

# SERIES H56

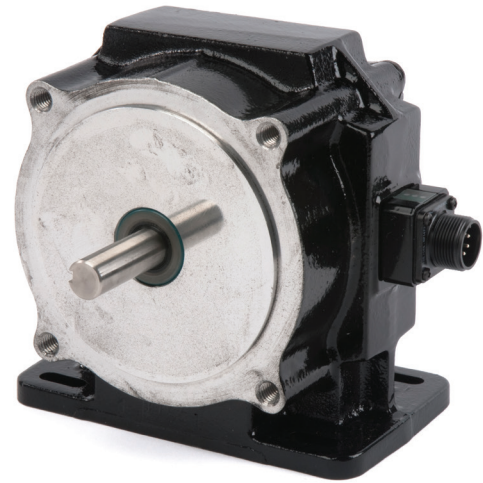
NorthStar™ brand

## 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)  $\pm 7.5$  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:**  $90^\circ \pm 22.5^\circ$  electrical  
**Symmetry:**  $180^\circ \pm 25^\circ$  electrical  
**Index:**  $180^\circ \pm 25^\circ$  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.  
**Typical Starting Torque:** 15 oz-in Single Shaft;  
 20 oz-in Double Shaft  
**Moment of Inertia:**  $7.9 \times 10^{-4}$  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

### 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	$1.3 \times 10^{10}$
75	25	$6.4 \times 10^9$
100	25	$4.1 \times 10^9$
100	50	$1.3 \times 10^9$

### 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

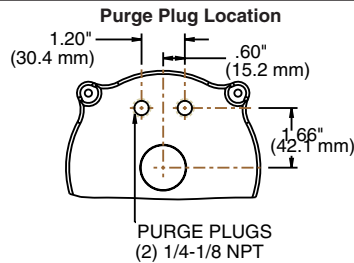
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## Ordering Information

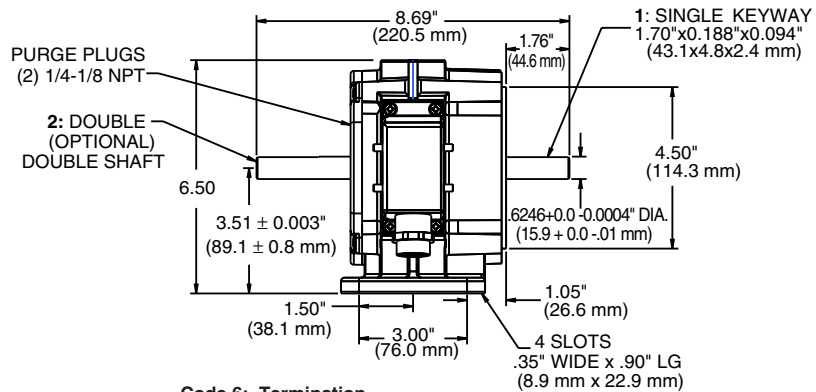
To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR	Code 3: Shaft	Code 4: Format	Code 5: Electrical	Code 6: Termination	Code 7: Options
<b>H56</b>	□□□□	□	□	□	□	□□
Ordering Information						
<b>H56</b> Mill Duty, 56C-Face or Foot Mount Rotopulser®	<b>0001 0500</b>	<b>1</b> Single, 5/8"	Complimentary signals only included when Code 5 is 3,4,5, or 6.	<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>0012 0900</b>		<b>2</b> Single Output, 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>0015 1000</b>	<b>0032 1024</b>		<b>3</b> Single Output, Quadrature w/ 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>0050 1200</b>	<b>0060 1500</b>		<b>4</b> Dual Isolated Outputs, Quadrature (AB)	<b>4</b> 5-26V in, 5-26V Differential Line Driver Out (7272)		
<b>0100 2000</b>	<b>0120 2048</b>		<b>6</b> Dual Isolated Outputs, Quadrature w/Index (ABZ)	<b>5</b> 5-26V in, 5V Differential Line Driver Out (4469)		
<b>0200 2400</b>	<b>0240 2500</b>			<b>6</b> 5-15V in, 5-15V Differential Line Driver Out (4469)		
<b>0250 3072</b>						
<b>0300 4000</b>						
<b>0360 4096</b>						
<b>5000</b>						

## DIMENSIONS inches [mm]



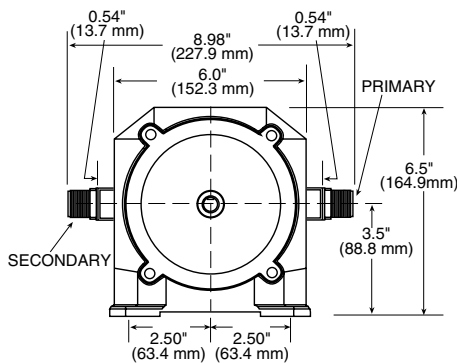
### Code 3: Shaft



### Code 6: Termination

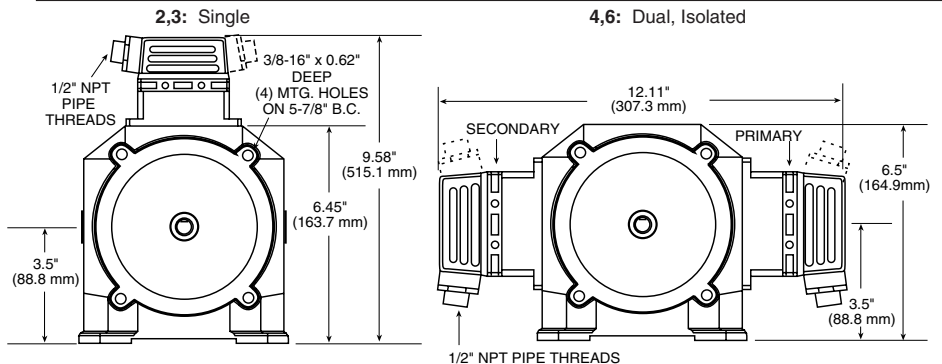
#### 0,1: MS Connectors

Shown with LED Output Indicator Option  
Code 9: PS



#### 2,3: Pluggable Screw Terminals

#### Code 4: Format



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