REDDING RELOADING EQUIPMENT

OPERATING INSTRUCTIONS
SAECO LEAD HARDNESS TESTER

The **SAECO** Lead Hardness Tester is a simple precision instrument that enables the user to easily obtain accurate indications of the relative hardness of the lead alloys in cast bullets. It accomplishes this by penetrating the nose of the bullet with a hardened steel **indenter point.** Harder bullets resist penetration by the steel indenter, while softer bullets permit deeper penetration. The depth of the indenter's penetration is thus a reliable indication of the relative hardness of the bullet being tested.

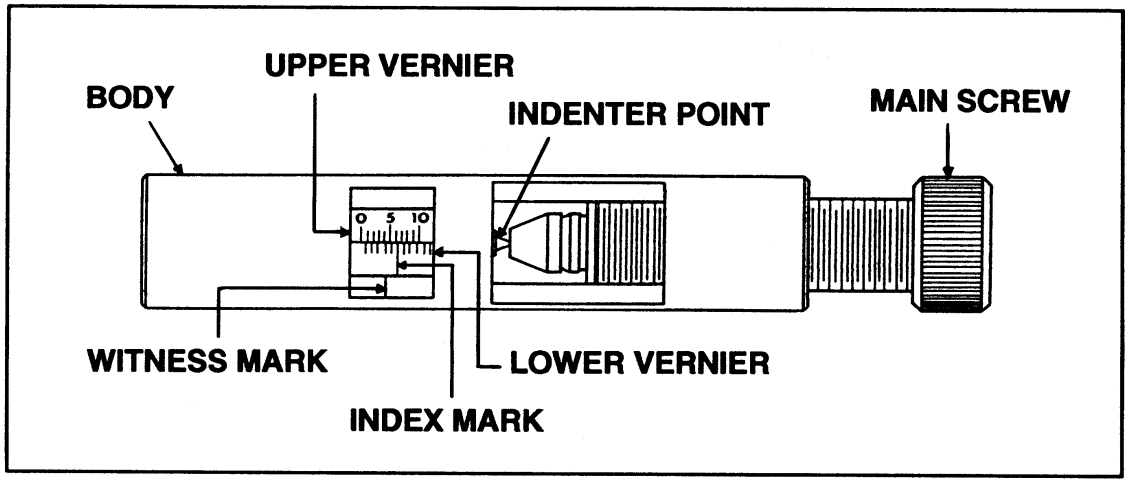

FIGURE 1

The body of the tester (Figure 1) contains the mainspring, indenter mechanism, and vernier reading scale on one end, and is threaded for the main screw at the other end. The large opening through the sides of the tester body permits the insertion of the bullet between the recessed face of the main screw and the indenter point.

The small opening on the left side of the body exposes the two sliding halves of the **vernier scale** where the readings are taken. The longer vertical line on the lower half of the vernier scale is called the **index mark.** The scribed line immediately below the vernier scale on the body of the unit is called the **witness mark.**

To operate the tester, it is necessary to have a flat surface on the bullet's nose. File a flat about 3/16 inch in diameter on the nose of any bullet that has a round nose, a sharp point, or a flat less than 3/16 inch

across. The bullet is then placed in the large opening so that its base rests squarely on the face of the main screw. There are recesses on the face of the main screw for .30, .35 and .45 caliber bullets.

The main screw is then turned in a clockwise direction to drive the bullet up against the indenter point. While advancing the bullet towards the indenter point (best if done holding the tester in a vertical position,) be sure that the bullet does not wobble. If the bullet does wobble, the base is not seated squarely against the screw and may result in an erroneous reading.

Turn the screw in this fashion until the **index mark moves** to a position directly in line with the **witness mark.** This insures that the proper amount of force is applied each time. **Important: Do not turn the screw beyond the point where the index and witness marks are lined up.**

When the witness mark and the index mark are in line, **one – and only one –** of the marks on the upper half of the vernier scale will be in line with a mark on the lower half of the scale. The corresponding number of this mark is the SAECO value for indicating the relative hardness of the bullet. The basic SAECO hardness scale is an arbitrary scale from 0 to 10, with "0" being the softest (pure lead) to "10" being the hardest (linotype.)

The accompanying illustrations will demonstrate various readings:

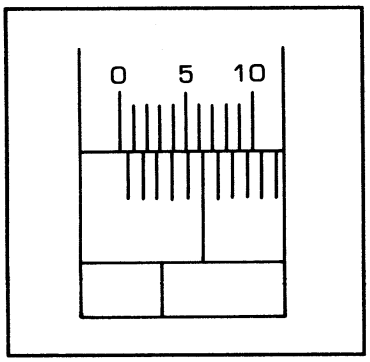

FIGURE 2

Figure 2 shows the tester in rest position. Notice that the **witness** and **index** marks are not lined up.

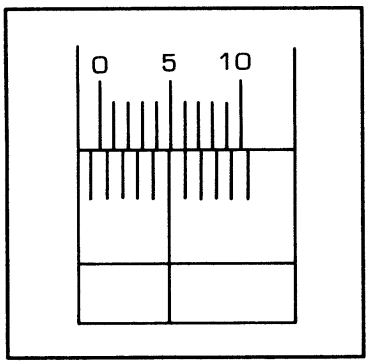

FIGURE 3

Figure 3 shows a typical reading. The **witness** and **index** marks are aligned, insuring that the correct pressure is placed on the bullet. Also, notice that the **left-most** mark on the lower vernier is to the **left** of the "0" mark on the upper vernier. This is the normal condition for measurements from SAECO 1 to 10. Now, it is a simple matter to determine which mark on the upper vernier is most closely aligned with a mark on the lower vernier. In this case, the lines are aligned at the number "6." The correct reading is SAECO 6.

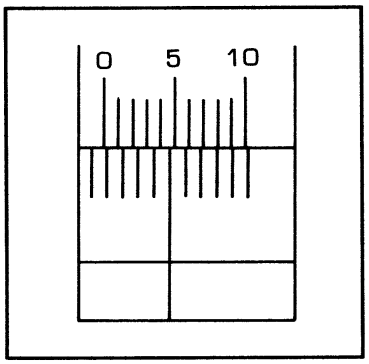

FIGURE 4

Figure 4 shows another typical reading. In this instance, the numbers are closely aligned at the "8" or "9" position, indicating a SAECO hardness of 8 or 9. This reading is frequently encountered with the Lyman #2 alloy, or Taracorp.

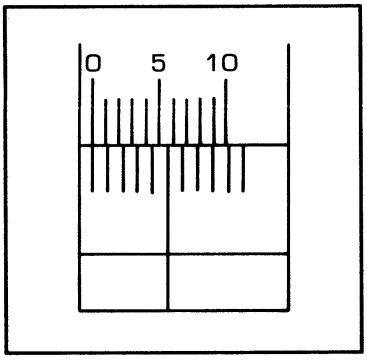

FIGURE 5

Figure 5 illustrates the reading 0, commonly found in pure lead.

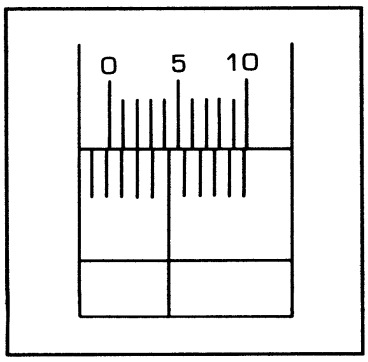

FIGURE 6

The SAECO lead hardness tester can also measure alloys that are harder than **SAECO 10.** Figure 6 is an example of this. Notice that after the index and witness marks are lined up, **two** of the marks on the lower vernier are to the left of the "0" mark on the upper vernier. When this condition occurs, you are dealing with an alloy that is harder than SAECO 10. Determine the reading as before, by identifying the two marks that are in line (in this case "2"), but then add "10" to the number. The correct reading is therefore **SAECO 12.**

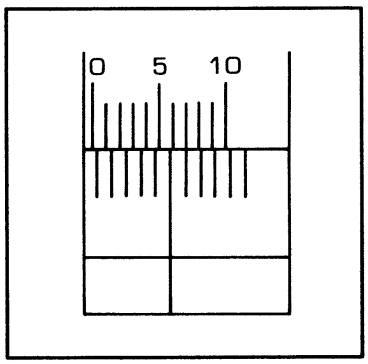

FIGURE 7

The tester can also determine readings that are less than SAECO 0, as in Figure 7. If, after the witness and index marks are aligned, the **left-most** mark on the lower vernier is on the **right** side of the "0" mark on the upper vernier, we have a material with a hardness of less than SAECO 0. Again, note which marks are most closely lined up (in this example, "7"), in this case, remember that you are reading in the negative direction from **zero.** Thus, the number "7" is actually **three units less than zero.** The correct reading is therefore **SAECO -3.**

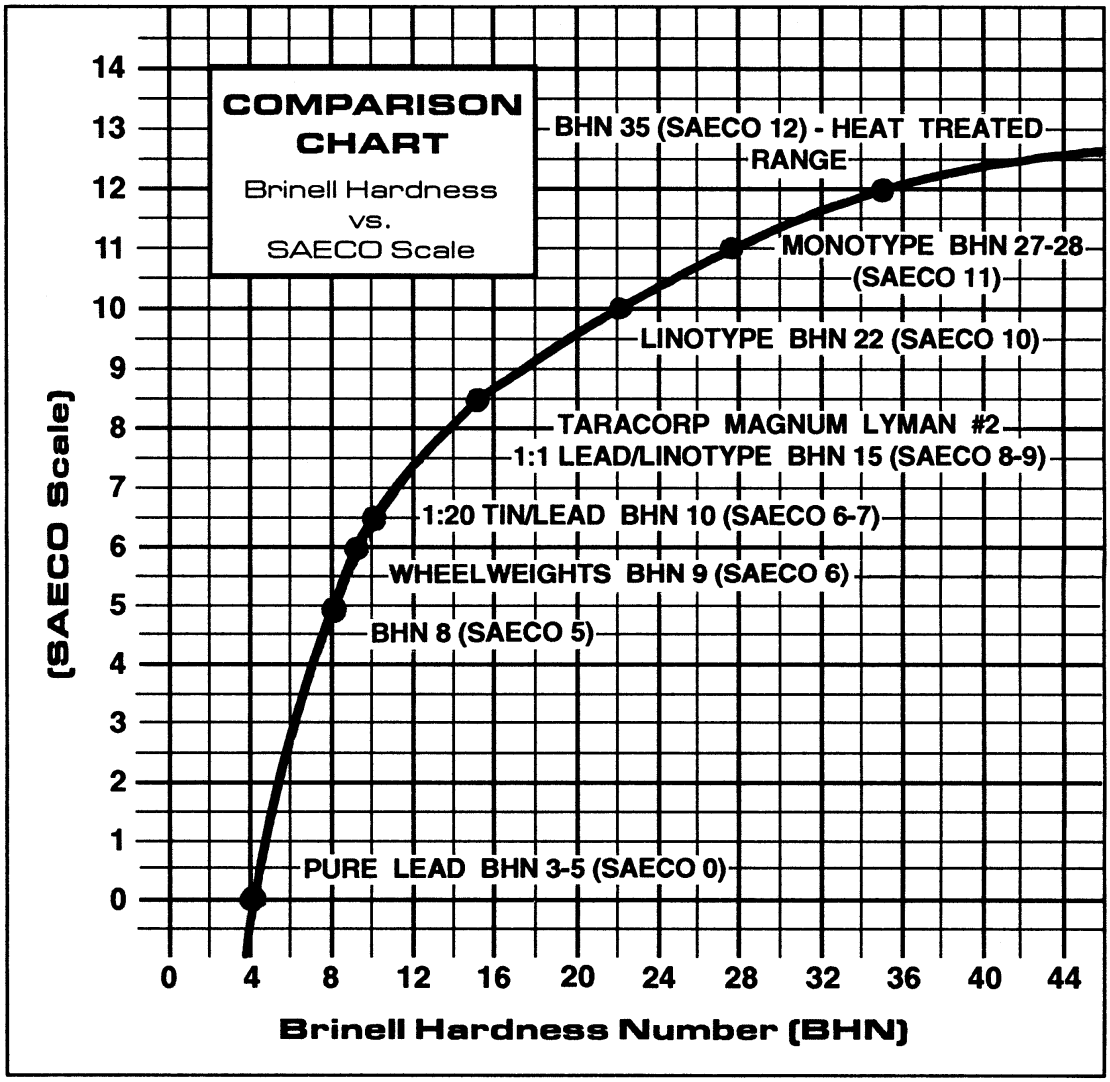

FIGURE 8

There is no direct correlation between the SAECO scale and the Brinell scale of hardness, nor is there a mathematical formula for converting a reading from one scale to the other. However, we have created a chart that illustrates some commonly encountered alloys, their SAECO values, and where they would fall on the Brinell scale. Other alloys can be interpolated with a reasonable degree of accuracy.

Also, please remember that hardness alone is no guarantee that bullets will not lead bores. A good lubricant is necessary, such as **SAECO Gold** pistol lubricant, **SAECO Green** rifle lubricant, or **SAECO Traditional** rifle and pistol lubricant.

Redding Reloading Equipment
1089 Starr Road
Cortland, NY 13045
(607)-753-3331