

The **TS100** control module requires calibration before it can estimate platform load; calibration records the lift cylinder pressure at various platform heights, both fully loaded and empty.

After the calibration procedure is enabled using an **EZcal** hand-held device, the lift machine platform is fully raised and lowered three times:

1. "DYNAMIC" calibration — Fully loaded platform raised & lowered in one continuous movement
2. "LOADED" calibration — Fully loaded platform raised & lowered with stops to take measurements
3. "EMPTY" calibration — Unloaded platform raised & lowered with stops to take measurements

IMPORTANT: Any changes to the machine mechanics, hydraulics, etc may require calibration to be repeated!

The following procedures must be followed COMPLETELY to calibrate the **TS100**; throughout the procedure various checks are made — if any problem is detected, the procedure stops and displays a FLASHING failure message. Explanations of each message and suggested corrections can be found in the document at the end of this Appendix (page 37).

NOTE: If the calibration procedure is interrupted, completed phases need not be repeated. A "REDO" prompt will appear – answer "NO" if there is no reason to repeat the phase, or "YES" if the phase must be repeated (for example because a significant mechanical or hydraulic change has been made).

1. Ensure machine parked on level ground, and **TS100** leveled.
2. Ensure machine control is in GROUND MODE.
3. Enter the "ACCESS LEVEL" 2 code (2222) using EZcal to enable adjustments and calibrations
4. Select the "LOAD SETUPS" menu (available from the "SETUPS" menu) and select the "CALIBRATE LOAD" option.
5. The display will show "REDO DYNAMIC? YES" – for the first time calibration only "YES" can be selected.
 - Press the **ENTER** button to confirm that dynamic calibration is needed.
6. The display will show "PLATFORM DOWN?", asking for confirmation that the platform is fully lowered.
 - Check that the platform is fully lowered then press the **ENTER** button to confirm.
7. The display will show "PLATFORM LOADED?", asking for confirmation that the platform is loaded.
 - Load the platform with the calibration load then press the **ENTER** button to confirm.
8. The display will show "PLEASE LIFT ...", waiting for the UP switch to be activated to begin raising the platform.
 - Close the UP switch and KEEP IT ACTIVATED until the platform has reached full height.
 - **IMPORTANT:** If the UP switch is released early, the calibration will have to be aborted and repeated from the beginning!
9. When the system detects the UP switch activated, the display will show "LIFTING" with an increasing count.
 - The system will monitor changing height as the platform is lifted, until the UP switch is released.
 - When the UP switch is released, the **TS100** records the maximum height of the platform.
10. The display now shows "PLEASE LOWER ..."
 - Activate the DOWN switch and KEEP IT ACTIVATED until the platform is fully lowered
 - **IMPORTANT:** If the DOWN switch is released early, the calibration will have to be aborted and repeated from the beginning!

11. When the system detects the DOWN switch activated, the display will show "LOWERING."
 - The system will wait for the DOWN switch to be released once the platform is fully lowered.
- 12. The load calibration "DYNAMIC" phase is now complete.**
13. The display will show "REDO LOADED? YES" – for the first time calibration only "YES" can be selected.
 - Press the **ENTER** button to confirm that loaded calibration is needed
14. The display will show "PLATFORM LOADED?", asking for confirmation that the platform is loaded.
 - Press the **ENTER** button to confirm.
15. The display will show "PLEASE LIFT ...", waiting for the UP switch to be activated to begin raising the platform.
 - Activate the UP switch and keep it activated until the platform has reached full height.
16. When the system detects the UP switch activated, the display will show "LIFT LOADED" with the current height (from 0% to 100%).
17. After a delay, the system will stop the platform lift and take height & pressure measurements; the display will show "MEASURING #xx."
 - When the measurements have been taken, the platform will resume lifting.
18. The lifting ... stopping ... measuring ... lifting process will continue until the platform reaches full height.
19. When the platform reaches full height (and height 100% is displayed), release the UP switch.
20. The display shows "TOTAL DATA: xx" to indicate the number of measurements taken, then shows "PLEASE LOWER ..."
 - Activate the DOWN switch and keep it activated until the platform is fully lowered.
21. When the system detects the DOWN switch activated, the display will show "LOWER LOADED" with the current height (from 100% to 0%).
22. Again after a delay, the system will stop the platform lower and take height & pressure measurements; the display will show "MEASURING #xx."
 - When the measurements have been taken, the platform will resume lowering.
23. The lowering ... stopping ... measuring ... lowering process will continue until the platform is fully lowered.
24. When the platform is fully lowered (and height 0% is displayed), release the DOWN switch; the display shows "TOTAL DATA: xx" to indicate the number of measurements taken.
- 25. The load calibration "LOADED" phase is now complete.**
26. The display will show "REDO EMPTY? YES" – for the first time calibration only "YES" can be selected.
 - Press the **ENTER** button to confirm that empty calibration is needed.
27. The display will show "PLATFORM EMPTY?", asking for confirmation that the platform is empty.
 - Remove all load from the platform then press the **ENTER** button to confirm.
28. The display will show "PLEASE LIFT ...", waiting for the UP switch to be activated to begin raising the platform.
 - Activate the UP switch and keep it activated until the platform has reached full height.
 - When the system detects the UP switch activated, the display will show "LIFT EMPTY" with the current height (from 0% to 100%).
 - Similar to the "LIFT LOADED" phase the lifting ... stopping ... measuring ... lifting process will continue until the platform reaches full height, then the UP switch can be released.
 - The display shows "TOTAL DATA: xx" to indicate the number of measurements taken.
29. The display will show "PLEASE LOWER ..."
 - Close the DOWN switch and keep it activated until the platform is fully lowered.
 - Similar to the "LOWER LOADED" phase the lowering ... stopping ... measuring ... lowering process will continue until the platform is fully lowered, then the DOWN switch can be released.
 - The display shows "TOTAL DATA: xx" to indicate the number of measurements taken.

30. The load calibration "EMPTY" phase is now complete.

31. The collected data is checked to ensure that there were no problems with the recorded pressure; checks include making sure that the loaded pressures are higher than the empty pressures, with sufficient difference to enable load estimates to be calculated.
32. The display will show "CALDATE: mm/dd/yy" with the "mm" value flashing.
 - It is recommended that the current date be entered here to provide easy tracking of the date of last calibration (the date can be seen in the "LOG" menu available in the "DIAGNOSTICS" menu).
 - Use **↑** and **↓** to set the month, then press **→** to move to the date; set the date and then the year in the same way.
 - Press ENTER to complete date entry (the system will store it).
33. The display will show "FINISHED!"
34. *IMPORTANT: Press the ESC button to exit the "CALIBRATE LOAD" option (it's not possible to use the machine if you don't do this).*

35. The TS100 is now fully calibrated.