

Heavy Duty Incremental Encoders (Metric Dimension Encoders)

TRD-GK series

Features

A heavy duty encoder is the most rugged encoder you can buy. Top-of-the-line bearings allow a service life of 12 billion revolutions. Features include:

- 10 mm solid shaft
- Rugged body with 78 mm diameter and 60 mm depth
- Splash-proof IP65 rating
- Incremental operation from 30 pulses per revolution to 5,000 pulses per revolution
- 100 kHz maximum response frequency
- 10-30 VDC, Totem-pole output



Solid-shaft (TRD-GK) model

Heavy Duty Standard Shaft Incremental Encoders					
Model	Price	Pulses per Revolution	Input Voltage	Output	Body Diameter
TRD-GK30-RZD	\$:0096j	30	10-30 VDC	Totem-pole (sink/source)	78mm
TRD-GK100-RZD	\$0096n	100			
TRD-GK120-RZD	\$0096p	120			
TRD-GK200-RZD	\$0096u	200			
TRD-GK240-RZD	\$0096v	240			
TRD-GK250-RZD	\$0096y	250			
TRD-GK300-RZD	\$0096z	300			
TRD-GK360-RZD	\$0096_	360			
TRD-GK400-RZD	\$0096#	400			
TRD-GK500-RZD	\$0096?	500			
TRD-GK600-RZD	\$:0096.	600			
TRD-GK800-RZD	Retired	800			
TRD-GK1000-RZD	\$-0096l	1000			
TRD-GK1200-RZD	\$0096o	1000			
TRD-GK1500-RZD	Retired	1500			
TRD-GK1800-RZD	Retired	1800			
TRD-GK2000-RZD	\$:0096t	2000			
TRD-GK2500-RZD	\$0096x	2500			
TRD-GK3600-RZD	\$:0096j	3600			
TRD-GK5000-RZD	\$:0096l	5000			

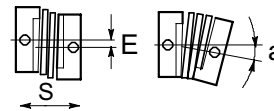
Electrical Specifications		
Model		TRD-GKxxx-RZD
Power Supply	Operating Voltage	10–30 VDC (nominal) * Range: 9.7–30.9 VDC
	Allowable Ripple	3% rms max.
	Current Consumption	At less than 16VDC: 50 mA max. / at 16VDC or more: 70mA max.
Output Waveform	Output Signal	Quadrature + home position
	Duty Ratio	50% ±25%
	Max. Frequency Response	100kHz max.
	Operating Speed	(max response frequency / resolution) x 60
	Signal Width at Home Position	At 400P or less: 25 to 150%; at 500P or more: 1° at 30'
	Rise/Fall Time	2µs max. (when cable length is 2m or less)
Output	Output Type	Totem-pole
	Current: Outflow: H	30mA max.
	Voltage: H	(power source voltage - 4V) min.
	Voltage: L	2V max.
	Load Power Voltage	35VDC max.
* To be supplied by Class II source		
Mechanical Specifications		
Starting Torque	Max. 0.1 N·m (0.07 ft·lbs) max. at 20°C (68°F)	
Max. Allowable Shaft Load	Radial: 100N (22.48 lbs) Axial: 50N (11.24 lbs)	
Max. Allowable Speed	5,000 rpm	
Service Life of Bearing	12 billion revolutions (at max. allowable speed)	
Wire Size	AWG24	
Weight	Approx. 600g (21.16 oz) with 2m cable	
Environmental Specifications		
Ambient Temperature	-10 to 70 °C [14 to 158 °F]	
Storage Temperature	-25 to 85 °C [-13 to 185 °F]	
Operating Humidity	35–85% RH (with no condensation)	
Insulation Resistance	50MΩ min.	
Vibration Resistance	At 500P or less: Durable for one hour along three axes at 10 to 55 Hz with 0.75 mm amplitude At 600P or more: Durable for one hour along three axes at 10 to 55 Hz with 0.35 mm amplitude	
Shock Resistance	At 500P or less: 11 ms with 980 m/s ² applied three times along three axes At 600P or more: 11 ms with 294 m/s ² applied three times along three axes	
Protection	IP65	

Encoder Accessories – Couplings

Encoder Couplings

Couplings provide a connection between solid-shaft encoders and solid shafts. We offer aluminum, fiberglass, and polymer couplings for metric, S.A.E. and metric-to-S.A.E. applications.

Misalignment compensation



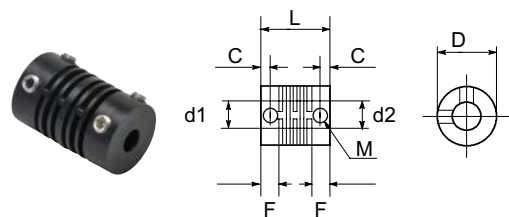
Couplings Selection Guide and Dimensions																
Type	Part Number	Price	Applicable Encoders (shaft size)	Shaft Diameter		D	L	F	C	M	a	E	S	Working Torque	Torsional Rigidity	Material
				d1	d2						max					
						(mm [in])			(mm [in])			(N·m)				
Fiberglass (metric)	GJ-4D	\$0963:	TRD-MX (4mm)	4mm	4mm	13 [0.51]	21 [0.83]	5.3 [0.21]	3 [0.12]	M3 set screw	5°	0.4 [0.02]	0.4 [0.02]	0.6 N·m	6 N·m/rad	Glass-fiber reinforced resin
	GJ-6D	\$965:	TRD-S/SR (6mm)	6mm	6mm	15 [0.59]	22 [0.87]	5.2 [0.20]	3 [0.12]	M3 set screw	6°	0.5 [0.02]	0.12 [0.005]	0.8 N·m	10 N·m/rad	
	GJ-8D	\$0966:	TRD-N/NA (8mm)	8mm	8mm	19 [0.75]	24 [0.94]	6.8 [0.27]	3.5 [0.14]	M4 set screw	5°	0.5 [0.02]	0.4 [0.016]	1.5 N·m	20 N·m/rad	
	GJ-10D	\$0962:	TRD-GK (10 mm)	10 mm	10 mm	22 [0.87]	26 [1.02]	7.1 [0.28]	4 [0.16]	M4 set screw	5°	0.5 [0.02]	0.12 [0.005]	2.0 N·m	32 N·m/rad	
Fiberglass (SAE)	GJ-635D	\$0964:	TRDA-2E (0.25 in)	0.25 in	0.25 in	15 [0.59]	22 [0.87]	5.2 [0.20]	3 [0.12]	M3 set screw	5°	0.5 [0.02]	0.12 [0.005]	0.8 N·m	10 N·m/rad	Glass-fiber reinforced resin
	GJK-953D	\$0967:	TRDA-20/25 (0.375 in)	0.375 in	0.375 in	25 [0.98]	32 [1.26]	7.3 [0.29]	3.5 [0.14]	M4 set screw	5°	0.5 [0.02]	0.12 [0.005]	2.0 N·m	32 N·m/rad	
Polymer (SAE)	STP-MTRA-SC-1412	\$-096j:	TRDA-2E (0.25 in)	0.25 in	0.50 in	25 [0.98]	38 [1.50]	9.9 [0.39]	5.4 [0.21]	M3 cap screw	5°	0.3 [0.01]	0.12 [0.005]	3.7 N·m	0.36 °/lb·in	Engineered polymer
	STP-MTRA-SC-3812	\$096k:	TRDA-20/25 (0.375 in)	0.375 in	0.50 in	25 [0.98]	38 [1.50]	9.9 [0.39]	5.4 [0.21]	M3 cap screw	5°	0.3 [0.01]	0.12 [0.005]	3.7 N·m	0.36 °/lb·in	
Aluminum (metric)	ARM-075-5-4D	\$,095.:	TRD-MX (4mm)	4mm	5mm	19.1 [0.75]	19.1 [0.75]	4.6 [0.18]	2.4 [0.09]	M3 set screw	5°	0.25 [0.01]	0.25 [0.01]	2.3 N·m	8.2 N·m/rad	Aluminum alloy
	RU-075D	\$096g:	TRD-S/SR (6mm)	6mm	6mm	19.1 [0.75]	19.1 [0.75]	4.6 [0.18]	2.4 [0.09]	M3 set screw	5°	0.25 [0.01]	0.12 [0.005]	1.0 N·m	8.2 N·m/rad	
	JU-100D	\$0968:	TRD-N/NA (8mm)	8mm	8mm	25.4 [1.00]	25.4 [1.00]	6.6 [0.26]	3.8 [0.15]	M5 set screw	5°	0.25 [0.01]	0.25 [0.01]	1.6 N·m	14.3 N·m/rad	
	RU-100D	\$096h:	TRD-GK (10 mm)	10 mm	10 mm	25.4 [1.00]	25.4 [1.00]	6.6 [0.26]	3.8 [0.15]	M5 set screw	5°	0.25 [0.01]	0.12 [0.005]	1.6 N·m	14.3 N·m/rad	
Aluminum (metric-to-SAE)	ML13P-4-476D	\$096e:	TRD-MX (4mm)	4mm	0.1875 in	13 [0.51]	19 [0.75]	5.5 [0.22]	2.5 [0.10]	M2 set screw	5°	0.4 [0.02]	0.2 [0.01]	0.25 N·m	44 N·m/rad	Aluminum alloy (Bent plate: Polyimide)
	ML16P-4-635D	\$,096f:	TRD-MX (4mm) TRDA-2E (0.25 in)	4mm	0.25 in	16 [0.63]	23 [0.91]	7 [0.28]	3 [0.12]	M3 set screw	5°	0.6 [0.02]	0.3 [0.01]	0.4 N·m	70 N·m/rad	
	MCGL16-6-635	\$0969:	TRD-S/SR (6mm) TRDA-2E (0.25 in)	6mm	0.25 in	16 [0.63]	23.2 [0.91]	7 [0.28]	3 [0.12]	M3 set screw	3.5°	0.3 [0.01]	0.3 [0.01]	0.4 N·m	70 N·m/rad	
	MCGL20-8-635	\$096a:	TRD-N/NA (8mm) TRDA-2E (0.25 in)	8mm	0.25 in	20 [0.79]	26 [1.02]	7.5 [0.30]	3.7 [0.15]	M3 set screw	3.5°	0.3 [0.01]	0.4 [0.02]	0.6 N·m	130 N·m/rad	
	MCGL20-8-952	\$096b:	TRD-N/NA (8mm) TRDA-20/25 (0.375 in)	8mm	0.375 in	20 [0.79]	26 [1.02]	7.5 [0.30]	3.7 [0.15]	M3 set screw	3.5°	0.3 [0.01]	0.4 [0.02]	0.6 N·m	130 N·m/rad	
	MCGL25-10-635	\$096c:	TRD-GK (10 mm) TRDA-2E (0.25 in)	10 mm	0.25 in	25 [0.98]	30.2 [1.19]	9 [0.35]	4 [0.16]	M4 set screw	3.5°	0.3 [0.01]	0.5 [0.02]	1.4 N·m	240 N·m/rad	
	MCGL25-10-952	\$096d:	TRD-GK (10 mm) TRDA-20/25 (0.375 in)	10 mm	0.375 in	25 [0.98]	30.2 [1.19]	9 [0.35]	4 [0.16]	M4 set screw	3.5°	0.3 [0.01]	0.5 [0.02]	1.4 N·m	240 N·m/rad	
Aluminum (SAE)	ARM-075-635-635D	\$0960:	TRDA-2E (0.25 in)	0.25 in	0.25 in	19.1 [0.75]	19.1 [0.75]	4.6 [0.18]	2.4 [0.09]	M3 set screw	5°	0.25 [0.01]	0.25 [0.01]	1.0 N·m	8.2 N·m/rad	Aluminum alloy
	ARM-100-9525-9525D	\$0961:	TRDA-20/25 (0.375 in)	0.375 in	0.375 in	25.4 [1.00]	25.4 [1.00]	6.6 [0.26]	3.8 [0.15]	M5 set screw	5°	0.25 [0.01]	0.25 [0.01]	1.6 N·m	14.3 N·m/rad	
* mm ÷ 25.4 = inches																

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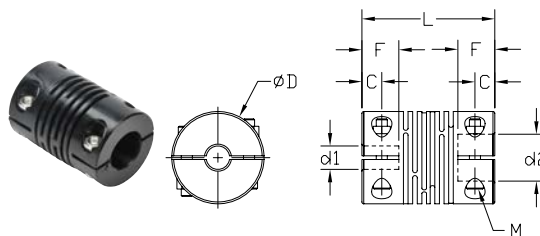
Encoder Accessories – Couplings

Encoder Couplings – Dimensions

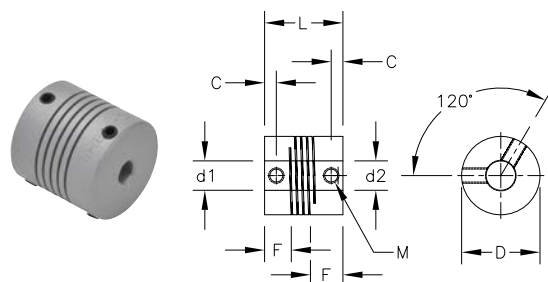
GJ-xxD Fiberglass Couplings (metric) & GJx-xxxD Fiberglass Couplings (SAE)



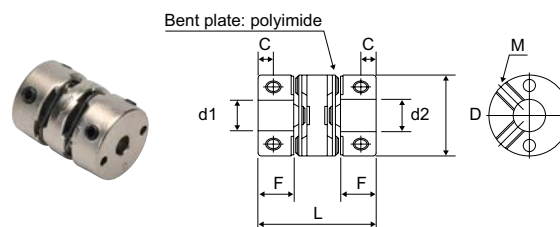
STP-MTRA-SC-xxxx Polymer Couplings



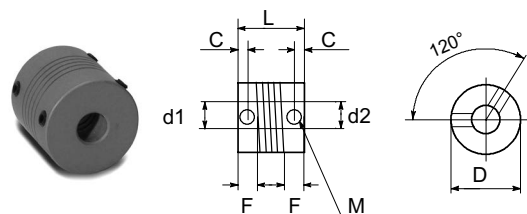
ARM-xxxxxxD Aluminum Couplings (metric & SAE)



MCGLxx Aluminum Couplings & ML1xP-4-xxxD Aluminum Couplings



RU-075D, RU-100D, and JU-100D Aluminum Couplings



Encoder Selection Guide

SAE Dimension Encoders & Metric Dimension Encoders

Encoder Selection Guide												
Type	Duty	Series	Encoder Diameter	Shaft Diameter	Shaft Type	Operating Voltage (VDC) and Electrical Output	IP Rating	Cable	Max Radial Load (N)	Max Axial Load (N)	Available Resolutions (PPR)	Brand
Incremental	Modular Kit	AMT	28mm, 42mm	2, 3, 4, 5, 6, 8 mm 3/16, 1/4, 3/8, 1/2, 5/8 inch	Hollow	5V Line Driver (TTL) or 5V Push-Pull (Totem Pole)	IP20	Custom cables sold separately	N/A	N/A	Programmable up to 4096	Same Sky
		MTRA	31mm	5mm 1/4", 3/8"	Hollow	5V Line Driver (TTL) or 5V Push-Pull (Totem Pole)	IP20	Custom cables sold separately	N/A	N/A	400, 1000	SureStep
	Light Duty	TRD-S(H)R	38mm, 40mm	8mm	Solid or Hollow	5V Line Driver (TTL) or 5-26V NPN/PNP Open Collector (HTL)	IP50 or IP65	Integral 2m pigtail cable	20	10	100, 200, 360, 500, 600, 1000, 1024, 2000, 2500	JTEKT
		A41	41mm	1/4"	Solid or Hollow	5-30VDC Universal output circuit: Push-Pull (Totem Pole), or NPN/PNP Open Collector (HTL), or Line Driver (TTL)	IP64	Integral 2m pigtail cable	20	20	100, 200, 360, 500, 1000, 1024, 200, 2048, 3600, 4096	Lika
	Medium Duty	A50	50mm	1/4", 3/8"	Hollow		IP65	M12 cables sold separately	20	20	360, 1000, 1024, 2048	
		A80	80mm	30mm (reducer bushings available for 19 & 20mm, 5/8", 7/8", 1, and 1 1/8")	Hollow		IP64	M23 cables sold separately	30	30	1024	
		AQ58/59	58mm, 59mm	3/8" solid, 15mm hollow (reducer bushings available for 6, 8, 10, 11, 12 mm; 1/4, 3/8, 1/2 inch)	Solid or Hollow		IP65	M12 cables sold separately	100	100	Programmable from 1 to 16,384 (default 1024)	
		AR01	58mm	15mm	Solid Dual-shaft		IP65	M12 cables sold separately	50	50	250 (linear res: 0.36 deg/cts) 1250 (linear res: 0.072 deg/cts)	
	Heavy Duty	TRDA-20	2"	3/8"	Solid	5VDC Line Driver (TTL) or 5-30VDC Push-Pull (Totem Pole)	IP50	Integral 2m pigtail cable	50	30	100, 360, 500, 1000, 1024, 2500	JTEKT
		TRDA-25	2.5" flange (w/2.0" body)	3/8"	Solid		IP65	Military Spec (MS) cables sold separately	50	30	100, 360, 500, 1000, 1014, 2500	
		TRD-N(H)	50mm	8mm	Solid or Hollow		IP65	Integral 2m pigtail cable	50	30	3, 4, 5, 10, 30, 40, 50, 60, 100, 120, 200, 240, 250, 300, 360, 400, 480, 500, 600, 750, 1000, 1024, 1200, 2000, 2500	
		TRD-GK	78mm	10mm	Solid		IP65	Integral 2m pigtail cable	100	50	30, 100, 120, 200, 240, 250, 300, 360, 400, 500, 600, 1000, 1200, 2000, 2500, 3600, 5000	
		TRD-NA	50mm	8mm	Solid		IP65	Integral 2m pigtail cable	50	30	32, 64, 128, 180, 256, 360, 512, 720, 1024 (gray code)	