

**AMETEK**<sup>®</sup>

**GEMCO**<sup>®</sup>

## Linear Cable Reel Sensor





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## Principles of Operation

The Series 925 Linear Cable Reel can be used in any linear application up to 1200 inches. The system consists of a heavy duty spring motor assembly attached to a precision machined cable drum. As the cable is pulled off of the precision drum, the drum rotates a shaft connected to it. This shaft is precisely geared such that the full number of revolutions of the drum is equal to the appropriate number of revolutions required by the chosen sensor.

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## Applications

The Series 925 can be used in any industrial application to monitor a linear or reciprocating machine motion.

The sensor package, along with the associated electronics (i.e. programmable logic controller, programmable limit switch, counter card, etc.) can sense the position of any linear motion and can, therefore, be used to control machines.



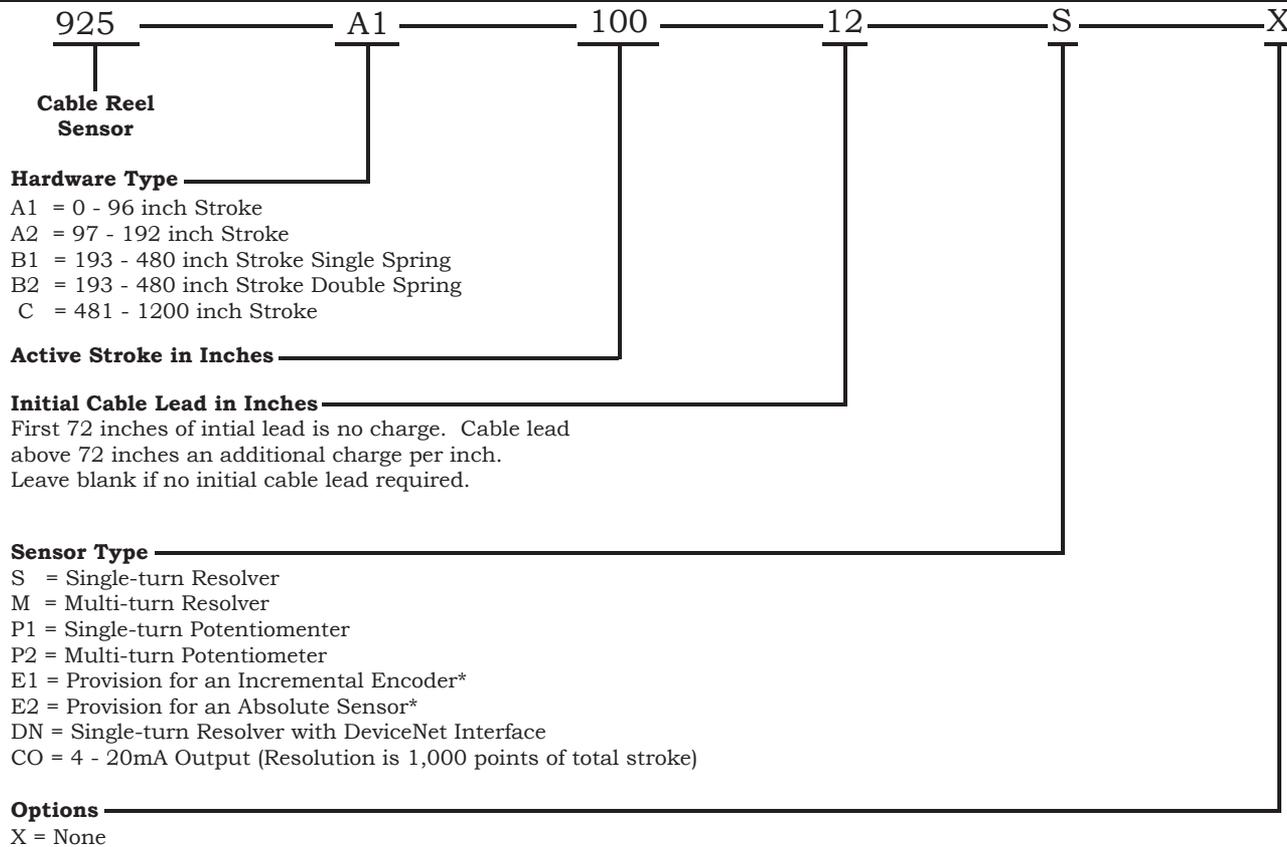
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## Advantages

This approach to machine positioning has several advantages over traditional limit switches. In hostile environments, such as many steel mill applications, the cable reel sensor can be mounted remotely. This protects the sensor from excessive heat, steam, water, chemicals and physical damage. In addition, mounting alignment is not critical in that the cable can be mis-aligned somewhat without harm, thus saving installation time. The variety of sensors available allows the system to be easily integrated to existing machine controls.



# Part Numbering



- \* In instances where provisions for a customer supplied sensor are required, the following points must be covered:
- A. A detailed dimension drawing of the sensor to be coupled must be supplied
  - B. A custom dimension/approval drawing will be made prior to manufacturing.
  - C. Special gearing of sensor may require an additional charge.

Sheave Assemblies	
Description	Part Number
Horizontal	PSD0102600
Vertical	PSD0102500

Resolver	
Description	Part Number
Resolver & Mating Connector	SD0308900

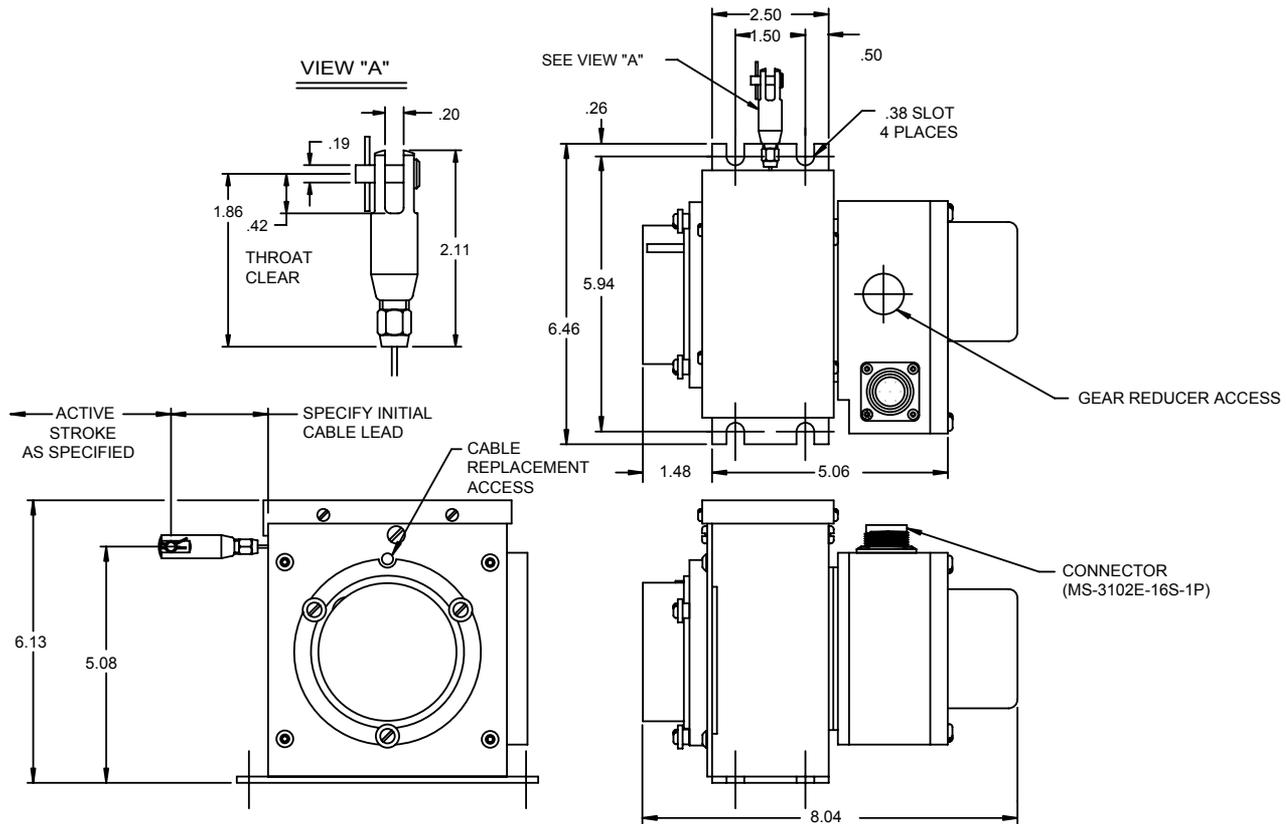
Replacement Spring Assembly	
Description	Part Number
Spring motor for A1 & A2 Style Units	M0352900
Spring motor for B & C Style Units	SD039220

Cable Assembly	
Part Number	
SD0414600L__	

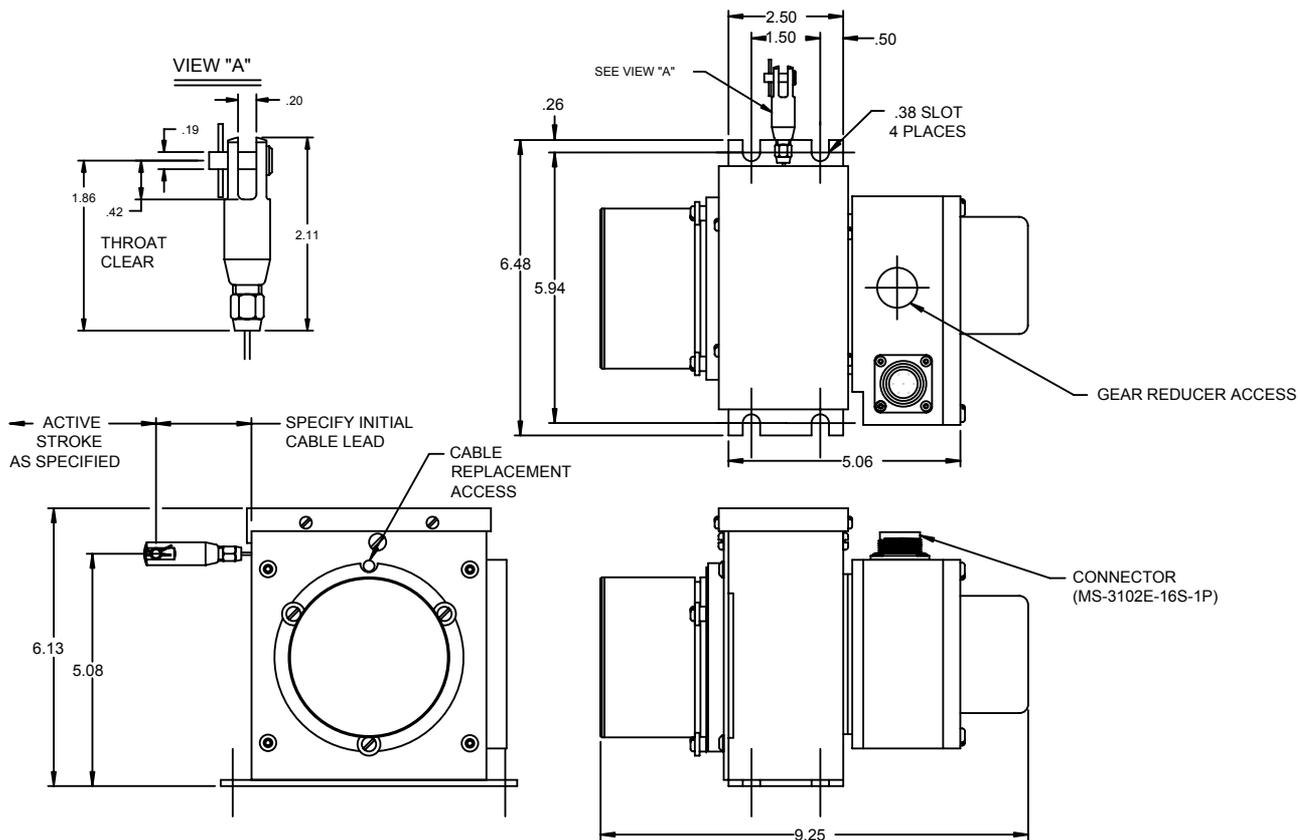
Points to note when ordering a linear cable reel sensor:

1. Hardware types determine the maximum capable stroke of each style. The actual stroke is customer specified. Three initial wraps minimum remain on cable drum after the stroke length is reached. Pulling the cable out to its physical maximum length may damage the unit.
2. Standard gearing of single-turn sensors is such that the active stroke of the cable reel will rotate the sensor 350 degrees. Multi-turn sensors will rotate the maximum number of turns over the active stroke. Requests for gearing other than the above must be called out clearly on order.
3. Mounting of customer supplied sensors is done in the most expedient way possible. Special mounting requirements must be specified clearly on order.

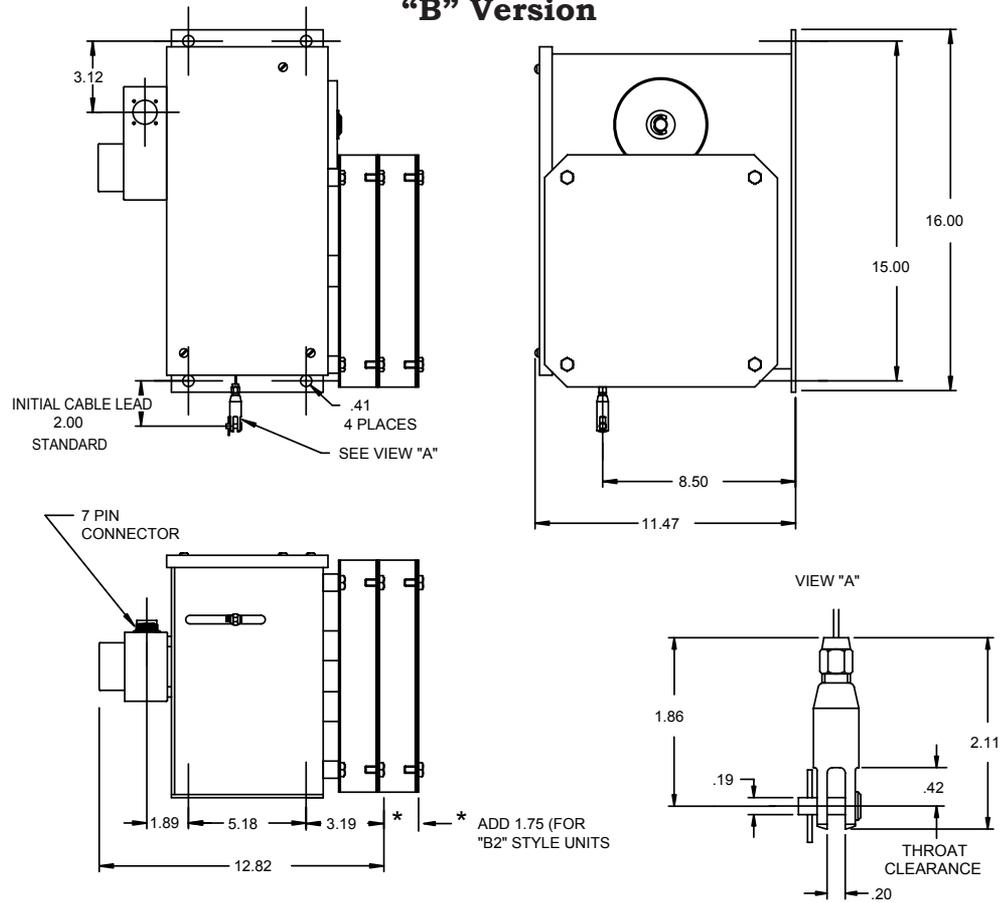
### “A” Version (stroke 96” or less)



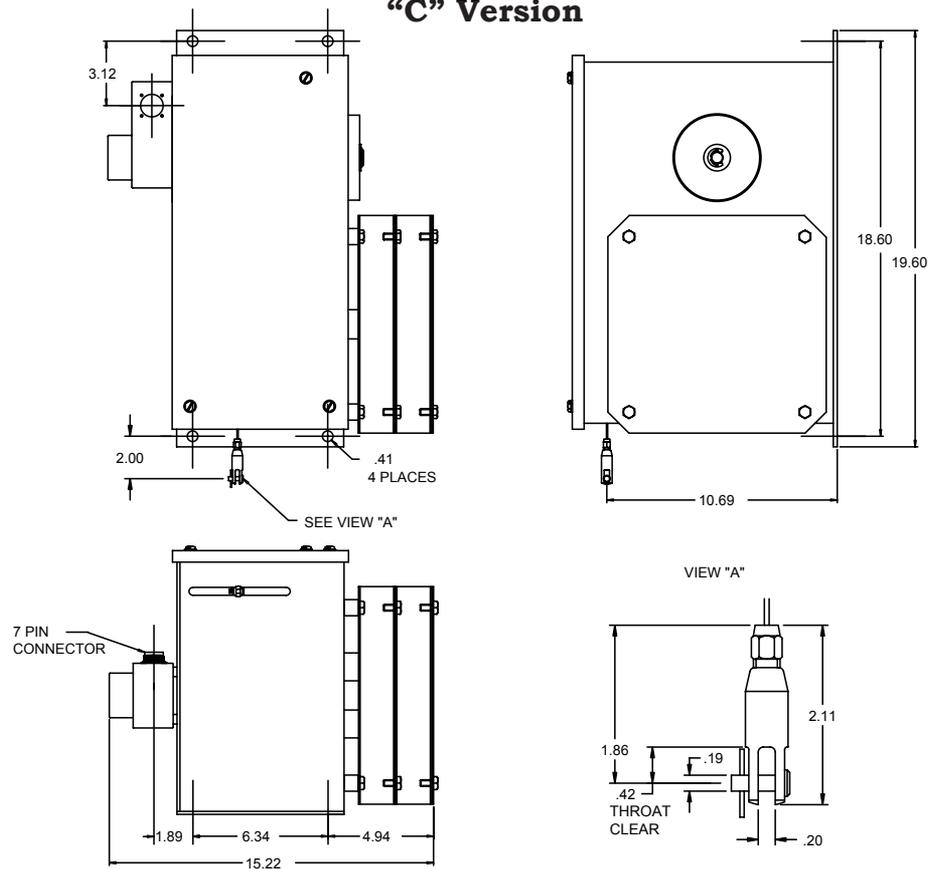
### “A” Version (stroke 97” to 192”)



### "B" Version



### "C" Version



## Single Turn Resolver



Cable reel sensor with single turn resolvers are setup so that the full stroke of the cable reel is equal to approximately 350 degrees rotation of the resolver. The resolver signal is fed to a converting device, like the Gemco Series 2500 PLS. The Series 2500 can be scaled to display the linear motion of the cable reel sensor. Example: A 20 ft. stroke cable reel sensor is specified to be used with our Series 2500 PLS. Desired accuracy is .01 ft. By calculating a scale factor based on 360 degrees rotation of the resolver such that 2000 counts or (20.00 ft.) is obtained at 350 degrees, full linear display is achieved.

### Specifications

Stroke Range	Up to 1200 inches (100 ft.) standard
Mechanical Accuracy	0.05% of active stroke
Speed Range	Variable
Cable Tension	Type A unit 2.5 lbs. to 4.2 lbs. (stroke to 96") Type A unit 1.25 lbs. to 4.2 lbs. (stroke to 192") Type B unit 1.6 lbs. to 14.27 lbs. Type C unit .75 lbs. to 16.30 lbs.
Cable Material	.056" (actual) stainless steel aircraft grade
Housing Material	10 gauge cold rolled sheet steel with baked enamel paint finish
Seal	Splash Proof
Temperature Range	Sensor dependent (most encoders and potentiometers are around 0° to 180° F standard, resolvers are typically -50° to 250° F). Check manufacturers specs

## Multi-Turn Resolvers

In instances where a high degree of accuracy or a long stroke is required, it may be advantageous to use a multi-turn resolver. The multi-turn resolver can generate many counts per revolution of the cable drum (up to 16,384 with our Series 2500 electronics) and will accumulate these counts per revolution to track the total linear travel. By using the linear travel per revolution of the drum we can formulate a scale factor for the electronic package that will display linear cable travel throughout the full stroke.

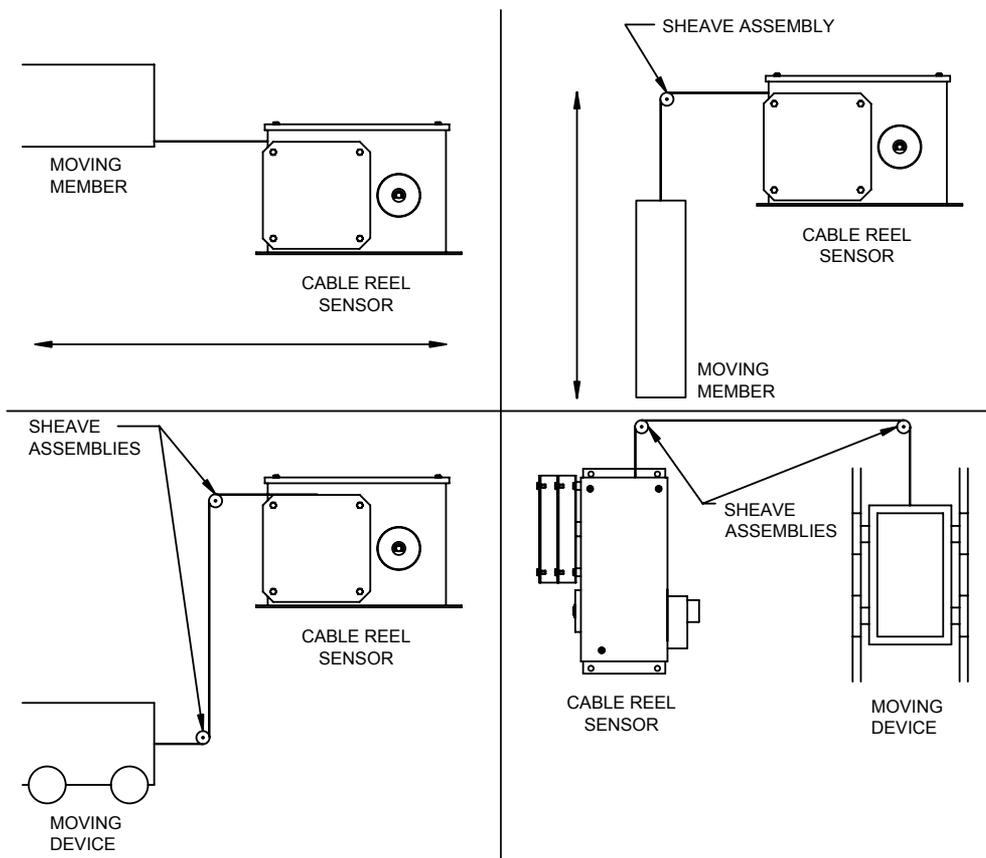
## Encoder and Potentiometer Sensors

When encoders or potentiometers are used we can formulate the outputs to most any customer specification. As standard packages potentiometers would be geared so that the full stroke of the cable reel sensor was equal to approximately 90% of the active rotation on a single turn pot and approximately 90% of the last turn on a 10 turn pot.



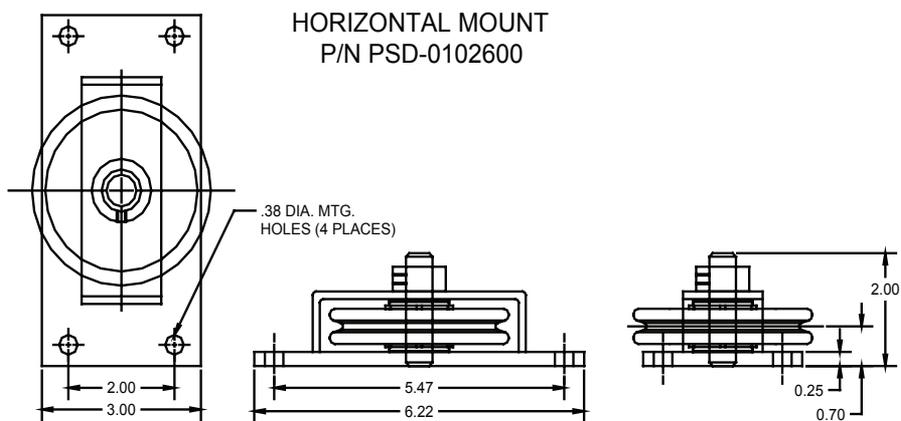
Incremental encoders can be directly driven off the cable drum to give a known number of pulses per revolution.

Absolute encoders can be geared so that the maximum number of counts would equal the specified linear stroke. If maximum stroke is exceeded, the encoder will roll through to zero.

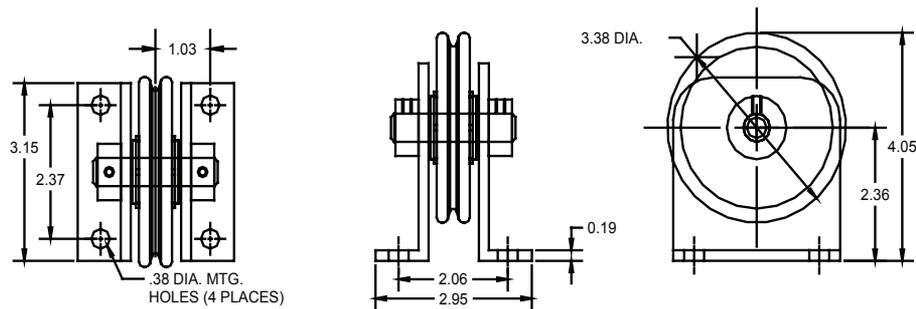


### SHEAVE ASSEMBLIES

HORIZONTAL MOUNT  
P/N PSD-0102600



VERTICAL MOUNT  
P/N PSD-0102500





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