



## MAIN FEATURES

- Specifically designed for leadfree reflow soldering processes (excellent performance).
- Cermet resistive element.
- IP54 protection according to IEC 60529.
- Plastic material according to UL94V-0.
- Alumina substrate.
- Full traceability.
- Also upon request:
  - Long life model for low cost control potentiometer applications.
  - Mechanical detents.
  - Low torque version.
  - Centering pins.
  - Wiper positioned at initial, 50% or fully clockwise.

## MECHANICAL SPECIFICATIONS

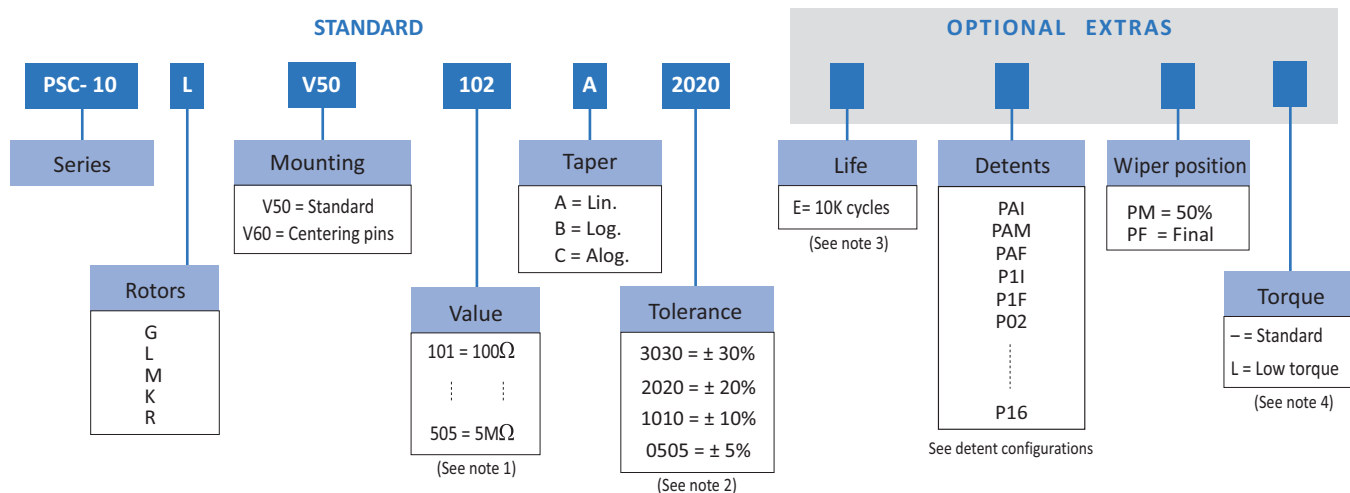
- Mechanical life\*: Up to 10K cycles.
- Mechanical rotation angle:  $235^\circ \pm 5^\circ$
- Electrical rotation angle:  $220^\circ \pm 20^\circ$
- Torque: 0.4 to 2 Ncm.  
(0.6 to 2.7 in-oz)
- Stop torque: > 5 Ncm. (> 7 in-oz)

## ELECTRICAL SPECIFICATIONS

- Range of values\*:  $100\Omega \leq R_n \leq 5M\Omega$  (Decad. 1.0 - 2.0 - 2.2 - 2.5 - 4.7 - 5.0)
- Standard tolerance\*:  $100\Omega \leq R_n \leq 1M\Omega$  -----  $\pm 20\%$   
 $1M\Omega \leq R_n \leq 5M\Omega$  -----  $\pm 30\%$
- Tapers\*: Lin, Log, Alog (Log and Alog. only  $R_n \geq 1K$ ).
- Nominal power: 0.33W @ 70°C (158°F)
- Operating temperature\*:  $-40^\circ\text{C} + 90^\circ\text{C}$
- Residual resistance:  $\leq 0.5\%$   $R_n$
- Equivalent noise resistance:  $\leq 3\%$   $R_n$
- Max. voltage: 200 VDC

\* Others upon request

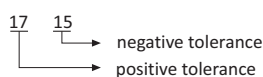
## HOW TO ORDER



### NOTES:

- (1) Value Example:  $\frac{10}{2} = 1K\Omega$   
 → Number of zeros  
 → First two digits of the value.

- (2) Non standard tolerance, upon request. Example: +17%  
 -15%



- (3) Others upon request.

- (4) Low torque:  $\leq 1.5\text{Ncm}$ . No detent option available for low torque models.

## HOW TO ORDER CUSTOM DRAWING

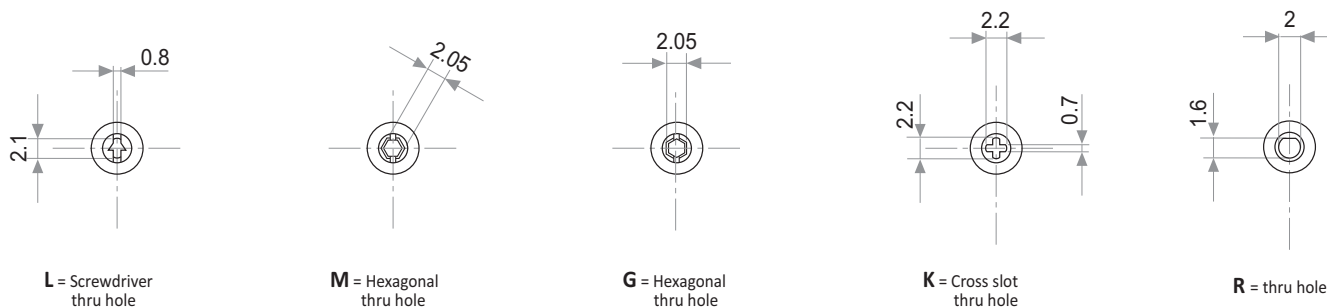
PSC10MV50 + DRAWING NUMBER

This way of ordering should be used for options which are not included in the "How to order" standard and optional extras.

## STANDARD OPTIONS

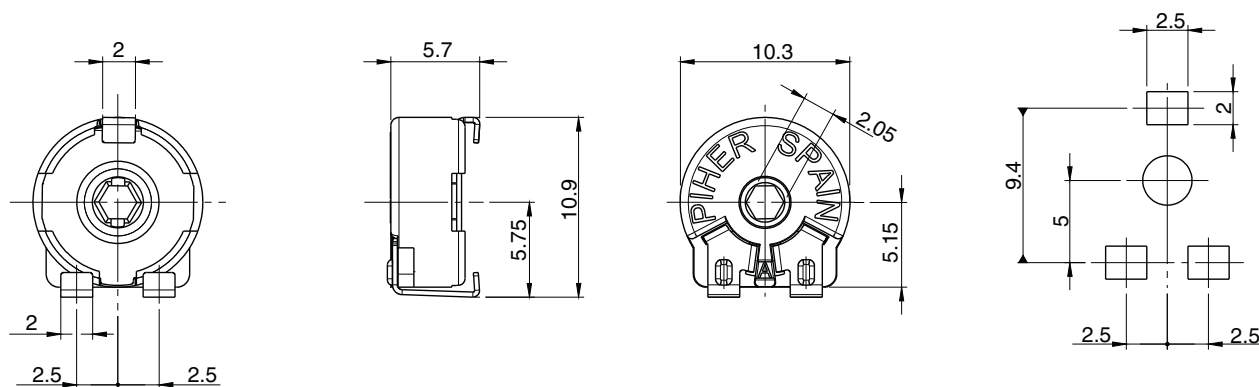
|                       |             |
|-----------------------|-------------|
| Mechanical life ..... | 1000 cycles |
| Detents .....         | None        |
| Rotor colour .....    | Brown       |
| Housing colour .....  | Brown       |
| Wiper position .....  | Initial     |
| Torque .....          | Standard    |
| Packaging .....       | Reel        |

## ROTORS (collector side view)

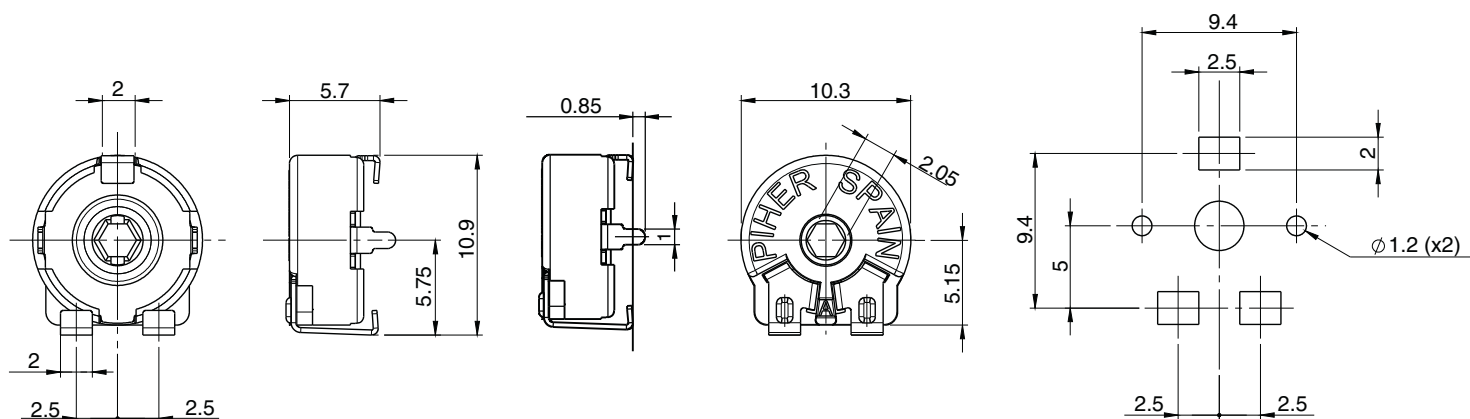


Note: wipers shown positioned at 50%

## DIMENSIONS (V50 version)

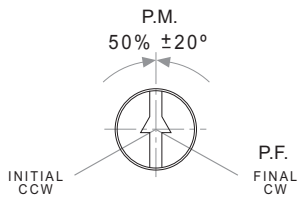


## DIMENSIONS (V60 version - with centering pins)

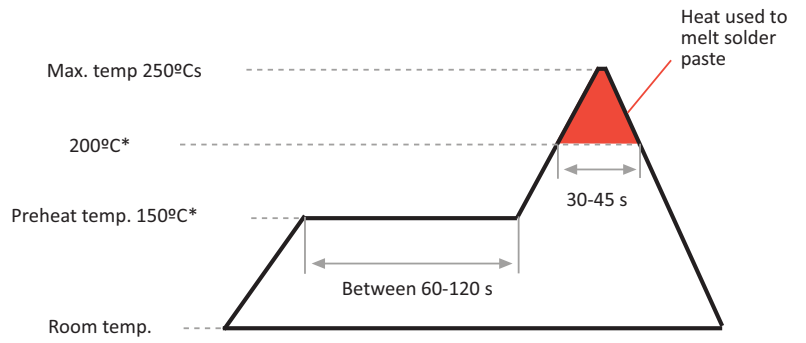


## OPTIONS

Positioning (Std. Position = CCW)



## RECOMMENDED REFLOW PROFILE



\* Melting point temp. depends on solder properties

## TESTS

## TYPICAL VARIATIONS

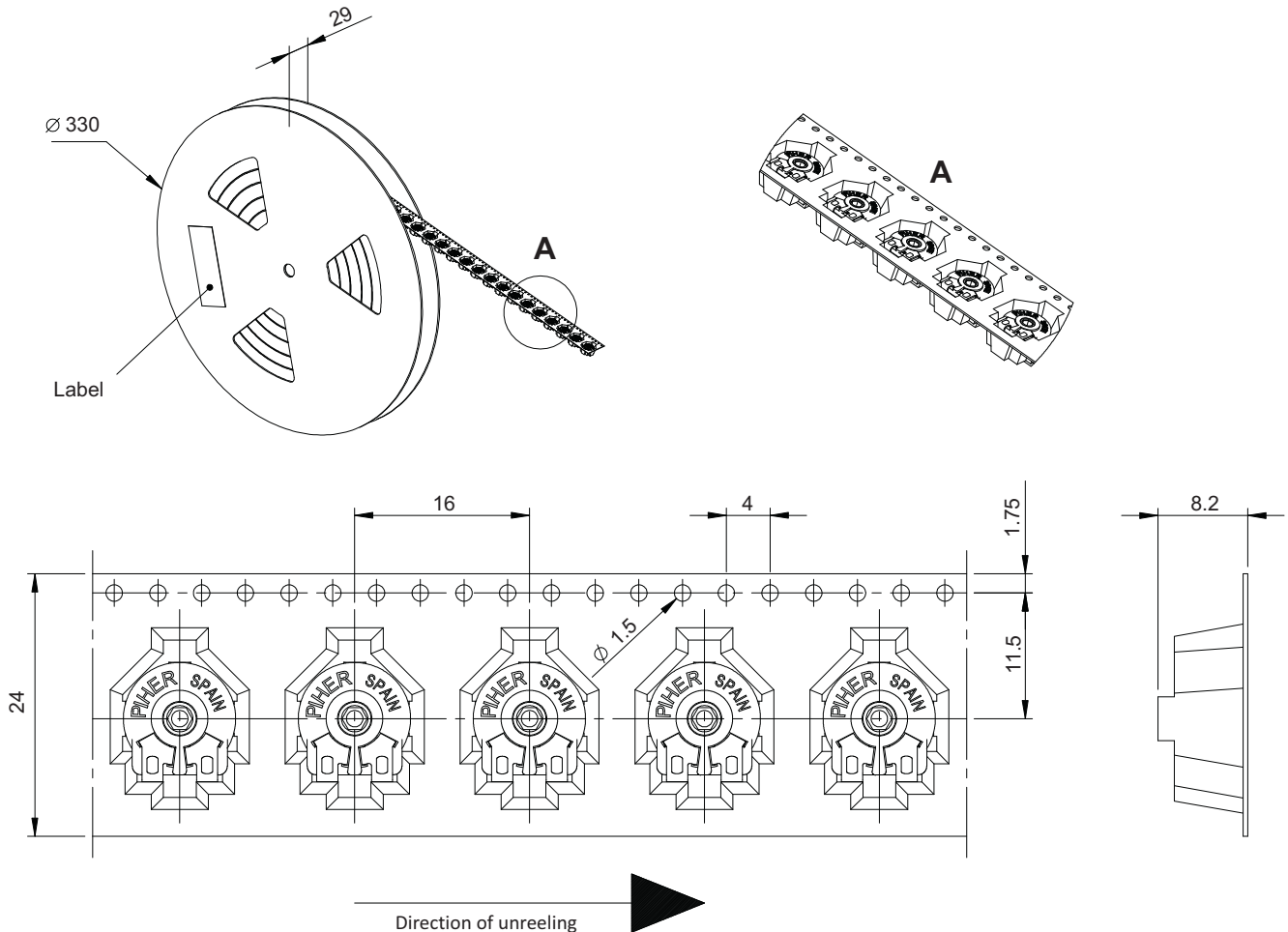
|                                  |                           |                       |
|----------------------------------|---------------------------|-----------------------|
| ELECTRICAL LIFE                  | 1000 h. @ 70°C; 0.33 W    | ±5 %                  |
| MECHANICAL LIFE (CYCLES)         | 1000 @ 10 CPM ...15 CPM   | ±3 % (Rn < 1 MΩ)      |
| TEMPERATURE COEFFICIENT          | -40°C; +90°C              | ±100 ppm (Rn < 100 K) |
| THERMAL CYCLING                  | 16 h. @ 90°C; 2h. @ -40°C | ±2.5 %                |
| DAMP HEAT                        | 500 h. @ 40°C @ 95% HR    | ±5 %                  |
| VIBRATION (for each plane X,Y,Z) | 2 h. @ 10 Hz. ... 55 Hz.  | ±2 %                  |

NOTE: Out of range values may not comply these results.

## PACKAGING

BULK: 500pcs / per Box (80 x 85 x 185 mm.)

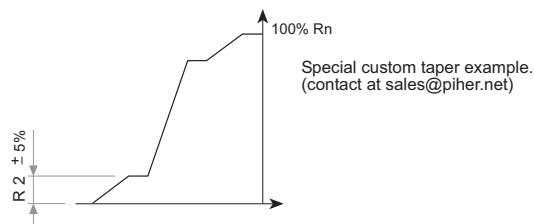
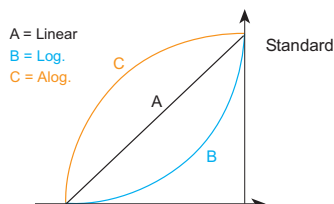
EMBOSSED TAPE: 500pcs / Reel



## STANDARD VALUES AND TOLERANCES

|                        |     |     |     |     |     |     |     |     |      |      |      |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |      |      |     |  |
|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|-----|-----|------|------|-----|--|
| Resistance $\Omega$    | 100 | 200 | 220 | 250 | 470 | 500 | 1K  | 2K  | 2.2K | 2.5K | 4.7K | 5K  | 10K | 20K | 22K | 25K | 47K | 50K | 100K | 200K | 220K | 250K | 470K | 500K | 1M  | 2M  | 2.5M | 4.7M | 5M  |  |
| How to order code      | 101 | 201 | 221 | 251 | 471 | 501 | 102 | 202 | 222  | 252  | 472  | 502 | 103 | 203 | 223 | 253 | 473 | 503 | 104  | 204  | 224  | 254  | 474  | 504  | 105 | 205 | 255  | 475  | 505 |  |
| Standard tolerance     | 20% |     |     |     |     |     |     |     |      |      |      |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     | 30%  |      |     |  |
| (Others upon request ) |     |     |     |     |     |     |     |     |      |      |      |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |      |      |     |  |

## TAPERS



## DETENT CONFIGURATIONS EXAMPLES - Stepped potentiometers.

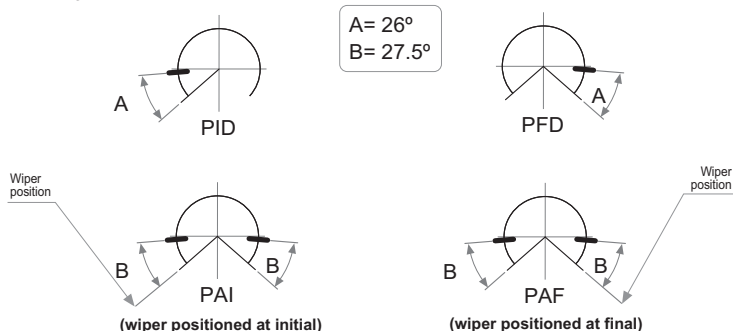
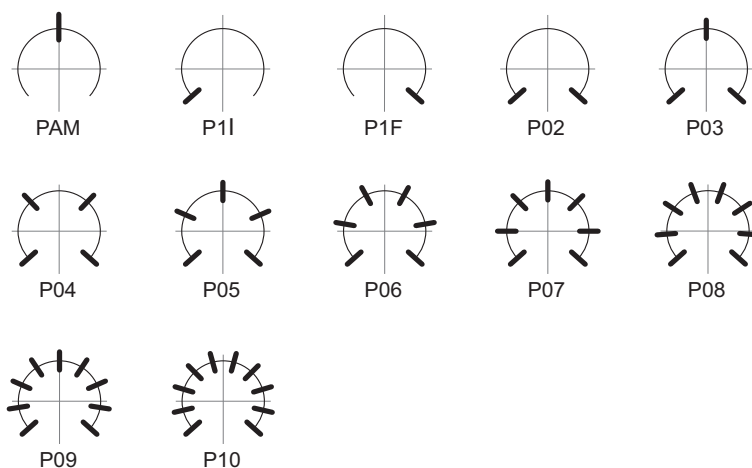
This innovative product family has been specifically developed to allow the integration of otherwise large and expensive external mechanisms into the body of the majority of the 10 & 15 mm. PS/PSX/PSC/PT/PTC potentiometer series, thus allowing a high range of configurations: special tapers, tolerances, linearity, etc.

This detent design not only adds a "click" sensation of position, but also offers enormous savings in both cost and space for any given application.

Strong and weak detents can be mixed as per customer's request.

Detent number and positions can be made or fitted to the customer needs or preferences.

 Relative detent (steps) positions along the total mechanical travel. Unless otherwise specified the detents are evenly spaced (using the end points as reference)



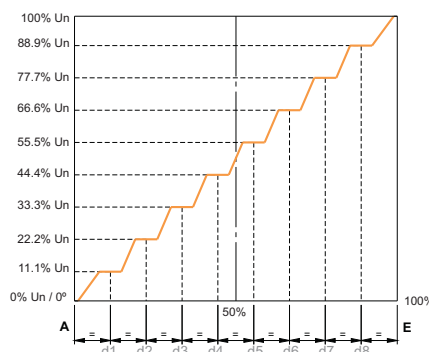
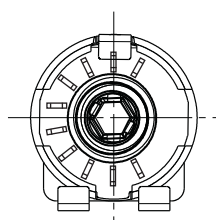
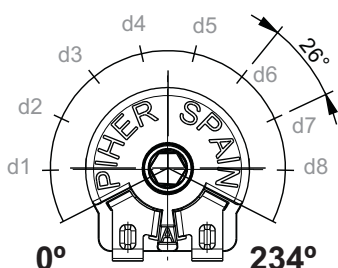
### NOTES FOR DETENTED VERSIONS:

- (1) Some configurations may have a longer leadtime.
- (2) Standard mechanical life is 500 cycles.
- (3) Long life versions are available under request and have the following characteristics at T<sup>8</sup>:
  - Potentiometers with 1 to 3 detents: up to 10K cycles
  - Potentiometers with 4 and more detents: up to 5K cycles
- (4) Detent torque can vary from 1.2 to 2.5 times the standard potentiometer torque.
- (5) Please consult your nearest Piher supplier if unique non-overlapping values at each detent position or LOG/ALOG tapers are required.
- (6) Different output voltage values can be matched at each detent position (under request).

## PSC-10 with 10 detents and silver zones

upon request

Detents can be matched with constant value zones when required.



## SHAFTS (for G and M rotor types, top view)

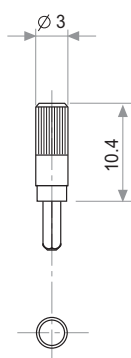


Fig. 1 / Ref. 5016

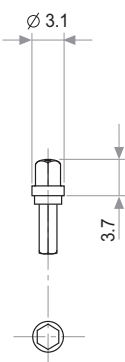


Fig. 2 / Ref. 5053

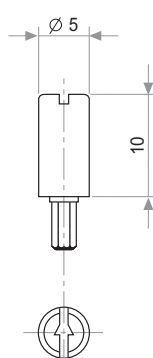


Fig. 3 / Ref. 5012

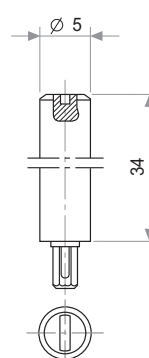


Fig. 4 / Ref. 6053

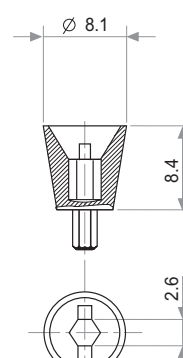


Fig. 6 / Ref. 5035

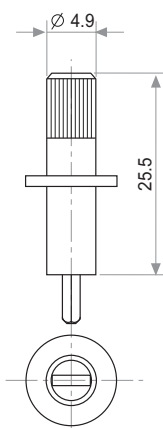


Fig. 7 / Ref. 5115

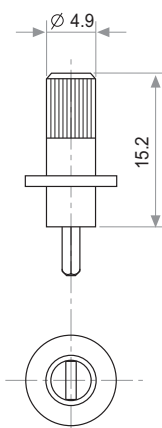


Fig. 8 / Ref. 5116

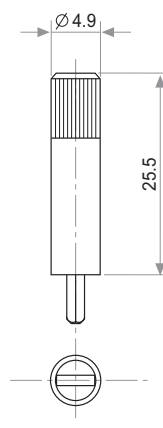


Fig. 9 / Ref. 5119

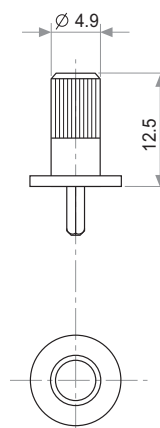


Fig. 10 / Ref. 5120

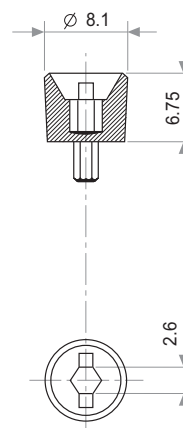


Fig. 11 / Ref. 5027

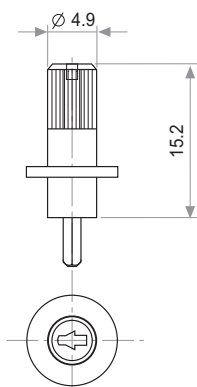


Fig. 12 / Ref. 6052

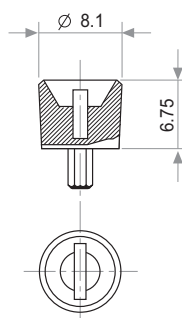


Fig. 13 / Ref. 5121

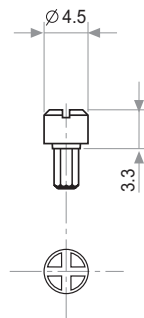


Fig. 14 / Ref. 5055

Shafts, knobs and thumbwheels are delivered unassembled. If you wish to use your own custom plastic shaft/knob/actuator please contact Piher for advice about compatible materials.

## THUMBWHEELS (for G and M rotor types, top view)

### THUMBWHEEL

For R rotor type only

Marking: configurable number of positions.

Example of four positions marking:

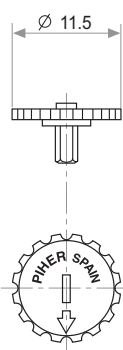


Fig. 5 / Ref. 5034

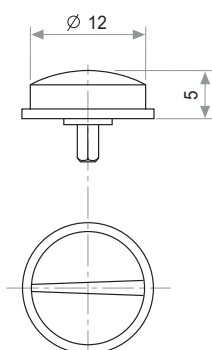


Fig. 15 / Ref. 6008

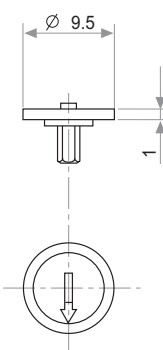


Fig. 16 / Ref. 5039

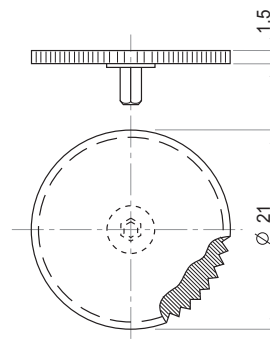
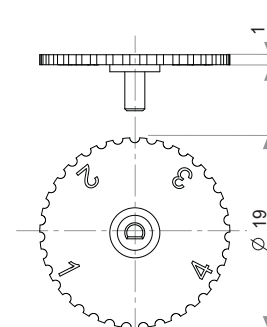


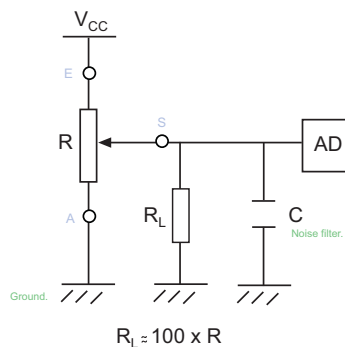
Fig. 17 / Ref. 5062



Upon request

## RECOMMENDED CONNECTIONS

Piher potentiometer's recommended connection circuit for a position sensor or control application. (voltage divider circuit electronic design).



The product information in this catalogue is for reference purposes. Please consult for the most up to date and accurate design information.

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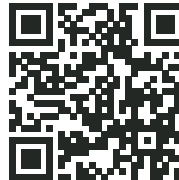
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v160818

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[www.piher.net](http://www.piher.net)

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