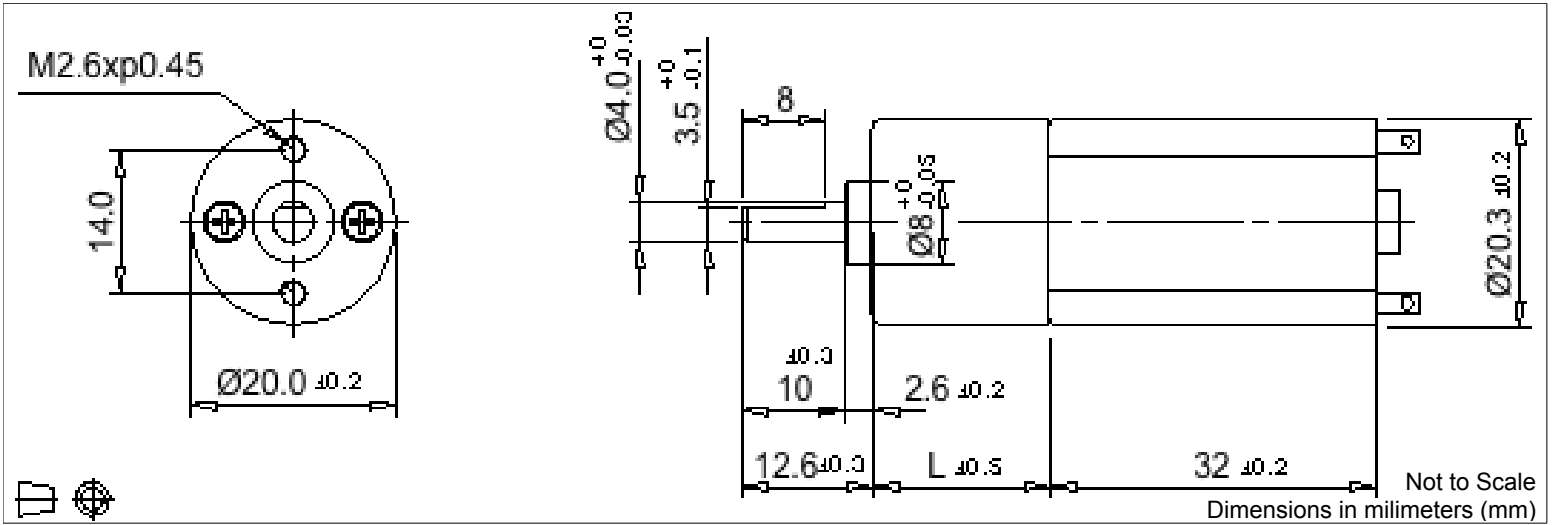


Spur Gearmotor - 20 mm Ø



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	6.0 Volts	73 %	794 rpm	0.090 Amp	0.14 Nm	0.016 Nm	16.5 mm	56.0 grams	Opposite	S200010AM10
12.5:1	6.0 Volts	73 %	632 rpm	0.090 Amp	0.18 Nm	0.020 Nm	16.5 mm	56.0 grams	Opposite	S200013AM10
18.2:1	6.0 Volts	65 %	434 rpm	0.090 Amp	0.23 Nm	0.025 Nm	20.0 mm	59.5 grams	Same	S200018AM10
28.8:1	6.0 Volts	65 %	275 rpm	0.090 Amp	0.36 Nm	0.041 Nm	20.0 mm	59.5 grams	Same	S200029AM10
42.0:1	6.0 Volts	55 %	189 rpm	0.090 Amp	0.45 Nm	0.050 Nm	20.0 mm	59.5 grams	Same	S200042AM10
52.0:1	6.0 Volts	55 %	152 rpm	0.090 Amp	0.55 Nm	0.063 Nm	20.0 mm	59.5 grams	Same	S200052AM10
67.2:1	6.0 Volts	55 %	118 rpm	0.090 Amp	0.72 Nm	0.080 Nm	20.0 mm	59.5 grams	Same	S200067AM10
80.2:1	6.0 Volts	50 %	99 rpm	0.090 Amp	0.78 Nm	0.086 Nm	21.8 mm	61.0 grams	Opposite	S200080AM10
99.3:1	6.0 Volts	50 %	80 rpm	0.090 Amp	0.96 Nm	0.108 Nm	21.8 mm	61.0 grams	Opposite	S200099AM10
119.5:1	6.0 Volts	50 %	66 rpm	0.090 Amp	1.16 Nm	0.132 Nm	21.8 mm	61.0 grams	Opposite	S200120AM10
150.2:1	6.0 Volts	50 %	53 rpm	0.090 Amp	1.46 Nm	0.147 Nm	21.8 mm	61.0 grams	Opposite	S200150AM10
179.2:1	6.0 Volts	45 %	44 rpm	0.090 Amp	1.56 Nm	0.177 Nm	25.3 mm	64.0 grams	Same	S200179AM10

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			Options	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:
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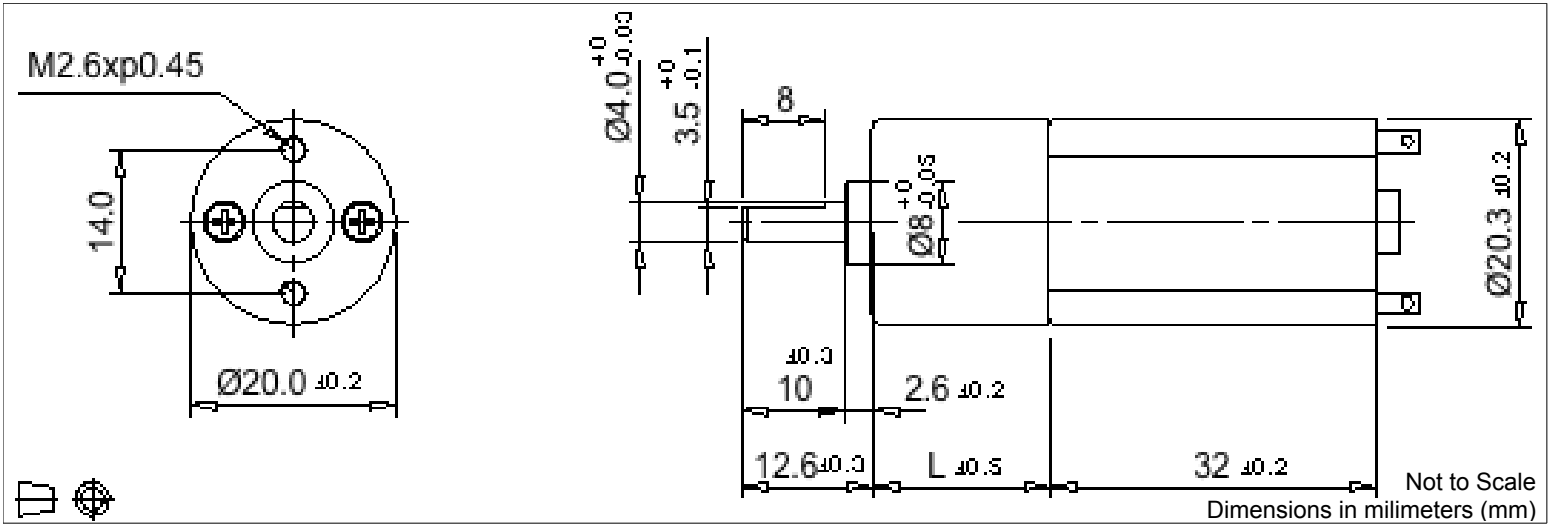
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Spur Gearmotor - 20 mm Ø



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	6.0 Volts	45 %	35 rpm	0.090 Amp	1.97 Nm	0.177 Nm	25.3 mm	64.0 grams	Same	S200225AM10
274.9:1	6.0 Volts	45 %	29 rpm	0.090 Amp	2.40 Nm	0.177 Nm	25.3 mm	64.0 grams	Same	S200275AM10
350.4:1	6.0 Volts	45 %	23 rpm	0.090 Amp	3.06 Nm	0.177 Nm	25.3 mm	64.0 grams	Same	S200350AM10
430.4:1	6.0 Volts	40 %	18 rpm	0.090 Amp	3.34 Nm	0.177 Nm	25.3 mm	64.0 grams	Opposite	S200430AM10
548.7:1	6.0 Volts	40 %	14 rpm	0.090 Amp	4.26 Nm	0.177 Nm	25.3 mm	64.0 grams	Opposite	S200549AM10
689.3:1	6.0 Volts	40 %	11 rpm	0.090 Amp	5.35 Nm	0.177 Nm	25.3 mm	64.0 grams	Opposite	S200689AM10
794.5:1	6.0 Volts	40 %	10 rpm	0.090 Amp	6.17 Nm	0.177 Nm	25.3 mm	64.0 grams	Opposite	S200794AM10
866.1:1	6.0 Volts	40 %	9 rpm	0.090 Amp	6.72 Nm	0.177 Nm	25.3 mm	64.0 grams	Opposite	S200866AM10

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	Options	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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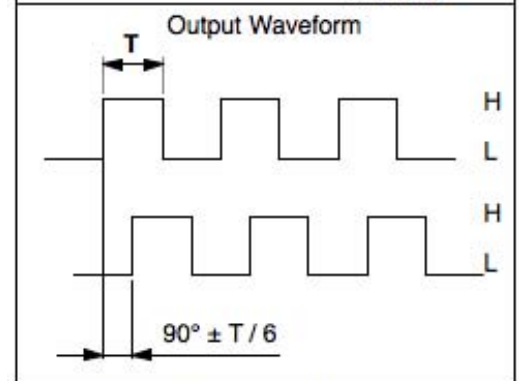
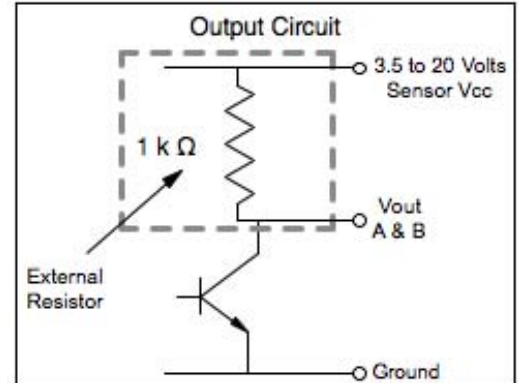
Magnetic Encoders - Integrated

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

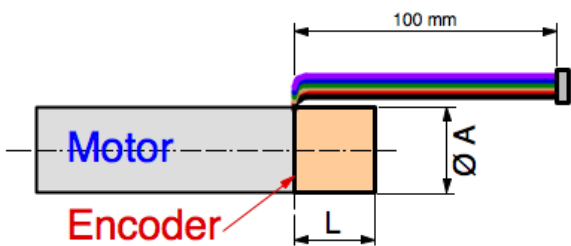
One Channel Encoder

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

CONNECTOR A
JST ZHR-6, P=1.5-6P
26 AWG, UL 1061 Wires

CONNECTOR B
JST PHR-6; P=2.0-6P
24 AWG, UL 1007 Wires

CONNECTORS C - Two
JST PHR-4; P=2.0-6P
24 AWG, UL 1007 Wires
Molex 09-50-3021; P= 3.96-2P
18 AWG 18, UL 1007 Wires



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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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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