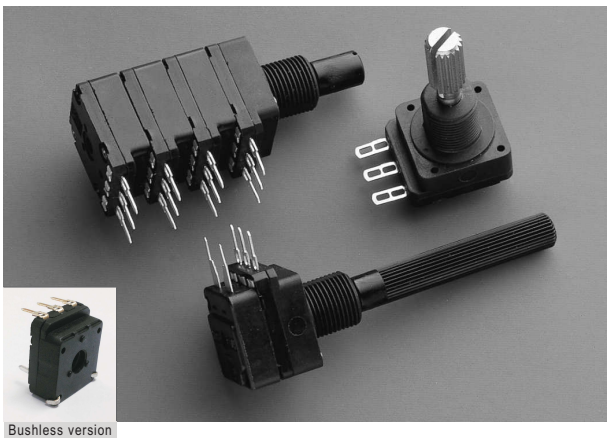
PIHER

# PC-16 16 mm Carbon Potentiometer





Bushless version

## FEATURES

- Carbon resistive element.
- IP54 protection according to IEC 60529.
- Polyester substrate.
- Modular gang type (up to 4).
- Self extinguishable material UL 94-V0.
- Upon request:
  - Metalic support.
  - Stereo matching.
  - Switch.
  - Nut & washer.
  - Bushless & shaftless models.
  - Assemblies with wires and connectors.

## MECHANICAL SPECIFICATIONS

| | |
|---|---|
| – Mechanical rotation angle: | 300° ± 5° |
| – Electrical rotation angle: | 280° ± 20° |
| – Torque: | 0.5 to 1.5 Ncm.<br>(0.7 to 2.1 in-oz) |
| – Stop torque: | > 40 Ncm. ( >56 in-oz) |
| – Max. torque nut (binding out): | < 80 Ncm. (112 in-oz) |
| – Thrust and pull in the shaft: | > 25 N |

* Others check availability.

** Up to 85°C depending on application.

## ELECTRICAL SPECIFICATIONS

– Range of values*
100Ω ≤ Rn ≤ 5 M (Decad. 1.0 - 2.0 - 2.2 - 2.5 - 4.7 - 5.0)

– Standard tolerance*: 100Ω ≤ Rn ≤ 1M Ω ------ ± 20%
1MΩ < Rn ≤ 5M Ω ------ ± 30%

– Max. Voltage: 250 VDC (lin) 125 VDC (no lin)

– Nominal Power 50°C (122°F) (see power rating curve)
0.2 W (lin) 0.1 W (no lin)

– Taper* Lin ; Log; Alog (Log. & Alog. only Rn ≥ 1K).

– Residual resistance*: ≤ 0.5% Rn (5 Ω min.)

– Equivalent Noise Resistance: ≤ 3% Rn (3 Ω min.)

– Operating temperature**: –25°C + 70°C (–13°F + 158°F)

## HOW TO ORDER

| PC-16 | D | H | 10 | I | M06 | 203 | A | 2020 | OPTIONAL EXTRAS 0 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Serie**
PC-16

**Model**
S =Single
D =Tandem
T =Triple
C =Quad.

**Mounting style**
H= Horizontal
V = Vertical
(See note 1)

**Bushing diameter**
07 = M7
10 = M10
SC = Bushless
(See note 2)

**Terminals**
I = PCB
C = Solder Lugs

**Shafts**
M04
M06
M07
M11
M17
P01
P22
---
(See note 3)

**Value**
101 = 100 Ω
203 = 20 K
504 = 500 K
505 = 5M
(See note 4)

**Taper**
A = Linear
B = Log.
C = Alog.
(See note 10)
Others tapers on request

**Tolerance**
0505 = ± 5%
1010 = ± 10%
2020 = ± 20%
3030 = ± 30%
(See note 5)

**Shafts spec. leng.**
XX.X
(See notes 6,9)

**Mounting brackets**
M1
M2
(See note 7)

**Stereo matching**
3D = 3dB
4D = 4dB
6D = 6dB
(See note 8)

**Switch**
I = PCB
C = Solder lugs
(See note 9)

**Nuts & Washers**
-TA = loose nut & washer
MTA=assembled nut & washer
-T- = loose nut
MT- = assembled nut
(See note 9)

NOTES:

(1) Mounting style: Type "V" is only available in model "S" potentiometer and with printed circuit terminals.

(2) Bushings: Type "10" has two paralell flat surfaces for avoiding rotation. Bushless option only available for single model.

(3) M07 shaft is only available with M10 bushing. --- = no shaft

(4) Value: • Code: 10 1 100 Ω
10 → 2 first digits of the value.
1 → Number of zeros
• In models "D", "T", "C", with different values, they will be asked by drawings.

(5) Tolerance (non standard), upon request. Example: +7% -5% Code: 07 05
07 → negative tolerance
05 → positive tolerance

(6) Shaft special length:
• Only for special length and plain shafts (not knurled). Example: Shaft Ø6.35 L= 24.5 M07 ..... 24.5
• NOTE: Maximun length recommended: L = 45
24.5 → special length shafts

(7) Mounting brackets: Only applicable for model "S", mounting "H" and without switch.

(8) Stereo matching: not available for single models. Maximun will be: •3dB for model "D" •4dB for model "T" •6dB for model "C"

(9) Not available for Bushless version.

(10) Switch option not available with antilog taper.

## HOW TO ORDER CUSTOM DRAWING

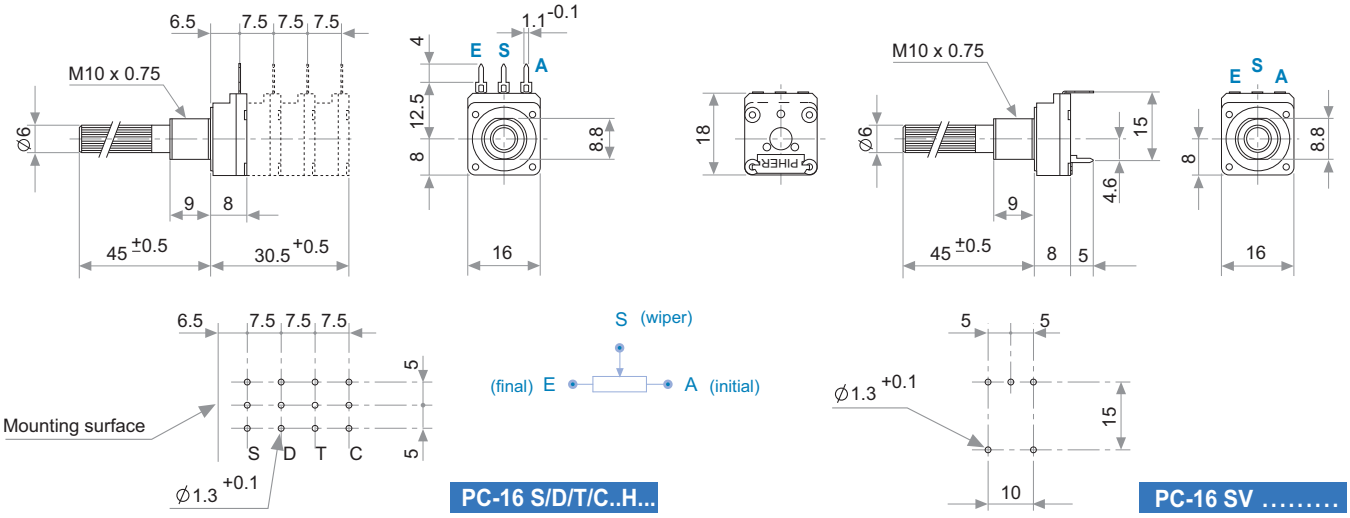
PC-16 S V + DRAWING NUMBER (Max. 16 digits)

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

## STANDARD OPTIONS

Shaft length ..... 0 Standard Length
Mounting brackets ..... Without mounting brackets
Stereo matching ..... Only on request (see note 8)
Switch ..... No switch
Nut & washer ..... Without nut and washer

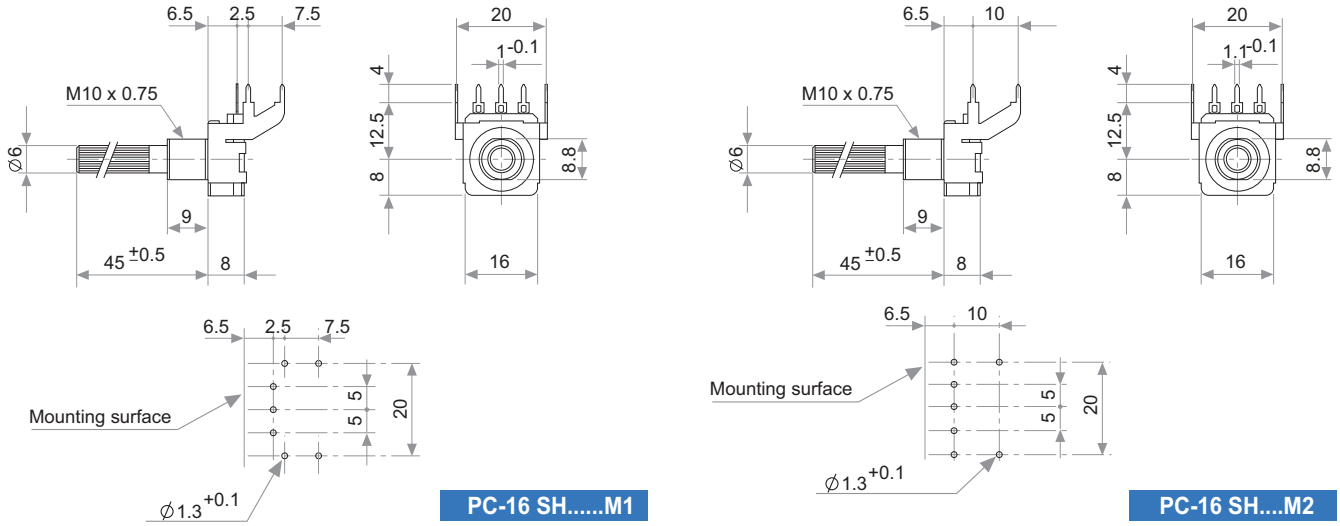
## MODELS




PC-16 S/D/T/C..H...

PC-16 SV .....

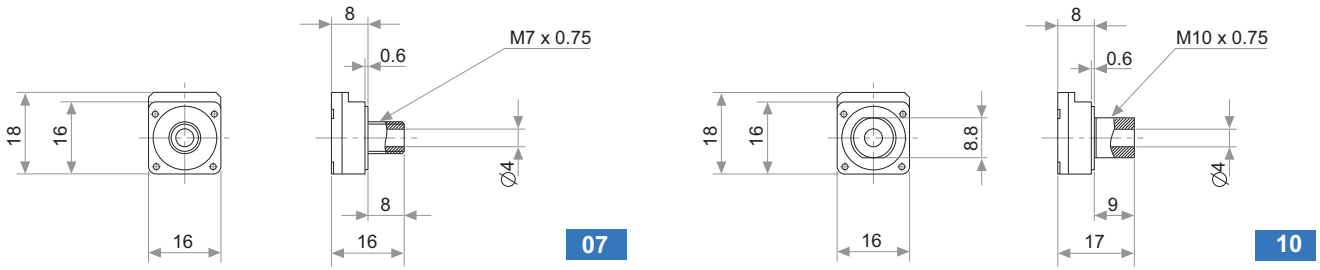
## METALLIC SUPPORT




PC-16 SH.....M1

PC-16 SH....M2

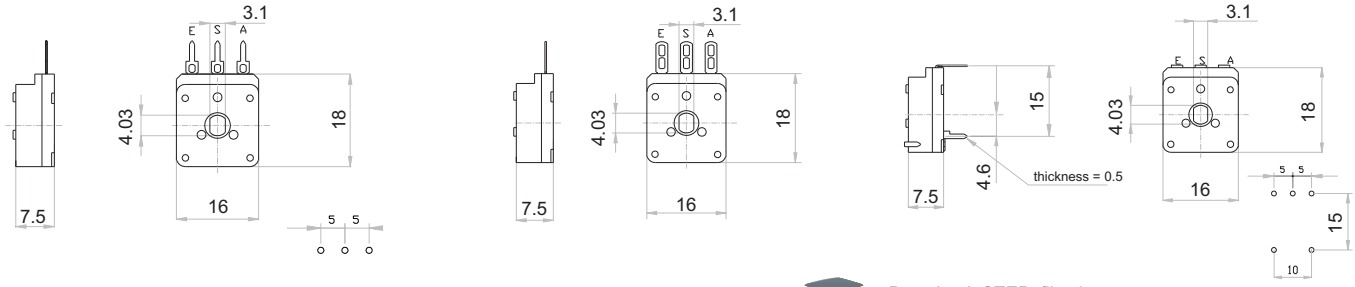
## BUSHINGS




07

10

## EXAMPLES OF BUSHLESS VERSION

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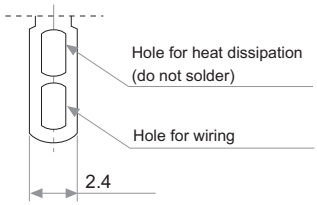
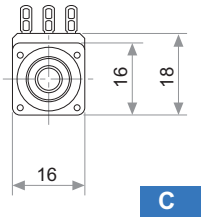
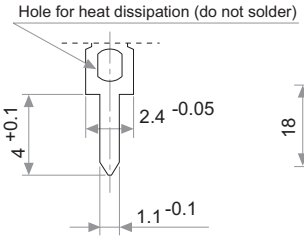
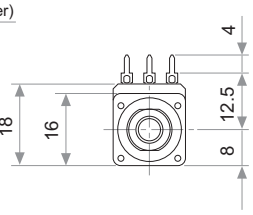
## TERMINALS




C



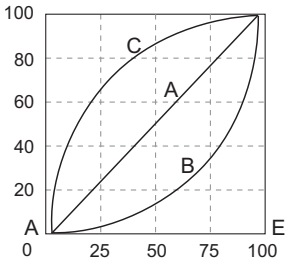




I

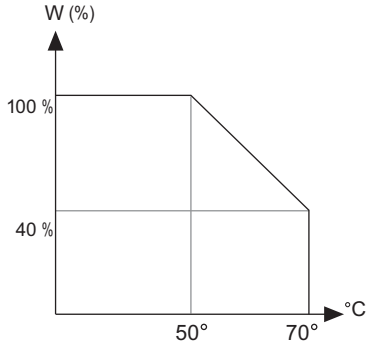
## TAPERS

Standard

A = Linear
B = Log.
C = Alog.

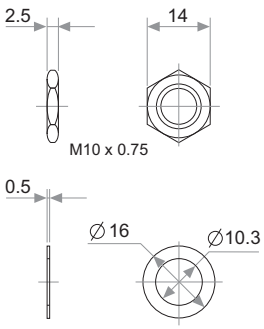



## POWER RATING CURVE

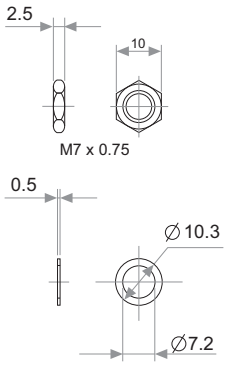



## NUTS & WASHERS

Bushing 10




Bushing 07



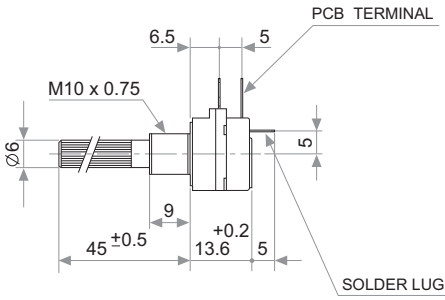

NOTE = Please note relative terminal positions when ordering non linear tapers.

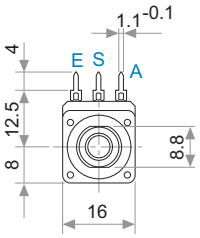
## TESTS

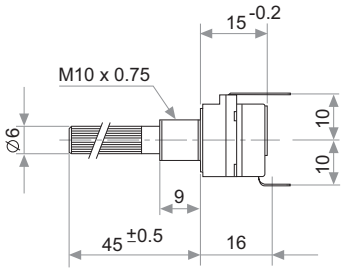
| | | TYPICAL VARIATIONS |
|---|---|---|
| ELECTRICAL LIFE | 1.000 h. @ 50°C; 0.2 W | ±5 % |
| MECHANICAL LIFE : POT.*<br>SWITCH | 25.000 (10-15 CPM)<br>10.000 (1 A, 50 VAC) | ±3 % (Rn < 1 MΩ) |
| TEMPERATURE COEFFICIENT | –25°C; +70°C | ±300 ppm/°C (Rn < 100 KΩ) |
| THERMAL CYCLING | 16 h. @ 85°C; 2h. @ –25°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 % |

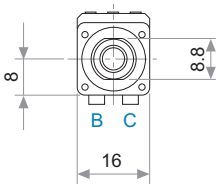
(*) only applicable to values ≥1K. For lower values please consult.

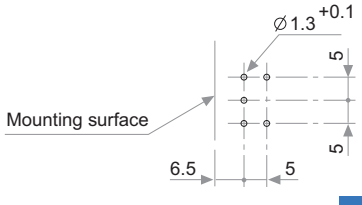
## SWITCH

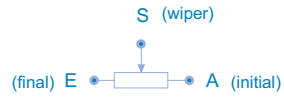


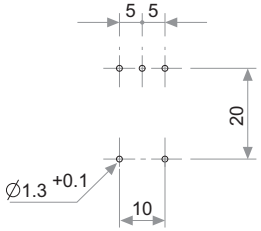



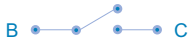




PC-16S . . . H . . . . . . I / C




PC-16SV . . . I

## SWITCH SPECIFICATIONS

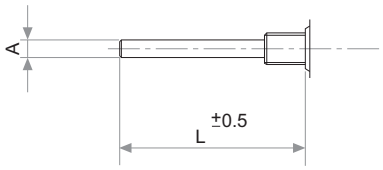
| | |
|---|---|
| NOMINAL CURRENT | 1A, 250 VAC |
| CONTACT RESISTANCE (initial) | 10 m Ω |
| OPERATING TORQUE | 1 to 3 Ncm (1.4 to 4.2 in oz) |
| OPERATING ANGLE | 30° ± 5° |
| TEST VOLTAGE | 500 V |

## PACKAGING

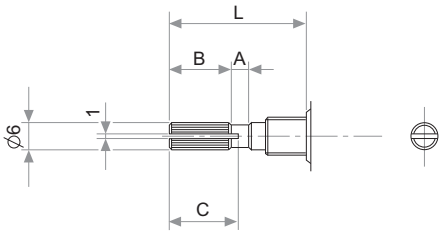
Boxes of 100 pieces (single body model): Inner dimensions 250 x 160 x 95 mm

## METALIC SHAFTS

STANDARD

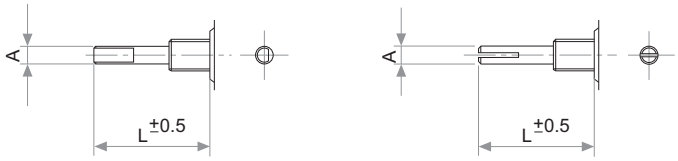



| A | L | CODE |
|---|---|---|
| 4 | 45 | M04 |
| 6 | 45 | M06 |
| 6.35 | 45 | M07 |



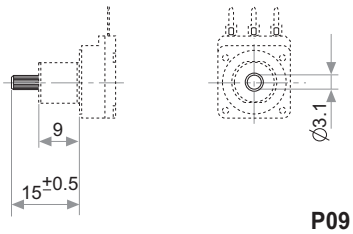

| A | B | C | L | CODE |
|---|---|---|---|---|
| 2 | 5 | 7 | 15 | M11 |
| 2 | 10 | 11 | 20 | M12 |
| 4 | 12 | 14 | 25 | M13 |
| 4 | 12 | 14 | 30 | M14 |
| 4 | 12 | 14 | 35 | M15 |
| 4 | 12 | 14 | 40 | M16 |
| 4 | 12 | 14 | 45 | M17 |

SPECIAL



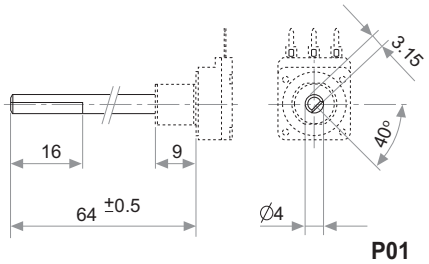

| A |
|---|
| ∅4 |
| ∅6 |
| ∅6.35 |

## PLASTIC SHAFTS Ø3.1

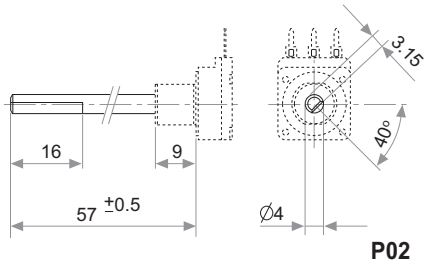



**P09**

## PLASTIC SHAFTS Ø4

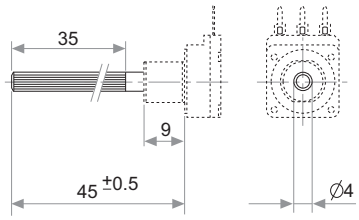



**P01**




**P02**

## PLASTIC SHAFTS Ø4

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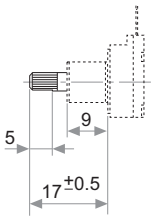


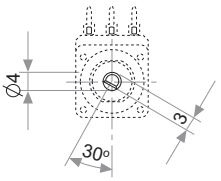


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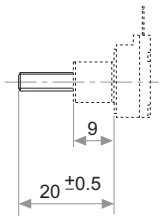


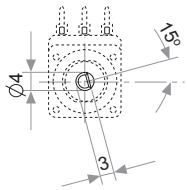


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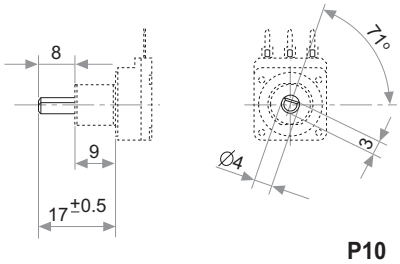


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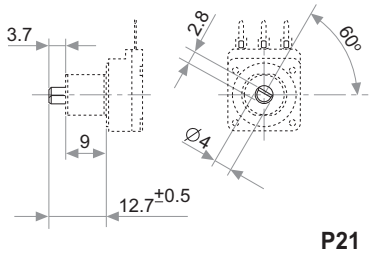
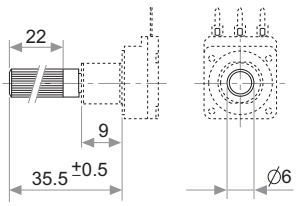



P21

## PLASTIC SHAFTS Ø6

Shaft position shown full CCW. Any other position for plastic shafts has to be shiftted n times 24°. Other positions upon request.

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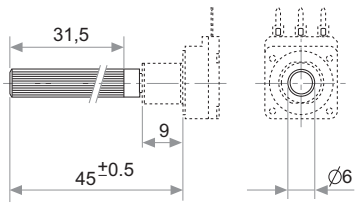


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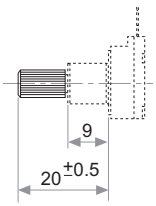


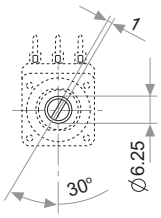


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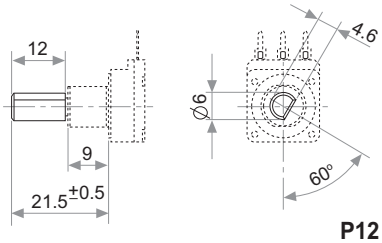


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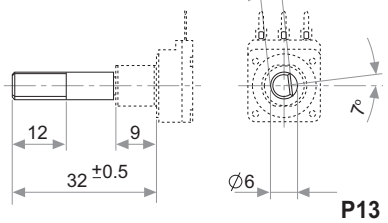
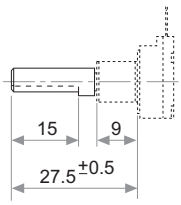
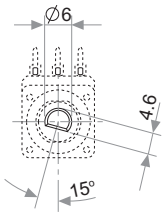



P13

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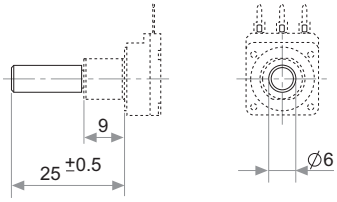


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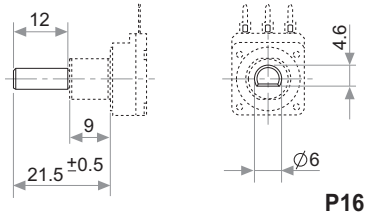


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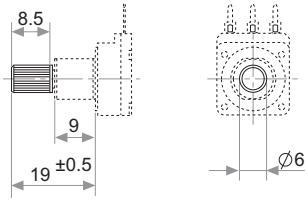


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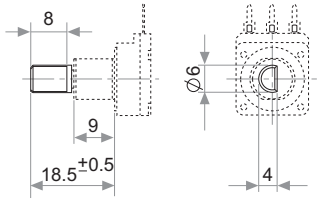


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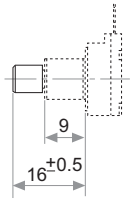


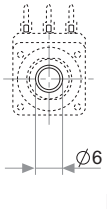


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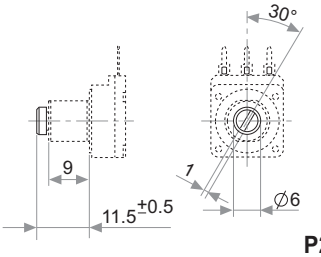


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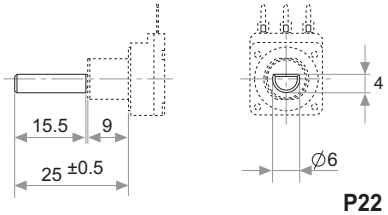
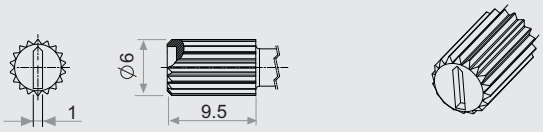
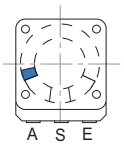



P22

Special shaft example (18 teeth knurl & arrow. Check availability.).

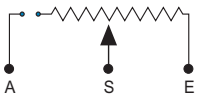


## OPEN CIRCUIT FEATURE (CUT TRACK)

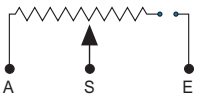


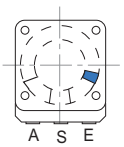

CCW on-off (A)

**PCI**
Cut track at the beginning of the travel.




**PCF**
Cut track at the end of the travel



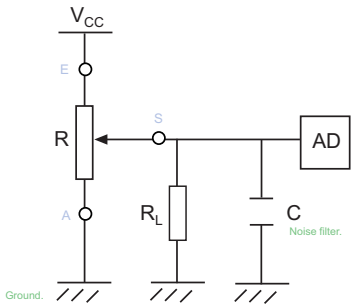




CW on-off (E)

A = Initial S = Wiper E = Final.
PCI, PCF and other configurations available upon request. Check the ordering code with Piher.

## RECOMMENDED CONNECTIONS

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




$R_L \geq 100 \times R$

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## Contact

Piher Sensors & Controls SA
Polígono Industrial Municipal
Vial T2, 22,
31500 Tudela - Spain.
t. +34-948-820450
f. +34-948-824050

sales@piher.net

www.piher.net

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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**Офис по работе с юридическими лицами:**

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9