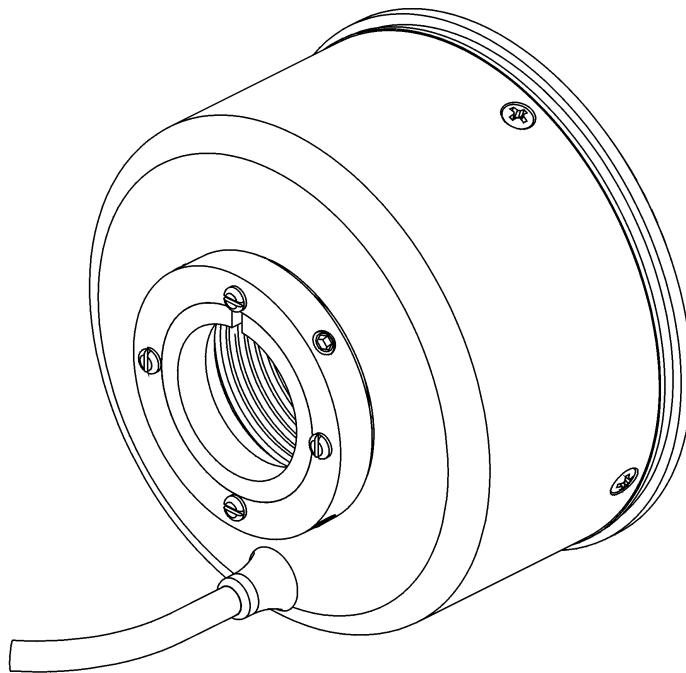


Model 835H
Precision Encoder w/ Bellows Coupling

INSTALLATION MANUAL

Second Edition

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Warning Precautions

This encoder is equipped with a precision flexible metal bellows assembly to compensate for angular misalignment, axial extension or compression, or parallel offset in the installation, without affecting encoder performance or bearing life. Internal mechanical stops are provided to ensure that the maximum restrictions for these parameters are not easily exceeded. However, combinations of more than one of these can exceed the capability of the bellows without contacting the mechanical stops. In addition, forces generated from improper handling or during installation with a severely misaligned or offset shaft can overwhelm the mechanical stops. Finally, the encoder should not be operated even briefly with the mechanical stops in contact. Total installation misalignment must meet the following constraint:

$$100P + 14E + 0.125A < 0.5$$

Where:

P = Parallel offset, inches (max = 0.005")

E = Axial extension or compression, inches (max = 0.035")

A = Angular misalignment, degrees (max = 4°)

Before you install the encoder, please make sure this above constraint is not exceeded.

Note: If not equipped with the optional V-ring seal, the encoder has been shipped with a shim between the clamp and the encoder housing. The shim is designed to remain in place during installation to aid in installing the encoder with the bellows in the center of its axial travel. Remove the shim before operation.

(If Applicable) This encoder is offered with an optional internal magnetic fluid shaft seal at the base end and an external V-ring seal on the clamp end, to protect internal parts from dirt, debris, and moisture. This option does not use the shim as described in the warning above. Instead, it employs a precision pin, 0.2812" diameter, which is shipped separately. Instructions for installation are provided below.

The magnetic fluid shaft seal is contained within the encoder housing. It is maintenance free and proper treatment should give satisfactory operation for thousands of hours. However, this seal is not designed for high pressure differential. Avoid directing pressurized gases or liquids at the interface of the shaft and base. In particular, liquid or high concentration vapor solvents will wash out the seal liquid and destroy the seal's functionality.

The V-ring seal on the clamp end is designed to withstand severe environments, and will function properly even when the shaft is misaligned or offset. The Nitrile rubber seal is resistant to water, hydrocarbon fuels, petroleum oils and greases. Resistance to polar fluids (acetone, esters, ketones), chlorinated hydrocarbons (carbon tetrachloride, trichloroethylene) and aromatic fluids (benzene, toluene) is poor. Alternate seal compounds are available; please consult the factory for assistance if you have questions

as to seal compatibility with any other fluid. Avoid directing high pressure gases or liquids at the seal as they can lift the seal lip and force debris inside the encoder.

Installation Instructions (See Figure 1)

1. Loosen the radial shaft clamping set screws and remove the clamp adapter ring.
2. Slide the encoder onto the shaft and install the base onto the mounting surface.
3. Slide the clamp adapter ring onto the shaft and into the annulus between the shaft and the clamp. Be sure the gap in the adapter ring is half way between any two of the four radial clamping screws, and that the ring bottoms in the recess in the clamp.
4. Snug the radial clamping screws. If the encoder is not equipped with the optional V-ring seal, note that there is a shim taped to the housing cover to assist in installing the clamp with the bellows in its nominal, unstressed position. Check to ensure that the bellows is neither compressed nor extended from its nominal position. Remove the shim and check for clearance between the housing and the clamp. The shim should be snug to .005 loose, and should be approximately equal around the diameter; adjust if necessary. Once proper alignment is achieved, torque the radial clamping screws to 18 inch pounds. Save the shim for future use.
5. If the encoder is equipped with the optional V-ring seal, a precision pin, 0.2812" diameter, is shipped separately. This pin is used in exactly the same fashion as the shim described above, except the diameter of the pin is used to set the gap between the seal running surface and top clamp flange.
6. If so equipped, slide the V-ring seal onto the shaft, with the flexible lip toward the encoder. Carefully stretch the V-ring over the raised edge of the clamp. Being careful not to damage the V-ring or the seal running surface on the encoder, insert a tool (such as a dull screwdriver) between the seal and the clamp and run the tool around the diameter a few times. Ensure the base of the seal is fully seated against the raised edge of the clamp.

Note: The V-ring seal (if so equipped) has been factory prelubricated with Molykote 321 dry film lubricant. In severe environments, seal life can be improved with periodic relubrication. If Molykote 321 is not available, any petroleum-based oil or grease is acceptable.

Color Codes and Connector Pin Outs

	Code	P	Q	S	M	A
	Connector	None	DA-15P	DE-9P	MS3102E-18-1P	
	Function	Color	Pin #	Pin #	Pin #	Pin #
SQUARE WAVE OUTPUT (output codes L,C,T,F)	A	Yellow	8	4	A	A
	/A ⁽¹⁾	Brown	7	8	B	H
	B	Green	5	3	C	B
	/B ⁽¹⁾	Orange	4	7	D	I
	IND	Blue	2	2	E	C
	/IND ⁽¹⁾	White	1	6	F	J
	+V	Red	10	5	I	D
	COMM	Black	13	9	J	F
	CASE	Gray	9	1	H	G
	SHIELD	Bare ⁽²⁾	14	1		
BUFFERED SINUSOID OUTPUT (output code B)	SIN	Yellow	9		A	
	COS	Green	11		C	
	IND	Blue	5		E	
	+V	Red	4		I	
	COMM	Black	15		J	
	CASE	Gray	8		H	
	SHIELD	Bare ⁽²⁾	8			
PULSE OUTPUT (output code P)	CW	Yellow	5	3	A	
	/CW	Brown	4	7	B	
	CCW	Green	8	4	C	
	/CCW	Orange	7	8	D	
	IND	Blue	2	2	E	
	/IND	White	1	6	F	
	+V	Red	10	5	I	
	COMM	Black	13	9	J	
	CASE	Gray	9	1	H	
	SHIELD	Bare ⁽²⁾	14	1		

Notes:

1. Available with RS-422 Differential Line Driver Output (code L) only.
2. Available with shielded cable only. Not connected to the case of the encoder.
3. Channel B (cos) leads Channel A (sin) for CW shaft rotation, looking at the shaft end.
4. Consult Series 835H data sheet for output waveforms, package outlines, general performance specifications, etc.

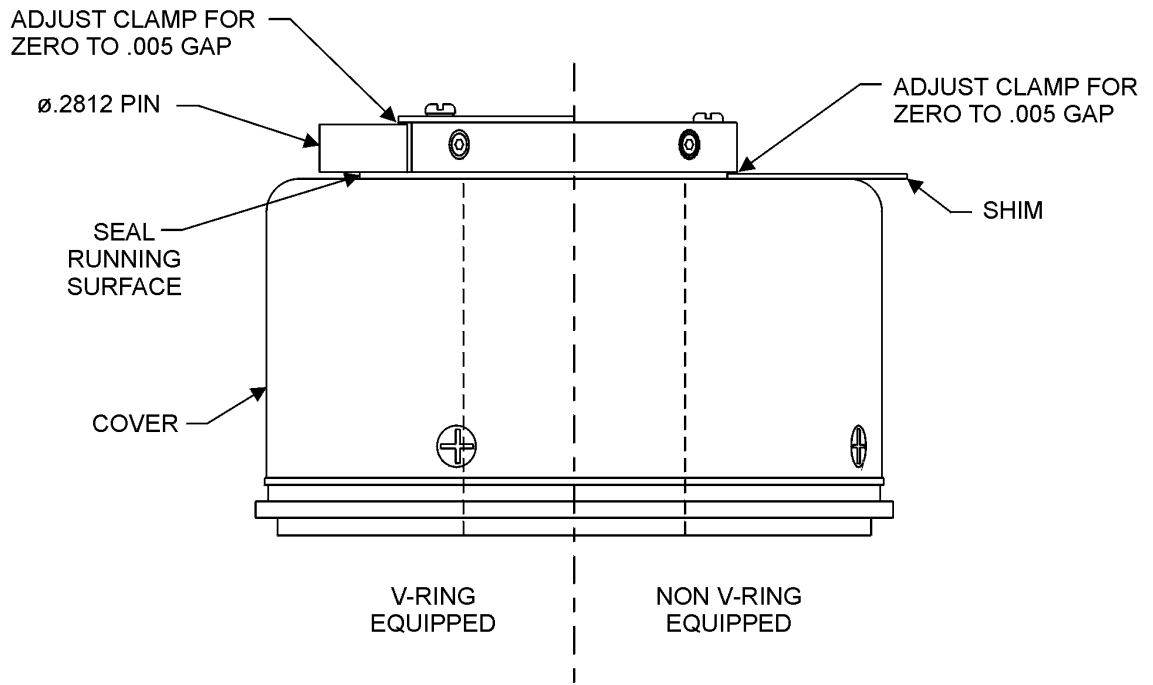


Figure 1

Warranty and Return Policy

Gurley Precision Instruments (GPI) does not warrant that the hardware will work properly in all environments and applications, and makes no warranty and representation, either implied or expressed, with respect to the quality, performance, merchantability, or fitness for a particular purpose of any software or documentation. GPI reserves the right to make changes to the hardware and to Installation Manual content without obligation to notify any person or organization of the revision or change.

GPI warrants its products to conform to their published specifications and to be free from defects in material and workmanship for a period of one year from date of shipment. This Limited Warranty is extended to the original end user and covers parts and labor. Any product returned under warranty is subject to inspection and testing at GPI. User must return the product, freight prepaid, to the factory. GPI, at its option, will repair or replace any product found defective, free of charge. Return freight charges are collect to the user.

This warranty is void if damage was caused by unreasonable or improper use, including failure to comply with manufacturer's installation and operation instructions. Damage from shipping is specifically excluded from warranty.

This warranty is exclusive and GPI makes no other representation of any other kind, expressed or implied, with respect to the product, including its merchantability or fitness for a particular purpose. Buyer's exclusive remedy to claims arising under this Warranty shall be the repair or replacement of the product, or damages which will not exceed the purchase price of the product. In no event, including claims of negligence, shall GPI be liable for incidental or consequential damages.

All brand and product names are the trademarks of their respective owners.

As part of our continuing effort to improve our customer service, we have established an **RMA NUMBER SYSTEM** for returned goods. If you have to send any products to us for any reason, please observe the following procedure:

1. Before you ship us anything, call your salesperson for an RMA number. Please have the model and serial number available.
2. Make sure your product is properly packed so it is not damaged in shipment.
3. Before you seal the box, write the RMA number on a piece of paper and put it *inside* the box so it's the first thing we see when we open it.
4. Also write the RMA number on the *outside* of the box, next to the address label. Use a black felt-tipped marker.
5. If you contact us about the returned item or items, please refer to the appropriate RMA number for quickest service.

Thank you for your cooperation.