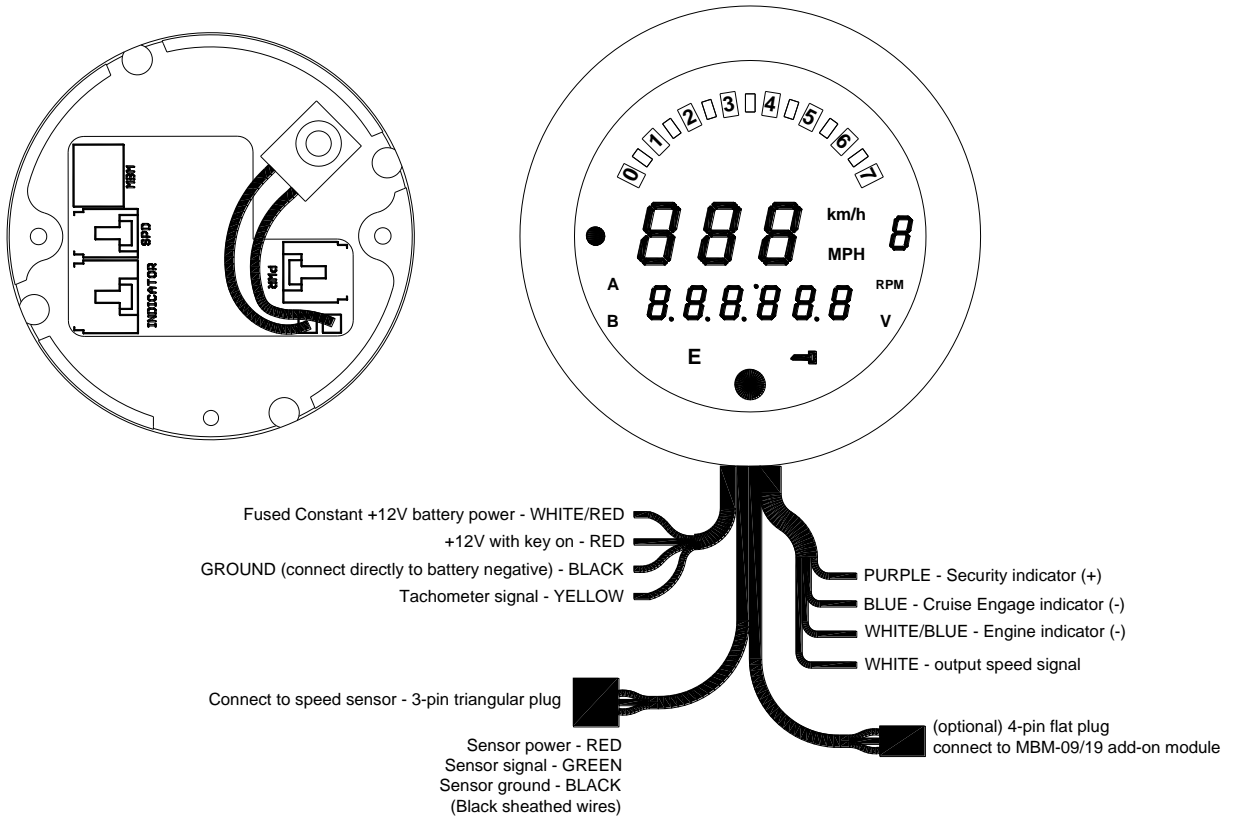# MODEL MCL-3200
3-3/8" SPEEDOMETER/TACHOMETER for 1994 – 2003

IMPORTANT NOTE! **This gauge has an odometer preset option that is only available one time in the first 100 miles (160km) of operation. See "*Odometer preset*" for instructions.**

Fused Constant +12V battery power - WHITE/RED
+12V with key on - RED
GROUND (connect directly to battery negative) - BLACK
Tachometer signal - YELLOW

PURPLE - Security indicator (+)
BLUE - Cruise Engage indicator (-)
WHITE/BLUE - Engine indicator (-)
WHITE - output speed signal

Connect to speed sensor - 3-pin triangular plug

(optional) 4-pin flat plug
connect to MBM-09/19 add-on module

Sensor power - RED
Sensor signal - GREEN
Sensor ground - BLACK
(Black sheathed wires)

MOUNTING

The gauge will mount using the original housing, grommet, and screws. Unbolt the two screws from the back plate at the back of the gauge housing, then unplug the factory gauge, noting the position of the grommets. There is one grommet on the front between the gauge and housing and one on the back between the housing and the back plate. Install the Dakota Digital gauge in reverse order installing grommets and then plugging the new MCL-3200 harnesses in and securing with the two screws.

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POWER

Connect the red wire from the 4-wire main harness to accessory power from the ignition switch. Connect the WHITE/RED wire from the 4-wire main harness to constant battery power. The WHITE/RED wire keeps the clock time and the RED wire lights up the gauge.

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 from the 4-wire harness is the main ground for display system. A poor ground connection can cause improper or erratic operation.

SPEEDOMETER

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

The speed input connector plugs into the speed sensor to tell how fast you are traveling. On cable driven applications, the SEN-6011 (sold separately) connects to the speedometer cable and provides the electric signal. This sensor has a 5/8" coarse thread fitting that accepts mid-80's and earlier cables directly. For newer cycles the speedometer cable will need to be replaced with a cable having the correct fitting. Custom cables can be made, or stock cables can be modified for many of the Metric applications.

With transmissions having the built-in electric sensor, the supplied three-wire harness adapter connects the transmission speed sensor to the speedometer. This system will also accept most after-market inductive, Hall-effect, or ground switch sensors.

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 GREEN wire from the 3-wire harness, connect the sensor power wire to the red wire from the 3-wire harness, and connect the sensor ground wire to the black wire from the 3-wire harness.

For a 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 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 described on page 3. 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.

TACHOMETER

The tachometer is used by connecting the YELLOW wire from the 4-wire harness to the negative side of the coil or to an ignition module tach output. The tachometer is adjustable for 1 – 16 cylinder settings. The 1 cylinder setting is used for single-fire ignition systems without a buffered tach output.

For tach signals integrated into a vehicle wiring harness, consult a service manual to determine the color code and location of the tachometer signal. The bar displays RPM x1000 with a range of 250 – 7000 RPM.

 For 2004+ Harley and 2003 V-Rod

The tachometer signal will come from the negative side of the ignition coil. Blue/Orange for the front cylinder, Yellow/Blue for the rear cylinder, connect the tachometer input to **only one** of these two wires, set the tachometer for a 1 cyl signal, see Tachometer Set-up for instructions.

STATUS AND WARNING INDICATORS

The security indicator is activated by a 12 volt input signal connected to the purple wire in the 5-wire indicator harness. The MCL-3200 wire colors may not match the wire colors in your electrical wire harness.

The cruise engage and check engine indicators are activated by a ground signal connected to the 5-wire indicator harness. The check engine wire is WHITE/BLUE and the cruise engage wire is BLUE.

LOW VOLTAGE WARNING

When the voltage drops below the warning limit with the engine running, LO and your current voltage will be displayed. (default warning limit is 11.0V)

CLOCK

The clock uses a 12 hour format and can be set by pressing and holding the switch while the clock is displayed. After the switch is held for a few seconds the hours will begin flashing. Momentarily pressing the switch will change the hours, holding the switch will move to the minute set, and the minutes will begin flashing. Momentarily pressing the switch will now change the minutes. Holding the switch will exit the clock set mode.

GAUGE SETUP AND CALIBRATION

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

Menu	Description
RUŁO	auto calibrate speed
RdJu5Ł	adjust calibrate speed
un Ił (MPH, km/h)	select speed unit
5 5EŁ (OFF, 500 - 7500)	miles to service setting
PErF (On, OFF)	turn on/off performance displays
n I9HŁ (On, OFF)	turn on/off automatic night dimming
Ł CRL (0- 16)	set engine cylinder count for tachometer
�Rⁿʳᵖᵐᴿᴾᴹ (shown on bar graph)	set RPM shift warning point
ᴜᴜRⁿⱽ (9. 0- 12. 1)	set low volt warning point
9ERr (dOnE, LERrn)	transmission gear display selection
5 I9nRL (On, OFF)	select normal or low voltage tach signal
Rdd on (5CRn, ᴜᴜRrn , dOnE)	set warning points for add on MBM's
InFO	display gauge revision code on speedometer
odoⁿⁿ-	one-time odometer preset

SPEEDOMETER SETUP/CALIBRATION

Press and hold the switch while turning the key on and starting the engine. Once the engine is running, release the switch. Press and release the switch to change the menu selection.

SPEED CALIBRATION

When performing speedometer calibration, enter the speed setup mode by pressing and holding the function switch while turning the key on and starting the bike, once the bike is running, release the switch. This avoids any problems with the battery voltage dropping during engine cranking.

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 needs a lot of correction. 'Adjust' requires you to follow another vehicle going at a set speed, time yourself over a mile to determine your speed, or use a hand-held GPS with speed indication.

RUŁo *Auto Cal*

- Press and release the switch until "RUŁo" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The display will switch to "un Ił" and light up the current speed unit (MPH or km/h).
- Press and hold the switch to keep the current unit or press and release the switch to change the unit.
- Next the speedometer will display "CRL" and the message display will show zeroes. You should now begin driving the measured mile. The message display will show 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 measured mile, press and release the switch again. The calibration is now done.

RdJu5Ł *Adjust*

- Press and release the switch until "RdJu5Ł" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The display will switch to "un Ił" and light up the current speed unit (MPH or km/h).
- Press and hold the switch to keep the current unit or press and release the switch to change the unit.
- Next the system will restart with "RdJu5Ł" 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 10 seconds.
- To exit the adjust mode you will need to stop and turn the key off.

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 trouble-shooting page for assistance in checking your sensor.

ᴜᴎ ιᴛ *Speed unit*

- Press and release the switch until "ᴜᴎ ιᴛ" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The display will light up the current speed unit (MPH or km/h).
- Press and hold the switch to keep the current unit or press and release the switch to change the unit.
- Press and hold the switch until " - " is displayed to save the setting.

ᔕ ᔕᴇᴛ *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 mileage is enabled and it gets to 0 miles it will display "ᔕ -ᴅᴜᴇ" each time the key is turned on. If the push button switch is pressed and held while "ᔕ -ᴅᴜᴇ" or "ᔕ" and a mileage is displayed, the service miles will be reset to your preset value.

- Press and release the switch until "ᔕ ᔕᴇᴛ" is displayed, then press and hold the switch until " – " is displayed.
- Release the switch. The current setting will be displayed, "ᴏFF" or a mileage from 500 - 7500.
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed to save the setting.

ᴎ ιᔕʜᴛ *Night Dimming*

Your display system has a dimming feature that dims the display intensity automatically at night. Normally the system is at full brightness for daytime viewing. To have the system at full brightness all of the time, go into the setup menu as described above and select "ᴎᔕᴛ" (night). Press and release the function switch to select "ᴏFF" instead of "ᴏᴎ". Press and hold the function switch to save the new setting.

- Press and release the switch until "ᴎ ιᔕʜᴛ" is displayed, then press and hold the switch until " – " is displayed.
- Release the switch. The current setting will be displayed. (ᴏᴎ, ᴏFF).
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed to save the setting.

ᴛ ᴄᴀʟ *Engine cylinder setup*

- Press and release the switch until "ᴛ ᴄᴀʟ" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The current cylinder setting will be displayed.
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed.

ᴡᴀʀᴎ ᴿᴾᴹ *RPM warning setup*

The RPM warning/shift point can be adjusted from 2000 – 7500.

- Press and release the switch until "ᴡᴀʀᴎ ᴿᴾᴹ" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The current warning point will be displayed on the bar graph.
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed to save the setting.

ᔕᴇᴀʀ *Gear Indicator setup*

This gauge has a single digit display for gear position. The gauge can learn the gear ratios based on speed and RPM so no sensors are needed, just what you've already connected. It will work with 4, 5, 6, or 7 speed transmissions. To program the gear positions, begin at a section of road where you can gradually shift through all of the gears. Press and hold the switch while turning the key on and starting the engine. Once the engine is running, release the switch.

- Press and release the switch until "ᔕᴇᴀʀ" is displayed, press and hold the switch until " - " is displayed.
- Release the switch. The display will show either "ᴏFF" or "ʟᴇᴀʀᴎ".
- Press and release the switch until "ʟᴇᴀʀᴎ" is shown, then press and hold the switch until " - " is displayed.
- The message will show "ʟᴏ ᴛᴄʜ" if the engine rpm is below 1500, or "ʟᴏ ᔕᴾᴅ" if the vehicle speed is below 5.
- Begin driving in 1st gear. The display should show ᔕᴇᴀʀ ι and the " ι" should be flashing. Drive at a steady speed until the " ι" stops flashing, it should only take about 20 seconds if the speed and RPMs are steady.
  - ➢ *Optionally: If the gear does not stop flashing you can manually override and jump to the next gear by pressing and releasing the switch to store the gear position quicker.*
- Shift to 2nd gear and drive at a steady speed. The display will change to a flashing "2".
- Wait until the "2" stops flashing. Shift to the next gear and a "3" should start flashing.
  - ➢ *Optionally: If the gears do not stop flashing you can manually override and jump to the next gear by pressing and releasing the switch to store the gear position quicker.*
- Repeat this through each gear. When you are done, come to a complete stop or press and hold the switch until the display shows "ᔕᴇᴛᴜᴾ" and then release it.
- Turn the key off and then on again to restart the gauge in normal operation; verify the gear position by riding through each gear and seeing if positions agree.

5 ı9nAL *Tach signal setup*
- Press and release the switch until "5 ı9nAL" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The current setting will be displayed (ı2 H ı or 5 LO).
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed to save the setting.

�Arn ᵛ *Voltage warning setup*
- Press and release the switch until "�Arn ᵛ" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The current warning point will be displayed (9.0 – ı2. ı).
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed to save the setting.

PErF *Performance menu setup*
The performance readings can be turned on or off. When they are turned off the odometer display will only toggle through the mileage readings.
- Press and release the switch until "PErF" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The current setting will be displayed (on or oFF).
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed to save the setting.

ınFO *Info menu*
Displays the current software revision on the speedometer display. Press and hold the switch to see the speedometer calibration value. This will be displayed in pulses per mile.

odoᴹ7 *Odometer preset*
The odometer can be preset by the customer within the first 100 miles. Once the odometer has more than 100 miles, the menu option will no longer be displayed. Make sure you have correctly selected the units to be either MPH or km/h first. The odometer will be set in the selected units. Once you have preset the miles you cannot change it again.

WARNING!!: *This only allows setting odometer to the <u>nearest mile</u>. <u>Do not use tenths!</u> For example a mileage of 65432.1 should be set to "065432" using this method. If the tenths digit is used, the odometer will read 10 times too high.*
- Press and release the switch until "-odoᴹ7" is displayed, then press and hold the switch until " - " is displayed.
- The current miles will be displayed with the left most digit flashing.
- Press and release the switch to increment the digit. Press and hold the switch to move to the next digit to the right.
- Continue until the right most digit has been set. Press and hold the switch and the speed display will show "no".
- Press and hold the switch while "no" is displayed to go back and continue changing the odometer display. Turn the key off to cancel any changes.
- Press and release the switch to change to speed display to "YES". Press and hold the switch while "YES" is displayed to save the current odometer reading.

FUNCTION SWITCH

The function switch on the side of the dash panel allows access to all of the mileage, RPM, and performance information. With the key off this can also be used to momentarily display the current odometer reading. With the key on pressing and releasing the function switch toggles through the different displays. Press and holding the switch will reset the current display. The display sequence is as follows:

ODOMTR	>	000000	odometer mileage
TRIP A	>	$^A000.0$	trip meter mileage A
TRIP B	>	$_B000.0$	trip meter mileage B
SERVIC	>	$5\ 0000$	miles since last service (if programmed)
KPH	>	$======$	metric speed conversion (to mph if metric unit is selected)
VOLTS	>	$00.0\ ^V$	displays voltage to gauge
* HI SPD	>	$HI\ \ 00$	high speed recall
* 0-60 T	>	$60\ \ 00.0$	0-60mph time (0-100kph)
* QUARTR	>	$25\ 00.0$	quarter mile time
* QT MPH	>	$25\ \ 00$	trap speed
CLOCK	>	$12:00$	12 hour clock
* HOURS	>	$Hr\ 0.0$	re-settable hour meter
RPM	>	$0000\ ^{RPM}$	RPM reading in alpha display
* HI RPM	>	$H\ 0000$	high RPM recall

The 0-60 and ¼ mile timers are zeroed by pressing and holding the switch while that timer is displayed. The timer will not restart until the speed reaches zero and you start driving again.

Display functions with a '*' in front of them are only shown with performance readings turned on.

Troubleshooting guide

Problem	Possible cause	Solution
Gauge will not light up	Red wire does not have power.	Connect to a location that has power with the key on.
	White/Red wire does not have power.	Connect to a location that has constant power.
	Black wire is not getting a good ground.	Connect ground to a different location.
	Gauge is damaged.	Return gauge for repair. (see instructions)
Gauge lights up, but speed will only show zero.	Harness is not connected properly.	Check connection from speed harness to speed sensor and gauge.
	Speed sensor not grounded properly.	Move ground to different location, preferable close to the speedometer ground.
	Speed sensor is not being turned by the cable.	Check cable connection between sensor and cable drive. Sensor can be tested by spinning the cable with a drill.
	Sensor is not sending a speed signal.	See speed sensor voltage checks listed below.
	Gauge is not calibrated	Gauge must be recalibrated (see instructions).
PLEASE – SET – SPEED	Speedometer is not calibrated.	Gauge must be calibrated to your bike (see instructions)
Speed reading is erratic or jumps around.	Speed sensor wire is loose or broken.	Check all wire connections and inspect wire for breaks.
	Cable is loose or broken.	Check cable between sensor and transmission or front wheel.
	Poor ground connection.	Check ground connection on speedometer and sensor.
Speed reading is incorrect.	Gauge is not calibrated correctly.	Gauge must be calibrated (see instructions).
Gauge lights up, but tach will only show zero.	Tach wire is not connected properly.	Check connection from yellow wire to tach signal wire.
	Ignition system not grounded properly.	Check engine and ignition system grounds.
	Gauge is not grounded properly.	Check gauge and engine grounds.
	Tach signal type is not set correctly.	Change the signal type as described in the TACH SIGNAL SETUP.
	Gauge is not calibrated	Gauge must be recalibrated (see instructions).
Tach reading is erratic or jumps around.	Tach signal wire is loose or broken.	Check all wire connections and inspect wire for breaks.
	Poor ground connection.	Check ground connection on tachometer and engine.
Tach reading is incorrect.	Gauge is not calibrated correctly.	Gauge must be calibrated (see instructions).
Clock resets when key is off.	White/Red wire does not have constant power.	Connect to a location that has constant power.
Gauge will not dim.	Auto dimming is disabled.	Check setting under "Night" menu.
Gauge remains dim at all times.	Light sensor is covered.	Make sure the bottom center of the gauge lens is clean and not obstructed.
Cruise Engage, 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.
Turn signals do not cancel automatically.	Output speed signal to stock cancel is loose or not connected properly.	Check the connections on the solid white wire coming from the gauge.
	Speedometer is not calibrated.	Calibrate the speedometer.
	Speed sensor is not working.	If the speedometer always shows zero, check speed sensor voltages.
	Turn signal cancel module is not working.	Test turn signal module according to the bike's service manual.
Security indicator does not work.	Loose or incorrect connection to indicator wire.	Check that the wire has about 0 volts when the indicator should be off and about 12 volts when the indicator should be on.

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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 volt meter and not a test light.

3-wire sensor: Red wire should have 9-11 volts dc, slightly less than battery voltage.
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 pass by 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).

WIRING COLOR CODE FOR GAUGE:

MCL-3200 4-wire	Stock HD® harness color	Function
RED	ORANGE/WHITE	+12 volt with key on
WHITE/RED		Constant fused +12V battery power
BLACK	BLACK	ground (connect directly to battery negative)
YELLOW	PINK	tachometer signal
MCL-3200 5-wire	**Stock HD® harness color**	**Function**
PURPLE	BROWN/VIOLET	Security indicator
BLUE	GREEN/RED	Cruise Engage indicator (dot to left of speed reading)
WHITE/BLUE	BLACK/YELLOW	"ENGINE" indicator
WHITE	WHITE/GREEN	output speed signal
MCL-3200 3-wire	**Stock HD® harness color**	**Function**
RED	RED	+12 power to sensor
BLACK	BLACK	ground for sensor
GREEN	WHITE	speed signal

***The HD® wire colors provide are for reference, please consult service manual for verification*

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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