MLX-2000

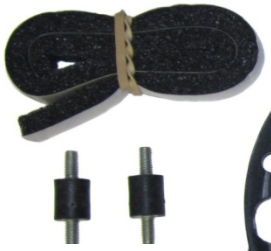
TANK MOUNT 5” SPEEDOMETER/TACHOMETER

For 2003 and earlier Harley Davidson models with “fat bob” style tank-mount instrument

The MLX-2000 kit includes:



MLX display



Foam tape

Rubber studs



#8-32 nuts



Deuce mount



MBM harness

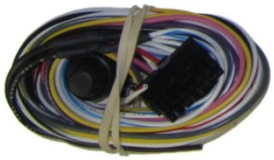


8-32 x ½” screws

#8 Lock washers



#L-brackets



Main harness



Sensor harness



Speed harness

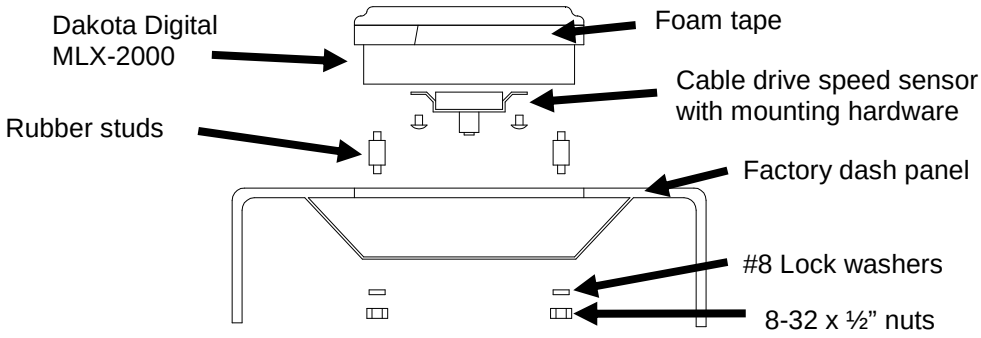
***To avoid damage to motorcycle**, please see Speedometer, Tachometer, and Status and Warning Indicators sections for details on locating VSS, Tachometer, and indicator wires for **most motorcycle applications**

IMPORTANT NOTE!

This gauge has an odometer preset option that is only available for the first 100 miles (160km) of operation. See “preset odometer” on page 11 for instructions.

The MLX-2000 can be used in a variety of tank-mount dashes, including clip-in (1995 and newer), older bolt-in style, and the Deuce dash. The supplied L-brackets are used for the clip in version while the rubber mounts with studs on both sides are used for the bolt-in style. The mounting ring is used for Deuce models.

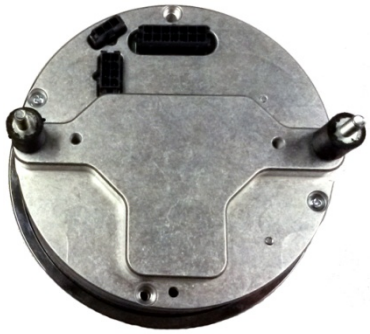
Gauge installation: **(with cable drive speedometer and rubber mounts)**



1. Remove the dash

2. Unbolt and unplug the factory gauge

3. Install the rubber studs and foam tape around the new Dakota Digital gauge. The tape should apply to the side of the gauge housing and be against the bottom of the bezel; this fills the opening in the dash.



4. Insert the MLX-2000 from the front of dash.

5. Use supplied lock washers and nuts to secure the gauge to the factory dash.

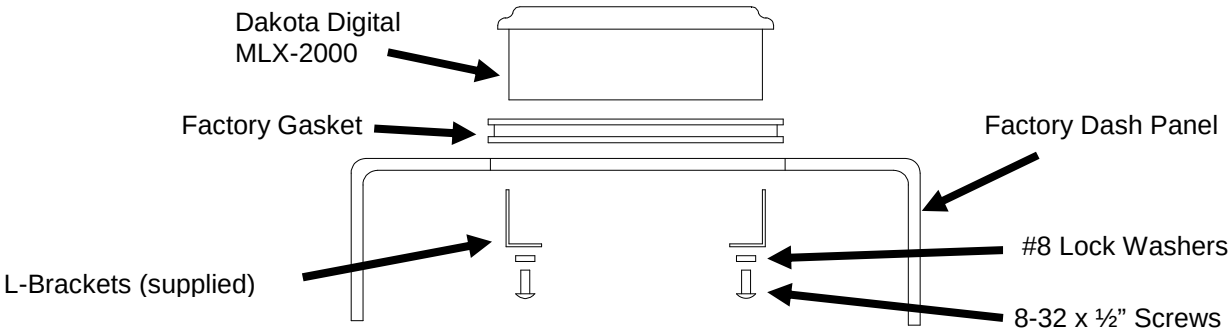
6. 1995 and older bikes require a cable drive speed sensor; install as shown with the supplied bracket and screws supplied with the SEN-6011 speed sensor. Connect the main harness and see page 6 for wiring details.



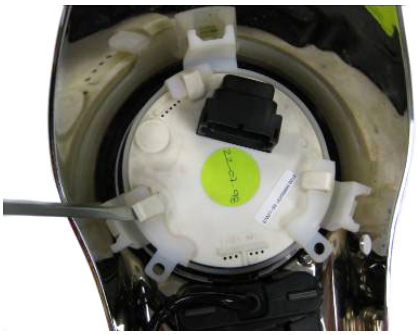
7. If you'd like to add standard indicators, oil pressure, oil temperature, air pressure, boost or compass readings to the MLX-2000, connect the applicable harnesses and route to their appropriate locations; MBM modules may fit under the seat.

8. Skip to page 5 and complete all electrical aspects of the installation before reinstalling the dash.

Gauge installation: **(with factory electronic speed sensor)**



1. Remove the dash
2. Unclip and unplug the factory gauge





3. Ensure the rubber gasket is in place on the dash; the MLX-2000 requires this factory piece.

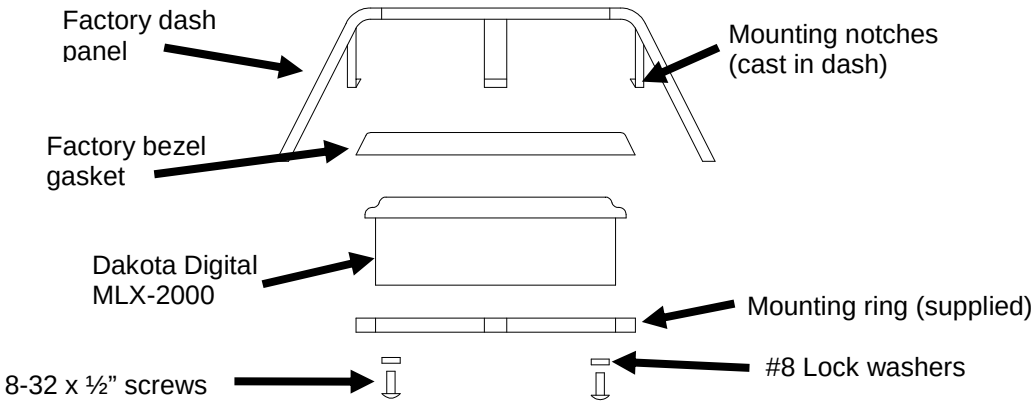


4. Insert the new gauge from front of dash and use supplied L-brackets, lock washers and screws to secure the gauge.
5. Before fully tightening the screws, plug in the main harness and turn the key on so you can align the gauge.
6. Tighten the screws.
7. If you'd like to add standard indicators, oil pressure, oil temperature, air pressure, boost or compass readings to the MLX-2000, connect the applicable harnesses and route to their appropriate locations; MBM modules may fit under the seat.
8. Skip to page 5 and complete all electrical aspects of the installation before reinstalling the dash.

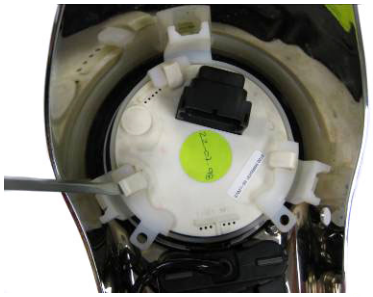
Gauge installation: (Deuce only)

NOTE: The supplied L-bracket mounting pieces are not used for this application and can be discarded

Since the Deuce gauge mounts from under the dash mounting requires use of the supplied mounting ring.



1. Remove the dash
2. Unclip and unplug the factory gauge



3. Remove the rubber gasket from the factory gauge bezel.



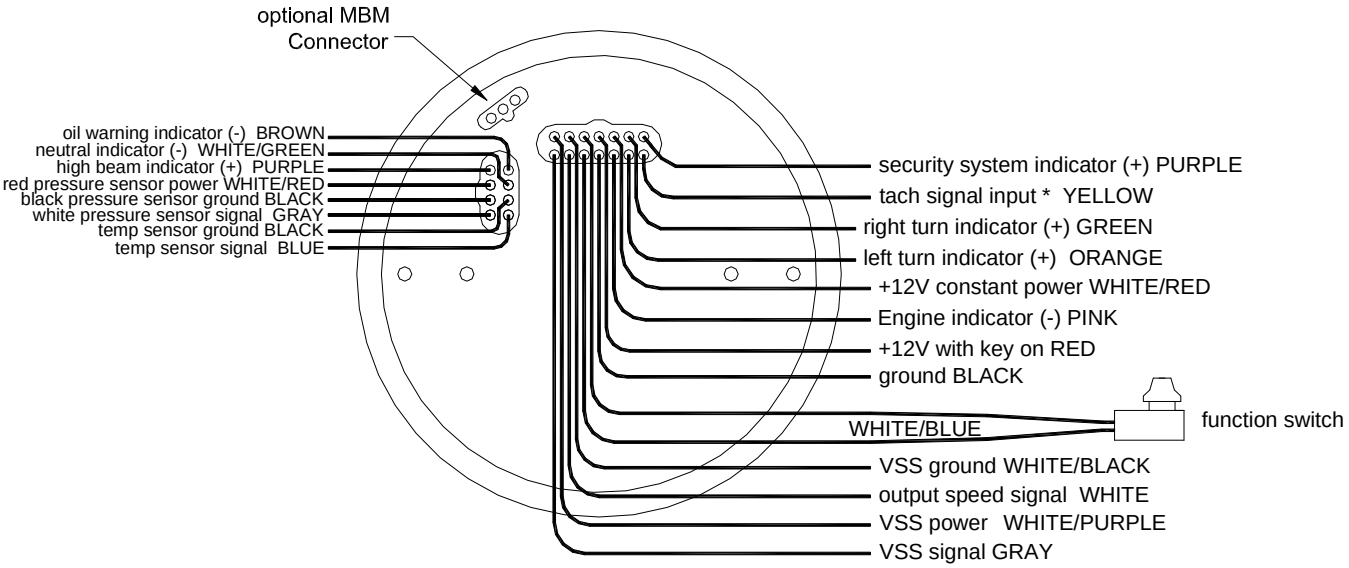
4. Fit the gasket over the bezel of the MLX-2000. Only the inner, raised portion of the front bezel will be exposed while the entire back of the bezel is covered by the gasket.
5. Place the mounting ring over the back of the gauge so the gauge fits in the recessed pocket. Align the screw and connector reliefs for proper orientation. Use the two 8-32 screws and lock washers to secure the bracket to the gauge; this will align the gauge properly in the dash.



6. Snap the gauge into the dash starting with one tab in and, working in a clockwise direction, snap the other two tabs in one at a time. The tabs are tight so it takes a fair amount of pressure to snap them in. Make sure the tabs are seated in the notches of the dash once locked in.
7. Skip to page 5 and complete all electrical aspects of the installation before reinstalling the dash.



Wiring Diagram



Installation: wiring

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.
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.
These can be connected to the signal wires for the original indicator lights.
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 WHITE output speed signal normally attaches to the GREEN/WHITE wire of a stock Harley turn cancelation module. Aftermarket TCM modules, that do not use speed to self-cancel turn signals, will not need this wire.

OPTIONAL OIL TEMPERATURE

Dakota Digital part number SEN-1043 or SEN-1044 must be used. The SEN-1043 is a one-wire sender with 1/8" NPT threads. Connect the terminal on the end of the sender to the indicator harness BLUE wire. Because this sensor grounds through its body, ensure sure the sender threads are able to make a metal-to-metal connection to complete the ground.
The SEN-1044 is a two-wire sender with 3/8" NPT threads. Connect the sender red wire to the indicator harness BLUE wire and connect the sender BLACK wire to the indicator harness BLACK wire.

MLX-2000	**Sender**
BLUE	SEN-1043 terminal **or** SEN-1044 sensor RED wire
BLACK	SEN-1044 sensor BLACK wire

OPTIONAL OIL PRESSURE

Dakota Digital part number SEN-1039 must be used. The sensor red wire connects to the indicator harness WHITE/RED wire, the sensor WHITE wire connects to the gauge GRAY wire, and the sensor BLACK and BARE shield wires connect to the indicator harness BLACK wire.
The BROWN "Low Oil Warning" wire will not be used with the SEN-1039, only with a stock low-pressure switch.

MLX-2000	**Sender**
WHITE/RED	SEN-1039 sensor RED wire
GRAY	SEN-1039 sensor WHITE wire
BLACK	SEN-1039 sensor BLACK wire

WIRING COLORS: (2003 and older HD)

MLX-2000 14-pin*	Stock harness color	Function
YELLOW	PINK or YELLOW/BLUE*	tachometer signal
PINK	BLACK/YELLOW	"ENGINE" indicator (-)
BLACK	BLACK	ground (connect directly to battery negative)
WHITE/BLUE		connected to function switch
WHITE	WHITE/GREEN	output speed signal (to stock TCM)
GRAY	WHITE	VSS signal
PURPLE	BROWN/VIOLET	security system indicator
WHITE/RED		+12v constant power
RED	ORANGE/WHITE	+12v with key on
WHITE/BLUE		connected to function switch
WHITE/BLACK	BLACK	VSS ground
WHITE/PURPLE	RED	VSS power
ORANGE	VIOLET	left turn indicator(+)
GREEN	BROWN	right turn indicator(+)

MLX-2000 8-pin*	Stock harness color	Function
BLUE		temperature sensor signal
BLACK		temperature sensor ground
PURPLE	WHITE	high beam indicator(+)
WHITE/GREEN	TAN	neutral indicator(-)
WHITE/RED	SEN-1039 RED	pressure sensor power
GRAY	SEN-1039 WHITE	pressure sensor signal
BLACK	SEN-1039 BLACK	pressure sensor ground
BROWN	GREEN/YELLOW	oil warning indicator(-)

***To avoid damage to motorcycle**, please consult a factory service manual for details on locating VSS, Tachometer, and indicator wires. The above chart shows typical wire colors for **most motorcycle applications**

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 external sensor connects to the speedometer cable and provides the electric signal. The sensor is normally bolted directly to the bottom of the speedometer, but can also be remote mounted. The 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 one having the correct fitting.

For applications with an electronic speed sensor in the transmissions, a three-wire harness adapter connects the transmission speed sensor to the speedometer. This system will also accept most aftermarket inductive, Hall-effect, or ground switch sensors.

For three wire Hall-effect sensors, refer to the sensor installation instructions to determine wire color code. Most three wire sensors use the following color code: RED – power, BLACK – ground, WHITE – speed signal. Connect the sensor signal wire to the MLX-2000 main harness GRAY wire, connect the sensor power wire to the WHITE/PURPLE wire, and connect the sensor ground wire to the WHITE/BLACK wire.

For a speed sensor integrated into a vehicle wiring harness, consult a service manual to determine the color code and location of the speedometer signal. **If the factory harness supplies +5V to the sensor, connect only the GRAY wire to the speed signal wire, leaving the other sensor wires intact.**

The speedometer is fully adjustable and calibration is discussed in the **Speedometer Setup** section (page 11).

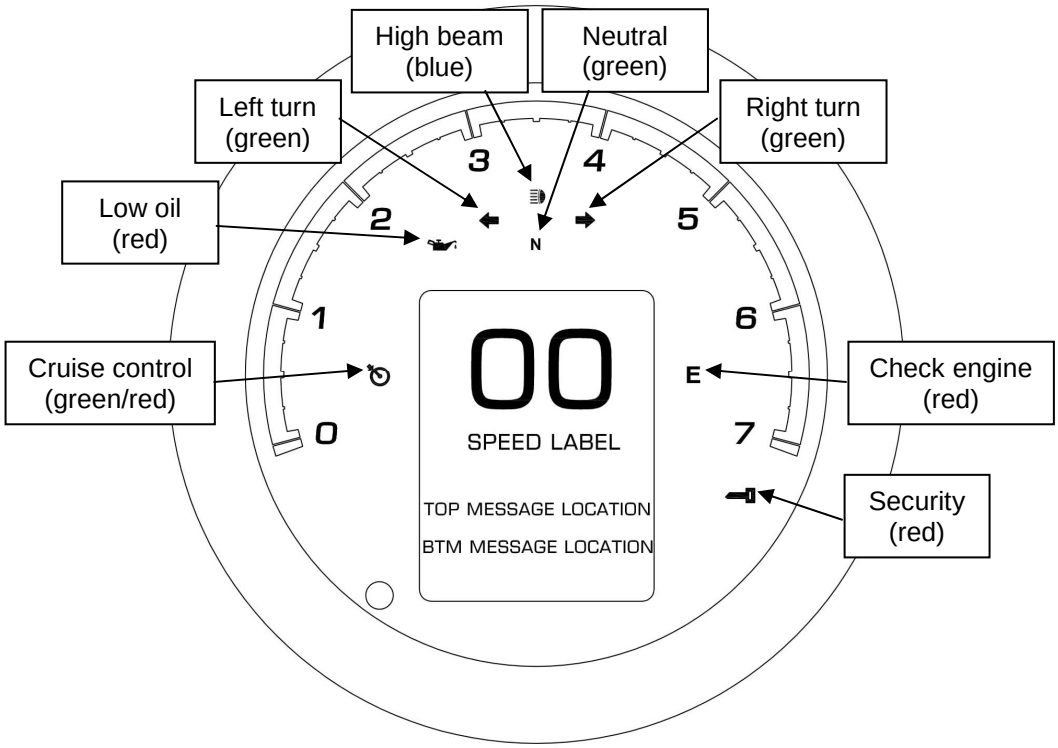
TACHOMETER

The tachometer is activated by connecting the yellow wire from the main 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 one cylinder setting is used for single-fire ignition systems without a buffered tach output.

If there is not a pink wire attached to the stock gauge harness: for carbureted models connect to the pink wire to the negative side of the coil and set the tach for 2 cylinders; for fuel injected models connect to either the blue/orange or yellow/blue under the seat in the harness along the right side frame rail and set the tach for a 1 cylinder. For tach signals integrated into a vehicle wiring harness, consult a service manual to determine the color code and location of the tachometer signal.

System features

INDICATORS



LOCATIONS

There are two message locations available to display additional information under the speedometer. They are labeled Top and Bottom Message Location, respectively. You can program what you want in each location as well as turn readings off. Each location can have multiple readings assigned to it; simply tap the function switch to scroll to the next reading in that location. See function switch operation on page 8.

The main speedometer reading ranges from 0-250MPH/400km/H while the arching bar graph tachometer offers a 0-7000 RPM reading.

Information readings	Description
ODOMETER	Odometer reading (0-999,999)
TRIP A	Trip A odometer reading (0-9999.9)
TRIP B	Trip B odometer reading (0-9999.9)
SERVICE (when enabled)	Distance to next service (0-7500.0 or ---- when “SERVICE DUE”)
TRIP HR	Hours gauge has been on with engine running HH:MM (00:00 to 99:59)
SPEED km/h	Alternate speed unit conversion
RPM	Digital RPM reading (0-9,999)
OIL TEMP (with optional sender present)	Engine oil temperature
OIL PSI (with optional sender present)	Engine oil pressure
VOLTS	System voltage
GEAR/CLOCK	Gear position and 12 hour clock display

Performance readings	
HIGH MPH	High speed recall
0-60 TIME	0-60 mph time in seconds
Quarter mile speed/time	Speed at end of ¼ mile (trap speed) and ¼ mile time from standing start
HIGH RPM	High RPM recall

MBM (Motorcycle Bus interface Module)	
MBM displays (optional)	Readings for connected modules

Operation, Clock Set, Service Reset

FUNCTION SWITCH
The factory trip reset switch on the side of the dash is used as the main function switch. During normal operation, the function switch allows access to information including mileage, RPM, and performance data located within two message locations below the speedometer. The message locations have arrows indicating which message location is currently selected, or in focus. Tap the function switch to scroll through information available in each location.

If you would like to change focus to another location, press and hold the function switch; you'll see a status bar labeled "MOVE FOCUS" filling. Once the status bar is filled, "RELEASE TO MOVE" will be displayed below; if the data in the selected location can be reset, such as a tripmeter, the bar will be emptying with "HOLD TO CLEAR" displayed above. Release the switch before the bar empties and the next line of information will be in focus, illustrated by arrows on each side. Focus alternates top and bottom.

To clear or reset information such as Trip A, Trip B or performance readings, press and hold the function switch until you see the status bar filling. Continue to hold the switch as the bar empties and then displays "HOLD TO CLEAR". Hold until you see "RELEASE" displayed above the status bar. The information will now be reset.

If the function switch is pressed while the key is in the off position, the clock and odometer will be displayed.

SETTING THE CLOCK
The clock uses a 12 hour format and can be set with the key on by holding the function switch while the focus arrow is next to the clock. If the clock is not shown, tap the function switch until it appears; keep in mind you may need to move to another message location.
Hold the switch until "RELEASE" is displayed; the hours will begin flashing. Tap switch to change the hours, hold the switch to move to the minute set and the minutes will begin flashing. Tap the switch to change the minutes; hold the switch to save and exit the clock set mode.

SERVICE RESET
"SERVICE DUE" may appear at start up, indicating your preselected service time is due.
The screen will go back to the last display shown.

- To clear the service odometer, after your service was completed, press and release the function switch until the highlighted "SERVICE DUE" appears in either message location.
- When "SERVICE DUE" is displayed, hold the function switch until "RELEASE" is displayed.

Programming

SETUP MENU

To simplify the setup procedure, please download our IOS or Android app 'Dakota Digital Motorcycle'

The function switch is used to enter setup mode. To get into setup, press and hold the function switch while turning the key on. Press and release the switch to advance through the menus below, press and hold to enter each menu.

Main Menu	Sub Menu	Description
BLUETOOTH	STATUS CHECK	Bluetooth ID and current connection status
	OFF	Disable Bluetooth connections
	SETUP ONLY	Allow Bluetooth connections only while in setup
	ALWAYS ON	Allow Bluetooth connections when key is on
LIGHTING COLOR	COLOR THEMES	Set factory defined color themes
	SET ALL COLOR	Set all areas to one color
	DISPLAY COLOR	Set speed digit color
	LABEL COLOR	Set speed label color
	MESSAGE COLOR	Set message location 1 and 2 color
	BAR COLOR	Set tach/fuel bar color
	WARNING COLOR	Set tach high warning color
	DIMMING	Set dimming method
	SUNLIGHT	Set sunlight brightness method
	RESET	Returns all colors and settings to factory default
SPEED	ADJUST	Adjust speed reading up or down while riding
	AUTO	Drive one mile (or km) to calibrate speed
	UNIT	Select MPH or km/h unit
	SERVICE RESET	Set miles to service reset value or turn off
	ODO PRESET	Odometer preset **(Can only be set within the first 100 miles)**
TACH	INPUT	Set cylinder count and input type
	HIGH WARNING	Set high RPM warning point
OIL PSI	ON/OFF	Enable/Disable option oil pressure reading
	*If ON-	The options below are only visible if this setting is set to on
	LOW WARNING	Set low warning point
	TEST	Display sender voltage for troubleshooting
OIL TEMP	UNIT	Select F or C for temperature unit
	ON/OFF	Enable/disable option oil temperature reading
	*If ON-	The options below are only visible if this setting is set to on
	HIGH WARNING	Set high warning point
	TEST	Display sender resistance for troubleshooting
VOLT	LOW WARNING	Set low warning point
DISPLAYS	TOP MESSAGE	Show/hide performance readings in Speed top message location
	BTM MESSAGE	Show/hide performance readings in Speed bottom message location
	MBMS	Show connected MBM's and set warning points
GEAR	PRESET	Turn gear display off (factory reset)
	LEARN	Learn gears based on speed and RPM
FACTORY RESET		Resets all settings except odometer to factory defaults
VERSION		Displays software codes of each controller
EXIT SETUP		Exit

Setup

PRESS AND HOLD FUNCTION SWITCH WHILE TURNING IGNITION ON. Release the switch.
For speed calibration: **HOLD THE FUNCTION SWITCH WHILE STARTING THE BIKE**
Press and release the switch to move through the different setup menus.
Press and hold the switch to enter a setup menu.
Press and hold to also save an option.
Current selections within a sub menu are denoted with an asterisk (*).

Exiting Setup

At the end of every setup section, steps must be taken to properly exit the setup and return to normal operation. When a section in this manual says "**Exit setup**", please refer to these steps.

- Press and release the function switch until you see ">BACK".
- Press and hold the switch until you see "RELEASE", and release the switch.
- Press and release the function switch until you see ">EXIT MENU".
- Press and hold the function switch until you see "RELEASE", then release the switch.

BLUETOOTH Bluetooth menu

- ✓ Reference this is diagnostic section when using the app for your smartphone or tablet.
- ✓ The app can aid in setup and also read real time data on your device.

- When ">BLUETOOTH" is displayed, hold until "RELEASE" is displayed, and release the switch.
  - Under the word SETUP the Bluetooth ID will be shown.
  - For Android users, this is the ID that you pair to, in Settings/Bluetooth, prior to opening the app.
- The Bluetooth menu options are: "STATUS CHECK", "OFF", "SETUP ONLY", "ALWAYS ON", "RESET", "BACK, and "EXIT".
- STATUS CHECK: Shows the unit is either "WAITING" for connection or "CONNECTED" with the app.
- OFF: turns off the Bluetooth.
- SETUP ONLY: Bluetooth is only active in setup.
- ALWAYS ON: default mode, works for setup and for real time readings on your smartphone or tablet.
- RESET: resets the Bluetooth options to default, useful if pairing is a problem.

LIGHTING Lighting menu for color changes

- When ">LIGHTING" is displayed hold until "RELEASE" is displayed, and release the switch.
- The color menu options are: "COLOR THEMES", "SET ALL COLOR", "DISPLAY COLOR", "LABEL COLOR", "MESSAGE COLOR", "BAR COLOR", "WARNING COLOR", "DIMMING" , "SUNLIGHT", "RESET" or "BACK".
- Since the color options are so expansive the selection process is the same in all sections.
  - Press and release the switch to change the selection.
  - Hold the function switch to enter the selected setup menu, until "RELEASE", and release the switch.
  - The display will show the available options. Press and release the switch to move through the available options.
    - An asterisk* will appear next to the option indicating it's set as the current setting.
  - Press and hold to select an option, until "RELEASE" is displayed.
  - Exit setup.
- COLOR THEMES: offers preset colors for the LCD color, label colors, message colors, tach bar, and tach warning.
- SET ALL COLOR: can set the entire gauge to one of 31 color choices.
- DISPLAY COLOR: independently sets the speed color to one of 31 color choices.
- LABEL COLOR: independently sets the MPH or km/h label color to one of 31 color choices.
- MESSAGE COLOR: independently sets the message area, (below the speed readout), color to one of 31 color choices.
- BAR COLOR: independently sets the color of the tach bar, up to the warning point, to one of 31 color choices.
- WARNING COLOR: independently sets warning point (high RPM) color to one of 31 color choices.
- DIMMMING: offers two options, AUTOMATIC night dimming, or "OFF".
- SUNLIGHT: special feature to enhance viewing of the TFT LCD in *bright daylight* with a high contrast display.
  This works independently from the night dimming
  If enabled, this will temporarily override the color choices made, to offer a visible display during the day.
  The color will revert back when the sunlight is less intense, (light overcast days can trigger this mode).
  - NORMAL: in daylight the background will stay black as the speed and messages will turn white.
  - INVERT: in daylight the background will turn white as the speed and messages will turn black.
  - OFF: your color choices will not change.
- RESET: This will reset all color choices and options back to original factory colors.

SPEED Speed setup menu

- **>> Speed calibration requires holding the function switch, THEN starting the engine <<**
- When ">SPEED" is displayed, hold until "RELEASE" is displayed, and release the switch.
- The selectable options are "ADJUST", "AUTO", "UNIT", "SERVICE RESET", "ODO PRESET", or "BACK".
- Press and release the switch to change the selection. Press and hold the switch to select it.

ADJUST Selection

- **This requires riding a known speed with a GPS, or following another vehicle at a known speed.**
- When ">ADJUST" is displayed, press and hold the switch until "RELEASE" is displayed - release the switch.
- The options will be "FASTER", and "SLOWER", to adjust the speed.
- Press and release the switch to choose "FASTER" to increase speed, or "SLOWER" to decrease speed.
- Press and hold the switch until "RELEASE" is displayed to begin adjusting.
- When riding a known speed, the speedometer will display a speed reading.
- While the display shows ">TAP TO INCREASE (DECREASE)", tap the switch to adjust speed.
- When your speed is correct, hold the switch until "RELEASE" is displayed, release the switch.
- If you go past your target speed, enter ">ADJUST" again and repeat the process until correct.
- Exit setup.

AUTO Selection

- **This requires riding a one mile (or kilometer) distance, which must be determined before starting.**
- When ">AUTO" is displayed, hold until "RELEASE" is displayed, and release the switch.
- The display will show ">BEGIN". You should be at the beginning of your measured distance to ride.
- When ready, hold the switch until "RELEASE" is displayed, and release the switch.
- When you see "PPM", you may ride the distance at any speed, and may stop and start.
  - The PPM numbers will increase while riding. If they remain at 000000 please check your speed sensor wiring.
- When you reach the end of the distance, press and release the switch.
- Exit setup.

UNIT MPH / km/h Selection

- **It is very important to set the speed unit PRIOR to setting the odometer!**
- When ">UNIT" is displayed, press and hold the switch until "RELEASE" is displayed, release the switch.
- The display will show UNIT and ">*MPH" for miles and "km/h" for kilometers.
- MPH is default. Press and release the switch to choose between MPH or km/h.
- Hold the switch until you see "RELEASE" and release the switch.

SERVICE RESET miles or km to next service setup

Service is a countdown odometer. The service odometer display can be disabled or can be set to count down from 500 – 7500 miles, (800 to 12,000 kilometers). If the service odometer is enabled and display reaches 0 miles/km, it will display "SERVICE DUE" each time the key is turned on.

- When ">SERVICE RESET" is displayed, press and hold the switch until "RELEASE" is displayed and release the switch.
- The current setting will be displayed. The default is ">*OFF", but it could be a value in miles or kilometers.
- The miles begin at 500 and go up to 7,500 miles in 500 mile increments.
- The kilometers begin at 800 and go up to 12,000 KM in 800km increments.
- To change the service odometer, press and release the switch until the desired setting is displayed.
- Hold the switch until you see "RELEASE", and release the switch.
- Exit setup.

PRESET ODO Odometer preset

- ✓ The odometer starts at zero, but can be preset by the customer within the first 100 miles (161 km) of riding.
- ✓ After riding more than 100 miles (161 km), the menu option will no longer be displayed.
- ✓ Correctly select the units to be either MPH or km/h ***FIRST***, as the odometer will be set in the selected units.
- ✓ The preset is in full miles or kilometers only, ***no*** tenths.
- ✓ The odometer preset can be reset multiple times within the first 100 miles (161 km) of riding.
- When ">PRESET ODO" is displayed, press and hold the switch until "RELEASE" is displayed and release the switch.
- The current miles will be displayed with the left most digit flashing.
- To change the flashing number, press and release the switch to the desired number.
- Press and hold the switch until "RELEASE" is displayed, then release the switch.
- Repeat the process of until the right most digit has been set.
- With the far right number flashing, press and hold the switch and the display will show ">SAVE ODO? NO".
- Verify the small odometer at the bottom is what you want set.
  - If incorrect hold the button until "RELEASE" is displayed, then release the switch.
  - You can now step through the process again and correct your readings.
  - Turning the key off at any time will discard any attempted odometer settings.
- If the odometer is correct at the ">SAVE ODO? NO" screen, press and release the switch to change the display to "SAVE ODO? YES".
- When ">SAVE ODO? YES" is displayed, press and hold the switch until "RELEASE" is displayed and release the switch.
- Exit setup.

TACH Tachometer warning setup

- When ">TACH" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The selectable options are "INPUT", "HIGH WARNING", and "BACK".
- Press and release the switch to change the selection; press and hold the switch to select it.

INPUT Signal input setup

- This may be required to be changed for some low voltage ECM tach signals.
- When ">INPUT" is displayed, press and hold the switch until "RELEASE" is displayed, release the switch.
- The selections are "CYLINDER", "TYPE", and "BACK".
- Press and release the switch to change the selection: press and hold the switch to select it.

CYLINDER Cylinder count setup

- When ">CYLINDER" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The cylinder options range from 1 to 16.
-
- Press and release the switch to change the cylinder count.
- Press and hold the switch until "RELEASE" is displayed, and release.
- Exit setup.

TYPE Signal type setup

- When ">TYPE" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The options are ">*12V HIGH", "5V LOW" and "BACK".
- Press and release the switch to change the voltage input range.
- Press and hold the switch until "RELEASE" is displayed, and release.
- Exit setup.

High warning (shift light) setup

- When ">HIGH WARNING" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The display will show the current high RPM warning with a *.
- The default is 5,500 RPMs but is selectable from 2,200 to 8,200 RPMs.
- Press and release the switch to change the RPM warning point.
- Press and hold the switch until "RELEASE" is displayed, and release.
- Exit setup.

OIL TEMP Engine oil temperature setup menu

- **Only valid to use when optional SEN-1043 or SEN-1044 is used.**
- When ">OIL TEMP" is displayed, press and hold the switch until "RELEASE" is displayed.
- The options are "UNIT", "ON", "OFF" and "BACK". **Factory default is "*OFF" (no temp displayed)**
- Press and release to choose an option, then press and hold to select option.
    - When ">UNIT" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
    - Press and release the switch to select "F", "C" or "BACK".
    - Press and hold the switch on the selection, until "RELEASE" is displayed, and release.
- The options are "UNIT", "ON", "OFF" and "BACK, again.
- To enable oil temp, when ">ON" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The selections will be "SENDER", "HIGH WARNING", "TEST", or "BACK".
- Press and release the switch to change the selection, press and hold the switch to select it.

SENDER Temperature sender selection

- When ">SENDER" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The display options are "SEN-1043", "SEN-1044" and "BACK".
- Press and release the switch to match to the optional sender you purchased from Dakota Digital.
- Press and hold the switch on the selection, until "RELEASE" is displayed, and release.

HIGH WARNING High oil temperature warning setup

- When ">HIGH warning" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The display will show the default high temp warning of ">*300".
- The high temperature warning points range from 225 to 375F, (107 to 190C).
- Press and release the switch to change the change the high temp warning point.
- Press and hold the switch until "RELEASE" is displayed, and release.

TEST Resistance test

- When ">TEST" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The display will give a resistance (ohm) reading of the sender. An open will read -1 ohms.
- Press and release the switch to change the gauge. Press and hold the switch to exit.
- Exit setup.

OIL PSI Engine oil temperature setup menu

- **Only valid when optional SEN-1039 pressure sender is purchased from Dakota Digital.**
- When ">OIL PSI" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The options are "ON", "OFF", and "BACK".
- To enable oil PSI, move focus to ">ON", press and hold the switch until "RELEASE" is displayed, and release.
- The selections will be "LOW WARNING", "TEST" and "BACK".
- Press and release the switch to change the selection, press and hold the switch to select it.

Low warning Low oil pressure warning setup

- When ">LOW warning" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The low pressure options will range from 0 to 30 PSI.
- Press and release the switch to change the change the low oil pressure warning point.
- To exit, press and hold the switch until "RELEASE" is displayed, and release.

TEST Voltage test

- When ">TEST" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The display will give a voltage return from the sender with 0.5 volts at zero PSI.
- 0.0 volts means the sensor is not connected.
- To exit, press and hold the switch until "RELEASE" is displayed, and release.
- Exit setup.

VOLT Low voltage warning setup

- When ">VOLT" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The low voltage warning points will range from 9.0 to 12.1 volts.
- Press and release the switch to change the low voltage warning point.
- Press and hold the switch until "RELEASE" is displayed, and release.
- Exit setup.

DISPLAYS Message display option menu

Refer to graphic on **page 7** for indicator and message locations.

- When ">DISPLAYS" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The display will show "MESSAGE TOP", "MESSAGE BTM", "MBMs", or "BACK".
- Press and release the switch to change the selection, press and hold the switch until "RELEASE" is displayed, and release.

MESSAGE TOP Top message screen information

- When ">MESSAGE TOP" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The selectable options are "PERFORM HIDE", "PERFORM SHOW", and "BACK".
- Push and release the switch to select the option, press and hold the switch until "RELEASE" is displayed, and release.
- PERFORM HIDE: does not allow any performance option displays to be show while riding.
- PERFORM SHOW: turns on the following options, which can toggled through while riding.
  - HIGH Speed (MPH – km/h), 0-60 time, ¼ mile speed with ¼ mile time, and HIGH RPM.
- Press and release the switch to change the change the option.
- Press and hold the switch until "RELEASE" is displayed, and release.
- Exit setup.

BTM MESSAGE Bottom message screen information

- When ">MESSAGE BTM" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The selectable options are "PERFORM HIDE", "PERFORM SHOW", and "BACK".
- Push and release the switch to select the option, press and hold the switch until "RELEASE" is displayed, and release.
- PERFORM HIDE: does not allow any performance option displays to be show while riding.
- PERFORM SHOW: turns on the following options, which can be toggled through while riding.
  - HIGH Speed (MPH – km/h), 0-60 time, ¼ mile speed with ¼ mile time, and HIGH RPM.
- Press and release the switch to change the change the option.
- Press and hold the switch until "RELEASE" is displayed, and release.
- Exit setup.

MBMS Display which MBMs are connected and adjust warnings

If a pressure or boost sensor is not connected or failed, the display will show "FAIL", "TOO LOW".
If no MBM is attached but the display shows a blank value, click through the displays to remove it.

- When ">MBMs" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The screen display what MBM modules are attached and more than one input if it exists.
- The screen will show "NONE" if there are no MBMs present.
- Press and release the switch to move through the MBMs attached.
- Press and hold the switch until "RELEASE" is displayed on the MBM setting to modify.
  - See the separate MBM manual for additional details.
- Exit Setup.

GEAR Gear indicator setup

Optional gear readout could be displayed to the left of the clock only. Nothing will show until programming is done.
The gear programming cannot take place until the speed is calibrated.
The gauge can 'learn' the gear ratios based on speed and RPM, no additional sensors are needed.
It will work with various transmissions up to seven speed models.
To program the gear positions, you will need a stretch of road to gradually reach highway speeds with no interruptions.
Each gear will need the speed to be held steady, until instructed to speed up and shift up.

- **>> Gear programming requires holding the function switch, THEN starting the engine <<**
- Once the engine is running, release the switch.
- Press and release the switch until "GEAR" is displayed
- Press and hold the switch until "RELEASE" is displayed, then release the switch.
- The display will show "PRESET", "LEARN", or "BACK".
    - "PRESET" will turn the indicator off.
    - "LEARN" starts the leaning process of speed and RPMs to calculate your gear reading.
- To reset the gear to not be displayed select ">PRESET".
    - Press and hold the switch until "RELEASE" is displayed, then release the switch.
    - Press and hold again to return to Gear menu.
- To start learning gears, press and release the switch until ">LEARN" is displayed, then press and hold the switch.
    - The message will show "NO RPM" if the engine RPM is below 1500.
    - The message could also say "LOW SPEED" if the vehicle speed is below 5 MPH.
- Begin riding in 1st gear. The display should show "WAIT 1".
- Ride at a steady speed and steady RPM until the message changes to "SHIFT TO 2".
- It should only take about 20 seconds if the speed and RPMs are steady.
    - *Optional: If the message continues to say "WAIT 2", you can manually override and jump to the next gear by pressing and releasing the switch to store the gear position quicker.*
- Upshift to 2nd gear and ride at a steady speed. The display should change to "WAIT 2".
- Ride until the message changes to "SHIFT TO 3". Shift to 3rd gear.
    - *Optional: If the message continues to say "WAIT 3", 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.
    - You may also press and hold the switch, while riding, until the display shows "MOVE FOCUS" and then release it.
- The gears will now show up to the left of the clock display only.

***When downshifting, the gear position may jump up momentarily as the RPM is higher than expected.**
Also, the gear position reading may drop to "N" or a "0" when you pull the clutch in coming to a stop.
The position will begin reading as the bike begins to move in gear.

FACTORY RESET

- In the event you would like to start over with your settings, preferences and display locations, this will reset all settings back to the out-of-the-box configuration.
- This includes message locations, color selections and speedometer calibration but **DOES NOT** include the odometer.
- When you see ">FACTORY RESET", press and hold the switch until "RELEASE" then release the switch.
- The options will be "NO" and "YES".
- By pressing and holding on ">NO" it will exit the reset menu.
- When you select ">YES", press and hold the switch until "RELEASE" is displayed, then release the switch.
- The screen will "YES" and "RESET". Tap the switch once to return to the main menu.

VERSION

- For technical support assistance, this screen can display the model number, and the software versions loaded for the two processors.

EXIT SETUP

- Exits the setup menu and returns to normal gauge operation.

Troubleshooting guide

Problem	Possible cause	Solution
Gauge will not light up	White/Red wire does not have power. Red wire does not have power. Black wire is not getting a good ground. Gauge is damaged.	Connect to a location that has constant, battery power. Connect to a location that has power with the key on. Connect ground to a different location. Return gauge for repair. (see instructions)
Gauge lights up, but speed will only show zero.	Speed sensor not grounded properly. Sensor is not sending a speed signal.	Move ground to different location, preferable close to the speedometer ground. Check for a damaged or malfunctioning speed sensor.
PLEASE – SET – SPEED	Speedometer not calibrated	Gauge must be calibrated to your vehicle (see instructions)
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 Use suppression spark plug wires
Speed reading is incorrect.	Gauge is not calibrated correctly.	Gauge must be calibrated (see instructions).
Gauge lights up, but tach will only show zero.	Yellow wire is not connected properly. Ignition system not grounded properly. Gauge is not grounded properly. Tach signal type is not set correctly. Gauge is not calibrated	Check connection from yellow wire to tach signal wire. Check engine and ignition system grounds. Check gauge and engine grounds. Change the tach signal type (see instructions). Gauge must be recalibrated (see instructions).
Tach reading is erratic or jumps around.	Tach signal wire is loose or broken. Poor ground connection.	Check all wire connections and inspect wire for breaks. Check ground connection on tachometer, engine, and ignition system.
Tach reading is incorrect.	Gauge is not calibrated correctly.	Check cylinder count in tach setup menu (see instructions).
Gear indicator isn't displayed	Gears not programmed.	Program gear indicator in setup. (see instructions).
High beam, turn signal, or Security 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.
Pressure reading does not show up.	Pressure sender is not enabled in setup menu.	Select "ON" under OIL PSI menu.
Oil Temperature reading does not show up.	Oil Temp sender is not enabled in setup menu.	Select "ON" under OIL TEMP menu.
Pressure or temperature reading shows "SHORT" or "FAIL LO"	Sender is shorted to ground. Pressure power wire is not connected.	Inspect wire for bare insulation or pinching. Connect sensor RED wire to gauge WHITE/RED wire.
Pressure or temperature reading shows "OPEN" or "FAIL HI"	Sender wire is open or broken. Sender is not grounded.	Inspect for breaks in wire connection. Check sender ground connection.

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).

TECHNICAL SPECIFICATIONS

Switched input voltage:	6.5 – 22V, 0.15A typical current draw
Battery input voltage:	6.3 – 22V, 0.0002A typical current draw
Speed input signal:	> 1.4Vp-p sine wave or square wave
Tach input, NORMAL:	low < 3.0V and high > 7.6V
Tach input, LO VOLT:	low < 1.0V and high > 4.0V
High beam, Left turn, or Right turn:	> 4.0V active, < 1.6V off
Neutral, Engine, or Low oil:	< 1.6V active, > 4.0V off

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

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