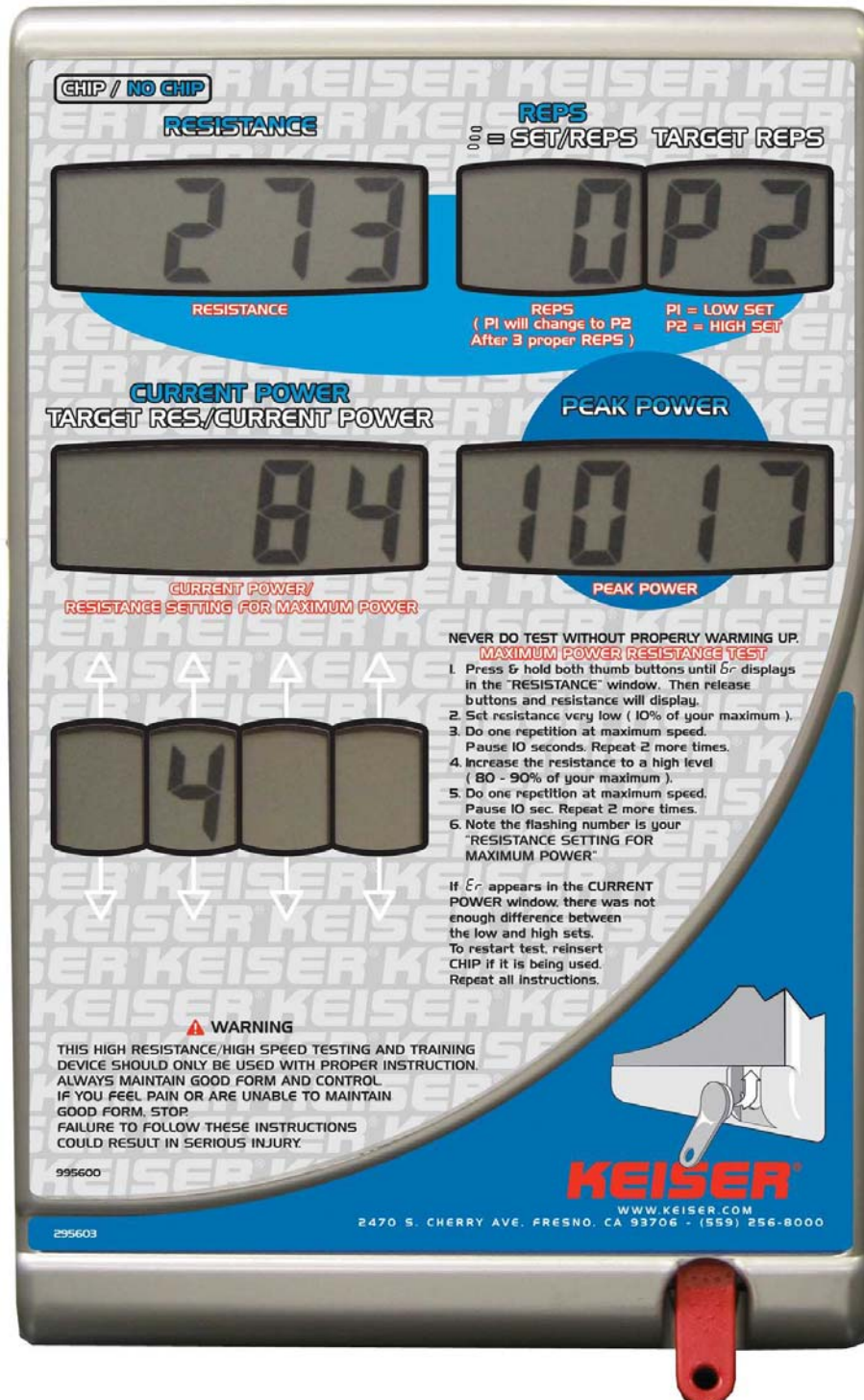


KEISER®

Chip System and Display Module Operation Manual



Introduction

The Keiser Chip System is an electronic replacement for a hand written exercise card. Workout data is stored in a small electronic Chip carried by the user. The Chip stores settings for up to 24 separate machine models and up to 240 separate workout sets. The Chip contains an electronic memory chip and a battery. Battery life is designed to be at least ten years under normal operating conditions. Up to four machine position settings may be stored for each machine model number (i.e., Seat Position, Arm Position, etc.), depending on the needs of the particular model. Not all models use all four available settings. For each workout, the Chip stores the time and date of the workout, the resistance, the number of repetitions, and the version and serial number of the software in the machine being used. The Chip also stores data related to a power test if the user selects the power test mode. The display module functions as a standard digital display of resistance and repetitions without a Chip inserted. The software in version 7.50 and newer can calculate and display the peak power produced on each repetition. A test mode has been added that calculates the resistance setting at which maximum power is produced.

User Interface

The user interacts with the machine through the display module and the force setting thumb buttons. A small number of Keiser machine models use foot pedals in place of thumb buttons to set the force. The display module is divided into sections as shown in Figure 1.

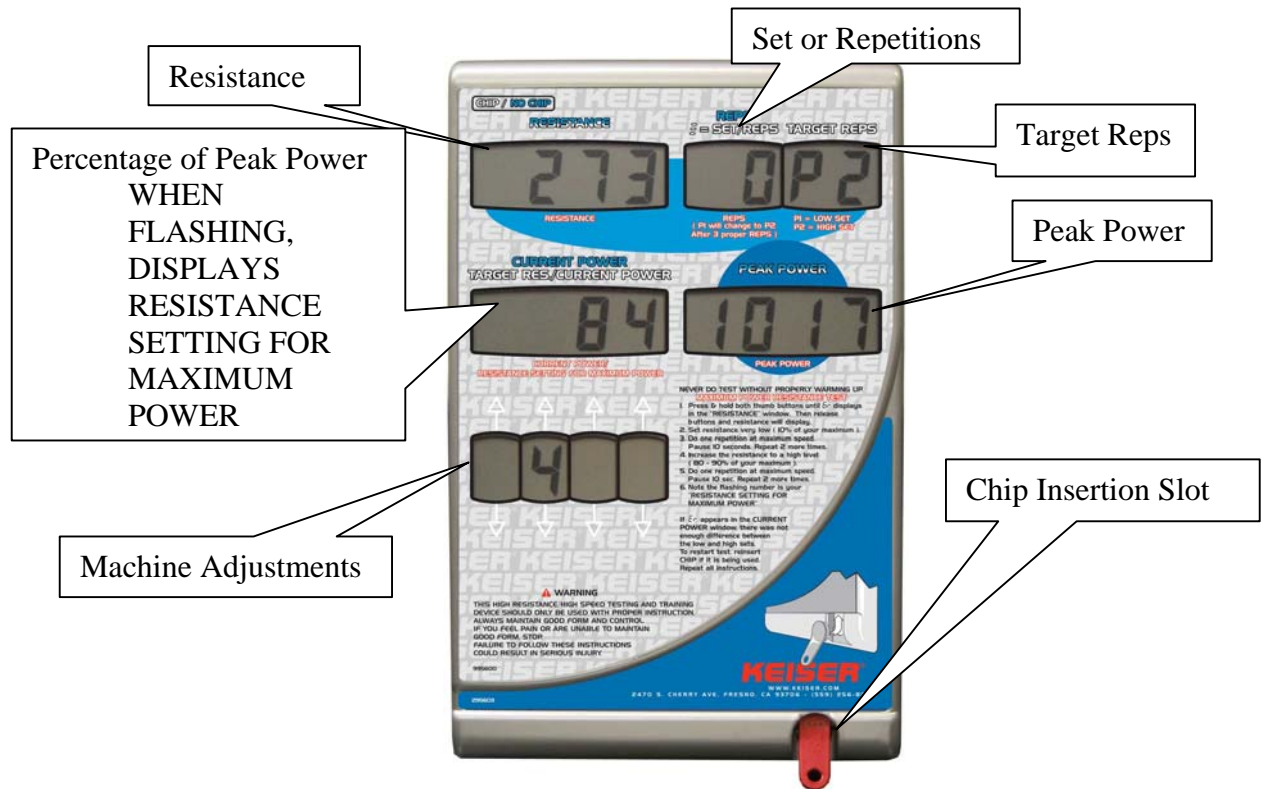


Figure 1 Display Module

The *Resistance* window displays the current resistance or **OFF**. Using the thumb buttons / foot pedals will change the current resistance. When this window displays **OFF** the machine has gone into a low power consumption sleep mode to increase battery life. Normal operation may be resumed by pressing the thumb buttons / foot pedals or by inserting a Chip. If this window displays **LoBA**, the batteries are getting weak and should be replaced soon.

The *Set/Reps* window displays the current repetition count except immediately after a Chip is inserted, in which case it displays the current set. The set count may range from 1 to 9 and is signaled by the appearance of 3 horizontal bars in the left digit. The number of sets is defined as the number of sets of exercises that have been performed in a four-hour period. Once four hours have passed, the machine assumes that the user is returning for a new visit. The repetition count may range from 0 to 99. The repetition count may be reset by simultaneously depressing both thumb buttons / foot pedals. The repetition count behaves a little differently when running the power test. See the section on power testing for details. Once three repetitions have been completed, data is stored into the Chip on each subsequent repetition. If the repetition count is cleared, it is still stored in the Chip once three repetitions have been completed.

The *Target Reps* window displays the number of repetitions that were performed on the corresponding set of the previous visit if that set was a normal workout set and a Chip is inserted. If the corresponding set of the previous visit was a power test, the display will show **Pr**. When the machine is placed into the power test mode the display shows **P1** during the high velocity portion of the test and **P2** during the high resistance portion of the test. See the section on power testing for more details. In the case of the Runner, model 3231, this window displays the approximate distance in yards or meters.

The *Current Power* window can display four different values. During an exercise set, it displays the percentage of maximum peak power that has been achieved for the most recent repetition. At the end of a power test, this window displays the resistance setting for maximum power. When a Chip is inserted and the previous corresponding set was a normal workout set, it displays the resistance that was used for that set. When a Chip is inserted and the previous corresponding set was a power test, it displays the resistance at which maximum power is produced. When the resistance setting for maximum power is being displayed, this display flashes. In summary, during an exercise set, this window displays the percentage of maximum peak power for the current repetition, at the end of a power test it is the resistance setting for maximum power. When a Chip is inserted it is the resistance to set into the window above before beginning exercise.

The *Peak Power* window displays the highest power that has occurred during this workout or since the data was last reset.

The *Machine Adjustments* area displays from one to four machine adjustments depending upon the model being used. The adjustments in each of the windows may be changed by pressing the arrows discretely located directly above or below each window. The adjustments may only be changed immediately after the Chip is inserted and before the third repetition has occurred. Once three repetitions are performed, the machine adjustments cannot be changed until the Chip has been removed and reinserted.

Machine adjustments apply to a machine and cannot be changed from set to set.

The *Chip Insertion Slot* is the opening into which the Chip is inserted as per the illustration on the face of the display module. There are two types of Chips that function with the Keiser Chip System. The normal user Chip has a red handle and the timeset Chip has a black handle. The timeset Chip is used to set the time of day into the clock in the processor box on each machine. To set the time on any machine, simply insert the timeset Chip into the Chip insertion slot. The time and date that is being set into the machine will display. The timeset Chip has its time set by the Keiser Chip System program, which runs on a standard Windows PC and is described in the Keiser Chip System software operation manual. The time will only need to be set when daylight savings time starts or ends. For those areas that do not adhere to daylight savings time, setting the time once or twice a year will keep the time within a couple of minutes of the correct time. The timekeeping circuitry in the processor box as well as that in the timeset Chip is very similar to that in a wristwatch and has similar accuracy. If you are not using the Chip System, the time does not need to be set.

Using the Power Test

The purpose of this test is to determine the resistance at which you achieve maximum power. The test consists of six repetitions, three done at a very low resistance and three done at a high resistance (near your maximum). All repetitions are to be performed as fast as you can possibly go at that given resistance. Speed is essential in power output; and therefore, to produce maximum power you must produce maximum speed.

1. Push both thumb buttons at the same time until **CLER** appears in the upper left display followed by **6r** then release the buttons immediately This puts the machine in the six rep test mode.
2. Select a very low resistance for your first three repetitions. The resistance should be low enough that it seems like there is almost no resistance.
3. Perform only your first repetition. Note the power readings in the two middle displays. The display on the right is recording the maximum power you have achieved. The display on the left is the percentage of maximum peak power generated on your current repetition. On your first repetition the display on the left will always read 100.
4. You may adjust your resistance after the first or second repetition. In doing so the rep counter will be reset to zero and you will need to perform three repetitions at the new resistance.
5. Perform the second repetition as fast as possible trying to beat the power generated on your first repetition.
6. Pause, focus your thoughts, and do your third repetition trying to better your power once again.

7. Now increase the resistance to a level just below your maximum (approximately 80% of your maximum). You can try a rep or two at various resistances as long as you don't do three at a given resistance, otherwise it will assume that those three were your test reps at the higher resistance.
8. Once you have settled on the resistance for the upper level test, do three repetitions for maximum speed and power. Pause between each repetition as long as it takes to ensure maximum performance for the next rep.
9. Once the third rep is done and you return the exercise arm to its starting position, the middle left display will flash the resistance at which maximum power is produced.

NOTE: If *Er 1*, *Er 2*, *Er 3*, or *Er 4* flashes in the power window, an arithmetic error has occurred because there was not enough resistance difference between the low and high resistance tests.

10. To exit the test mode, do one of the following:
 - a. If a Chip is inserted, remove the Chip.
 - b. If no Chip is inserted, press both thumb buttons momentarily.

Maintenance

The only periodic maintenance that is required of the Keiser Chip System is to replace the batteries when they run down. When the batteries approach the end of their life, the

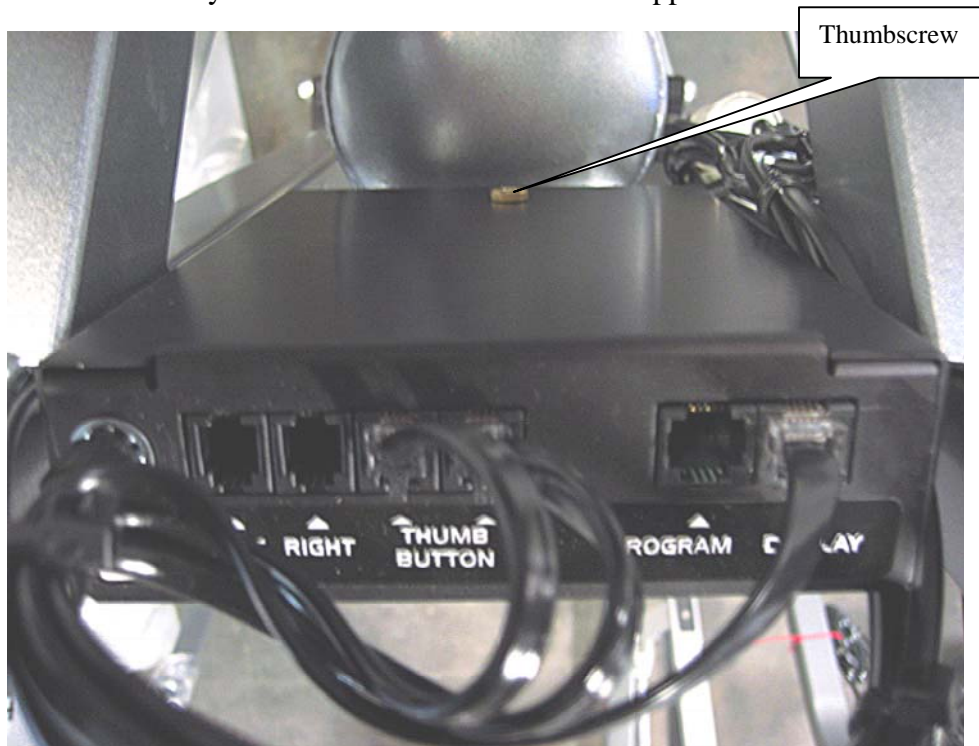


Figure 2 Processor Box

Resistance window will read **L0bA** instead of **OFF** when the unit goes to sleep. Also, a dead battery indicator will display at the left side of each window. When this happens, replace the two D cells inside the processor box with new ones. To remove the cover of the box, remove the brass thumbscrew shown in Figure 2 and lift the cover out and away from the rest of the box.

As the new batteries are installed into the box, the display will first light all the segments on all the windows for a short time. Next, the software build number will be displayed in the current resistance display. The software version number will consist of the letter **U** followed by a single digit of the major version number and 2 digits of the minor version number. For example, if the version number is 7.76, the display for this build would show as **U776**.

Warning! Do not leave the processor box without batteries for an extended period of time as this will put an unnecessary load on the clock maintenance battery which is not field replaceable. When the clock battery wears out, the entire processor will have to be returned to the factory to be replaced or repaired. The clock battery is designed to last in excess of 10 years under normal use.

Once the batteries have been replaced, press either the increase or decrease thumb button or foot pedal to allow the machine to go to sleep. The machine will not operate normally until either the increase or decrease thumb button or foot pedal has been pressed after the batteries have been changed.

Checking or changing the Model Number

Each processor box is programmed to work with a specific model of Keiser exercise machine. To verify that the model number is programmed correctly, press and hold both the increase and decrease thumb buttons or foot pedals at the same time for several seconds. The upper left display will pass through the **CLER** and **Er** modes and finally display a four-digit number. This four-digit number is the machine model number. Match the model number with the machine model number printed on the machine serial number decal on the back of the machine. After a few seconds, this number will change to display one of three values, **USLb**, **EUro**, and **SI nE** signifying the units of measure. **USLb** means the units are pounds, **EUro** means the units are in kilograms and **SI nE** means the units are SI Newtons. While continuing to hold the increase and decrease thumb buttons, one more number will display in the format **A=03**. This number will only appear on machines that have the power option installed, and is the elevation above sea level in hundreds of feet where the machine is located. When the model set function occurs, the software also records the position of the cylinder to keep track of the starting or zero point. It is necessary to insure that there is a reasonable amount of resistance set to insure that the machine is resting firmly against its home position stops. In the case of the model 2531 Leg Press which has an alternate set of stops, the pedals must be against the rear most set of stops when the model number is set. Note that this procedure is the opposite of that used on the Keiser A420 electronics. To change the model number of a machine, press both the Increase and Decrease Program Buttons, located inside the processor box at the same time as shown in Figure 3. When both buttons have been released, the upper left display will show the model for which the processor is currently programmed. To change this model number, depress either the Increase or Decrease Program Button to step through the available model numbers while the number is still

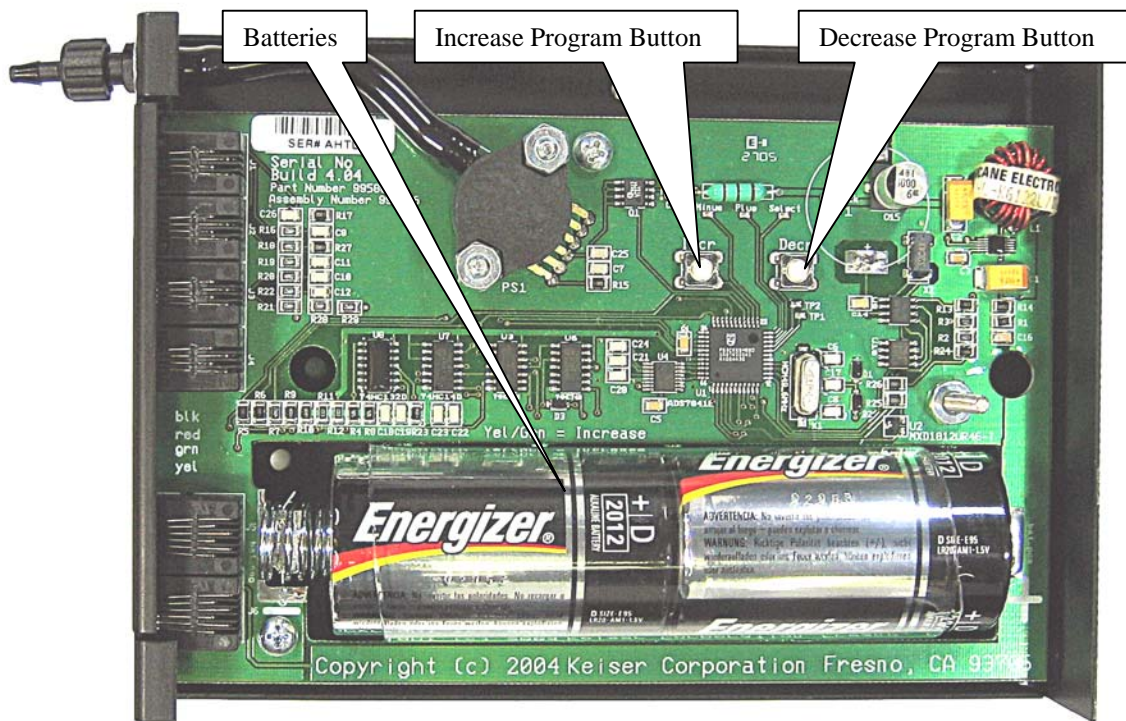


Figure 3 Processor Circuit Board

being displayed. When you have located the desired model number, simply wait and do not press any more keys for the next several seconds. At this time, the upper left display will change to display the units of measure as one of *USLb*, *EUro*, and *SmE*. Use the Increase or Decrease Program Buttons to step through the possible values until the desired setting is displayed. After a few seconds of no button being pressed, the upper left display will change to show an **A** and 3 horizontal bars followed by a 2 digit number. The 2-digit number is the local elevation above sea level in hundreds of feet, whether the units are set to metric or English. The software requires the elevation to approximate the local barometric pressure to use in its resistance setting calculations. Use the Increase and Decrease Program Buttons while this number is displayed to change it to the correct value for your location. After a few seconds with no buttons pressed, the display will change to display the current time and date for a couple more seconds in the top four windows and then revert back to the normal user display. The model, elevation and cylinder zero point are now set.

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