

PT-15

FEATURES

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

MECHANICAL SPECIFICATIONS

- Mechanical rotation angle: $265 \pm 5^\circ$
240°±5 available under drawing (blue housing only)
- Electrical rotation angle: $250 \pm 20^\circ$
- Torque: 0.5 to 2.5 Ncm.
(0.7 to 3.4 in-oz)
- Stop torque: >10 Ncm. (>14 in-oz)

ELECTRICAL SPECIFICATIONS

- Range of values(*)
 $100 \Omega \leq R_n \leq 5M$ (Decad. 1.0-2.0-2.2-2.5-4.7-5.0)
- Tolerance(*): $100 \Omega \leq R_n \leq 1M \Omega$ ----- 20%
 $1M \Omega < R_n \leq 5M$ ----- 30%
- Max. Voltage: 250 VDC (lin) 125 VDC (no lin)
- Nominal Power 50°C (122° F) (see power rating curve)
0.25W (lin) 0.12W (no lin)
- Taper(*) (log. & Alog. only $R_n \geq 1k$) Lin; Log; Alog.
- Residual resistance: $\leq 5.10^{-3} R_n$ (2 min.)
- Equivalent Noise Resistance: $\leq 3\% R_n$ (3 min.)
- Operating temperature**: (-25°C + 70°C) (-13° F + 158° F)
- * Others upon request ** Up to 85°C depending on application

HOW TO ORDER

STANDARD					OPTIONAL EXTRAS				
PT-15	L	H01	223	A	2020				
Series	Code	Mounting Method	Taper	Life	Detent	Flammability	Wiper position	Magazine	
PT-15	H01	H2.5	A=Lin. B=Log C=Alog.	E=Long life U=Extra Long life (See note 5)	See PT's with detents data sheet	I=non flammable (See note 6)	PM=50% PF=Final	T (See note 9)	
Rotors	H05 H25 H06 H02 H10 V02 V12 V15 V17 V18 V24 V21 V22 V23	H5 HC5 B H2.5P H5P V12.5 VA V15 V17.5 D VD15 V12.5P VAP V15P	Value	Tolerance	Cut track	Shaft Thum.	Shaft/rotor colour		
C F G L M N R T X W Y Z			101=100Ω 223=22K 504=500K 505=5M	2020=±20% 3030=±30% (See note 4)	PCI=Initial PCF=Final	01 Fig.1 28 Fig.28	RO=Red NE=Black VE=Green AM=Yellow AZ=Blue MA=Brown GR=Grey NA=Orange CR=Cream. (See note 7)	Torque =Standard L=Low torque (See note 8)	
(See note 1)	(See note 2)	(See note 3)							

NOTES:

- (1) "z" adjustment only available on "H" versions. Standard colour for the "T" rotor: Orange
- (2) Terminal styles: "P" are crimped terminals
- (3) Value Example: Code: 10 1 100Ω
 1 → Numb of zeros
 10 → First two digits of the value.
- (4) Non standard tolerance, upon request. Example: +7% Code: 07 05
 -5% → negative tolerance
 → positive tolerance
- (5) Life ♦ Standard 500 cycles
 ♦ Long life 10000 cycles
 ♦ Extra Long life 100000 cycles (to be studied case by case)
- (6) Non flammable: housing, rotor and shaft.
- (7) Colour shaft/rotor: ♦ Potentiometer without shaft: only rotor ♦ Potentiometer with shaft: only shaft
 Cream colour only available in standard plastic
- (8) Low Torque: $\leq 1.5Ncm$. No detent option available for low torque models
- (9) Magazines (35pcs/mag): available for VA (12.5), V (12.5), V (12.5P), V (15), V (15P) and H models.
 For more information please contact us directly.

STANDARD OPTIONS

Mechanical-Life.....	500 cycles
Cut track	No
Detents	None
Non flammable.....	No
Rotor colour	White
Shaft colour	Natural
Wiper position.....	Initial
Torque	Standard

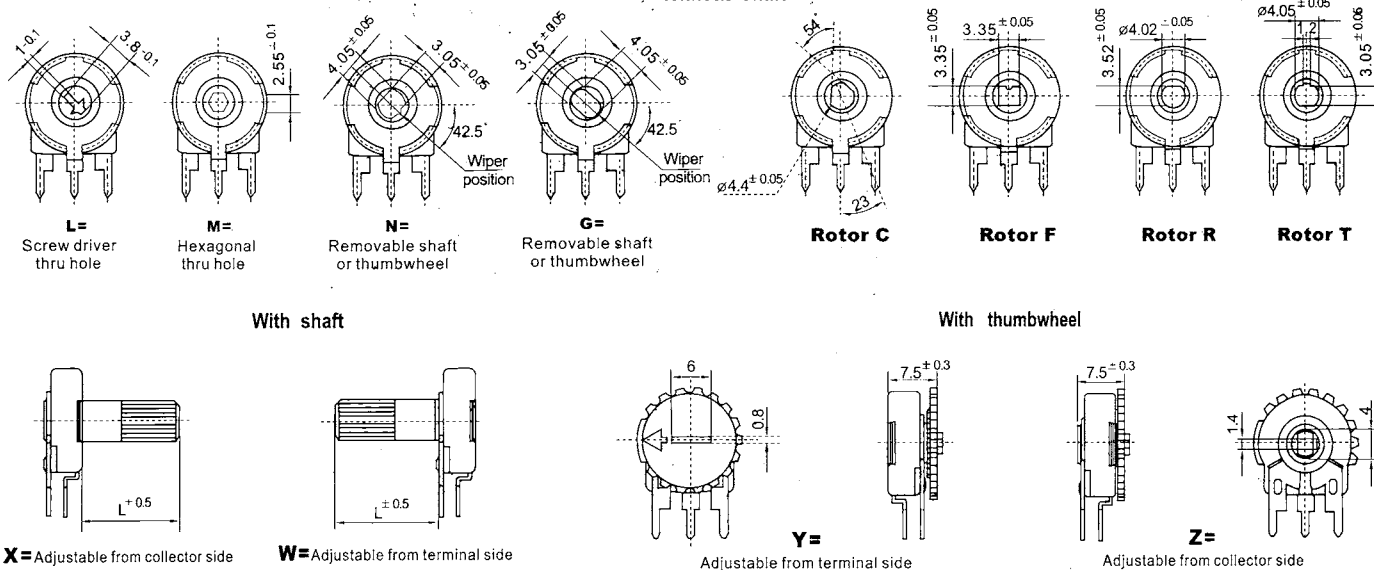
This way of ordering should be used for options which are not included in the "How to order" standard and optional extras.

ROTORS

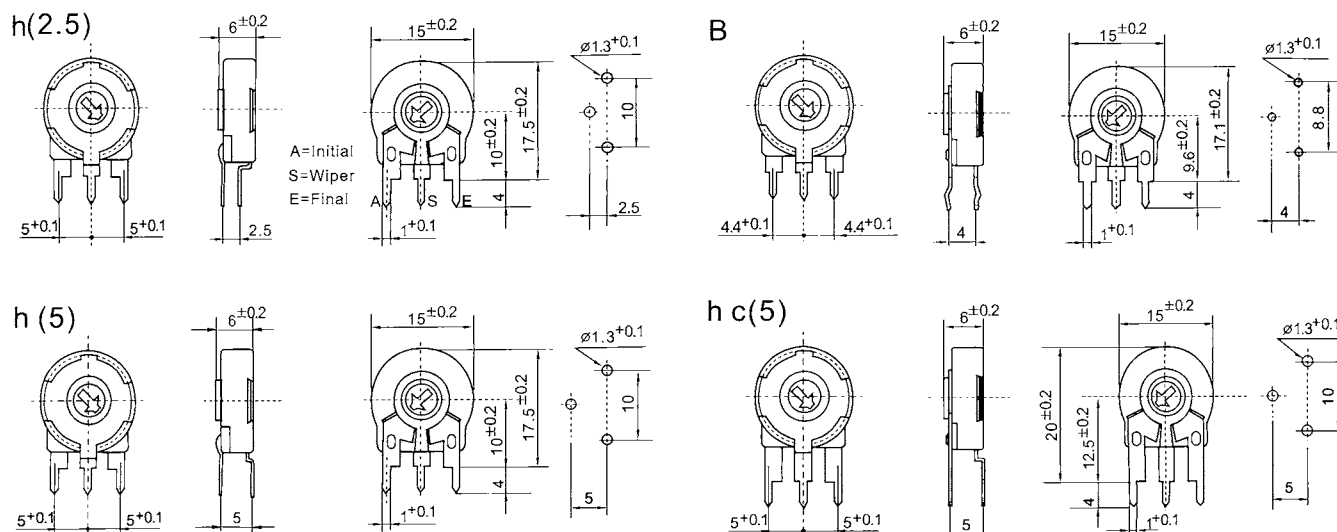
Wipers positioned[®] at initial

Without shaft

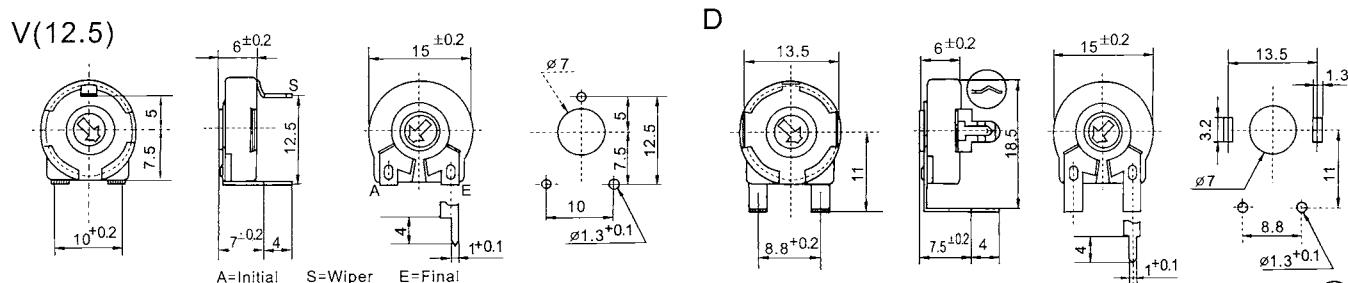
Wipers positioned at 50%



VERTICAL MOUNT-HORIZONTAL ADJUST

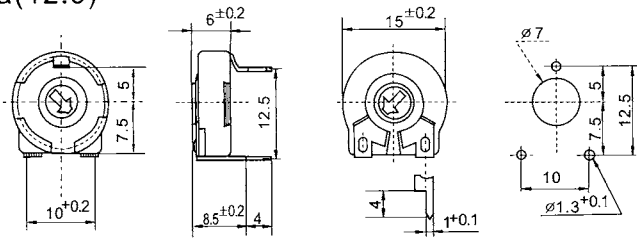


HORIZONTAL MOUNT-VERTICAL ADJUST

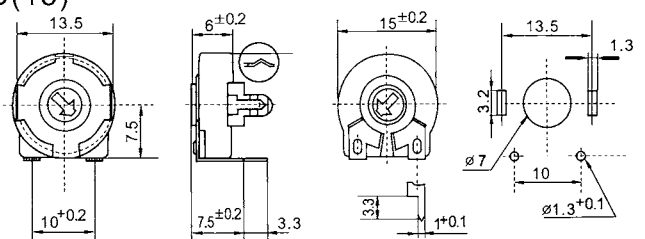


HORIZONTAL MOUNT-VERTICAL ADJUST

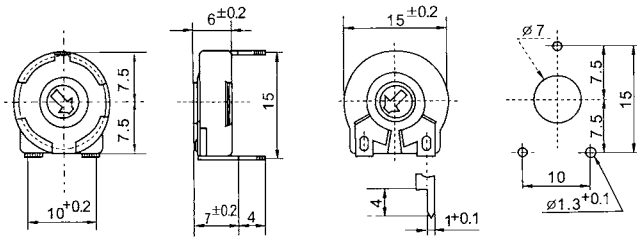
Va(12.5)



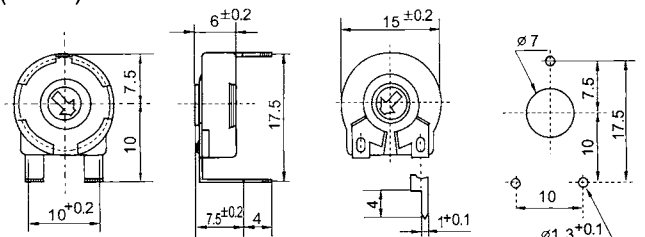
VD(15)



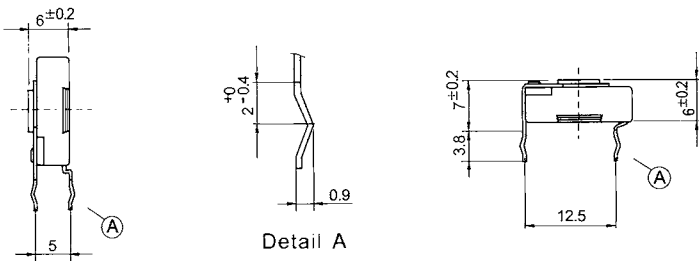
V(15)



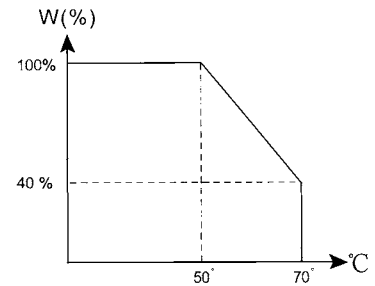
V(17.5)



CRIMPED TERMINALS (DETAIL)



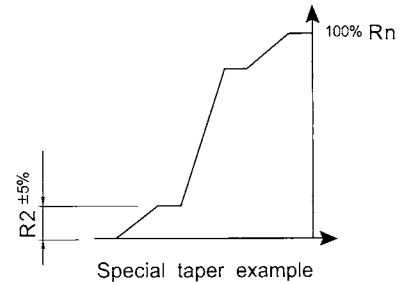
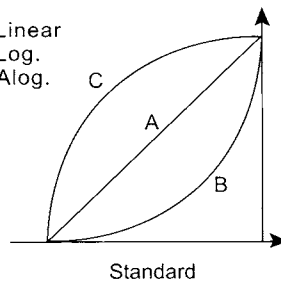
POWER RATING CURVE



TAPERS

A=Linear
B=Log.
C=Alog.

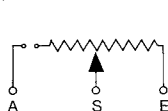
NOTE: Please note terminals disposition when ordering non linear curves.



OPTIONS

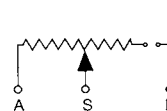
Cut Track

CCW on-off(A)



Std Position=CCW

A=Initial
S=Wiper
E=Final



CW on-off(E)



TESTS

ELECTRICAL LIFE	1.000 h.@ 50°C ; 0.25 W	%
MECHANICAL LIFE (CYCLES)	500@ 10 CPM----15 CPM	%(Rn<1 MΩ)
TEMPERATURE COEFFICIENT	5°C;+ 70°C	00 ppm (Rn<100 K)
THERMAL CYCLING	16h.@ 85°C;2 h.@-25°C	.5%
DAMP HEAT	500 h.@ 40°C @ 95% HR	%
VIBRATION (for each plane X,Y,Z)	2 h.@ 10 Hz--- 55 Hz	%

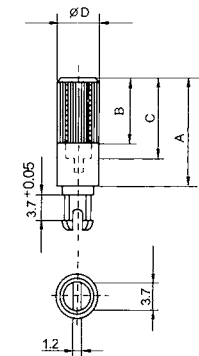
NOTE: Out of range values may not comply these results

PACKAGING

	PIECES/BOX
No thumbwheel/shaft	200 (40×85×185mm.)
With thumbwheel/shaft up to 19mm.	100 (40×85×185mm.)
With shaft exceeding 19mm.	50 (40×85×185mm.)

SHAFTS

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	15	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

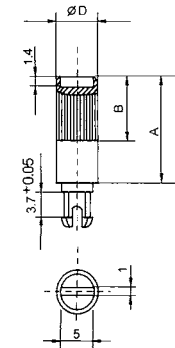


FIG.	A	B	D	Ref.
6	15	9	6	5219
7	16.8	9	6	5220
8	25.3	9	6	5207
12	46	5	6	5227

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

SHAFTS

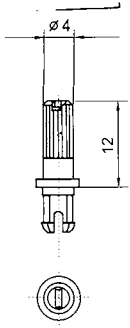


Fig.3/Ref.5372

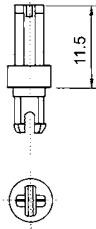


Fig.14/Ref.5248

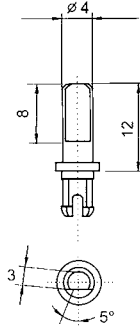


Fig.15/Ref.5217

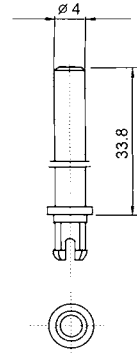


Fig.16/Ref.5262*

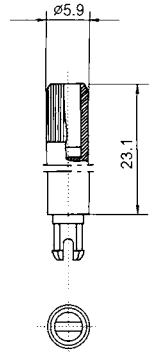


Fig.17/Ref.5210

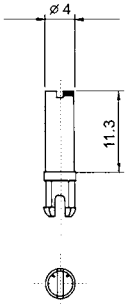


Fig.18/Ref.5271

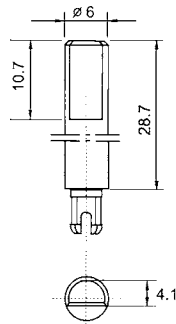


Fig.19/Ref.6032*

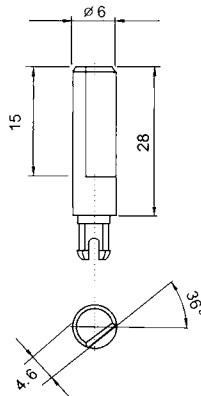


Fig.20/Ref.5369*

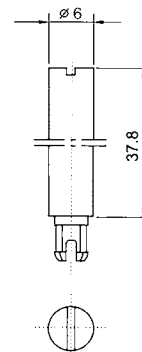


Fig.21/Ref.6031*

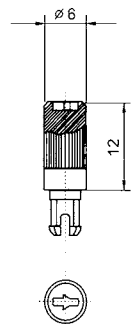


Fig.22/Ref.6029

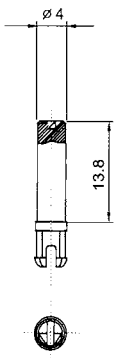


Fig.23/Ref.6022

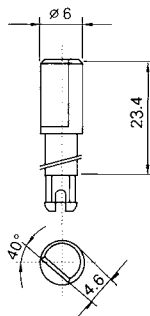


Fig.24/Ref.6058

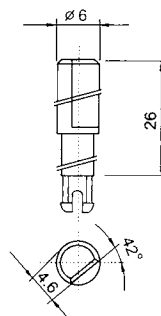


Fig.25/Ref.6059

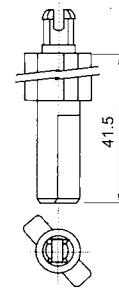


Fig.27/Ref.5268*

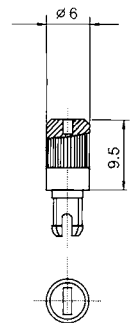


Fig.28/Ref.6055

* Not available in self extinguishable plastic

THUMBWHEEL

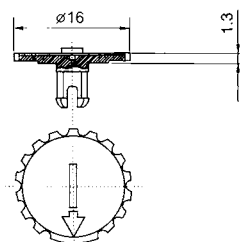


Fig. 4/Ref.5371

PT-10 Carbon Potentiometer

FEATURES

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

MECHANICAL SPECIFICATIONS

- 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(*)
 $100 \Omega \leq R_n \leq 5M$ (Decad. 1.0-2.0-2.2-2.5-4.7-5.0)
- Tolerance(*): $100 \Omega \leq R_n \leq 1M \Omega$ ----- $\pm 20\%$
 $1M \Omega < R_n \leq 5M \Omega$ ----- $\pm 30\%$
- Max. Voltage: 200 VDC (lin) 100 VDC (no lin)
- Nominal Power $50^{\circ}C$ ($122^{\circ}F$) (see power rating curve)
0.15W (lin) 0.07W (no lin)
- Taper(*) (log. & Alog. only $R_n \geq 1k$) Lin; Log; Alog.
- Residual resistance: $\leq 5 \cdot 10^{-3} R_n$ (2Ω min.)
- Equivalent Noise Resistance: $\leq 3\% R_n$ (3Ω min.)
- Operating temperature**: $(-25^{\circ}C + 70^{\circ}C)$ ($-13^{\circ}F + 158^{\circ}F$)
- *Others upon request **Up to $85^{\circ}C$ depending on application

HOW TO ORDER

STANDARD					OPTIONAL EXTRAS				
PT-10	L	H01	101	A	2020				
Series	Code	Mounting Method	Taper	Life	Detent	Shaft /Thum.	Shaft/rotor colour	Torque	
PT-10	H01	H2.5	A=Lin. B=Log. C=Alog.	E=Long life (See note 5)	See PT's with detents data sheet	01= Fig.1 02= Fig.2 17= Fig.17	RO=Red NE=Black VE=Green AM=Yellow AZ=Blue MA=Brown GR=Grey NA=Orange CR=Cream. (See note 8)	--=Standard L=Low torque X=Extra Low Torque (See note 9)	
Rotors			Value	Tolerance	Cut track		Magazine	Flammability	Wiper position
G		H10	101=100 Ω	2020= $\pm 20\%$	PCI=Initial PCF=Final		T	I=non flammable (See note 7)	PM=50% PF=Final
L		H05	504=500K	3030= $\pm 30\%$ (See note 4)					
M		V10	505=5 M (See note 3)						
K		V11							
X		V13							
W									
Y									
Z									
(See note 1)		(See note 2)	(See note 3)				(See note 6)		

NOTES:

- (1) "Z" adjustment only available on "H" versions. Rotor "G" only available in purple (shaft/rotor colour "VI").
- (2) Terminals styles: "P" & "J" are crimped terminals.
- (3) Value Example: Code: 10 1 100 Ω
→ Numb of zeros
→ First two digits of the value.
- (4) Non standard tolerance, upon request. Example: +7% Code: 07 05
-5% → negative tolerance
→ positive tolerance
- (5) Life ♦ Standard 500 cycles
♦ Long life 10000 cycles
- (6) Magazines: not available with the H10, V05 and V13 models, nor with adjustment types X, W, Y, Z.
- (7) Non flammable: housing, rotor and shaft.
- (8) Colour shaft/rotor: ♦ Potentiometer without shaft: only rotor ♦ Potentiometer with shaft: only shaft
♦ Cream colour only available in standard plastic
- (9) Low Torque: 0.25 to 1 Ncm (per pot.)
Extra Low Torque: 0.1 to 0.4 Ncm (per pot.). Only available on "H" models without crimping
No detent option available for low and extra low torque models. No shaft or thumbwheel option for extra low torque models.

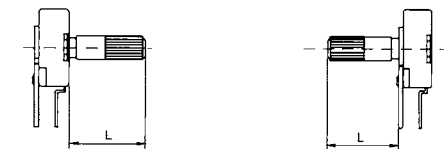
NOTE: The information contained here should be used for reference purposes only.

STANDARD OPTIONS

Mechanical Life	500 cycles
Cut track	No
Detents	None
Packing	Bulk
Non flammable	No
Rotor colour	White
Shaft colour	Natural
Wiper position	Initial
Torque	Standard

ROTORS

With shaft

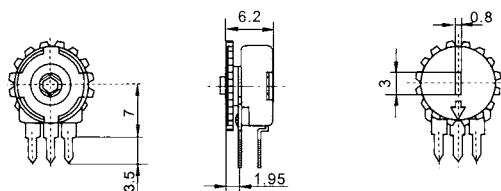


X=Adjustable from collector side

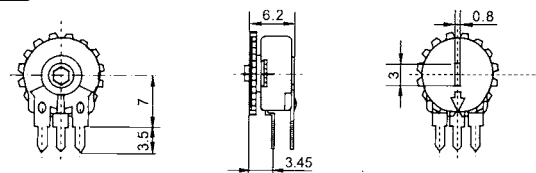
W=Adjustable from terminal side

Wipers positioned at 50%

With thumbwheel



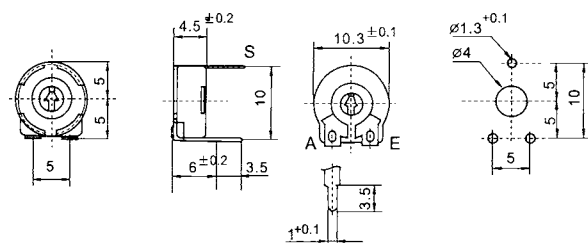
Y=Adjustable from terminal side



Z=Adjustable from collector side

MOUNTING MENTHODS

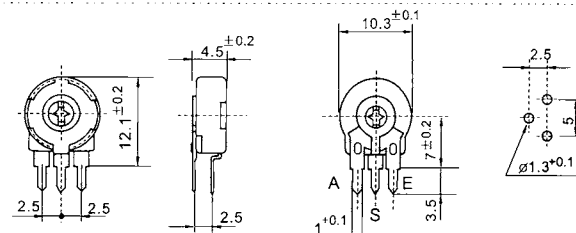
h = vertical mount - horizontal adjust

 $V(10)$

A=Initial

S=Wiper

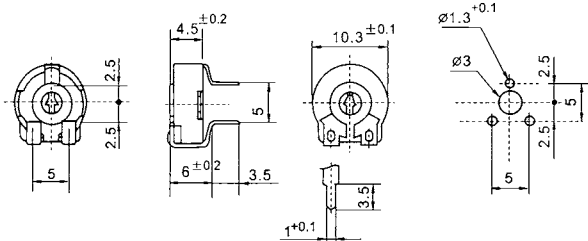
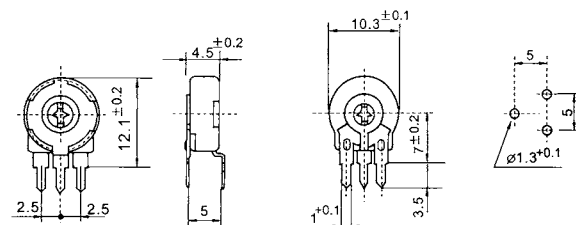
E=Final


$$h(2.5)$$

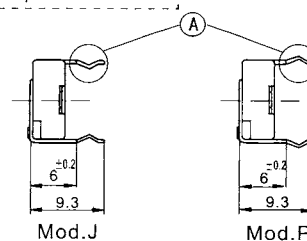
A=Initial

S=Wiper

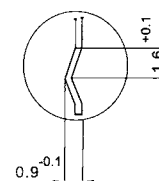
E=Final

 $V(5)$ 
$$h(5)$$

Cramped terminals

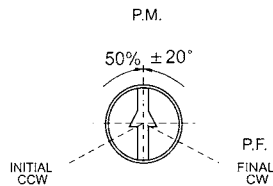


Detail

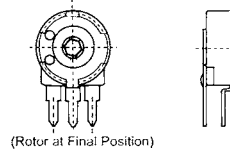


OPTIONS

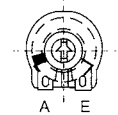
Positioning(Std.Position = CCW)



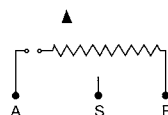
Special SWITCH (Upon request)



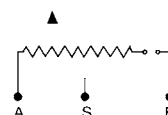
CUT TRACK
CCW on-off(A)



A=Initial

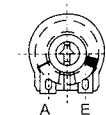


E=Final



S=Wiper

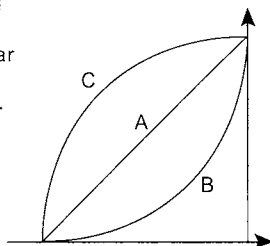
CW on-off(E)



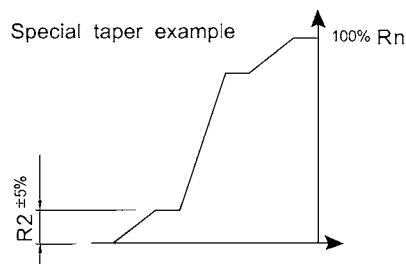
TAPERS

Standard

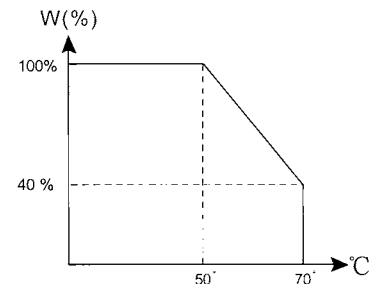
A=Linear
B=Log.
C=Alog.



Special taper example



POWER RATING CURVE



NOTE: Please note relative terminals positions when ordering non linear tapers.

TESTS

ELECTRICAL LIFE	1.000 h.@ 50°C ; 0.15 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	16h.@ 85°C; 2 h.@ -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

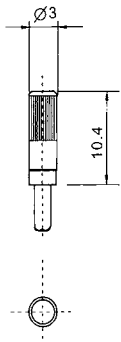


Fig.1/Ref.5016

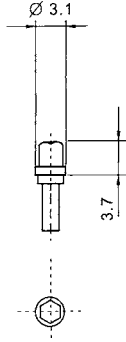


Fig.2/Ref.5053

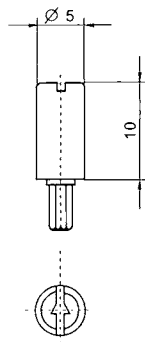


Fig.3/Ref.5012

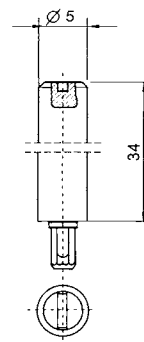


Fig.4/Ref.6053

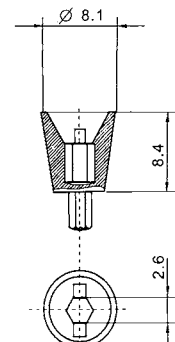


Fig.6/Ref.5035

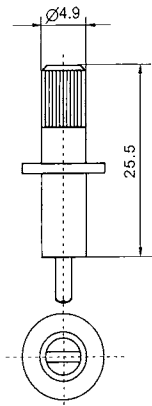


Fig.7/Ref.5115

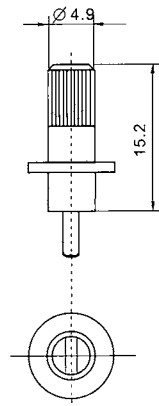


Fig.8/Ref.5116

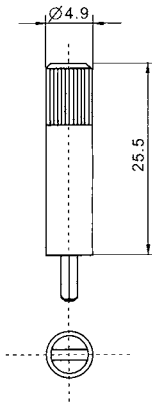


Fig.9/Ref.5119

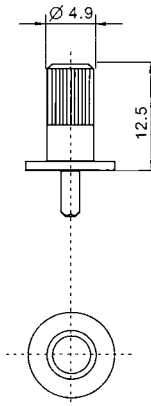


Fig.10/Ref.5120

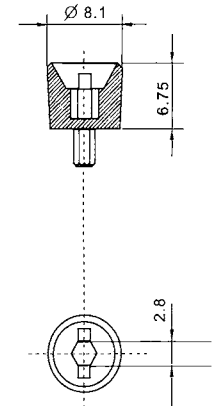


Fig.11/Ref.5027

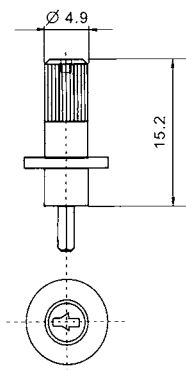


Fig.12/Ref.6052

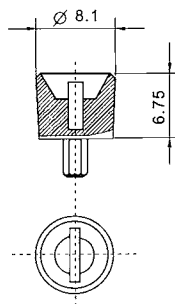


Fig.13/Ref.5121

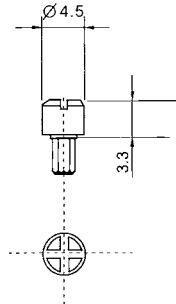


Fig.14/Ref.5055

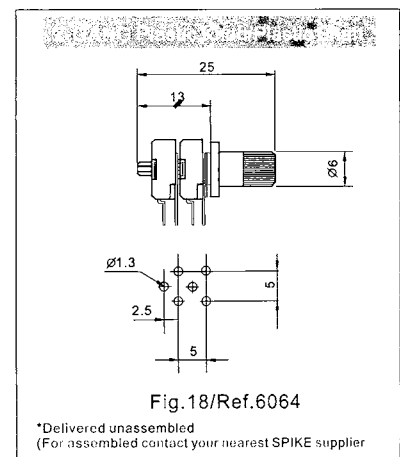


Fig.18/Ref.6064

*Delivered unassembled
(For assembled contact your nearest SPIKE supplier)

THUMBWHEELS

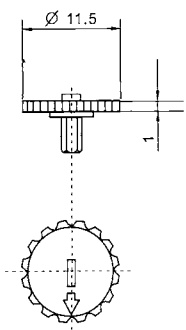


Fig.5/Ref.5034

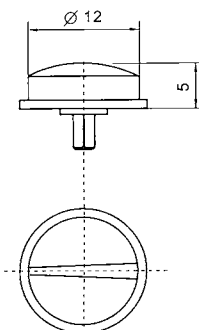


Fig.15/Ref.6008

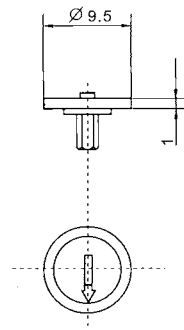


Fig.16/Ref.5039

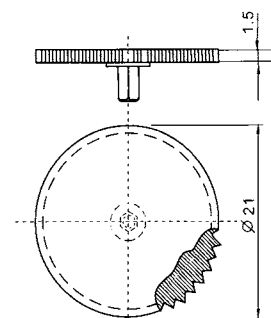


Fig.17/Ref.5062