

ECO

**ECO**Data sheet  $\frac{7}{5.650} E$ 

33196



# precision rotative transducer

— conductive plastic, economic series —

MIL-R-39023  
NF C 93255

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

- SIZE 05 - 09 - 13
- REASONABLE COST
- LONG LIFE
- ACCURACY  $\pm 1\%$  down to  $\pm 0,25\%$
- BUSH OR SERVO MOUNTING
- REAR MOUNTED TERMINALS

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 CHARACTERISTICS

Theoretical electrical angle (TEA)	actual electrical angle (AEA) $-2^\circ$							
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 ( $R_T$ )	1 k $\Omega$ ; 5 k $\Omega$ ; 10 k $\Omega$ ; on request other values							
Ohmic value tolerances at 20°C	$\pm 10\%$	$\pm 20\%$	$\pm 10\%$	$\pm 20\%$	$\pm 10\%$	$\pm 20\%$	$\pm 10\%$	$\pm 20\%$
Output smoothness	$\leq 0,05\%$							
Maximum power rating at 70°C	0,5 W		1 W			1,5 W		
Wiper current	recommended: a few $\mu A$ - 1 mA max. (continuous)							
Tap (current or voltage)	NA		1 on request					
Resistance load on wiper	minimum $10^3 \times R_T$							
End voltage	$\leq 0,2\%$	$\leq 0,5\%$	$\leq 0,2\%$	$\leq 0,5\%$	$\leq 0,2\%$	$\leq 0,5\%$	$\leq 0,2\%$	$\leq 0,5\%$
Insulation resistance	$\geq 1000 M\Omega$ 500 V DC							
Dielectric strength	$\geq 500$ V RMS 50 Hz							

## 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	servo	bushing
Shaft guiding	ball bearings	sleeve bearings	ball bearings	sleeve bearings	ball bearings	sleeve bearings	ball bearings	sleeve bearings
Shaft	stainless steel							
Housing	plastic moulding							
Termination	turrets							
Wiper	precious metal multi-finger contact							
Starting torque (N.cm)	$\leq 0,2$	$\leq 0,5$	$\leq 0,2$	$\leq 0,5$	$\leq 0,2$	$\leq 0,5$	$\leq 0,2$	$\leq 0,5$
Torque on stops (N.cm)	50							
Weight (g)	$5 \pm 2$	$8 \pm 2$	$13 \pm 2$	$17 \pm 2$	$29 \pm 2$	$34 \pm 2$	$29 \pm 2$	$34 \pm 2$
Moment of inertia (g.cm <sup>2</sup> )	$\leq 0,5$		$\leq 1$			$\leq 2$		

## PERFORMANCES

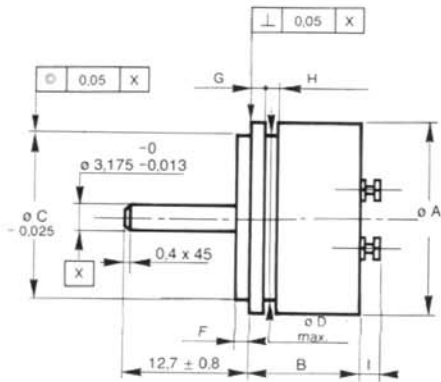
Life ( $10^6$ cycles)	40	20	40	20	40	20	40	20
Temperature range	$-55^\circ C, +125^\circ C$							
Climatic category	55 / 125 / 04							
Speed rotation (RPM)	600	150	600	150	600	150	600	150
Sine vibrations on 3 axes	1,5 mm or 20 g from 10 Hz to 2000 Hz							
Mechanical shocks on 3 axes	50 g - 11 ms - half sine							

# "ECO"

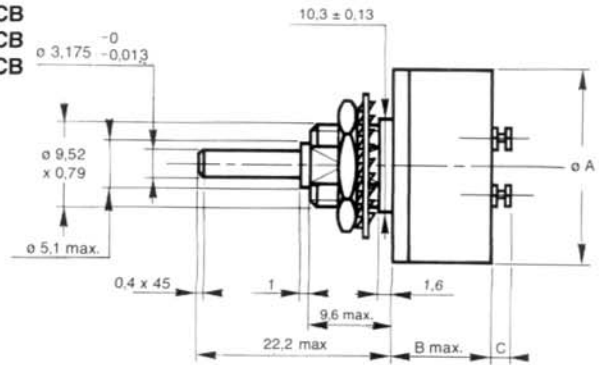
SIZE 05/09/13

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50 ES  
78 ES  
78 CS  
156 ES  
156 CS



50 CB  
78 CB  
156 CB



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		

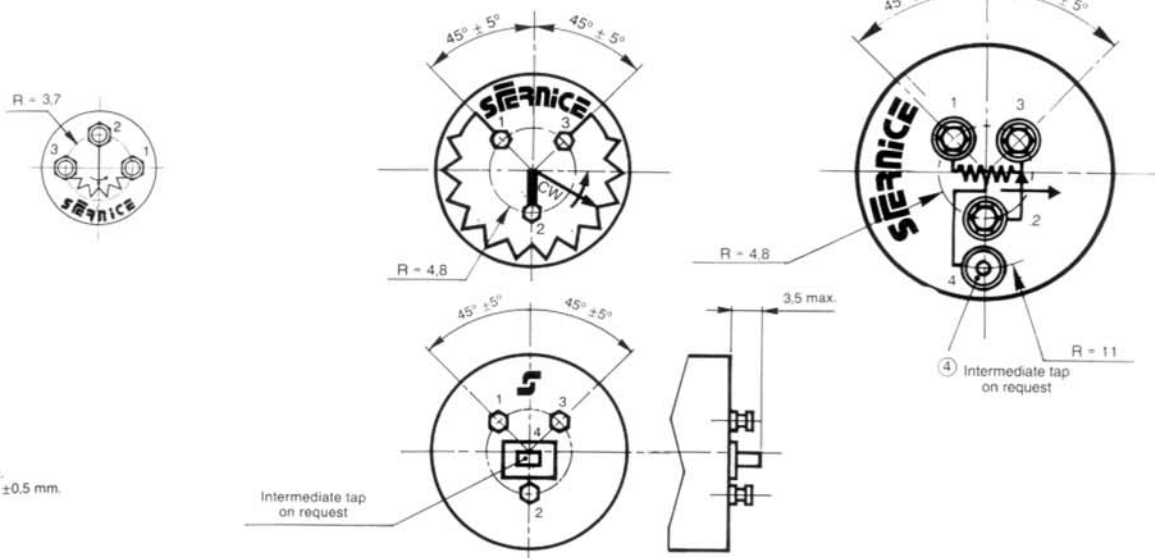
DIMENSIONS	DESIGNATION	SIZE 05		SIZE 09		SIZE 13	
		50 CB	78 CB	78 CB	156 CB		
Ø A	Ø housing	12,7	22,2		33,3		
B max.	length	11	11,5		16		
C max.	height of the turret	2,5	2,5		3,6		

## REAR VIEWS

SIZE 05

SIZE 09

SIZE 13



Dimensions in mm.  
General tolerance ±0.5 mm.

## ORDERING PROCEDURE



E = Ball bearings  
C = Sleeve bearings

S: Servo  
B: Bushing

A ±1%  
B ±0.5%  
C ±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