

Multi-Axis Positioning System

**moti:CONt**

**Moticon**  
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## Description

Three Phase Brushless Driven Stage with Quadrature Position Sensor with Limit and Home Switches  
Range of Motion: 11" (280 mm) by 11" (280 mm) Total Travel,  
Positioning Resolution: 1 micron, 13 microns, 26 microns  
Continuous Force: 9.3 lb, 41.4 N  
Intermittent Force: 29.4 lb, 130.8 N  
Configurable as XY, XYZ, XYZ-Theta

GENERAL SPECIFICATIONS		
Intermittent Force @ 10% Duty Cycle	29.4	lb
	130.8	N
Continuous Force @ 25 °C	9.3	lb
	41.4	N
Continuous Force @ Tmax	8.0	lb
	35.6	N
Continuous Power	38	W
Motor Constant	1.5	lb/ W <sup>0.5</sup>

ELECTRICAL SPECIFICATIONS		
Peak Current @ 10% Duty Cycle	11.6	A
Continuous Current @ Tmax	3.2	A
Force Constant	2.5	lb/A
	11.1	N/A
Back EMF	0.3	V/in/s
	11.1	V/m/s
Resistance @ 25 °C	2.8	Ohm
Inductance @ 1 KHz	1.0	mH

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## Pin Functions, X and Y Axes, DB-25 Male

Signal Connector, DB-25 Male			
Pin	Name	Description / Notes	I/O
1	MOTOR A	Motor Phase A	O
2	MOTOR C	Motor Phase C	O
3	MOT ENC A/	Inverted Motor Encoder A Channel Output	O
4	MOT ENC B/	Inverted Motor Encoder B Channel Output	O
5	THERM+	Thermistor	O
6	GND1	Ground for Encoder and Hall Sensors	GND
7	MOT ENC A	Motor Encoder A Channel Output	O
8	MOT ENC B	Motor Encoder B Channel Output	O
9	VCC1	+5 VDC Logic Supply for Encoder and Hall Effect Sensors	I
10	NEG LIMIT	Negative Limit Sensor, TTL / CMOS Compatible, Normally Low, Active High	O
11	VCC2	+5 VDC Logic Supply for Negative Limit Sensor Circuit Board	I
12	GND2	Ground for Negative Limit and Home Sensors Circuit Board	GND
13	POS LIMIT	Positive Limit Sensor, TTL / CMOS Compatible, Normally Low, Active High	O
14	MOTOR B	Motor Phase B	O
15		Not Connected	
16		Not Connected	
17	THERM-	Thermistor	O
18		Not Connected	
19	HALL-A	Commutation Sensor Output - A	O
20	HALL-C	Commutation Sensor Output - C	O
21	HALL-B	Commutation Sensor Output - B	O
22		Not Connected	
23	HOME	Home Sensor, TTL / CMOS Compatible, Normally Low, Active High	O
24	GND3	Ground for Positive Limit Sensor Circuit Board	GND
25	VCC3	+5 VDC Logic Supply for Positive Limit Sensor Circuit Board	I

## Pin Functions, Z Axis, Pin, DB-25 Male

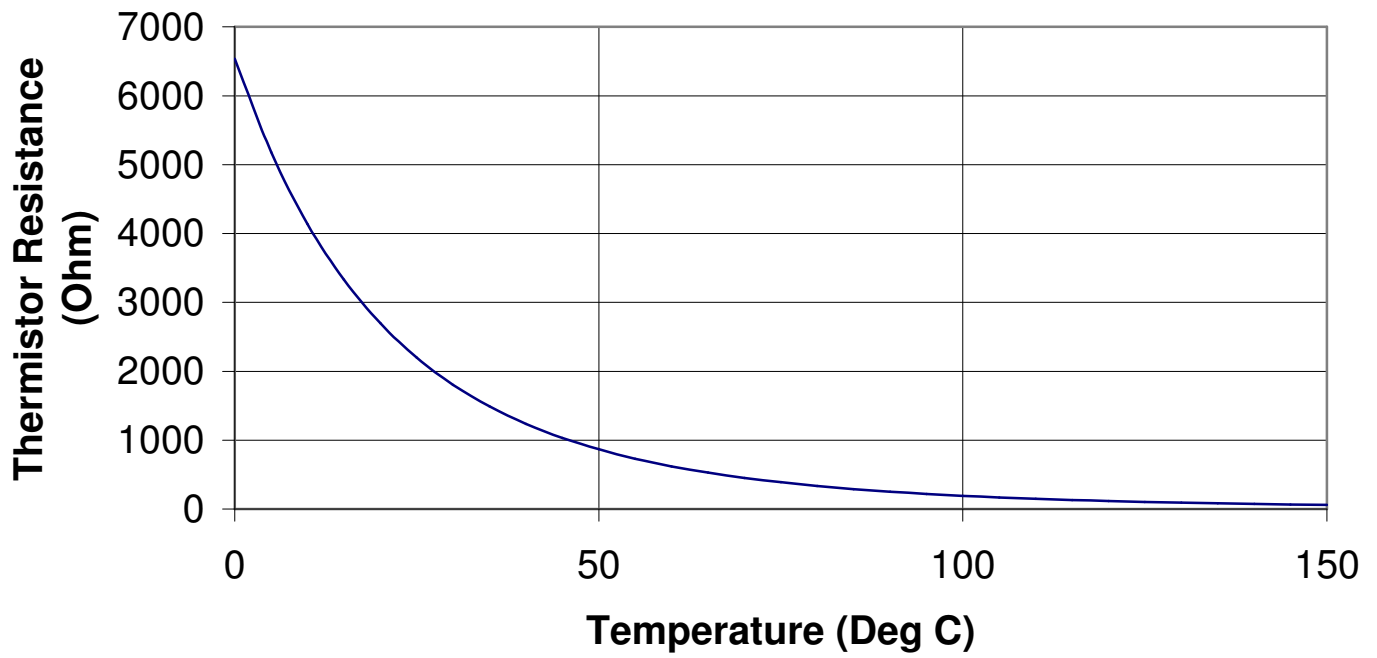
Signal Connector, DB-25 Male			
Pin	Name	Description / Notes	I/O
1	MOTOR +	Motor Positive	O
2	MOTOR -	Motor Negative	O
3		Not Connected	
4		Not Connected	
5		Not Connected	O
6	GND	Ground	GND
7	MOT ENC A	Motor Encoder A Channel Output	O
8	MOT ENC B	Motor Encoder B Channel Output	O
9	VCC	+5 VDC Logic Supply	I
10	NEG LIMIT	Negative Limit Sensor, TTL / CMOS Compatible, Normally Low, Active High	O
11		Not Connected	
12		Not Connected	
13	POS LIMIT	Positive Limit Sensor, TTL / CMOS Compatible, Normally Low, Active High	O
14		Not Connected	
15		Not Connected	
16		Not Connected	
17		Not Connected	
18		Not Connected	
19		Not Connected	
20		Not Connected	
21		Not Connected	
22		Not Connected	
23	HOME	Home Sensor, TTL / CMOS Compatible, Normally Low, Active High	O
24		Not Connected	
25		Not Connected	



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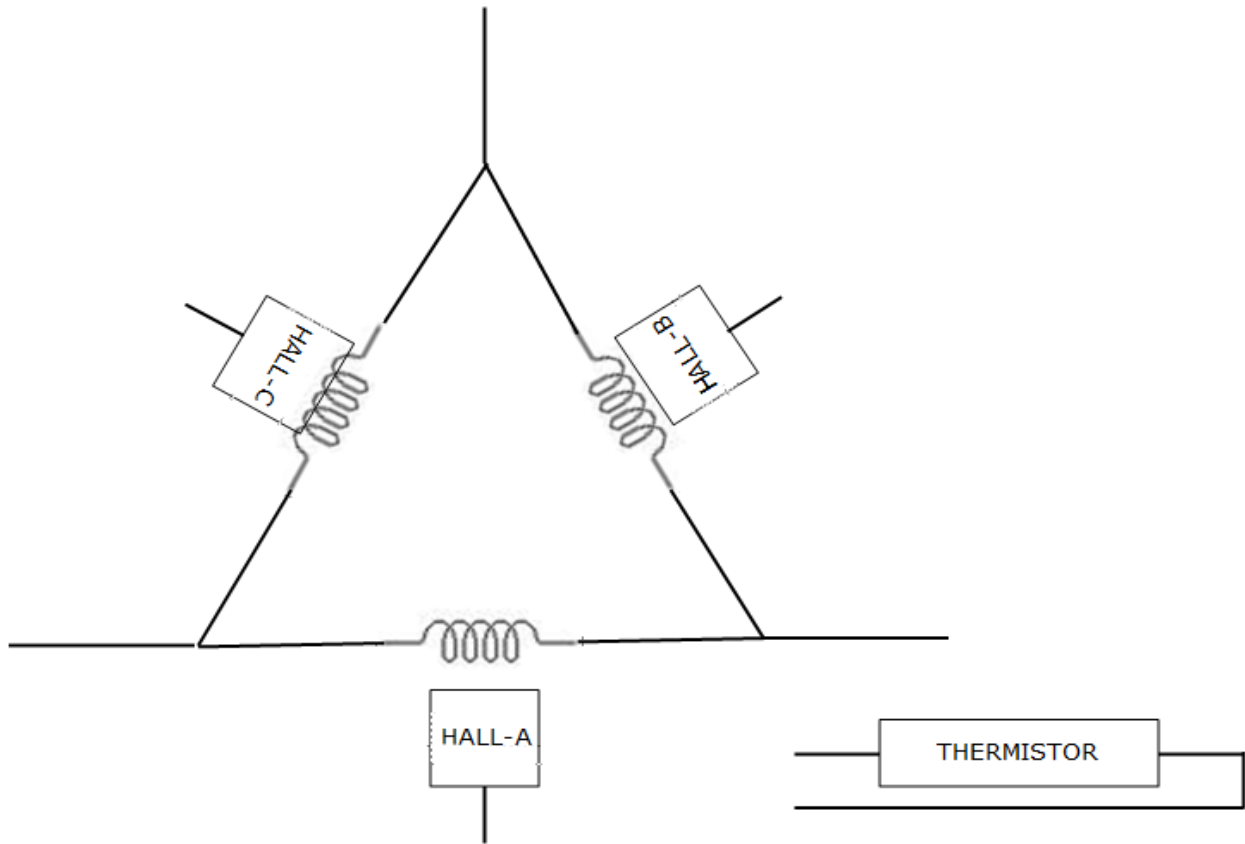
## Thermistor Value vs. Temperature



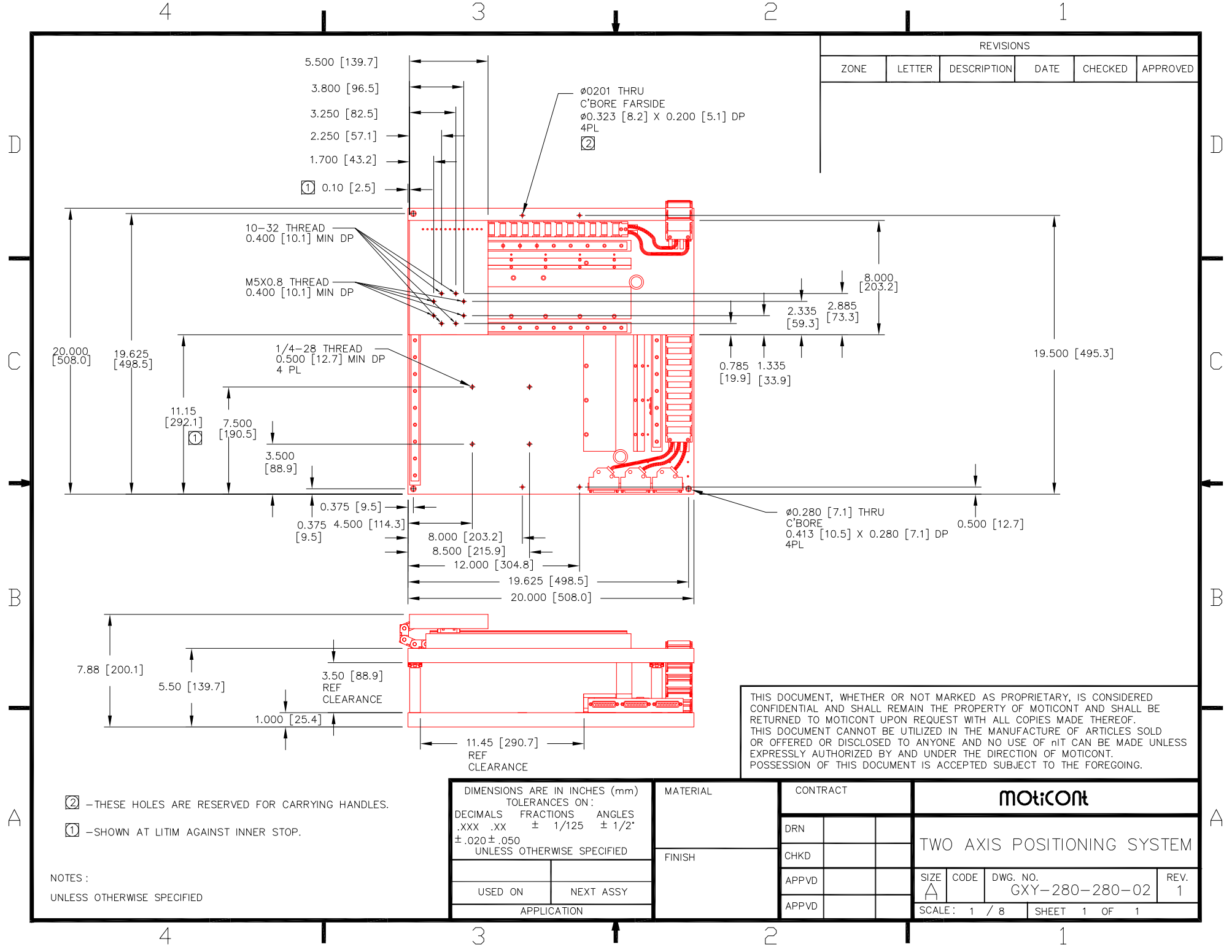
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**Three Phase Brushless Motor Wiring Diagram**



REVISIONS					
ZONE	LETTER	DESCRIPTION	DATE	CHECKED	APPROVED

- 5.500 [139.7]
- 3.800 [96.5]
- 3.250 [82.5]
- 2.250 [57.1]
- 1.700 [43.2]
- ① 0.10 [2.5]

Ø0.201 THRU  
C'BORE FAR SIDE  
Ø0.323 [8.2] X 0.200 [5.1] DP  
4PL  
②

10-32 THREAD  
0.400 [10.1] MIN DP

M5X0.8 THREAD  
0.400 [10.1] MIN DP

1/4-28 THREAD  
0.500 [12.7] MIN DP  
4 PL

20.000 [508.0]

19.625 [498.5]

11.15 [292.1]  
①

7.500 [190.5]

3.500 [88.9]

0.375 [9.5]  
0.375 4.500 [114.3]

8.000 [203.2]

8.500 [215.9]

12.000 [304.8]

19.625 [498.5]

20.000 [508.0]

0.785 [19.9]

1.335 [33.9]

2.335 [59.3]

2.885 [73.3]

8.000 [203.2]

19.500 [495.3]

Ø0.280 [7.1] THRU  
C'BORE  
0.413 [10.5] X 0.280 [7.1] DP  
4PL

0.500 [12.7]

7.88 [200.1]

5.50 [139.7]

1.000 [25.4]

3.50 [88.9]  
REF CLEARANCE

11.45 [290.7]  
REF CLEARANCE

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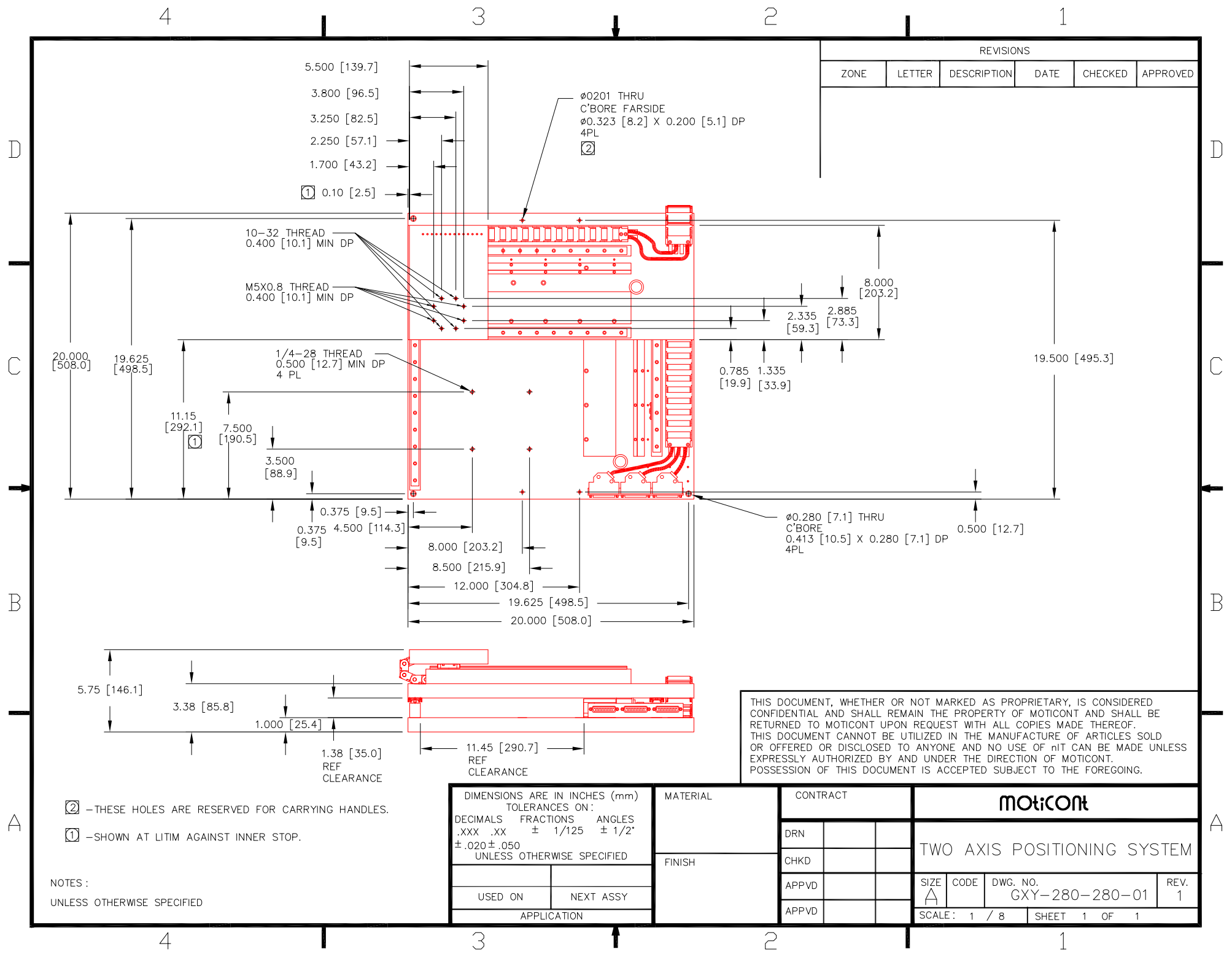
- ② - THESE HOLES ARE RESERVED FOR CARRYING HANDLES.
- ① - SHOWN AT LITIM AGAINST INNER STOP.

NOTES:  
UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES (mm)	
TOLERANCES ON:	
DECIMALS	FRACTIONS ANGLES
.XXX .XX	± 1/125 ± 1/2°
± .020 ± .050 UNLESS OTHERWISE SPECIFIED	
USED ON	NEXT ASSY
APPLICATION	

MATERIAL	CONTRACT
FINISH	DRN
	CHKD
	APPVD
	APPVD

<b>MOTICONT</b>			
TWO AXIS POSITIONING SYSTEM			
SIZE	CODE	DWG. NO.	REV.
A		GXY-280-280-02	1
SCALE: 1 / 8		SHEET 1 OF 1	



REVISIONS					
ZONE	LETTER	DESCRIPTION	DATE	CHECKED	APPROVED

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19.625 [498.5]

20.000 [508.0]

Ø0.280 [7.1] THRU  
C'BORE  
0.413 [10.5] X 0.280 [7.1] DP  
4PL

0.500 [12.7]

5.75 [146.1]

3.38 [85.8]

1.000 [25.4]

1.38 [35.0] REF CLEARANCE

11.45 [290.7] REF CLEARANCE

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	CHKD
	APPVD
	APPVD

<b>motiCont</b>			
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SIZE	CODE	DWG. NO.	REV.
A		GXY-280-280-01	1
SCALE: 1 / 8		SHEET 1 OF 1	