PIN BRINELL INSTRUCTIONS
Models CPIT & CPST & PINS

Made in China

To achieve maximum accuracy with the CPIT impact (hammer) model of this tester, the operator should be aware that a material's flow characteristics during the indentation may affect the results. Since the load (approx. 1500 kg) is applied extremely quickly, the time at full load does not meet the requirement of a normal Brinell test. The charts for cast iron and mild steel are provided only as guides. An operator should perform comparison testing with a standard Brinell tester to be sure the test results match. The Brinell numbers on the chart can be changed slightly if necessary. The static (C-clamp) model of the Pin Brinell, model CPST, can be used as your reference tester if necessary, with which to compare the impact results, since it does not create an impact effect.

FACTS ON THE PIN BRINELL SYSTEM:

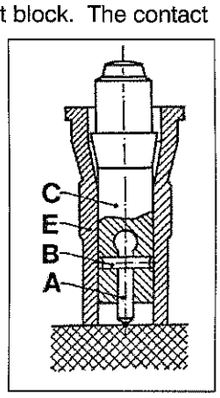
- The load to indenter ratio provides a displacement that is equivalent to a standard Brinell test (3000 kg load,10 mm ball) and the Brinell values are arrived at using the standard Brinell formula.
- A wide range of hardness can be checked from 100 to 700+. Brinell 100 to 300 or 400 (depending on the material) can be checked with the standard indenter (part# CP3). The hardness range from Brinell 300 to 700+ can be checked using the carbide indenter (part# CP3A). *NOTE: Indenters are considered normal wear items and are NOT covered under warranty. Indenters can break at any time. Due to the brittle nature of carbide this is especially true for the CP3A.*
- Each shear pin (part CP4) is calibrated during manufacturing to establish shear strength and the prescribed minimum variation of under 2% in each bag. Based on this calibration, each pin is separated into a given lot, in which the shear strength does not exceed this variation. These lots are provided with letter designations (D, E, F, G, H). There is **no effective difference** between the operation of pins in these different letter designations, so long a each pin is used with the appropriate chart that comes with the pins. Each of these types of pins covers the entire hardness range. *NOTE: These charts must not be mixed between types of pins.*

GENERAL INSTRUCTIONS

The Newage Testing Instruments Pin Brinell uses a unique method for the measurement of Brinell hardness. The load is transmitted to the indenter by means of a calibrated shear pin. The load is determined by the breaking or shear strength of the pin (variation under 2%). The indentation resulting from a test is measured by means of a Brinell scope, and the hardness is read from the attached chart. The Newage B.O.S.S.® (Brinell Optical Scanning System) may also be used to measure the impression automatically. For optimum scope readings, it is important for the surface be as smooth as possible. The method lends itself both for static use (clamp) and for impact use (hammer), however, the static method (clamp) is the more desirable method wherever test dimensions permit, since it has no impact effect.

REMINDERS

1. To check hardened surfaces over the HB300-400 range where the normal indenter cannot be used, a special carbide indenter, part# CP-3A, must be used.
2. For impact tests (hammer), if it is desired to prevent the impact cylinder from leaving a slight impression, it is suggested that a piece of thin cardboard with a hole the size of the indenter be placed under the tester before impact is made.
3. Protective eyewear must be worn to prevent possible injury. When using the impact tester, the handle should be used to hold the tester to avoid injury to the hand.
4. Use the chart that comes with each bag of pins - don't switch.
5. Periodically, check the tester on a Brinell test block. The contact surfaces where the shear pin contacts the interior of the inden-ter holder can wear over time, preventing the shear pin from breaking as cleanly.

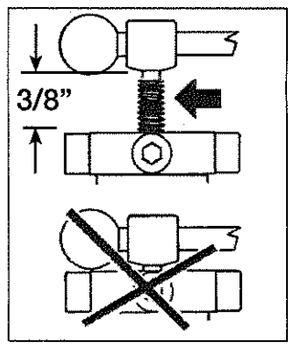


SPECIFIC INSTRUCTIONS FOR IMPACT TEST (HAMMER)

1. Push a shear pin "B" (part# CP4) into the hole in the indenter holder "C" (part# CP1) so that it does not protrude at the sides. The indenter "A" (part# CP3 or CP3A) is pushed up against the shear pin.
2. The indenter holder "C" should now be inserted in the impact cylinder "E" (part# CP2)
3. The entire unit is then placed on the test specimen. Slip the impact cylinder into the CPIT handle (Part #CP200) to prevent hitting your hand.
4. With a flat face hammer of 2 to 3 lb., (1-1.5 Kg) apply a sharp blow on the indenter holder "C". The blow should be sufficient to break the shear pin cleanly. (If the pin is not broken with one blow, the test is not valid.) Note: The indenter will need to be pushed out of the way so another shear pin can be inserted. The pin ejector (Part #CP5) is supplied with the tester for this purpose.
5. The impression is measured with a Brinell scope in 2 or more axes, but only the smallest diameter is used in the Impact (hammer) test. The Brinell value is read from the chart for the value corresponding to the measurement. Use the correct table for "IMPACT" load and whichever indenter type is used: the standard (CP3) or carbide (CP3A) indenters.

SPECIFIC INSTRUCTIONS FOR STATIC TEST (CLAMP)

1. The shear pin "B" should be placed into the side of the indenter holder "C". The indenter "A" should be put into the end of the indenter holder and the rubber cap should be placed on the end of the indenter holder. Its purpose is to both prevent the pin from slipping out and to insure that the surface if the test specimen is not damaged during the test.
2. Insert the indenter holder into the opening of the C-clamp screw making sure that it has enough play to rotate. This is important in order to obtain clean impressions..
3. Mount a suitable anvil on the clamp. Make certain that the smaller drive screw section operated by the handle has a travel of at least 3/8" (1 cm). Be sure to back off the drive screw before each test. (There are two screw threads on this tester - the larger threads that open and close the C-clamp and the smaller threads that apply the test load - see below.)
4. The test specimen is then placed in the C-clamp so that it is perpendicular to the test surface. The drive screw handle is then turned. First the main screw will start rotating to close the gap in the C-clamp and then, after contact has been made, the fine pitch screw will begin rotating and apply the load. Important: Turn the handle until the pin breaks.
5. The impression is then measured with a Brinell scope in two axes. Read the Brinell hardness value equivalent to the average diameter measurement from the table for "STATIC" load.



When using the clamp be sure to back off the drive screw before each test

HARD METAL TESTING WITH CARBIDE INDENTER UP TO 700 BH (65 HRC)

Avoid testing hard tempered surfaces with the standard indenter. A special carbide indenter (CP3A) can be purchased for use on higher hardness materials. Use this indenter in either impact or static tests. However, the correct chart section must be used to obtain hardness numbers. This indenter is required on metals from 300-400 BH up to 700 BH (65 RC). This indenter makes a smaller impression and consequently has to be measured more accurately. Because of the small diameter of the impressions in the higher hardness levels, it is advisable to use a 20X power Brinell scope which can be purchased separately.

(Right) Newage HiLight™ Brinell Scopes with built-in high-efficiency LED lighting for optimum test impression illumination.

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