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LENSATIC MILITARY COMPASS INSTRUCTION MANUAL

This manual offers instructions for setting up, using, and maintaining the Brunton H-3 Tritium and Model 94 Phosphorescent Lensatic Military Compasses. It is designed to be user-friendly and accessible to individuals with varying levels of technical expertise.

PRECISION MADE IN THE USA

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Model Specifications

		
Product Name	**H-3**	**Model 94**
National Stock Number	NSN 6605-01-196-6971	NSN 6605–01-571-6052
Meets Military Specification	MIL-PRF-10436N	TBD
Description	The Brunton H-3 is illuminated with tritium and meets all US military specifications for the most popular type of soldier's compass.	The Brunton Model 94 is the phosphorescent version of our military lensatic compass. The only difference is the illumination source.
Illumination	7 sealed **tritium** vials that provide self-illumination for 12 years	7 **phosphorescent** vials that glow after exposure to external light source
Dimensions	**Closed:** 3.0 x 2.3 x 1.2 in | 7.6 x 5.8 x 3.0 cm	**Open:** 5.7 x 2.3 x 1.2 in | 14.5 x 5.8 x 3.0 cm
Weight	**Without Case:** 5.76 oz | 163 g	**With Case:** 6.90 oz | 196 g
Compass Disc Format	0-6400 Mils with 20 mils graduations on outside in black, 0-360 Azimuth 5° graduations on inside in red (with option to flip)	
Compass Disc Graduations	20 mils graduations | 5° graduations	
Needle	Rare-earth needle on sapphire bearing, dampened by copper pan; Available in N and S versions	
Vial	Dry, non-liquid-filled vial performs in wide range of temperatures and altitudes	
Body Construction	Rugged, die-cast aluminum with powder coat in "military green"	
Lens Construction	Optical glass for superior compass viewing	
Bezel Construction	Long-wearing material that will hold "clicks" over compass lifetime	
Ruggedness	Waterproof, Dustproof, Sandproof, Shockproof	
Carrying Case Material	Water-resistant, durable nylon with drain hole and metal snap	
Carrying Case Compatibility	Unique design for 2" belt loop, ALICE clip, and MOLLE system	
Included Components	Pouch, lanyard, warranty, and instruction card	







Safety and Performance Considerations

Brunton manufactures two models of military-grade lensatic compasses:

- **H-3 Tritium** (F-H3-NH, F-H3-SH, F-H3-GOV)
- **Model 94 Phosphorescent** (F-94-NH, F-94-SH, F-94-GOV)

NH denotes a northern hemisphere needle and **SH** a southern hemisphere needle. For equatorial regions, either model will work.

GOV denotes the non-commercial models sold specifically to the U.S. government.

Military Specification: The Brunton H-3 and Model 94 lensatic compass models are identical to each other in all specifications and performance, both meeting **MIL-PRF-10436N**; the only difference is their illumination source.

Safety Warning: The H-3 Lensatic Military Compass contains tritium, which is a radioactive substance safely sealed in enclosed vials within the compass. **DO NOT OPEN** the compass base or attempt to remove tritium vials for any reason. If any tritium vials are damaged, avoid contact with skin and dispose of the unit immediately in landfill trash.

Repair: Brunton military lensatic compasses are not eligible for repair. Do not open or attempt any self-repair.

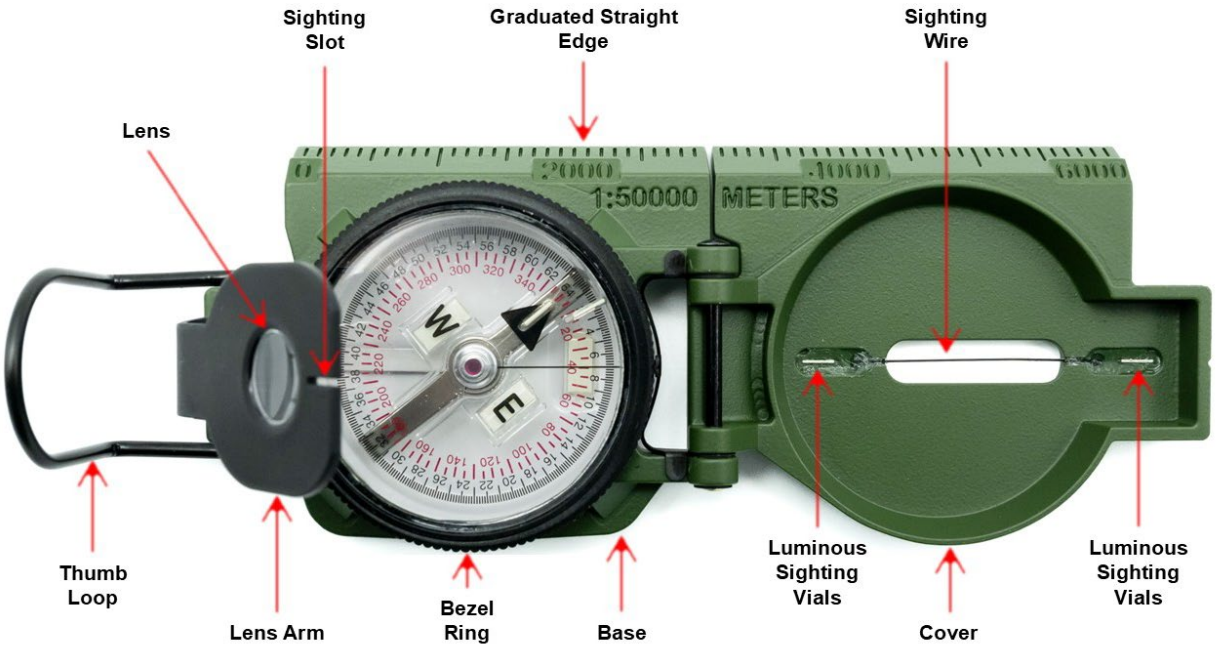
Performance: Both Brunton lensatic compass models are Shockproof, Waterproof, Sandproof, and Temperature tested from -62°F to 155°F.

Interference: Metal objects and electrical sources can affect compass performance. Maintain the following safe distances for proper compass operation:

Metal Objects or Electrical Sources	Safe Distances in Meters
High-tension power lines	55
Field gun, truck, or tank	18
Telephone wires or barbed wire	10
Machine gun	2
Service Rifle (sling across the back is effective)	0.5

Primary Components and Functions

The H-3 Tritium and Model 94 Phosphorescent Lensatic Military Compasses consist of three primary components: the **Cover**, the **Base**, and the **Lens Arm**.



Cover: When closed, the cover protects the clear protective face and contains the sighting wire and luminous vials.

- **Sighting Wire:** Used to sight in on objects and for compass calibration. Luminous sighting vials are placed above and below the sighting wire to aid in nighttime navigation.
- **Luminous Sighting Vials:** Used for night land navigation and low light.
- **Graduated Straight Edge:** Compatible with a 1:50,000 scale map, a ruler that can measure distance. When used with the scale on the Base, it can measure up to 6,000 meters (3.7 miles).

Base: The base contains and protects the dial assembly, including a graduated straight edge with a 5-inch ruled scale (120 millimeters). It is graduated at a ratio of 1:50,000 and can measure, when used with the cover scale, distances up to 6000 meters. This is the compass component that must be functional to be used in navigation, even if the other components were to fail for some reason. There are four screws securing the internal components on the back of the Base. **DO NOT OPEN** the Base for any reason. If your compass contains tritium, it contains hazardous materials.

- **Bezel Ring:** This ring features a clear protective face and the short luminous line, which helps preset a direction for nighttime compass navigation. It contains 120 clicks when rotated (each click equals 3°).
    - **Black Index Line:** A stationary line, etched into the clear protective face, serves as a reference line for determining direction. When the compass is held correctly, the azimuth indicated under the black index line identifies the direction the compass is pointing.
    - **Short Luminous Line:** Used to read an azimuth at night or in low light. It rotates as the Bezel Ring is rotated.

- **Floating Compass Dial:** This dial is delicately balanced and free-floating during use, but it can be locked in place by closing the Lens Arm. The Floating Compass Dial has a Luminous Magnetic North Seeking Arrow and is flanked by East and West indicators. The East and West indicators feature a small luminous rectangle under each to aid in direction at night or in low light. The dial features two circular scales: Degrees (red) and Mils (black).
    - **Red Scale** is 360 degrees with 5-degree increments between red lines and 20-degree increments between numbers.
    - **Black Scale** is 6400 mils with 20-mil increments between black lines and 200-mil increments between numbers. **Note:** MILS is another unit of angular measurement commonly used in calculating metric units and for military use. While degrees divide a circle into 360 parts, mils divide it into 6400.
- **Lanyard Ring:** A ring near the Lens Arm and Thumb Loop. The Lanyard (approximately 2 ft closed loop cord girth hitched to the Lanyard Ring) is attached to the lanyard ring and used to prevent the loss of the compass. It may be worn around the neck or secured to clothing or equipment.
- **Thumb Loop:** Used to hold the compass with the thumb and to secure the cover when the compass is not in use.

Lens Arm (Rear Sight): Holds the lens used to read the dial and a sighting slot, used in conjunction with the sighting wire to aim at objects. When closed (parallel) on the bezel ring, and not in use, the lens arm locks the floating dial to protect it from unnecessarily rotating.

- **Lens:** A high-quality magnifier with an approximate 2.5-inch focal length is used for reading the dial when positioned about 30 degrees off perpendicular to the base. Handle carefully with a clean tissue. **Caution:** Close the lens arm against the clear protective face before closing the case cover to prevent damage to the lens.
- **Sighting Slot:** Used, with the sight wire, the index line, and the dial, to set a course of movement and to determine an azimuth.

Inspection

Compasses are precision instruments and should be cared for accordingly. Conduct a detailed inspection before using the Lensatic Military Compass.

Visual Inspection

Step	Action
1	Open the compass and check that: ▪ The clear protective face is not broken, clouded, or cracked. ▪ The compass dial is free-floating and does not stick.
2	Inspect the front cover to see if the cover sighting wire is missing or bent.
3	Inspect the lens arm to be sure: ▪ It is placed flat against the clear protective face. ▪ The index line on the clear protective face bisects (dividing in two equal parts) the sight slot. ▪ With the compass closed, the sighting wire also bisects the sight slot. ▪ The lens rear sighting slot is not bent.

Inspection for Night Clarity



Step	Action
1	Check that the bezel ring makes a distinct click as it is rotated. Proper bezel ring functioning is essential for accurate night navigation.
2	The following parts should be luminous in the dark: ▪ The two luminous lines on the front cover are at opposite ends of the sighting wire. ▪ The luminous line of the clear protective face of the bezel ring. ▪ The luminous line of the North-seeking arrow. ▪ The luminous rectangles under the letters "W" and "E" on the compass face. ▪ The luminous rectangle is at the base of the compass cup under the index line.

Care, Maintenance, and Calibration

Maintenance & Cleaning

Follow these procedures to increase the life of the lensatic compass:

- Rinse in freshwater, especially after exposure to salt water.
- Brush off dirt and grime.
- Ensure the ridges on the bezel ring are free of dirt.
- Check the movement of the lens arm to ensure it moves freely.
- Clean only with mild detergent and water if needed.

Calibration

A compass in good working condition is very accurate, but it needs to be checked periodically on a known line of direction. This process, called compass calibration, should be conducted as follows:

Step	Action
1	Note the calibration point azimuth: the known magnetic azimuth from the calibration point to a designated point.
2	Shoot an azimuth from the calibration point to the designated point using the compass-to-cheek technique (described in detail in this handout). Check for effects on your compass from eyeglasses, etc. If you wear these items in the field, wear them when calibrating your compass.
3	Compare azimuths. If your compass shows an azimuth: ▪ Greater than the calibration point azimuth, add the difference between the two azimuths (the calibration point value) to your computed magnetic azimuth. ▪ Less than the calibration point azimuth, subtract the difference between the two azimuths (the calibration point value) from your computed magnetic azimuth.
4	Allowable tolerance (the amount of permitted variation) +/- 3 Degrees

Compass Techniques

Center Hold Technique

The center hold technique is fast and easy and can be used under any visibility conditions. You can use this method without taking off your helmet or removing your rifle. (see image below)



Center Hold Technique

Step	Action
1	Open the compass so the cover forms a straight edge with the base.
2	Move the lens arm to the rear (90° from the base), ensuring the compass dial can move freely.
3	Place your thumb through the thumb loop.
4	Rest the compass base on your extended thumb and align your index finger with the compass's long edge.
5	Pull your elbows in along your sides. The compass should be at stomach level.
6	To measure an azimuth, turn your body toward an object or in the direction you wish to move, pointing the compass cover in that direction.

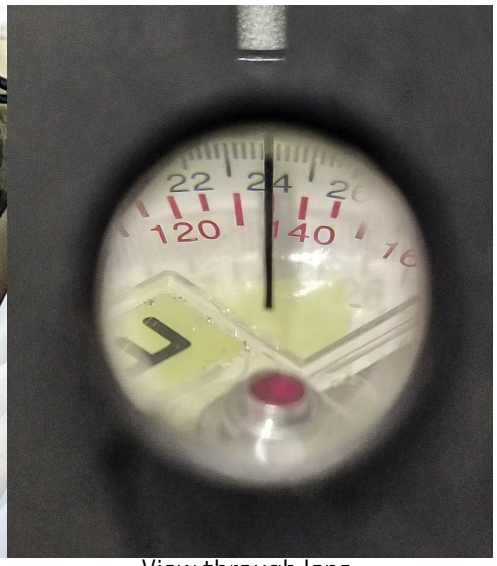
Compass-to-Cheek Technique

The compass-to-cheek technique is more accurate than the center-hold technique. It is ideal when employing intersection and resection techniques or when a more accurate azimuth is required. (see images below)

Note: In extreme cold weather, avoid direct contact between metal and exposed skin.



Compass-to-Cheek Technique



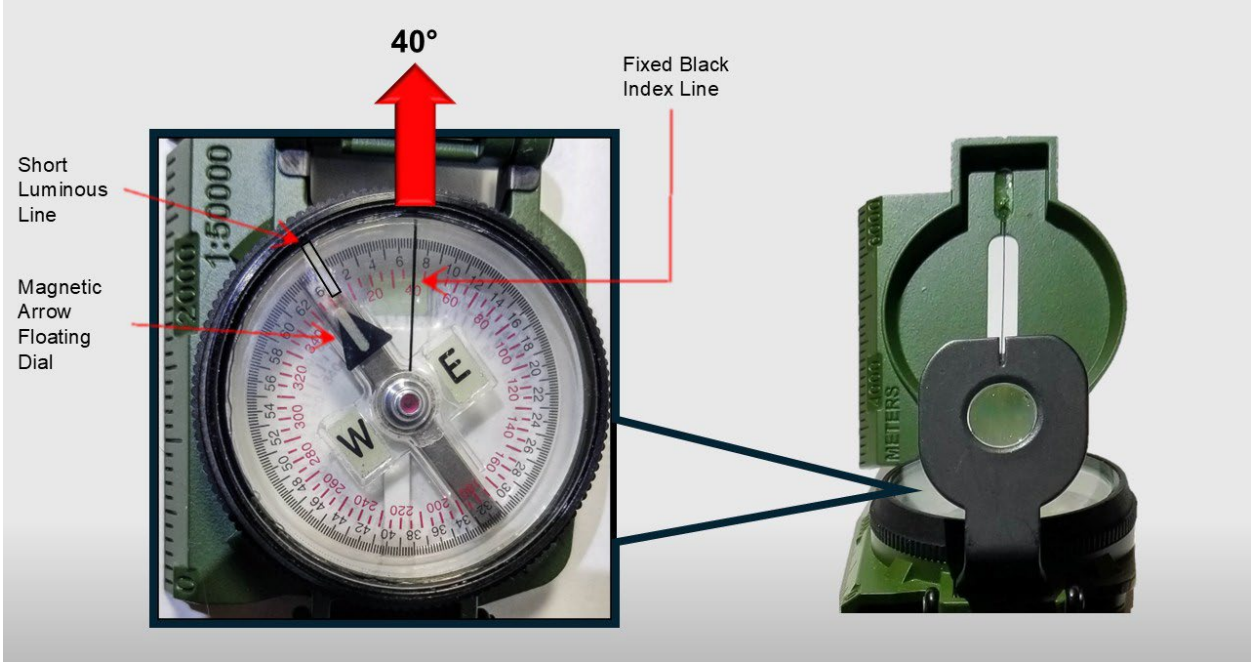
View through lens

Step	Action
1	Open the cover until it is at a 90° angle from the base.
2	Fold the lens arm forward to 35° until you can read the degrees on the floating dial through the lens, ensuring that the lens arm does not lock the floating dial in place.
3	Look through the rear sight slot and align the front sighting wire with the desired object.
4	Glance at the dial to read the azimuth and ensure the compass dial is floating freely.

Setting the Compass and Following an Azimuth

During Daylight Hours or With a Light Source

Step	Action
1	Hold the compass level in the palm of the hand.
2	Rotate it until the desired azimuth falls under the fixed black index line (for example, 40°), maintaining the azimuth as shown below.
3	Turn the bezel ring until the luminous line aligns with the North-seeking arrow. Once the alignment is obtained, the compass is preset.
4	To follow an azimuth, assume the center hold technique and turn your body until the North-seeking arrow aligns with the luminous line. Then, proceed forward in the direction of the front cover's sighting.



During Limited Visibility

An azimuth may be set on the compass using the bezel ring and the click method. Remember that the bezel ring contains 3° intervals (clicks).

Step	Action
1	Rotate the bezel ring until the luminous line is over the fixed black index line.
2	Find the desired azimuth and divide it by three. The result is the number of clicks you have to rotate the bezel ring.

3a	Count the desired number of clicks. If the desired azimuth is smaller than 180°, count the number of clicks on the bezel ring counterclockwise.
3b	If the desired azimuth is larger than 180°, subtract the number of degrees from 360° and divide by 3 to obtain the number of clicks. Count them in a clockwise direction.

Example 3a: The desired azimuth is 51°

Step	Action
1	51 divided by 3 = 17
2	Turn the bezel 17 clicks counterclockwise.

Example 3b: The desired azimuth is 330°

Step	Action
1	360°-330° = 30 divided by 3 = 10
2	Turn the bezel 10 clicks clockwise.

4	An initial azimuth should be set while light is still available. Using the initial azimuth as a base, any other azimuth that is a multiple of three can be established by clicking the bezel ring.
5	With the compass preset described above, assume a center hold technique and rotate your body until the North-seeking arrow is aligned with the luminous line on the bezel.
6	Proceed toward the front cover's luminous vials, aligned with the fixed black index line containing the azimuth.

Note: Sometimes, the desired azimuth is not exactly divisible by three, causing the option of rounding up or rounding down. If the azimuth is rounded up, this increases its value, and the object is to be found on the left. If the azimuth is rounded down, this decreases its value, and the object is to be found on the right.

Total Darkness Usage

7	Once you have determined your course, hold the lensatic compass open and level in both hands, with the index finger of the right hand along the side of the compass.
8	Position the compass approximately halfway between the chin and the belt, keeping the North arrow under the Luminous Bezel Indicator.
9	Proceed forward in the direction that your index finger is pointing.

Pace Count

Knowing your pace count is an important part of land navigation because it can provide information to determine your location.

Determining Your Average Pace Count

Understanding your pace count can give you a significant amount of information needed to pinpoint your location on the map and on the ground at any time. Technically, there is no true average pace; however, you can start with 60 paces per 100 meters until you determine your specific pace. While pace counts can vary for many reasons, an average range is typically between 60 and 75 paces per 100 meters. To find your average pace count, you need to:

Step	Action
1	Walk a straight line over a pre-measured distance on terrain representative of the area where you will be navigating.
2	Count each time your left foot strikes the ground.
3	Convert your pace to a specific number of paces per 100 meters. Example: 310 paces / 500 meters = 62 paces per 100 meters

Pace Count between Objectives

Step	Action
1	Multiply the distance between the objective points by your average pace count per 100m.
2	Calculate the total pace count Example: Pace Count = 60 paces per 100m Distance = 370m 370 meters x (60 paces / 100 meters) = 222 paces

Factors Affecting Pace Count

The following factors should be considered when navigating.

- **Slope:** Pace count lengthens on a downgrade and shortens on an upgrade.
- **Winds:** Tailwinds lengthen your pace count, and headwinds shorten your pace count.
- **Surface:** Loose surfaces tend to shorten your pace count.
- **Elements:** Snow, rain, and ice tend to shorten your pace count.
- **Clothing and equipment:** Heavier burdens may shorten your pace count.
- **Stamina (endurance):** Fatigue will shorten your pace count.
- **Limited visibility/night:** Unsure footing or unseen obstacles make people wary, which tends to shorten your pace count.

Basic Navigation Terms and Techniques

There are several terms used in navigating with a compass and map that are sometimes used interchangeably. Here are a few basic navigation terms and definitions:

- **Navigation:** Determining your location or start point, identifying the location of your objective, and planning and following a route to get there.
- **Orienteering:** It is common in civilian use to hear the term "orienteering". People participate in orienteering activities, using a map and compass, to demonstrate their ability to get to pre-established points.
- **Orientation:** Determining/knowing your position.
- **Route-finding:** Selecting the route, considering many variables such as time, distance, terrain, obstacles, ability/capability of the individual or group, to get to your objective/destination.
- **Collecting features:** Features that you plan to cross en route to your objective, which may serve as a checkpoint to confirm your location.
- **Limiting/catching feature:** A predetermined feature, preferably linear (like a stream, finger, or road), beyond your objective.
- **Attack point:** These are permanent, known landmarks that are easily identified on the ground. Terrain features are used as attack points: hilltops, stream junctions, or any unique feature that stands out on the map and in the real world.
- **Man-made attack points:** Road junctions, bridges, stream/road junctions, etc.

  Note: A good attack point is an easily recognizable feature positively identified on the map and the ground, preferably 400 meters or less from your objective. The optimal attack point is a readily identifiable, man-made feature within 400m of your objective. However, do not discard an excellent, readily identifiable attack point simply because it is over 400m from your objective.

Dead Reckoning

Dead reckoning follows an established azimuth for a specific distance without regard to terrain.

Step	Action
1	Locate your starting point and objective on the map.
2	Determine the grid azimuth between the two points and convert it to a magnetic azimuth (remember to include your compass calibration point value).
3	Determine the distance to your objective and convert it to a pace count.
4	Set the magnetic azimuth on your compass by: ▪ Rotating the compass until the desired azimuth is under the fixed black index line. ▪ Holding the compass and turning the bezel ring until the luminous line aligns with the North-seeking arrow. **Note:** During limited visibility, an azimuth may be set using the click method. The bezel ring contains one click per three degrees.

5	Choose an object in the distance along your azimuth. Put the compass away and walk to that object. Repeat this process until you reach your objective.

Drift is a deviation (departure) from your intended azimuth. Factors that can cause you to drift are:

- Unbalanced load, which may pull you slightly off balance.
- Elements, as there is a tendency to face away from rain, snow, or the sun.
- Movement around obstacles, as right-handed people tend to move to the right, and left-handed people tend to move to the left.
- Alternating direction of movement around obstacles compensates for excessive deviation from the intended direction.

Terrain Association

Terrain association uses terrain features to guide you to the objective with little or no reliance on the compass. This is the preferred technique because it allows the navigator to consistently know their location by referencing the surrounding terrain.

Step	Action
1	Determine your start point and objective.
2	Identify the terrain features between these points.
3	Proceed to your objective, reading the terrain along your direction of movement.

Combination Method

The combination method combines dead reckoning and terrain association. This is the best method for beginner and intermediate navigators and can be used under almost any conditions.

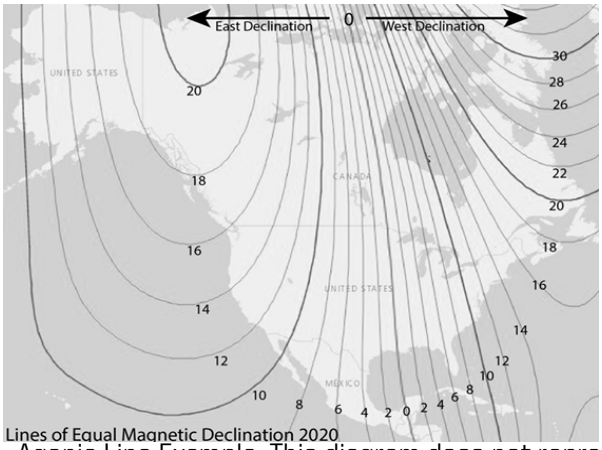
Step	Action
1	Determine your start point and objective.
2	Identify a prominent feature to serve as an attack point.
3	Determine a magnetic azimuth and pace count from the attack point to the objective.
4	Plan the route to your objective, identifying objectives you will cross en route (collecting features).
5	Identify a feature beyond your objective to serve as a catching feature. If you reach this feature, you have traveled too far. 150% of your pace count is a built-in catching feature.
6	Always verify your movement with azimuth and pace count.

Understanding North and Declination

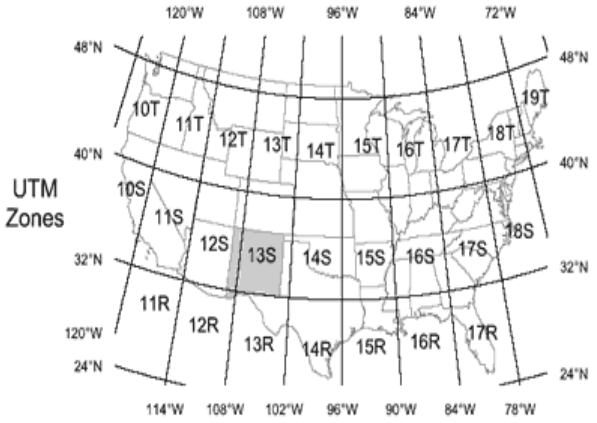
While the compass or the map could be used alone to navigate, the most accurate and useful way in which any compass is used is in combination with a topographic map. While this manual does not focus on topographic map reading and usage, it is important to understand these concepts for proper use with the compass.

Three types of North: The term "North" can mean three different things based on its context.

- **True North (★ TN):** This is the direction pointing towards the North Pole, the Earth's geographic axis of rotation.
- **Grid North (GN):** On a flat map, grid lines represent a grid system (e.g., UTM). Grid North is the direction of these grid lines.
- **Magnetic North (↑ MN):** Magnetic North, the direction a compass needle points, is distinct from Grid North and True North. A reference line called the Agonic Line, which changes based on the Earth's geomagnetic field, determines easterly (negative) or westerly (positive) declination.



Agonic Line Example. This diagram does not represent the current Agonic Line. To view the current Agonic Line, use the NOAA World Magnetic Model.



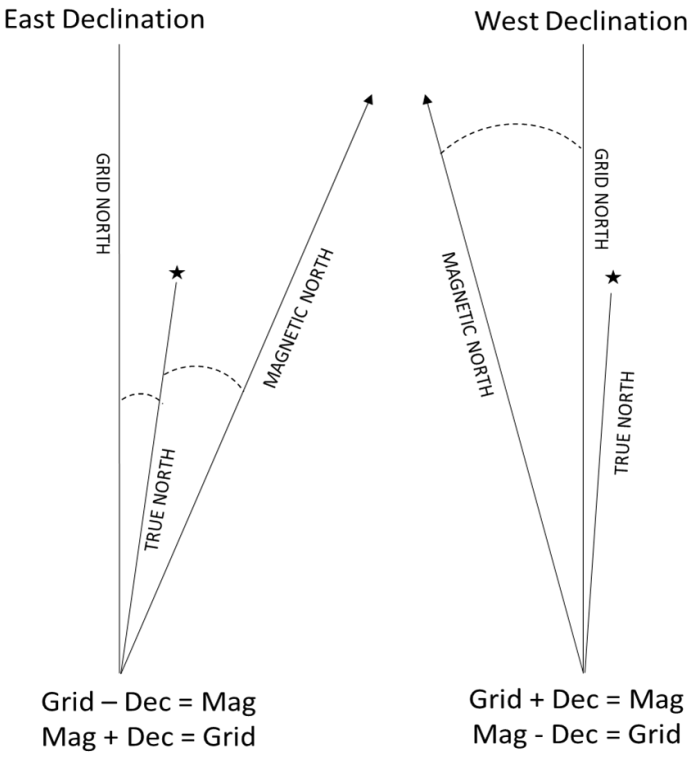
Grid North is based on the map projection (e.g., UTM) being used. When projecting a curved surface (the Earth) onto a flat map, distortions occur. This is why True North and Grid North are not always aligned.

Declination: When using UTM (including USGS and MGRS) as the North reference, the difference between Magnetic North (↑) and Grid North (GN) is called declination, and the slight difference between True North and Grid North is called Grid convergence. Calculating the difference between Grid North and Magnetic North is referred to as the Grid to Magnetic (G-M) angle.

Note: If using a map with longitude lines as the North reference, declination is the angle between True North and Magnetic North. The examples here represent a map with UTM as the North reference.

Azimuth: An azimuth is an angle measured clockwise from a North baseline. The North baseline could be TN, MN, or GN. Plotting an azimuth on a map is referred to as a "Grid Azimuth", and measuring a horizontal angle using a Lensatic Military Compass is referred to as a "Magnetic Azimuth."

Azimuth use in land navigation: USGS and Military maps use UTM as the Grid North reference to plot coordinates and measure distances on the map grid. Declination must first be determined for accurate navigation. The Lensatic Military Compass measures the magnetic azimuth, but to plot this line on a grid map, the magnetic azimuth value is converted to a grid azimuth. The opposite process converts a grid azimuth to a magnetic azimuth. The declination diagram, as shown on most USGS and Military maps (examples below), is used for these conversions.



Map Orientation and Use with a Lensatic Compass

Proper orientation of the map allows you to match the map to the terrain with accuracy. This can be accomplished with or without a compass. Make sure to check the map's date. Using an older map may not accurately reflect changes, manmade or otherwise, to the current topography or magnetic declination. If you use a map without considering these factors, locating yourself or objects in navigation may result in errors.

Orientation by Inspection: Without a compass, you can orient the map by aligning recognizable terrain features on the map with the corresponding features on the ground.

Orienting a Map using the Lensatic Military Compass

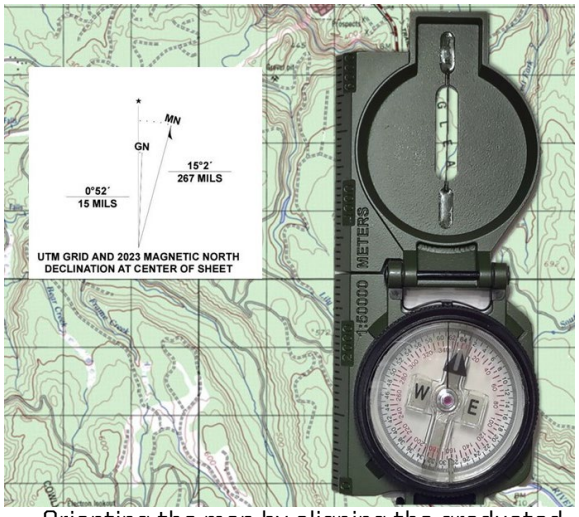
When orienting a map with a compass, remember that the Lensatic Military Compass measures magnetic azimuths. Since the magnetic arrow points to the magnetic North, pay special attention to the declination diagram (only if it is current). Two techniques are used:

First Technique: Map Orientation using Grid North

Step	Action
1	With the map in a flat position, take the graduated straight edge on the left side of the compass and place it alongside the North-South grid line with the cover of the compass pointing toward the top of the map. This procedure places the fixed black index line of the compass parallel to the North-South grid lines of the map.
2	Keeping the compass aligned as directed above, rotate the map and compass together until the magnetic arrow is below the fixed black index line on the compass. At this time, the map is close to being oriented.
3	Rotate the map and compass in the direction of the declination diagram.
4	If the magnetic North arrow on the map is to the left of the grid North, check the compass reading to see if it equals the Grid to Magnetic (G-M) angle given in the declination diagram. The map is then oriented.
5	If the magnetic North is to the right of Grid North, check the compass reading to see if it equals 360 degrees minus the Grid to Magnetic (G-M) angle.



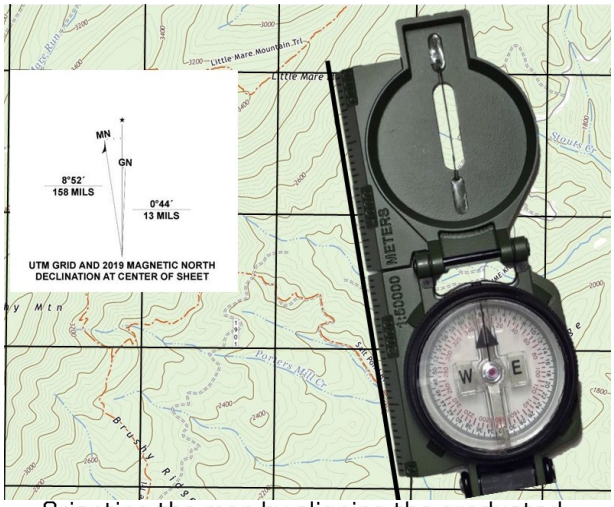
Orienting the map by aligning the graduated straight edge with a N/S grid line and applying the Westerly Declination under the fixed black index line



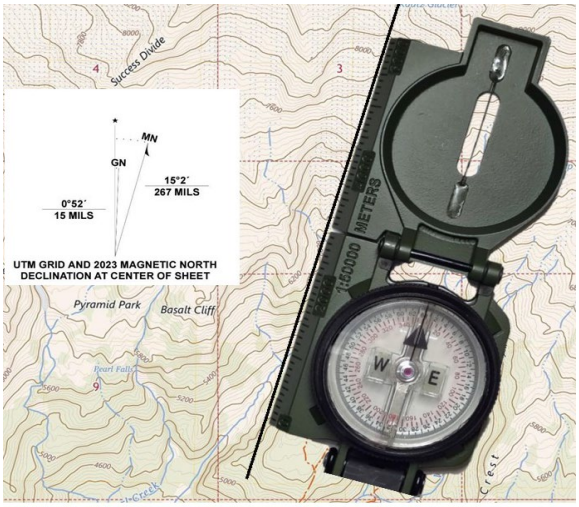
Orienting the map by aligning the graduated straight edge with a N/S grid line and applying the Easterly Declination under the fixed black index line

Second Technique: Map Orientation using Magnetic North

Step	Action
1	Using any North-South grid line on the map as a base, draw a magnetic azimuth equal to the Grid to Magnetic (G-M) angle given in the declination diagram with the protractor.
2	If the declination is easterly (right), the drawn line equals the value of the Grid to Magnetic (G-M) angle. Then, align the graduated straight edge, which is on the left side of the compass, alongside the drawn line on the map. Rotate the map and compass until the magnetic arrow of the compass is below the fixed black index line. The map is now oriented (below).
3	If the declination is westerly (left), the drawn line will equal 360 degrees minus the value of the Grid to Magnetic (G-M) angle. Then, align the graduated straight edge, which is on the left side of the compass, alongside the drawn line on the map. Rotate the map and compass until the magnetic arrow of the compass is below the fixed black index line. The map is now oriented.



Orienting the map by aligning the graduated straight edge with the MN line to account for Westerly Declination



Orienting the map by aligning the graduated straight edge of the compass with the MN line to account for Easterly Declination

Note: Once the map is oriented, magnetic azimuths are determined using the compass. Do not move the map from its oriented position, since any change in its position moves it out of line with the Magnetic North. Special care should be taken whenever orienting your map with a compass. A small mistake can cause you to navigate in the wrong direction.

LARS (Left Add, Right Subtract): LARS is an acronym to assist in converting from a known azimuth to an unknown azimuth (e.g., grid to magnetic, magnetic to grid). Disregard the TN line when using LARS.

- Example 1: If the known angle is a magnetic azimuth (and you need a grid azimuth), find the declination diagram on your map; if the Grid North line is to the left of the Magnetic North line, you add the declination, if it is to the right, you subtract.

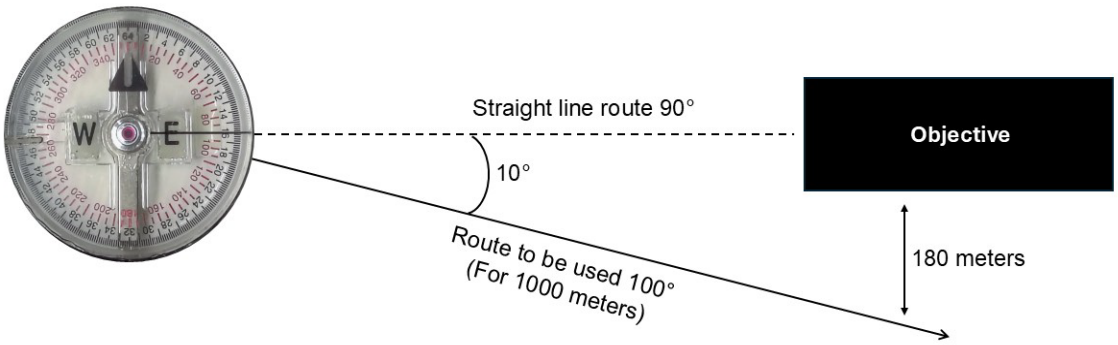
- Example 2: If the known angle is a grid azimuth (and you need a magnetic azimuth), find the declination diagram on your map; if the Magnetic North line is to the left of the Grid North line, you add the declination, if it is to the right, you subtract.

Proceeding Along an Azimuth

Step	Action
1	With your lensatic compass pointing along a desired azimuth, find an easily identified object that aligns with the Sighting Slot of the Lens Arm and the Sight Wire. This "steering mark" should be distinct from the surroundings. It should be visible at all times along the route and should be identifiable when reached. ▪ If your steering mark is lost to view, stop, re-sight, and select a new steering mark immediately. ▪ If a good steering mark does not align with your desired azimuth, select an alternative steering mark off to the side.
2	Head for the point on the travel path beside the alternative steering mark. At this position, sight a back azimuth to the old steering mark. A back azimuth is 180 degrees away from a traveled azimuth. If the traveled azimuth is less than 180 degrees, add 180 degrees. If the traveled azimuth is more than 180 degrees, subtract 180 degrees.
3	The correct back azimuth of the desired azimuth is 340 degrees, which is 180 degrees plus the desired azimuth of 160 degrees; therefore, you will have to move perpendicular (An angle of 90° to a given line or plane) to your path until you can sight a back azimuth of 340 degrees to the old steering mark. You are now back on your correct, originally desired course.
4	In darkness, use steering marks that are closer together and have a distinct silhouette (outline) against the sky.

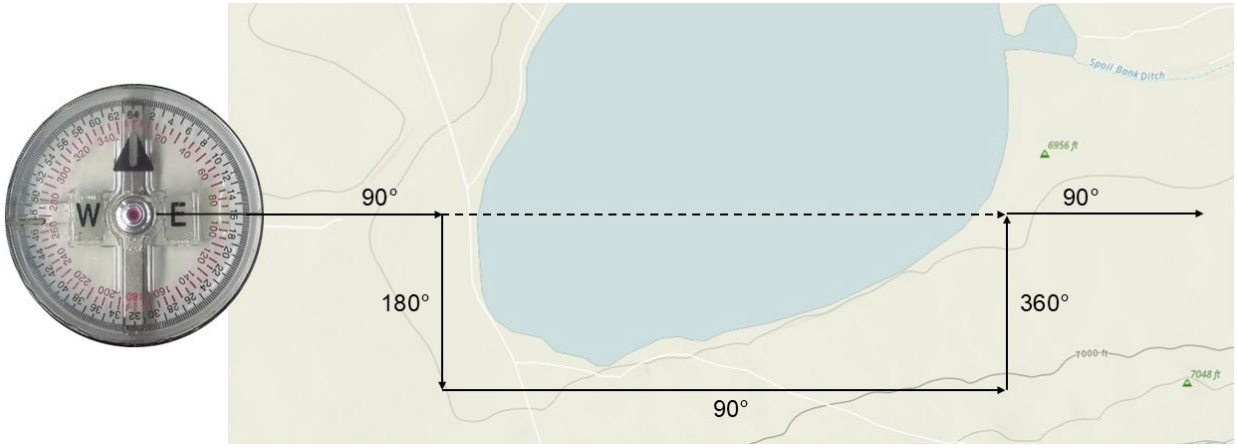
Offsetting

Intentional Offset is deliberately offsetting your magnetic azimuth to take advantage of a linear terrain feature. Each degree offset moves the course about 18 meters to the right or left for each 1,000 meters traveled.



90° Offset Rule

This technique is used when you cannot cross a sizable obstacle. To execute this technique, you simply create a "box" around the obstacle by adding and subtracting 90° to your azimuth. You must keep track of your pace count during this evolution.



Bypassing at Night:

To make a 90° turn to the right, hold the compass in the center hold technique; turn until the center of the luminous letter E is under the luminous line (do not move the bezel ring).

To make a 90° turn to the left, turn until the center of the luminous letter W is under the luminous line. This does not require changing the compass setting (bezel ring) and ensures accurate 90° turns.

Resection - Locating Your Position Using the Intersection of Two Known Points

Step	Action
1	Orient the map using one of the methods described previously.
2	Identify two or three distant, easily recognizable points on the ground and find them on the map. These points are called known points.
3	Measure the magnetic azimuth from your position to each known point using the compass-to-cheek technique or center hold technique.
4	Convert the magnetic azimuths to grid azimuths using the declination diagram.
5	For each known point, draw a line on your map from the known point back toward your position along the corresponding grid azimuth.
6	The point of intersection accurately locates your position on the map.
7	From here, you can determine the azimuth of bearing to any terrain feature shown on the map as long as your map is oriented.

Works Cited

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