

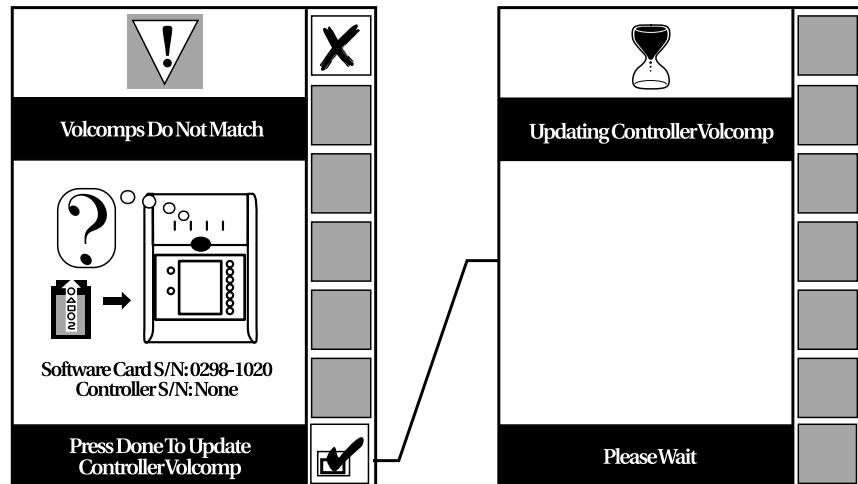
Installing a Replacement Controller

General Procedure:

1. Load the Volcomp file.
2. AutoTune
3. Select Machine Type

1. Loading the Volcomp File

- a. Install the controller as shown in the installation manual (cables, mountings, etc.)
- b. Remove old software (top) and storage (bottom) smart cards from the old controller.
- c. Insert the old cards into the new controller.
- d. Turn on the new controller. Wait for language screen to appear. Select language. Press Done.
- e. The volcomp load screen, shown below will appear. Press the Done softkey and your volcomp file will automatically be loaded from the software card.



IMPORTANT: Never swap software cards between multiple systems. Because the volcomp file is stored on the software card, as well as the controller, moving the software card to a new controller can cause problems which can only be resolved by a service call.

Note: The volcomp number, displayed at the upper left section of the homing screen, will now match the machine serial number found on the back of the machine.

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2. AutoTuning

Please read the instructions in their entirety before attempting the AutoTune process. You will be entering the service utilities section of the software and can cause irreversible damage if not used correctly. Stay out of all areas unless specifically instructed by this document or by a service person. If you have questions, please contact your local service person before proceeding.

a. What is AutoTune?

AutoTune is the electronic process for adjusting the RefleX encoder signals. Before AutoTune, the tuning process had to be done by a qualified Brown & Sharpe service technician, resulting in downtime. Now, this process can be done faster and more accurately by you.

b. When should I do an AutoTune?

- After installing a replacement controller
- If "Rate Errors" appear.
- If instructed by a service person.

c. What should I do before an AutoTune?

- Verify that all encoder cables are plugged in securely in their proper port.
- Verify that scales are clean
- Check encoder's raw signal levels, described in section g.

d. What causes "Rate" errors?

A rate error is the electronics way of notifying you that the encoder signal quality is unacceptable. Because of that, exact machine position may be in error. There are many variables that can cause rate errors. There include:

- The controller is a new controller not yet Autotuned.
- An encoder cable is not plugged in securely
- The previous AutoTune was performed incorrectly.
- An encoder's performance has degraded or an encoder has slipped out of alignment.
- There is dust, dirt, oil, or a scratch on a scale.
- The encoder cable has a broken wire.
- A hardware error has occurred inside the controller.

e. Where do I find the Service Utilities?

- At the home screen, record the number at the top left of the screen.
- Select the "Service Utilities" (ambulance) softkey.
- At the password prompt, enter the last 5 digits of the recorded serial number, reversed.
- Press the "Done" softkey. You are now in the Service Utilities.

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f. The AutoTune Process:

- Check the raw encoder signal levels. (Section g)
- AutoTune. (Section h)
- Recheck encoder signal levels. (Section i)
- Verify AutoTune in the Measurement Mode. (Section j)

g. Checking Raw Encoder Signal Levels:

- Enter the service Utilities. (Section e)
- Press the "Align Encoders" softkey.
- Confirm "Before AutoTune" is displayed at the top of the screen.
- Begin moving the axes back and fourth. Verify that all signal levels are above the dotted line while axes are in motion. If not, a service visit may be required.
- Press the "Done" softkey. This will return you to the Service Utilities menu.

h. The AutoTune Process:

- In the service menu, press the "AutoTune" softkey.
- As prompted, bring the Z-rail to the home (upper, left, front) position. Press the Done softkey.
- Immediately after the Done button is pressed, begin moving the machine towards the lower, right, back position. Move so that it takes you approximately 25 seconds to reach this position (lower, right, back). DO NOT stop the machine during the AutoTune! All axes must be in continuous motion. AutoTune should finish before it reaches its destination, near the center of the volume.
- When the "AutoTune Passed" screen appears, press the "Done" softkey to save the results.
- If the "AutoTune Failed" screen appears, repeat the AutoTune process (Press cancel and repeat above steps). If still unsuccessful, contact your local service person.

i. Checking "After AutoTune" Signal Levels:

- In the Service Utilities menu, return to the "Align Encoders" section by pressing the "Align Encoders" softkey.
- Press the "Change Option" (circular arrow) softkey to look at the AutoTuned signal levels.
- Confirm "After AutoTune" is displayed at the top of the screen.
- Begin moving the axes back and fourth again. While the axes are in motion, verify that all signal levels remain between the dotted lines. If not, then repeat the AutoTune process.
- Press the "Done" softkey. This will return you to the Service Utilities menu.

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j. Verifying Lissajous patterns

- In the Service Utilities menu, press the "Lissajous" softkey.
- Lock the Y & Z axes. Unlock the X axis.
- Begin moving the X axis slowly. Verify that a nice, round circle appears. The circle should move through, or close to the 4 tic marks. If it does not, you may need to try autotuning again.
- Repeat the process for the Y & Z axes.

Note: The lissajous utility was developed so that signal levels can be viewed without the use of an oscilloscope. But, because the controller is not as fast as an oscilloscope, moving an axis too fast will cause the pattern to become elliptical, slanted at a 45% angle. If this happens, simply slow down.

k. Verify Tune in Measurement Mode.

- Press the "System Startup" button (below the help button). This will return you to the "homing" screen. After homing the machine, press the "Done" softkey.
- If the software asks you to qualify a probe, follow the instructions on the screen to qualify a probe as usual.
- Enter the measurement mode.
- Move the Z-rail in all 3 axes throughout the volume of the machine for a time period of 1 minute. If no rate errors appear, then AutoTune was successful.

3. Setting the Machine Type:

The final step of installing a replacement controller is to inform the Controller about the machine. The system scales its part drawings depending on whether a Gage2000, MicroXcel, or other machine is used.

- a. Enter Screen 1 of the System Options
- b. Scroll down to "Machine Type".
- c. Select your machine.
- d. Press the "Done" softkey. Your specific machine will now appear in the home screen the next time your system is homed.

Note: In the event that a controller has to be returned, be sure to include the power supply also. Only in that way can it be fully diagnosed and repaired.