

## Precision Rotative Transducers, Conductive Plastic, Economic Series (ECO)


**FEATURES**

- Size 05 - 09 - 13
- Reasonable Cost
- Long Life
- Accuracy  $\pm 1\%$  down to  $\pm 0.25\%$
- Bush or Servo Mounting
- Rear Mounted Terminals
- Following MIL-R-39023 and NFC 93-255 requirements

The “ECO” models are a comprehensive range of rotational motion transducers for industrial applications.

All mechanical and electrical parameters can be adapted to meet your specifications.

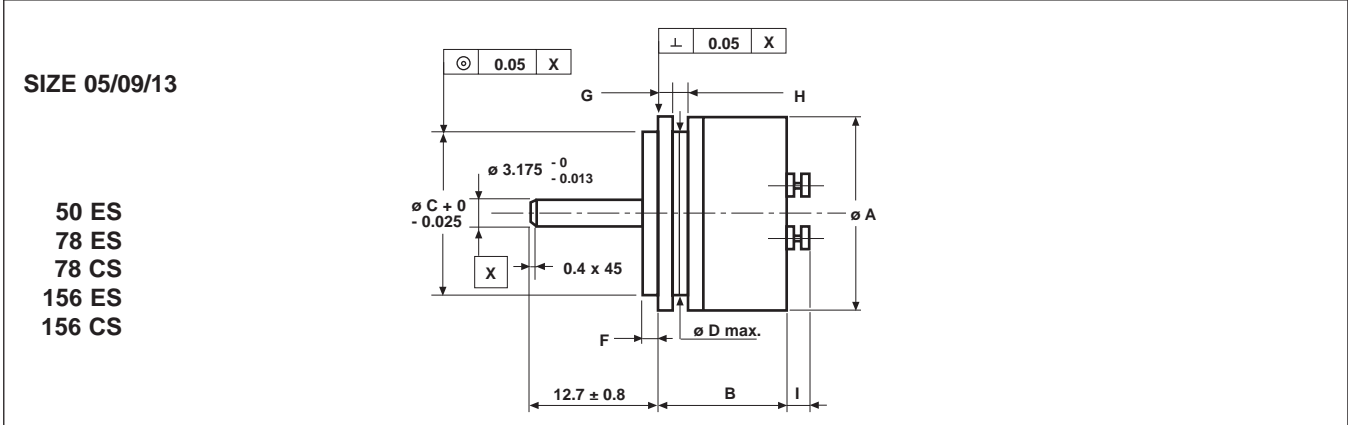
SIZE	05		09			13		
MODEL	50 ES	50 CB	78 ES	78 CS	78 CB	156 ES	156 CS	156 CB

ELECTRICAL SPECIFICATIONS							
Theoretical electrical angle (TEA)	actual electrical angle (AEA) - 2°						
Independent linearity (over TEA)	$A \leq \pm 1\%$		$B \leq \pm 0.5\%$			$C \leq \pm 0.25\%$	
Actual electrical angle (AEA)	$330^\circ \pm 5^\circ$		$340^\circ \pm 5^\circ$			$350^\circ \pm 3^\circ$	
Ohmic values (Rt)	1k $\Omega$ - 5k $\Omega$ - 10k $\Omega$ - on request other values						
Ohmic value tolerances at 20°C	$\pm 10\%$	$\pm 20\%$	$\pm 10\%$	$\pm 20\%$	$\pm 10\%$	$\pm 20\%$	$\pm 20\%$
Output smoothness	$\leq 0.05\%$						
Maximum power rating at 70°C	0.2W		0.3W			0.5W	
Wiper current	recommended: a few $\mu A$ - 1mA max. (continuous)						
Tap (current or voltage)	NA		1 on request				
Resistance load on wiper	minimum $10^3 \times R_t$						
End voltage	$\leq 0.2\%$	$\leq 0.5\%$	$\leq 0.2\%$	$\leq 0.5\%$	$\leq 0.2\%$	$\leq 0.5\%$	$\leq 0.5\%$
Insulation resistance	$\geq 1000M\Omega$ , 500VDC						
Dielectric strength	$\geq 500VRMS$ , 50Hz						

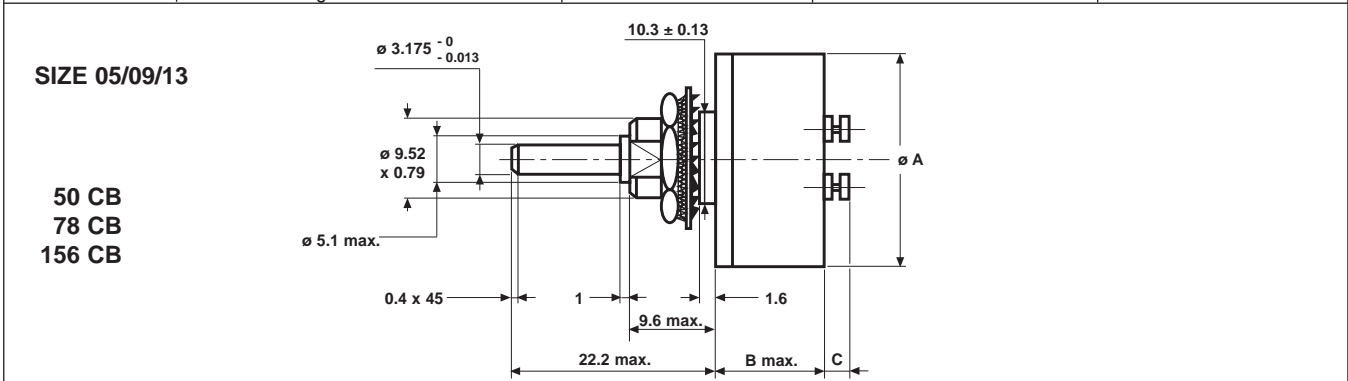
MECHANICAL SPECIFICATIONS							
Mechanical angle (MA)	360° continuous						
on request: stops	NA		$340^\circ \pm 3^\circ$			$350^\circ \pm 3^\circ$	
Mounting type	servo	bushing	servo	bushing	servo	bushing	bushing
Shaft guiding	ball	sleeve	ball	sleeve	ball	sleeve	sleeve
	bearings	bearings	bearings	bearings	bearings	bearings	bearings
Shaft	stainless steel						
Housing	plastic moulding						
Termination	turrets						
Wiper	precious metal multi-finger contact						
Starting torque (N.cm)	$\leq 0.2$	$\leq 0.5$	$\leq 0.2$	$\leq 0.5$	$\leq 0.2$	$\leq 0.5$	$\leq 0.5$
Torque on stops (N.cm)	50						
Weight (g)	$5 \pm 2$	$8 \pm 2$	$13 \pm 2$	$17 \pm 2$	$29 \pm 2$	$34 \pm 2$	$34 \pm 2$
Moment of inertia (g. cm <sup>2</sup> )	$\leq 0.5$		$\leq 1$			$\leq 2$	

PERFORMANCE		
Life (10° cycles)	30 (on ES models)	20 (on CS and CB models)
Temperature range	- 55°C, + 125°C	
Climatic category	55 / 125 / 04	
Speed rotation (RPM)	600 (on ES models)	150 (on CS and CB models)
Sine vibration on 3 axes	1.5 mm or 20g from 10Hz to 2000Hz	
Mechanical shocks on 3 axes	50g - 11ms - half sine	

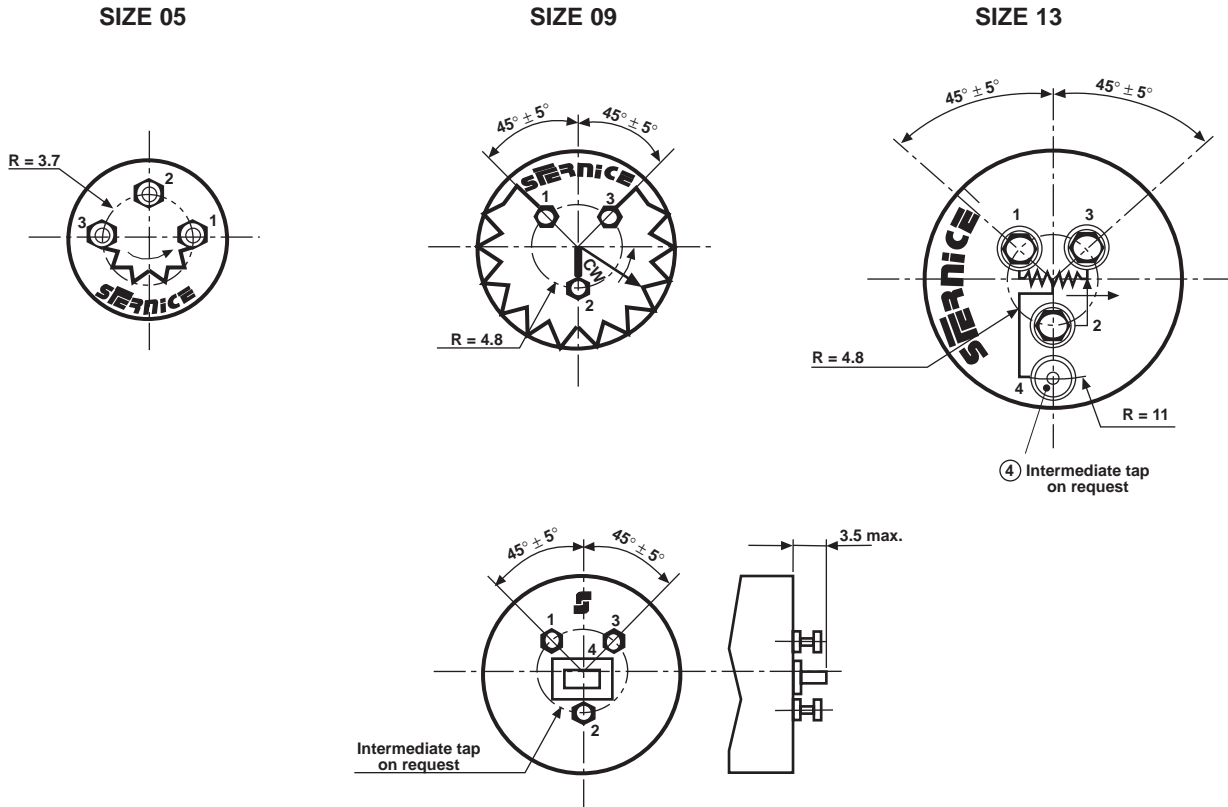
**DIMENSIONS** in millimeters, general tolerance ± 0.5mm



DIMENSIONS	DESIGNATION	SIZE 05	SIZE 09		SIZE 13	
		50 ES	78 ES	78 CS	156 ES	156 CS
Ø A	Ø housing	12.7	22.2		33.3	
B	length	13.0	13.5		18.0	
Ø C	Ø pilot	9.525	19.05		30.16	
Ø D max.	Ø groove	11.45	19.64		30.9	
F	flange thickness	1 ± 0.1	1.6 ± 0.1			
G	shoulder	1.2 ± 0.1	1.6 ± 0.1			
H	dia. of groove	1.2 ± 0.2	1.5 min.			
I max.	height of the turret	2.5	2.5		3.6	



DIMENSIONS	DESIGNATION	SIZE 05	SIZE 09	SIZE 13
		50 CB	78 CB	156 CB
Ø A	Ø housing	12.7	22.2	33.3
B max.	length	11	11,5	16
C max.	height of the turret	2.5	2.5	3.6

**REAR VIEW DIMENSIONS** in millimeters, general tolerance  $\pm 0.5\text{mm}$ 

**ORDERING INFORMATION**

ECO	78	E	S	A	T	103	W...
SERIES	MODEL	TYPE	FIXATION	LINEARITY	TAP	OHMIC VALUE	MODIFICATION
		E = Ball bearings C = Sleeve bearings	S: Servo B: Bushing	Code A: $\pm 1\%$ B: $\pm 0,5\%$ C: $\pm 0.25\%$	on request T: voltage U: current position to be specified	First 2 digits are significant numbers 3rd digit indicates number of zeros	Special feature code number



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