

SERIES HSD35

NorthStar™ brand

Heavy Duty Optical Encoder

Key Features

- Robust Field Serviceable Latching Connector
- Dual Isolated Output Option for Redundancy
- Stainless Steel Clamp and Hollow Shaft for Mill Duty Applications
- Accomodates Shaft Sizes up to 1.25" (Electrically Isolated up to 1.125")

HD
Heavy Duty



SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical
Resolution: 1 to 20,000 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° ± 30° electrical
Symmetry: 180° ± 25° 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. 80 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: 10 Pin Latching Industrial Connector

MECHANICAL

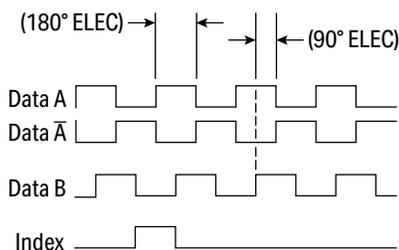
Bore Diameter: 6mm to 28mm, 1/4" to 1.25", electrically isolated
Mounting Configuration: Hollow Bore, direct mount over shaft with multiple tether options available
Mating Shaft Length:
 1.25" (Minimum)
 1.60" (Recommended)
Shaft Speed: 6000 RPM, Maximum (Enclosure Rating is IP64 at speed over 5000 RPM)
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 Material: Hard Anodized and Powder Coated Aluminum
Shaft Material: Stainless Steel
Disc Material: Aluminum
Weight: 1.76lb (28 Oz) Typical

ENVIRONMENTAL

Standard Operating Temperature: -40 to +85°C (0 to +70°C with 4469 line driver, see "Ordering Information"). At shaft speed above 3000 RPM, derate 10°C per 1000 RPM
Extended Temperature Range: -40 to +100°C (See ordering information)
Storage Temperature: -40 to +100°C
Shock: 400G, 6ms
Vibration: 5 to 3000 Hz, 20G
Humidity: Up to 98% (non-condensing)
Enclosure Rating: IP67 (IP64 at shaft speeds above 5000 RPM)
Connector Rating: IP65

STANDARD DATA AND INDEX

Not all complements shown
 A̅ 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
HSD35	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HSD35 Heavy-duty, Hollowshaft Encoder	Enter Custom PPR from 1 to 20,000 Examples: 0001 = 1 PPR 0256 = 256 PPR 1000 = 1000 PPR 9999 = 9999 PPR A000 = 10,000 PPR B000 = 11,000 PPR C999 = 12,999 PPR : : G000 = 16,000 PPR G384 = 16,384 PPR H000 = 17,000 PPR J000 = 18,000 PPR K000 = 19,000 PPR L000 = 20,000 PPR Note: Letter "I" is skipped and not use	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" H Same as "0" with Extended temp range J Same as "1" with Extended temp range K Same as "2" with Extended temp range L Same as "4" with Extended temp range M Same as "5" with Extended temp range N Same as "6" with Extended temp range P Same as "7" with Extended temp range Q Same as "D" with Extended temp range R Same as "E" with Extended temp range W Differential ABZ, 10-24VDC in, 10-24VDC out (2707)

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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

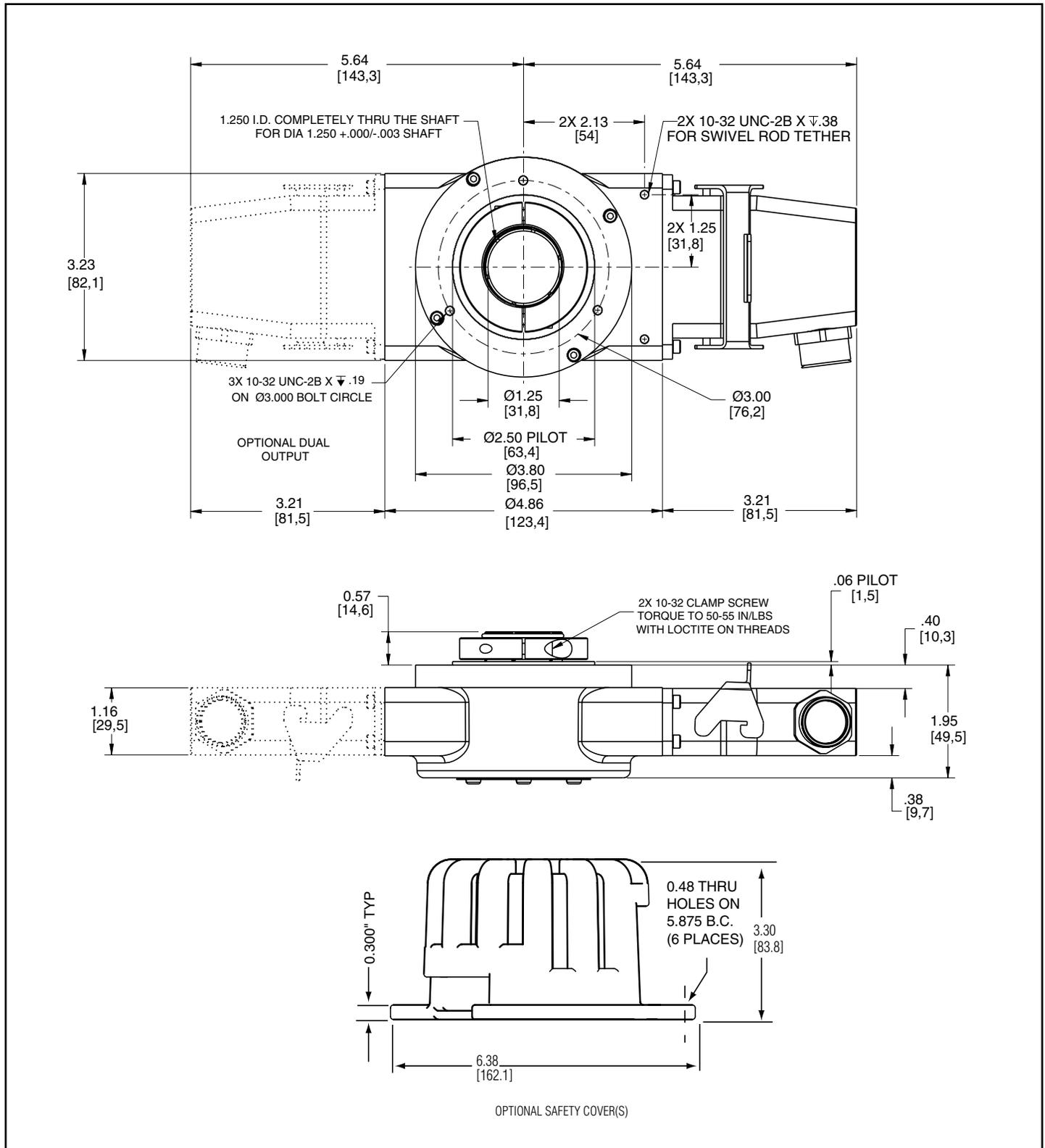
Encoder Function	Connector Pin
Common	1
Signal B	2
Signal A	3
Signal Z[†]	4
Case (optional)	5
Vcc 5-26 VDC	6
Signal \bar{B}	7
Signal \bar{A}	8
Signal \bar{Z}[†]	9
No connection	10

[†] Index not provided on all models.
See ordering information

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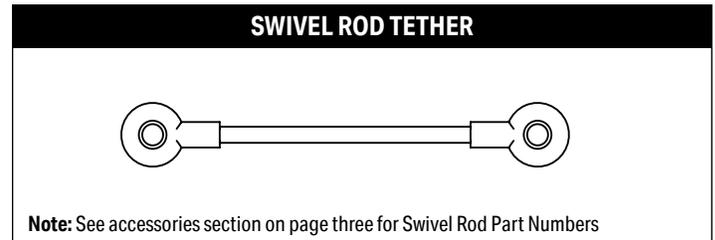
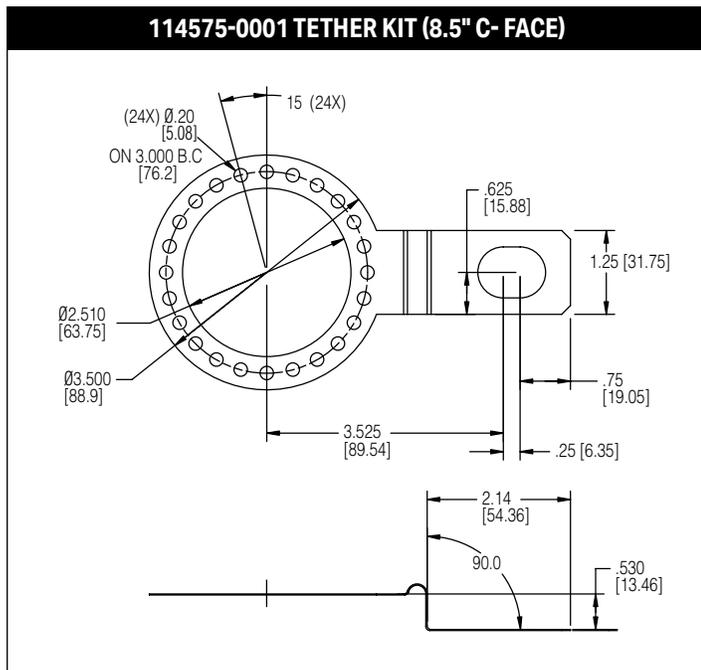
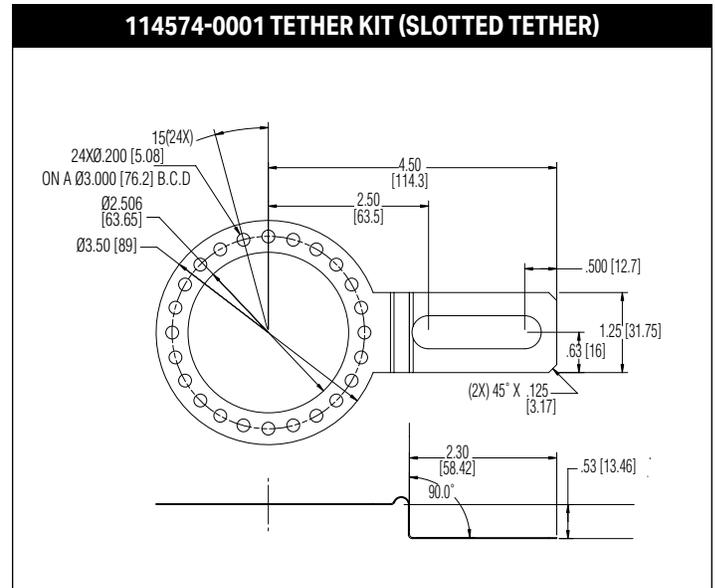
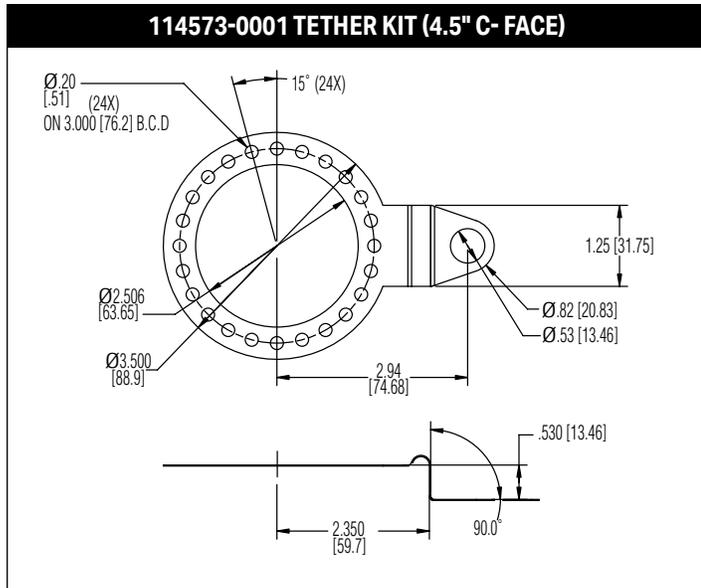
Dimensions: inch [mm]



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Dimensions: inch [mm]



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

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