
| See Below                                                                                                                                                                                                         |      |    |   |   |   |   |    |   |      |

### Standard Resistance Values, Ohms

500    1K    2K    5K    10K    20K    50K    100K    200K    500K    1MEG

#### General Note

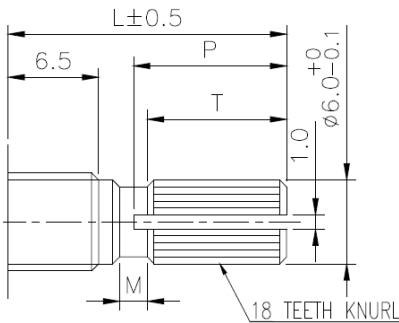
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## 16 mm Panel Potentiometer

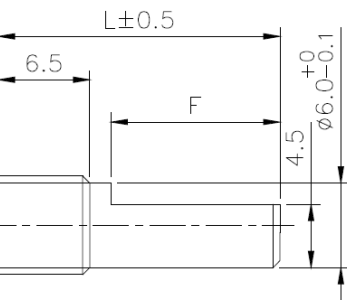
### Shaft Types and Lengths

#### Q - Knurled



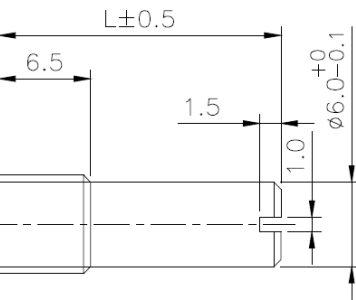
|   |     |    |    |    |    |    |    |    |
|---|-----|----|----|----|----|----|----|----|
| L | 10  | 13 | 15 | 17 | 20 | 25 | 30 | 35 |
| P | 2.5 | 5  | 7  | 9  | 12 | 14 | 14 | 14 |
| T | 2.5 | 4  | 6  | 8  | 10 | 12 | 12 | 12 |
| M | 1   | 1  | 1  | 1  | 2  | 2  | 4  | 4  |

#### F - Flatted



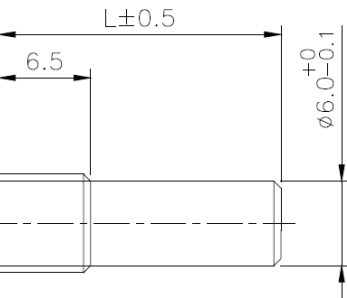
|   |    |    |    |    |    |    |
|---|----|----|----|----|----|----|
| L | 15 | 18 | 20 | 25 | 30 | 35 |
| F | 7  | 10 | 12 | 12 | 12 | 12 |

#### E - Slotted



|   |    |    |    |    |    |    |
|---|----|----|----|----|----|----|
| L | 10 | 15 | 20 | 25 | 30 | 35 |
|---|----|----|----|----|----|----|

#### P - Plain



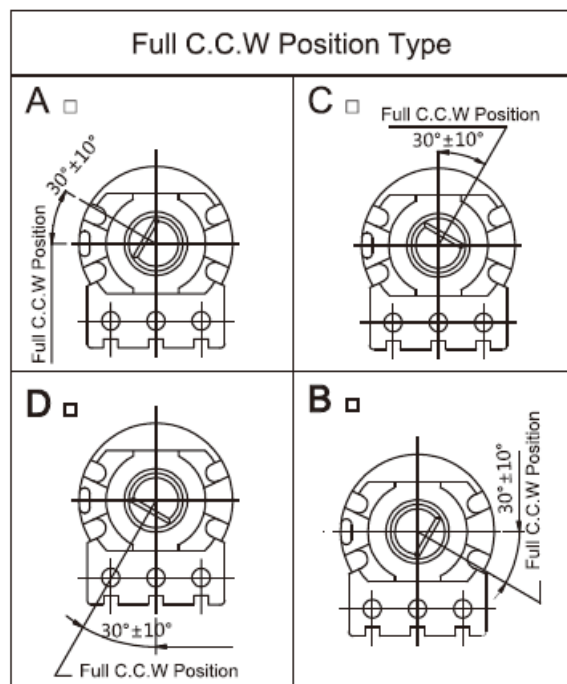
|   |    |    |    |    |    |
|---|----|----|----|----|----|
| L | 15 | 20 | 25 | 30 | 35 |
|---|----|----|----|----|----|

#### General Note

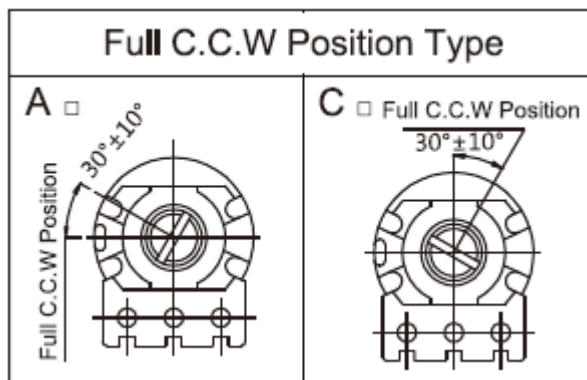
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### Full CCW Positions

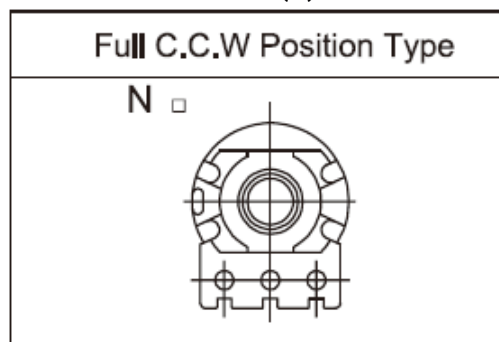
#### Flatted (F)



#### Knurled (Q) and Slotted (E)



#### Plain (P)



#### General Note

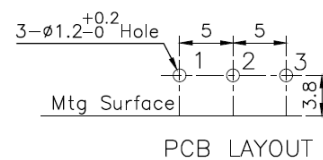
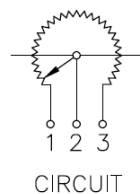
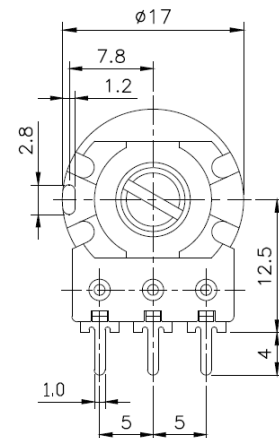
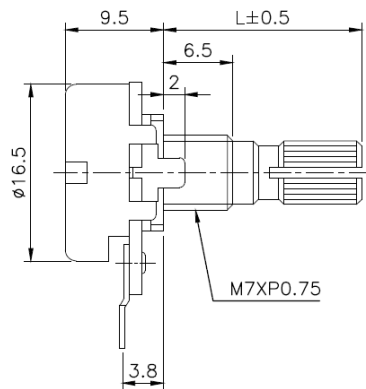
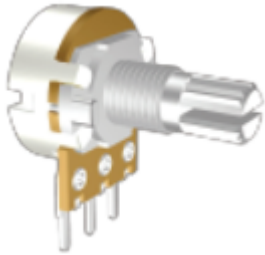
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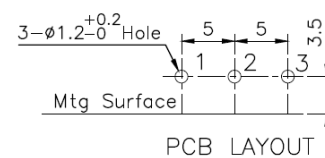
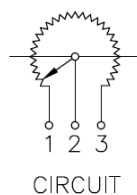
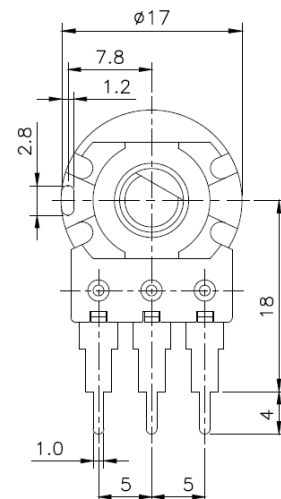
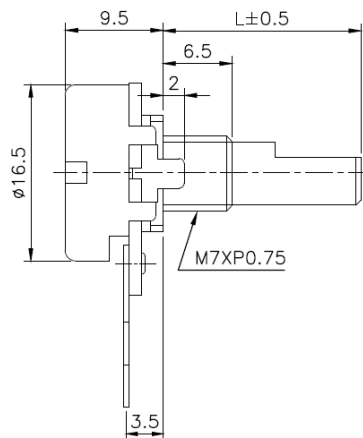
## 16 mm Panel Potentiometer

### Outline Drawing

#### KN – Side Adjust, PC Pins



#### KN2 – Side Adjust, Long PC Pins



#### General Note

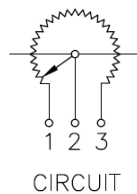
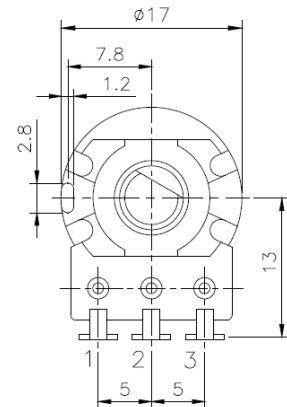
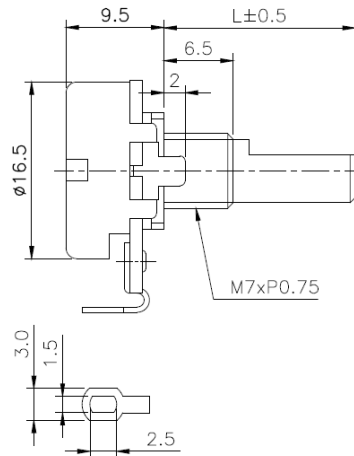
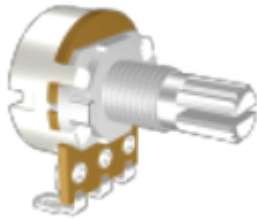
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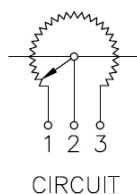
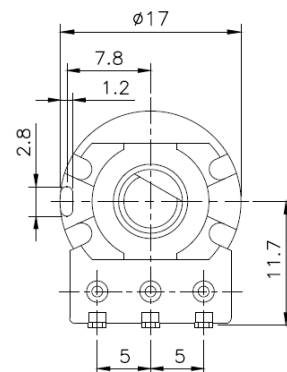
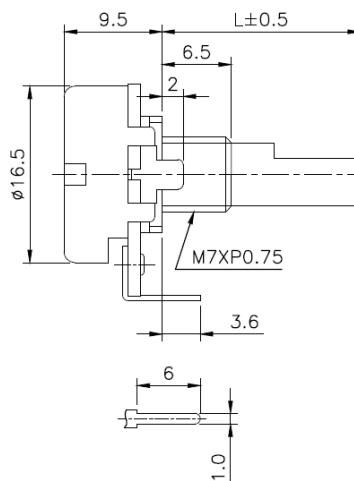
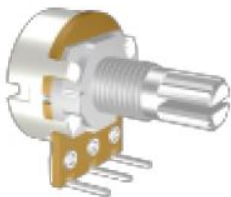
### Outline Drawing

#### KNP – Side Adjust, Solder Lugs

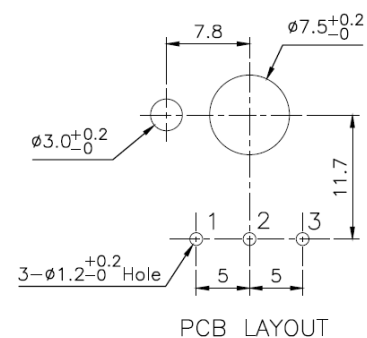


CIRCUIT

#### KNPD – Rear Adjust, PC Pins



CIRCUIT



PCB LAYOUT

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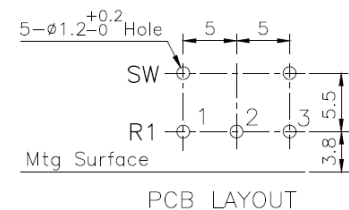
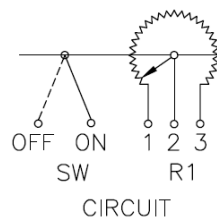
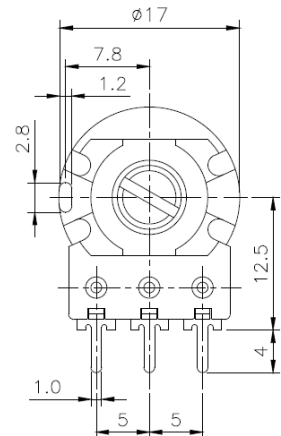
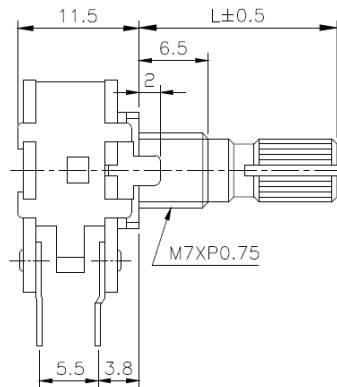
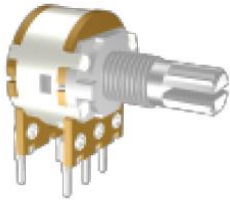
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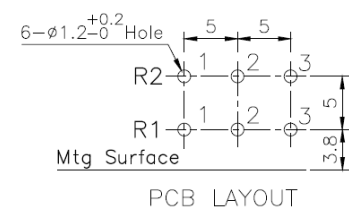
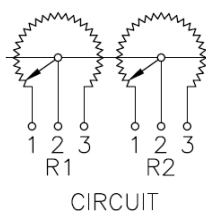
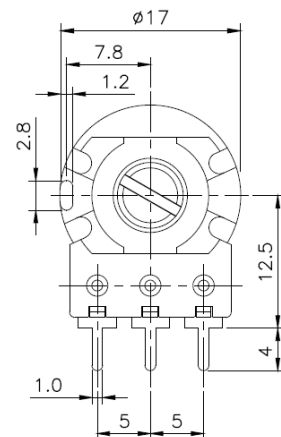
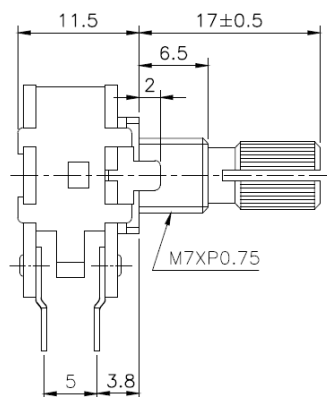
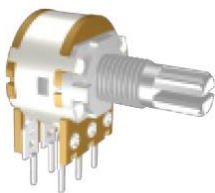
## 16 mm Panel Potentiometer

### Outline Drawing

#### KS – Side Adjust, Rotary Switch, PC Pins



#### KG – Side Adjust, Dual Gang, PC Pins



#### General Note

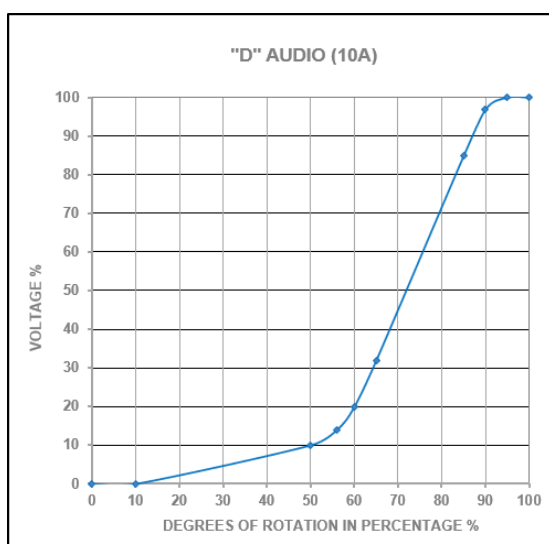
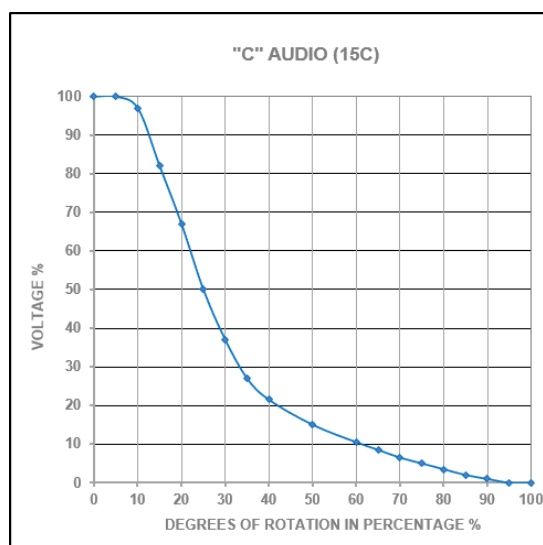
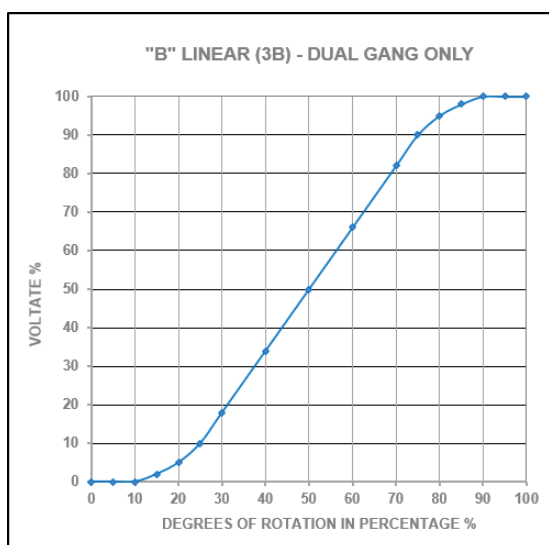
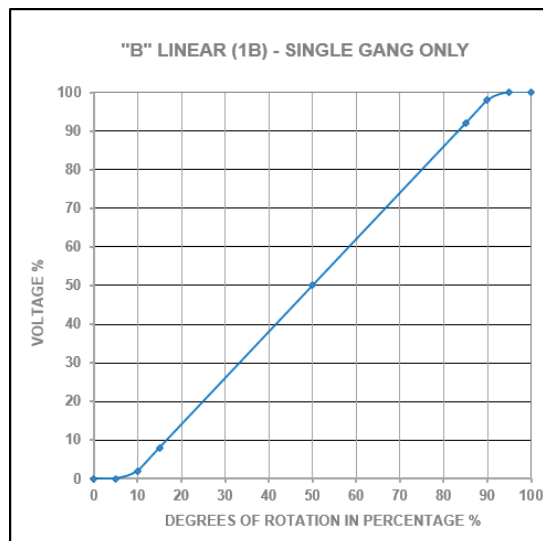
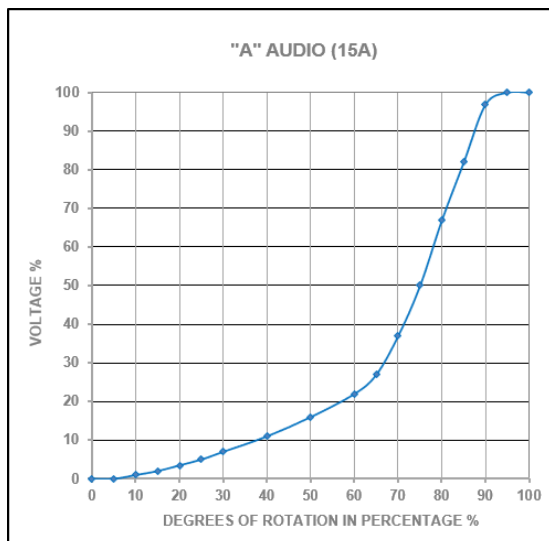
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### Tapers



#### General Note

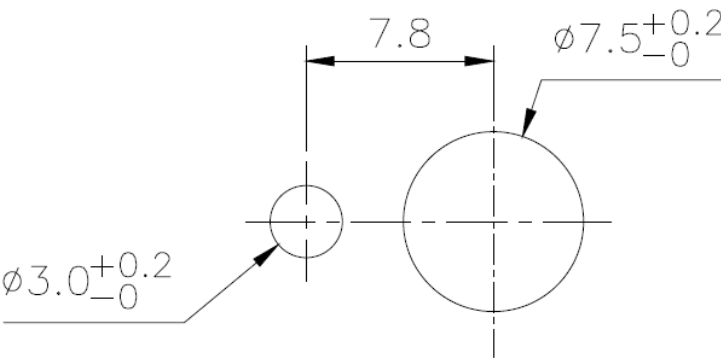
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Panel Layout



Packaging

|                    |                         |
|--------------------|-------------------------|
| Standard Packaging | Plastic Trays           |
| Included Hardware  | Hex Nut and Flat Washer |

Hardware

