

SERIES HSD35

NorthStar™ brand

Heavy Duty Optical Encoder

Key Features

- Rugged Design Resists up to 400G Shock
- Stainless Steel Clamp and Hollow Shaft for Mill Duty
- Compact Design with Field Serviceable Connector for Solder-Less Connections
- Accommodates Shaft Sizes up to 1.25" (Electrically Isolated up to 1.125")
- Dual Isolated Output Option for Redundancy



PRELIMINARY SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical

Resolution: 1 to 5000 PPR (pulses/revolution)
See Ordering Information

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:

For resolutions 200 to 300 PPR and 1200 PPR and above: 90° ±30° electrical; all other resolutions: 90° ±15°

Symmetry:

For resolutions 200-300 PPR and above 1024 PPR: 180° ±25° electrical; all other resolutions: 180° ±18°

Index: 150° to 330°, A leads B, CW (from clamp end)

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

ELECTRICAL CONNECTIONS

Signal	Connector Pin
Common	1
B	2
A	3
Z*	4
Case (optional)	5
Vcc 5-26 VDC	6
B̄	7
Ā	8
Z̄*	9
No Connection	10

* Index (Z) optional. See Ordering Information

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

Frequency Response: 125 kHz (data & index)

Noise Immunity: Tested to EN61326-1

Electrical Immunity: Reverse polarity and short circuit protected with 7272 or 7273 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 & Cover Material: Hard Anodized and Powder Coated Aluminum

Shaft Material: Stainless Steel

Disc Material: Mylar

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

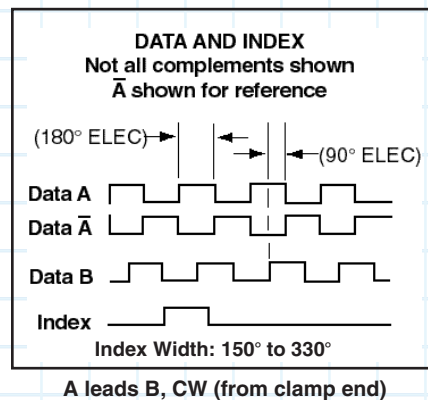
Shock: 400G, 6mSec

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



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"/>		
Ordering Information						
HSD35 Heavy-duty, Hollowshaft Encoder	0001 0512	0 6mm	Stamped Metal	Swivel Rod	0 Single Ended ABZ, 5-26VDC push-pull (7272)	Blank None
	0003 0600	1 1/4"	0 None	A AC Motor Fan Cover Tether with T-bolt	1 Single Ended ABZ, 5-26VDC O/C (7273)	
	0010 0900	2 5/16"	1 4.5" C-Face Tether	B 4.5" C-Face Tether with 3/8" Bolt	2 Single Ended ABZ, 5-26VDC O/C w/2.2kOhm (7273)	
	0012 1000	3 8mm	2 8.5" C-Face Tether	C 8.5" C-Face Tether with 1/2" Bolt	4 Differential AB only, 5-26, 5-26 out (7272)	
	0015 1024	4 3/8"	3 Slotted Tether	D Same as "A" w/ Cover Kit	5 Differential AB only, 5-26 in, 5V out (7272)	
	0032 1200	5 10mm	4 Same as 1 w/ 56 C-Face Cover	E Same as "B" w/ Cover Kit	A Differential AB, 5-26V in, 5V out (4469)	
	0050 1500	6 12mm	5 Same as 3 w/ Cover		C Differential AB, 5-15V in, 5-15V out (4469)	
	0060 2000	7 1/2"	6 Same as 2 w/ 180 C-Face Cover		6 Differential ABZ, 5-26 in, 5V out (7272)	
	0100 2048	8 5/8"			7 Differential ABZ, 5-26 in, 5-26 out (7272)	
	0120 2400	9 15mm			8 Differential ABZ, 5-26 in, 5V out (4469)	
	0200 2500	A 16mm			9 Differential ABZ, 5-15 in, 5-15 out (4469)	
	0240 3072	C 19mm			D Dual Isolated Outputs, same as "6"	
	0250 4000	D 3/4"			E Dual Isolated Outputs, same as "7"	
	0300 4096	E 20mm			F Dual Isolated Outputs, same as "8"	
	0360 5000	F 7/8"			G Dual Isolated Outputs, same as "9"	
	0500	G 24mm			H Same as "0" with Extended temp range	
		H 1"			J Same as "1" with Extended temp range	
	J 1-1/8"			K Same as "2" with Extended temp range		
	K 1-1/4"			L Same as "4" with Extended temp range		
	M 14mm			M Same as "5" with Extended temp range		
	N 18mm			N Same as "6" with Extended temp range		
	P 25mm			P Same as "7" with Extended temp range		
	R 28mm			Q Same as "D" with Extended temp range		
				R Same as "E" with Extended temp range		
				W Differential ABZ, 10-24V in, 10-24V out (Mosfet)		

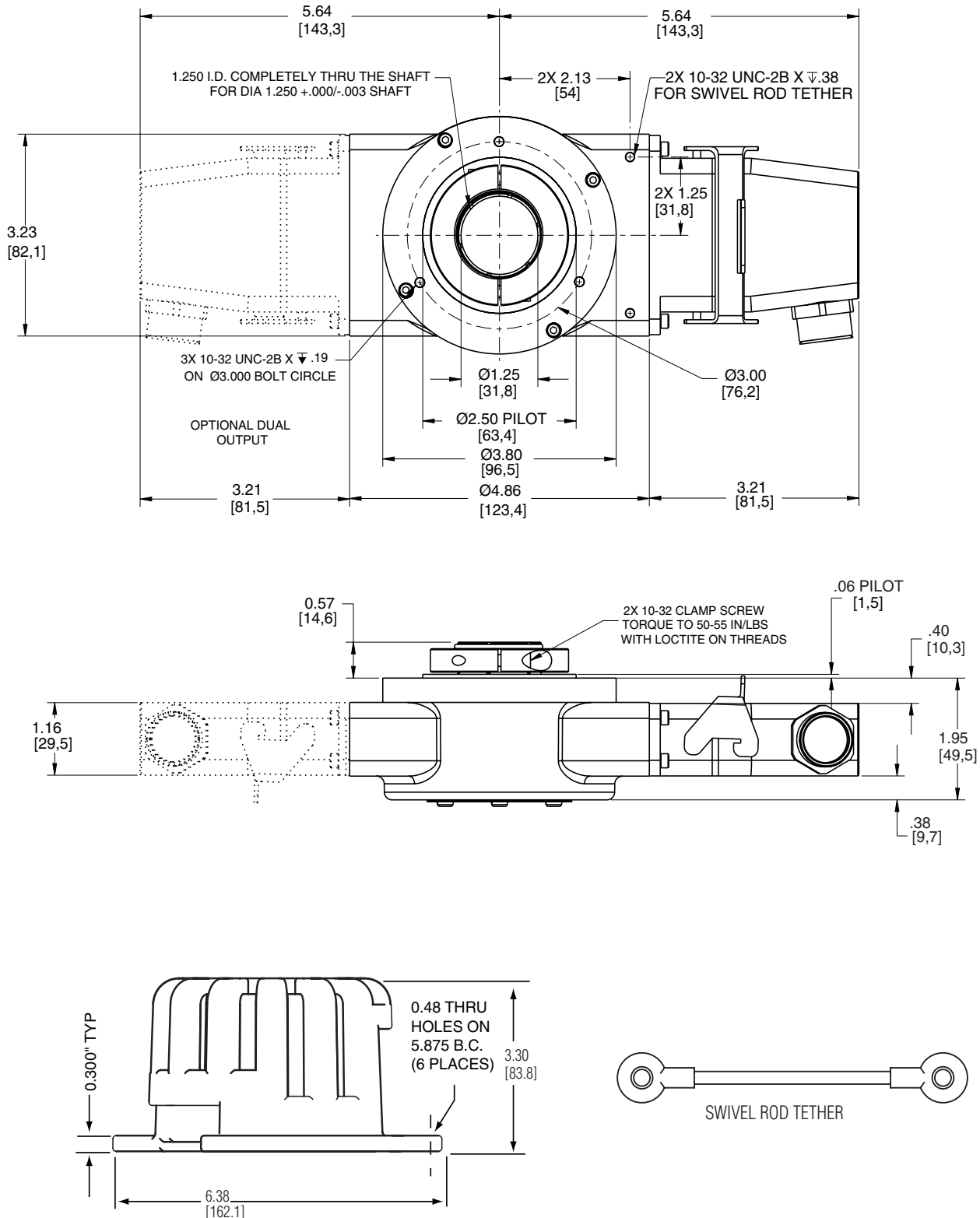
Accessory Kits:

- 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)

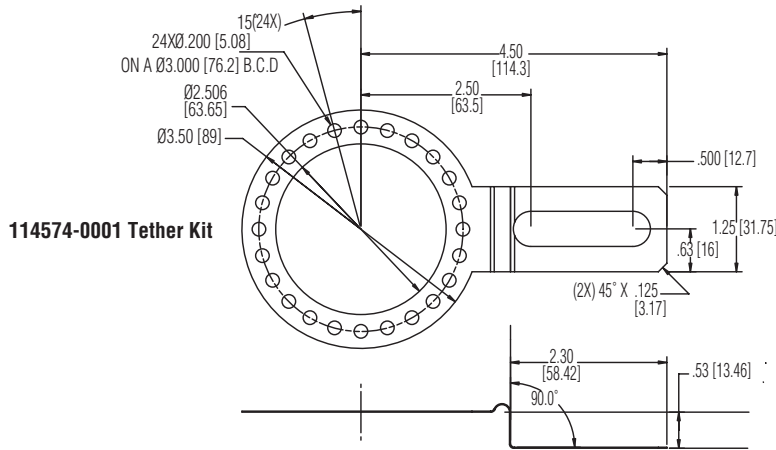
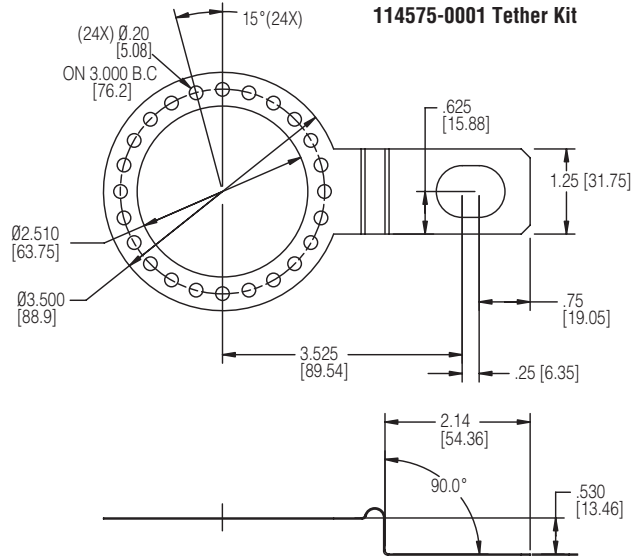
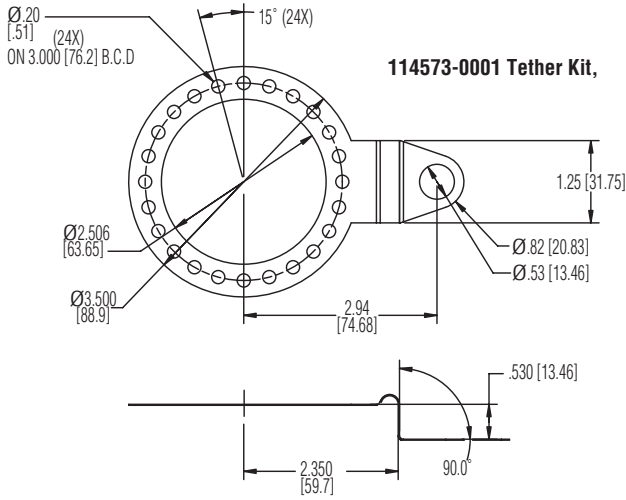
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 INNOVATION - CUSTOMIZATION - DELIVERY

WWW.DYNAPAR.COM

Headquarters: 1675 Delany Road • Gurnee, IL 60031-1282 • USA

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

Technical Support
 Tel.: +1.800.234.8731
 Fax: +1.847.662.4150
 northstar.techsupport@dynapar.com

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