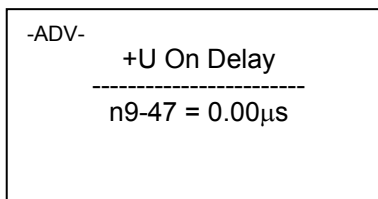


**Introduction**

For large capacity, G7 480V drives, “On-Delay Compensation” parameter values set the degree of bias for the IGBT on the positive and negative side of each voltage phase. Each G7 contains a unique set of values for these six parameters (n9-47 thru n9-52) as IGBT voltage drop among the series/parallel IGBT configuration may vary slightly. When replacing a control board in a large horsepower G7 (see below), the On-Delay Compensation values must be set using Shipping Adjustment Auto-tuning function. This is because the replacement control board will have null values for all six parameters (0.00µs).

Failure to follow this procedure will not result in immediate G7 failure, but it may adversely affect G7 performance.



**Figure 1: Example of Null Parameter Value**

**Affected Part/Model Numbers**

CIMR-G7*40550B	CIMR-G7*40550C
CIMR-G7*40750B	CIMR-G7*40750C
CIMR-G7*40900B	CIMR-G7*40900C
CIMR-G7*41100B	CIMR-G7*41100C
CIMR-G7*41320B	CIMR-G7*41320C
CIMR-G7*41850B	CIMR-G7*41850C
CIMR-G7*42200B	CIMR-G7*42200C
CIMR-G7*43000B	CIMR-G7*43000C

*\*denotes spec. A, C, U, P, or S*

## Recommended Procedure for Replacing a Control Board in a CIMR-G7\* 4055 to 4300 of Revision B or Later

*Note: Follow all precautions in the drive's technical manual, Document TM.G7.01, for safe wiring and operation of the G7 Drive during auto-tuning.*

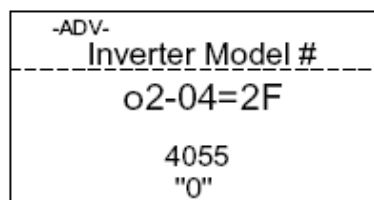
*Note: An appropriately sized motor with a FLA that closely matches the G7s rated output current needs to be connected to the G7 while performing the Shipping Adjustment auto-tuning function. Tuning with a motor that is considerably smaller than the G7 may adversely affect the performance of the G7.*

*Note: The motor will not rotate while performing Shipping Adjustment Auto-tuning. Therefore, the motor does not need to be disconnected from the load. However, take appropriate precautions to secure the load and insulate the motor terminals as voltage will be applied to the motor.*

1. Before replacing the control board, use the COPY function of the digital operator to copy the G7 parameter settings. When using the COPY function, first confirm the replacement control board software matches the original control board software. The original control board software version can be viewed using the digital operator by viewing monitor U1-14. Confirm the last 4 digits of the value monitored in U1-14 match the last 4 digits of the replacement control board part number (-SXXXX). The COPY function cannot be used if the software version is different on the replacement control board. Manual parameter recording using the Modified Constants Menu with the original control board will be necessary if the software versions do not match. If in doubt, manually record the modified parameters as they appear in the original Control Board Modified Constants Menu. In addition, record the setting of A1-02 (control method selection) for Step 4.

Item	Original Control Board Value	Replacement Control Board
Control Board Part Number	ETCXXXXXX-SYYYY	ETCXXXXXX-SYYYY
Software number (U1-14)		(confirm same as original Control PCB)
Inverter capacity (o2-04)		(set same as original Control PCB to match the drive's power rating. Refer to Step 3 below)
Control method (A1-02)		(set same as original Control PCB. Refer to Step 4 below)

2. Replace the control board.
3. Change the kVA setting (o2-04) to match the G7s power section. See Figure 2.



**Figure 2: Drive kVA Setting**

4. Set the control method (A1-02). Refer to the value noted in Step 1. See Figure 3.

-ADV-
Initialization
A1-02=2 *2*
Open Loop Vector

**Figure 3: Set Control Method**

5. Initialize the G7. See Figure 4.

-ADV-
Init Parameters
A1-03=2220 *0*
2 WIRE Initial
"0"

**Figure 4: Initialize Drive**

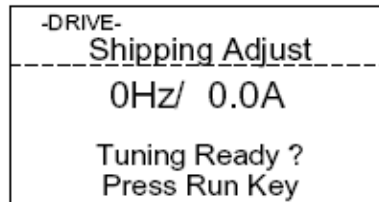
6. Upon entering the G7s Operation menu, the motor rated power (T1-02) is automatically displayed. Enter the motor rated power (in kW) and press DATA/ENTER. See Figure 5. Then, proceed to Step 10. If motor rated power is not automatically displayed upon entering the G7s Operation Menu this means the kVA setting may already have been programmed and the Shipping Adjustment Auto-tuning will have to be accessed by performing Steps 7 thru 9. Proceed to Step 7.

-DRIVE-
Mtr Rated Power
T1-02=55.00kW
(2.00~650.00)
"55.00kW"

**Figure 5: Auto-tuning Set-up**

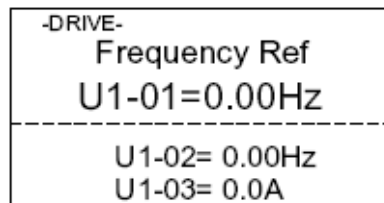
7. Set the factory access level password (A1-04 = 0616).
8. Set the access level to factory (A1-01 = 616).
9. Enable "Shipping Adjustment" auto-tuning by setting parameter o2-16 = 1.

10. The “Shipping Adjust” screen is displayed. See Figure 6. Confirm the output contactor or disconnect between the motor and drive (if applicable) is closed to ensure the motor is connected to the G7. Verify it is safe to begin auto-tuning and press RUN.



**Figure 6: Auto-tuning Start**

11. Drive auto-tuning will run for approximately two minutes. **Note: Do not touch the motor terminals. Although the motor may not rotate, voltage is being applied to the motor.** When complete, the G7 display shows the standard Operation menu. See Figure 7.



**Figure 7: Auto-tuning Complete**

12. After auto-tuning, verify the on-delay compensation values have been set.  
13. In the G7s Programming menu, set the factory access password (A1-04 = 0616).  
14. Set the factory access level (A1-01 = 616)  
15. Check and record (but do not edit) the values of parameters n9-47 thru n9-52. The values should vary from -10.00µs to 10.00µs and must not all be 0.00µs. Some settings of zero are acceptable. If all settings indicate 0.00µsec, the procedure has not been performed properly. Repeating this procedure will be necessary. Proceed back to Step 3 to repeat the Shipping Adjustment Auto-tuning process.

No.	Parameter Name <i>LCD Display</i>	Description	Range	Resulting Setting
n9-47	On-Delay Comp U+ <i>+U On Delay</i>	Sets the degree of bias on the positive side of the U-phase for On-Delay Compensation (n9-12, -31, -32).	-10.00~ 10.000	____ µS
n9-48	On-Delay Comp U- <i>-U On Delay</i>	Sets the degree of bias on the negative side of the U-phase for On-Delay Compensation (n9-12, -31, -32).	-10.00~ 10.000	____ µS
n9-49	On-Delay Comp V+ <i>+V On Delay</i>	Sets the degree of bias on the positive side of the V-phase for On-Delay Compensation (n9-12, -31, -32).	-10.00~ 10.000	____ µS
n9-50	On-Delay Comp V- <i>-V On Delay</i>	Sets the degree of bias on the negative side of the V-phase for On-Delay Compensation (n9-12, -31, -32).	-10.00~ 10.000	____ µS
n9-51	On-Delay Comp W+ <i>+W On Delay</i>	Sets the degree of bias on the positive side of the W-phase for On-Delay Compensation (n9-12, -31, -32).	-10.00~ 10.000	____ µS
n9-52	On-Delay Comp W- <i>-W On Delay</i>	Sets the degree of bias on the negative side of the W-phase for On-Delay Compensation (n9-12, -31, -32).	-10.00~ 10.000	____ µS

16. Upon successful auto-tuning, disable access to the factory level (A1-01=2) and clear the factory access password (A1-04 = 0000).
17. Use the COPY function of the operator to paste the parameter settings from the old control board to the new one. If the COPY function is unavailable, enter the previously recorded Modified Constants settings manually (as recorded Step 1 above).
18. This completes the procedure.

*Note: Contact your Yaskawa representative if any one of the following is true:*

- a. A motor cannot be connected.*
- b. The motor being used is two or more HP ratings smaller than the G7 (e.g. G7 = 150HP, Motor = 75HP).  
The motor-drive size mismatch could result in improper tuning results.*
- c. The new control board software version does not match the old control board's version.*