



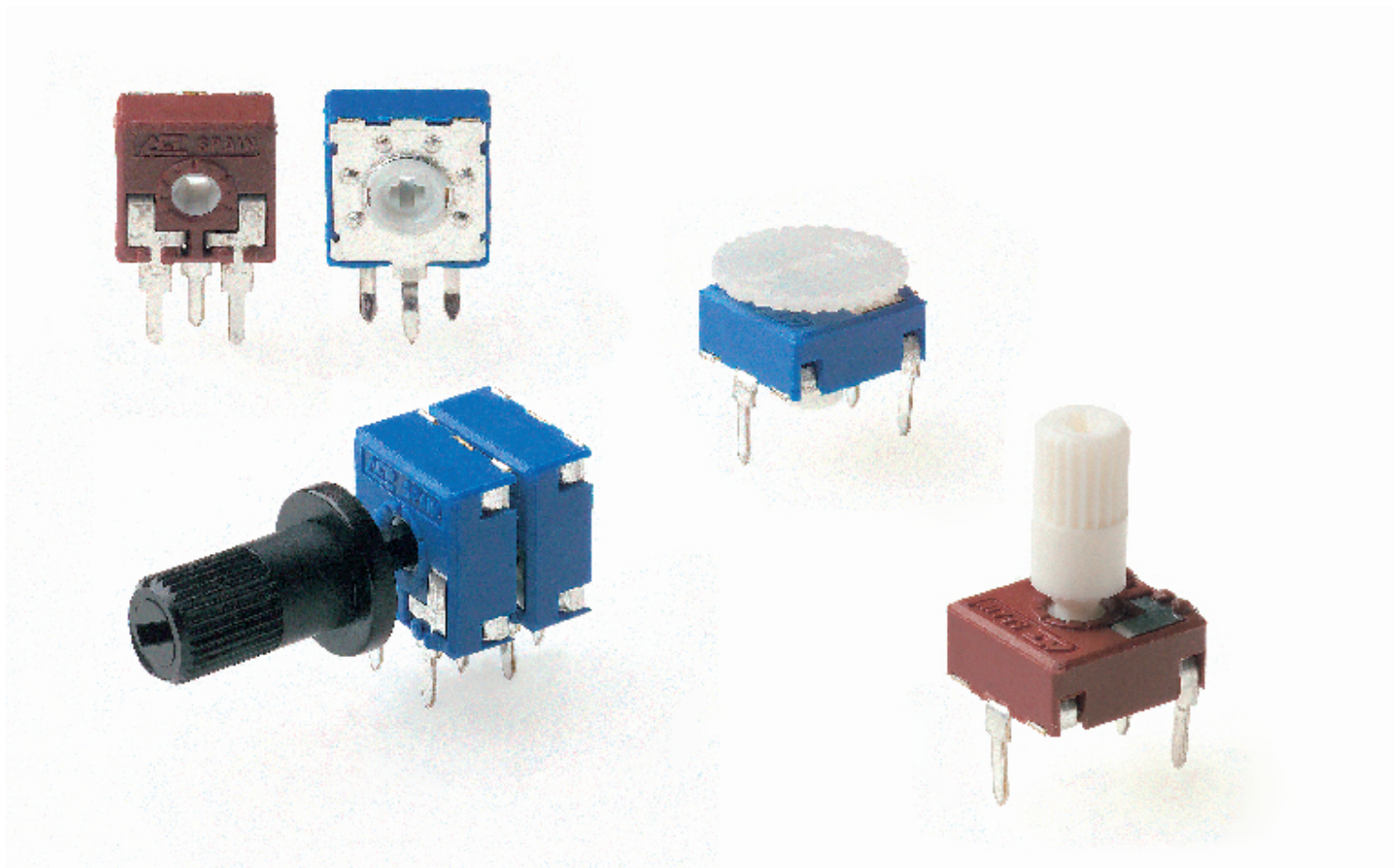
CA9



CE9

Carbon
Potentiometers
CA

Cermet
Potentiometers
CE





9mm carbon potentiometers with plastic housing and protection type IP 5 (dust-proof).

Standard tapers available include linear, log and antilog. ACP can also study special requests.

Terminals are manufactured in tinned brass to guarantee better soldering and higher resistance to corrosion. They can be provided straight or crimped (with “snap in”), recommended to hold the potentiometer to the board prior to the soldering operation. SMD configuration can be available on request.

Thumbwheels and shafts can be provided either separately or already inserted in the potentiometer.

ACP's potentiometers can be adjusted from either side, both in the horizontal and the vertical adjustment types. There is a guide on the housing to simplify the manual adjusting operations.

Our potentiometers can be manufactured in a wide range of possibilities regarding:

- Resistance value.
- Tolerance.
- Tapers / variation laws.
- Pitch.
- Positioning of the wiper (the standard is at 50%).
- Housing and rotor color.
- Mechanical life.
- Pause effect (up to 20 detents available).
- Self-extinguishable plastic parts according to UL 94 V-0.

Applications

- Electronic appliances: white goods, brown goods, small household appliances.
- Heating and air conditioning equipment and thermostats.
- Automotive: dimmers, climate controls, lighting regulation (position adjustment and sensing).
- Measurement and test equipment. Timers and relays.
- Multimedia.



9mm Cermet potentiometers with plastic housing and protection type IP 5 (dust-proof). Self-extinguishable according to UL 94 V-0.

Standard taper is linear. Log, Antilog and other tapers are available on request. Laser trimming equipment in-house, allowing for very low tolerances.

Terminals are manufactured in tinned brass to guarantee better soldering and higher resistance to corrosion. They can be provided straight or crimped (with “snap in”), recommended to hold the potentiometer to the board prior to the soldering operation. SMD configuration can be available on request.

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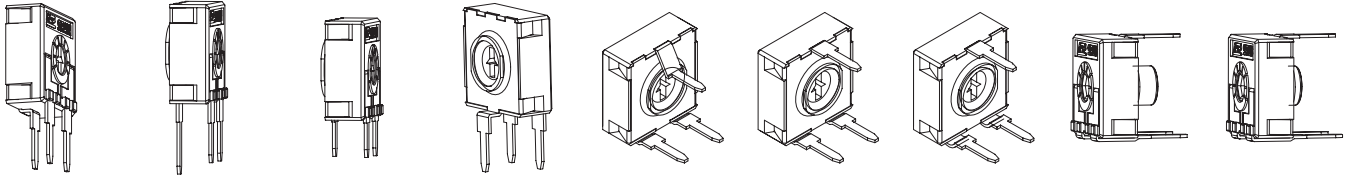
- Resistance value.
- Tolerance.
- Tapers / variation laws.
- Pitch.
- Positioning of the wiper (the standard is at 50%).
- Housing and rotor color.
- Mechanical life.
- Pause effect (up to 20 detents available).

Applications

- Electronic appliances: white goods, brown goods, small household appliances, boilers, water heaters, etc.
- Heating and air conditioning equipment and thermostats.
- Automotive: dimmers, climate controls, lighting sensors.
- Industrial electronics: multimeters, oscilloscopes, test equipment, time relay.

Models

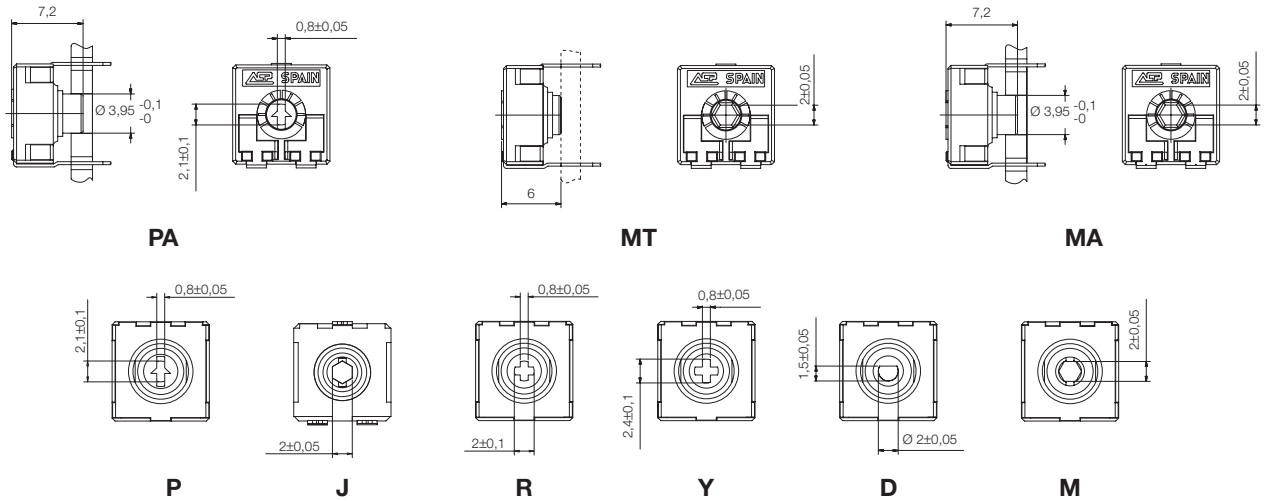
All models shown here have the standard rotor for the 9mm series, the arrow (P). Models can be manufactured with any of the rotors listed on the rotor menu. The color of the housing or rotor can also be modified. SMD configuration can be available on request.



CA9 H2,5 CE9 H2,5 CA9 H3,8 CE9 H3,8 CA9 HS3,8 CE9 HS3,8 CA9 H5 CE9 H5 CA9 V7,5 CE9 V7,5 CA9 V10 CE9 V10 CA9 VR10 CE9 VR10 CA9 MAV10 CE9 MAV10 CA9 MTV10 CE9 MTV10

Rotors

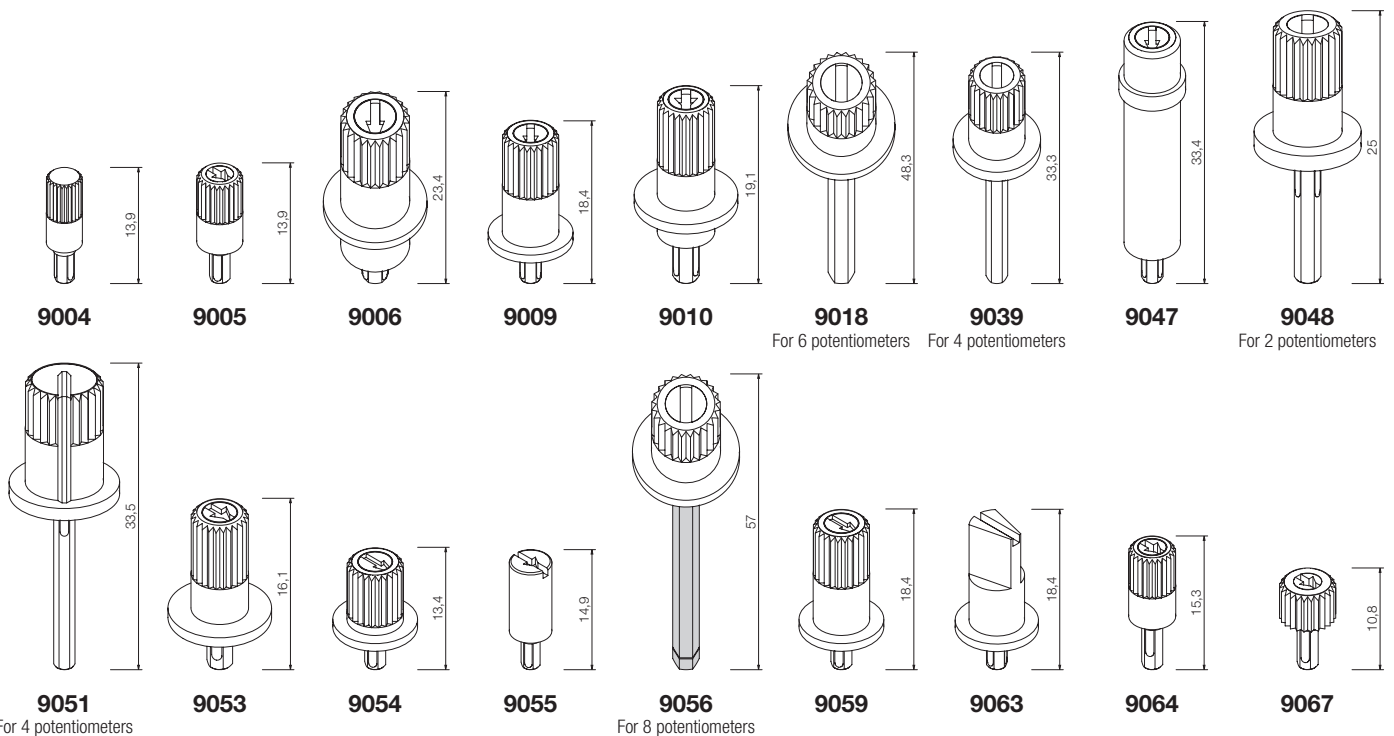
The rotor by default is the arrow (P). Accessories are designed for the M and J rotors, unless otherwise stated.



Shafts

• **CA9.** Shafts are available in different colors. On request, they can also be provided in accordance with UL 94 V-0. Potentiometers can be supplied with shafts already inserted in. ACP can also study special shafts.

• **CE9.** Shafts in accordance with UL 94 V-0 are available in different colors. Potentiometers can be supplied with shafts already inserted in. ACP can also study special shafts.



50°

70°

50° C +2%; -8%

- **EXAMPLE: CA9MH2,5-10KA2020 SNP PI WT9005-BA-V0**
- **EXAMPLE: CE9MH2,5-10KA2020 SNP PI WT9005-BA-V0**

| Standard features | | | | | | | | Extra features | | | | | | | Assembled accessory | | | |
|-------------------|-------|-------|-------|-----------|-------|------|------|----------------|---------|---------|---------|-------|-------|-----|---------------------|-------|-------|-------|
| Series | Rotor | Model | Packg | Ohm value | Taper | Tol | Life | Track | Detents | Snap in | Housing | Rotor | Wiper | Lin | Assembly | Ref # | Color | Flam. |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | 16 | | 17 |
| CA9/CE9 | M | H2,5 | | -10K | A | 2020 | | | | SNP | | | PI | | WT | 9005 | -BA | -V0 |

| Standard configuration | | Customized products | |
|------------------------|---|--|--|
| Dimensions: | 9mm | A drawing is requested to order a customized product. The code assigned will include all special specifications. | |
| Protection: | <ul style="list-style-type: none"> • CA9: IP 5 (dust-proof) • CE9: IP-5 (dust-proof) Self-extinguishable, to meet UL 94 V-0 | | |
| Substrate: | <ul style="list-style-type: none"> • CA9: Carbon technology • CE9: Cermet | Series, rotor, model and total resistive value are given before the special code: CA9PH2,5 10K CODE C00111. | |
| Color: | <ul style="list-style-type: none"> • CA9: Blue housing with white rotor • CE9: Brown housing with white rotor | | |
| Packaging: | Bulk | | |
| Wiper position: | at 50% ±15° | | |
| Terminals: | Straight, without SNAP IN | | |
| Marking: | Resistive value marked on housing. Others on request | | |

1 - Series

- CA9
- CE9

3 - Model and pitch

| | | | | |
|------|------|-------|-------|------|
| H2,5 | H3,8 | H5 | HS3,8 | V7,5 |
| V10 | VR10 | MAV10 | MTV10 | |

HSMD and VSMD models can be available on request.

5 - Resistance value

| Taper: | Lin (A) | Log (B), Antilog (C) |
|----------|---------------------------------------|---------------------------------------|
| Value Rn | 100 Ω / 100 ... / ... 5 MΩ / 5M | 1KΩ / 1K ... / ... 2,2 MΩ / 2M2 |

Other resistive values available on request.

7 - Tolerance

| | |
|---|------|
| 100 Ω ≤ Rn ≤ 1MΩ: ±20% | 2020 |
| 1 MΩ ≤ Rn ≤ 5MΩ: ±30% | 3030 |
| For out of range values: Rn > 5MΩ, tol : +50% - 30% | 5030 |

Special tolerances available: <5% ... 10%, etc.

9 - Cut track

| | |
|--------------------------------------|-----|
| At beginning of track, CCW: Off - On | PCI |
| At end of track, CW: On - Off | PCF |

11 - Crimped terminals (SNAP IN)

| | |
|-----------|-----|
| SNAP IN P | SNP |
| SNAP IN J | SNJ |

2 - Rotors

| | | | | | | | | |
|--------------|----|---|---|---|---|----|----|---|
| P (standard) | PA | R | Y | D | M | MA | MT | J |
|--------------|----|---|---|---|---|----|----|---|

4 - Packaging

| | Through-hole | SMD models |
|---------------------|---------------------------|------------|
| Bulk | (blank)... ⁽¹⁾ | On request |
| T&R (Tape and reel) | (N.A.) ⁽²⁾ | On request |

(1) If blank, bulk packaging is implied.

(2) N.A. - Not Available: Tape and Reel packaging is only available for SMD terminals.

6 - Resistance law / taper

| | |
|---------------------------------------|-----------------------|
| Lin - Linear | A |
| Log - Logarithmic | B (on request for CE) |
| Antilog - Antilogarithmic | C (on request for CE) |
| - Special tapers have codes assigned: | CODE YXXXXX |

Please, indicate terminal position when ordering a special taper.

8 - Operating life (cycles)

| | |
|--|----------------|
| Standard (1000cycles) | (leave blank) |
| Long life: LV + the number of cycles. ex: LV10 for 10000 cycles ⁽¹⁾ | LVXX: ex: LV10 |

(1) Others on request.

10 - Detents (DT)

| | |
|----------------------------------|-----------|
| One detent at the beginning: CCW | DTI |
| One detent at the end: CW | DTF |
| X number of detents. Ex., 10 | XDT: 10DT |

Detents readily available: 3, 4, 6, 7, 9, 10, up to 20 –evenly distributed along 240°±5°. Others on request.

12 - Housing color

- **CA9:** standard is blue
- **CE9:** standard is brown

With other colors -see color chart below-, for example, red CJ-color, ex: CJ-R0

13 - Rotor color

| | |
|---|---------------------|
| Standard is white | |
| With other colors -see color chart below-, for example, red | RT-color; ex: RT-RO |

15 - Linearity

| | |
|--|----------------|
| Independent linearity controlled & below x%, for example, 3%: LN3% | LNx%; ex: LN3% |
| Absolute linearity controlled & below x% | LAx% |

17 - Flammability (according to UL 94 V-0)

| | |
|---|---------------|
| • CA9: Not self-extinguishable | (leave blank) |
| Self-extinguishable according to standard UL 94 (including all plastic parts of the potentiometer: rotor, housing and accessory. If only one part needs to be V0, please, inform) | -V0 |
| • CE9: All accessories assembled with cermet potentiometers will have the self-extinguishable property according to standard UL 94 | -V0 |

For ordering spare accessories

Accessory reference - color- flammability. Ex. 9005-AZ-V0 is a blue self-extinguishable 9005 thumbwheel XXXX-YY-__

For ordering special sets of potentiometers

STACKING STK + ... (POTENTIOMETER CODE) Example: STK+CA9MH2,5-10KA2020 ⁽¹⁾
GANGED MTX + (number of potentiometers: 2, 4, 6, 8) + ... (POT. CODE + ASSEMBLED SHAFT CODE) Example: MTX4+CA9PH2,5-10KA2020 WT9051-BA ⁽¹⁾

(1) Note: If not all potentiometers in the set are identical, please, order potentiometers separately and indicate assembly order.

Color chart for rotor, housing and accessories

| | |
|----------------------|----|
| Black ⁽¹⁾ | NE |
| White | BA |
| Neutral | IN |
| Transparent | TA |
| Red | RO |
| Green | VE |
| Yellow | AM |
| Blue | AZ |
| Grey | GS |
| Brown | MR |

(1) Black is not an option for housings.

14 - Wiper

| | |
|---|---------------|
| Wiper position (Standard is at 50% ± 15°) | (leave blank) |
| Initial or CCW | PI |
| Final or CW | PF |
| Others: following clock positions; at 3hours: P3H | PXH, ex: P3H |
| Wiper torque (Standard: <2 Ncm) | (leave blank) |
| Low torque (< 1.5Ncm) | PGB |

16 - Potentiometers with assembled accessories

| | |
|---|---------------------------|
| Assembled from front side | WT |
| Assembled from collector side | WTI |
| Accessory Reference See list of shafts and thumbwheels available | XXXX Example: 9005 |
| Color of shaft or thumbwheel | -YY Example, white: BA |

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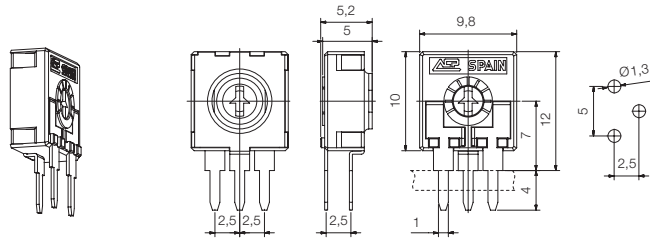
DRAWINGS CA9 // CE9

Tolerances 9 mm (in mm.):

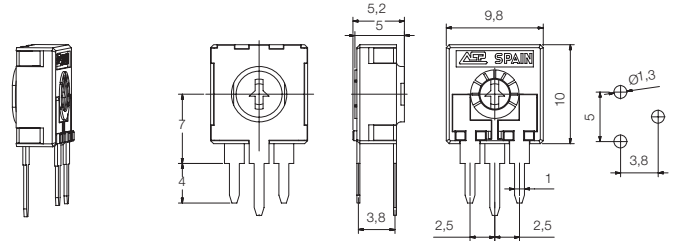
| | |
|--------|------|
| <1 | ±0,1 |
| 1...<5 | ±0,3 |
| 5... | ±0,5 |

Model types. CA9 // CE9

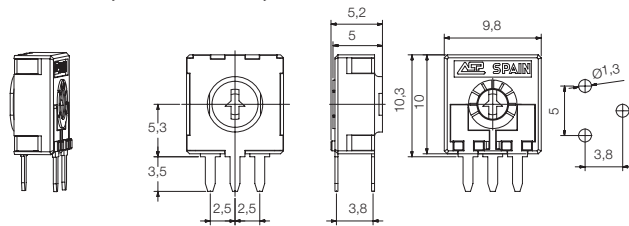
CA9 H2,5 // CE9 H2,5



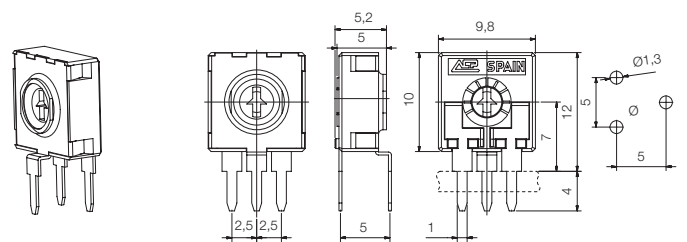
CA9 H3,8 // CE9 H3,8



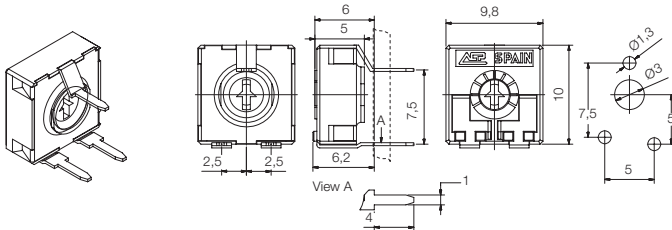
CA9 HS3,8 // CE9 HS3,8



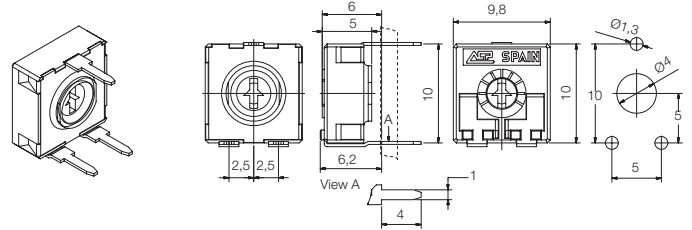
CA9 H5 // CE9 H5



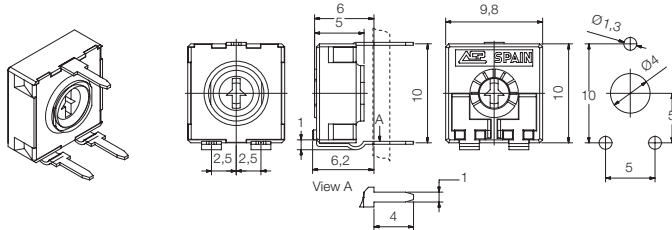
CA9 V7,5 // CE9 V7,5



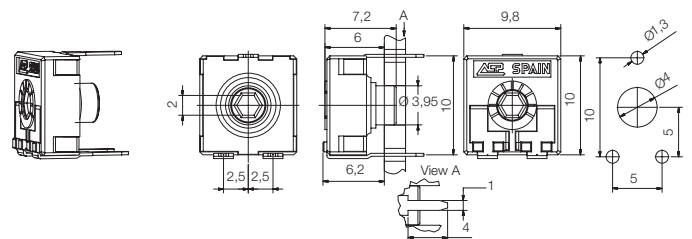
CA9 V10 // CE9 V10



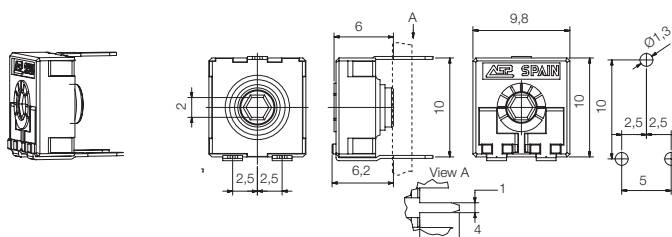
CA9 VR10 // CE9 VR10



CA9 MAV10 // CE9 MAV10



CA9 MTV10 // CE9 MTV10



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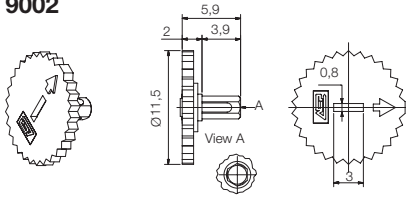
DRAWINGS CA9 // CE9

Tolerances 9 mm (in mm.):

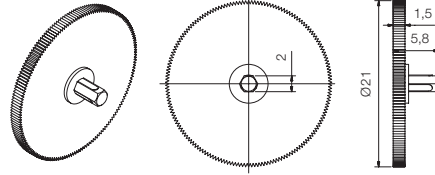
| | |
|--------|------|
| <1 | ±0,1 |
| 1...<5 | ±0,3 |
| 5... | ±0,5 |

Thumbwheels. CA9 // CE9

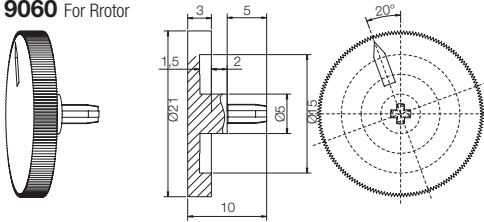
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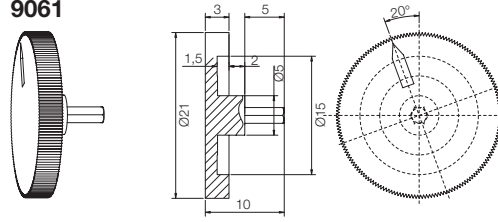
9041



9060 For Rrotor

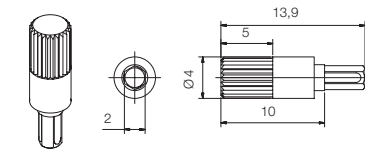


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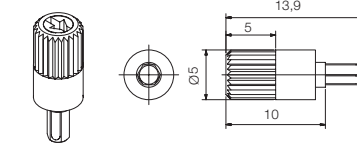


Shafts. CA9 // CE9

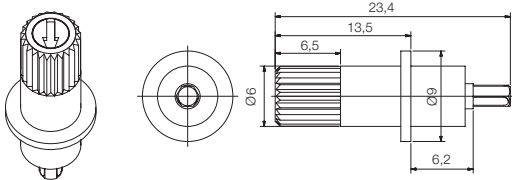
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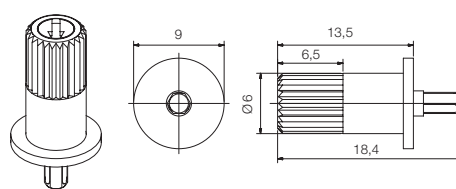
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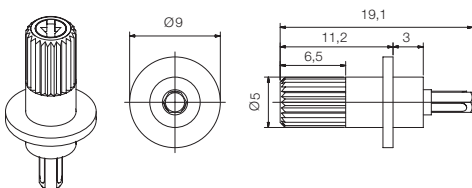
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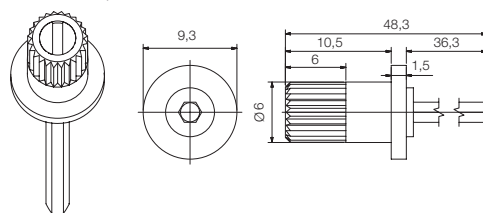
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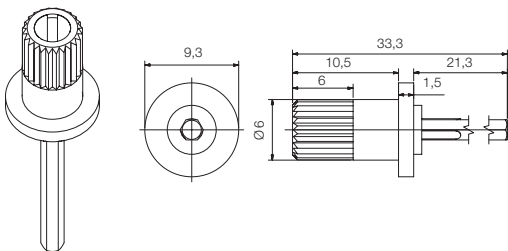
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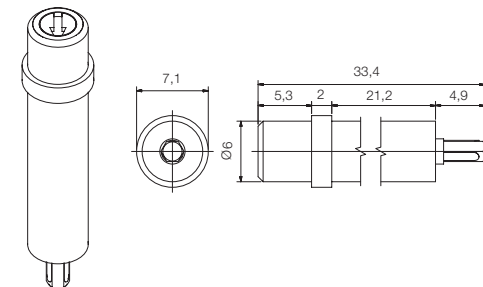
9018 For 6 potentiometers



9039 For 4 potentiometers



9047



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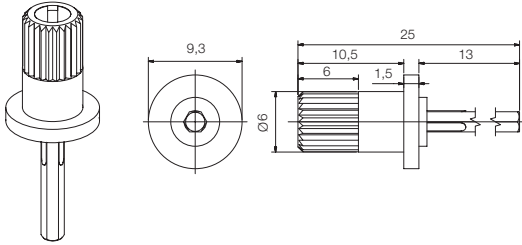
DRAWINGS CA9 // CE9

Tolerances 9 mm (in mm.):

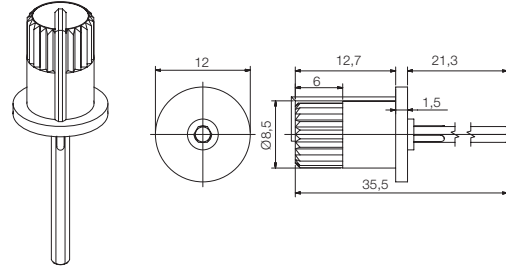
| | |
|--------|------|
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| 1...<5 | ±0,3 |
| 5... | ±0,5 |

Shafts. CA9 // CE9

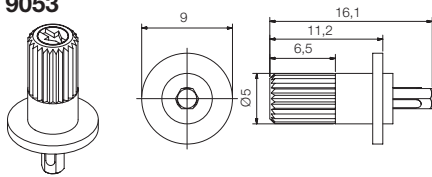
9048 For 2 potentiometers



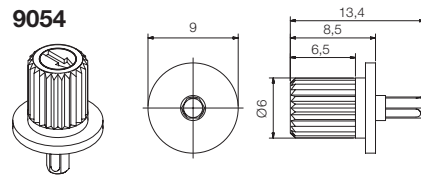
9051 For 4 potentiometers



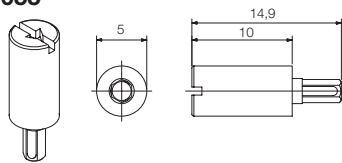
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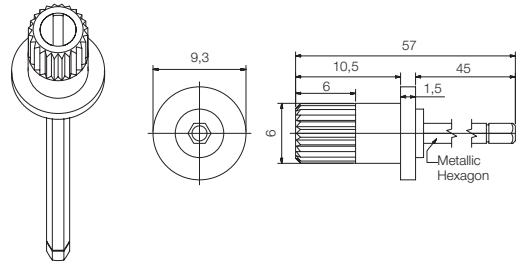
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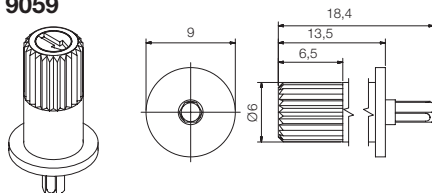
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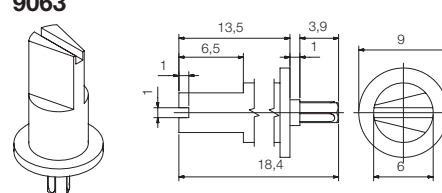
9056 For 8 potentiometers



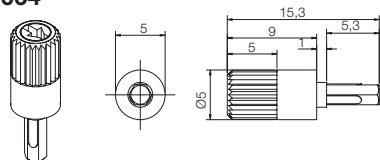
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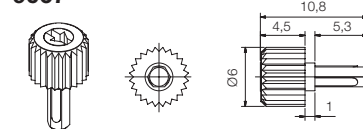
9063



9064



9067



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