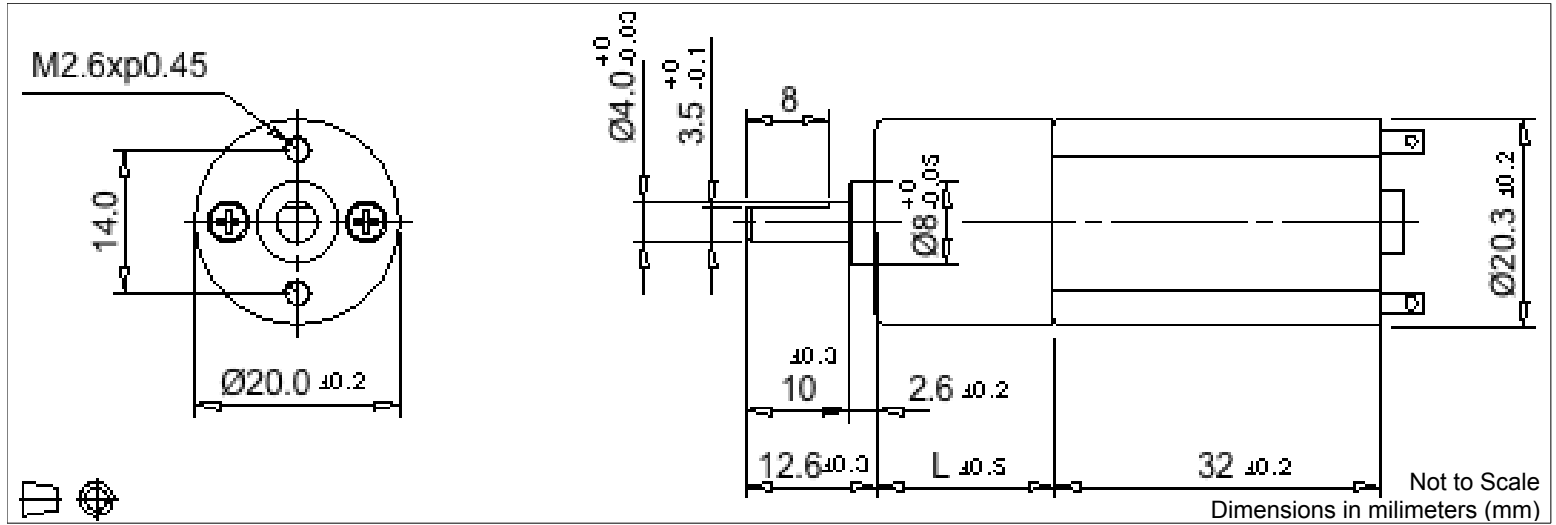


# Spur Gearmotor - 20 mm Ø



Low Friction - Low Cost Encoder Option

Global Motion Products



Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque Nm	Continuous Torque Nm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
10.0:1	3.0 Volts	73 %	892 rpm	0.180 Amp	0.11 Nm	0.014 Nm	16.5 mm	56.0 grams	Opposite	S200010AM30
12.5:1	3.0 Volts	73 %	710 rpm	0.180 Amp	0.13 Nm	0.017 Nm	16.5 mm	56.0 grams	Opposite	S200013AM30
18.2:1	3.0 Volts	65 %	487 rpm	0.180 Amp	0.17 Nm	0.022 Nm	20.0 mm	59.5 grams	Same	S200018AM30
28.8:1	3.0 Volts	65 %	309 rpm	0.180 Amp	0.28 Nm	0.034 Nm	20.0 mm	59.5 grams	Same	S200029AM30
42.0:1	3.0 Volts	55 %	212 rpm	0.180 Amp	0.34 Nm	0.042 Nm	20.0 mm	59.5 grams	Same	S200042AM30
52.0:1	3.0 Volts	55 %	171 rpm	0.180 Amp	0.42 Nm	0.052 Nm	20.0 mm	59.5 grams	Same	S200052AM30
67.2:1	3.0 Volts	55 %	132 rpm	0.180 Amp	0.54 Nm	0.068 Nm	20.0 mm	59.5 grams	Same	S200067AM30
80.2:1	3.0 Volts	50 %	111 rpm	0.180 Amp	0.59 Nm	0.074 Nm	21.8 mm	61.0 grams	Opposite	S200080AM30
99.3:1	3.0 Volts	50 %	89 rpm	0.180 Amp	0.73 Nm	0.091 Nm	21.8 mm	61.0 grams	Opposite	S200099AM30
119.5:1	3.0 Volts	50 %	74 rpm	0.180 Amp	0.88 Nm	0.111 Nm	21.8 mm	61.0 grams	Opposite	S200120AM30
150.2:1	3.0 Volts	50 %	59 rpm	0.180 Amp	1.10 Nm	0.137 Nm	21.8 mm	61.0 grams	Opposite	S200150AM30
179.2:1	3.0 Volts	45 %	50 rpm	0.180 Amp	1.19 Nm	0.147 Nm	25.3 mm	64.0 grams	Same	S200179AM30

Radial Load Rating	≤ 3.9 N	Radial Play	≤ 0.05 mm	Max Temperature Oper.	60°C
Radial Load Distance	10 mm	Axial Play	≤ 0.30 mm	Min Temperature Oper.	-10°C
Axial Load	≤ 2.0 N	Backlash	≤ 3.0 °	Relative Humidity Oper.	20% to 85%
Press Fit Force - Max	≤ 19.6 N			<b>Options</b>	Bearing Sleeve

**CAUTION:**  
**Stall Torque is a theoretical calculation- NOT a rating or maximum value. Continuous Torque is the lesser of the Gearbox Continuous Torque Rating or the Motor's Continuous Torque Rating at gearbox output shaft.**

Magnetic Encoders. Leads. Connectors. Pinion/Gear Mounting. Lubricants. Motor Windings. Gear material. Shaft modifications and component mounting. Coreless Motor.

\* Rotational Sense of Gearbox Output Shaft to Motor Shaft

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Commutation Type:  
 Precious Metal

RoHS Compliant

A - March 2011

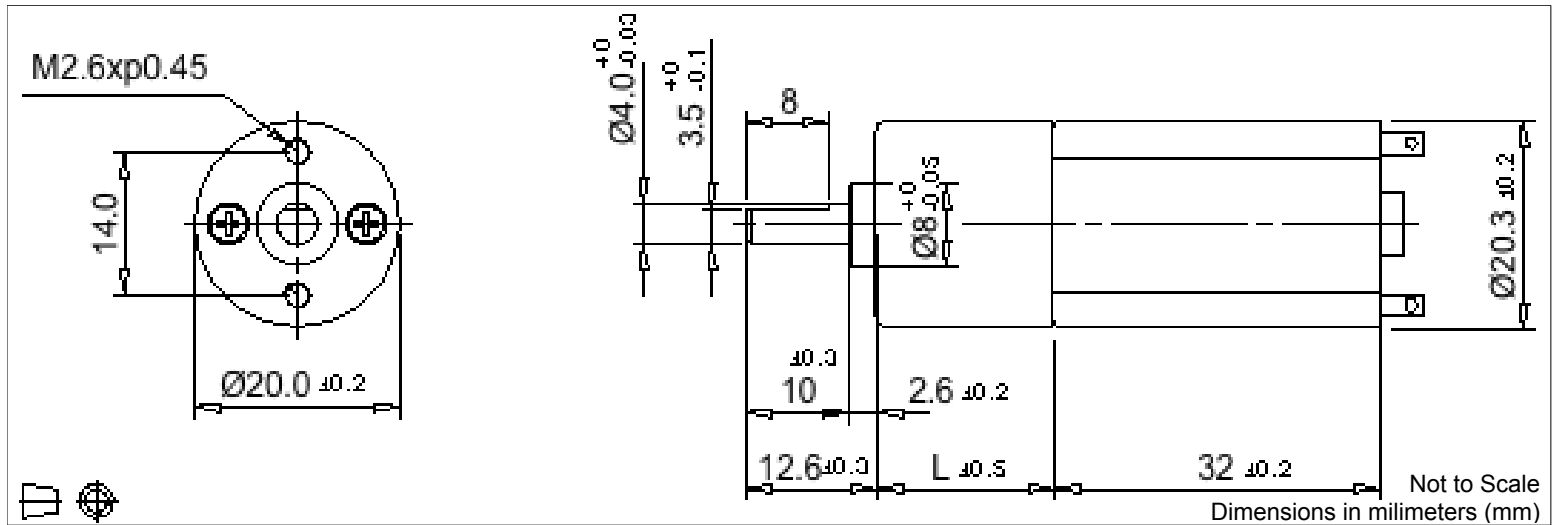
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# Spur Gearmotor - 20 mm Ø

Low Friction - Low Cost Encoder Option



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Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque Nm	Continuous Torque Nm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
225.2:1	3.0 Volts	45 %	39 rpm	0.180 Amp	1.49 Nm	0.177 Nm	25.3 mm	64.0 grams	Same	S200225AM30
274.9:1	3.0 Volts	45 %	32 rpm	0.180 Amp	1.82 Nm	0.177 Nm	25.3 mm	64.0 grams	Same	S200275AM30
350.4:1	3.0 Volts	45 %	25 rpm	0.180 Amp	2.32 Nm	0.177 Nm	25.3 mm	64.0 grams	Same	S200350AM30
430.4:1	3.0 Volts	40 %	21 rpm	0.180 Amp	2.53 Nm	0.177 Nm	25.3 mm	64.0 grams	Opposite	S200430AM30
548.7:1	3.0 Volts	40 %	16 rpm	0.180 Amp	3.23 Nm	0.177 Nm	25.3 mm	64.0 grams	Opposite	S200549AM30
689.3:1	3.0 Volts	40 %	13 rpm	0.180 Amp	4.06 Nm	0.177 Nm	25.3 mm	64.0 grams	Opposite	S200689AM30
794.5:1	3.0 Volts	40 %	11 rpm	0.180 Amp	4.68 Nm	0.177 Nm	25.3 mm	64.0 grams	Opposite	S200794AM30
866.1:1	3.0 Volts	40 %	10 rpm	0.180 Amp	5.10 Nm	0.177 Nm	25.3 mm	64.0 grams	Opposite	S200866AM30

Radial Load Rating	≤ 3.9 N	Radial Play	≤ 0.05 mm	Max Temperature Oper.	60°C
Radial Load Distance	10 mm	Axial Play	≤ 0.30 mm	Min Temperature Oper.	-10°C
Axial Load	≤ 2.0 N	Backlash	≤ 3.0 °	Relative Humidity Oper.	20% to 85%
Press Fit Force - Max	≤ 19.6 N	<b>Options</b>	Bearing	Sleeve	

**CAUTION:**  
**Stall Torque is a theoretical calculation- NOT a rating or maximum value. Continuous Torque is the lesser of the Gearbox Continuous Torque Rating or the Motor's Continuous Torque Rating at gearbox output shaft.**

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Commutation Type:  
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RoHS Compliant

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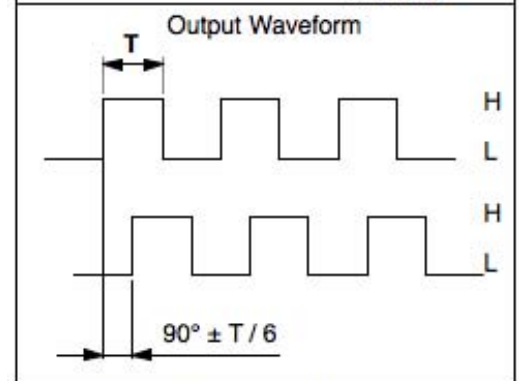
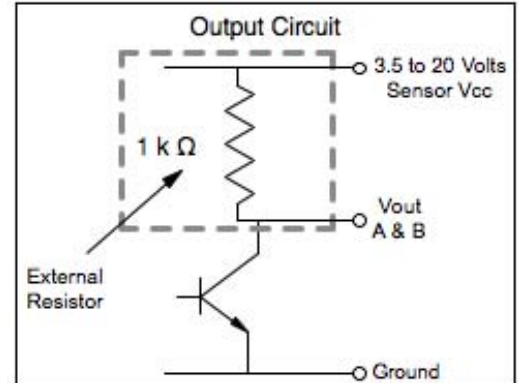
# Magnetic Encoders - Integrated

## Low Cost - Single & Quadrature Channels



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Supply Voltage - Max	20.0 Volt
Supply Voltage - Min	3.5 Volt
Supply Voltage - Symbol	Vcc
Output Saturation Voltage - Max	700 mVolts
Output Saturation Voltage - Ref	300 mVolts
Output Saturation Voltage - Symbol	Vce(sat)
Output Saturation Voltage - Test Conditions	Vcc =14 Volts; Ic = 20mA
Output Leakage Current - Max	10.0 µAmp
Output Leakage Current - Ref	< 0.1 µAmp
Output Leakage Current - Symbol	Icex
Output Leakage Current - Test Conditions	Vce =14 Volts; Vcc = 14 V
Supply Current - Max	10 mAmp
Supply Current - Ref	5 mAmp
Supply Current - Symbol	Ice
Supply Current - Test Conditions	Vcc =20 Volts, Output Open
Output Rise Time - Max	1.5 µSec
Output Rise Time - Ref	0.3 µSec
Output Rise Time - Symbol	tr
Output Rise Time - Test Condition	Vce =14 Volts; RI = 820 Ω; CI = 20pF
Output Fall Time - Max	1.5 µSec
Output Fall Time - Ref	0.3 µSec
Output Fall Time - Symbol	tf
Output Fall Time - Test Conditions	Vce =14 Volts; RI = 820 Ω; CI = 20pF
Max Temperature - Operating	60°C
Min Temperature - Operating	-10°C
Relative Humidity - Operating	20% to 85% RH

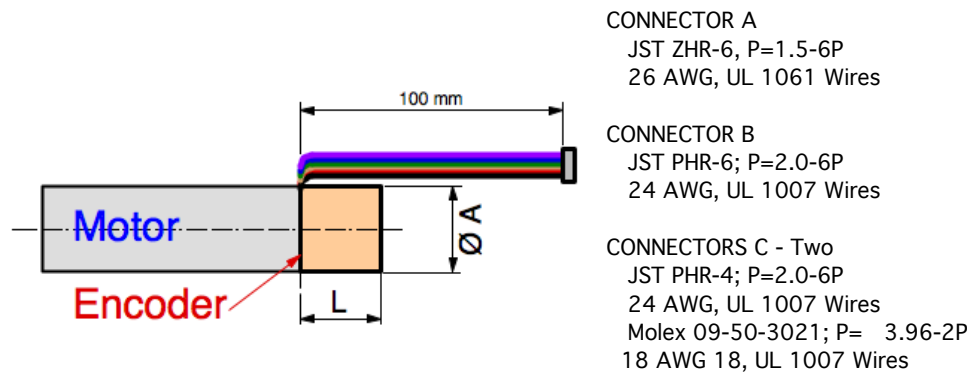


### Two Channel Encoder

Connector Pin	Color	Function
1	Black	- Motor
2	Red	+ Motor
3	Brown	Hall Sensor Vcc
4	Green	Hall Sensor Ground
5	Blue	Hall Sensor A Vout
6	Purple	Hall Sensor B Vout

### One Channel Encoder

Connector Pin	Color	Function
1	Black	- Motor
2	Red	+ Motor
3	Brown	Hall Sensor Vcc
4	Green	Hall Sensor Ground
5	Blue	Hall Sensor A Vout
6	Purple	No Function



**Note:**  
For encoder resolution and channel options, how to order, diameter and encoder length details refer to the following pages. Resolution options vary by motor diameter, as do connector(s) and wire gauge(s).

Below 30 mm motor diameter the magnetic encoder does not have the option for a dust cap at this time. The encoder is exposed and the dimensions represent the largest dimension of the encoder. On 30 mm and larger diameter motors an OPTIONAL Dust Cap is available. Part Numbers here represent no Dust Cap.

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# Magnetic Encoders - Integrated



Low Cost - Single & Quadrature Channels

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Pulses per Revolution per Track	Track Number	Dust Cap Option	Cover ØA mm	Cover or Encoder L - mm	Connector Type(s)	Compatible Gearmotor Series	Order Part Number
1	X	No	12.0	6.5	A	A12----GM--	EM120001X00
3	X	No	12.0	6.5	A	A12----GM--	EM120003X00
1	X	No	15.4	6.5	A	A16----AS--	EM160001X00
3	X	No	15.4	6.5	A	A16----AS--	EM160003X00
1	X	No	20.3	8.5	B	S20----AM--; A22----GM--; A22----HM--	EM210001X00
3	X	No	20.3	8.5	B	S20----AM--; A22----GM--; A22----HM--	EM210003X00
1	X	Yes	30.0	12.6	B	A30----GM--	EM300001X00
3	X	Yes	30.0	12.6	B	A30----GM--	EM300003X00
7	X	Yes	30.0	12.6	B	A30----GM--	EM300007X00
7	X	Yes	32.0	14.3	B	A32----GM--	EM320007X00
7	X	Yes	36.0	13.5	B	A36----GM--	EM360007X00
1	X	Yes	42.5	15.5	C	A45----A---	EM430001X00
5	X	Yes	42.5	15.5	C	A45----A---	EM430005X00
1	X	Yes	52.0	18.0	C	A52----GM--	EM520001X00
1	X	Yes	52.0	18.0	C	A52----GM--	EM520001X00
5	X	Yes	54.0	18.0	C	A54----GM--	EM540005X00
5	X	Yes	54.0	18.0	C	A54----GM--	EM540005X00
1	X & Y	No	12.0	6.5	A	A12----GM--	EM120001Y00
3	X & Y	No	12.0	6.5	A	A12----GM--	EM120003Y00
1	X & Y	No	15.4	6.5	A	A16----AS--	EM160001Y00
3	X & Y	No	15.4	6.5	A	A16----AS--	EM160003Y00
1	X & Y	No	20.3	8.5	B	S20----AM--; A22----GM--; A22----HM--	EM210001Y00
3	X & Y	No	20.3	8.5	B	S20----AM--; A22----GM--; A22----HM--	EM210003Y00
1	X & Y	Yes	30.0	12.6	B	A30----GM--	EM300001Y00
3	X & Y	Yes	30.0	12.6	B	A30----GM--	EM300003Y00
7	X & Y	Yes	30.0	12.6	B	A30----GM--	EM300007Y00
7	X & Y	Yes	32.0	14.3	B	A32----GM--	EM320007Y00
7	X & Y	Yes	36.0	13.5	B	A36----GM--	EM360007Y00
1	X & Y	Yes	42.5	15.5	C	A45----A---	EM430001Y00
5	X & Y	Yes	42.5	15.5	C	A45----A---	EM430005Y00
1	X & Y	Yes	52.0	18.0	C	A52----GM--	EM520001Y00
1	X & Y	Yes	52.0	18.0	C	A52----GM--	EM520005Y00
5	X & Y	Yes	54.0	18.0	C	A54----GM--	EM540001Y00
5	X & Y	Yes	54.0	18.0	C	A54----GM--	EM540005Y00

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