

## APPLICATIONS

- Injection moulding machines
- Hydraulic and pneumatic cylinders: control of the position of the piston
- Material machining: detection of the position of tools
- Control of the position of mechanical arms, tilting angle of skips, ground clearance of ploughs, breakers and asphalt machine dimensioning, etc...



## DESCRIPTION

PS-range sensors are designed to measure angle displacements over 340° to 350 °. They can make different revolutions at the maximal. They can make different revolutions at the maximal rotating speed of 600 rev/min. They include a potentiometric plastic track.

- Separate linearity:  $\pm 0,05\%$  (standard is  $\pm 0,5\%$ )
- Infinite resolution.
- Repeatability: 0.01 of the CET.
- Rotating speed up to
- Lifespan > 100x10<sup>6</sup> operations at 10rev/s.
- Protection class: IP40.

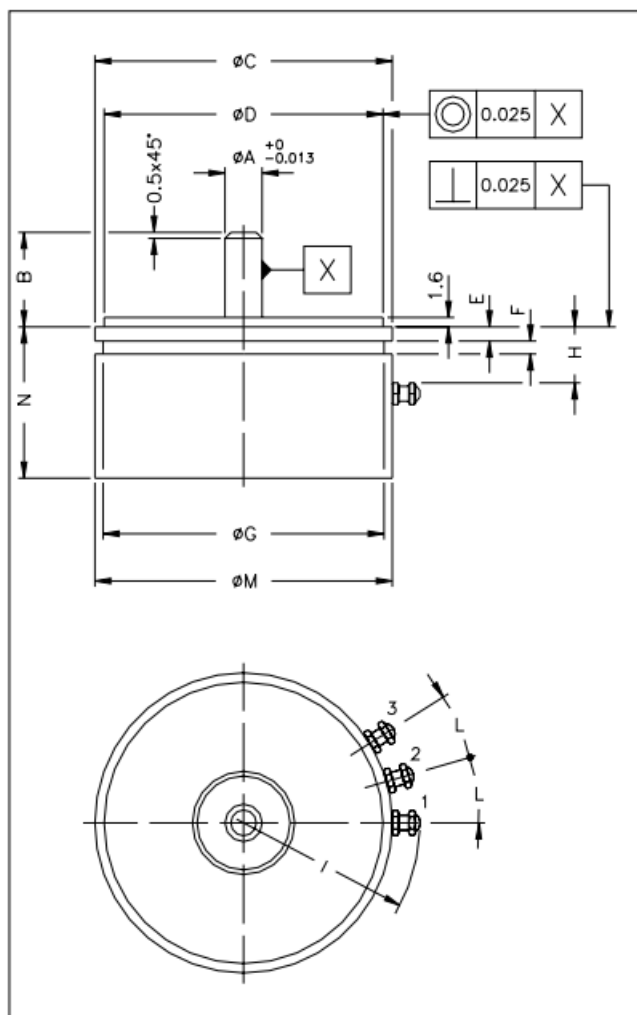
## TEACHNICAL FEATURES

|   |  |
|---|--|
| <b>Model</b>  | 09 - 11 - 20   |
| <b>Vibrations</b>   | 5...2000Hz, Amax =0,75 mm Amax. = 20 g                           |
| <b>Shock</b>  | 50 g, 11ms.  |
| <b>Electrical terminals</b>                                 | Gold plated turrets  |
| <b>Torque</b>   | <= 0,20Ncm   |
| <b>Rotation speed</b>                                       | <= 600 giri/min. (within C.E.U.)                                 |
| <b>Life duration (within C.E.U.)</b>                        | >100x10 <sup>6</sup> operations                                  |
| <b>Tolerance on resistance total</b>                        | ± 20% other values by request                                    |
| <b>Recommended cursor current</b>                           | < 0,1 mA   |
| <b>Maximum cursor current</b>                               | 10mA   |
| <b>Electrical isolation</b>                                 | >100MΩ a 500V=, 1bar, 2s   |
| <b>Dielectric strength</b>                                  | < 100 mA a 500V~, 50Hz, 2s, 1bar                                 |
| <b>Dissipation at 40°C (0W at 120°C)</b>                    | See table  |
| <b>Actual temperature coefficient of the output voltage</b> | < 1,5ppm/°C  |
| <b>Working temperature</b>                                  | -55...+100°C   |
| <b>Storage temperature</b>                                  | -55...+125°C   |
| <b>Case material</b>  | Diallyphtalate   |
| <b>Shaft material</b>                                       | AISI 316   |
| <b>Bearings</b>   | High precision with double (ZZ) sealed screen in stainless steel |
| <b>Flange</b>   | Anodised aluminium   |

**Important :**

All the data reported in the catalogue linearity, lifetime, temperature coefficient are valid for a sensor utilization as a ratiometric device with a max current across the cursor  $I_c \leq 0.1$  mA.

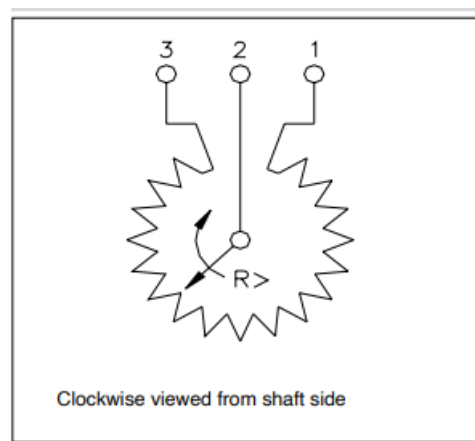
## MECHANICAL DIMENSIONS



## MECHANICAL / ELECTRICAL DATA

| MODEL                                    |    | PS09     | PS11   | PS20     |
|--|----|----------|--|----------|
| Theoretical electrical stroke (C.E.T.)   | °  | 340 ± 4° | 345 ± 4°   | 350 ± 4° |
| Useful electrical stroke (C.E.U.)        | °  |          | C.E.T. -2°   |          |
| Resistance ± 20% (C.E.T.)                | kΩ |          | 1 - 4.7 - 10   |          |
| Independent linearity<br>(within C.E.U.) | ±% |          | A = ± 1%<br>B = ± 0,5%<br>C = ± 0,25%<br>D = ± 0,1%<br>E = ± 0,05% |          |
| Dissipation at 40°C<br>(0W at 120°C)     | W  | 1        | 1,25   | 3        |
| Mechanical rotation                      | °  |          | 360° continuous  |          |
| Weight                                   | g  | 16       | 20   | 90       |

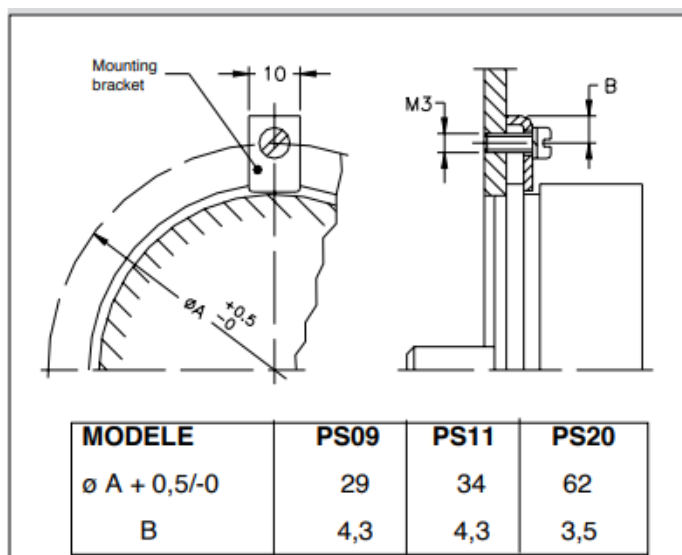
## ELECTRICAL CONNECTIONS



## DIMENSIONS

| DIMENSIONS (mm)           | DESCRIPTION                         | SIZE/MODEL 09 / PS09 | SIZE/MODEL 11 / PS11 | SIZE/MODEL 20 / PS20 |
|---------------------------|-------------------------------------|----------------------|----------------------|----------------------|
| $\varnothing A + 0/0.013$ | $\varnothing$ Stainless steel shaft | 3.175                | 3.175                | 6.35                 |
| B max.                    | Shaft length                        | 16                   | 16                   | 16                   |
| $\varnothing C$ max.      | External $\varnothing$ of flange    | 22.25                | 27.05                | 50.8                 |
| $\varnothing D$           | $\varnothing$ flange                | 19.05                | 24.608               | 47.625               |
|                           | Tolerance on flange                 | +0 -0.013            | +0 -0.013            | +0 -0.025            |
| E                         | Shoulder                            | 1.6                  | 1.6                  | 2.4                  |
| F min.                    | Width of groove                     | 1.5                  | 1.5                  | 2.2                  |
| $\varnothing G$ max.      | Diameter of groove                  | 20                   | 25                   | 48                   |
| H min.                    | Locating turrets                    | 6                    | 6                    | 10                   |
| I max.                    | Radius on turrets                   | 16                   | 18                   | 30                   |
| $L \pm 2^\circ$           | Angle between turrets               | $30^\circ$           | $25^\circ$           | $15^\circ$           |
| M max.                    | External $\varnothing$ of case      | 22.2                 | 27                   | 50.8                 |
| N max.                    | Length for Nr. of elements = 1      | 21                   | 21                   | 24                   |

## MOUNTING DIAGRAM



## ORDER OCODE

| Rotative transducer   |   | PS          |     |               |     |              |     |  |
|---|---|-------------|-----|---------------|-----|--------------|-----|--|
| Model   |   |             |     |               |     |              |     |  |
| Linearity (std. B)  | A = $\pm 1\%$   |             |     |               |     |              |     |  |
|   | B = $\pm 0,5\%$   |             |     |               |     |              |     |  |
|   | C = $\pm 0,25\%$  |             |     |               |     |              |     |  |
|   | D = $\pm 0,1\%$   |             |     |               |     |              |     |  |
|   | E = $\pm 0,05\%$  |             |     |               |     |              |     |  |
| Resistance value (std.103)  | <table border="1"> <tr> <td>1k<math>\Omega</math></td> <td>102</td> </tr> <tr> <td>4,7k<math>\Omega</math></td> <td>472</td> </tr> <tr> <td>10k<math>\Omega</math></td> <td>103</td> </tr> </table> | 1k $\Omega$ | 102 | 4,7k $\Omega$ | 472 | 10k $\Omega$ | 103 |  |
| 1k $\Omega$   | 102   |             |     |               |     |              |     |  |
| 4,7k $\Omega$   | 472   |             |     |               |     |              |     |  |
| 10k $\Omega$  | 103   |             |     |               |     |              |     |  |
| If requested, it is possible to supply models with non-standard mechanical and/or electrical features |   |             |     |               |     |              |     |  |

Example: **PS20 - B - 0 - 103**  
 Rotative transducer model PS20, 1 resistive element, linearity  $\pm 0,5\%$ , no voltage or current intermediate pick-offs, 10k $\Omega$  resistance.

## INCLUDED ACCESSOIRES

|   | Code    |
|---|---------|
| Fixing kit for PS:<br>3 brackets, M3x8TC screws, grower |         |
| Rotative transducers PS09 - PS11                        | PKIT012 |
| Rotative transducers PS20                               | PKIT013 |

SPHEREL Systems reserves the right to make any kind of design or functional modification at any moment without prior notice