



XM ROTATION AXIS CALIBRATION CHECK

1. INTRODUCTION

This procedure is used to check the calibration the XM System Rotation Axis Motion function to assure accurate and reliable positioning of the motion control devices. This procedure applies to all XM Modules loaded with Rotation Axis firmware.

2. RESPONSIBILITIES

Performer	Responsibility
Technician	After assuring prerequisites are met, performs a calibration check of the Rotation Axis Module functions using steps 4.1 through 4.8 of this procedure. If calibration check fails, initiate troubleshooting using step 4.9 and the NOTE at the end of this procedure as guidance.

3. PREREQUISITS

Record the XM Module serial number in Appendix A. The following tools and equipment are needed to perform this calibration:

- 3.1 A non-permanent pen or pencil.

4. INSTRUCTIONS

- 4.1 Press the SETUP Mode Button on the controller.
- 4.2 Use the SELECT MODULE Programming Knob to highlight the Rotary Axis.
- 4.3 Press the CALIBRATE Programming Knob to enter the CALIBRATION Mode.
- 4.4 Set a desired velocity using the ADJUST VELOCITY Programming Knob.
- 4.5 Set the length of rotational travel to 360 degrees using the ADJUST LENGTH Programming Knob. (An alternate rotational angle may be set. However, 360 degrees provides the easiest measurement.)
- 4.6 Mark the position of the rotary axis using a non-permanent pen or pencil. This mark will be used to determine the actual degrees of travel.
- 4.7 Press the **Start** Sequence Button on the controller.
- 4.8 When rotation has stopped, verify the axis has rotated exactly 360 degrees (or the value set in step 4.5). Record the rotational travel in the *Initial Check* column of Appendix A, Table A-1, *XM Rotation Axis Travel Calibration Data*. If the rotation is accurate, no adjustment is needed. Record the rotational travel in the *Final Check* column of Appendix A, Table A-1, *XM Rotation Axis Travel Calibration Data*.
- 4.9 Exit the CALIBRATION Mode by pressing the CLOSE Soft Button. Verify that the Rotary Axis Module being checked is still highlighted. Press the CONFIGURE Programming Knob to enter the CONFIGURATION Mode.



Doc. No.: TP-XM-003

Revision: 4

Page: 2 of 3

Effective Date: 01/18/2010

XM ROTATION AXIS CALIBRATION CHECK

- Record the Counts/Unit (shown on the right side of the display) in Appendix A, Table A-2, *Final Counts/Unit* for the Rotation Axis being calibrated.
- 4.10 If the rotation was other than 360 degrees (or the value set in step 4.5) continue with step 4.11. If you have already completed step 4.11 and the rotation is still incorrect, refer to the NOTE below. Record the final rotation travel value in the *Final Check* column of Appendix A, Table A-1, *XM Rotation Axis Travel Calibration Data* and the final Count/Unit in Table A-2, *Final Counts/Unit*.
- 4.11 Press the CLOSE Soft Button. Verify that the Rotary Axis Module being checked is still highlighted. Press the CONFIGURE Programming Knob to enter the CONFIGURATION Mode. Press the CUSTOMIZE Soft Button. Press the LOAD Soft Button. Use the SELECT Programming Knob to highlight the configuration file for the rotary device being checked. Press the LOAD Soft Button. Once this is complete, press the CLOSE Soft Button twice to exit the Configuration Mode. Repeat Steps 4.1 through 4.9.

NOTE: When in Rotation Configuration Mode as described in step 4.9, you will notice a “Counts/Unit” parameter on the right hand side of the display when “Rotator” is selected on the left hand side of the display. The existing value of the “Counts/Unit” parameter is based on the encoder counts and the drive ratio of the rotator motor and gear box assembly. If the rotational axis does not rotate accurately to a set distance, then either the “Counts/Unit” parameter has changed from its original value or there is a mechanical discrepancy with the rotator assembly. In order to determine the source of the problem, continue with the following steps:

1. Verify that all mechanical connections are sound and there is no slippage of the motor shaft to the encoder or gear box.
2. If there are no mechanical discrepancies, contact AMET Inc., Technical Support for the correct “Counts/Unit” value.

5. RECORDS

The records for this calibration are in Appendix A, *XM Rotational Axis Calibration Data*.

6. DEFINITIONS

None

7. REFERENCES

- 7.1 XM System Manual, SM-001

8. APPENDIXES

- 8.1 Appendix A, *XM Rotational Axis Calibration Data*



XM ROTATION AXIS CALIBRATION CHECK

Doc. No.: TP-XM-003

Revision: 4

Page: 3 of 3

Effective Date: 01/18/2010

APPENDIX A

XM ROTATION AXIS CALIBRATION DATA

Technician:

Date:

XM Module Serial Number:

Table A-1, XM Rotational Axis Calibration Data

Step	Parameter	Initial Check	Final Check
Step 4.5	ROTATION TRAVEL SET	360°	
Step 4.8	MEASURED ROTATION		

Table A-2, Final COUNTS/UNIT

Parameter	Final Value
Step 4.9 – COUNTS/UNIT	