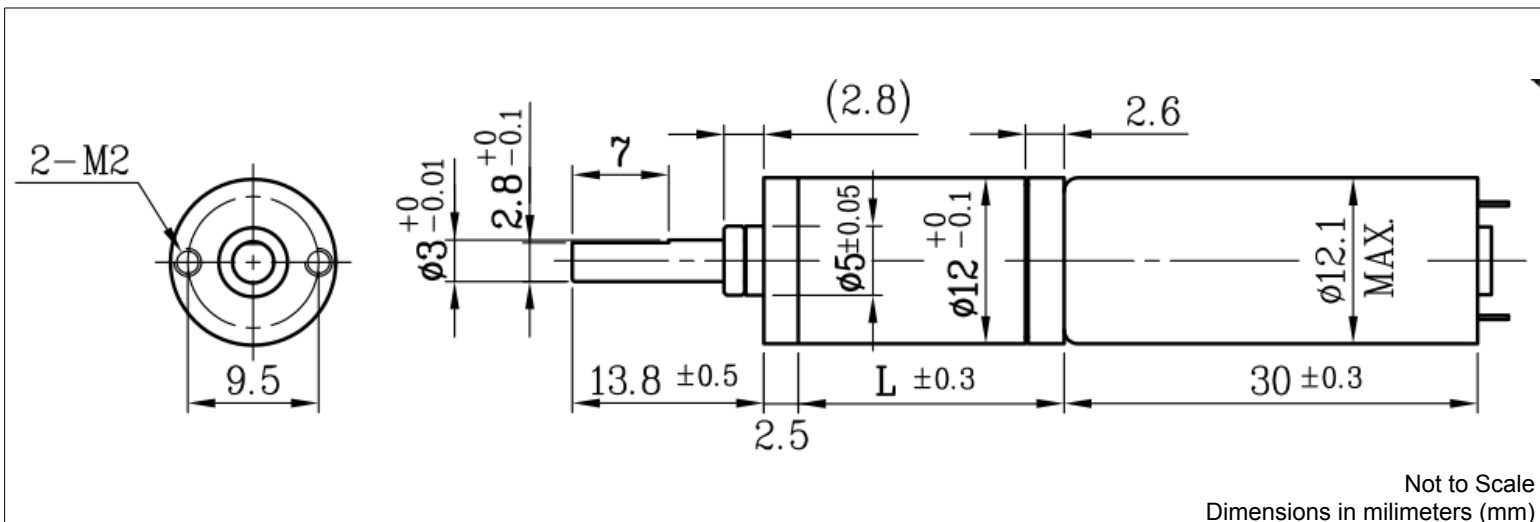


# Planetary Gearmotor - 12 mm Ø



A12••••GM00

Global Motion Products



Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque mNm	Continuous Torque mNm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
4:1	2.4	85 %	3,071 rpm	0.200 Amp	0.02 Nm	204 mNm	12.8 mm	25.1 grams	Same	A120004GM00
16:1	2.4	75 %	768 rpm	0.200 Amp	0.08 Nm	714 mNm	16.1 mm	27.2 grams	Same	A120016GM00
64:1	2.4	65 %	192 rpm	0.200 Amp	0.28 Nm	2,549 mNm	19.4 mm	29.3 grams	Same	A120064GM00
256:1	2.4	55 %	48 rpm	0.200 Amp	0.95 Nm	8,566 mNm	22.7 mm	31.4 grams	Same	A120256GM00
1,024:1	2.4	45 %	12 rpm	0.200 Amp	3.10 Nm	20,394 mNm	26.0 mm	33.6 grams	Same	A121024GM00
4,096:1	2.4	40 %	3 rpm	0.200 Amp	11.04 Nm	20,394 mNm	29.3 mm	35.6 grams	Same	A124096GM10

Radial Load Rating	≤ 4.9 N	Radial Play	≤ 0.05 mm	Max Temperature Oper.	60°C
Radial Load Distance	8 mm	Thrust Play	≤ 0.20 mm	Min Temperature Oper.	-10°C
Axial Load	≤ 4.9 N	Backlash	≤ 3.0 °	Relative Humidity Oper.	20% to 85%
Press Fit Force - Max	≤ 14.7 N			Bearing	Sleeve

**CAUTION:** Stall Torque is a theoretical calculation- NOT a rating/ maximum value.

\* Rotational Sense of Gearbox Output Shaft to Motor Shaft

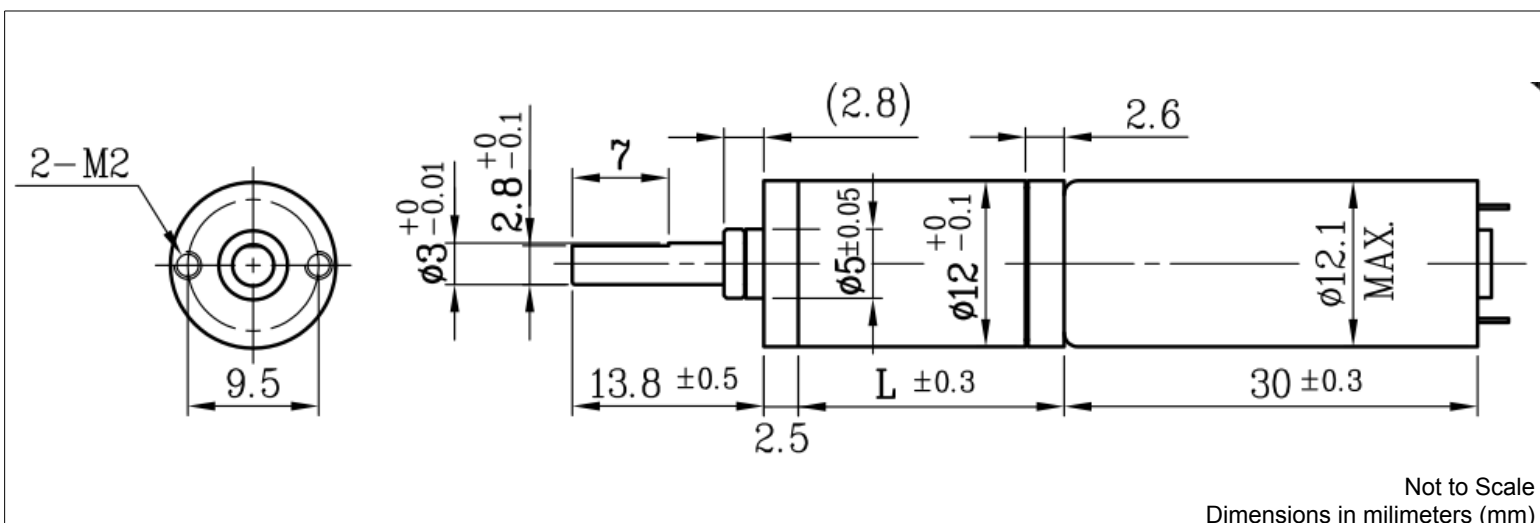
**Options**  
Magnetic Encoders. Leads. Connectors. Pinion/Gear Mounting. Lubricants. Motor Windings. Gear material. Corless Motors.

# Planetary Gearmotor - 12 mm Ø



A12••••GM10

Global Motion Products



Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque mNm	Continuous Torque mNm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
4:1	3.0	85 %	3,001 rpm	0.160 Amp	0.01 Nm	194 mNm	12.8 mm	25.1 grams	Same	A120004GM10
16:1	3.0	75 %	750 rpm	0.160 Amp	0.03 Nm	663 mNm	16.1 mm	27.2 grams	Same	A120016GM10
64:1	3.0	65 %	188 rpm	0.160 Amp	0.11 Nm	2,345 mNm	19.8 mm	29.3 grams	Same	A120064GM10
256:1	3.0	55 %	47 rpm	0.160 Amp	0.39 Nm	7,954 mNm	22.7 mm	31.4 grams	Same	A120256GM10
1,024:1	3.0	45 %	12 rpm	0.160 Amp	1.27 Nm	20,394 mNm	26.0 mm	33.5 grams	Same	A121024GM20
4,096:1	3.0	40 %	3 rpm	0.160 Amp	4.51 Nm	20,394 mNm	29.3 mm	35.6 grams	Same	A124096GM20

Radial Load Rating ≤ 4.9 N  
 Radial Load Distance 8 mm  
 Axial Load ≤ 4.9 N  
 Press Fit Force - Max ≤ 14.7 N

Radial Play ≤ 0.05 mm  
 Thrust Play ≤ 0.20 mm  
 Backlash ≤ 3.0 °

Max Temperature Oper. 60°C  
 Min Temperature Oper. -10°C  
 Relative Humidity Oper. 20% to 85%  
 Bearing Sleeve

**CAUTION:**

Stall Torque is a theoretical calculation- NOT a rating/  
 maximum value.

\* Rotational Sense of Gearbox Output Shaft to Motor Shaft

**Options**

Magnetic Encoders. Leads. Connectors. Pinion/Gear Mounting. Lubricants.  
 Motor Windings. Gear material. Corless Motors.

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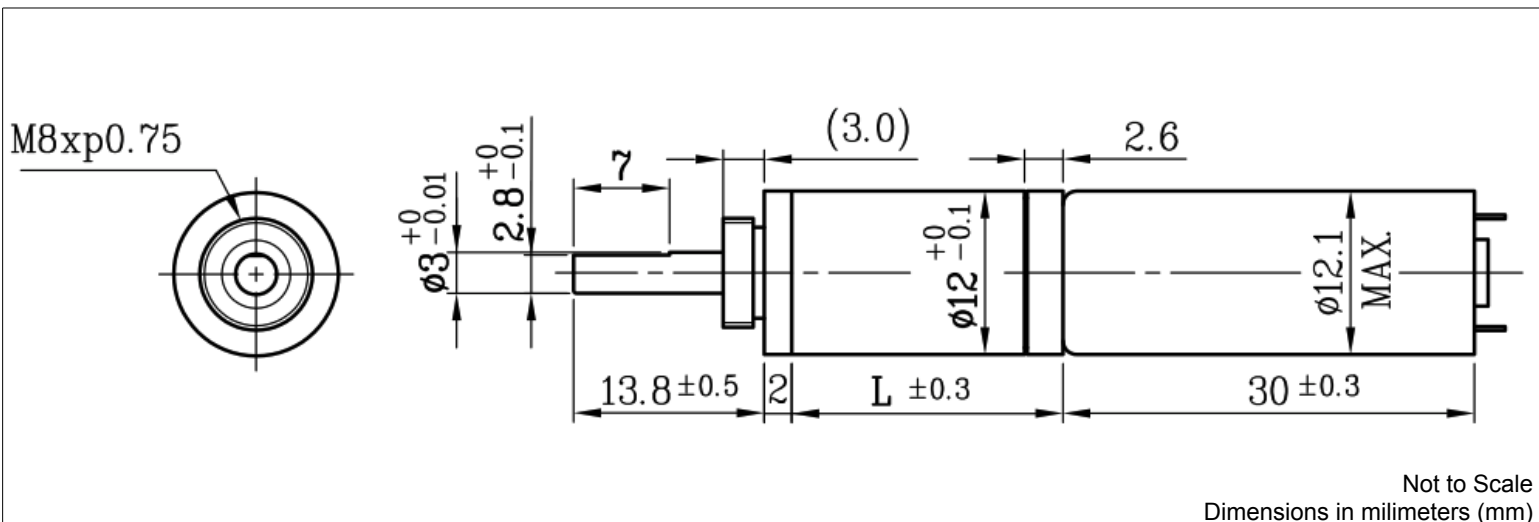
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# Planetary Gearmotor - 12 mm Ø



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A12••••GM20



Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque mNm	Continuous Torque mNm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
4:1	2.4	85 %	3,071 rpm	0.200 Amp	0.02 Nm	204 mNm	12.9 mm	25.6 grams	Same	A120004GM20
16:1	2.4	75 %	768 rpm	0.200 Amp	0.08 Nm	714 mNm	16.5 mm	27.7 grams	Same	A120016GM20
64:1	2.4	65 %	192 rpm	0.200 Amp	0.28 Nm	2,549 mNm	19.8 mm	29.8 grams	Same	A120064GM20
256:1	2.4	55 %	48 rpm	0.200 Amp	0.95 Nm	8,566 mNm	23.1 mm	31.9 grams	Same	A120256GM30
1,024:1	2.4	45 %	12 rpm	0.200 Amp	3.10 Nm	20,394 mNm	26.4 mm	34.0 grams	Same	A121024GM30
4,096:1	2.4	40 %	3 rpm	0.200 Amp	11.04 Nm	20,394 mNm	29.7 mm	36.1 grams	Same	A124096GM30

Radial Load Rating	≤ 4.9 N	Radial Play	≤ 0.05 mm	Max Temperature Oper.	60°C
Radial Load Distance	8 mm	Thrust Play	≤ 0.20 mm	Min Temperature Oper.	-10°C
Axial Load	≤ 4.9 N	Backlash	≤ 3.0 °	Relative Humidity Oper.	20% to 85%
Press Fit Force - Max	≤ 14.7 N	<b>Options</b>		Bearing	Sleeve

**CAUTION:** Stall Torque is a theoretical calculation- NOT a rating/ maximum value.

\* Rotational Sense of Gearbox Output Shaft to Motor Shaft

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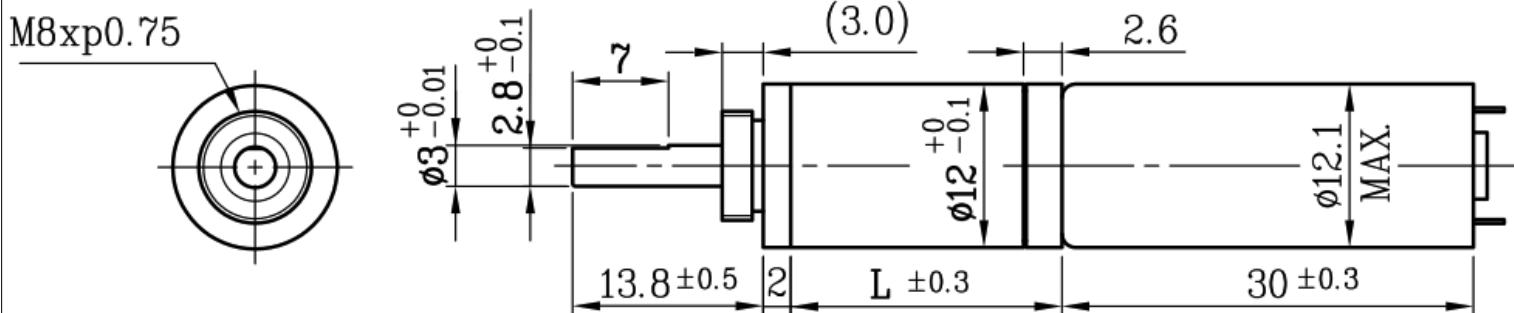
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# Planetary Gearmotor - 12 mm Ø



Global Motion Products

A12••••GM30



Not to Scale  
Dimensions in millimeters (mm)

Ratio	Voltage Volts	Gearbox Efficiency %	No Load Speed rpm	Gearmotor No Load Current A	Stall Torque mNm	Continuous Torque mNm	Length L mm	Gearmotor Mass grams	Direction of Rotation*	Order Part Number
4:1	3.0	85 %	3,001 rpm	0.160 Amp	0.01 Nm	194 mNm	12.9 mm	25.6 grams	Same	A120004GM30
16:1	3.0	75 %	750 rpm	0.160 Amp	0.03 Nm	653 mNm	16.5 mm	27.7 grams	Same	A120016GM30
64:1	3.0	65 %	188 rpm	0.160 Amp	0.11 Nm	2,345 mNm	19.8 mm	29.8 grams	Same	A120064GM30
256:1	3.0	55 %	47 rpm	0.160 Amp	0.39 Nm	7,954 mNm	23.1 mm	31.9 grams	Same	A120256GM30
1,024:1	3.0	45 %	12 rpm	0.160 Amp	1.27 Nm	20,394 mNm	26.4 mm	34.0 grams	Same	A121024GM30
4,096:1	3.0	40 %	3 rpm	0.160 Amp	4.51 Nm	20,394 mNm	29.7 mm	36.1 grams	Same	A124096GM30

Radial Load Rating ≤ 4.9 N  
Radial Load Distance 8 mm  
Axial Load ≤ 4.9 N  
Press Fit Force - Max ≤ 14.7 N

Radial Play ≤ 0.05 mm  
Thrust Play ≤ 0.20 mm  
Backlash ≤ 3.0 °

Max Temperature Oper. 60°C  
Min Temperature Oper. -10°C  
Relative Humidity Oper. 20% to 85%  
Bearing Sleeve

**CAUTION:**

Stall Torque is a theoretical calculation- NOT a rating/  
maximum value.

\* Rotational Sense of Gearbox Output Shaft to Motor Shaft

**Options**

Magnetic Encoders. Leads. Connectors. Pinion/Gear Mounting. Lubricants.  
Motor Windings. Gear material. Corless Motors.

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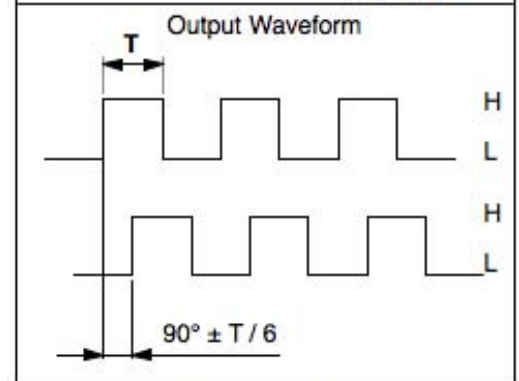
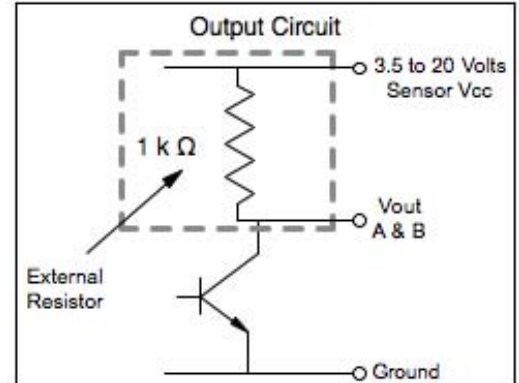
# Magnetic Encoders - Integrated

## 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 $\mu$ Amp
Output Leakage Current - Ref	< 0.1 $\mu$ Amp
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 $\mu$ Sec
Output Rise Time - Ref	0.3 $\mu$ Sec
Output Rise Time - Symbol	tr
Output Rise Time - Test Condition	Vce = 14 Volts; RI = 820 $\Omega$ ; CI = 20pF
Output Fall Time - Max	1.5 $\mu$ Sec
Output Fall Time - Ref	0.3 $\mu$ Sec
Output Fall Time - Symbol	tf
Output Fall Time - Test Conditions	Vce = 14 Volts; RI = 820 $\Omega$ ; CI = 20pF
Max Temperature - Operating	60°C
Min Temperature - Operating	-10°C
Relative Humidity - Operating	20% to 85% RH

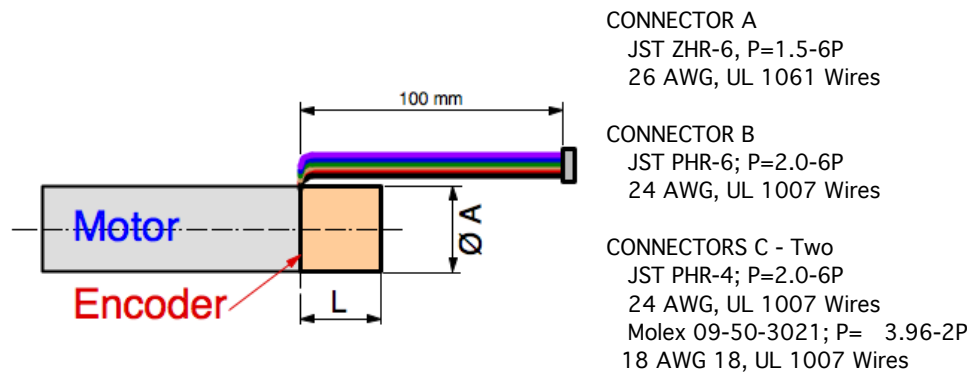


### Two Channel Encoder

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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