

# SERIES H56

**NorthStar™ brand**

## Heavy Duty Encoder

### Key Features

- Encoder-Within-Encoder Design with Phased Array Sensor for Reliable Signal Output
- Large Outer Bearings Isolate Shaft Loads
- Foot Mount or 56 C-Face Mount Easily Replaces BC42 and 46 Tachs
- Rugged Enclosure Rating: IP66

HD  
Heavy Duty



## SPECIFICATIONS

### STANDARD OPERATING CHARACTERISTICS

**Code:** Incremental, Optical  
**Resolution:** 1 to 5000 PPR (pulses/revolution)  
**Accuracy:** (Worst case any edge to any other edge) ±7.5 arc-min.  
**Format:** Two channel quadrature (AB) with optional Index (Z) and complementary outputs  
**Phase Sense:** A leads B for CW shaft rotation as viewed from the C-face of the encoder  
**Quadrature Phasing:** 90° ± 22.5° electrical  
**Symmetry:** 180° ± 25° electrical  
**Index:** 180° ± 25° electrical (gated with B low)  
**Waveforms:** Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

### ELECTRICAL

**Input Power:** (each output)  
 5-26 VDC at 100 mA max., not including output loads  
**Outputs:**  
 7273 Open Collector: 40mA, sink max  
 7272 Push-Pull: 40mA, sink or source  
 7272 Differential Line Driver: 40 mA, sink or source  
 4469 Differential Line Driver: 100mA, sink or source  
**Frequency Response:** 100 kHz min.  
**Noise Immunity:** Tested to EN61326-1  
**Electrical Immunity:** Reverse polarity and short circuit protected  
**Mating Connector:**  
 6 pin, style MS3106A-14S-6S (MCN-N4);  
 10 pin, style MS3106A-18-1S (MCN-N6)  
 Pluggable Screw-Terminal (110532-0001)

### MECHANICAL

**Shaft Size:** 5/8" nominal  
**Shaft Loading:** 100 lbs. radial, 50 lbs. axial  
**Shaft Speed:** 3600 RPM max.  
**Starting Torque:** 16 oz-in max.;  
**Moment of Inertia:** 7.9 x 10<sup>-4</sup> oz-in-sec<sup>2</sup>  
**Bearing Life:** See table, below  
**Housing Material:** Aluminum  
**Shaft Material:** Stainless Steel  
**Disc Material:** Mylar (unbreakable)  
**Weight:** 144 oz. (9 lbs.)

### ELECTRICAL CONNECTIONS

\* This is a mating connector/cable assembly described in the Encoder Accessories section of this catalog. Color-coding information is provided here for reference.

Encoder Function	Cable # 1400209XXXX 6 Pin Single Ended		Cable #1400419XXXX 10 Pin Differential Twisted Pairs		Pluggable Screw Terminal Pin Number
	Pin	Wire Color	Pin	Wire Color	
Sig. A	B	RED	B	RED	3
Sig. $\bar{A}$	—	—	G	BLK	8
Sig. B	D	BLU	D	BLU	7
Sig. $\bar{B}$	—	—	H	BLK	2
Sig. Z*	A	GRN	A	GRN	4
Sig. $\bar{Z}$ *	—	—	I	BLK	9
+V	E	WHT	E	WHT	6
Common	C	BLK	C	BLK	1
Shield	F	SHIELD	F	SHIELD	10

### NOTES:

- 1) Cable Configuration: PVC jacket, 80°C rated, spiral wrapped copper shield; 22 AWG conductors
- 2) Standard cable length is 10 feet but may be ordered in any length in 5 foot increments. For example, for a 20 foot cable, replace -XXXX with -0020
- 3) \*Index not provided on all models. See ordering information.
- 4) "MS" Type mating connectors and pre-build cables are rated NEMA 12

### ENVIRONMENTAL

**Operating Temperature:** -40 to +80 °C  
**Storage Temperature:** -40 to +80 °C  
**Shock:** 50 G's for 11 milliseconds duration  
**Vibration:** 5 to 2000 Hz at 2.5 G's  
**Humidity:** Up to 98% (non-condensing)  
**Enclosure Rating:** NEMA4/IP66 (dust proof, washdown)

### Bearing Life versus Load

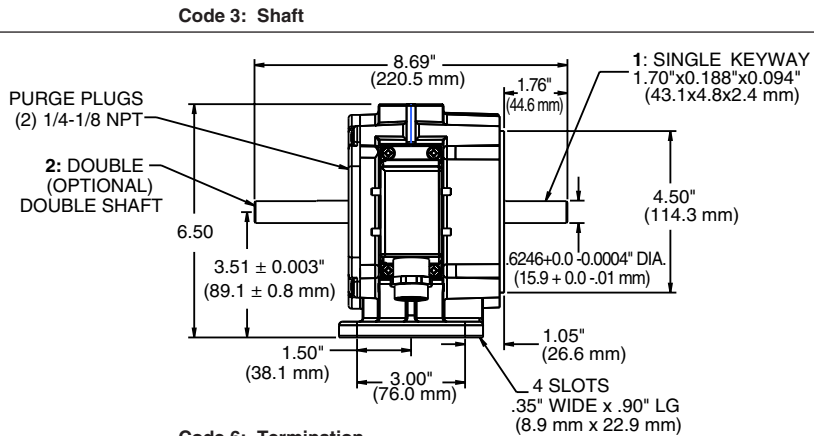
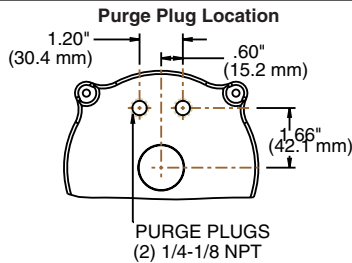
Radial	Axial	Revolutions
75	15	1.3 x 10 <sup>10</sup>
75	25	6.4 x 10 <sup>9</sup>
100	25	4.1 x 10 <sup>9</sup>
100	50	1.3 x 10 <sup>9</sup>

## Ordering Information

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

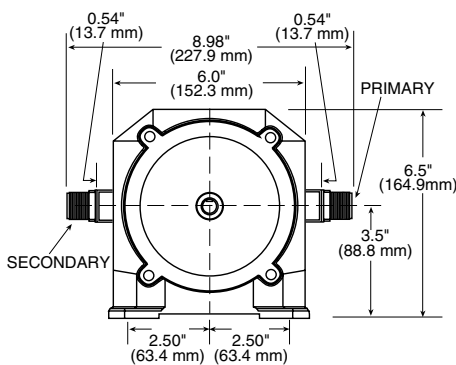
Code 1: Model	Code 2: PPR	Code 3: Shaft	Code 4: Format	Code 5: Electrical	Code 6: Termination	Code 7: Options
<b>H56</b>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
Ordering Information						
<b>H56</b> Mill Duty, 56C-Face or Foot Mount Rotopulser®	<b>0001 0500</b>	<b>1</b> Single, 5/8"	Compliments available when Code 5 is 3 or 4	<b>0</b> 5-26V in, 5-26V Open Collector Out	<b>0</b> MS Connector(s)	Available when Code 6 is 0 or 1, and Code 5 is 3 thru 6:
	<b>0003 0512</b>	<b>2</b> Double, 5/8"		<b>1</b> 5-26V in, 5-26V Open Collector Out w/ 2.2kΩ Pullups		
	<b>0010 0600</b>		<b>2</b> Single, bidirectional quadrature (AB)	<b>2</b> 5-26V in, 5-26V Single Ended Push-Pull Out	<b>2</b> Pluggable Screw Terminal Connector(s)	<b>PS</b> LED Output Indicator
	<b>0012 0900</b>		<b>3</b> Single, bidirectional quadrature with index (ABZ)	<b>3</b> 5-26V in, 5V Differential Line Driver Out (7272)	<b>3</b> Pluggable Screw Terminal(s), plus Mating Connector(s)	
	<b>0015 1000</b>		<b>4</b> Dual, isolated bidirectional quadrature (dual AB)	<b>4</b> 5-26V in, 5-26V Differential Line Driver Out (7272)		
	<b>0032 1024</b>		<b>6</b> Dual, isolated bidirectional quadrature with index (dual ABZ)	<b>5</b> 5-26V in, 5V Differential Line Driver Out (4469)		
	<b>0050 1200</b>			<b>6</b> 5-15V in, 5-15V Differential Line Driver Out (4469)		
	<b>0060 1500</b>					
	<b>0100 2000</b>					
	<b>0120 2048</b>					
	<b>0200 2400</b>					
	<b>0240 2500</b>					
	<b>0250 3072</b>					
	<b>0300 4000</b>					
	<b>0360 4096</b>					
	<b>5000</b>					

## DIMENSIONS inches [mm]



### 0,1: MS Connectors

Shown with LED Output Indicator Option Code 9: PS



### 2,3: Pluggable Screw Terminals

### Code 4: Format

