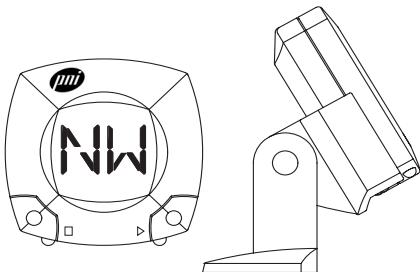

Operation Manual

V100

Electronic Vehicle Compass



CONGRATULATIONS!

You have acquired one of the most sophisticated compasses available for use in a vehicle. The V100 incorporates patented magnetic sensor technology that was developed for the United States Military to give you the most accurate electronic compass headings.

Unlike traditional floating ball compasses, which require difficult manual adjustments, the V100 compass electronically compensates for the magnetic fields generated by a vehicle. Direction of travel is provided instantly on a large LCD display, without the settling time required with floating ball compasses.

The V100 compass utilizes the same magnetic sensor technology found in built-in compasses in GM, Ford, and Chrysler vehicles.

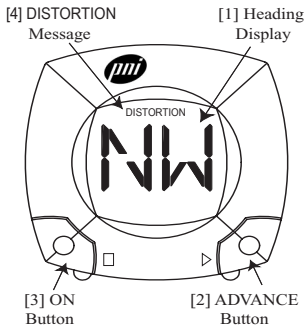
V100 Features:

- **Works in Any Vehicle:** accurate in all types of vehicles - cars, trucks, SUVs, or RVs.
- **Adjustable Holding Bracket:** easily mounts to any windshield with heavy-duty suction cups (included).
- **Easy to Read Display:** compass heading is displayed with 8 large cardinal points (N, NW, W, SW, S, SE, E, NE).

V100 FEATURES

- Removable Compass Unit: compass easily slides off from its holding bracket to be used outside the vehicle or to prevent theft.
- Electronic Calibration: Just press a button and drive your vehicle in two circles. Calibration doesn't have to be repeated until the batteries are removed or the compass is mounted elsewhere.
- "Smart" Auto Shut-Off: turns off automatically to save battery power when the vehicle is parked and no magnetic field change is detected for ten minutes.
- Magnetic Distortion Message: alerts you when magnetic interference from outside sources is affecting the accuracy of the compass.
- Low Power Requirements: operates on 2 "AAA" batteries for over 1 year of usage.
- Wide Temperature Range: -14°F to 140°F operating temperature; -40°F to 160°F storage temperature.
- Accuracy of +/- 10° and resolution of 45°.

DISPLAY AND BUTTONS



[1] Heading Display - Compass heading is displayed with 8 cardinal points (N, NW, W, SW, S, SE, E, NE).

[2] ADVANCE Button - to turn the unit on or off, and to calibrate the compass.

[3] ON Button - to turn the unit on or to exit calibration programming.

[4] "DISTORTION" Message -- The V100 detects when outside magnetic interference is compromising compass accuracy by displaying the word "DISTORTION." Distortion occurs when there has been a significant change in the surrounding magnetic fields, such as when you are driving underneath an overpass or over a bridge.

INSTALLING / REPLACING THE BATTERIES

The V100 uses two “AAA” size batteries

Installing / Replacing the Batteries:

1. Remove the compass from its holding bracket and place it on a solid surface with the LCD facing down and the back of the compass facing up.
2. Slide open the battery cover on the back of the compass housing.
3. Install the two batteries, noting the polarity as shown inside the battery compartment. Replace battery cover.

After the V100 goes through a self-test pattern, the calibration message “CAL” will flash. **You now must proceed with calibration.** See pages 7-8 for information on Calibrating the V100.

Notes:

- If nothing happens, or if the display becomes “stuck” with characters, remove the batteries, wait approximately 1 minute, and then reinsert them. Make sure the batteries are positioned correctly.
- Every time the batteries are removed or replaced, you must recalibrate the compass (see pages 7-8).
- The V100 has an auto shut off power. When you have parked your vehicle and no magnetic field change has been detected for approximately 10 minutes, the compass automatically shuts off. To turn the power back on, press the ON button.

MOUNTING THE V100

Mounting Guidelines:

- The V100 should be mounted on the windshield.
- Choose a place on the windshield that will not obstruct the view of the driver and is within reach so the buttons can be easily pushed.
- For maximum accuracy, the V100 should be mounted at least 5 inches away from strong stereo speakers.
- Once installed, the face of the compass must be pointing towards the rear of the vehicle. The compass can be adjusted vertically, up to $\pm 20^\circ$ from road level and still remain accu-

rate. If it is adjusted more than 20° , the heading information may not be accurate.

Mounting the V100:

1. Install the suction cups (included) onto the base of the holding bracket by fitting them into their holes.
2. Adjust the angle of the holding bracket so that the face of the compass is pointing towards the rear of the vehicle. Loosen the screw on the holding bracket stem by a quarter turn. Make your up and down adjustments, then tighten the screw.

MOUNTING THE V100

3. Press the holding bracket base firmly against the windshield, until the suction cups securely take hold (clean surface of windshield and suction cups, if necessary).
4. Readjust the angle of the holding bracket, if necessary.

Feature: The compass easily slides out of its holding bracket without having to remove the bracket mechanism. This is useful if you want to use the compass outside of the vehicle or to avoid theft. Removing the compass without disrupting the bracket

mechanism eliminates the need for recalibration, since the unit will be repositioned in its holding bracket the same way as when originally calibrated.

You are now ready to calibrate your compass.

CALIBRATING THE V100

Calibration allows the V100 to separate the earth's field from the magnetic fields generated by your vehicle, and therefore provides accurate heading information.

When to Calibrate:

- When the compass is used for the first time in a vehicle.
- When the compass is used in a different location than where previously calibrated.
- When the magnetic "DISTORTION" message is continuously displayed.
- When the batteries are removed or replaced.

Calibration Guidelines:

Before you begin calibration, the V100 must be mounted on the windshield in the location where it will be used in the vehicle. The backlight must also be off.

Calibration should be performed on a level surface.

TIP: Try calibrating your compass on a flat, non-metallic surface prior to driving your vehicle. This will help you get acquainted with the process of calibration.

CALIBRATING THE V100

Calibrating the V100:

Note: If the “CAL” message is already flashing, proceed to step 2.

1. Press and hold for 2 seconds both the ON and ADVANCE buttons until the “CAL” message flashes.
2. Press the ADVANCE button. The “TURN TWICE” message will flash.
3. Turn your vehicle in two circles (see Notes below).
4. Press the ADVANCE button. Calibration is now complete and the compass heading is displayed.

Notes:

- The size of the circles or the direction your vehicle is pointing when beginning or ending the circles does not matter. The circles do not need to be perfect circles, but must be completed in the same direction. It is also important that each circle takes a minimum of 20 seconds but less than 1 minute to complete.
- If at any time during calibration the ON button is pressed, calibration is exited and the previous calibration settings remain in memory.

FREQUENTLY ASKED QUESTIONS

How does the V100 work?

The V100 uses a patented magnetic sensor technology that was developed by PNI Corp. for the U.S. Military. This technology is called Magneto-Inductive and is the largest advance in compass technology since the fluxgate was invented 60 years ago. The earth generates a magnetic field, and through a mathematical calculation, compass heading is determined. The Magneto-Inductive technology is able to electronically sense the difference in the earth's field from your vehicle's magnetic field. The V100's microprocessor electronically subtracts your vehicle's mag-

netic fields, displaying highly accurate compass readings. Magneto-Inductive sensor technology has many advantages over other technologies including better performance, consuming less power and being less expensive. These advantages have made Magneto-Inductive sensor technology the choice for many high profile compass applications including GM, Ford, and Chrysler automobiles, Polaris jet skis, Bayliner boats and Timex watches.

Where can the V100 be used?

The V100 can be used in any type of vehicle including cars, trucks, vans, SUVs, and RVs.

FREQUENTLY ASKED QUESTIONS

How do I read the display?

The V100 displays direction with 8 cardinal points (N, NW, W, SW, S, SE, E, NE).

What is calibration and why is it necessary?

Calibration is the process whereby the V100 separates the earth's magnetic field from externally generated magnetic fields such as those generated by a vehicle's steel body or electronics. Without calibration, the V100 thinks the entire magnetic field it is reading is from the earth and therefore displays inaccurate compass readings.

When do I need to calibrate the V100?

The V100 needs to be calibrated when used for the first time, when used in an environment with a different magnetic field, or when the batteries are removed or replaced. Using the V100 in a different environment includes moving it to a new position in the same vehicle, installing it in a different vehicle, or when there has been a change to your vehicle such as installation of a new stereo.

FREQUENTLY ASKED QUESTIONS

What happens when the batteries are removed?

Removing the batteries from the V100 erases calibration information. The compass must be recalibrated.

See pages 7 and 8 for instructions on “Calibrating the V100.”

What is magnetic distortion?

Many things generate external magnetic fields that can cause a compass to be inaccurate, such as metal and electronics.

Unlike all other compasses, the V100 senses when there has been a significant change in magnetic fields and displays the “DISTORTION” message. This

may occur when driving over a bridge, under an overpass, over railroad tracks or within close proximity to something with a strong magnetic field. Once the vehicle has moved away from the source of interference, the V100 will be accurate again.

If the “DISTORTION” message is continuously displayed, it is usually a sign that there has been a significant change in magnetic fields and recalibration is necessary. See pages 7 and 8 for instructions on “Calibrating the V100.”

SERVICE AND REPLACEMENT

For the fastest service, contact or return your V100 to the place of purchase.

If you wish to return the unit for replacement or repair to PNI, please follow the following procedures:

1. Obtain a Return Merchandise Authorization (RMA) number by contacting PNI:

- *By Phone:*
1-888-422-6672 (Toll-Free within the U.S. only) or at 707-566-2260
- *By Fax:*
707-566-2261
- *By E-mail:*
returns@pnicorp.com

2. Provide a proof of purchase, such as a mechanical reproduction or carbon copy of a sales receipt. If you send your original receipt, it cannot be returned. Proof-of-purchase must show printed date of purchase, model number, and place of purchase.

Once you have acquired a RMA number, pack the unit securely to prevent damage in transit. If possible, use the original packing material and box. Be sure to send the entire product.

3. Ship prepaid and insured by way of a traceable carrier: such as United Parcel Service (UPS), Roadway Parcel Service (RPS), or First Class

SERVICE AND REPLACEMENT

Mail to avoid loss in transit.

4. With the issued RMA number written on the outside of your package, send your proof-of-purchase and description of the problem to:

PNI Corporation
5464 Skylane Blvd., SuiteA
Santa Rosa, CA 95403-1084

Type or print your name and address where the replacement should be delivered. After receipt of your documents and unit, a replacement unit will be sent to you. Please allow 2-3 weeks from receipt of your returned product to delivery of your replacement.

LIMITED WARRANTY; LIMITATION OF LIABILITY

Precision Navigation, Inc. ("PNI") warrants to the original user that this product will be free of defects in workmanship and materials for one (1) year from the date of purchase. This warranty does not cover wear and tear due to normal use, or damage to the product as the result of improper usage, neglect of care, alteration, accident or unauthorized repair. If the product is found by PNI to be defective and you have provided proof of purchase acceptable to PNI, PNI's entire liability and your exclusive remedy for breach of warranty shall be that PNI, at its option, will replace or repair the product and return the replacement or repaired product to you at no charge, provided that you ship the product to PNI at your expense. PNI warrants the repaired or replaced product to be free from defects in material and workmanship for a period of the greater of: (i) ninety (90) days from the date it is shipped to you; or (ii) the period of time remaining on the original one (1) year warranty.

THE FOREGOING WARRANTY IS GIVEN IN LIEU OF AND PNI DISCLAIMS ALL OTHER WARRANTIES OR REPRESENTATIONS, EXPRESSED OR IMPLIED, IN FACT OR IN LAW, WITH RESPECT TO THIS PRODUCT, INCLUDING, BUT NOT LIMITED TO, (1) THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE, OR (2) THAT USE OF THE PRODUCT WILL BE UNINTERRUPTED AND ERROR FREE. PNI shall have no liability for any indirect or speculative damages (including, but not limited to, consequential, incidental and special damages) relating to the use of or inability to use this product, whether arising out of contract, negligence, tort, or under any warranty theory, or for infringement of any other party's intellectual property rights, irrespective of whether PNI had advance notice of the possibility of any such damages, including, but not limited to, loss of use, revenue or profit. In no event shall PNI's total liability for all claims regarding the product exceed the price paid for the product. PNI neither assumes nor authorizes anyone to assume for it any other liabilities.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.



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