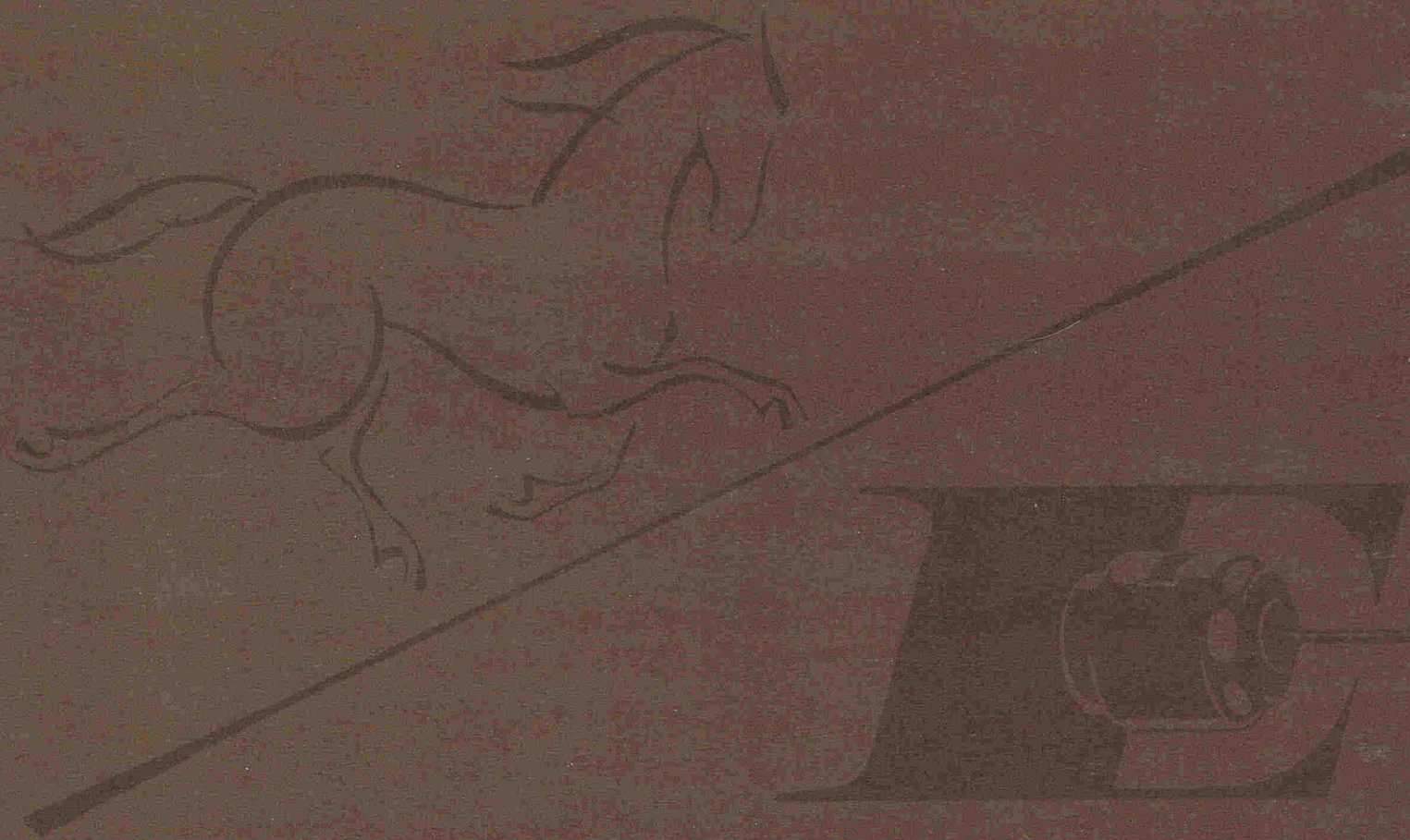


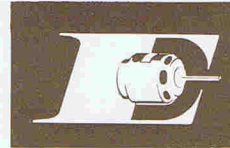
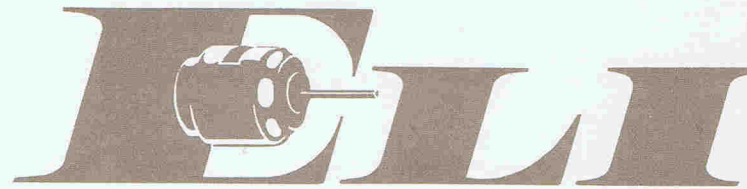
MAGNETIC SHAFT POSITION ENCODERS



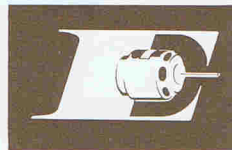
DELINCO

CATALOG NO. 8A

The research laboratory of The Electric Indicator Company, Inc., has made an important break-thru in magnetic shaft position encoders. This advanced technique is based upon the original work of Machine Tool Automation, Inc., under whose patents these magnetic encoders are manufactured.



Ultra-reliability at all speeds under most environmental conditions. No mechanical contact of rotating components. Only contacting parts are the stainless steel ball bearings that position the input shaft.



Never needs service adjustment or recalibration. The accuracy and the signal to noise ratio are not affected by long periods of storage or use.



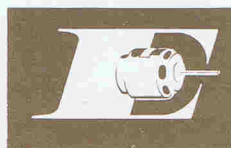
Input voltage and frequency changes of $\pm 10\%$ and variations of wave shape have a negligible effect upon the output signal.



Very high resolution capabilities. Resolution equals and in many cases can greatly exceed the brush type encoder. ELINCO encoders have the highest resolution of any other magnetic shaft encoder.

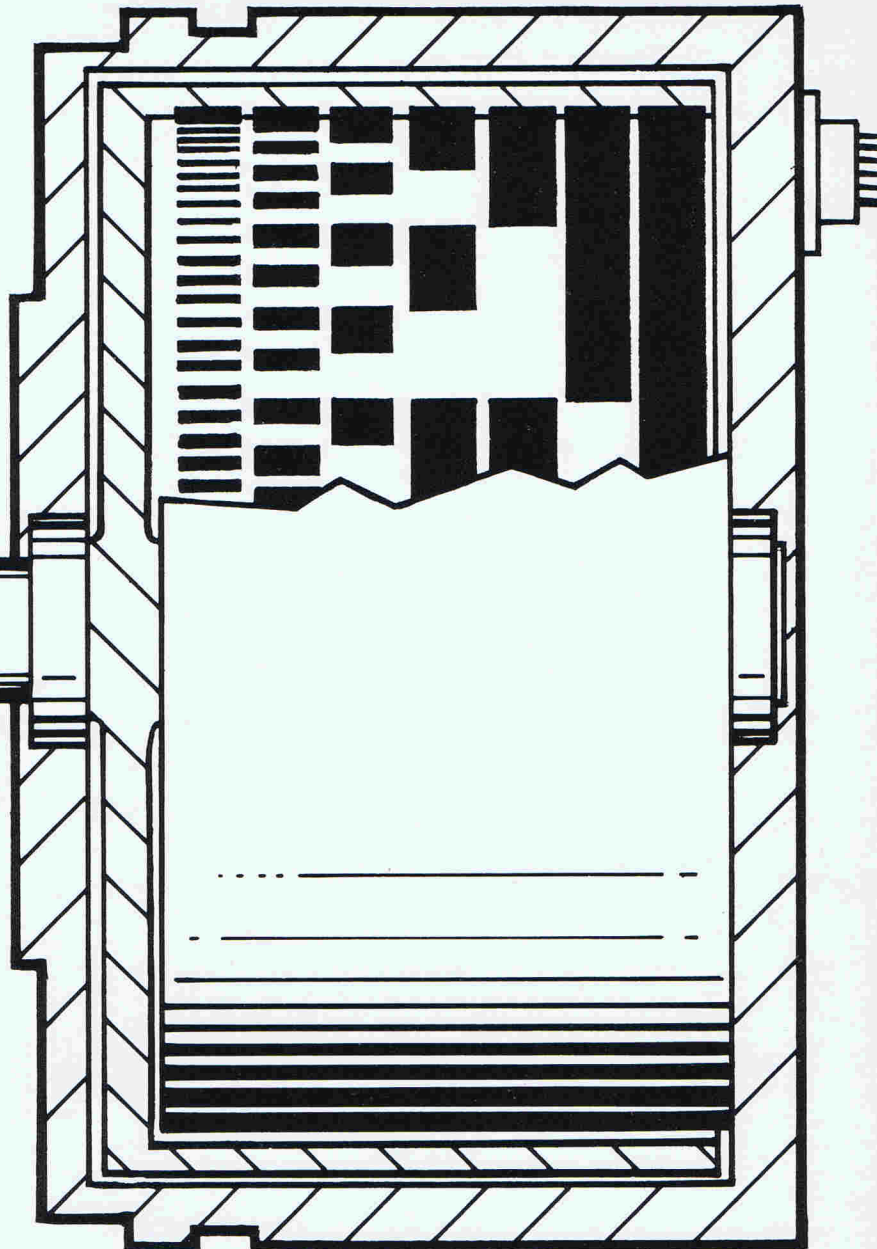


All code readouts are unambiguous — no uncertain readings. A "U" scan system greatly simplifies the required logic circuitry.

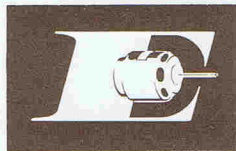


The etched code drum lends itself to simple low cost production with an infinite variety of modifications.

ELINCO features OF MAGNETIC SHAFT ENCODERS



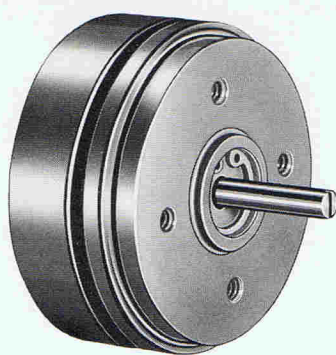
Associated output electronics are extremely simple and with proper design can be minimized.



Modifications can be easily accomplished so that all types of coded read outs can be used. Such as, pure binary, reflected binary (Grey), binary coded decimal, decimal angle, sine/cosine and many others.

ELINCO'S new Engineering Laboratory and factory is equipped to design and manufacture magnetic encoders other than the models shown in this catalogue — Your inquiries are most welcome and will receive prompt attention.

MODEL C8G



SIZE 11
SINGLE TURN

8 BIT SHAFT POSITION DIGITAL ENCODER

SPECIFICATIONS

Size	1 $\frac{1}{16}$ " Dia. x $\frac{5}{8}$ " Long
Code	Gray
Resolution	2 ⁸
Accuracy	$\pm \frac{3}{4}$ Quanta ($\pm 1^\circ$ of arc)
Input	5 Ma., 400 cps to 50 kc. & 24 \pm 10% volts
Output	At 10 kc, 2 ma. max. for "one" 1.00 volt rms. min. for "zero" .500 volts rms. max. and .250 volts rms. min.
Weight	4 oz. maximum
Break away torque	Less than .3 oz./in.
Moment of inertia	20 gr. cm. ²
Operating temp.	-65°C to +125°C.
Maximum speed	10,000 rpm (Bearings only limiting factor)
Life	Bearing life is determining factor.



SIZE 18
MULTI-TURN

MODEL
E13B

13 BIT SHAFT POSITION DIGITAL ENCODER

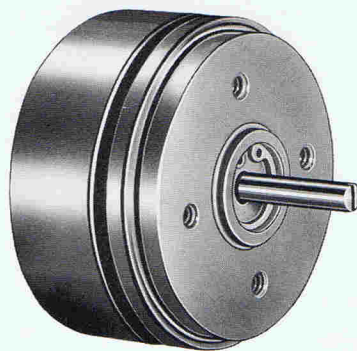
SPECIFICATIONS

Size	1¾" Dia. x 2½" Long.
Code	Binary with lag & lead outputs
Resolution	2 ¹³ [1 part in 8192 for 64 turns]
Accuracy	±¾ Quanta (±2 minutes of arc)
Input	5 ma., 400 cps to 200 kc. & 24±10 volts
Output	At 10 kc., 2 ma. max. for "one" 1.00 volt rms. min. for "zero" .500 volts rms. max. and .250 volts rms. min.
Weight	7 oz. maximum
Break away torque	Less than .4 oz./in.
Moment of inertia	40 gr. cm. ²
Operating temp.	-65°C to +125°C.
Rotation	Counter-clockwise for increasing count.
Maximum speed	10,000 rpm. (Bearings & Gear Train are limiting factors)
Life	Bearing life is determining factor.

VINGS AVAILABLE UPON REQUEST

ELINCO

MODEL C101

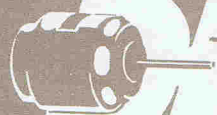


1 ³/₈" DIA.

10 BIT INCREMENTAL ENCODER

SPECIFICATIONS

Size	1 ³ / ₈ " Dia. x ³ / ₄ " Long
Readout	Incremental — 2 heads at 90°
Resolution	2 ¹⁰
Accuracy	± ³ / ₄ Quanta (± 15 minutes of arc)
Input	10 ma., 400 cps to 200 kc. & 24 ± 10% volts
Output	At 10 kc, 2 ma. max. for "one" 1.00 volt rms. min. for "zero" .500 volts rms. max. and .250 volts rms. min.
Weight	4 oz. maximum.
Break away torque	Less than .1 oz./in.
Moment of inertia	30 gr. cm. ²
Operating temp.	— 65°C. to + 125°C.
Maximum speed	10,000 rpm. (Bearings are only limiting factor)
Life	Bearing life is determining factor.



ELINCO

THEORY OF OPERATION

CONSTRUCTION

ELINCO magnetic encoders consist of code tracks mounted on the inside of a drum that is rotated by the input shaft. Pick-up heads are positioned inside the drum. The entire rotating assembly is mounted on stainless steel ball bearings in an aluminum housing.

CODE TRACK

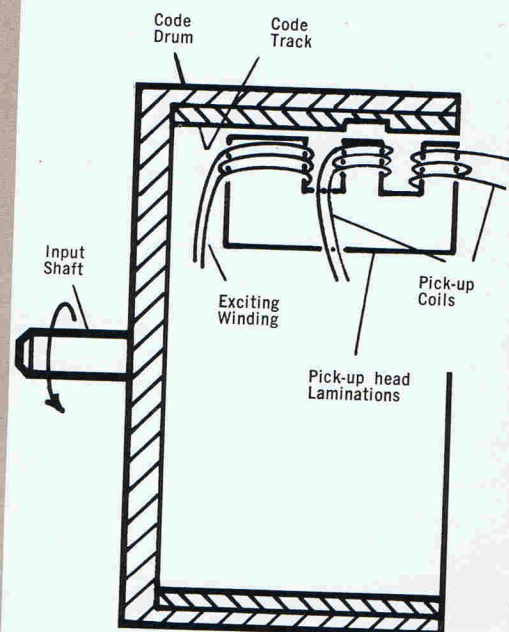
The code track is the heart of the **ELINCO** magnetic encoder and is made by a unique chemical etching process that creates a pattern of high and low areas corresponding to the desired code.

PICK-UP HEAD

The readout coils are located on the pick-up head laminations and together with the exciting coil constitute the electrical outputs and inputs.

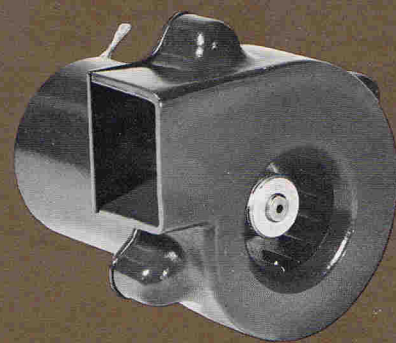
OPERATION

The operation of the **ELINCO** magnetic encoder is based upon the well known principal of a variable reluctance transformer. In any transformer the transformation ratio can be controlled by varying the number of flux lines which link the primary coil with the secondary coil. This is most easily accomplished by controlling the magnetic permeability of the space surrounding the two coils, thus, for instance, the coupling of an air core transformer may be improved by inserting an iron slug into this space. This is exactly what happens in the **ELINCO** variable reluctance, two winding, transformer magnetic encoder. The coil linking flux is dependent upon the reluctance of this flux path. However, the reluctance is a function almost exclusively of the air gap in the magnetic flux path at the tip of the pick-up head. This is varied by the presence or absence of a raised portion on the code track. Thus the flux flowing thru the pick-up coil winding and hence the AC voltage flowing in this coil is a direct function of the code track pattern.



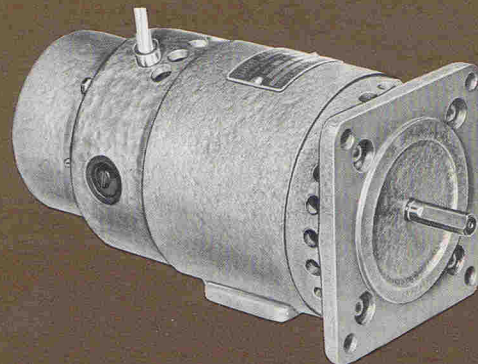
AIR BLOWERS AND FANS

ELINCO specializes in the design of high performance air blowers and fans for military applications and electronic equipment cooling. **ELINCO's** Engineering Staff maintains a constant development program which, during the past year alone, developed in excess of a hundred new units to meet difficult commercial and military specifications.



PRECISION FRACTIONAL HORSEPOWER MOTORS

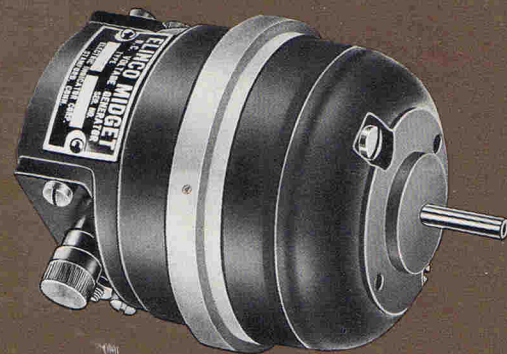
ELINCO, with thirty years experience in precision fractional electric rotary equipment has produced 75 new electrical rotary units. Write us for catalogs on the following: Commutator Motors catalog no. 1. Induction Motors & Torque Motors, catalog no. 3. Synchronous Motors, catalog no. 4. Self-Synchronous Motors, catalog no. 5.



A.C. & D.C. GENERATORS and GENERATOR SETS

More than 150 representative A.C. and D.C. Generators of the following type:—

- | | |
|----------------------------------|---------------------------------------|
| A.C. Permanent Magnet Generators | A.C. Induction Generators |
| A.C. Sine Wave Generators | A.C. Motor-Driven Induction Generator |
| D.C. Dual Field Generators | A.C. Motor-Generator Sets |
| D.C. Permanent Magnet Generators | D.C. Motor-Generator Sets |
| D.C. Speed-Squared Generators | D.C. Wound Field Generators |



DIGITAL READOUT INDICATORS

ELINCO's new positive positioning Digital Indicators carry photoprinted digits, letters, symbols or complete multiword messages. Receipt of input signal initiates operation of permanent-magnet inductor drive motor. Motors are available in 6 volt to 220 volts, 50 to 60 cps ratings. Visual characters are 2" x 4½" and come in cases 2⅝"x6"x9¾". Write for Digital Readout Catalog.



ELECTRIC INDICATOR COMPANY, INC.
CAMP AVENUE, STAMFORD, CONNECTICUT
TELEPHONE DAVIS 2-1671