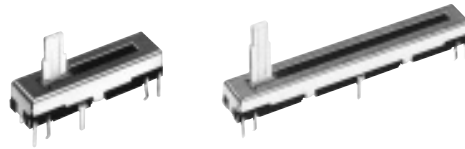


Standard Type Slide Potentiometers

Japan
Malaysia

Type: **EWAK/EWAM/EWAN**
EWAP/EWAQ



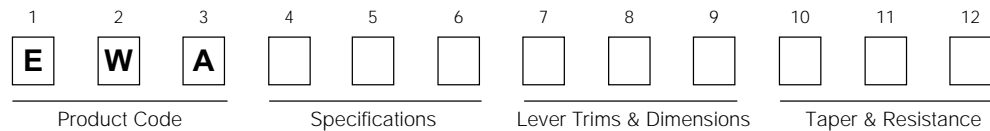
■ Features

- Compact size and wave-soldering available
- A large variety: 15.0, 20.0, 30.0, 45.0 and 60.0 mm travel

■ Recommended Applications

- Audio Equipment
- Video Equipment
- Home Electrical Appliances
- Electronic Musical Instruments

■ Explanation of Part Numbers



■ Product Chart

| Classification | | Standard part numbers | Functions | | | |
|----------------|-------------|-----------------------|-------------|---------------------|-----------------|--------------|
| Travel | Single/Dual | | Metal lever | Mounting screw hole | Midpoint detent | Midpoint tap |
| 15.0 mm | Single | EWAKF | ○ | ○ | ○ | ○ |
| | Dual | EWAKA | ○ | ○ | ○ | ○ |
| 20.0 mm | Single | EWAMF | ○ | ○ | ○ | ○ |
| | Dual | EWAMA | ○ | ○ | ○ | ○ |
| 30.0 mm | Single | EWANF | ○ | ○ | ○ | ○ |
| | Dual | EWANA | ○ | ○ | ○ | ○ |
| 45.0 mm | Single | EWAPF | ○ | ○ | ○ | ○ |
| | Dual | EWAPA | ○ | ○ | ○ | ○ |
| 60.0 mm | Single | EWAQF | ○ | ○ | ○ | ○ |
| | Dual | EWAQA | ○ | ○ | ○ | ○ |

Notes:

- Standard part numbers are insulated lever types.
- =available

■ Minimum Quantity/Packing Unit

| | | | |
|-----------------------------------|------|------------------------|------------------------|
| Minimum Quantity/ Packing Unit | EWAK | 100 pcs. (Tray Pack) | |
| | EWAM | 100 pcs. (Tray Pack) | Lever length < 20.0 mm |
| | | 50 pcs. (Tray Pack) | Lever length > 21.0 mm |
| | EWAN | 100 pcs. (Tray Pack) | |
| | EWAP | 50 pcs. (Tray Pack) | |
| | EWAQ | 50 pcs. (Tray Pack) | Lever length < 20.0 mm |
| 25 pcs. (Tray Pack) | | Lever length > 21.0 mm | |
| Quantity/ Carton | EWAK | 1000 pcs. | |
| | EWAM | 1000 pcs. | Lever length < 20.0 mm |
| | | 500 pcs. | Lever length > 21.0 mm |
| | EWAN | 1000 pcs. | |
| | EWAP | 500 pcs. | |
| | EWAQ | 500 pcs. | Lever length < 20.0 mm |
| 250 pcs. | | Lever length > 21.0 mm | |

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

Nov. 2005

■ Specifications

● Electrical Specifications

1. Power Rating

Maximum load which can be continuously applied under 50 °C, is per following chart. For potentiometers operated in ambient temperatures above 50 °C, Power Rating shall be derated in accordance with the figure below.

| Taper | Type | 15.0 mm | | 20.0 mm | | 30.0 mm | | 45.0 mm | | 60.0 mm | |
|------------|--------|----------------|------------------------|----------------|------------------------|----------------|------------------------|----------------|------------------------|----------------|------------------------|
| | | EWAKF EWAKA | | EWAMF EWAMA | | EWANF EWANA | | EWAPF EWAPA | | EWAQF EWAQA | |
| | Rating | Power | Max. operating voltage | Power | Max. operating voltage | Power | Max. operating voltage | Power | Max. operating voltage | Power | Max. operating voltage |
| B | | 0.03 W | 75 V | 0.04 W | 150 V | 0.06 W | 150 V | 0.10 W | 200 V | 0.12 W | 200 V |
| A, C, D, G | | 0.02 W | 75 V | 0.02 W | 150 V | 0.03 W | 150 V | 0.05 W | 150 V | 0.06 W | 200 V |

2. Residual Resistance

The minimum resistance at each end of sliding position is the residual resistance (hop-off) (see Chart 1).

The minimum resistance at tap position between tap terminal and contactor is the tap residual resistance (See Chart 2).

Chart 1. Residual Resistance

| Total Resistance | Taper | A, C, D | | B, G | | | | | | | | | | |
|--------------------------|-------------------------|-------------------------|------------|------------|------------|-----------|-----------|-----------|------------|------------|-----------|-----------|-----------|-----------|
| | | Terminal | 1 to 2 | 2 to 3 | 1 to 2 | | | | | 2 to 3 | | | | |
| | | Travel | - | - | 15.0 mm | 20.0 mm | 30.0 mm | 45.0 mm | 60.0 mm | 15.0 mm | 20.0 mm | 30.0 mm | 45.0 mm | 60.0 mm |
| Standard | General (For tone) | R < 50kΩ | 3 Ω max. | 25 Ω max. | 10 Ω max. | 10 Ω max. | 15 Ω max. | 20 Ω max. | 25 Ω max. | 10 Ω max. | 10 Ω max. | 15 Ω max. | 20 Ω max. | 25 Ω max. |
| | | R > 50 kΩ R < 250 kΩ | 25 Ω max. | 50 Ω max. | 25 Ω max. | | | | | 25 Ω max. | | | | |
| | | R > 250kΩ | 100 Ω max. | 100 Ω max. | 100 Ω max. | | | | | 100 Ω max. | | | | |
| | For volume | R < 50kΩ | 3 Ω max. | 25 Ω max. | 3 Ω max. | | | | | 25 Ω max. | | | | |
| | | R > 50 kΩ R < 250 kΩ | 5 Ω max. | 50 Ω max. | 5 Ω max. | | | | | 50 Ω max. | | | | |
| | | R > 250kΩ | 50 Ω max. | 100 Ω max. | 50 Ω max. | | | | | 100 Ω max. | | | | |
| With LED & for dc use | R < 50kΩ | 10 Ω max. | 60 Ω max. | 25 Ω max. | 35 Ω max. | 50 Ω max. | 60 Ω max. | 25 Ω max. | 35 Ω max. | 50 Ω max. | 60 Ω max. | | | |
| | R > 50 kΩ R < 250 kΩ | 60 Ω max. | 100 Ω max. | 60 Ω max. | | | | | 60 Ω max. | | | | | |
| | R > 250kΩ | 100 Ω max. | 100 Ω max. | 100 Ω max. | | | | | 100 Ω max. | | | | | |

Chart 2. Tap Residual Resistance

| Total resistance | Residual resistance |
|--------------------|---------------------|
| R < 50 kΩ | 100 Ω max. |
| 50 kΩ < R < 500 kΩ | 500 Ω max. |
| R < 500 kΩ | 1 kΩ max. |

3. Tracking

Tracking on dual slide potentiometer is measured by following formula with 2 V to 5 V applied voltage, at 1000±200 Hz between terminal 1 and 3.

$$\text{Tracking error (dB)} = 20 \log (V_2/V_1)$$

Where:

V₁=output voltage of one side (between terminal 1 and 2)

V₂=output voltage of the other side (between terminal 1 and 2)

| Range | Type | For volume | | General purpose |
|--------------------------|------|---------------|---------------------|-----------------|
| | | 15.0, 20.0 mm | 30.0, 45.0, 60.0 mm | |
| -40 dB to 0 dB | | | ±3 dB | |
| -30 dB to 0 dB | | ±3 dB | | |
| 50 % of Sliding Position | | | | ±3 dB |

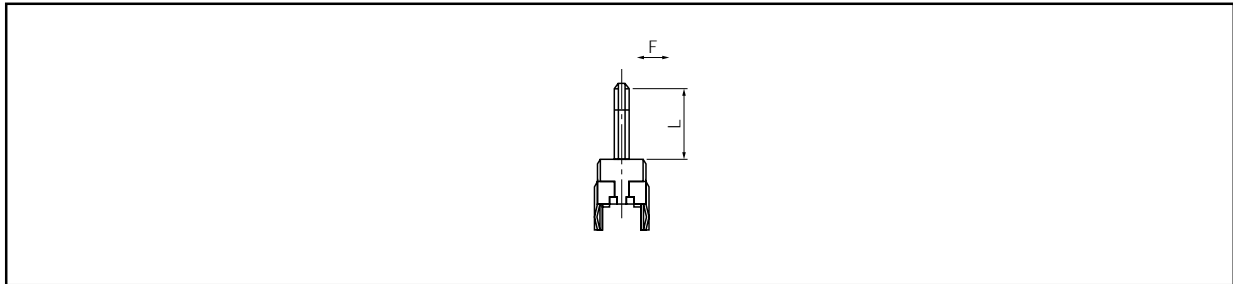
● Mechanical Specifications

1. Sliding Force

In a room at 5 °C to 35 °C, apply a sliding force to the lever at a point of 5.0 mm from the mounting surface at a rate of 30.0 mm/1 to 2 seconds. The sliding force shall be 0.4 N to 3.5 N.

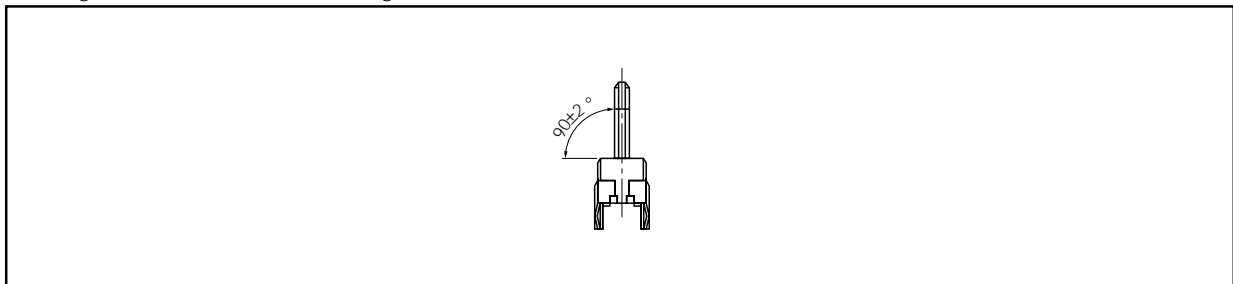
2. Lever Wobble

When a moment of 25 mN·m is applied perpendicularly on the top of the lever, the wobble of lever tip shall be within 3×L/10 mm max. for one side. Where: L=Length of lever



3. Lever Angle

The angle of lever from the mounting surface shall be 90 °±2 ° max.



4. Detent Slip-out Force

In a room at 5 °C to 35 °C, detent slip-out force shall be 0.2 N to 1.5 N greater than the sliding force of lever.

5. Operating Life

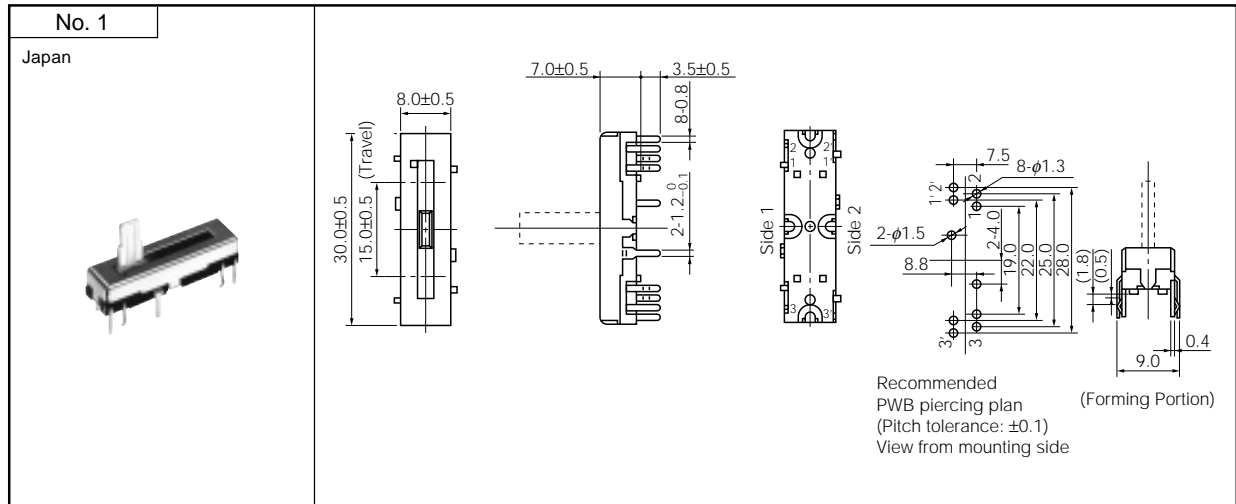
15000 cycles min.

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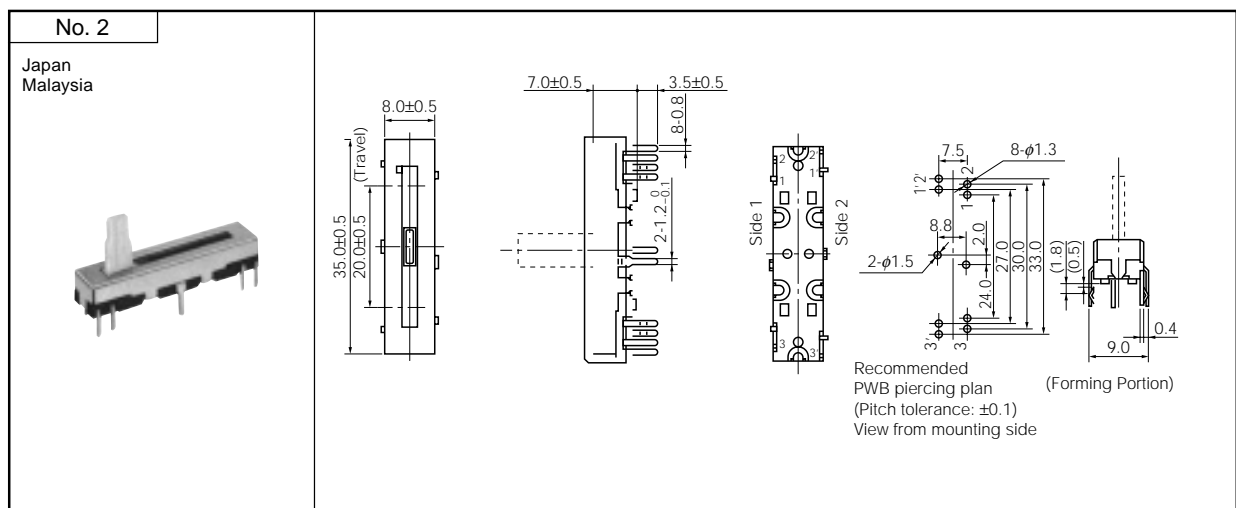
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■ Dimensions in mm (not to scale)

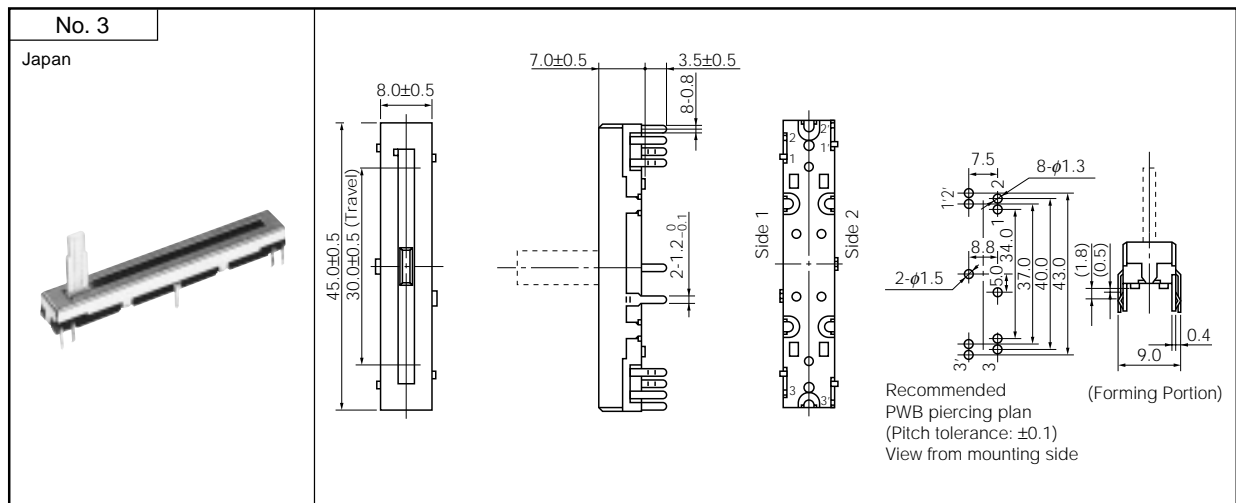
- Single.....EWAKF
- 15.0 mm Travel Series
- Dual.....EWAKA



- Single.....EWAMF
- 20.0 mm Travel Series
- Dual.....EWAMA



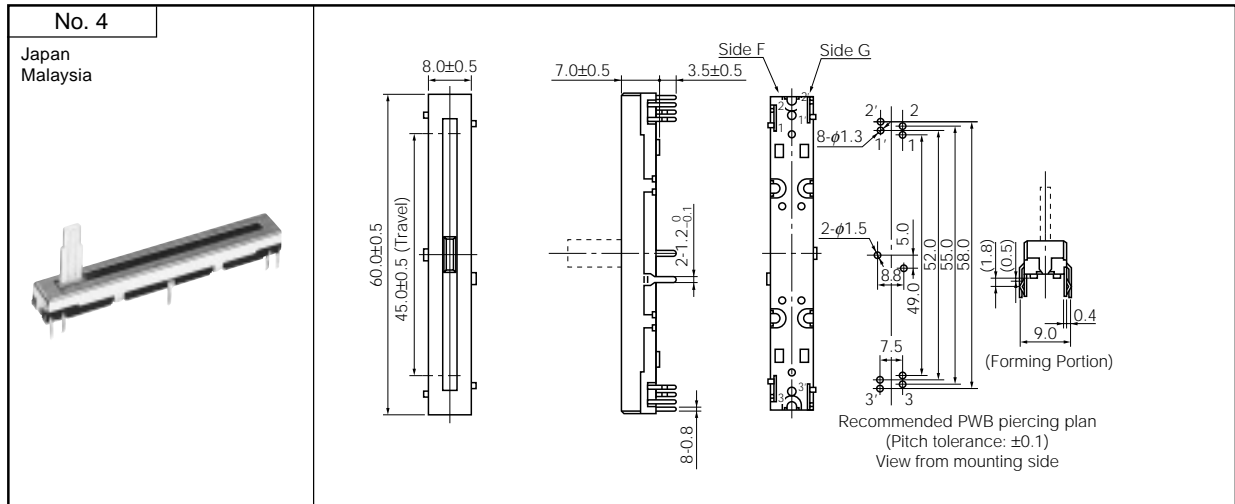
- Single.....EWANF
- 30.0 mm Travel Series
- Dual.....EWANA



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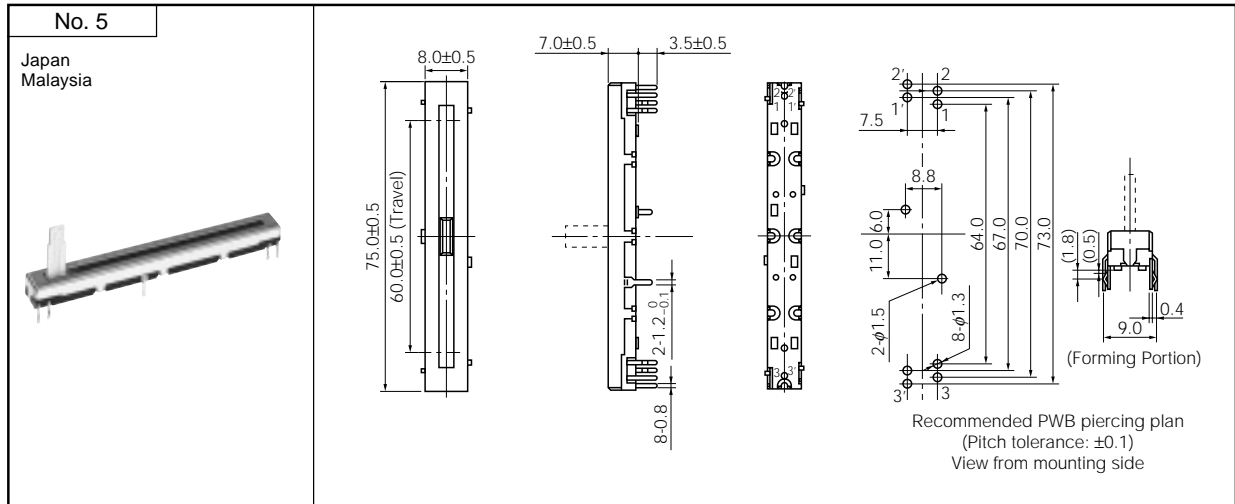
- 45.0 mm Travel Series

- Single EWAPF
- Dual EWAPA



- 60.0 mm Travel Series

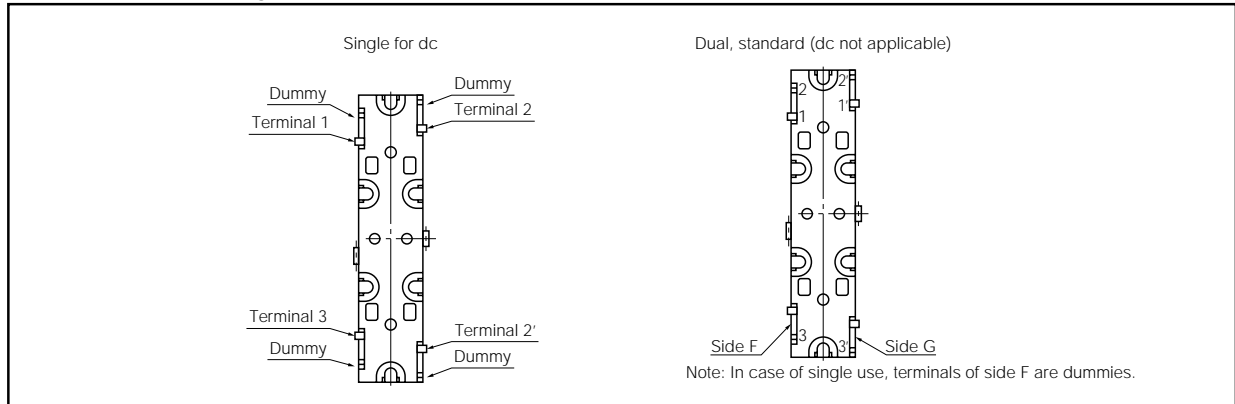
- Single EWAQF
- Dual EWAQA



Notes:

1. Refer to the drawing below for terminal alignment of single slide potentiometers.
2. Slide Potentiometers with no Midpoint Tap
Terminals 3-3' and the next inner terminals are connected together as a common terminal.
3. Slide Potentiometers with Midpoint Tap
The next inner terminals to Terminal 3-3' shall be used for midpoint taps.

Terminal Numbers of Single, DC Version



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■ Lever Trims and Dimensions in mm

1. Insulated lever (15.0, 20.0, 30.0, 45.0, 60.0)

2. Metal lever (15.0, 20.0, 30.0, 45.0, 60.0)

| Type | Insulated lever | Type | Metal lever | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|--|------------|---|---|-----|------|-----|-----|------|-----|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|-----|------------|------|------|-----|------|------|-----|------|-----|-----|------|-----|
| C | <table border="1"> <thead> <tr> <th>Part No.</th> <th colspan="2">Length</th> </tr> <tr> <th>7th to 9th</th> <th>L</th> <th>ℓ</th> </tr> </thead> <tbody> <tr> <td>C10</td> <td>10.0</td> <td>5.0</td> </tr> <tr> <td>C15</td> <td>15.0</td> <td>5.0</td> </tr> </tbody> </table> | Part No. | Length | | 7th to 9th | L | ℓ | C10 | 10.0 | 5.0 | C15 | 15.0 | 5.0 | C | <table border="1"> <thead> <tr> <th>Part No.</th> <th colspan="2">Length</th> </tr> <tr> <th>7th to 9th</th> <th>L</th> <th>ℓ</th> </tr> </thead> <tbody> <tr> <td>C10</td> <td>10.0</td> <td>5.0</td> </tr> <tr> <td>C15</td> <td>15.0</td> <td>10.0</td> </tr> <tr> <td>C20</td> <td>20.0</td> <td>10.0</td> </tr> </tbody> </table> | Part No. | Length | | 7th to 9th | L | ℓ | C10 | 10.0 | 5.0 | C15 | 15.0 | 10.0 | C20 | 20.0 | 10.0 | | | | | | |
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| 7th to 9th | L | ℓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C10 | 10.0 | 5.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C15 | 15.0 | 5.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Part No. | Length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7th to 9th | L | ℓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C10 | 10.0 | 5.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C15 | 15.0 | 10.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C20 | 20.0 | 10.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 7th to 9th | L | ℓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| X05 | 5.0 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| X10 | 10.0 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| X15 | 15.0 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| X20 | 20.0 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Part No. | Length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| S10 | 10.0 | 7.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S15 | 15.0 | 8.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S20 | 20.0 | 8.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 7th to 9th | L | ℓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U10 | 10.0 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U15 | 15.0 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U20 | 20.0 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 7th to 9th | L | ℓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D15 | 15.0 | 10.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D20 | 20.0 | 10.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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