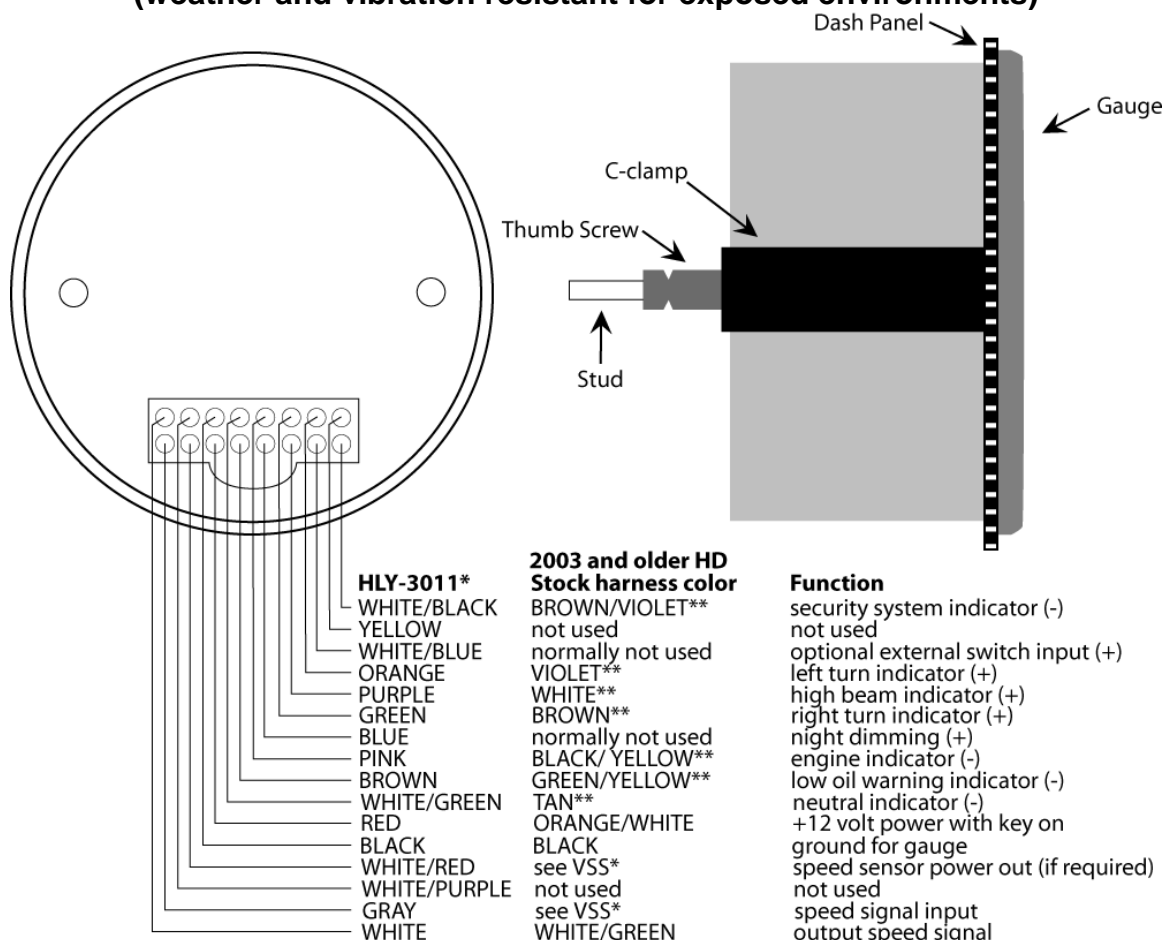


# Dakota Digital

## HLY-3011 rev C PERFORMANCE SPEEDOMETER (weather and vibration resistant for exposed environments)



**\*\*To avoid damage to motorcycle**, please see Speedometer and Status and Warning Indicators sections for details on locating VSS, and indicator wires for **most motorcycle applications**

\*\*The Check Engine indicator will not function using these gauges on **2004+ HD** models due to the signal being fed through the 'data bus', however the HD diagnostic tool can still check and clear codes through the diagnostic connector. **2004+HD** Indicator wires match the above chart, but please read VSS and Tachometer sections for proper wiring.

### GAUGE SETUP AND CALIBRATION

The setup menus are entered by holding the switch in while turning the key on. The menus are as follows:

Main Menu	Sub Menu	Description
SPEED	AUTO	auto calibrate speed
	ADJ	adjust calibrate speed
	UNIT	select mph or kph units MPH KPH
INFO	SERVICE	miles to service setting
	MODEL	Gauge model number
	VER	Gauge revision code
	PPM	speed cal setting
DONE		restart system with new settings

## POWER

Connect the red wire from the main harness to accessory power from the ignition switch.

Never connect this to a battery charger alone. It needs to have a 12 volt battery connected to it. Battery chargers have an unregulated voltage output that will cause the system to not operate properly.

## GROUND

The black wire is the main ground for display system. A poor ground connection can cause improper or erratic operation.

## STATUS AND WARNING INDICATORS

The right turn, left turn, and high beam indicators are activated by 12 volts at their respective hook-up wires. The right turn signal wire is green, the left turn signal wire is orange, and the high beam wire is purple. These can be connected to the same wires that the indicator lights would be connected to. The display system wire colors may not match the wire colors in your electrical wire harness, consult a service manual to determine the color code and location of any wires you cannot locate.

The neutral, low oil, and check engine indicators are activated by ground at their respective hook-up wires. The check engine wire is pink, the low oil wire is brown, and the neutral wire is white/green.

## SECURITY SYSTEM INDICATOR

The security system indicator is a red light that is activated by 12 volts to the white/black wire. It will light up whether the gauge is powered or not.

## VSS(Vehicle Speed Sensor connections)

***Failure to calibrate the speedometer may cause your odometer mileage to increase very rapidly.***

The gray wire connects to the vehicle speed sensor. For two wire pulse generators attached to a speedometer cable, attach one wire from the sensor to the speedometer ground and connect the other to the gray wire. If the signal is being shared by a cruise control or ECM, make sure they all use a common ground for the pulse generator.

For inductive pickup's, connect one terminal from the pickup to ground and connect the other terminal to the gray wire on the gauge.

For 3 wire Hall-effect sensors, refer to the installation instructions for the sensor to determine wire color code. Most 3 wire sensors use the following color code: RED – power, BLACK – ground, WHITE – speed signal. Connect the sensor signal wire to the gauge gray wire, connect the sensor power wire to the gauge white w/red stripe, and connect the sensor ground wire to the gauge black wire. If the bike's harness provides +5V power and ground to the sensor, please leave all wires connected to the bike as from the factory and "Tee" into the signal wire.

For speed sensor integrated into a vehicle wiring harness(most **Metric Cruisers** w/factory VSS utilize a 3-wire Hall-effect sensor), consult a service manual to determine the color code and location of the speedometer signal. **If the factory harness supplies +5V to the sensor, please utilize the factory connection in place of the white/red power wire.**

**For 2004+ Harley and 2003 V-Rod** applications make sure to simply "Tee" into the white wire on the speed sensor to make certain the ECM will still receive its proper VSS signal from the sensor.

**2006+ Sportsters** utilize a black/blue wire for the VSS signal in place of the white wire on most big-twin models.

The speedometer is fully adjustable and calibration is discussed in the **Speedometer Setup** section. VSS wires should be isolated from the ignition system. Coils, plug wires, or tachometer signal wires routed near or with the VSS wire can cause: erratic speedometer operation, speed reading at a standstill, incorrect or difficult calibration.

## **SPEEDOMETER SETUP**

Press and hold the switch while turning the key on and starting the engine. Once the engine is running, release the switch. When "SPEED" is displayed, press the switch again and then release it. The message display should switch between "AUTO", "ADJUST", "UNIT", and "SERVIC".

### **METRIC SELECTION**

If you are setting the system up for metric displays, press the switch when "UNIT" is displayed.

Press and release the switch until "KPH" is displayed.

Press and hold the switch until "DONE" is displayed.

### **SPEED CALIBRATION**

There are two methods for calibrating the speedometer, auto cal and adjust. Either one can be used. Auto cal requires that you have one measured mile marked out (km for metric), this is the best method to start with if your speedometer is a long ways off. Adjust requires you to follow another vehicle going at a set speed or timing your self over a mile to determine your speed.

#### **Auto Cal**

When "AUTO" is displayed press and release the switch. The speedometer will display "CL" and the message display will show zeroes. You should now begin driving the measured mile. The message display will count the number of pulses received from the sensor. The message display cannot be used to determine when a mile has been driven. Once you reach the end of your marked mile, press the switch again. The calibration is now done.

#### **Adjust**

When "ADJUST" is displayed press and release the switch. The system will restart with "ADJUST" on the message display. The speedometer will show the speed reading. Begin driving at a known speed. When the switch is pressed the speedometer reading will begin increasing until the switch is released. The next time the switch is pressed the reading will begin decreasing until it is released. When the speedometer is correct you can release the switch. The new calibration will be saved if no adjustments are made for 7-10 seconds.

## **PLEASE NOTE:**

### **Common problems during calibration:**

VSS wires should be isolated from the ignition system. Coils, plug wires, or tachometer signal wires routed near or with the VSS wire can cause many problems. If you are seeing **erratic speedometer operation, registering speed at a standstill, or speed changes with engine RPM**, please double-check your VSS wire and tachometer wire routing making sure the VSS wire is separated from any ignition system components.

If your **speedometer registers '00'** all the time, the unit is not receiving a VSS signal, please double-check your sensor wiring and mounting. The speedometer cannot be properly calibrated until you are registering a stable, but incorrect speedometer reading.

Please see **Speed sensor voltage checks** on the last page for assistance in checking your sensor.

## **MILES TO NEXT SERVICE SETUP**

The service mileage is a countdown mile meter. The service mile display can be disabled or can be set to count down from 500 – 7500 miles. If the service mile is enabled and it gets to 0 miles it will display "SERVIC DUE". If the push button switch is pressed and held while "SERVIC DUE" is displayed, the service miles will be reset.

To change the service miles, enable, or disable the reading, go to the SPEED setup menu and then select "SERVIC".

The current setting will be displayed. "OFF" or a mileage from 500 – 7500.

Press and release the switch until the desired setting is displayed.

Press and hold the switch until "DONE" is displayed.

## **INFO MENU**

The INFO menu is used to get the gauge model number, gauge revision code, and speed cal setting. This will normally only be used for diagnostic and troubleshooting.

## FUNCTION SWITCH

The function switch on the front of the speedometer allows access to all of the mileage, rpm, and performance information. Pressing and releasing the function switch toggles through the different displays. The display sequence is as follows:

<u>SPEED MENU</u>		
ODOMTR	>	000000 odometer mileage
TRIP A	>	A 000.0 trip meter mileage A
TRIP B	>	B 000.0 trip meter mileage B
SERVIC	>	S 0000 miles since last service (if programmed)
KPH	>	KPH 00 metric speed conversion (to mph if metric unit is selected)
LO OIL	>	only visible if input is activated
P MENU	>	switch to performance menu
<u>PERFORMANCE MENU</u>		
HI SPD	>	HI 00 high speed recall
0-60 T	>	60 00.0 0-60mph time (0-100kph)
QUARTR	>	QT 00.0 quarter mile time
QT MPH	>	QT 00 quarter mile speed
S MENU	>	switch to speed menu

Example: If the odometer mileage is currently displayed and you want to change to the 0-60 time, press and release the switch until "P MENU" is displayed. Wait until the display switches to "HI RPM". Press and release the switch until "60 TIM" is displayed. After a couple of seconds the display will show the current 0-60 time.

## NIGHT DIMMING

Your display system has a dimming feature that dims the display intensity. Normally the system is at full brightness for daytime viewing. When the blue wire has 12 volts the display intensity will be reduced. Connect this to a toggle switch if you wish to use this feature. To have the system at full brightness all of the time, leave the blue wire disconnected.

## WIRING COLOR CODE FOR GAUGE:

HLY-3011*	2003 and older HD	
PIN # ON GAUGE	Stock harness color	Function
1- WHITE	WHITE/GREEN	output speed signal
2- WHITE/PURPLE	<b>not used</b>	<b>not used</b>
3- BLACK	BLACK	ground for gauge
4- WHITE/GREEN	TAN**	neutral indicator
5- PINK	BLACK/YELLOW**	engine indicator
6- GREEN	BROWN**	right turn indicator
7- ORANGE	VIOLET**	left turn indicator
8- YELLOW	<b>not used</b>	<b>not used</b>
9- GRAY	see VSS section*	speed signal input
10- WHITE/RED	varies with application	speed sensor power out (if required)*
11- RED	ORANGE/WHITE	+12 volt power with key on
12- BROWN	GREEN/YELLOW**	low oil warning indicator
13- BLUE	normally not used	night dimming
14- PURPLE	WHITE**	high beam indicator
15- WHITE/BLUE	normally not used	optional external switch input
16- WHITE/BLACK	BROWN/VIOLET	security system indicator

\*To avoid damage to motorcycle, please see Speedometer and Status and Warning Indicators sections for details on locating VSS, and indicator wires for **most motorcycle applications**

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**MOUNTING:**

The gauge requires a round hole 3-3/8" in diameter. It should be inserted into the opening from the front and the U-clamp will be installed from the back. Tighten the two nuts on the U-clamp so that the gauge is secure.

**Troubleshooting guide.**

<b>Problem</b>	<b>Possible cause</b>	<b>Solution</b>
Gauge will not light up	Red wire does not have power. Black wire is not getting a good ground. <u>Gauge is damaged.</u>	Connect to a location that has power. Connect ground to a different location. <u>Return gauge for repair. (see instructions)</u>
Gauge lights up, but speed will only show zero.	Gray wire is not connected properly. Speed sensor not grounded properly.  Speed sensor is not being turned by transmission. Sensor is not sending a speed signal. <u>Gauge is not calibrated</u>	Check connection from gray wire to speed signal wire. Move ground to different location, preferable close to the speedometer ground. Check cable connection between sensor and transmission. Sensor can be tested by spinning the cable with a drill. Check for a damaged or malfunctioning speed sensor. <u>Gauge must be recalibrated (see instructions).</u>
<b>PLEASE – SET – SPEED</b>	<u>Speedometer not calibrated</u>	<u>Gauge must be calibrated to your vehicle (see instructions)</u>
Speed reading is erratic or jumps around.	Speed sensor wire is loose or broken. Cable is loose or broken. Poor ground connection. Ignition Interference	Check all wire connections and inspect wire for breaks. Check cable between sensor and transmission. Check ground connection on speedometer and sensor. Check for tachometer wires routed with VSS signal wires. Check for VSS signal wires routed near ignition coils Check for poor ignition system ground <u>Use suppression spark plug wires</u>
Speed reading is incorrect.	<u>Gauge is not calibrated correctly.</u>	<u>Gauge must be calibrated (see instructions).</u>
Gauge will not dim.	Blue wire is not connected correctly.	Check wiring connections. Blue wire should have 12 volts with headlights on.
Gauge remains dim at all times.	Blue wire is getting power all of the time.	Connect blue wire to location that only has power only when the headlights are on.
High beam, Left turn, or Right turn indicator does not work.	Loose or incorrect connection to indicator wire.	Check that the appropriate indicator wire has about 0 volts when the indicator should be off and about 12 volts when the indicator should be on.
Neutral, low oil, or engine indicator does not work.	Loose or incorrect connection to indicator wire.	Check that the appropriate indicator wire has about 12 volts when the indicator should be off and about 0 volts when the indicator should be on.

**Speed sensor voltage checks.** All checks should be made with the sensor connected to the gauge and the key on. Checks should be done with a voltmeter and not a test light. Checks for the 3-wire sensor should be made between each individual wire and ground.

3-wire sensor: Red wire should have 9-11 volts dc, slightly less than battery voltage, (sometimes +5V if supplied by factory harness)  
Black wire should show ground, 0 volts dc at all times.  
White wire should vary between 0 and 5 volts dc as the gear teeth, or a steel object passes by the sensor. Aluminum and Stainless Steel will not work with a Hall-effect sensor. This can be checked with the sensor mounted and spinning the rear tire slowly, or by removing the sensor and moving a steel object pass the face of the sensor.

2-wire sensor: Measure the voltage between the two sensor wires. With the wheel spinning the voltage should be about 1-10 volts ac (make sure the meter is set to AC volts and not DC volts for this check).

## **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.

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