



## Position Feedback For Crane & Hoist



**ABSOLUTE PROCESS CONTROL  
KNOW WHERE YOU ARE... REGARDLESS**

## Rotary Limit Switches

Gemco manufactures a complete line of geared rotary limit switches (RLS) that provide upper, lower and / or intermediate limits for moving machinery and mechanisms. When motion is expressed in shaft rotation, we can provide limits that are adjustable throughout the entire range of movement. Rotary Limit Switches can be used for material handling on crane or winch drums, hoists, lifts, screw jacks, or platforms. They can also be used to limit gate travel on locks, dams, intake water structures, or any moving item.



- Gemco's Rotary Limit Switch offers the broadest range of standard gear selections of any switch available. Standard reduction ratios range from 5:1 through 5333.3:1 or multipliers up to 1:3
- Nema 1, 12, 4, 4X, 7, and 9 Enclosures
- 2, 3, and 4 circuit designs
- Rugged duty die cast aluminum alloy or fiber alloy (plastic) enclosures Also available in cast iron or naval bronze, 1B / 2B
- All metal gearing
- Standard 25 degree cams or optional long dwell cams

For more information, request catalog Z16 – 2000/2006 Rotary Limit Switches or Catalog Z11 – 1980 Rotating Cam Limit Switch.



## Camboxes

GEMCO is the industry leader in Rotary Position Products with over 50 years of experience. We pride ourselves on packaging sensors to survive in the most hostile environments. Our experience on bridges, locks, dams, steel mills, foundries, ship yards, stamping presses, and many other harsh industries has provided us with the capability to offer hundreds of custom sensor packages to meet your needs. We have the largest selection of standard and custom products. With over 1,000,000 possible combinations in our standard units alone, we are certain to have a cambox for your specific application.



A rotating cam limit switch or cambox makes it possible to open or close independent circuits at any desired angular position. The 3" diameter plastic cams are adjustable for dwells of 4 degrees through 356 degrees. Electrical switches are available in SPDT and DPDT configurations. Gear reducers and multipliers are also available. The RCLS is available with up to 40 cams / circuits packaged in standard steel or Stainless Steel enclosures. Many custom features have been developed and are available for this product. Optional 6" diameter all metal cams are also available for harsh and demanding environments. The 1980 cambox can also be supplied with an internal size 11 resolver to provide a continuous position output signal that can be interfaced with a resolver interface device. PLC cards and stand alone devices are typically used to provide the resolver excitation and process the sine / cosine return signals. Resolvers provide an absolute position feedback signal and are extremely immune to shock, vibration, and all forms of electrical noise. They can typically handle cable runs of 1,000 feet to 3,000 feet depending upon the interface device selected. In addition, we can provide a variety of other rotary sensors such as encoders, potentiometers, tach generators, or other motion sensing devices.

- Mechanical for up to 500 RPM
- Optical for up to 3600 RPM
- NEMA 1, 4, 7, 9, and 12
- Contaminant and Explosion Proof
- Up to 40 Circuits
- Gear Reducers and Multipliers Right Angle or Straight Drive
- Resolver, Encoder, Potentiometer, or other Rotary Sensor Options available
- Stainless Steel and Epoxy Paint Enclosures
- Enclosure Heaters for Extreme Outdoor Applications
- Custom Features for the most Demanding Environments

For more information, request catalog Z11 – 1980 Ordering Guide



## Resolvers

GEMCO 1986 Resolvers have been the preferred source for rugged and accurate rotary positioning in a variety of industrial applications and are typically found in lock, dam, and bridge applications to report rotary position information back to the host controller, such as one of our PLS's or Interface Modules.

The advantage of resolver transducers over other rotary position products is that resolvers hold up better in harsh environments and they are always absolute, so if power is lost and restored, the exact position data will be communicated. In long cable runs, a resolver signal can typically go much further than other technologies. Resolvers have long been the standard rotary position method in packaging, primary metals manufacturing, stamping, automotive, tire and rubber, paper mills, and mining.

GEMCO has always been a pioneer in the design and manufacturing of "built to order" resolver packages. We can mechanically and electrically match any competitor's package while improving the overall design to enhance the performance, accuracy, or durability. Through our wide range of materials for construction and precision gear reducers, we can extend your sensor's life many times over. We offer packages with multiple sensors and gear reducers in a variety of materials. We have engineered special resolver packages with stainless steel housings, oil filled packages, high RPM, high resolution, resolver/encoder combinations, and tach generators. The resolvers can also be combined with our 1980 Camboxes to give both mechanical and solid-state position control.

### 1986 Series Resolvers

- Precision resolvers with absolute position packages are direct bolt-in replacements for most english and metric size encoders
- Allows up to 14-Bit resolution
- Internal precision gear reducers for multi-turn applications
- Standard foot mount unit is the most rugged in the industry
- Single or dual resolvers

For more information, request catalog Z4 – 1986 Resolver Catalog



## Programmable Limit Switches

Programmable Limit Switches (PLS's) are used in a variety of applications from packaging and stamping to every day automation. In the Heavy Moveable Structure Industry, they can typically be found in Rail and Draw Bridge Control Houses. The PLS has a rotary Resolver input that can be located up to 1,000 feet from the PLS and is immune to shock, vibration, and temperature locations. The resolver signal is converted in the PLS to electronically simulate mechanical limit switches.



These devices are typically found in applications where the PLC scan time cannot keep up with the process. In many cases, the end user is looking for a simple interface that can be adapted to their machine without having to buy the PLC, HMI, and programming software but then have to struggle to write their own ladder logic. Should the PLC ever see a fault, a laptop with the host PLC software must be connected to the machine in question to diagnose the error.

### PLC Encoder Modules and Programmable Limit Switches (PLS's)

- Provides monitoring of Resolver or Linear Displacement Transducer (LDT) from a remote, safe location
- Converts sensor signal to compatible digital, analog, or limit switch outputs
- High-speed output update times improve control resolution and repeatability

For more information, request catalog Z143 – 2500 PLS Catalog

## Interface Modules

The Gemco 2120 Interface Module can typically be found on the consoles in the control house. The Gemco 2120 is an accurate, absolute position sensing device for use with our rugged Resolvers or Linear Displacement Transducers. They can be used as simple indicators of position or as a PLC interface module that generates digital signals. In addition, they are used as analog outputs to feed positional and velocity information to the host control.



In harsh, noisy environments, encoders mounted on machines can experience mechanical failures as well as inconsistent signal transmission due to ambient electrical noise invading the signal. A Gemco transducers (resolver or LDT) at the machine can transmit a noise immune position signal to a safe location up to 3,000 feet away. At that location, the signal is converted by our Series 2120 PLC Interface Module to binary, BCD, gray code, or analog outputs for use by the PLC or host controller.

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For more information, request catalog Z7 – 2120 Brochure



## CATRAC® Cable & Hose Carriers



CATRAC® is used on various types of machinery, such as lift and swing bridges as a means of safely and efficiently conveying power, electrical, air, or fluid (or a combination of these) to equipment in motion. CATRAC is designed to be maintenance free and to protect cables and hoses from abrasion, wear and twisting. A wide variety of options are available.

The center pivot design allows for smoother cycling and minimal hose movement. The CATRAC design offers “no pinch points” to insure operator safety. Standard side links are high tensile steel for maximum strength. Steel CATRAC is zinc plated with a yellow dichromate dip for superior corrosion resistance. Optional materials, such as aluminum and stainless steel are available.

We also offer a line of Mill Duty CATRAC that is used in rugged applications and environments such as steel mills. These CATRACs offer a box beam type carrier for maximum strength and stability. Spring loaded rods offer the customer easy access to cables and hoses. They also eliminate the concern of fitting sizes that must pass through the (fixed) compartment opening on a box beam style carrier. Hardened shoulder bolts and locknuts (referred to as bolted construction) are recommended for use in rugged environments. The CATRAC is manufactured so that pieces or sections can be removed or replaced in the field.

Our CATRAC product offers: a variety of sizes from 2” to 14” high links, carrier options from welded carriers, split aluminum bar carriers, rod carriers, removable pipe, spring loaded rods, vertical pins, double deck, custom radius “M” dimension (including double radius), custom and special widths, including single widths, double widths, triple widths, etc. We offer various support systems from a single stationary roller support to a complete CATRAC carriage support system.

We can provide you with the optimum system to suit your needs either with our standard carriers and options, or by means of a custom designed system. In addition to our standard systems used in a linear motion, we can also provide you with double radius side mounted systems. Contact our applications engineers for additional information or to discuss your needs in detail.

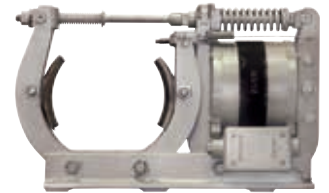
### Get on the right track with CATRAC Cable & Hose Carriers.

- All steel or nylon construction
- Prevents twisting and wear of cables
- Steel construction can withstand severe hydraulic shock loads
- Steel, Stainless Steel, and Nylon construction available
- Nylon resists corrosion and is non-conductive

*For more information, request catalog Z88 – Catrac Catalog*

## Brake Systems

Gemco Industrial Brakes stop virtually any type of industrial machine. Applications such as draw and lift bridges, steel mills, indoor and outdoor bridge cranes, gantries, heavy-duty cranes, high-duty cycle cranes, lock and dam projects, stacker reclaimers, and commercial laundry equipment are just some of the uses for Gemco Industrial Brakes.



These field proven, high performance brake systems were originally designed and built by Westinghouse and Wagner Industrial Brakes. They are tough, reliable, and provide trouble free service. They are designed and built to exact specifications. For more than 40 years, Gemco has been an acknowledged leader in brake system technology for heavy-duty industrial applications.

### GEMCO Industrial Brake Systems

- Hydraulic Brakes, AISE electric brakes
- Custom brakes engineered to requirement
- Self-adjustment feature available on electro-thrust brakes
- Competitive pricing and lead times

*For more information, request catalog Z329 – Brake Overview*



Over 30 years ago, AMETEK / GEMCO purchased the rights to manufacture and resell the CB and TM style brakes as designed and built by Westinghouse Electric. We also purchased the rights to the overhead hydraulic crane brakes as designed and built by Wagner Electric. All of our brakes are field proven, reliable, and manufactured in our Peck, MI. USA facility. Are you using genuine AMETEK / Gemco Westinghouse/Wagner brakes and parts? Know the difference!

**AMETEK is a global leader in electronic instruments and electromechanical devices with manufacturing facilities around the world.**

**AMETEK Factory Automation has been supplying GEMCO Industrial Brakes, Industrial Rotary and Linear solutions designed for the Crane & Hoist markets for over 50 years. We offer a wide variety of solutions that are commonly found on Cranes & Hoists.**

### **AMETEK Factory Automation Markets Served**

- Steel Mill
- Fluid Power
- Heavy Moveable Structures
- Hydro Power
- Tire & Rubber
- Factory Automation
- Lumber
- Plastics
- Liquid Level
- Aerial Lifts



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## 953 VMAX LDT

- Shock resistant to 1000Gs
- Vibration resistant to 30Gs
- Analog outputs, 0-10 VDC, +/-10 VDC, 0-5 VDC, +/-5 VDC, 4-20mA
- Digital output Start/Stop, Control Pulse, and Variable Pulse (PWM)
- Ethernet/IP
- SSI (Synchronous Serial Interface) 24, 25, or 26 Bit, Binary or Gray Code, Synchronous or Asynchronous Mode
- Removable cartridge
- IP68 rating
- Stroke length to 300"
- Input power range is 7 to 30 VDC
- Programmable zero and span
- Diagnostic Tri-Color LED



## 955 BRIK Gen III & 955S Smart BRIK

- Low profile LDT
- Analog output 4-20mA, 0-10 VDC, +/-10 VDC, digital output
- Programmable zero and span
- Stroke length to 180"
- Wide input voltage range
- Optional floating magnet
- Diagnostic LED



## Other Products



LINEAR DISPLACEMENT TRANSDUCERS

PLC INTERFACE PRODUCTS

ROTARY POSITION PRODUCTS

PROGRAMMABLE LIMIT SWITCHES

EXTREME DUTY CABLE REEL PRODUCTS

ROTARY LIMIT SWITCHES

RESOLVERS

MILL DUTY ENCLOSURES

ULTRA HIGH SPEED PLS

SAFETY PRODUCTS



MADE IN AMERICA

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**Gemco manufactures a complete line of position feedback devices that are known for their robustness and high performance.**