

HAZARDOUS SERIES HSD35

NorthStar™ brand

Hazardous Duty Encoder

Key Features

- UL Certified for Hazardous Applications
- Class I and Class II Division 2
- Dual Isolated Output Option for Redundancy
- Accommodates Shaft Sizes up to 1.25" (Electrically isolated up to 1.125")

HAZ
Hazardous Duty

SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical

Resolution: 1 to 9,000 PPR (pulses/revolution)

Format: Two channel quadrature (AB) with optional Index (Z), and complementary outputs

Phase Sense: A leads B for CW shaft rotation viewing the shaft clamp end of the encoder

Quadrature Phasing: $90^\circ \pm 30^\circ$ electrical

Symmetry: $180^\circ \pm 25^\circ$ electrical

Index: 180° default gated to B low

Waveforms: Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

ELECTRICAL

Input Power: 5-26VDC, 5-15VDC. 50 mA max., not including output loads.

Outputs:

7272 Push-Pull: 40mA, sink or source

7272 Differential Line Driver: 40 mA, sink or source

7273 Open Collector: 40mA, sink max

4469 Differential Line Driver: 100mA, sink or source

2707 Differential Line Driver: 60mA, sink or source

Frequency Response: 200 kHz (data and index)

Noise Immunity: Tested to EN61326-1

Electrical Immunity: Reverse polarity (all models); Short Circuit protection (7272, 7273, and 2707 line drivers only)

Termination: Pluggable screw terminals, inside terminal box with 1/2" conduit connector

MECHANICAL

Bore Diameter: 6mm to 28mm, 1/4" to 1.25", electrically isolated

Mounting Configuration: Hollow Bore, direct mount over shaft with multiple tether options available

Mating Shaft Length: 1.25", Minimum, 1.60", Recommended

Shaft Speed: 6000 RPM, Maximum (Enclosure Rating is IP64 at speed over 5000 RPM)

Starting Torque: 11.0 in.-oz. maximum (at 25°C)

Running Torque: 5.0 in.-oz. maximum (at ambient)

Bearings: ABEC 3

Housing and Cover: Hard Anodized and Powder Coated Aluminum

Shaft Material: Stainless Steel

Disc Material: Aluminum

Weight: 3.2 lb (51.2 oz) Typical

ENVIRONMENTAL

Operating Temperature: -40° to $+85^\circ$ C with 7272 Line Driver; -40° to $+70^\circ$ C with 4469 line driver; see "Ordering Information". At shaft speed above 3000 RPM, derate 10° C per 1000 RPM

Storage Temperature: -40 to $+100^\circ$ C

Shock: 400g, 6ms

Vibration: 5 to 3000 Hz, 20g

Humidity: Up to 98% (non-condensing)

Enclosure Rating: IP67 (IP64 at shaft speeds above 5000RPM)

Hazardous Location Certification:

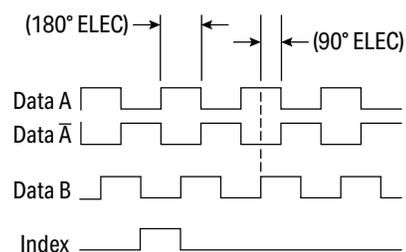
Class I, Division 2, Groups A, B, C and D;

Class II, Division 2, Groups F and G

STANDARD DATA AND INDEX

Not all complements shown

\bar{A} shown for reference



Index Width: 180° Default
A leads B, CW (from clamp end)

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ORDERING INFORMATION

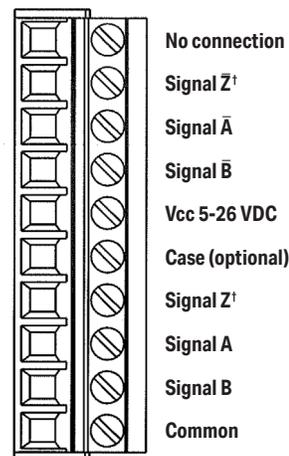
To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR	Code 3: Bore Size	Code 4: Fixing	Code 5: Output Format	Code 6: Options
HSD35	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HSD35 Hazardous Series, Hollowshaft Encoder	Enter Custom PPR from 0001 to 9000 Examples: 0001 = 1 PPR 0256 = 256 PPR 1024 = 1024 PPR 8192 = 8192 PPR 9000 = 9000 PPR	Electrically Isolated (Non-Metallic Insert) 0 6mm 1 1/4" 2 5/16" 3 8mm 4 3/8" 5 10mm 6 12mm 7 1/2" 8 5/8" 9 15mm A 16mm C 19mm D 3/4" E 20mm F 7/8" G 24mm H 1" J 1-1/8" M 14mm N 18mm P 25mm R 28mm Not Electrically Isolated (No Insert) K 1-1/4"	Stamped Metal 0 None 1 4.5" C-Face Tether 2 8.5" C-Face Tether 3 Slotted Tether 4 Same as "1" with 56 C-Face Cover 5 Same as "3" with Cover 6 Same as "2" with 180 C-Face Cover Swivel Rod A AC Motor Fan Cover Tether with T-bolt B 4.5" C-Face Tether with 3/8" Bolt C 8.5" C-Face Tether with 1/2" Bolt D Same as "A" with Cover Kit E Same as "B" with Cover Kit	0 Single Ended ABZ, 5-26VDC push-pull (7272) 1 Single Ended ABZ, 5-26VDC O/C (7273) 2 Single Ended ABZ, 5-26VDC O/C w2.2kOhm (7273) 4 Differential AB only, 5-26VDC in, 5-26V out (7272) 5 Differential AB only, 5-26VDC in, 5V out (7272) A Differential AB, 5-26VDC in, 5V out (4469) C Differential AB, 5-15VDC in, 5-15V out (4469) 6 Differential ABZ, 5-26VDC in, 5V out (7272) 7 Differential ABZ, 5-26VDC in, 5-26V out (7272) 8 Differential ABZ, 5-26VDC in, 5V out (4469) 9 Differential ABZ, 5-15VDC in, 5-15V out (4469) D Dual Isolated Outputs, same as "6" E Dual Isolated Outputs, same as "7" F Dual Isolated Outputs, same as "8" G Dual Isolated Outputs, same as "9" W Differential ABZ, 10-24VDC in, 10-24V out (2707)	D2

COMPATIBLE ACCESSORIES

114573-0001	Tether Kit, 4.5" C-Face Single Point with 3/8" bolt
114574-0001	Tether Kit for Standard AC Motor Fan Covers with T-bolt
114575-0001	Tether Kit, 8.5" C-Face Single Point with 1/2" bolt
756-042-01	Rod Tether, AC Motor Fan Cover with T-bolts
756-043-01	Rod Tether Kit, 4.5" C-Face with 3/8" bolt
756-044-01	Rod Tether Kit, 8.5" C-Face with 1/2" bolt
114622-0001	Cover Kit, 56 C-Face (single or dual output)
114928-0001	Cover Kit, 180 C-Face (single or dual output)
114623-0001	Cover Kit, Fan Cover (single or dual output)

ELECTRICAL CONNECTIONS

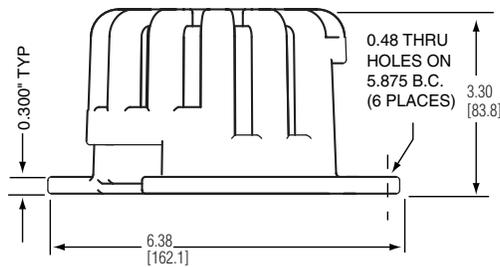
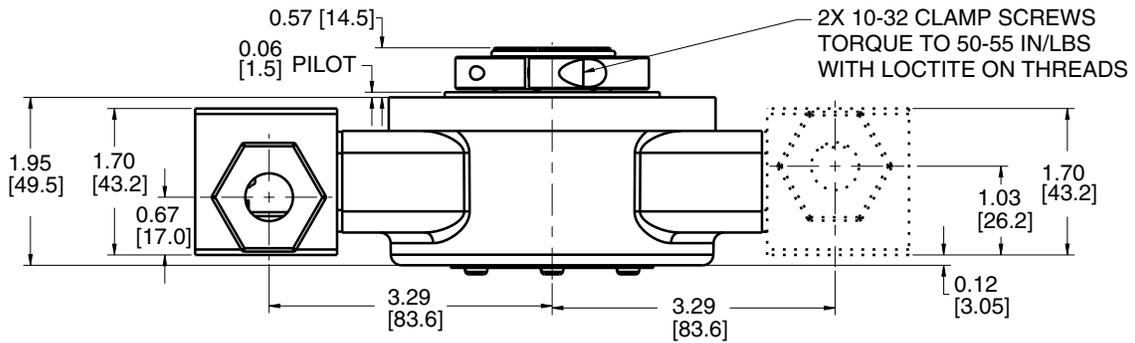
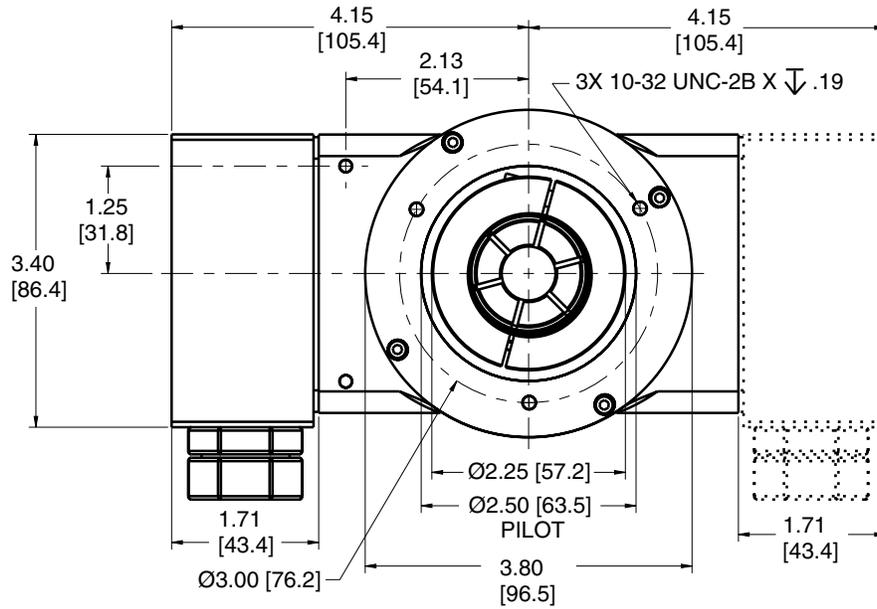


† Index not provided on all models.
See ordering information

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Dimensions: inch [mm]

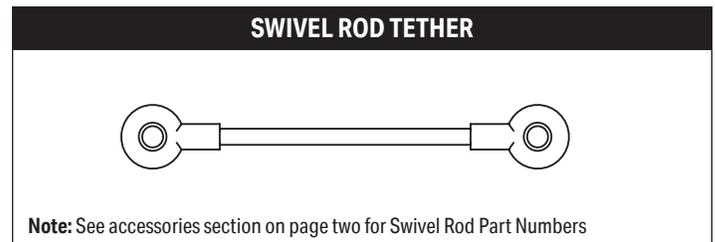
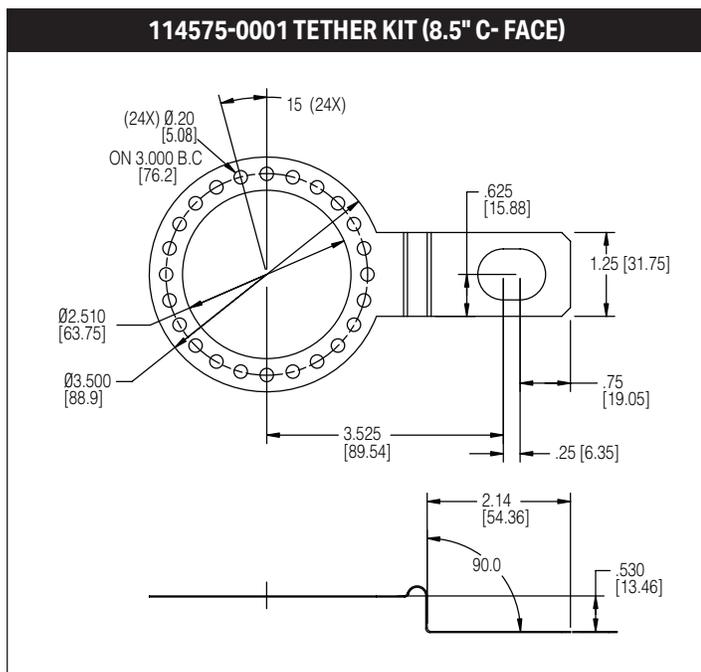
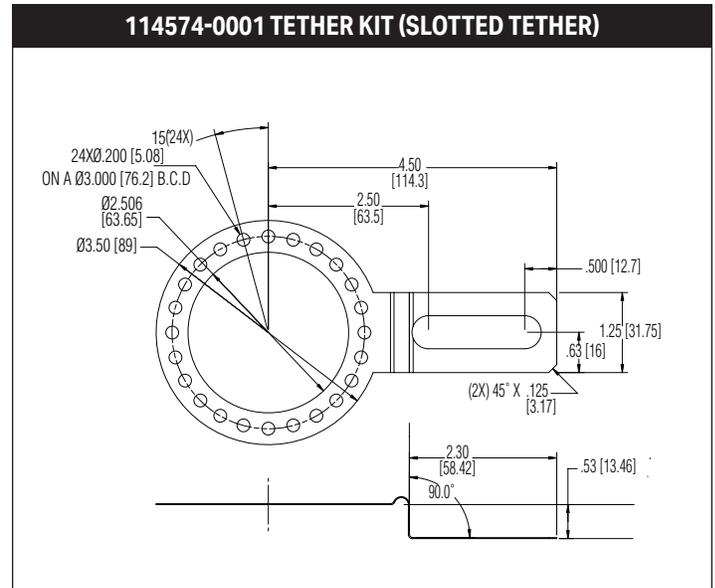
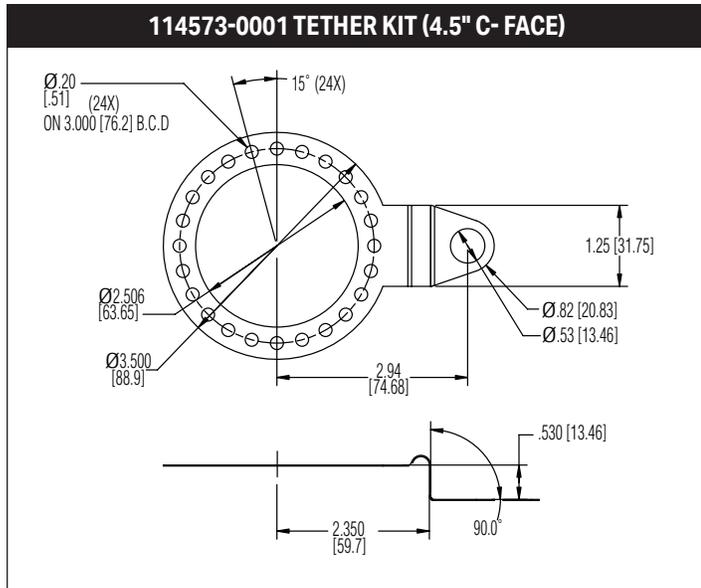


OPTIONAL SAFETY COVER(S)

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Dimensions: inch [mm]



Worldwide Brands: NorthStar™ • Dynapar™ • Hengstler™ • Harowe™

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