

MECHANICAL SPECIFICATIONS

- Mechanical rotation angle: $265^\circ \pm 5^\circ$
 $240^\circ \pm 5^\circ$ available under drawing (blue housing only)
- Electrical rotation angle: $240^\circ \pm 20^\circ$
- Torque: 0.5 to 2.5 Ncm.
(0.7 to 3.4 in-oz)
- Stop torque: > 10 Ncm. (> 14 in-oz)
- Life: up to 200K cycles

FEATURES

- Carbon resistive element.
- Dust proof enclosure.
- Polyester substrate.
- Also upon request:
 - Long life model for low cost control pot. applications
 - Low torque option
 - Supplied in magazines for automatic insertion.
 - Wiper positioned at 50% or fully clockwise.
 - Self extinguishable plastic UL 94V-0.
 - Cut track option.
 - Special Tapers.
 - Mechanical detents.

ELECTRICAL SPECIFICATIONS

- Range of values (*)
 $100\Omega \leq R_n \leq 5\text{ M}$ (Decad. 1.0 - 2.0 - 2.2 - 2.5 - 4.7 - 5.0)
- Tolerance (*): $100\Omega \leq R_n \leq 1\text{ M}\Omega$ $\pm 20\%$
 $1\text{ M}\Omega < R_n \leq 5\text{ M}$ $\pm 30\%$
- Max. Voltage: 250 VDC (lin) 125 VDC (no lin)
- Nominal Power 50°C (122°F) (see power rating curve)
0.25 W (lin) 0.12 W (no lin)
- Taper (*) (Log. & Alog. only $R_n \geq 1\text{K}$) Lin ; Log; Alog.
- Residual resistance(*): $\leq 0.5\%$ R_n (5Ω min.)
- Equivalent Noise Resistance: $\leq 3\%$ R_n (3Ω min.)
- Operating temperature**: $-25^\circ\text{C} + 70^\circ\text{C}$ ($-13^\circ\text{F} + 158^\circ\text{F}$)

* Others upon request

** Up to 85°C depending on application

HOW TO ORDER

PT-15	L	H01	223	A	2020	OPTIONAL EXTRAS						S		
Series PT-15	Code H01 H05 H25 H06 H02 H10 V02 V12 V15 V17 V18 V24 V21 V22 V23	Mounting Method H2.5 H5 HC5 B H2.5P H5P V12.5 VA V15 V17.5 D VD15 V12.5P VAP V15P	Taper A = Lin. B = Log. C = Alog.	Life E = Long life U = Extra Long life (See note 5)	Value 101 = 100 Ω 223 = 22 K 504 = 500 K 505 = 5 M	Tolerance 2020 = $\pm 20\%$ 3030 = $\pm 30\%$ (See note 4)	Detents PAI PAM PAF P1I P1F P02 : P38	Flammability I = non flammable (See note 6)	Wiper position PM = 50% PF = Final	Shaft/rotor colour RO=Red NE=Black VE=Green AM=Yellow AZ=Blue MA=Brown GR=Grey NA=Orange CR=Cream (See note 7)	Magazine T (See note 9)	Torque – = Standard L = Low torque (See note 8)	Cut track PCI = Initial PCF = Final	Shaft Thum. 01 – Fig. 1 : 28 – Fig. 28 (See note 10)
Rotors C F G L M N R T X W Y Z (See note 1)														

NOTES:

- "Z" adjustment only available on "H" versions. Standard colour for the "T" rotor: Orange
- Terminal styles: "P" are crimped terminals. V24 not available with steel terminals. V=Vertical adjust; H=Horizontal Adjust
- Value Example: Code: 10 1 100 Ω
Numb of zeros
First two digits of the value.
- Non standard tolerance, upon request. Example: +7% Code: 07 05
-5% negative tolerance
positive tolerance
- Life
 - Standard 500 cycles
 - Long life 10000 cycles
 - Extra Long life 100000 cycles (to be studied case by case)
- Non flammable: housing, rotor and shaft. According to UL 94V-0
- Colour shaft/rotor:
 - Potentiometer without shaft: only rotor
 - Potentiometer with shaft: only shaft
 Cream colour only available in standard plastic
- Low Torque: $\leq 1.5\text{Ncm}$. No detent option available for low torque models
- Magazines (35 pcs/mag): available for VA (12.5), V (12.5), V (12.5P), V (15), V15 (P) and H models.
For more information please contact your nearest Piher supplier.
- If you wish to use your own custom plastic shaft/knob/actuator please contact Piher for advice about compatible materials.

NOTE: The information contained here should be used for reference purposes only.

HOW TO ORDER CUSTOM DRAWING

PT-15 LH 01 + DRAWING NUMBER (Max. 16 digits)

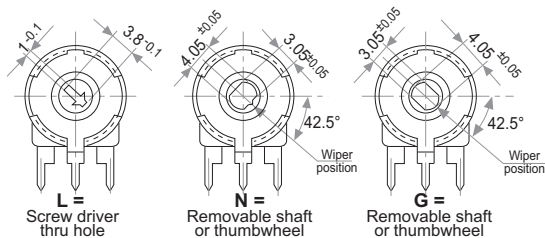
This way of ordering should be used for options which are not included in the "How to order" standard and optional extras.

STANDARD OPTIONS

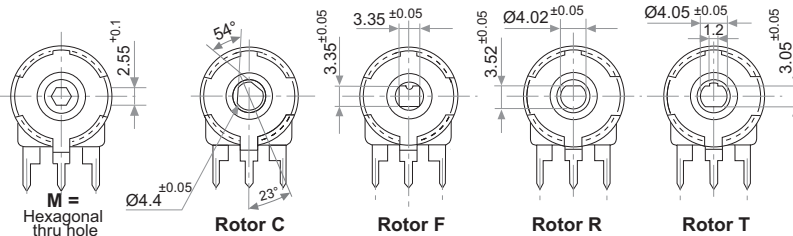
Cut track	.....	No
Detents	.....	None
Non flammable	.....	No
Rotor colour	.....	White
Shaft colour	.....	Natural
Wiper position	.....	Initial
Torque	.....	Standard

ROTORS

Wipers positioned at initial (without shaft)

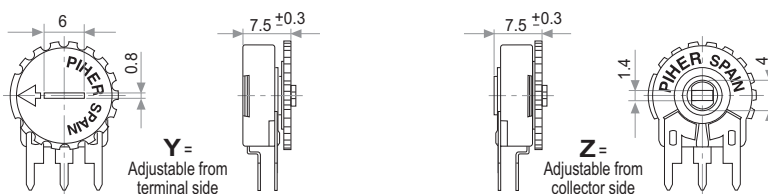
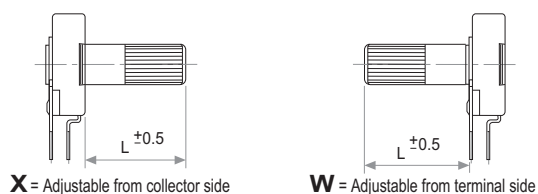


Wipers positioned at 50% (without shaft)

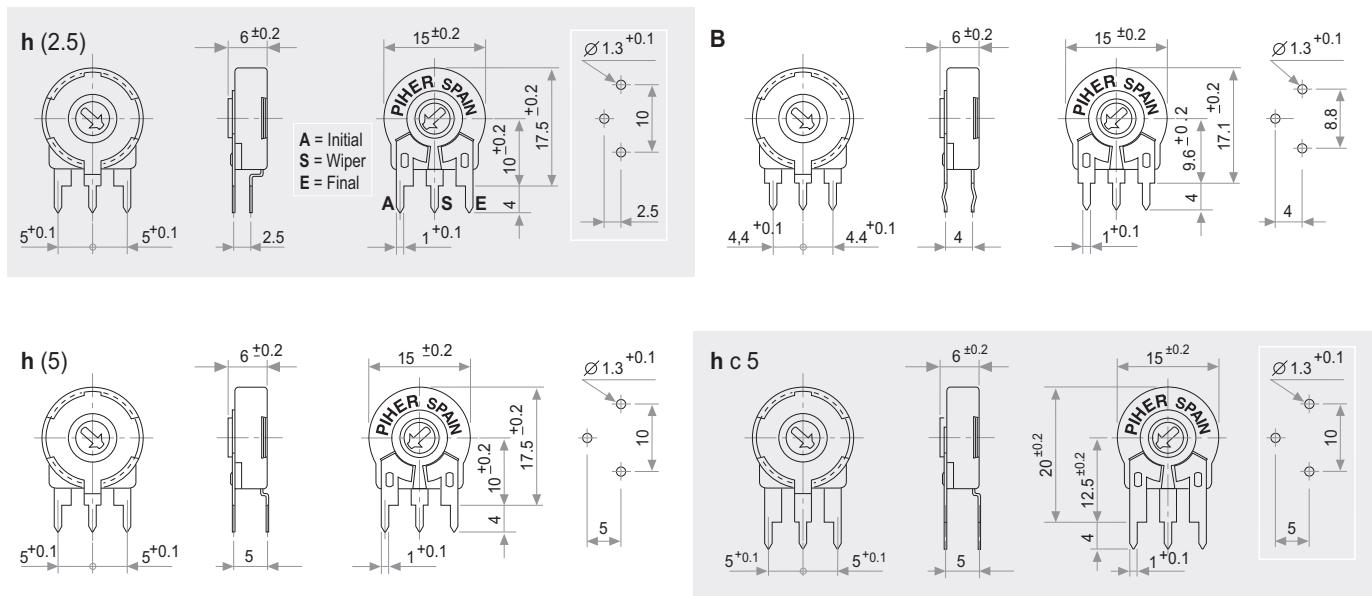


With shaft

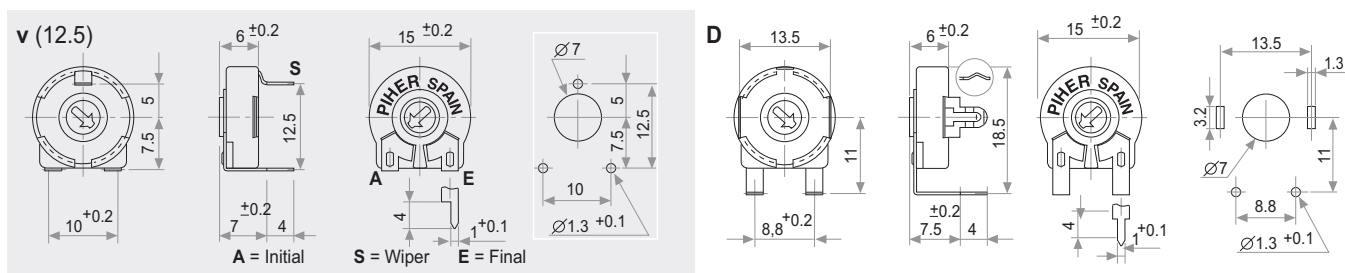
With thumbwheel



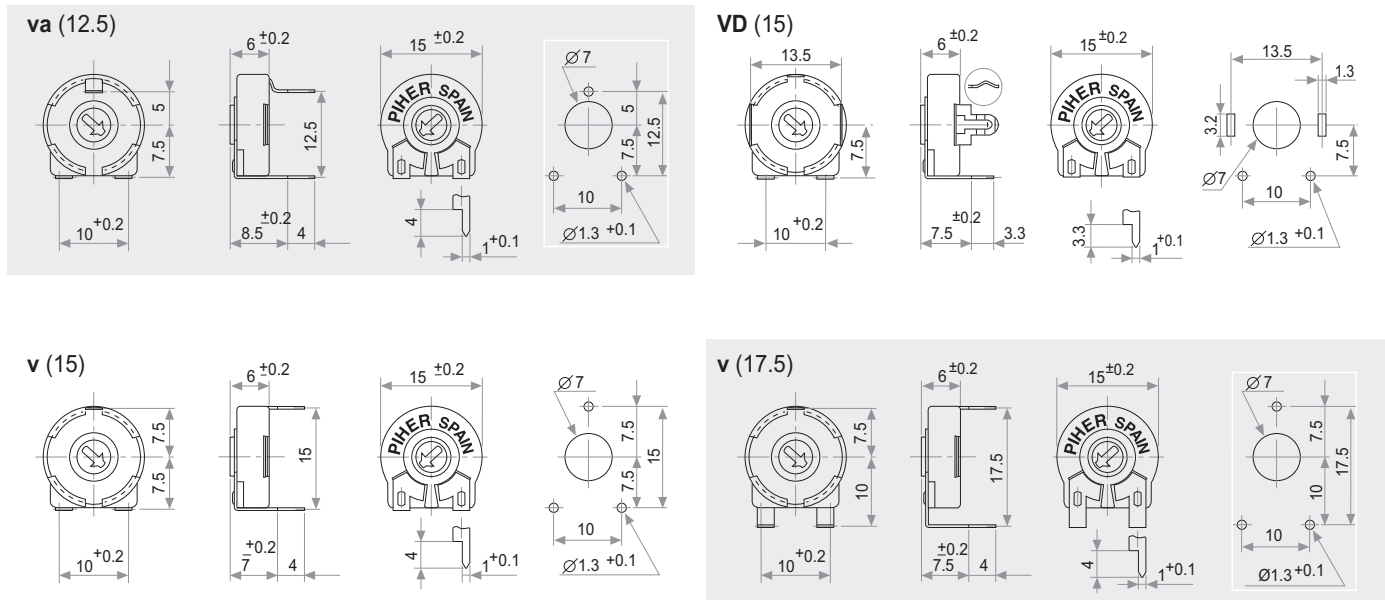
VERTICAL MOUNT - HORIZONTAL ADJUST



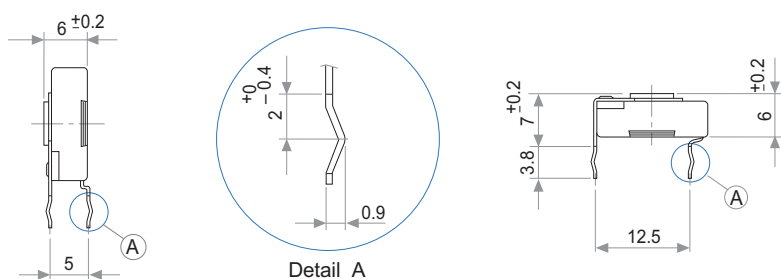
HORIZONTAL MOUNT - VERTICAL ADJUST



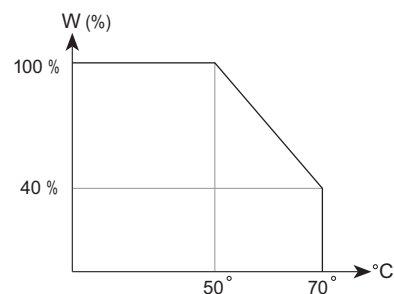
HORIZONTAL MOUNT - VERTICAL ADJUST



CRIMPED TERMINALS (DETAIL)

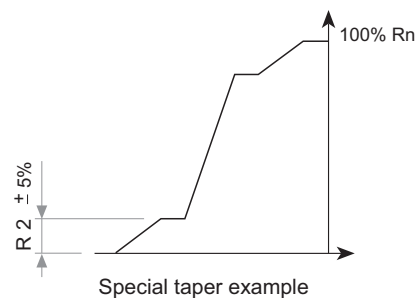
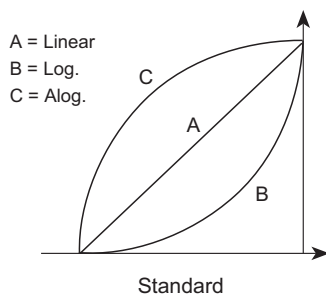


POWER RATING CURVE

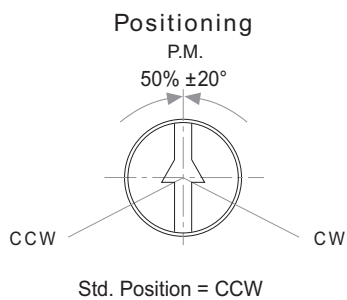


TAPERS

NOTE: Please note terminals disposition when ordering non linear curves.

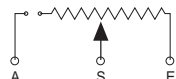


OPTIONS

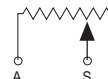


Cut Track

CCW on-off (A)



A = Initial
S = Wiper
E = Final



CW on-off (E)



TESTS

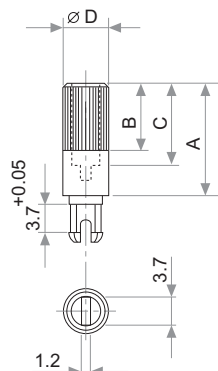
TYPICAL VARIATIONS

ELECTRICAL LIFE	1.000 h. @ 50°C; 0.25 W	±5 %
MECHANICAL LIFE (CYCLES)	500 @ 10 CPM ...15 CPM	±3 % (Rn < 1 MΩ)
TEMPERATURE COEFFICIENT	-25°C; +70°C	±300 ppm (Rn <100 K)
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 %

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

SHAFTS (for N, G and T rotor types, top view)

Hollow model shafts



A = Length (FRS)
B = Knurling length
C = Hollow depth
D = Shaft diameter
FRS = From rotor surface

FIG.	A	B	C	D	Ref.
1	12	9	8	6	5272
2	19	9	15	6	5214
5	9.5	6.5	5.5	6	5208
9	35	9	31	6	5216
10	37.8	9	33.8	6	5218
11	35	25	15	6	5209
13	7.8	4.8	3.8	6	5265

Solid model shafts

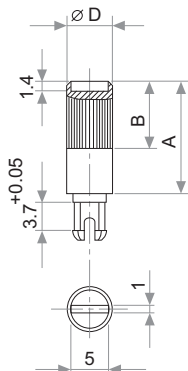
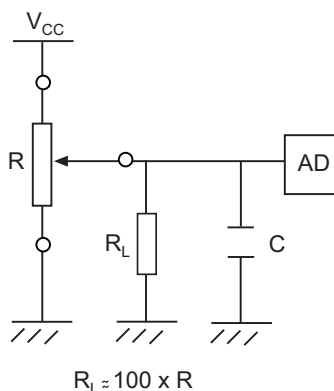


FIG.	A	B	D	Ref.
6	15	9	6	5219
7	16.8	9	6	5220
8	25.3	9	6	5207
12	46	5	6	5227

Slot (1 x 1.4) perpendicular to wiper position. Fig. 12 slot is on line with wiper position.

RECOMMENDED CONNECTIONS

Recommended connection scheme for Piher's position sensors (voltage divider)



SHAFTS (for N, G and T rotor types, top view)

By default shafts, knobs & thumbwheels are delivered unassembled.

Mounted shafts, knobs & thumbwheels are delivered at random position. Positioning available upon request.

If you wish to use your own plastic shaft/knob/actuator please contact Piher for advice about compatible materials.

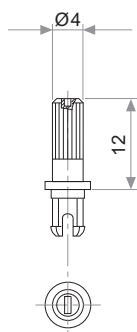


Fig. 3 / Ref. 5372

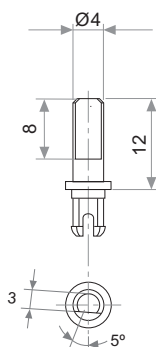


Fig. 15 / Ref. 5217

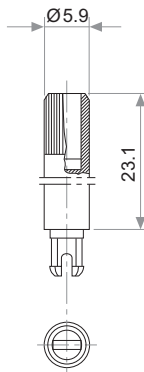


Fig. 17 / Ref. 5210

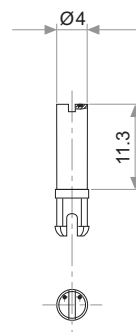


Fig. 18 / Ref. 5271

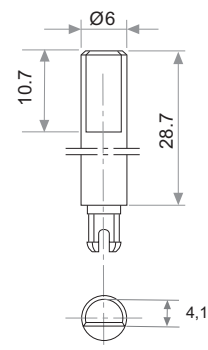


Fig. 19 / Ref. 6032*

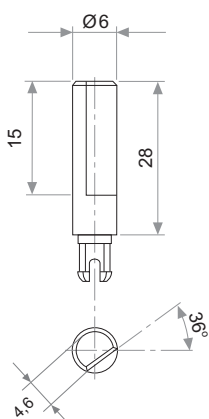


Fig. 20 / Ref. 5369*

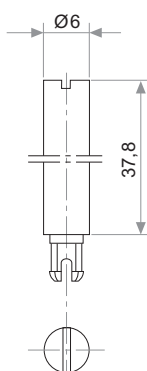


Fig. 21 / Ref. 6031*

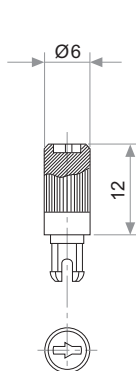


Fig. 22 / Ref. 6029

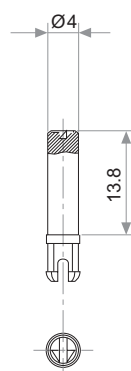


Fig. 23 / Ref. 6022

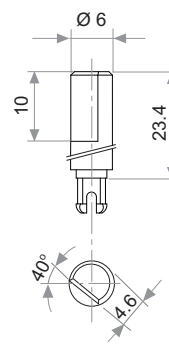


Fig. 29 / Ref. 6162

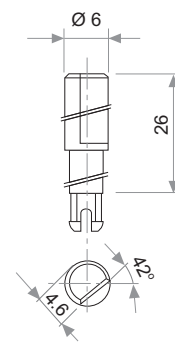


Fig. 25 / Ref. 6059

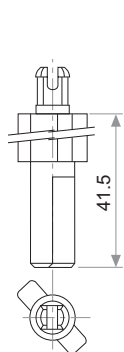


Fig. 27 / Ref. 5268*

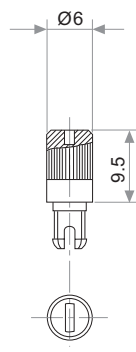


Fig. 28 / Ref. 6055

* Not available in self extinguishable plastic

THUMBWHEEL

By default shafts, knobs & thumbwheels are delivered unassembled.

Mounted shafts, knobs & thumbwheels are delivered at random position. Positioning available upon request.

If you wish to use your own plastic shaft/knob/actuator please contact Piher for advice about compatible materials.

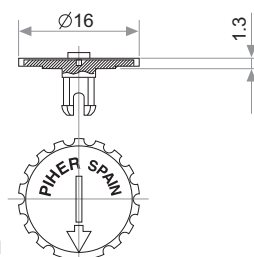


Fig. 4 / Ref. 5371


DETENT CONFIGURATIONS EXAMPLES

This innovative PT's with detents family has been specifically developed to allow the integration of otherwise large and expensive external mechanisms into the body of the potentiometer thus allowing a high range of configurations: special tapers, torque, tolerances, linearity, cut track, etc.

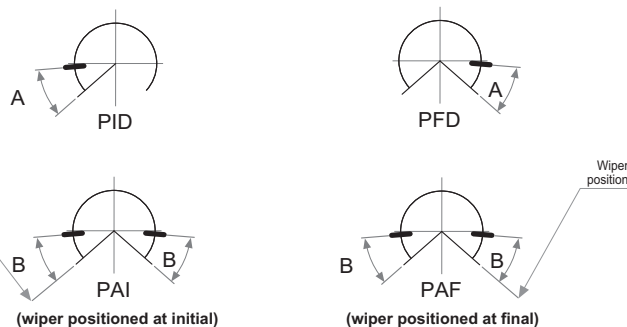
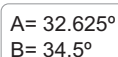
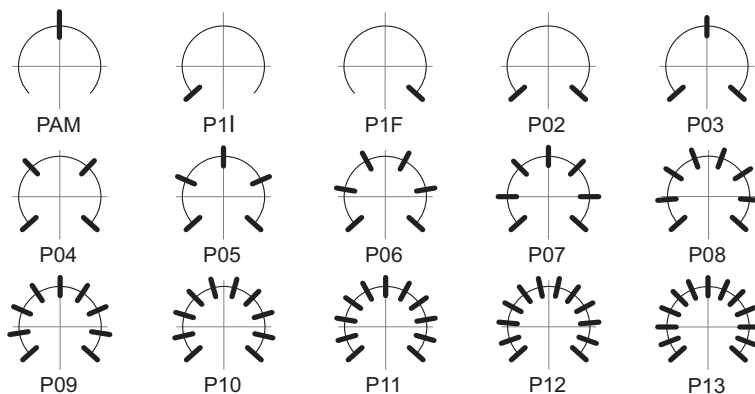
This detent design not only adds a "click" sensation of position, but also offers enormous savings in both cost and space for any given application.

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

*For more than 13 detents versions please contact your nearest PIHER distributor. Mechanical and/or electrical features may be affected by detents. Detents may not be available for all mounting methods. Please see our separate PTs with detents datasheet at www.piher.net

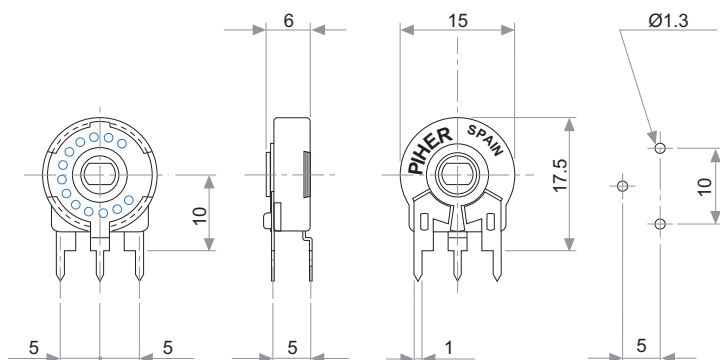


DETENT DETAILS

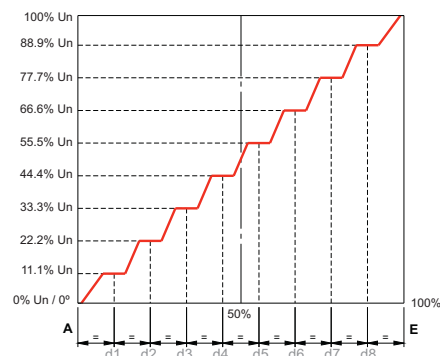
13 detents example

DETENTS & STEPPED OUTPUTS

10 detents example



Our potentiometers can feature flattened regions in its output curve. This allows engineers to precisely control constant voltage outputs within the normal rotational range of their potentiometer. These regions can be combined with Piher's detent feature providing a positive mechanical action when rotating the potentiometer into these constant voltage zones.



All Piher products can be adapted to meet customer's requirements.

Disclaimer

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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