

WECO Tracer Adjustments – Engineers Notes

Self-Calibration

The WECO tracer is a highly sophisticated frame measuring device, and to maintain optimum control of size, axis and scaling the unit features an automatic self calibration system. The software within the tracer has default values for size & axis, together with a tolerance value that is used to validate the calibration procedure and to alert the user of a fault if calibration falls outside of the preset value.

To enable self-calibration the unit measures itself against a factory preset calibration gauge, which is supplied with every unit. The gauge is unique to each tracer and carries a serial number that should match the serial number of the applicable tracer.

The tracer has been set up to require self-calibration after every 100 traces. When the 100 trace limit has expired the tracer will not allow further traces to be made, and the error message *Err x16* will be observed on the LCD display.

To conduct self-calibration follow this procedure:

1. Press [C] to acknowledge the error message (important!)
2. Fit the calibration gauge to the frame table ensuring that the serial number faces you and that the bottom edge of the gauge is flat against the bottom of the frame table.
3. Press and hold the [CTL] key and then press [CAL]. Release both keys and the automatic self-calibration procedure will commence. The procedure takes approximately 50% longer than a standard 2 eye trace, and must not be interrupted.
4. When the automatic procedure has been successfully completed the unit will beep once and return to its "READY" state. Tracing may now resume.

In the event of the unit failing to meet the preset calibration standards the unit will display "Wrong Gauge" and beep twice. In this case firstly ensure that the gauge used for calibration is the correct one (match serial numbers). Fit correct gauge or reposition existing gauge correctly, and repeat the self-calibration procedure.

If, after repeating the procedure, the calibration procedure fails then it's likely that the measurement system is worn and requires service, e.g. replacement of stylus. Refer for service.

The above procedure is applicable for internal traces and the same procedure exists for external (rimless & supra) traces.

To enable the tracer to continue working even after a calibration failure it is possible to reset the calibration values or increase the tolerance limit. To perform this adjustment it is necessary to make adjustments to values held in the unit's memory (cell locations), which is a procedure normally conducted by an engineer. These adjustments are a temporary measure only and the unit should not be used for remote edging purposes whilst "detuned" in this way.

Refer to the quick reference guide for further information or for prompts in completing this procedure.

Resetting the tolerance value for calibration

It is possible to assess the quality of the self-calibration process by monitoring the test values stored in 3 cell locations. This assessment is an important tool to monitor the tracer calibration process.

Test Value	Assessment	Action Required
Less than 25	good	no action
25 to 50	satisfactory	Repeat the calibration and assess again. If still within this range then check stylus tip for wear and alignment
Greater than 50	unacceptable	Major measurement error. The tracer will display an error W115 or E515 and will prevent further tracing operations.

The tolerance for the test value is contained in cell 44. It is possible to increase or decrease the tolerance value by overwriting the existing value with a new value. This facility can be employed to temporarily override an otherwise terminal calibration error to allow the unit to operate on a "limp home" basis until an engineer can service the unit.

Making Adjustments in Cell Locations

Access to cell locations is made with the following procedure:

1. Press [WECO] to reset the unit.
2. Press [CAL] then press and hold [CTL] and [0] simultaneously. The LCD display will show "EP01" together with a number (typically "1"). In this case this means that cell location 01 has a value of 1.
3. Other cell locations are incremented upwards every time [ENTER] is pressed, and downwards when [C] is pressed.

If it is necessary to enter a new value to a cell location then the following procedure should be adopted:

1. Access the cell locations as described above.
2. Display the cell location that you wish to enter a new value into using the [ENTER] or [C] keys.
3. Before inputting a new value, make a written note of the existing value to enable you to return to the original setting in case a mistake is made.
4. Using the numerical keys input the new value. The display will indicate the new value.
5. Press [ENTER] then [START] then press [ENTER] two times to permanently store the new value to memory. The tracer will automatically reset and will be available to trace when "READY" is displayed.

NOTE: On a remote tracer the identification of keys not used in normal operation is in faint text and the [ENTER] key is not identified at all. The [ENTER] key is located directly beneath the [START] key.

Error 05

This error is displayed if the frame table does not rotate fully 360 degrees. The cause of error is usually a physical obstruction in the path of the frame table during rotation. Remove the obstruction and trace again.

Error 06

This error is displayed when the spectacle frame moves during the trace operation. It alerts the operator that the trace is corrupt and disallows the operation. To remedy it is necessary to check that the frame is securely mounted on the frame table, without distorting the shape of the eye-wires. Re-position the frame more carefully and trace again.

In the event of continual error 6 messages it is likely that either there is a distortion of the frame or the lens securing screw on the frame is loose.

Error 36

This error occurs when the tracer stylus is not in the “home” position. If displayed move the stylus to its fully lowered position and rest the stylus tip against the ring of the table. Press the [WECO] button to reset.

Error 38

This error alerts the user that the frame being traced has a smallest radius of between 10mm and 12.5mm. The error is an alert only, and the trace data is sent normally. Be sure to use small clamping components for blocking and edging.

Error 39

This error indicates that the frame being traced has a smallest radius less than 10mm. It is not possible to trace frames with these dimensions, and the trace data will not be sent.

Error 40

This error is displayed only on Trace 2 tracers that are connected to a current loop system.

This error indicates that no memory device is available to accept the trace data. Typical reasons include the following:

1. Current loop cable not connected to memory device
2. Current loop cable damaged
3. System Manager (SM200) card not available because the edger is not switched on
4. System memory off line

Error 49 Emergency stop has activated

This error occurs if the stylus falls out of the frame or the stylus moves very quickly during the trace of an “exotic” frame. When this occurs the frame table immediately stops rotating and the error is displayed. The emergency stop is necessary as a safety measure to prevent the tracer from causing damage to itself or the frame.

The [C] button does not reset an error 49 condition. It is necessary to return the stylus to its bottom home position and to press the [WECO] button to reset.

In the case of an error 49 occurring due to an “exotic” frame being traced, then the emergency stop feature may be temporarily disabled by pressing the [START] button twice in quick succession when starting the trace. Be sure to carefully monitor the trace operation to ensure that tracing is conducted normally.

Error 321 Timing error during upward stylus movement

This error occurs when the stylus upwards movement becomes impeded and/or slows down. Typical reasons for this include the following:

1. The mirror that is connected to the bottom of the stylus becomes dirty over a period of time. Requires careful cleaning with cotton bud moistened with meths.
2. The value contained in cell 12 is too high. Note the existing value and write it down. Then try reducing the value by 2 digits and try the unit again.
3. The linear bearings on the stylus may be worn or dirty. With the power off gently move the stylus up and down to check for sticking. Clean thoroughly or replace linear bearings in severe cases.
4. Faulty Z-axis circuit board. Replace the board.

Error 521/621 (TMO Table Left/Right)

This error indicates a timing error when the frame table moves left/right. Consider the following possible reasons:

1. Check the electrical contacts on the underside of the frame table and also the mating contacts on the top of the tracer body. Clean all contacts and reapply silicone grease (supplied in accessories box). Check that the two sprung contacts on the top of the tracer body move in and out freely.

2. Check the gear meshing on the underside of the frame table, and adjust/remesh if necessary.
3. Check to ensure that both wires remain connected to the left/right motor located underneath the frame table. Resolder if disconnected.
4. Using a multimeter check the resistance of the left/right motor, measurement taken across the two electrical terminals on the underside of the frame table. The correct resistance is approximately 95 ohms. In the event of the motor being open/short circuit then the motor must be replaced.

In the event of the tracer table motor becoming inoperable then a temporary solution is to disable the motor by changing the value in cell 03 from "7" to "6". The frame table can then be moved left/right by hand.

Error - Table rotates after pressing [START] but stylus does not rise.

Error caused by incorrect value in cell 10. Note the existing value in cell 10 and write it down. Increase the value by 10 digits and try the unit again.

Note: Increasing the value of cell 10 may restrict the unit from tracing very small frames. If in doubt consult a WECO technician.

Consumable parts requiring occasional replacement

Part Number	Description	Located where?
1114-1101-00	Contact grease	In accessories box
2001-3088-00	Adhesive block	Used for tracing of lenses & stored in accessories box
2005-3058-00	Internal calibration gauge	Bottom of accessories box (under rubber insert)
2005-3041-00	External calibration gauge	Accessories box
1114-3117-00	Frame protection rubber sleeve	Jaws of frame gripper on frame table (4 sleeves)
1114-3120-00	Rear frame support	Rubber "saw tooth" on back of frame table
1114-1063-00	Stylus tip	End of stylus arm
	Fuse T 0.315 Ampere	Rear of tracer
3M-Blockpads	3M™ LEAP™ 2 pads	Double sided glazing pads

It should be noted that consumable parts are not covered by warranty conditions.

It is recommended that the tracer be serviced once per year by Pro-Laser. This service is preventative maintenance and is designed to maintain the unit in optimum condition and to protect the value of the investment. Details of fixed-price maintenance schemes are supplied with every new tracer.

Defects caused by fair wear and tear are not covered by warranty.