LEE
Lead Hardness
Testing Kit

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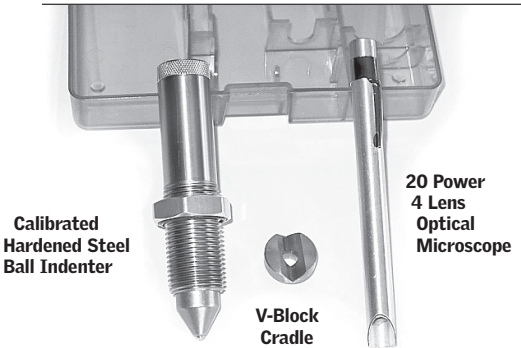
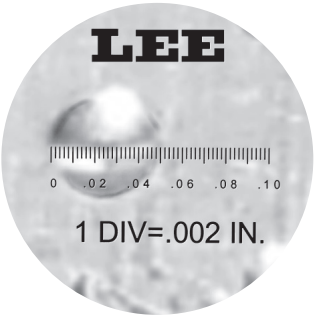
INSTRUCTIONS FOR THE LEE

Lead Hardness Testing Kit





view through microscope

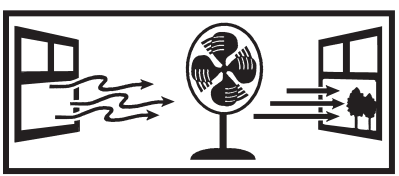
Why should you check the hardness of your casting alloy?

Simple. If you don't know the hardness of your metal, you have no idea if the alloy is suitable for the load you wish to reload. Suddenly that pile of salvage scrap lead alloy becomes much more valuable when you know exactly what loads it will be useful for. You'll never waste time and components working with the wrong alloy. See Chapter 10 of *Modern Reloading Second Edition* for complete details on working with cast bullets. A quick read and you will be an expert at selecting cast bullets loads that work

Rule of Thumb for Hardening Lead

For every 1% additional tin, Brinell hardness increases 0.29
For every 1% additional antimony, Brinell hardness increases 0.92
Sample equation:
Brinell = 5 Brinnell Pure Lead + (0.29 x Tin percentage) + (0.92 x Antimony percentage)
For example, if you increase the amount of tin by 10% and the amount of antimony by 5%, the Brinell hardness of your lead will be 12.5
Brinell hardness 12.5 = 5 + (0.29 x 10) + (0.92 x 5)

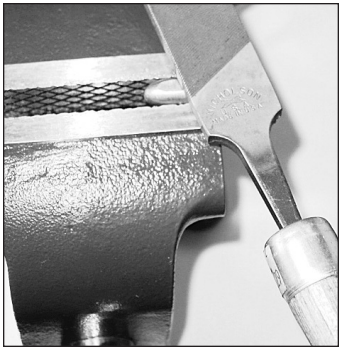
Reducing Exposure Lead contamination in the air, in dust, and on your skin is invisible. Keep children and pregnant women away during use and until clean up is complete. Risk can be reduced—but not eliminated—with strong ventilation; washing hands immediately after use of these products before eating or smoking; and careful cleaning of surfaces and floors with disposable wipes, after lead dust has had a chance to settle. Use a lead-specific cleaning with EDTA, or a high-phosphate detergent (like most detergents sold for electric dishwashers) and bag wipes for disposal.



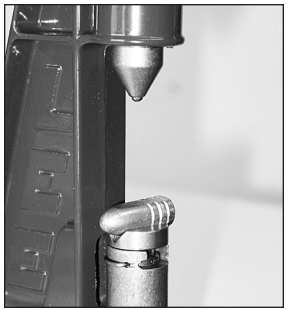
Use strong ventilation

① Install indenter into your reloading press. Depth is not critical.

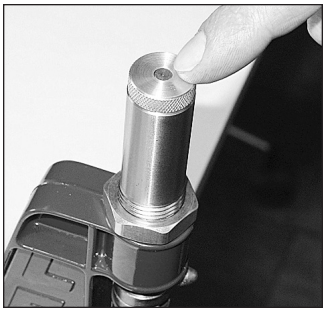
② Snap the “V” block into the shell holder slot in your press.



③ File a small flat on the side of the bullet to accept a hardness impression. This is best accomplished in a vice with a file.



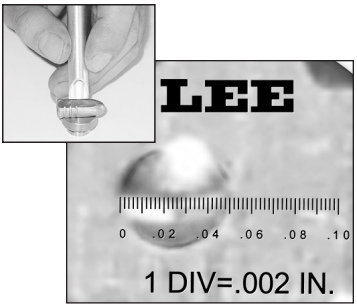
④ Place the bullet with flat up into the “V” block.



⑤ Carefully raise the ram until the indenter ball contacts the bullet, now slowly push the lever until the indicator rod becomes flush with the top of the indenter tool.

Hold the press lever for a minimum of 30 seconds in this position. If you push too hard on the lever of the press, the indicator rod will rise above the top of the indenter body. If it rises more than 1/64 of an inch (.015), disregard the impression as excessive force has been applied.

Shift the bullet and make a new impression.



⑥ Measure the impression created using the Lee Pocket Microscope. The diameter of the impression relates directly to the hardness of the lead alloy. Look up your impression diameter in the chart (at right) to determine the hardness and the maximum operating pressure of your alloy.

BRINNELL HARDNESS AND MAXIMUM PRESSURE CHART

Use a slow, even pressure and hold for 30 seconds.
Select a load with a chamber pressure that does not exceed the MAXIMUM PRESSURE in the fourth column.

LOAD 60 POUNDS 5/32" BALL

BULLET				BULLET			
Indent	Hardness	Strength	Pressure	Indent	Hardness	Strength	Pressure
Dia.	BHN	PSI	MAX PSI	Dia.	BHN	PSI	MAX PSI
.038	36.6	52111	46900	.059	14.9	21134	19021
.039	34.8	49432	44489	.060	14.3	20407	18367
.040	33.0	46951	42256	.061	13.9	19716	17745
.041	31.4	44650	40185	.062	13.4	19058	17152
.042	29.9	42511	38260	.063	13.0	18431	16588
.043	28.5	40519	36461	.064	12.5	17833	16050
.044	27.2	38662	34796	.065	12.1	17262	15536
.045	26.0	36927	33234	.066	11.8	16717	15046
.046	24.8	35304	31713	.067	11.4	16196	14511
.047	23.8	33783	30405	.068	11.0	15698	14128
.048	22.7	32356	29120	.069	10.7	15221	13699
.049	21.8	31016	27914	.070	10.4	14765	13288
.050	20.9	29755	26719	.071	10.1	14327	12895
.051	20.1	28567	25710	.072	9.8	13908	12517
.052	19.3	27447	24703	.073	9.5	13505	12155
.053	18.6	26390	23751	.074	9.2	13119	11801
.054	17.9	25391	22852	.075	9.0	12748	11473
.055	17.2	24446	22002	.076	8.7	12391	11152
.056	16.6	23552	21196	.077	8.5	12048	10844
.057	16.0	22703	20433	.078	8.2	11718	10541
.058	15.4	21898	19708	.079	8.0	11401	10261

It is always best to check hardness on side or nose of the bullet. Never test the base of the bullet as the results will show softer than actual hardness. If you wish to check a large ingot check the portion of the ingot that was in contact with the ingot mold. Be sure to file a flat pad before testing.

The Lead Hardness tester does not require any routine maintenance other than a light film of gun oil to prevent rust.
Do not disassemble the tester as you may loose any installed calibration shims.
Do not subject the indenter ball to impact or hardened surfaces.

Bullet casting made easy

Lee Pro 4-20
Large diameter high capacity pot, holds approx. 20 lbs. of lead. Patented high-efficiency design and remote sensing thermostat. With a generous 4 inches of clearance under the spout to accept all brands of bullet molds.
110 V 90947 220 V 90948

Lee Pro Pot IV
Large deep pot, holds approx. 10 lbs. of lead. 4" clearance under the spout instead of the standard 2". Infinite heat control. Pout spout up front where it belongs. Uses only 500 watts of power during heat-up. Guaranteed two years.
110 V 90009 220 V 90008

LT2140

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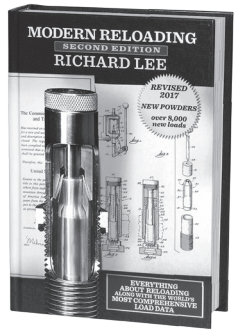
WARNING Handling lead objects may expose you and others in the area to lead, which is known to the State of California to cause reproductive harm and cancer. For more information, www.P65Warnings.ca.gov.
See instructions on REDUCING EXPOSURE supplied with product.

MODERN RELOADING SECOND EDITION

Learn how to reload ammunition that's more accurate than factory on your first try!



Newly revised edition with more than 37,000 loads, including the latest cartridges like the 480 Ruger, Remington Short Action Ultra Mags, Winchester Short Mags and many more. Extensive list of obsolete cartridges with priceless load data. • All data comes with complete, dimensioned cartridge drawings.
• Exclusive Pressure and Velocity Factors enable you to accurately calculate pressure and velocity for reduced loads. A must for precision cast bullet shooting. Hundreds of cast bullet loads. 90277

Guarantee

Lee Products are guaranteed not to wear out or break from normal use for two full years, or they will be repaired or replaced at no charge if returned to the factory. Any Lee product of current manufacture, regardless of age or condition, will be reconditioned to new, including a new guarantee, if returned to the factory with payment equal to half the current factory list price.

Date purchased _____

LEE PRECISION, INC.
4275 Hwy. U · Hartford WI 53027
262 | 673-3075
www.leeprecision.com