



Strip Guiding Systems



**The Dependable & Cost Efficient Way to
Ensure Consistent Control of Strip and
Web Guiding Systems**

GPE

an *L&J TECHNOLOGIES*

company

Strip Guiding Systems

The Dependable and Cost Efficient Way to Ensure Consistent Control of Strip and Web Guiding Systems

Modern process lines contain hundreds of feet of strip moving at high line speeds through narrow roll faces to be wound on enormous coils. Only the most accurate, automatic guiding system can protect such a mill against the product damage and process down-time caused when the strip runs off the rolls. Customers of steel companies are requiring higher standards for quality coils. The difficulties involved in engineering, manufacturing, installing, and servicing such systems have brought just about every major strip working company to our doors. Working in close cooperation with the line builders, we've been controlling strip on the move for years, and the vast majority of the hundreds of systems we've provided are still in operation today. Built for long life under the toughest possible working conditions, they're backed up by a large service organization. GPE systems benefit from years of unparalleled strip guide leadership. Their continued top performance is assured by the broadest, deepest fund of strip guiding experience anywhere in the world.

Quality Engineering Innovative Design

When you buy a system from GPE Controls you're buying more than just another piece of equipment. Your GPE system comes with over 70 years of engineering know-how and innovative design experience. Combining the latest advances in High-Tech research and development with years of field-proven experience, you are assured of a top quality, reliable and durable system capable of withstanding even the harshest of environments. This is a standard established for all of the equipment sold within the L&J Technologies family of products. Every product is designed and manufactured to last.



World Headquarters in Hillside, IL

Strip Guiding System Principles

This diagram traces the overall functioning of a typical GPE Strip Guiding System. As the strip edge passes through the sensor, its position determines the air pressure or electrical current reaching the controller (depending on whether the system is one of the pneumatic or photoelectric type). The jet pipe in the controller is balanced between two forces, one provided by the diaphragm or moving coil connected to the sensor.

As long as these two forces are in balance, with the strip edge in proper position, the jet pipe discharges oil equally to both openings in the distributor block and no corrective movement of the power cylinder piston occurs. If, however, the strip edge moves away from its proper position, the jet pipe is moved off center and the power cylinder position is caused to move in such a way as to correct the strip position.

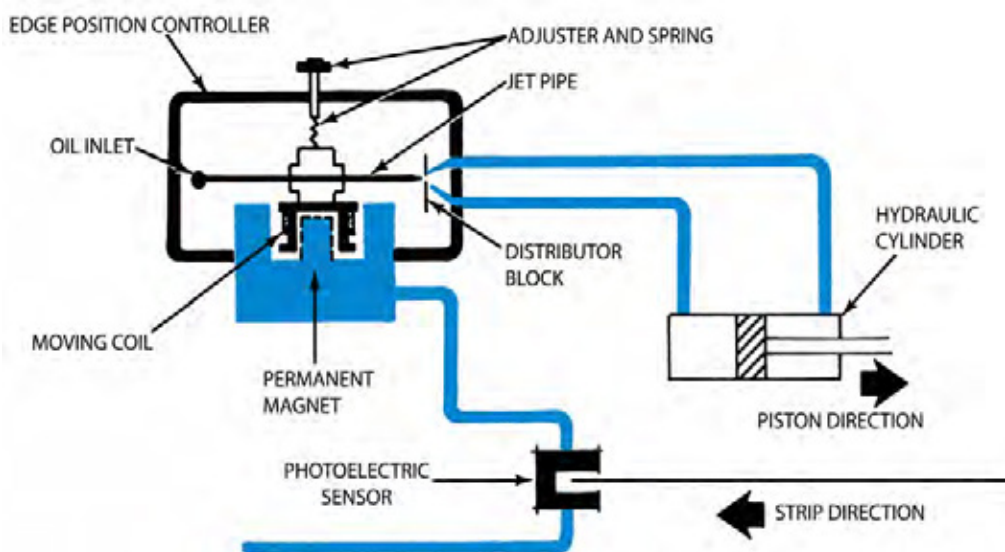
The strength of the signal from the sensor and the amount of displacement of the jet pipe are both directly proportional to the amount of displacement that occurs at the strip edge. Once the strip edge has been correctly positioned and the spring adjusted to balance the signal coming from the sensor, corrective force and speed originated by changes in the strip edge position will also be directly proportional to the amount of deviation from the correct position.

Various types of hydraulic boosters may also be included in the typical system so that almost any magnitude of corrective force is available. GPE also offers the adjustable gain booster, which enables an operator to make a simple on-the-job adjustment for maximum speed with stable control.

The product development team provides the latest advances in technology and proven application experience

Installation, operations and maintenance training are all available from the L&J Service Engineering Group.

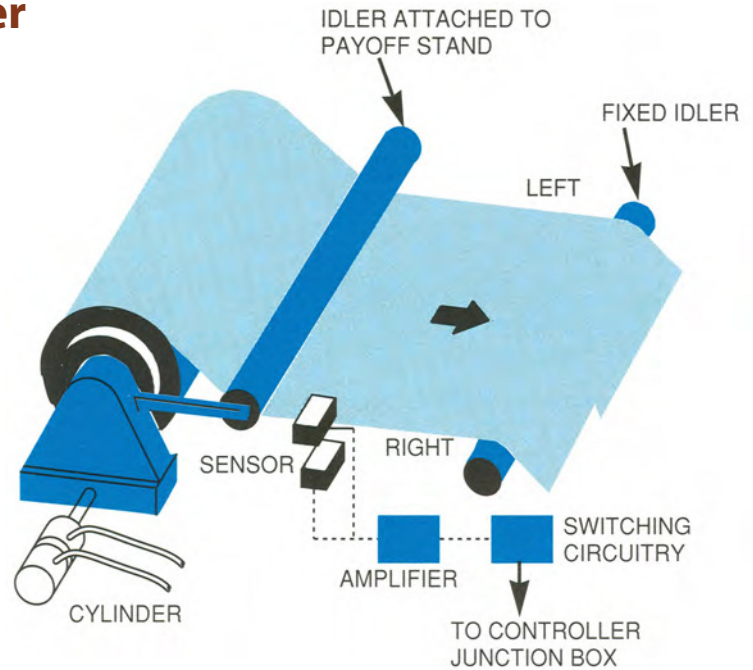
GPE Sales Professionals are available to evaluate your existing controls and advise upgrades to maximize efficiency.



Strip Guiding Techniques

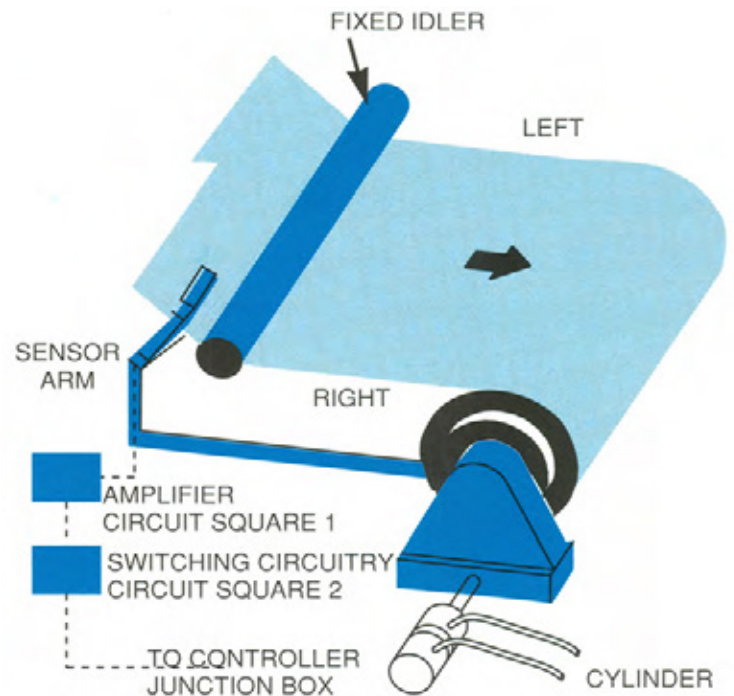
Edge Position Control for Uncoiler

A strip guiding system to control the feed of an irregularly wound coil directly to a mill or continuous line. The sensor detects the edge position of the strip and provides a continuous signal to the controller. Changes in edge position of the strip changes the signal to the controller. The controller causes the power cylinder or cylinders to move the uncoiler in the direction necessary to restore the edge onto the desired position. The Edge is maintained in the correct position.



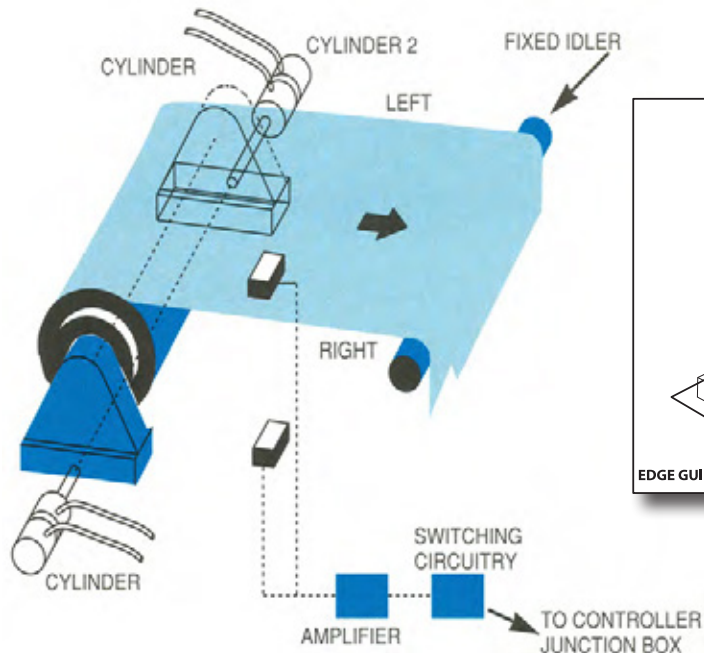
Edge Position Control for Recoiler

A strip guiding system for control of recoiling. The sensing head is mounted so that it moves laterally with the windup reel. The sensor detects changes in strip position. The controller operates the power cylinder, which moves the windup reel to the correct position to receive the strip to wind straight coils. The sensor and reel follow the strip in contrast to the uncoiler application where the reel and strip are positioned to the sensor.

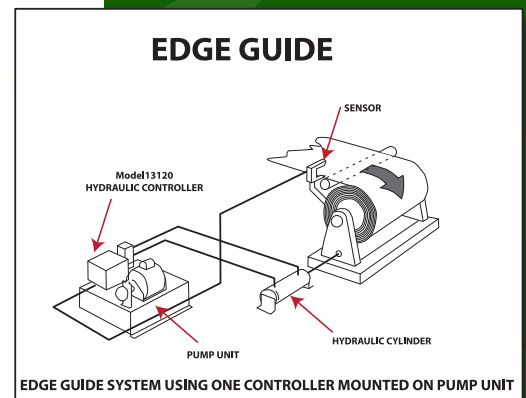


Wide Gap Edge Position Control

A strip guiding system for control of recoiling. The sensing head is mounted so that it moves laterally with the windup reel. The sensor detects changes in strip position. The controller operates the power cylinder, which moves the windup reel to the correct position to receive the strip to wind straight coils. The sensor and reel follow the strip in contrast to the uncoiler application where the reel and strip are positioned to the sensor.

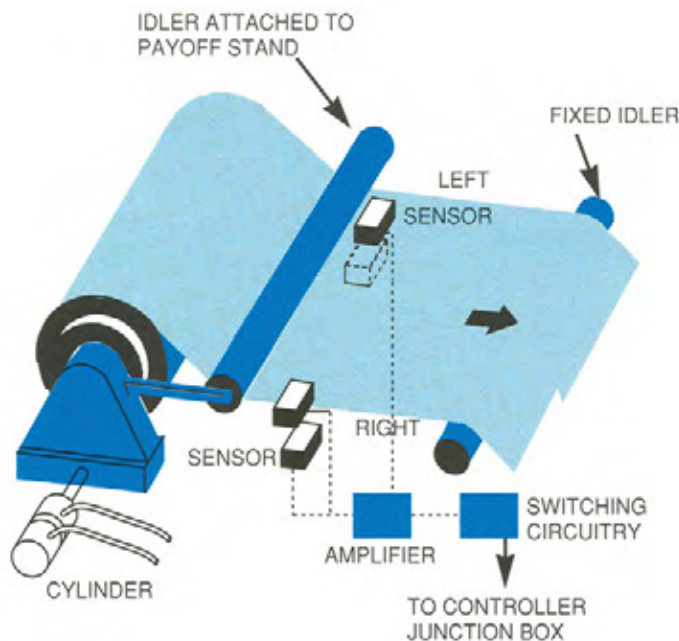


Typical Application



Centerguide for Uncoiler

A strip of uneven width may be uncoiled (or guided) at a fixed lateral center line position into side trimmers or other processing units. Sensors are installed on both sides of the strip. When irregularities in the width of the oncoming strip occur, these sensors independently detect changes in the edge position of each side of the strip. The resulting signal to the controller is such as to cause the cylinder or cylinders to move the uncoiler to that position which will place the centerline of the strip on the centerline of the processing line.



13120 DynaGuide



19111 Pump Unit



31551 Sensors



33130D Controller



Hydraulic Power Supplies



GPE 13141 **Integral Hydraulic Controller**

- Integral Power Supply
- Pressures up to 930 psi
- 5.8 to 14.1 GPM
- 3 to 7.5 Horsepower
- 35 Gallon Reservoir
- Proportional Control
- Pneumatic or Electronic Inputs
- Manual or Automatic Switching



GPE 13181 **Integral Hydraulic Controller**

- Integral Power Supply
- Pressures up to 1000 psi
- 10 to 40 GPM
- 10 to 25 Horsepower
- 100 Gallon Reservoir
- Proportional Control
- Pneumatic or Electronic Inputs
- Manual or Automatic Switching



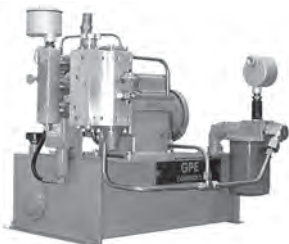
GPE 19111 **Hydraulic Power Supply**

- Integral Power Supply
- Pressures up to 780 psi
- 0.5 to 9 GPM
- 3/4 to 3 Horsepower
- 30 Gallon Reservoir
- Proportional Control
- Pneumatic or Electronic Inputs
- Manual or Automatic Switching



GPE 19140 **Hydraulic Power Supply**

- 5 Gallon Reservoir
- Mounting for 2 Controllers
- 1/2 Horsepower to Pump
- 0.8 to 4.0 GPM
- 125 to 230 psi
- External Pump for Easy Maintenance
- Meets JIC Standards



GPE 19140/13120 **Hydraulic Power Supply and Controller**

- 10 Gallon Reservoir Eliminates the Need for Heat Exchanger
- Meets JIC Standards
- Pressure, Filter and Level/Temperature Switches
- 3.7 GPM
- 100 - 300 psi



GPE 19150 **Hydraulic Power Supply**

- Meets JIC Standards
- 500 to 900 psi
- 10 to 20 GPM
- 5 to 15 Horsepower
- 60 Gallon Reservoir

Sensors



GPE 31551 **Heavy Duty Edge Guide Sensor**

- 0.005" Sensitivity
- Mounting up to 144" Apart
- Withstands Impact and Variations from Strip
- Provides Signal for Electrohydraulic or Powerpulse Controller



GPE 21512 **Pneumatic Miniature Type Sensor**

- Edge Guide Sensor
- Compact Single Housing
- Non-Clogging Design
- Sturdy Construction
- Integral Air Purge

Sensors (continued)



GPE 31510 Photoelectric Edge Guide Sensor

- 0.005" Sensitivity
- Compact Single Housing
- Adjustable Gain & Bias
- Available in Compact Miniature Design
- Simple Adjustments
- Extremely Versatile



GPE 31611 Capacitance Center Guide Sensor

- Operates in Dirty or High Temperature Environments
- 1/8" Sensitivity
- Heavy Duty Aluminum Channel Construction
- Sensors are Prewired
- Simple Calibration
- Continuous Strip Scanning



GPE 31850 LED Sensor

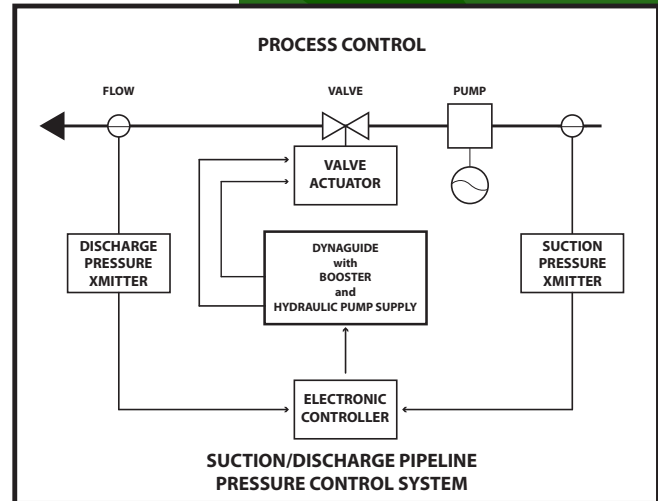
- Edge Guide Sensor
- 0.005" Sensitivity
- Can be mounted from 2" to 240" Apart
- Adjustable Gain & Bias
- Easily Aligned



GPE 31581 Autowide® Center Guide Sensor

- Photovoltaic Strip
- 0.005" Sensitivity
- Can be mounted up to 48" Apart
- Adjustable Gain & Bias
- Continuous Strip Scanning
- Rugged Construction
- Simple Calibration

GPE also designs and manufactures **Liquid Pipeline Suction/Discharge Pressure Control Systems.**



Width Measuring System



GPE 31620 Width Gauge

- Non-Contact Strip Width Measurement
- High Accuracy ± 0.4 mm (0.016")
- No Moving Parts
- Available with Fixed or Moveable Sensor Carriage
- Compact Design for Easy Installation
- Variable Width 32" to 86"



Strip Width Meter

- Width Indicator
- Deviation Indicator
- TCP/IP Interface
- RS232 Port
- 4 to 20 Ma Outputs

Position Transmitters



GPE 31490 Position Transmitter

- Rotary Position Transmitter
- 4 to 20 mA Output
- Accuracy of $\pm 1\%$ of range
- Explosion Proof Housing



GPE 31590 Position Transmitter

- Linear Position Transmitter
- 0 to 2000 Ohm Full Stroke Output
- 0.5% of Full Stroke Accuracy
- Right, Left, Up or Down Operations

Hydraulic Actuators

Designed with Versatility in Mind

The Series 14100 Straight Type and Crank Type cylinders offer extremely low breakloose pressure and can be configured in a variety of ways depending on your application. Cylinder ports can be located in any four positions with a choice of foot, flange or pivot mountings.

GPE 14110 Straight Type Cylinder

- Single End
- 1 1/2" to 8" Bore
- Up to 1500 lbs.
- Foot, Flange or Pivot Mtg.
- Low By-Pass Leakage
- Bronze Bearings
- Chrome Plated Cylinder Rod



Pivot Mounting with Self-Aligning Bearing
Model 14110 (only)



Flange Mounting with Male Threaded Connector
Models 14110 & 14120

Hydraulic Actuators

GPE 14120 Straight Type Cylinder

- Double End
- 1 1/2" to 8" Bore
- Up to 1500 lbs.
- Foot, Flange or Pivot Mtg.
- Low By-Pass Leakage
- Bronze Bearings
- Chrome Plated Cylinder Rod



Foot Mounting with Rod Clevis
Models 14110 & 14120

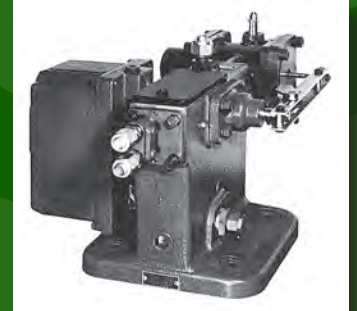
GPE 14130/14140 Crank Type Cylinders

- Double End
- 3", 3 1/2", or 5" Bore
- Up to 1500 lbs.
- Foot, Flange or Pivot Mtg.
- Low By-Pass Leakage
- Bronze Bearings
- Chrome Plated Cylinder Rod



3 1/2" Size with Manual Operator

Ask your GPE Professional about the GPE Pressure Control Systems for Positioning Valves in Cove Oven and Blast Furnace Gas Mains.



13210 Regulator

Electronic / Hydraulic Controller



GPE 33130D Digital Electronic Controller

- Proportional Control
- Reset Control (Optional)
- Accepts Inputs from GPE Sensors
- Digital Hydraulic Controller
- Keypad Adjustable Gain, Zero
- Microprocessor Controlled
- Digital & Analog Display

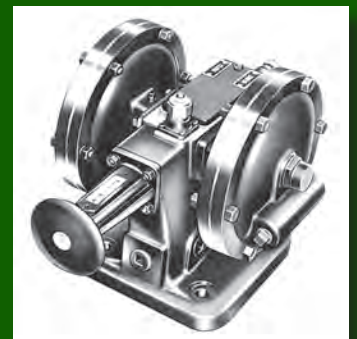
The Model 33130D Digital Controller eliminates the need for a separate electronic controller for various guiding applications.

The revolutionary controller accepts input signals from all of GPE's photoelectric LED and capacitance sensors. Also two different control modes are provided, PSF (Proportional Speed Floating) or PPF (Predictive Position Feedback). Controller outputs can operate the proper moving coil systems of GPE electro-hydraulic controls.

The 33130 D allows the operator to precisely adjust parameters via an external keyboard. The setpoints and preset operating conditions are conveniently displayed on a local LCD display.



13310 Regulator

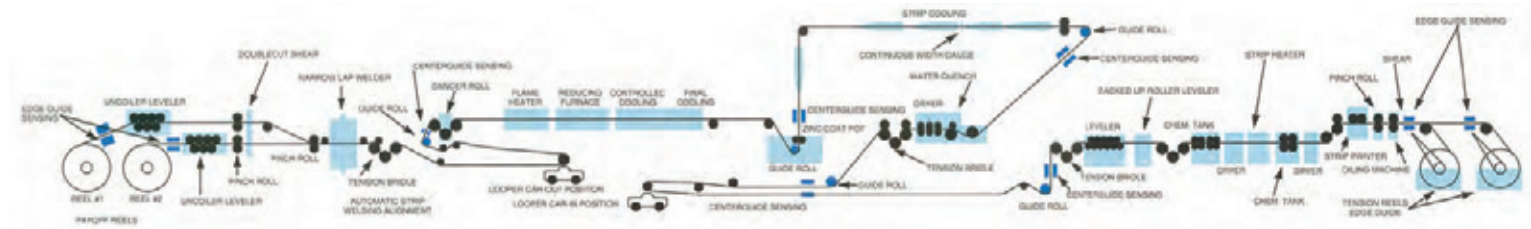


13410 Regulator

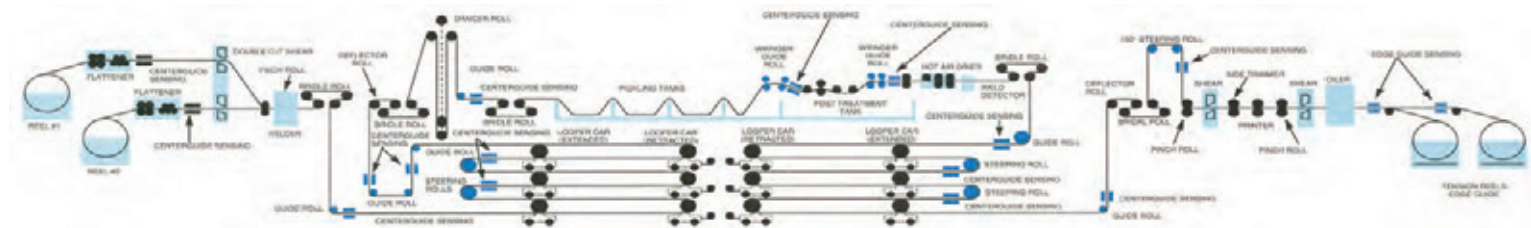


Typical Strip Line Diagrams

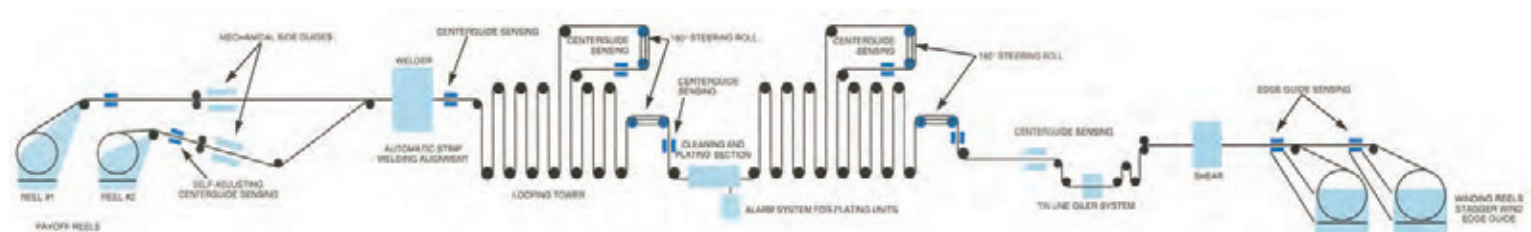
Continuous Galvanizing Line



Continuous Pickling Line



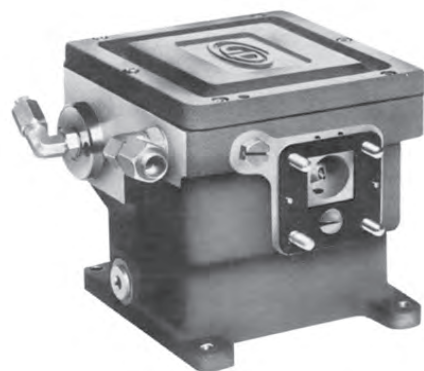
Tinning Line



Electronic / Hydraulic Controller

GPE 13120

DYNAGUIDE® Hydraulic Controller (Servo-valve)

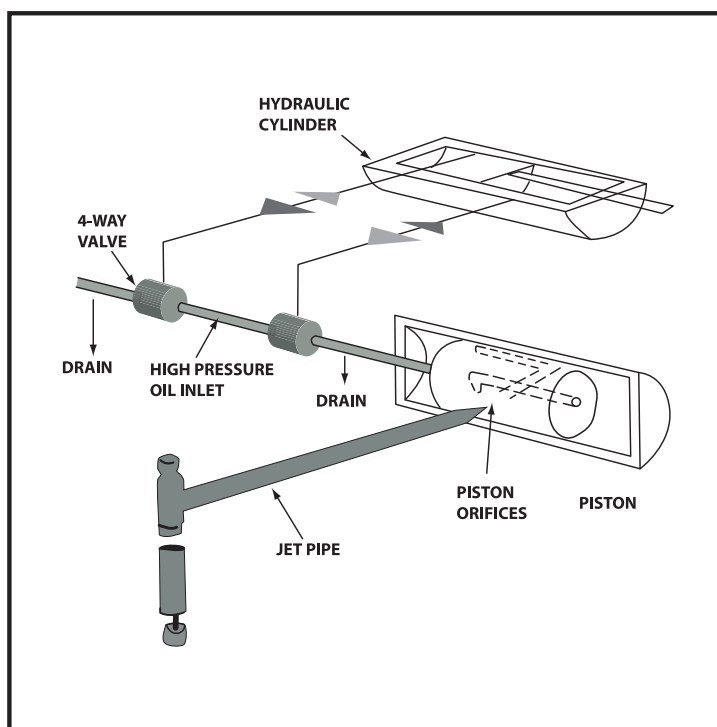


- Electric or Pneumatic Signal Inputs
- Proportional Control Providing
- Smooth Accurate Performance
- Hydraulic Supply to 2000 psi
- Mounting Separately in One or More Multiple Units
- Available Switching Option for Manual/ Automatic Control

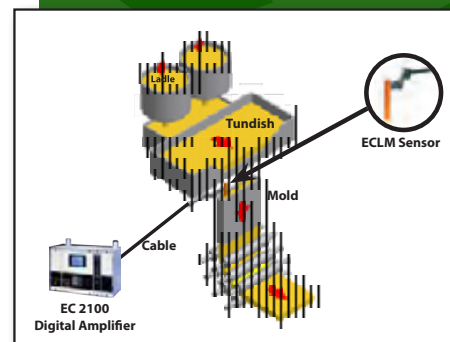
The Model 13120 Hydraulic Controller (servo valve) is specifically designed for any control system applications that require high performance hydraulic control or continuous servo valve actuation.

The Dynaguide* Hydraulic Controller accepts electrical or pneumatic signal inputs from primary sensors. This signal is converted into a powerful hydraulic signal, through the use of an integrally mounted moving coil or diaphragm assembly and a jet pipe nozzle.

The Dynaguide controller is also available with hydraulic boosters to extend the power range of the jet pipe controller. The booster is a spool type servo in which the spool is hydraulically servoed to follow the jet pipe motion to also provide proportional speed control. GPE boosters have an adjustable gain feature that allows optimum matching to the specific hydraulic system.

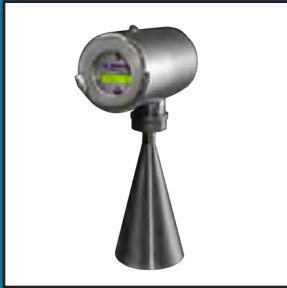


Ask your GPE Professional about the GPE Mold Level Measurement System for Continuous Casting.



L&J Technologies offers a complete line of products that provide solutions for hundreds of Industrial and commercial applications. Visit us online at www.ljtechnologies.com

L&J ENGINEERING



Liquid Level Gauging,
Temperature, Density &
Inventory Management

SHAND&JURS



Tank Vents, Flame and
Detonation Arresters &
Fittings

DELAVAN



Point/Multi-Point Level
Controls, Continuous
Level Sensors and Solid
Flow Indicators

GPE



Mold Level & Strip
Guiding Measurement
& Control Systems for
Metals/Steel Industries

OMNIROL



Liquid Level Switches

Durlam



FRP Conservation
Valves, Vents and
Hatches

Locations

World Headquarters
5911 Butterfield Road
Hillside, IL 60162
Phone: 708-236-6000
Fax: 708-236-6006

Houston Office
Houston, TX
Phone: 281-821-0322
Fax: 281-821-1796

Singapore Office
Phone: 65-6293-1355
Fax: 65-6293-1357