



## TECHNOLOGY HIGHLIGHT

### NEWALL INDUCTIVE LINEAR ENCODER TECHNOLOGY

#### Technology

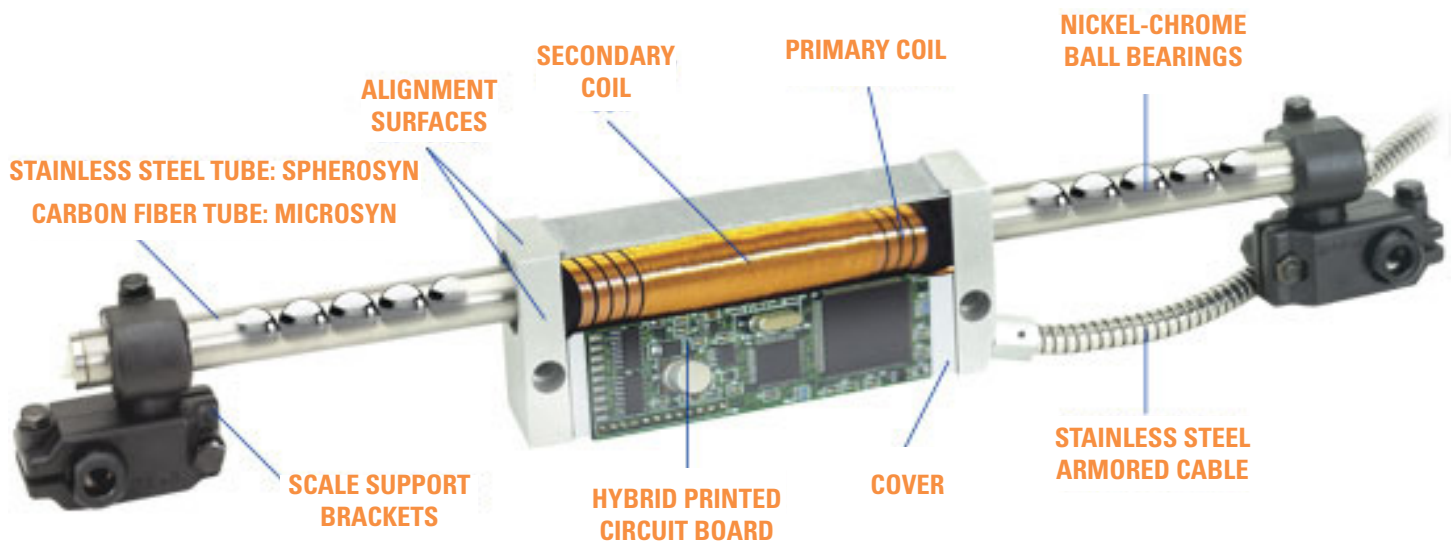
Newall's inductive linear encoders embody a truly innovative design in which all of the electronics and measuring components are sealed and protected. The encoders carry an IP67 environmental rating and will continue to provide accurate, reliable readings even when fully submersed in water, oil or coolant. No other linear encoder matches the durability and reliability of Newall's reader heads and scales.

#### Scale

Newall's scale consists of high-precision nickel-chrome ball bearings inserted into a stainless steel (Spherosyn™/SHG) or carbon fiber (Microsyn™/MHG) tube. The ball bearings are then pre-loaded against a traceable standard in a temperature-controlled environment.

#### Reader Head

The linear encoder is made up of a series of coil assemblies along with the supporting electronics. After final assembly the reader head cavity is filled with an epoxy resin to fully encapsulate and protect the electronic circuitry.



## HOW DO THEY WORK?

Newall Spherosyn and Microsyn encoders operate on the principle of electromagnetic induction. A 10kHz sinusoidal current is induced through a single drive coil within the reader head that generates an electromagnetic field. This field interacts with the nickel chrome precision balls contained in the scale.

A set of four pickup coils detect variations in the induced field that are then combined and processed by the electronic circuitry to generate a signal that varies as the head moves along the scale. Depending on the position of the reader head as it passes over each ball, the phase shift of this pickup signal relative to the drive signal will vary between 0 and 360 degrees.

## SIGNAL OUTPUT CONFIGURATIONS

Spherosyn2G and Microsyn	For use exclusively with Newall's Digital Readouts
DSG and DMG Series	These encoders provide a TTL or 1Vpp output signal and can be used with most brands of competitive Digital Readouts.
SHG Series	The SHG encoders are based on the Spherosyn body style and can be used as feedback for CNC and other motion control applications. Both incremental and absolute output signals are available.
MHG Series	The MHG is a smaller version of the SHG and provides a RS422 TTL signal or sine/cosine output.

## KEY BENEFITS

- IP67 rating (NEMA Type 6) Fully submersible
- Withstands dust, dirt, oil and other harsh environmental conditions
- No mechanical wear characteristics
- Requires no cleaning or maintenance
- High tolerance to shock and vibration
- Easy installation - No backer bar or machined surface required

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