

Classic Instruments

SN46Z

Installation Manual

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Welcome from the Team at Classic Instruments!

Our congratulations and appreciation for your purchase of one of the finest quality sets of specialty instruments ever produced! Your instrument set has been conceived, designed, and manufactured by Classic Instruments, Inc. in the U.S.A. Each instrument has been tested and certified for accuracy and quality before packaging and shipping.

For trouble-free installation and operation follow the instructions exactly as outlined. Your instruments were assembled to precise specifications and although each has a seven (7) year warranty covering defective parts and workmanship – this warranty will not cover instruments or sender units which have been installed incorrectly.

Follow our recommended procedures for installation and proper hookup to maintain the value and appearance of your instrument set during many future years of accurate and dependable service!

LIMITED WARRANTY

Classic Instruments, Inc. (CI) warrants to the original purchaser that any CI product manufactured or supplied by CI will be free from defects in material and workmanship under normal use and service for a period of seven (7) years from date of purchase.

Improper installation, use of sending units other than CI's or attempted repair or adjustments by other than CI shall void this warranty. Disassembly of any instruments or senders for whatever reason shall specifically void this warranty.

It's always easy to look to a part for an issue with your set. Before you conclude that a part may be bad, thoroughly check your work. Today's semiconductors and passive components have reached incredibly high reliability levels, but there is still room for error in our human construction skills. However, on rare occasions a sour part can slip through. Please be aware that testing can usually determine if the part was truly defective or damaged by assembly or usage. Don't be afraid of telling us that you "blew it", we're all human and in most cases, replacement parts are very reasonably priced.

Purchaser requesting a product to be repaired or replaced under warranty must first call CI at 1-800-575-0461 before the return of defective part. Send defective part to 826 Moll Drive, Boyne City, MI 49712, USA. Include a written description of the failure with defective part.

Purchaser agrees and accepts that under no circumstances will a warranty replacement be furnished until CI has first received, inspected, and tested the returned part.

All other warranties expressed or implied are hereby excluded including any implied warranty of merchandise and implied warranty of fitness for a particular purpose. The sole and exclusive remedy for breach of this warranty is limited to the replacement set forth above.

It is expressly agreed that there shall be no further remedy for consequential or other type of damage, including any claim for loss of profit, engine damage or injury.

TECHNICAL ASSISTANCE

1-800-575-0461

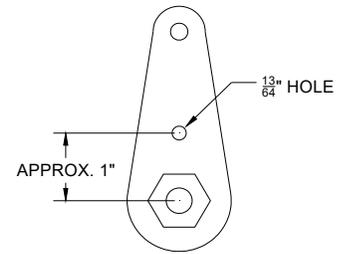
OR

Visit our website for the latest in gauge design and updates to our installation manual

www.classicinstruments.com

Mounting the Sensor

- 1) Drill a $\frac{13}{64}$ " diameter hole in the transmission's shift arm approximately 1" from the pivot point. Use this hole to mount one of the included ball pivot studs.
- 2) Mount the sensor bracket to the transmission where it will be within 6" of the transmission's shift arm. (Some modification to the bracket may be necessary depending on your transmission. Use included spacers if necessary. Original transmission bolts can be used to secure the bracket, but longer bolts may be necessary)
- 3) Mount the sensor to the bracket using the two included screws. (The sensor may be mounted in any orientation.)
- 4) Attach the included sensor arm to the sensor's pivot. Loosely thread the included screw to the bottom of the sensor arm, but do not tighten it yet. (the sensor pivot should rotate, but the arm should remain stationary)
- 5) Mount another ball pivot stud to the sensor arm. (try to have the ball pivot stud on the shift arm and the sensor arm aligned with each other)
- 6) Measure the included threaded stud to make sure it is the correct length to attach between the two ball pivot studs. (the threaded stud may need to be cut)
- 7) Connect the two ball pivot studs with the threaded stud. (Use the included jam nuts to secure.)
- 8) Rotate the pivot point of the sensor in the direction of the transmission's shift arm until you hit the internal limit. Then, rotate the sensor pivot slightly in the other direction and tighten the screw (using a .050 Allen Wrench) at the bottom of the sensor arm so that the pivot rotates with the sensor arm. (The point is to make sure the sensor doesn't "bottom out" when being rotated by the transmission's shift arm. **DO NOT OVER EXTEND THE SENSOR TRAVEL!**)
- 9) Test to make sure the sensor arm moves freely when the transmissions shift arm moves and the sensor does not bottom out.
- 10) Run the three-wire harness to the SN46Z decoder box which you should locate somewhere under your dash.



Transmission Shift Arm

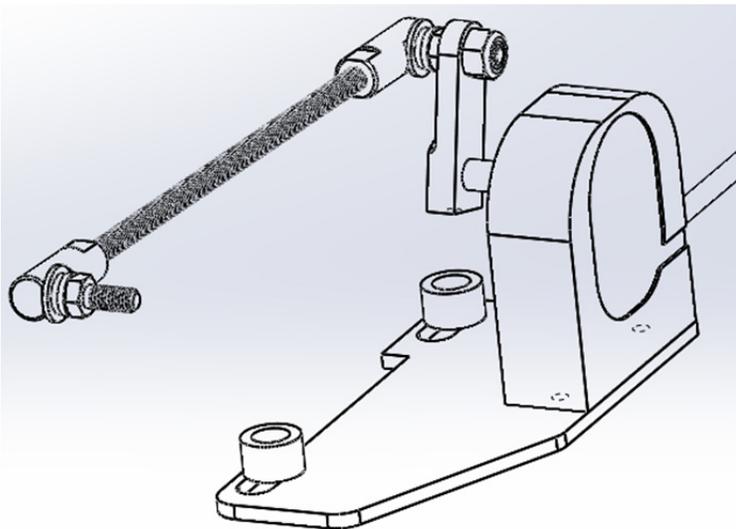


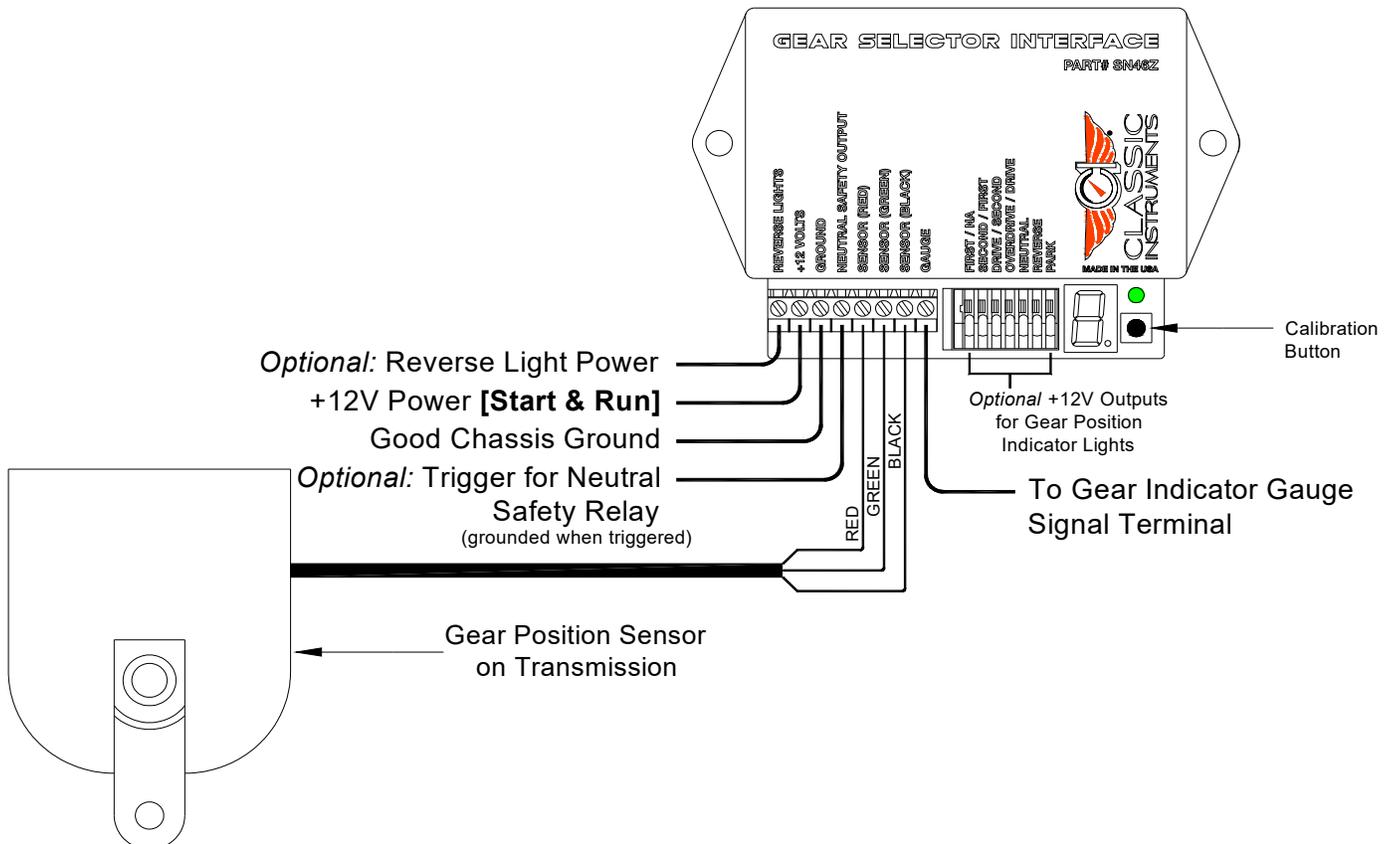
Diagram of Assembled Sensor



Sensor Mounted on a Turbo 350 Transmission

Wiring the SN46Z

- 1) Connect +12V power (in the Run and Start key positions) to the terminal marked **+12 VOLTS**.
- 2) Connect a good ground to the terminal marked **GROUND**.
- 3) Connect the red wire from the sensor to the terminal marked **SENSOR (RED)**.
- 4) Connect the green wire from the sensor to the terminal marked **SENSOR (GREEN)**.
- 5) Connect the black wire from the sensor to the terminal marked **SENSOR (BLACK)**.
- 6) Connect a wire from the signal terminal of the gear indicator gauge to the terminal marked **GAUGE**.
- 7) *Optional:* Connect the reverse lights power wire to the terminal marked **REVERSE LIGHTS**.
- 8) *Optional:* Connect the ground trigger wire of a neutral safety relay to the terminal marked **NEUTRAL SAFETY OUTPUT**. *This terminal provides a ground when in Park and Neutral.*
Warning: Connecting anything other than a neutral safety relay's ground to this wire will damage the SN46Z!
- 9) *Optional Gear Indicator Light Wiring:*
 - a. Connect the Park indicator light's +12V wire to the terminal marked **PARK**.
 - b. Connect the Reverse indicator light's +12V wire to the terminal marked **REVERSE**.
 - c. Connect the Neutral indicator light's +12V wire to the terminal marked **NEUTRAL**.
 - d. Connect the first forward gear indicator light's +12V wire to the terminal marked **OVERDRIVE/DRIVE**.
 - e. Connect the second forward gear indicator light's +12V wire to the terminal marked **DRIVE/SECOND**.
 - f. Connect the third forward gear indicator light's +12V wire (if needed) to the terminal marked **SECOND/FIRST**.
 - g. Connect the fourth forward gear indicator light's +12V wire (if needed) to the terminal marked **FIRST/NA**.



SN46Z Calibration

There are three parts to calibrating the SN46Z. First, set how many forward gears the transmission has. Second, set the sensor position at each of the gears. Third, set the pointer position on the gauge for each gear position. You must perform each of these parts consecutively to successfully calibrate the SN46Z.

Setting number of forward gears

- 1) Start with the transmission in Park with the key off. *(no lights should be lit on the SN46Z module)*
- 2) Press and hold the calibration button while turning the key on.
 - a. A solid “C” will be displayed, indicating you are in shift calibration mode.
- 3) Tapping the calibration button changes the display to “2” indicating 2 forward gears.
 - a. Continuing to tap the button causes the display to cycle between 2, 3 and 4 (indicating the number of forward gears).
 - i. *4 forward gears would be used for transmissions that have overdrive. 3 forward gears would be used for transmissions without overdrive.*
- 4) Push and hold the calibration button for approximately 10 seconds to select the number of forward gears indicated by the LED display.
 - a. A solid “C” will display to confirm the value is saved.

Setting the Sensor Calibration

3 Forward Gears (NON-Overdrive) Calibration

- 1) Tap the calibration button to enter sensor calibration mode.
 - a. A flashing “P” will be indicated on the display.
- 2) Make sure the transmission is in Park, and then press the calibration button.
 - a. The “P” should remain on steady to indicate the sensor Park position is programmed.
- 3) Tap the calibration button again. An “r” will begin flashing on the display.
- 4) Shift the transmission into Reverse, and then press the calibration button.
 - a. The “r” should remain on steady to indicate the sensor Reverse position is programmed. *(The sensor position must change to cause the display to stop flashing. If the display doesn't stop flashing, check to make sure the sensor is moving when you shift gears)*
- 5) Tap the calibration button again. An “n” will begin flashing on the display.
- 6) Shift the transmission into Neutral, and then press the calibration button.
 - a. The “n” should remain on steady to indicate the sensor Neutral position is programmed. *(The sensor position must change to cause the display to stop flashing. If the display doesn't stop flashing, check to make sure the sensor is moving when you shift gears)*
- 7) Tap the calibration button again. A “3” will begin flashing on the display.
- 8) Shift the transmission into Drive, and then press the calibration button.
 - a. The “3” should remain on steady to indicate the sensor Drive position is programmed. *(The sensor position must change to cause the display to stop flashing. If the display doesn't stop flashing, check to make sure the sensor is moving when you shift gears)*
- 9) Tap the calibration button again. A “2” will begin flashing on the display.
- 10) Shift the transmission into 2nd gear, and then press the calibration button.
 - a. The “2” should remain on steady to indicate the sensor 2nd gear position is programmed. *(The sensor position must change to cause the display to stop flashing. If the display doesn't stop flashing, check to make sure the sensor is moving when you shift gears)*

- 11) Tap the calibration button again. A “1” will begin flashing on the display.
- 12) Shift the transmission into 1st gear, and then press the calibration button.
 - a. The “1” should remain on steady to indicate the sensor 1st gear position is programmed.
(The sensor position must change to cause the display to stop flashing. If the display doesn't stop flashing, check to make sure the sensor is moving when you shift gears)
- 13) Programming for the sensor is now completed.
 - a. To verify that the calibration was successful, slowly shift the transmission back to Park. The display should properly change values as you shift through each gear.

4 Forward Gears (Overdrive) Calibration

- 1) Tap the calibration button to enter sensor calibration mode.
 - a. A flashing “P” will be indicated on the display.
- 2) Make sure the transmission is in Park, and then press the calibration button.
 - a. The “P” should remain on steady to indicate the sensor Park position is programmed.
- 3) Tap the calibration button again. An “r” will begin flashing on the display.
- 4) Shift the transmission into Reverse, and then press the calibration button.
 - a. The “r” should remain on steady to indicate the sensor Reverse position is programmed.
(The sensor position must change to cause the display to stop flashing. If the display doesn't stop flashing, check to make sure the sensor is moving when you shift gears)
- 5) Tap the calibration button again. An “n” will begin flashing on the display.
- 6) Shift the transmission into Neutral, and then press the calibration button.
 - a. The “n” should remain on steady to indicate the sensor Neutral position is programmed.
(The sensor position must change to cause the display to stop flashing. If the display doesn't stop flashing, check to make sure the sensor is moving when you shift gears)
- 7) Tap the calibration button again. A “4” will begin flashing on the display.
- 8) Shift the transmission into Overdrive, and then press the calibration button.
 - a. The “4” should remain on steady to indicate the sensor Overdrive position is programmed.
(The sensor position must change to cause the display to stop flashing. If the display doesn't stop flashing, check to make sure the sensor is moving when you shift gears)
- 9) Tap the calibration button again. A “3” will begin flashing on the display.
- 10) Shift the transmission into Drive, and then press the calibration button.
 - a. The “3” should remain on steady to indicate the sensor Drive position is programmed.
(The sensor position must change to cause the display to stop flashing. If the display doesn't stop flashing, check to make sure the sensor is moving when you shift gears)
- 11) Tap the calibration button again. A “2” will begin flashing on the display.
- 12) Shift the transmission into 2nd gear, and then press the calibration button.
 - a. The “2” should remain on steady to indicate the sensor 2nd gear position is programmed.
(The sensor position must change to cause the display to stop flashing. If the display doesn't stop flashing, check to make sure the sensor is moving when you shift gears)
- 13) Tap the calibration button again. A “1” will begin flashing on the display.
- 14) Shift the transmission into 1st gear, and then press the calibration button.
 - a. The “1” should remain on steady to indicate the sensor 1st gear position is programmed.
(The sensor position must change to cause the display to stop flashing. If the display doesn't stop flashing, check to make sure the sensor is moving when you shift gears)
- 15) Programming for the sensor is now completed.
 - a. To verify that the calibration was successful, slowly shift the transmission back to Park. The display should properly change values as you shift through each gear.

Setting the Gauge Calibration

- 1) Push and hold the calibration button for approximately 10 seconds until the display shows a solid “g”.
 - a. The SN46Z will now be in the gauge calibration mode.
- 2) Push and hold the calibration button again until the display starts alternating between “g” and the number corresponding with the gear being programmed. (*starting with Park*)
 - a. Park is indicated as “P”, reverse as “2”, neutral as “3”, etc...
- 3) Push and hold the calibration button to change the pointer position on the gauge to indicate the indicated gear.
 - a. *The first time the button is pressed and held, the pointer will move counter clockwise. The second time the button is pressed and held, the pointer will move clockwise. The button will alternate the gauge pointer movement between clockwise and counter clockwise each time it is pressed.*
- 4) Once the gauge is indicating the correct gear, wait approximately 8 seconds without pushing the button.
 - a. The display will change back to a solid “g” to indicate the gauge position has been saved.
- 5) Repeat steps 2 – 4 for the rest of the gear positions (2, 3, 4, 5, 6, 7*) of the transmission. If you programmed 3 forward gears, the display will change to “C” after setting the gauge 6 position. If you programmed 4 forward gears, the display will change to “C” after setting the gauge 7 position.
- 6) Once the display shows “C”, push and hold the calibration button for approximately 10 seconds until the display turns off.
 - a. SN46Z calibration is now complete!