MELDAS FR-SF Series

FR-SF PLG Adjustment Procedure
Using O-Scope

USA-E99651 -005*

MITSUBISHI ELECTRIC AUTOMATION

USA

List of Past Revisions

Suffix	Date of Revision	Detail
*	2/3/97	First edition created

Mitsubishi Spindle Drives utilize a closed loop motion control system. The closed loop means that there is a feedback unit which checks the speed or positioning of the controlled system and sends data back to the drive. The system that we use is referred to as a PLG or pilot generator. This closed loop feedback system assures the spindle drive that the spindle motor has reached the commanded RPM within a time frame of 12 seconds, otherwise an Alarm 23 (Excessive Speed Error) will occur. To test this feedback unit, access to the spindle motor is necessary. Remove the gray cover from the terminal box on the back of the spindle motor and follow the procedure below.

1. Access the Spindle Controller
   a. Locate the 4 push buttons below the 6 seven segment LED's
   b. Press the left-hand button (MODE) several times until the display reads E1
   c. Press the 3rd button (DOWN) 1 time and the display now reads **00**0000
   d. Press the 4th button (SET) 1 time and the first two zeros will begin flashing
   e. Press the 2nd button (UP) 1 time and the last zero changes to a 1
   f. Press the 4th button again and the first two zeros quit flashing
   g. The display should now read 000001. This indicates that parameter 00 is set to a 1. At this point do not power off or hit spindle reset, doing this will set parameter 00 back to a 0 and remove the spindle control from its open loop state.
2. Now manually start the spindle in forward direction with a speed command of 50 RPM. The spindle should start turning. Remember that you are now in open loop. Therefore the spindle drive will not have good control over the motor speed because it has no feedback. The RPM's must be taken up slowly, usually in increments and decrements of 50 RPM's or the spindle will lose control and coast to zero. If at any time an alarm 23 occurs on the spindle drive, the open loop procedure was done wrong and parameter 00 needs to be set to a 1.
3. When testing the PLG, the spindle motor needs to be running at least 300 RPM
4. Using an oscilloscope set for DC coupling, check the waveforms at Phase A and Phase B to AGA (common) on the PLG circuit board located in the terminal box on the back of the motor. Adjust each phase for 3vp-p, 1.5 positive, 1.5 negative.   VR1=PA offset, VR2=PA gain, VR3=PB offset, VR4=PB gain
5. When calibration is complete, either power off, or press the reset button located at the top of the SF-CA card on the spindle controller.