MCL-3000 SERIES COMPASS & AIR TEMPERATURE GAUGE
PART# MCL-GPS17

Thank you for purchasing the Dakota Digital MCL-GPS17 gauge for your Harley Davidson Touring bike. This gauge is designed to be a direct, plug in replacement for all touring models from 1996 - 2013. This is part of a six gauge package for touring models so you can add additional gauges as you choose.

The MCL-GPS17 gauge has an internal GPS receiver to provide the compass heading and will plug into the stock air temperature sensor. No additional sensors need to be connected or installed. The heading is determined by the change in position as you are moving, so the compass heading is accurate while you are riding. At speeds below 3 MPH, it will keep the last heading held constant. On initial power-up it will need to wait for the GPS to acquire satellite signals to begin operation. The time required may be from 15 seconds to 15 minutes depending on how long the gauge has been off and the visibility of the satellites in the sky. The typical acquisition time is from 30 seconds to 2 minutes.

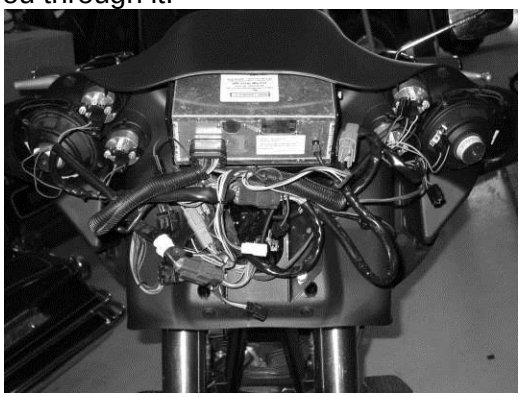
INSTALLATION

First read and familiarize yourself with all of the components and this manual. The first step is to remove the seat and disconnect the negative side of the battery, as with any electronic install. Once the battery is disconnected you are ready to start.

REMOVAL OF FACTORY GAUGES

Remove the outer fairing; this will vary from model to model, please follow the service manual to expose the wiring and gauges. Don't be alarmed by the amount of wires behind the fairing, this is a direct plug in kit and these detailed instructions will guide you through it.

Pic of Street Glide with outer fairing removed

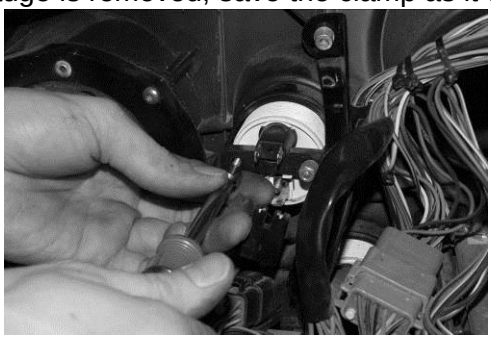


Pic of Road Glide with outer fairing removed

All of the small gauges, fuel, volts, oil, and air temp, have two plugs. One is for illumination while the other is for the gauge power, ground, and sensor signal. The illumination harness, two pins (orange and black wires), will not be reused and can hang freely inside the fairing with the bulb removed, or can be secured to the other gauge wires to clean things up. The three pin connector from the stock gauge will be used to connect the new Dakota Digital MCL-GPS17 gauge. Unplug connectors at the back of the gauge, then remove the two 5/16" nuts holding the clamp and remove the gauge.

******New nuts for the gauge are included in the hardware pack DO NOT reuse the stock nuts for the new gauge; they are not the same thread.***

Once the gauge is removed, save the clamp as it will be reused with the new MCL gauge.

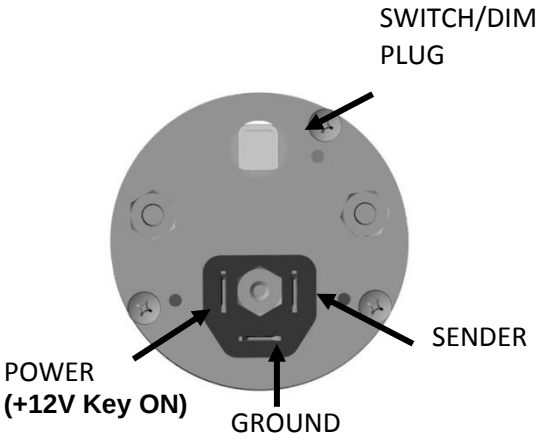


Remove the small gauge with 5/16" wrench or nut driver

Save Clamp, and reuse for install

INSTALLATION OF NEW MCL-GPS17 GAUGE

Install the new gauge into the fairing using the original clamp, along with the supplied nuts. Be sure the alignment tab on the clamp lines up with the notches in the fairing when tightening the clamp back up, flat side down.



WIRING

This gauge is designed to replace the factory air temperature gauge and will plug into the stock three pin connector with no modifications. The two pin bulb connector will not be used and can be taped up or secured using zip ties.

If the wiring harness plug is not available, wire according to the drawing on next page. Standard ¼" female spade connectors can be used to make a connection to the gauge.

The second connector toward the top of the back side of the gauge is where the supplied Switch/Dim harness connects. Both inputs are "triggered" when there is +12V on either wire.

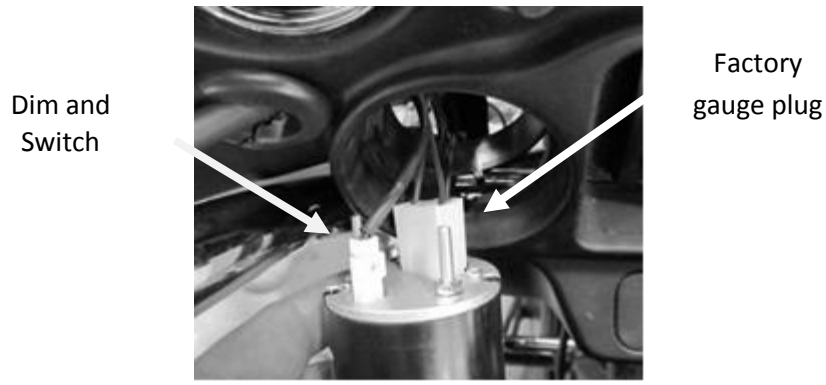
BLUE Wire (Dim Input)

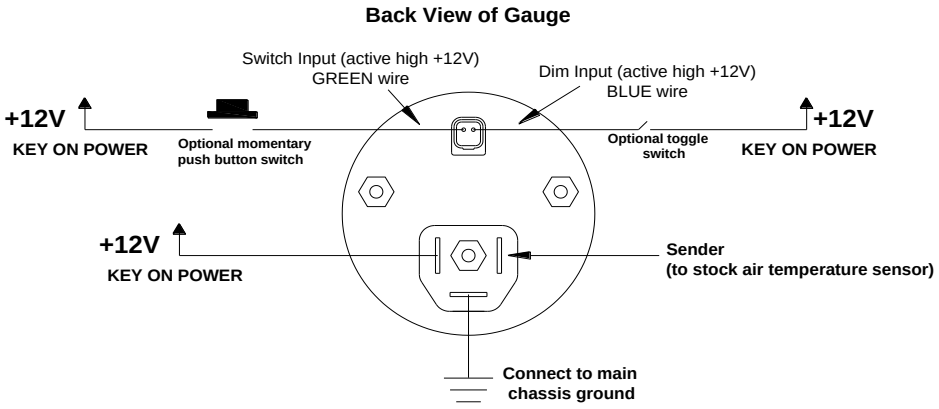
The BLUE wire is used for optional night time dimming function. When this wire receives +12V the gauge will dim to about ½ brightness.

GREEN Wire (Switch Input)

The GREEN wire is used for a switch input for entering setup. This wire can be wired to a momentary push button switch and the other side of the switch to +12V. The wire can also be stripped back and touched to +12V to enter setup and then taped off once complete.

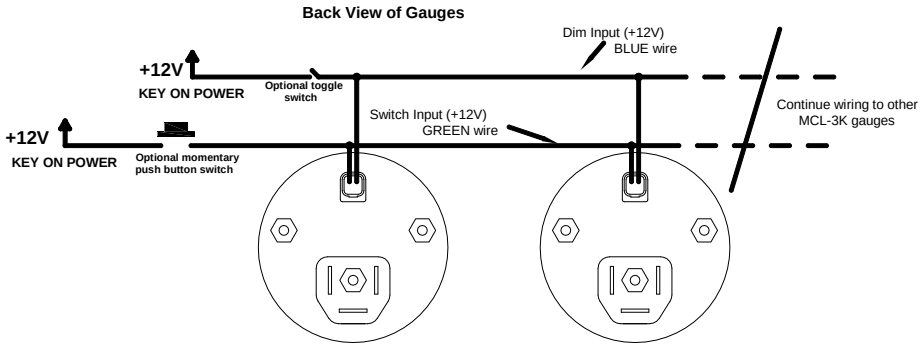
(Wiring diagram on next page)





If you are replacing a gauge in a set of Dakota Digital gauges, plug the small, white, two-pin connector into the compass gauge just as it was on the other gauge you removed. If you are adding this gauge to the set rather than replacing one (you will have a total of 5 small Dakota Digital gauges on the bike) you will need to locate any one of the other BLUE and GREEN wires going to the other gauges in the set, cut and splice into the new harness. Match BLUE to BLUE and GREEN to GREEN. If you are installing multiple MCL-3K gauges without a Dakota Digital Speedometer, you can tie the GREEN wires together and then to one switch. The same is true for the BLUE wire, wire all of them to one switch.

If you have an MCL-3K Tachometer, it will actually serve as the dimming "switch". The BLUE wire on any of the MCL-3K Tachs will provide a +12V output for the dimming function. The gauge has a light sensor behind the lens and when the ambient light is dim or low it will "turn on" the output and supply +12V to the BLUE wire. You will not need to wire in a toggle switch if you have an MCL-3K tachometer and choose to wire it this way.



OPERATION:

HOW IT WORKS:

The MCL-GPS17 uses the same GPS (Global Positioning System) signals that many common navigation systems use to determine location in the world. This location data is used to determine your motorcycle's direction of travel.

To function properly, the GPS receiver in the gauge must have a clear view of the satellites in the sky to receive the correct signals. This view can be blocked if the gauge is in a building, parking garage, or in underground tunnels. Even going under very wide overpasses can have an effect on the signal strength.

The gauge's heading (N, NW, E etc.) is determined by the actual direction of the MOVEMENT of the gauge itself. This is different from a conventional magnetic compass which uses the earth's magnetic field to determine direction. Using GPS signals for compass heading has several benefits over the magnetic method:

First, the orientation of the gauge is not critical to get a correct heading reading. The GPS compass will read correctly even if it is mounted at an angle to the ground or the bike itself, which can often be the case in a motorcycle.

Second, the GPS compass will not be affected by the bending of the magnetic field due to close by metallic objects (like the handle bars or motorcycle frame) or other magnetic fields from wires or speakers.

Third, the GPS compass will not need to be calibrated after it is installed, which is often the case for a magnetic compass.

It is important to note however that the GPS compass MUST BE MOVING in order to get an accurate direction reading. If the gauge is at a standstill, it will display the last direction calculated when it was moving, which may or may not be the direction the vehicle is now pointed. Once the gauge is again moving, a new direction can be calculated and displayed.

POWERING UP:

When the gauge is powered on, it must first locate the satellites and determine its location. This can take some time, especially if it has been a while since the gauge was last powered up. It can take up to a full minute depending on the current position of the satellites and last power on time.

While the gauge is locating, the heading section of the gauge will be blank and the lower message center will read " - " until a GPS location is determined. Riding while the gauge is in this state will not have any negative effect on the gauge or its location process.

Once the gauge has located enough satellites, the heading will be displayed.

TEMPERATURE DISPLAY:

The upper portion of the display shows the reading from the stock temperature sensor from the bike. This readout can be set to display in either Fahrenheit or Celsius through the setup menu.

GAUGE SETUP

The GREEN switch input wire, in the two pin connector, is used to enter setup. If you are only installing one or a couple Dakota Digital MCL-3K gauges set up may seem a little strange since they are designed to work as a set, however you'll simply cycle through a few screens to get to the desired gauge. The table below shows what will be on the gauge with each button press, or tapping the GREEN wire to +12V.

	Speed	Tach	Oil psi	Oil temp	Fuel	Volt	Compass
1st	- 1 -	CL	- 1 -	- 1 -	- 1 -	- 1 -	1
2nd	SPd	- 2 -	- 2 -	- 2 -	- 2 -	- 2 -	2
3rd	- 3 -	tCH	- 3 -	- 3 -	- 3 -	- 3 -	3
4th	- 4 -	- 4 -	PSI	- 4 -	- 4 -	- 4 -	4
5th	- 5 -	- 5 -	- 5 -	F or C	- 5 -	- 5 -	5
6th	- 6 -	- 6 -	- 6 -	- 6 -	FUL	- 6 -	6
7th	- 7 -	- 7 -	- 7 -	- 7 -	- 7 -	VLt	7
8th	- 8 -	- 8 -	- 8 -	- 8 -	- 8 -	- 8 -	CM

Please note that the word "switch" in the setup instruction is in reference to the GREEN wire, you can install any momentary push button switch and use that or simply strip the wire back and hold or tap the GREEN wire to a +12V source for set up. Once setup is complete, cover the end of the GREEN wire and secure it so it cannot accidentally be shorted.

To enter setup:

- Press and hold the switch while turning the key on, the gauge should light and show "dxx" (xx is the software code and may be used for tech support).
- Release the switch and " 1" should be displayed. Looking at the table, above, press and release the switch and scroll through until you see "CM" on the display; this is the screen you need to get to in order to enter the compass setup.
- Press and hold the switch until "- -" is displayed in the compass gauge to jump into setup.
- Release the switch. The display will show "SP" (signal power).
- Press and release the switch to toggle between "SP" (signal power), "FC" (temperature unit select), and "EN" (end). When the desired menu is displayed, press and hold the switch until "- -" is displayed to select it.
- "SP" signal power menu will show "HI" (highest satellite signal), "LO" (lowest satellite signal), "AV" (average signal of all satellites), and "N-" (number of satellites being tracked). Press and release the switch to change readings, press and hold the switch to exit back to the main menu.
- "FC" temperature unit select allows Fahrenheit or Celsius to be selected for the temperature unit. Press and release the switch to change the temperature unit, press and hold the switch to save it.
- "EN" exits the setup menu and returns to normal operation or the key can be turned off to exit.

Speed Setup:

If you enter setup for the speedometer, the MCL-GPS17 will use its GPS to give you a speed reading on the lower display to assist in calibrating the speedometer.

Clock Setup:

If you enter setup for the tachometer clock, the MCL-GPS17 will use its GPS to give you the minutes reading to assist in accurately setting the time.

Troubleshooting guide

Problem	Possible cause	Solution
Gauge will not light up.	Orange wire does not have power. Black wire is not getting a good ground. Gauge is damaged.	Connect to a location that has power, check fuses. Connect ground to a different location. Return gauge for repair. (see instructions)
Compass only displays '-'	GPS has not acquired a fix yet. GPS cannot receive a signal.	Wait for the GPS to find enough satellites to track. This may take several minutes depending on how long since it was last powered. GPS signals may be blocked inside buildings or structures. Keep add-on accessories away from the gauge housing behind the fairing.
Temperature reading shows "EE".	Temperature sensor wire is loose or broken.	Check all wire connections and inspect wire for breaks.
Temperature reading shows "- - ".	Temperature sensor wire is shorted to ground.	Check all wire connections for pinched areas or bare insulation.
Temperature reading is erratic or jumps around.	Temperature sensor wire is loose or broken.	Check all wire connections and inspect wire for breaks.
Temperature reading is incorrect.	Temperature sensor is damaged.	Verify wiring or replace sensor.
Gauge will not dim.	Blue wire (2-pin harness) is not connected correctly.	Check wiring connections. Blue wire should have 12 volts when tachometer is dim or dimming switch is on.
Gauge remains dim at all times.	Blue wire (2-wire harness) is getting power all of the time.	Check wiring connections. Blue wire should have 0 volts when tachometer is bright or dimming switch is off.
Gauge will not enter setup.	Green wire (2-wire harness) is not connected correctly.	Check wiring connections. Green wire should have 12 volts when the switch is pressed.

SERVICE AND REPAIR

DAKOTA DIGITAL offers complete service and repair of its product line. In addition, technical consultation is available to help you work through any questions or problems you may be having installing one of our products. Please read through the Troubleshooting Guide. There, you will find the solution to most problems.

Should you ever need to send the unit back for repairs, please call our technical support line, (605) 332-6513, to request a Return Merchandise Authorization number. Package the product in a good quality box along with plenty of packing material. Ship the product by UPS or insured Parcel Post. Be sure to include the RMA number on the package, and include a complete description of the problem with RMA number, your full name and address (street address preferred), and a telephone number where you can be reached during the day. Any returns for warranty work must include a copy of the dated sales receipt from your place of purchase. Send no money. We will bill you after repair.

Dakota Digital 24 Month Warranty

DAKOTA DIGITAL warrants to the ORIGINAL PURCHASER of this product that should it, under normal use and condition, be proven defective in material or workmanship within 24 MONTHS FROM THE DATE OF PURCHASE, such defect(s) will be repaired or replaced at Dakota Digital's option.

This warranty does not cover nor extend to damage to the vehicle's systems, and does not cover removal or reinstallation of the product. This Warranty does not apply to any product or part thereof which in the opinion of the Company has been damaged through alteration, improper installation, mishandling, misuse, neglect, or accident.

This Warranty is in lieu of all other expressed warranties or liabilities. Any implied warranties, including any implied warranty of merchantability, shall be limited to the duration of this written warranty. Any action for breach of any warranty hereunder, including any implied warranty of merchantability, must be brought within a period of 24 months from date of original purchase. No person or representative is authorized to assume, for Dakota Digital, any liability other than expressed herein in connection with the sale of this product.

⚠**WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Dakota Digital
4510 W. 61st St. North
Sioux Falls, SD 57107
www.dakotadigital.com
dakotasupport@dakotadigital.com
Phone (605) 332-6513
Fax (605) 339-4106