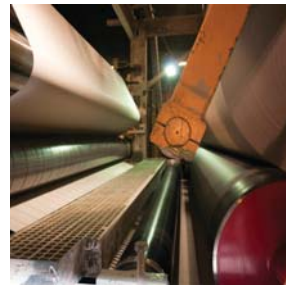
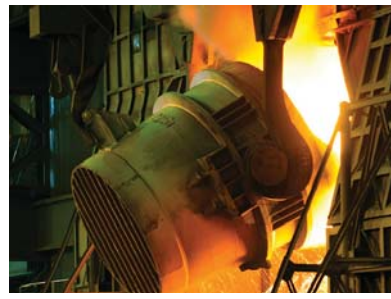


# ***FEEDBACK***

## **Quick Reference Guide**

A COMPREHENSIVE LINE OF OPTICAL, RESOLVER AND  
MAGNETIC ROTARY FEEDBACK PRODUCTS





*Try Dynapar FREE for 30 Days... It's AS SIMPLE AS 1...2...3*

## IT'S AS SIMPLE AS 1...2...3

### 1. **SELECT THE DYNAPAR ENCODER THAT FITS YOUR NEEDS**

Simply configure an absolute or incremental encoder or resolver at [www.dynapar.com/TRYDYNAPAR](http://www.dynapar.com/TRYDYNAPAR)

### 2. **BETA TEST DYNAPAR FREE FOR 30 DAYS**

You will receive your TryDynapar package via UPS. Once you receive your package, you have 30 days to beta test the encoder at no charge

### 3. **PURCHASE OR RETURN THE ENCODER**

After 30 days, you can either keep the encoder or return it to Dynapar with the pre-paid UPS label enclosed in your welcome packet.

## HOW TO USE THIS GUIDE

The Feedback Quick Reference Guide is designed to make product selection simple.

The guide provides you with a decision tree to assist with selecting the appropriate product for your needs.

**Step 1:** Select the type of feedback (Absolute, Resolver, Incremental)

**Step 2:** Select mounting style (Shafted, Hub Shaft, Hollowshaft, etc.)

**Step 3:** Select the appropriate "Duty Classification" for your application (See page 6 for encoder duty classifications)

**Step 4:** Scroll down to the appropriate "Duty" section to view encoder specifications

**Step 5:** Select the encoder that fits your criteria

**Step 6:** Try select encoders FREE for 30 days

		Page				
Incremental	Shafted	E12	1.2" servo mount encoder. 250-1024 PPR.	7		
		E14	<2.0" servo mount encoder. 100-2540 PPR.	7		
		E141C	<2.0" servo mount encoder. 100-2540 PPR.	7		
		E23	2.3" diameter standard servo mount encoder. 1-2540 PPR.	7		
		EC23	2.3" diameter standard servo mount encoder. 3000-5000 PPR.	7		
	Industrial Duty	NexGen 22 Qube	2-2.5" Qube style encoder. 1-3600 PPR.	8		
		H20	2.0" square and servo mount encoder. 1-2540 PPR.	8		
		HA25	2.5" square flange/servo mount encoder. 1-2540 PPR.	8		
		HR25	2.5" square flange/servo mount encoder. 1-1024 PPR.	8		
		HC25	2.5" square flange/servo mount encoder. 3000-5000 PPR.	8		
		HA26	2.5" encoder. 1-2540 PPR.	8		
		HR26	2.5" encoder. 1-1024 PPR.	8		
		HC26	2.5" encoder. 3000-5000 PPR.	8		
		H58	58mm servo mount encoder. 1-2540 PPR	9		
		RI58-0	Synchro, clamping and square flange mounts. 1-10,000 PPR.	9		
		H42	2.5" flange mount. 1-600 PPR.	9		
		HA725	2.5" square flange. 8192-10,000 PPR	9		
		Hub Shaft	Light Duty	<b>Standard Models</b>		
				HD20	2.0" square flange mount encoder. 1-3600 PPR.	12
				HD25	2.5" square flange mount encoder. 1-5000 PPR.	12
HD35R	110mm IEC Euro Flange. 1-5000 PPR.			12		
DWD38	>2.5" drawworks encoder. 15-5000 PPR.			12		
60 Rotopulser	3.5" servo mount encoder. 1-2500 PPR.			12		
60P Rotopulser	>2.5" foot mount or 4.5" C-face encoder. 1-2500 PPR.			12		
H56 Rotopulser	>2.5" foot mount or 4.5" C-face encoder. 1-5000 PPR.			12		
Rim Tach® NexGen 6200	4.5" C-FACE encoder. 60-2400 PPR.			14		
Rim Tach® 6200	4.5" C-FACE encoder. 60-1200 PPR.			14		
Heavy Duty	<b>Hazardous Duty Models</b>					
	Hazardous HD20		2.0" square flange encoder. 1-3600 PPR.	12		
	Hazardous HD25		2.5" square flange encoder. 1-5000 PPR.	12		
	ISW38		>2.5" drawworks encoder. 15-5000 PPR.	12		
	X25		>2.5" square flange encoder. 1-5000 PPR	12		
	RX70/71		69mm clamping flange encoder. 1-10,000 PPR	12		
	Light Duty		E14H	<2.0" hub shaft encoder. 100-2540 PPR.	7	
			Industrial Duty	H20 Hub Shaft	2.0" hub shaft encoder. 1-2540 PPR.	9
				RI58 - H	58mm synchro flange encoder. 1-5000 PPR.	9
			Heavy Duty	<b>Standard Models</b>		
HSD25		2.5" hub shaft encoder. 1-3600 PPR.		12		
HSD44	>2.5" hub shaft encoder. 15-5000 PPR.	13				
RR25	2.5" hub shaft encoder. 180-512 PPR.	13				
<b>Hazardous Duty Models</b>						
ISD25	2.5" hub shaft encoder. 1-3600 PPR.	12				
EN44	>2.5" hub shaft encoder. 1024 & 2048 PPR.	12				

# SELECTION GUIDE

			Page			
Incremental	Hollow Shaft	Industrial Duty				
		HS20	2.0" hollow bore encoder. 50-2540 PPR.	9		
			HS35R	>2.5" hollow bore encoder. 1-5000 PPR.	9	
	Servo Duty	F10	1.25" compact encoder. 1024 & 2048 PPR. 6 poles	10		
		F14	<2.0" hollow bore encoder. 1000-5000 PPR. 4, 6 or 8 poles.	10		
		F15	<2.0" pancake style servo mount encoder. 1024 & 2048 PPR. 6 or 8 pole.	10		
		F18	<2.0" encoder. 500-4096 PPR. 4, 6, 8 or 12 pole.	10		
		F21	2.0" pancake style servo mount encoder. 1024 & 2048 PPR. 8 or 10 pole.	10		
		HC20	2.0" hollow bore direct mount encoder. 500-2500 PPR. 4, 6 or 8 pole.	11		
	Heavy Duty	<b>Standard Models</b>				
		HSD35	3.5" hollow bore encoder. 1-5000 PPR.	13		
		HSD37	3.5" hollow bore encoder. 15-5000 PPR.	13		
		HSD38	3.5" hollow bore encoder. 15-5000 PPR.	13		
		Rim Tach® HS85	>3.5" hollow bore encoder. 60-2048 PPR.	14		
		Slim Tach® HS60	>3.5" hollow bore encoder. 64-2048 PPR.	15		
		Slim Tach® HS56	>3.5" hollow bore encoder. 64-2048 PPR.	15		
		<b>Hazardous Models</b>				
		Hazardous HSD35	>2.5" hollow bore encoder. 1-5000 PPR.	13		
		ISD37	>2.5" hollow bore encoder. 15-5000 PPR.	13		
		EN42	>2.5" hollow bore encoder. 15-5000 PPR.	13		
Bearingsless		Heavy Duty	Slim Tach® NEXGEN ST56	4.5" C-Face encoder. 64-2048 PPR.	14	
			Slim Tach® SL56	4.5" C-Face encoder. 64-1024 PPR.	14	
			Slim Tach® NEXGEN ST67	4.5" C-Face encoder. 64-2048 PPR.	14	
	Slim Tach® RL67		4.5" C-Face encoder. 64-1024 PPR.	14		
	Slim Tach® NEXGEN ST85		8.5" C-Face encoder. 64-2048 PPR.	14		
	Slim Tach® SL85		8.5" C-Face encoder. 64-1024 PPR.	15		
	Slim Tach® SL1250		12.5" C-Face encoder. 64-1024 PPR.	15		
	Rim Tach® NEXGEN 1250		12.5" C-Face encoder. 60-2400 PPR.	14		
	Rim Tach® 1250		12.5" C-Face encoder. 60-1200 PPR.	14		
	Rim Tach® NEXGEN 8500		8.5" C-Face encoder. 60-2400 PPR.	15		
	Rim Tach® 8500		8.5" C-Face encoder. 60-1200 PPR.	15		
	HDP18		<2.5" shaft-less encoder. 64 PPR.	15		
	HDP30		<2.5" shaft-less encoder. 8-512 PPR.	15		
	HDN58		58mm shaft-less encoder. 8-512 PPR.	15		
	R45 Rotopulser		4.5" C-Face encoder. 60 PPR.	15		
	Modular		Servo Duty	E9	0.9" diameter modular encoder. 100-512 PPR.	11
				M9	0.9" diameter modular encoder. 100-512 PPR.	11
				M15	Size 15 commutating encoder. 200-1000 PPR. 4, 6 or 8 pole.	11
				M53	2.0" modular hollow bore encoder. 500-2048 PPR. 4, 6 or 8 pole.	11
M602/M832		<2.0" Separate Module and Disc / Hub mounting. 1-5000 PPR.		11		

<b>Absolute</b>			
<b>Shafted</b>			
<b>Industrial Duty</b>	AI25	58mm, 2.5" or hub shaft encoder. 22 bit ST, 12 bit MT resolution.	8-9
	AC36	37.5mm encoder. 22 bit ST, 12 bit MT resolution.	9
<b>Servo Duty</b>	AD34	37.5mm encoder. 22 bit ST, 12 bit MT resolution.	10
	AD25	58mm encoder. 22 bit ST, 12 bit MT resolution.	10
<b>Standard Models</b>			
<b>Heavy Duty</b>	AR62/63	58mm or 2.5" encoder. 12 bit ST, 16 bit MT resolution.	15
<b>Hazardous Models</b>			
	AX65	59mm servo mount encoder. 12 bit ST, 16 bit MT resolution.	13
	AX70/71	70mm servo mount encoder. 22 Bit ST, 12 Bit MT resolution.	13
	AX73	73.5mm face mount encoder. 14 bit ST, 12 bit MT resolution.	13
	AC61	63.5mm square flange encoder. 17 Bit ST, 12 Bit MT.	13
<b>Hub Shaft</b>			
<b>Industrial Duty</b>	AI25	58mm, 2.5" or hub shaft encoder. 22 bit ST, 12 bit MT resolution.	8-9
	AC36	37.5mm encoder. 22 bit ST, 12 bit MT resolution.	9
<b>Servo Duty</b>	AD35	38mm hub shaft encoder. 22 bit ST, 12 bit MT resolution.	10
	AD36	38mm hollow bore or hub shaft encoder. 22 bit ST, 12 bit MT resolution.	10
<b>Hollow Shaft</b>			
<b>Servo Duty</b>	AD36	38mm hollow bore or hub shaft encoder. 22 bit ST, 12 bit MT resolution.	10
<b>Housed Resolver</b>			
<b>Servo Duty</b>	11	1.1" servo mount resolver. +/- 3 arcmin accuracy.	10
	R11	1.1" servo mount resolver. +/- 6 arcmin accuracy.	10
<b>Heavy Duty</b>	R25	2.5" servo and flange mount resolver. +/- 7 arcmin single speed accuracy.	13
	R56	5.6" foot/c face mount resolver. +/- 7 arcmin single speed accuracy.	13
	RF25	2.5" square flange resolver. +/- 10 arcmin single speed accuracy.	13
<b>Frameless Resolver</b>			
<b>Heavy Duty</b>	Frameless 10	1.0" frameless resolver. +/- 15 arcmin single speed accuracy.	11
	Frameless 15	1.5" frameless resolver. +/- 7 arcmin single speed accuracy.	11
	Frameless 21	2.1" frameless resolver. +/- 7 arcmin single speed accuracy.	11
	Frameless 31	3.1" frameless resolver. +/- 10 arcmin single speed accuracy.	11
	Frameless 55	5.5" frameless resolver. +/- 30 arcmin single speed accuracy.	11
	HaroMax® 15	1.5" frameless resolver. +/- 16 arcmin spread single speed accuracy.	11
	HaroMax® 21	2.1" frameless resolver. +/- 18 arcmin spread single speed accuracy.	11



# ENCODER DUTY CLASSIFICATION

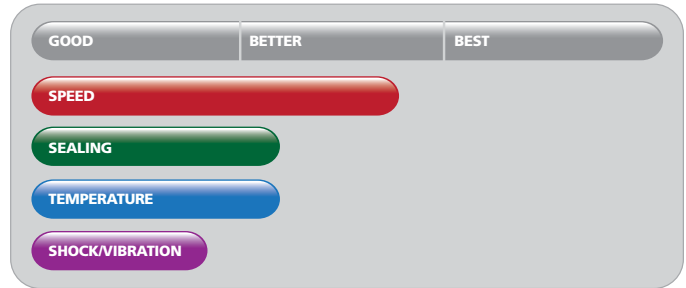
## Light Duty

Light duty encoders are commonly referred to as “commercial duty” due to their frequent use in commercial or office automation products. Copiers, fax machines, lab equipment, and medical equipment are common applications for light duty encoders. Typically these devices reside in fairly benign environments with little temperature variation, are fairly clean, and not generally subjected to high shock loading or moisture.



E14 Pictured

### GENERAL PERFORMANCE DATA

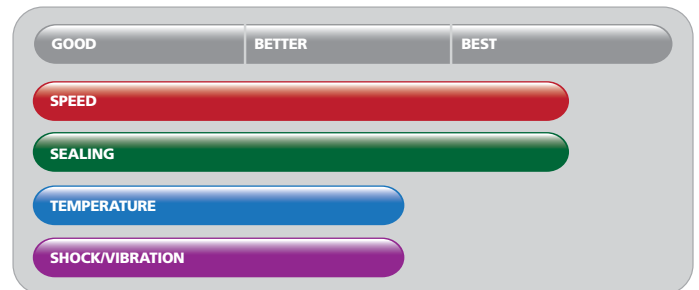


## Industrial Duty

Often considered the “workhorse” of the encoder world, industrial duty encoders achieve a good compromise between ruggedness and performance. These encoders are typically used in factory environments where contaminants like dust and moisture are common. The hollow-shaft variety of industrial duty encoders is often the preferred choice of vector motor OEM’s for speed feedback.



HA25 Pictured

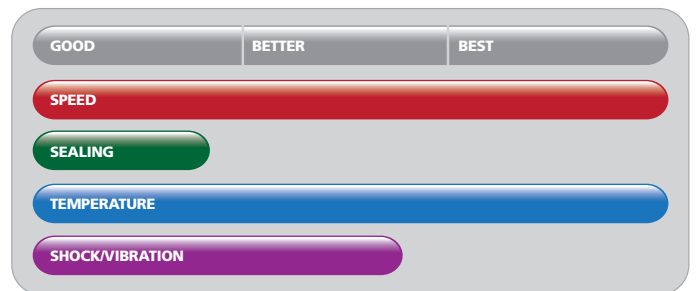


## Servo Duty

This class of encoders and resolvers is specifically suited to use on small-to mid-size stepper and servo motors. They typically have limited sealing due to their use inside motor housings, but are capable of very high speeds and high temperatures, a benefit due to being in such close proximity to motor windings. These devices typically come from the factory ready to mount to common motor back shafts.



AD36 Pictured

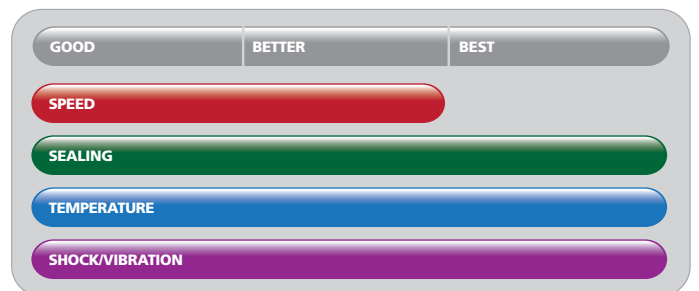


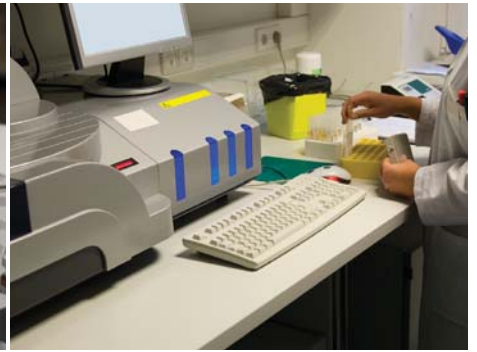
## Heavy Duty

Heavy Duty encoders and resolvers are designed to survive some of the toughest environments. Paper and steel mills, aerospace applications, and food and beverage processing machinery are all areas that benefit from heavy duty encoders. Using magnetic, inductive, or specially designed optical technology, their tight sealing, heavy-duty bearings (where applicable), and high temperature range all suit them for use in harsh environments.



ST56 Pictured






OPTICAL - INCREMENTAL






						
Product	E12	E14	E14IC (Integral Coupling)	E23	EC23	E14H (Hub Shaft)
Mounting Type	Shafted	Shafted	Shafted	Shafted	Shafted	Hub Shaft
Shaft/Bore Sizes	1/8"	1/8" or 1/4"	1/4" or 3/8"	1/4"	1/4"	1/4" to 5/8", 6mm to 14mm
Available Resolutions (PPR)	250 - 1024	100 - 2540	100 - 2540	1 - 2540	3000 - 5000	100 - 2540
Input Voltage (VDC)	5, 12, 15	5, 12, 15	5, 12, 15	5-26	5-26	5, 12, 15
Operating Temperature (°C)	0 to +70	0 to +70	0 to +70	0 to +70	0 to +70	0 to +70
Enclosure Rating	NEMA 12/IP54	NEMA 12/IP54	NEMA 12/IP54	NEMA 12/IP54	NEMA 12/IP54	NEMA 12/IP54
Certifications	RoHS	RoHS	RoHS	RoHS	RoHS	RoHS
Special Features	Sub-Compact 1.2" diameter	Rugged Metal Housing	Integrated coupling	Screw terminal connections	High 5000 PPR capability	Hub Shaft with flex tether




## OPTICAL - INCREMENTAL

									
Product	NexGen 22 Qube	H20	HA25	HR25	HC25	HA26	HR26	HC26	
Mounting Type	Shafted	Shafted	Shafted	Shafted	Shafted	Shafted	Shafted	Shafted	
Shaft/Bore Sizes	6mm, 1/4" or 3/8"	1/4", 3/8" or 10mm	1/4" or 3/8"	1/4" or 3/8"	1/4" or 3/8"	1/4", 3/8" or 1/2"	1/4", 3/8" or 1/2"	1/4", 3/8" or 1/2"	
Available Resolutions (PPR)	1 - 3600	1 - 2540	1 - 2540	1 - 1024	3000 - 5000	1 - 2540	1 - 1024	3000 - 5000	
Input Voltage (VDC)	5-26	5-26	5-26	5-26	5-26	5-26	5-26	5-26	
Operating Temperature (°C)	-40 to +100	0 to +70 (-40 to +85 opt.)	0 to +70 (-40 to +85 opt.)	0 to +70 (-40 to +85 opt.)	0 to +70 (-40 to +85 opt.)	0 to +70 (-40 to +85 opt.)	0 to +70 (-40 to +85 opt.)	0 to +70 (-40 to +85 opt.)	
Enclosure Rating	IP67 with shaft seals	NEMA 12/IP54 (NEMA 4/IP66 opt.)	NEMA 12/IP54 (NEMA 4/IP66 opt.)	NEMA 12/IP54 (NEMA 4/IP66 opt.)	NEMA 12/IP54 (NEMA 4/IP66 opt.)	NEMA 12/IP54	NEMA 12/IP54	NEMA 12/IP54	
Shock / Vibration	100g / 20g	50g / 20g	50g / 20g	50g / 20g	50g / 20g	50g / 20g	50g / 20g	50g / 20g	
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	
Special Features	Economical anodized housing	Reliable dual-row bearing design	Wide range of resolutions available	Unbreakable code disc	High 5000 PPR capability	Integral coupling and flange	Unbreakable code disc	High 5000 PPR resolution capability	

## OPTICAL - ABSOLUTE

						
Product	AI25 (DeviceNet)	AI25 (Profibus)	AI25 (Interbus)	AI25 (CANOpen)	AI25 (CANLayer2)	
Mounting Type	Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	
Shaft/Bore Sizes	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8"	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8"	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8"	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8"	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8"	
Available Resolutions (Bits)	Up to 14 bit Single-Turn, 12 bit Multi-Turn	Up to 14 bit Single-Turn, 12 bit Multi-Turn	Up to 12 bit Single-Turn, 12 bit Multi-Turn	Up to 14 bit Single-Turn, 12 bit Multi-Turn	Up to 14 bit Single-Turn, 12 bit Multi-Turn	
Input Voltage (VDC)	10-30	10-30	10-30	10-30	10-30	
Operating Temperature (°C)	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	
Enclosure Rating	IP64 or IP67	IP64 or IP67	IP64 or IP67	IP64 or IP67	IP64 or IP67	
Shock / Vibration	100g / 10g	100g / 10g	100g / 10g	100g / 10g	100g / 10g	
Certifications	CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	
Special Features	DeviceNet interface	Profibus interface	Interbus interface	CANOpen interface	CANLayer 2 interface	

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**OPTICAL - INCREMENTAL**

	<b>NEW</b> 			<b>TRY*</b> 	<b>NEW</b> 	<b>TRY*</b> 	<b>TRY*</b> 	
H58	RI58-0	H42	HA725	H20 Hub Shaft	RI58 Hub Shaft	HS20	HS35R	Product
Shafted	Shafted	Shafted	Shafted	Hub Shaft	Hub Shaft	Hollow Shaft	Hollow Shaft	Mounting Type
6 or 10mm	6 or 12mm	3/8"	3/8"	1/4", 3/8", 1/2" or 5/8"	10 or 12mm	1/4" to 5/8" 6mm to 16mm	6mm to 28mm 1/4" to 1-1/4"	Shaft/Bore Sizes
1 - 2540	1 - 10,000	1 - 600	8192 - 10,000	1 - 2540	1 - 5,000	50 - 2540	1 - 5000	Available Resolutions (PPR)
5-26	5, 10-30	5-26	5 or 10-30	5-26	5 or 10-30	5-26	5-26	Input Voltage (VDC)
0 to +70 (-40 to +85 opt.)	-10 to +70	0 to +70	0 to +70	0 to +70 (-40 to +85 opt.)	-10 to +70	0 to +70 (-40 to +85 opt.)	-40 to 85 (-40 to +100 opt.)	Operating Temperature (°C)
NEMA 12/IP54 (NEMA 4/IP66 opt.)	IP65, IP67	NEMA 12/IP54	NEMA 4/IP66	NEMA 12/IP54 (NEMA 4/IP66 opt.)	IP64	NEMA 4/IP65	IP67	Enclosure Rating
50g / 20g	100g / 10g	50g / 20g	50g / 2g	50g / 20g	100g / 10g	50g / 2.5g	400g / 30g	Shock / Vibration
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	Certifications
Euro-Standard 58mm mounting	Up to 40,000 steps with 10,000 pulses	Simplified economical design	Direct-read resolution up to 10,000 PPR	Hub Shaft with spring tether	High Accuracy with integrated flexible coupling	Electrically isolated hollow shaft	Shock Resistant to 400g	Key Features


**OPTICAL - ABSOLUTE**

	<b>TRY*</b> 	<b>TRY*</b> 	<b>NEW</b> 		
AI25 (Parallel)	AI25 (SSI)	AI25 (BiSS)	AI25 (EtherCAT)	AC36 (BiSS/SSI)	Product
Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	Mounting Type
Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8"	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8"	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8"	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8"	6 mm (Solid Shaft) 8 mm (Hub Shaft)	Shaft/Bore Sizes
Up to 14 bit Single-Turn, 12 bit Multi-Turn	Up to 17 bit Single-Turn, 12 bit Multi-Turn	Up to 22 bit Single-Turn, 12 bit Multi-Turn	Up to 22 bit Single-Turn, Up to 12 bit Multi-Turn	Up to 22 bit Single-Turn 12 bit Multi-Turn	Available Resolutions (Bits)
5 or 10-30	5 or 10-30	5 or 10-30	7-30	5 or 7-30	Input Voltage (VDC)
-40 to +100	-40 to +100	-40 to +100	-40 to +85	-40 to +100	Operating Temperature (°C)
IP64 or IP67	IP64 or IP67	IP64 or IP67	IP64 or IP67	IP64	Enclosure Rating
100g / 10g	100g / 10g	100g / 10g	400g / 30g	100g / 10g	Shock / Vibration
CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	Certifications
Parallel interface	SSI interface	BiSS interface	EtherCAT interface	Multi-Turn positioning in compact size	Key Features

# SERVO DUTY



## OPTICAL - ABSOLUTE

				
Product	AD34 (BiSS/SSI)	AD35 (BiSS/SSI)	AD36 (BiSS/SSI)	AD25 (BiSS/SSI)
Mounting Type	Shafted	Hub Shaft	Hollow Shaft & Hub Shaft	Shafted
Shaft/Bore Sizes	6mm	8mm	8mm	10mm
Available Resolutions (Bits)	Up to 19 bit Single-Turn	Up to 22 bit Single-Turn	Up to 22 bit Single-Turn, 12 bit Multi-Turn	Up to 22 bit Single-Turn, 12 bit Multi-Turn
Input Voltage (VDC)	5 or 7-30	5 or 7-30	5 or 7-30	5
Operating Temperature (°C)	-15 to +120	-15 to +120	-15 to +120	-15 to +120
Enclosure Rating	IP40	IP40	IP40	IP40
Shock / Vibration	100g / 10g	100g / 10g	100g / 10g	100g / 10g
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
Special Features	Unique one-step notched shaft mounting	Short mounting depth	Up to 22 bit single-turn resolution	Unique conical shaft for concentric motor mounting

## INDUCTIVE - RESOLVER

			
Product	11	R11	Frameless 10
Mounting Type	Shafted	Shafted	Bearingless
Shaft/Bore Sizes	0.120" (3.05mm)	0.120" (3.05mm)	Up to 6mm
Available Resolutions (Bits)	+/- 3 arcmin	+/- 6 arcmin	+/- 15 arcmin Single speed
Input Voltage (VDC)	2-26	2-6	2-10
Operating Temperature (°C)	Up to 125	Up to 125	Up to 200
Enclosure Rating	N/A	N/A	N/A
Shock / Vibration	N/A	N/A	N/A
Certifications	N/A	N/A	N/A
Special Features	Radiation Hardened	Radiation Hardened	Radiation Hardened

## OPTICAL - INCREMENTAL

					
Product	F10	F14	F15	F18	F21
Mounting Type	Hollow Shaft	Hollow Shaft	Hollow Shaft	Hollow Shaft	Hollow Shaft
Shaft/Bore Sizes	6mm	1/4", 6mm, 8mm	3/8"	1/4" to 1/2" 6 to 12mm	1/2"
Available Resolutions (PPR)	1024 - 2048	1000 - 5000	1024 - 2048	500 - 4096	1024 - 2048
Input Voltage (VDC)	5	5	5	5	5
Operating Temperature (°C)	0 to +120	0 to +120	0 to +120	0 to +120	0 to +120
Enclosure Rating	N/A	NEMA 1/ IP40 (w/cover)	N/A	NEMA 1/ IP40 (w/cover)	N/A
RPM	5,000	12,000	5,000	12,000	5,000
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
Special Features	Compact 1.0" diameter servo ring mount	Non-marring hollow shaft	Industry standard size 15 servo mounting	Under 2.0" dia package with high 4096 PPR capability	Industry standard size 21 servo mounting



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## A NOTE ABOUT RESOLVERS

Frameless resolvers are classified as Heavy Duty. By nature, resolvers are extremely rugged devices with no internal electronics. Resolvers can perform flawlessly in harsh duty applications with severe shock, vibration, contamination, and extreme temperatures.

### INDUCTIVE - RESOLVER

						
Frameless 15	Frameless 21	Frameless 31	Frameless 55	HaroMax® 15	HaroMax® 21	Product
Bearingless	Bearingless	Bearingless	Bearingless	Bearingless	Bearingless	Mounting Type
Up to 12mm	Up to 20mm	Up to 40mm	Up to 92mm	Up to 12mm	Up to 20mm	Shaft size/ Max bore size
+/- 7 arcmin Single speed +/- 4 arcmin Multiple speeds	+/- 7 arcmin Single speed +/- 4 arcmin Multiple speeds	+/- 10 arcmin Single speed +/- 5 arcmin Multiple speeds	+/- 30 arcmin Single speed +/- 2 arcmin Multiple speeds	16 arcmin spread - Single speed	18 arcmin spread - Single speed	Accuracy Speed
2-10	2-10	2-10	2-10	2-10	2-10	Input Voltage (Vrms)
Up to 200	Up to 200	Up to 200	Up to 200	Up to 155	Up to 155	Operating Temperature (°C)
N/A	N/A	N/A	N/A	N/A	N/A	Enclosure Rating
50g / 10g	50g / 10g	N/A	N/A	50g / 10g	50g / 10g	Shock / Vibration
N/A	N/A	N/A	N/A	N/A	N/A	Certification
Radiation Hardened	Radiation Hardened	Radiation Hardened	Radiation Hardened	Machine Wound Stator	Machine Wound Stator	Special Features

### OPTICAL - INCREMENTAL

						
HC20	E9	M9	M15	M53	M602/M832 Module	Product
Hollow Shaft	Hollow Shaft	Hollow Shaft	Hollow Shaft	Hollow Shaft	Modular	Mounting Type
6mm, 8mm	1.5 to 4mm, .125", .156"	1.5 to 4mm, .125", .156"	1/8" or 3/8" 6 to 10mm	1/4" to 1/2" 6 to 12mm	1/4", 3/8", 6mm, 8mm, 10mm	Shaft/Bore Sizes
500 - 2500	100 - 512	100 - 512	200 - 1000	500 - 2048	1 - 5000	Available Resolutions (PPR)
5-26	5	5	5	5 or 12	5	Input Voltage (VDC)
0 to +120	-20 to +100	-20 to +100	0 to +120	0 to +120	-40 to +100	Operating Temperature (°C)
IP51	N/A	N/A	NEMA 1/ IP50 (w/cover)	NEMA 1/ IP50 (w/cover)	Unsealed Housing	Enclosure Rating
2,000	5,000	12,000	12,000	12,000	2,000	RPM
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	RoHS	Certifications
Economical servomotor feedback	Super-compact size for small motors	Up to 512 PPR resolution	Easy installation without special tools	Up to 2048 PPR with commutation tracks	Tool-less gapping	Special Features



## OPTICAL - INCREMENTAL

								
Product	HD20	HD25	HD35R	DWD38	Series 60 Rotopulser®	Series 60P Rotopulser®	H56 Rotopulser®	HSD25
Mounting Type	Shafted	Shafted	Shafted	Shafted	Shafted	Shafted	Shafted	Hub Shaft
Shaft/Bore Sizes	3/8" or 10mm	3/8", 10mm, or 12mm	11mm	1"-14UNS x 5/8"-18 Threaded Shaft or 1"-14UNS Threaded Shaft	1/4" or 1/2"*	5/8" shaft (single or dual)	5/8"	6mm - 19mm or 1/4" - 3/4"
Available Resolutions (PPR)	1 - 3600	1 - 5000	1 - 5000	15 - 5000	1 - 2500	1 - 2500	1 - 5000	1 - 3600
Input Voltage (VDC)	5-26	5-26	5-26	5-26	5-15	5-15	5-26	5-26
Operating Temperature (°C)	-40 to +100	-40 to +100	-40 to +85	-40 to +100	0 to +54	0 to +54	-40 to +80	-40 to +100
Enclosure Rating	IP67	IP67	IP67	IP67	NEMA 12/IP54	NEMA 12/IP54 NEMA 4/IP66 opt.)	NEMA 4/ IP66	IP67
Shock / Vibration	50g / 20g	50g / 20g	400g / 20g	400g / 20g	N/A	N/A	50g / 2.5g	50g / 20g
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	N/A	N/A	CE, RoHS	CE, RoHS
Special Features	Unbreakable Code Disc up to 3600 PPR	Dual Isolated Outputs Available	Improved Seal Design for Increased Moisture Resistance	Stackable Encoder Options Available	Dual shaft output option	Mill-Duty Foot or Face Mount Design	Large Outer Bearings Isolate Shaft Loads	Field Replaceable Shaft Isolators

## OPTICAL - INCREMENTAL, HAZARDOUS DUTY

							
Product	Hazardous HD20	Hazardous HD25	ISW38	X25	RX70/71	ISD25	EN44
Mounting Type	Shafted	Shafted	Shafted	Shafted	Shafted	Hub Shaft	Hub Shaft
Shaft/Bore Sizes	3/8", 10mm	3/8", 10mm, 12mm	1"-14UNS x 5/8"-18 Threaded Shaft or 1"-14UNS Threaded Shaft	1/4" or 3/8"	10 mm	6mm - 19mm or 1/4" - 3/4"	16mm
Available Resolutions (PPR)	1 - 3600	1 - 5000	15 - 5000	1 - 5000	1 - 10,000	1 - 3600	1024 and 2048
Input Voltage (VDC)	5-26	5-26	5 or 7-26	5-26	5 or 10-30	5 or 7-26	7-26
Operating Temperature (°C)	-40 to +80	-40 to +80	-40 to +80	0 to +70	-40 to +60	-40 to +80	-50 to +100
Enclosure Rating	IP67	IP67	IP67	NEMA4X/IP56	IP64 / IP67	IP67	IP67
Shock / Vibration	50g / 20g	50g / 20g	400g / 20g	50g / 2g	100g / 10g	50g / 20g	50g / 20g
Certifications	CE, RoHS, CSA, ATEX	CE, RoHS, CSA, ATEX	CE, RoHS, CSA, ATEX	CE, RoHS, UL	CE, ATEX, IECEx	CE, RoHS, CSA, ATEX	CE, RoHS, CSA, ATEX, IECEx
Special Features	Ideal for Corrosive Environments with Stringent Wash-down Requirements	Ideal for Corrosive Environments with Stringent Wash-down Requirements	Draw Works Threaded Shaft with Field Replaceable Adapters	NEC Class 1&2, Div 1&2, Groups C, D, E, F, G	Explosion Proof Design for Hazardous Applications	Field Replaceable Shaft Isolators	Triple Certified Encoder for Hazardous Locations





**OPTICAL - INCREMENTAL**

HSD44	RR25	HSD35	HSD37	HSD38
Hub Shaft	Hub Shaft	Hollow Shaft	Hollow Shaft	Hollow Shaft
16mm	1" or 1-1/8"	6mm - 28mm, or 1/4" - 1 1/4"	6mm to 1" hollow shaft	12mm - 20mm or 1/2" - 1"
15 - 5000	180 - 512	1 - 5000	15 - 5000	15 - 5000
5-30	5-28	5-26	5-26	5-26
-30 to +100	-20 to +85	-40 to +85	-40 to +100	-40 to +100
NEMA 6	IP67	IP67 (IP64 at shaft speeds above 5000 RPM)	IP67	IP67
400g / 20g	50g / 10g	400g / 20g	400g / 20g	50g / 20g
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
For use in Heavy-Rail Traction Drive Applications	Corrosion Resistant Construction; Ideal for the Ag Industry	Stainless Steel Clamp and Hub Shaft for Mill Duty	Operates in High Shock and Vibration Environments	Electrically & Thermally Isolated Hollow shaft

**INDUCTIVE - RESOLVER**

R25	R56	RF25	Product
Servo/Flange	Foot/ C- Face	Flange	Mounting Type
3/8"	5/8"	3/8"	Shaft/Bore Sizes
+/- 7 arcmin - Single speed +/- 2 arcmin - Multiple speeds	+/- 10 arcmin - Single speed 10 arcmin spread - Two speed	+/- 10 arcmin - Single speed 10 arcmin spread - Two speed	Accuracy
2-26	26	26	Input Voltage (Vrms)
-55 to +125	-40 to +120	-55 to +125	Operating Temperature (°C)
IP65	IP66	IP65	Enclosure Rating
200g / 40g	50g / 10g	200g / 40g	Shock/ Vibration
RoHS	RoHS	RoHS	Certifications
Optional Connectors & Locations	Latching Connector	Optional Connectors & Locations	Special Features

**OPTICAL - INCREMENTAL, HAZARDOUS DUTY**

Hazardous HSD35	ISD37	EN42
Hollow Shaft	Hollow Shaft	Hollow Shaft
6mm - 28mm, or 1/4" - 1 1/4"	6mm - 25mm or 1/4" to 1"	15mm-16mm or 5/8" - 1"
1 - 5000	15 - 5000	15 - 5000
5-26	5 or 7-26	7-26 or 10-30
-40 to +85	-40 to +80	-50 to +100
IP67	IP67	IP67
400g / 20g	400g / 20g	50g / 20g
CE, RoHS, UL	CE, RoHS, CSA, ATEX	CE, RoHS, CSA, ATEX, IECEx
Field Serviceable Connector for Solder-Less Connections	Dual Isolated Outputs	Encapsulated Electronics with Increased Safety Interface for Zone 1 Use

**OPTICAL - ABSOLUTE, HAZARDOUS DUTY**

AX65 (SSI/CAN-Open)	AX70/71 (BISS/SSI/Profibus/DeviceNet/CAN-Open)	AX73 (Profibus)	AC61 (Parallel/Profibus/CAN-Open/CANlayer2/DeviceNet/Interbus/SSI Programmable)	Product
Shafted	Shafted	Shafted	Shafted	Mounting Type
10 mm	10 mm	10 mm	9.52 - 10 mm	Shaft/Bore Sizes
12 Bit Single-Turn, 12, 13 and 16 Bit Multi-Turn	10 - 22 Bit Single-Turn, 12 Bit Multi-Turn	14 Bit Single-Turn, 12 Bit Multi-Turn	10 - 17 Bit Single-Turn, 4 - 12 Bit Multi-Turn	Available Resolutions (Bits)
10-30	5 or 10-30	10-30	10-30	Input Voltage (VDC)
-40 to +60	-40 to +60	-40 to +70	-40 to +100	Operating Temperature (°C)
IP66/IP67	IP64/IP67	IP67	IP67	Enclosure Rating
200g / 30g	100g / 10g	100g / 10g	100g / 10g	Shock / Vibration
CE, RoHS, ATEX	CE, RoHS, ATEX, IECEx, AEx	CE, RoHS, ATEX, IECEx	CE, RoHS, UL	Certifications
Extreme Robust Explosionproof Absolute Multiturn Encoder	Pressure-Resistant Housing for Explosive Environments	Extreme corrosion resistance: high grade stainless steel housing	Chemical and Seawater Resistant; programmable encoder	Special Features











## MAGNETIC - INCREMENTAL

						
Product	Slim Tach® NEXGEN ST56	Slim Tach® SL56	Slim Tach® NEXGEN ST67	Slim Tach® RL67	Slim Tach® NEXGEN ST85	
Mounting Type	Bearingless	Bearingless	Bearingless	Bearingless	Bearingless	
Shaft/Bore Sizes	5/8" - 2 7/8" or 16mm - 80mm	5/8" - 2 7/8"	5/8" - 2 7/8" or 16mm - 80mm	5/8" - 2 7/8"	5/8" - 2 7/8" or 16mm - 80mm	
Available Resolutions (PPR)	64 - 2048	64 - 1024	64 - 2048	64 - 1024	64 - 2048	
Input Voltage (VDC)	5-26	5-26	5-26	5-26	5-26	
Operating Temperature (°C)	-40 to +100 Extended -40 to +120	-40 to +90 Extended -40 to +100	-40 to +100 Extended -40 to +120	-40 to +90 Extended -40 to +100	-40 to +100 Extended -40 to +120	
Enclosure Rating	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	
Shock /Vibration	300g / 20g	30g / 18g	300g / 20g	30g / 18g	30g / 18g	
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	
Special Features	Mounts to 56 and 140 C-Face Motors; Replaceable Wheels	Mounts to 56 and 140 C-Face Motors; Thin Profile Can be Sandwiched Between Motor & Reducer	Mounts to Reliance 6.75 Recess, 56 and 140 C-Face Motors; Replaceable Wheels	Mounts to Reliance Motors (6.75 fit and 56 and 140 C-Face); Large Air Gap of 0.060	Mounts to 180 C-Face Motors; Replaceable Wheels	

## MAGNETIC - INCREMENTAL

						
Product	Rim Tach® NEXGEN 6200	Rim Tach® 6200	Rim Tach® NEXGEN 1250	Rim Tach® 1250	Rim Tach® NEXGEN 8500	
Mounting Type	Shafted	Shafted	Bearingless	Bearingless	Bearingless	
Shaft/Bore Sizes	5/8"	5/8"	5/8" - 2 7/8" or 16mm - 80mm	5/8" - 2 7/8"	5/8" - 2 7/8" or 16mm - 80mm	
Available Resolutions (PPR)	60 - 2400	60 - 1200	60 - 2400	60 - 1200	60 - 2400	
Input Voltage (VDC)	5-26	5-26	5-26	5-26	5-26	
Operating Temperature (°C)	-40 to +100	-40 to +70	-40 to +100	-40 to +80	-40 to +100	
Enclosure Rating	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	
Shock /Vibration	30g / 18g	30g / 18g	200g / 18g	30g / 18g	200g / 18g	
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	
Special Features	Delivers a 70 Thousandths Air Gap; Replaceable Sensors	Foot-Mount or 56-C Face Mount	Circuitry for On-Board Diagnostics with LED and Alarm; Replaceable Wheels and Sensors	Mounts to 250-C Face Motors (12.5 Diameter Mounting Flange)	Circuitry for On-Board Diagnostics with LED and Alarm; Replaceable Wheels and Sensors	

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MAGNETIC - INCREMENTAL

MAGNETIC ABSOLUTE

Slim Tach® SL85	Slim Tach® SL1250	Slim Tach® HS56	Slim Tach® HS60
Bearingless	Bearingless	Hollow Shaft	Hollow Shaft
5/8" - 2 7/8"	5/8" - 2 7/8" or 16mm - 80mm	5/8" - 1 1/8"	1 1/8" - 2 7/8"
64 - 1024	64 - 1024	64 - 2048	64 - 2048
5-26	5-26	5-26	5-26
-40 to +90 Extended -40 to +100	-40 to +90 Extended -40 to +100	-20 to 80	-20 to 80
NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65
30g / 18g	30g / 18g	30g / 18g	30g / 18g
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
Mounts to 180 C-Face Motors; Dual C-Face Versions Available	Mounts to 250-C Face Motors; Requires only 1.4 of Motor Shaft	Ideal for TEFC AC Motor Mounting	Encapsulated Electronics Resist Moisture and Contamination

AR62/63	Product
Shafted	Mounting Type
3/8", 10 mm	Shaft/Bore Sizes
12 Bit Single-Turn, 12, 13 and 16 Bit Multi-Turn	Available Resolutions (Bits)
10-30	Input Voltage (VDC)
-40 to +100	Operating Temperature (°C)
IP67/ IP69k	Enclosure Rating
200g / 20g	Shock /Vibration
CE, RoHS	Certifications
3x the Life of Standard Absolute Encoders	Special Features

MAGNETIC - INCREMENTAL

Rim Tach® 8500	HDP18	HDP30	HDN58	R45 Rotopulser®	Rim Tach® HS85	Product
Bearingless	Bearingless	Bearingless	Bearingless	Bearingless	Hollow Shaft	Mounting Type
5/8" - 2 7/8"	1/2" to 1 1/2"	1/2" to 1 1/2"	1/2" to 1 1/2"	5/8" or 7/8"	1 1/8" - 4 1/2" or 25mm - 70mm	Shaft/Bore Sizes
60 - 1200	256	8 - 512	8 - 512	60	60 - 2048	Available Resolutions (PPR)
5-26	6-30	6-30	6-30	5-26	5-26	Input Voltage (VDC)
-40 to +90 Extended -40 to +100	-25 to +80	-25 to +80	-25 to +70	-40 to +85	-20 to +70	Operating Temperature (°C)
NEMA 4 & 12, IP65	IP68	IP68	Connector Dependent IP65, IP67 or IP68	N/A	NEMA 4 & 12, IP65	Enclosure Rating
30g / 18g	N/A	N/A	50g / 10g	20g / 2.5g	30g / 18g	Shock /Vibration
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	Certifications
Mounts to 180-C Face Motors:	Incremental & Absolute Output's Available; Completely Sealed & Encapsulated Electronics	Incremental & Absolute Output's Available; CAN SAE J1939 Communication Protocol	Incremental & Absolute Output's Available; Wide Sensing Envelope is Tolerant to Misalignment	56C-Face Mounting	Hollow Shaft Design Mounts Easily to Large Motor Shafts	Special Features

For full part numbers and descriptions please visit our catalog or website @ [www.dynapar.com](http://www.dynapar.com)

## RIM SS2 SIGNAL SPLITTER



The NorthStar signal splitter routes one encoder signal to multiple isolated locations.

## RIM SSW SIGNAL SWITCHER



The NorthStar signal switcher enables the use of one drive with two separate encoders.

## RIM 100 ENCODER TESTER



The NorthStar brand encoder tester is an instrument used to evaluate signal presence and quality produced by any manufacturers digital encoder

## CPL FLEXIBLE SHAFT COUPLINGS



CPL Series couplings provide maximum mechanical, thermal, and electrical protection for encoder shaft connections.

## FV3 FREQUENCY TO VOLTAGE CONVERTER



The FV3 converter converts the frequency output of the encoder to an analog signal for operating chart recorders, or for supplying velocity feedback in closed loop speed control systems.

## CABLE ASSEMBLIES



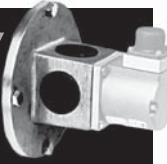
NorthStar brand offers shielded cable with MS or M12 connector and cable clamps at one end and tinned leads at the other end.

## MATING CONNECTORS



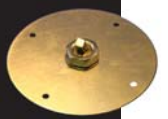
Dynapar offers a wide variety of military-style connectors for use with different style encoders.

## NEMA & 5PY ADAPTERS



Dynapar offers NEMA C-face, 5PY and custom adapters to allow you to mount a variety of flange mounted encoders to 4-1/2" NEMA and DC accessory flanges.

## GROUNDING BRUSH KITS



Provide a low resistance, and electrical contact to the motor shaft to reduce or eliminate induced shaft currents in AC and DC motors.

## BRACKETS



Dynapar offers a wide variety of rugged, stable, precision machined mounting brackets to secure popular Dynapar encoders for coupling to a machine shaft.

## TETHER & COVER KITS



A variety of tether kits are available for NEMA C-Face and other AC motors including single point tethers, slotted tethers and rod tethers. Dynapar also offers cover kits and basket covers that fit over the motor face.

## MEASURING WHEELS



Dynapar offers a wide range of precisely machined 12" circumference wheels including rubber, phenolic and O-ring surfaces to provide maximum accuracy over a wide temperature range for a variety of conveyor or material speed measurement applications.



For additional information or to receive a full-line catalog, contact your Dynapar representative at 1.800.873.8731 or visit our web site at: [www.dynapar.com](http://www.dynapar.com)

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