

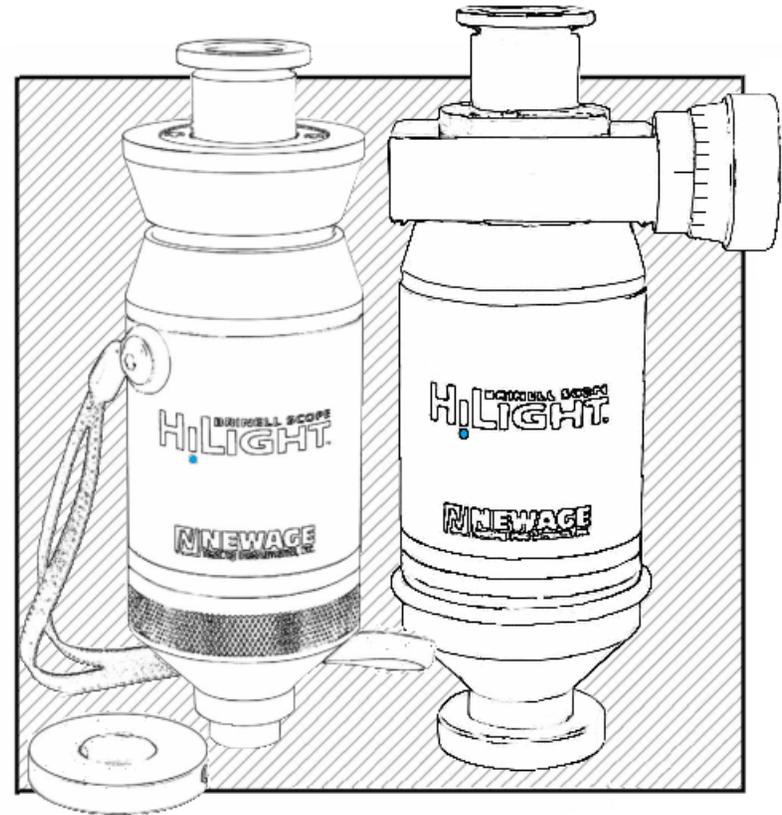
| INDENTATION DIAMETER |       |       | HARDNESS NUMBER FOR EQUIVALENT LOAD |      |       |
|----------------------|-------|-------|-------------------------------------|------|-------|
| MM.                  | 500   | 3000  | MM.                                 | 500  | 3000  |
| 2.0                  | 157.5 | 945.3 | 4.5                                 | 29.8 | 178.5 |
| 2.1                  | 142.7 | 856.5 | 4.6                                 | 28.4 | 170.4 |
| 2.2                  | 129.9 | 779.5 | 4.7                                 | 27.1 | 162.8 |
| 2.3                  | 118.7 | 712.4 | 4.8                                 | 25.9 | 155.6 |
| 2.4                  | 108.9 | 653.4 | 4.9                                 | 24.8 | 148.9 |
| 2.5                  | 100.2 | 601.5 | 5.0                                 | 23.8 | 142.6 |
| 2.6                  | 92.6  | 555.3 | 5.1                                 | 22.8 | 136.6 |
| 2.7                  | 85.7  | 514.2 | 5.2                                 | 21.8 | 131.0 |
| 2.8                  | 79.6  | 477.5 | 5.3                                 | 20.9 | 125.6 |
| 2.9                  | 74.1  | 444.4 | 5.4                                 | 20.1 | 120.6 |
| 3.0                  | 69.1  | 414.6 | 5.5                                 | 19.3 | 115.9 |
| 3.1                  | 64.6  | 387.7 | 5.6                                 | 18.6 | 111.4 |
| 3.2                  | 60.5  | 363.2 | 5.7                                 | 17.8 | 107.1 |
| 3.3                  | 56.8  | 340.9 | 5.8                                 | 17.2 | 103.0 |
| 3.4                  | 53.4  | 320.6 | 5.9                                 | 16.5 | 99.2  |
| 3.5                  | 50.3  | 302.0 | 6.0                                 | 15.9 | 95.5  |
| 3.6                  | 47.5  | 284.8 | 6.1                                 | 15.3 | 92.0  |
| 3.7                  | 44.9  | 269.1 | 6.2                                 | 14.8 | 88.7  |
| 3.8                  | 42.4  | 254.6 | 6.3                                 | 14.2 | 85.5  |
| 3.9                  | 40.2  | 241.2 | 6.4                                 | 13.7 | 82.5  |
| 4.0                  | 38.1  | 228.8 | 6.5                                 | 13.3 | 79.6  |
| 4.1                  | 36.2  | 217.2 | 6.6                                 | 12.8 | 76.8  |
| 4.2                  | 34.4  | 206.5 | 6.7                                 | 12.4 | 74.1  |
| 4.3                  | 32.8  | 196.5 | 6.8                                 | 11.9 | 71.6  |
| 4.4                  | 31.2  | 187.2 | 6.9                                 | 11.5 | 69.1  |

**ONE YEAR LIMITED WARRANTY**

Newage Testing Instruments, Inc. warrants this product to be free from defects in material and workmanship for a period of one year from date of shipment. During this period Newage will repair or replace at Newage's facility, and at Newage's discretion, any defect of material or workmanship with the following exceptions:

- Damage caused by misuse, abuse, negligence or modifications.
- Batteries

It is expressly agreed that this warranty shall replace all warranties of fitness for any particular purpose and the warranty of merchantability. In no event, whether as a result of breach of contract or warranty or alleged negligence, shall supplier be liable for direct, indirect, special or consequential damage including, but not limited to, loss of cost of capital, cost of substitute products, facilities, or services, downtime costs, or claims of customers for such damage.



## HiLight Scope Description

Each HiLight scope supports accurate measurements of Brinell indentations. The models 5620-05 and 5620-05A feature a 7 mm full scale reticule in a flat field of view, while the model 5620-01 has a 6 mm full scale reticule in a flat field of view with one fixed and one adjustable filar controlled by a measuring micrometer knob graduated to 0.01 mm increment. Each scope has 20x optical magnification suitable for measurement of Brinell impressions, along with a convenient wrist strap should be used to prevent the operator from accidentally dropping the scope. A removable base allows the scope to be either free standing or provides a reduced footprint for accessing impressions in restricted areas.

All models feature a self-contained illumination system which incorporates long lasting, highly efficient LED illumination with up to 200 hours of continuous duty per battery. The LEDs will seldom, if ever, require replacement over the life of the scope and each LED is directed down at a sharp angle to the test surface for even, consistent illumination. The HiLight scope is intended for use in both laboratory and shop environments.

## HiLight Scope Operation

- 1) Determine whether the removable foot should be used. (The scope is shipped with the flat foot attached.) If a smaller diameter footprint is needed in order to test in a more confined area (down to 5/8"), take off the removable foot which snaps on and off with a ball detent.
- 2) For models 5620-05 and 5620-01, turn on the LED illumination by screwing the metal base against the black body of the scope. There is a battery inside the scope that will make contact with the metal base, completing the circuit. **The base must be fully tightened so the red dot on the base centers on the battery diagram for proper calibration of the scope.** For the model 5620-05A which features the *Auto On/Off* function, with the metal base tight against the body of the scope, simply tilt the scope over on its side past 90 degrees to turn on the power. Once the tilt switch initiates, the power will remain on for 2 minutes. If the power goes out while the unit is still in use, simply tilt again to restore power.
- 3) Place the scope on a test surface so a Brinell impression is within the field of view.
- 4) Focus on the reticule by turning the focal ring located around the top eyepiece. The test surface should remain in sharp focus.
- 5) To conduct a measurement using the 5620-05 or 5620-05A models, put the scope directly over the Brinell impression and move the scope so that the edge of the indentation aligns with the origin (0 Zero) of the reticule and make the measurement across the diameter using the full scale of the reticule. To conduct a measurement using the 5620-01 model, put the scope directly over the Brinell impression and move the scope so that the edge of the indentation aligns with the fixed filar line. Read the full millimeter measurements from the reticule and add to this the fractional millimeter measurement as display the filar adjustment micrometer knob.

- 6) Now rotate the entire scope 90 degrees in relation to the Brinell impression and make a second measurement of the impression.
- 7) Average the two measurements (semi-sum) to arrive at the Brinell diameter measurement.
- 8) Calculate the Brinell hardness by using the following formula or, by using the table on the back of these instructions or other ASTM Brinell Hardness Conversion Chart.

$$H = \frac{P}{D/2(D-\sqrt{D^2-d^2})}$$

H=Brinell Hardness Number P=Machine Load Applied(Kgs) D= Machine Ball Diameter(mm) d=Indentation Diameter(mm)

## HiLight Scope Maintenance

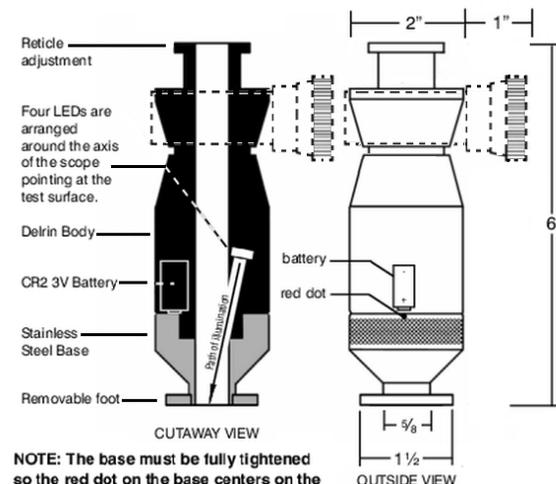
- 1) Keep fingers away from optical surfaces. Use lens tissue and an alcohol solution to clean optical surfaces.
- 2) Occasionally clean the battery contact surface of the Metal base if the scope is being used in a corrosive environment.
- 3) Protect the scope from dirt and airborne contaminants when not in use by returning the scope to the carry case supplied.
- 4) Battery Replacement: The battery is accessible by unscrewing the metal base from the scope body. The battery is 3 Volt, Type CR2, lithium.

### Specifications 5620-05 & 5620-05A

|                       |           |
|-----------------------|-----------|
| Magnification         | 20X       |
| Reticule scale length | 7 mm      |
| Scale Divisions       | .05 mm    |
| Field Diameter        | 10 mm     |
| Height x Diameter     | 6" x 2"   |
| Scope Weight          | 2-1/2 lb. |
| Shipping weight       | 4 lb      |
| Battery, Part #MC0143 | CR2, 3 V  |

### Specifications 5620-01

|                       |                       |
|-----------------------|-----------------------|
| Magnification         | 20X                   |
| Reticule scale length | 6 mm                  |
| Scale Divisions       | 0.01 mm (using filar) |
| Field Diameter        | 10 mm                 |
| Height x Diameter     | 6" x 2"               |
| Scope Weight          | 2-1/2 lb.             |
| Shipping weight       | 4 lb                  |
| Battery, Part #MC0143 | CR2, 3 V              |



**NOTE: The base must be fully tightened so the red dot on the base centers on the battery diagram for proper calibration.**

**NOTE: Micrometer outline as seen on model 5620-01 only.**