NorthStar™

SERIES HSD37 Installation Manual

702830-0001 Rev A

January 27th, 2010

Harsh Duty Optical Encoder

Key Features

- Unbreakable Code Disc up to 5000PPR
- ATEX Certification Available for Intrinsically Safe Applications
- Dual Isolated Outputs Available for Redundancy
- Anodized Aluminum, Stainless Steel, or Nickel Plated Housing

CE RoHS

A. GENERAL OVERVIEW

The NorthStar Series HSD37 is a harsh-duty speed and position transducer that when mounted to a rotating shaft, produces output pulses that are directly proportional to the shaft speed and direction. The hollowshaft encoder is attached to the motor shaft by using a clamp down collar. The HSD37 can accommodate several different motor or machine shaft sizes by selecting the proper bore insert. During installation, certain physical properties associated with the mechanical coupling must be observed to ensure a long operation life of the encoder.

B. SHAFT EXTENSION

Solid shaft preferred, keyway allowed (key must be removed); flatted shaft must not be used. The minimum shaft extension length is 1.25” (1.60” is recommended). Installations that use a press-fit or screwed-on stub shaft adapter should align the stub shaft to 0.002" TIR or less using a dial indicator.

CAUTION: The loads applied to the encoder shaft must be in accordance with the specificatios of this device.

C. TETHER POINT

For general industrial machinery and C-face motor installations, locate the tether hole at the nominal bolt circle location. The tether holes are slightly elongated to allow for hole location tolerance.

MECHANICAL INSTALLATION

1) Clean mating shaft so that it is free of any burrs or rough edges.
2) Install the supplied tether point mounting hardware: Steel washers, two-piece Nylon insulation washer, and bolt. (See Figure 1)

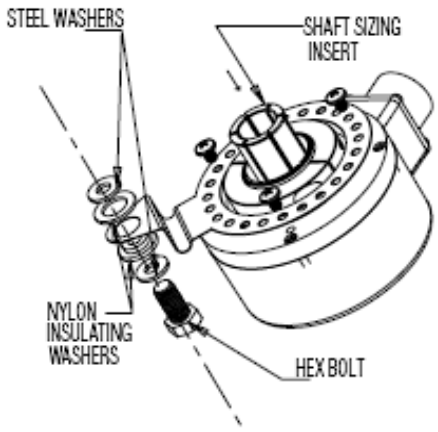

Figure 1
Tether Hardware

3) Slide encoder onto motor shaft and secure tether to motor. Ensure tether is not bent or stressed.
4) Tighten two (2) encoder clamp collar screws.
5) Check runout/wobble. Turn the shaft by hand to ensure it turns freely and does not produce excessive runout of the encoder. Most encoder installations will have runout arising from shaft tolerances. Using a dial indicator, measure the runout on the visible back face of the encoder. Runout of less than 0.007" TIR will not have any adverse effect on encoder performance. In general, the lower the TIR, the better.
6) Install basket guard (if applicable) over the encoder, large opening over the connector or cable and shorter opening over the tether. Ensure the cover is fully seated over the motor face (see Figure 2 following page). When mounting to a fan cover, drill three mounting holes .17” in diameter with appropriate spacing to match basket. Use three #10-24 self-tapping screws to mount (included with 114592-0001 Fan Mount Cover Kit).

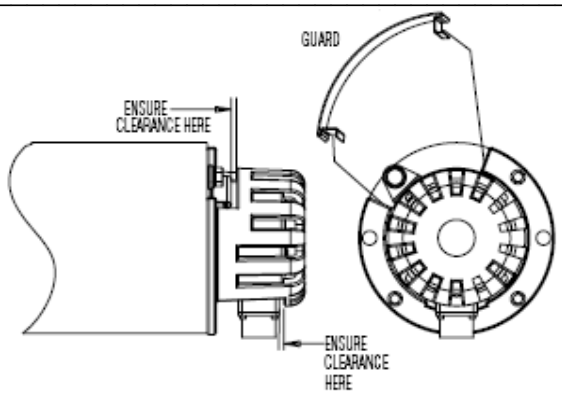

Figure 2
Basket Guard

IMPORTANT ELECTRICAL INSTALLATION INFORMATION

Important Wiring Instructions: Use of shielded cable is recommended for all encoder installations.

Grounding: For applications with high ground potential differences, DO NOT ground the encoder through both machine and controls end. Connect the shield at the controls end only. **NOTE: If the shield is connected at both ends, grounding problems that degrade system performance can result.**

CE Grounding Measures – For best EMC immunity the cable screen must be grounded on both encoder and controls end. For cable lengths longer than 30m or outdoor applications, additional measures must be implemented to comply with CE requirements. Connection of the encoder to DC power supply network is prohibited if CE compliance is required. CE-compliant products are tested to EN61326-1 EMC.

In all cases, system CE compliance is ultimately the responsibility of the manufacturer integrating the encoder.

If possible, run the encoder cable through a dedicated conduit (not shared with other wiring). Use of conduit will protect the cable from physical damage and provide a degree of electrical isolation. Do not run the cable in close proximity to other conductors that carry current to heavy loads such as motors, motor starters, contactors, solenoids, etc. This practice can induce electrical transients in the encoder cable, potentially interfering with reliable data transmission. Refer to Electrical Connections table for wiring information. To avoid possible damage, do not connect or disconnect the encoder connector or wiring while power is applied to the system.

CAUTION: Unused encoder signal wires must be individually insulated and under no circumstances be in contact with ground, voltage sources, or other signal lines.

ELECTRICAL CONNECTIONS

6, 7 & 10 Pin MS Connectors and Cables

Connector & mate/accessory cable assembly pin numbers and wire color information is provided here for reference. HSD37 models with direct cable exit carry the color coding as shown in the right hand column.

Encoder Function	Cable # 108594-6 Pin Single Ended		Cable # 108595-7 Pin Single Ended		Cable # 108596-7 Pin Dif Line Driver with Index		Cable # 1400635-10 Pin Dif Line Driver with Index		Cable Exit with Seal
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Wire Color
Sig. A	E	BRN	A	BRN	A	BRN	A	BRN	GREEN
Sig. B	D	ORN	B	ORG	B	ORG	B	ORG	BLUE
Sig. Z	C	YEL	C	YEL	—	—	C	YEL	ORANGE
Power +V	B	RED	D	RED	D	RED	D	RED	RED
Com	A	BLK	F	BLK	F	BLK	F	BLK	BLACK
Case	—	—	G	GRN	G	GRN	G	GRN	WHITE
N/C-Shield	F	—	E	—	—	—	E	—	—
Sig$\bar{A}$	—	—	—	—	C	BRN/WHT	H	BRN/WHT	VIOLET
Sig$\bar{B}$	—	—	—	—	E	ORG/WHT	I	ORG/WHT	BROWN
Sig$\bar{Z}$	—	—	—	—	—	—	J	YEL/WHT	YELLOW

5 & 8 Pin M12 Accessory Cables when Code 6= H or J

Connector pin numbers and cable assembly wire color information is provided here for reference.

Encoder Function	Cable # 112859-5 Pin Single Ended		Cable # 112860-8 Pin Single Ended		Cable # 112860-8 Pin Differential	
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color
Sig. A	4	BLK	1	BRN	1	BRN
Sig. B	2	WHT	4	ORG	4	ORG
*Sig. Z	5	GRY	6	YEL	6	YEL
Power +V	1	BRN	2	RED	2	RED
Com	3	BLU	7	BLK	7	BLK
Sig.$\bar{A}$	–	–	–	–	3	BRN/WHT
Sig.$\bar{B}$	–	–	–	–	5	ORG/WHT
*Sig.$\bar{Z}$	–	–	–	–	8	YEL/WHT

* Index not provided on all models. See ordering information

Cable Configuration: PVC jacket, 105 °C rated, overall foil shield; 24 AWG conductors, minimum

European Sales Representative
Hengstler GmbH
Uhlandstrasse 49, 78554 Aldingen - Germany
www.hengstler.de

Headquarters: 1675 Delany Road • Gurnee, IL 60031-1282 • USA
Phone: +1 847.662.2666 • Fax: +1 847.662.6633

Satellite Locations:
North America: North Carolina, South Carolina, Connecticut, Massachusetts, New York, Canada, St. Kitts • Europe: United Kingdom, Italy, France, Germany, Spain, Slovakia • Latin America: Brazil • Asia: China, Japan, Korea, Singapore

DYNAPAR™

www.dynapar.com

Customer Service:
Tel.: +1.800.873.8731
Fax: +1.847.662.4150
custserv@dynapar.com

Technical Support
Tel.: +1.800.234.8731
Fax: +1.847.782.5277
northstar.techsupport@dynapar.com