MLX-8604/MLX-8404
Direct plug in instrument system for 2004-2013 Harley Davidson Touring models

The MLX-8604 kit includes:

MLX displays
(MLX-8404 features two small gauges)

Oil temperature sensor harness

Cable ties

Interconnect harness

Sensor connect harness

Oil temperature sensor

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 13 for instructions.

Features of the MLX-8604 instrument system:

Speed - programmable speed calibration, performance menu, two trip meters, odometer, count down service miles, hours running, miles to empty, security and check engine indicators

Tachometer – programmable tach, clock, gear position, cruise control indicator, ABS indicator, and high RPM recall

Oil Pressure – programmable warning point, uses stock sensor or Dakota Digital sensor for higher pressure

Oil Temperature – programmable warning point, complete with new sensor

Volts – programmable warning point

Fuel Level – low fuel warning, uses factory sensor

Air Temperature – uses factory sensor

User selectable readings in each small gauge – pick what you want displayed in each gauge, including MBM readings

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Installation: Gauges (Street Glide/Ultra)

1. To gain access to the six gauges, you must remove the windshield and outer fairing; start with the windshield and set it aside. There are four T25 screws for the fairing; two on each side, one below the speaker and one toward the bottom, next to the neck. Carefully remove the fairing, unplug headlight and set aside in a safe place.
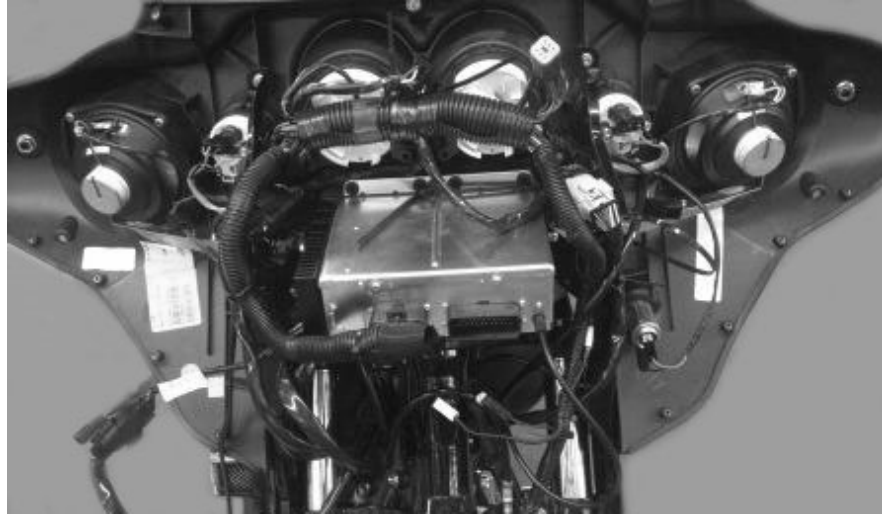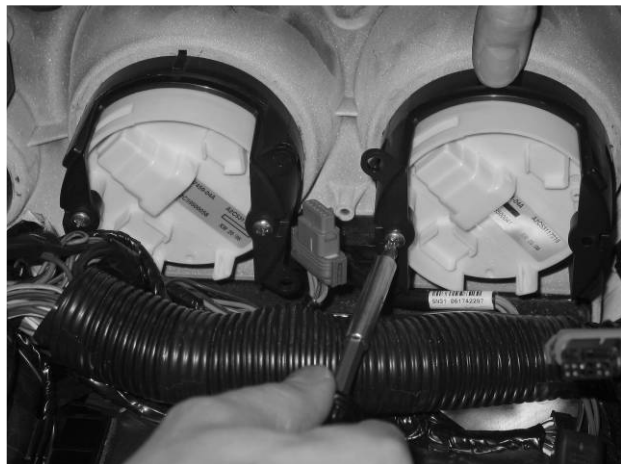

Street Glide/Ultra with outer fairing removed

2. Unplug the speedometer and tachometer, then remove the screws securing the clamps (baskets) holding the gauges in place. Save the screws, gaskets, and baskets as they will be reused with the new Dakota Digital gauges.
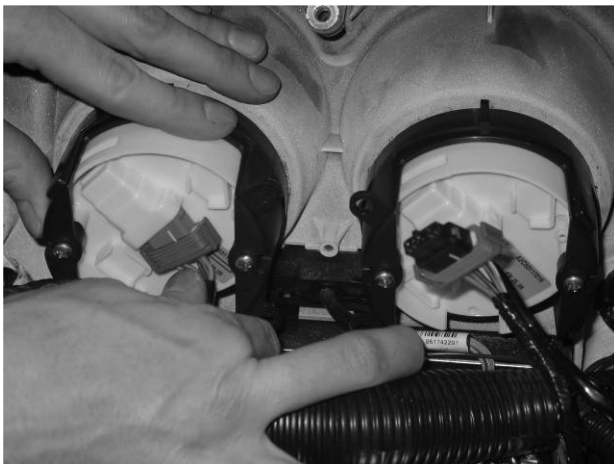
Unplug the factory speed and tach

Remove gauge baskets to remove gauges

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Installation: Gauges (Road Glide)

1. Remove the Speed/Tach bezel by removing one T25 Torx screw on each side; retain all hardware for reassembly.
2. Lift up on the back of the bezel and slide the tab that is under the ignition switch out from under the switch cover (see photos below of ignition switch cover removed to show detail). Unplug the gauges, switches and indicator lights so the bezel can be completely removed. Remove the clamps (baskets) that hold the gauges to the bezel and remove the gauges and gaskets.
3. Install the new MLX-8604 speedometer and tach using the original hardware. Set assemby aside in a safe place.

| Tab (switch cover removed) | Bezel removed | Gauges and gaskets removed |

4. To gain access to the four satellite gauges, you must remove the outer fairing and turn signals. There are six T25 screws around the preimeter of the fairing, and each turn signal is secured by a pair of ½" bolts. With the fairing free of the bike, unplug the headlights and set the fairing aside in a safe place.

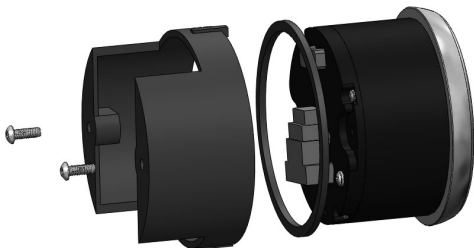MAN#650682:B

Installation: Gauges (All)
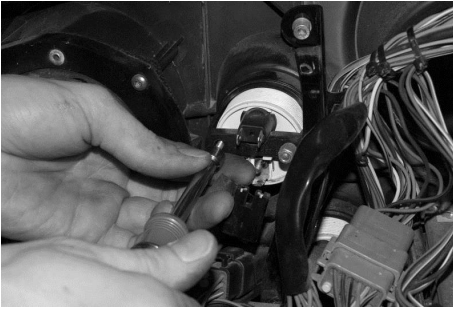
All of the stock small gauges (fuel, volts, oil, and air temp) have two plugs. One is for illumination the other is for the gauge power, ground, and sensor. The 2-pin illumination harness (orange and black wires) will not be reused so remove the bulb. Unplug the 3-pin connectors and remove the two 5/16" nuts holding the clamps.
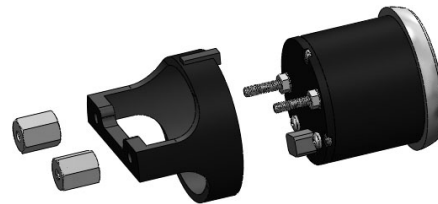
IMPORTANT NOTE!
SAVE ALL CLAMPS, GASKETS, and SCREWS FROM THE STEPS ABOVE AS THEY WILL BE USED TO SECURE THE NEW DAKOTA DIGITAL GAUGES
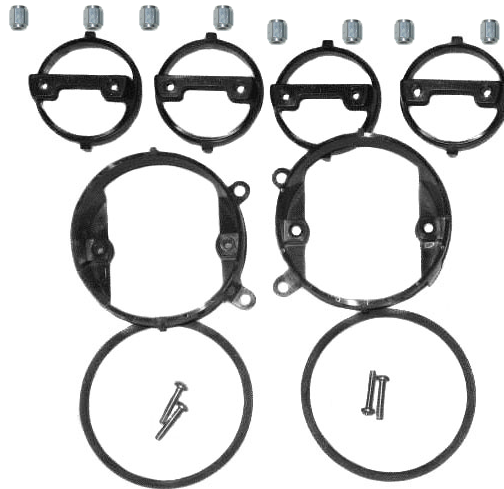
Now you are ready to install the new gauges into the fairing. Place the gauges into the fairing from the front, and secure using the original hardware from disassembly: clamps, gaskets, screws and nuts.
Be sure the alignment tab on the clamp lines up with the notches in the fairing. Some fairings may only have one notch; line up at least one tab on the clamp with the notch in the fairing, this will ensure the gauges are centered and aligned correctly. Be sure to check alignment from the front before final torqueing.

Speedometer and Tachometer

Oil PSI, Oil Temp, Voltmeter, and Fuel Level

STOCK GAUGE LOCATION
VIEW FROM RIDERS SEAT
ULTRA FLHT & FLHX

FUEL MPH RPM VOLTS TEMP OIL PSI

STOCK GAUGE LOCATION
VIEW FROM RIDERS SEAT
ROAD GLIDE FLTR

FUEL VOLTS TEMP OIL PSI MPH RPM

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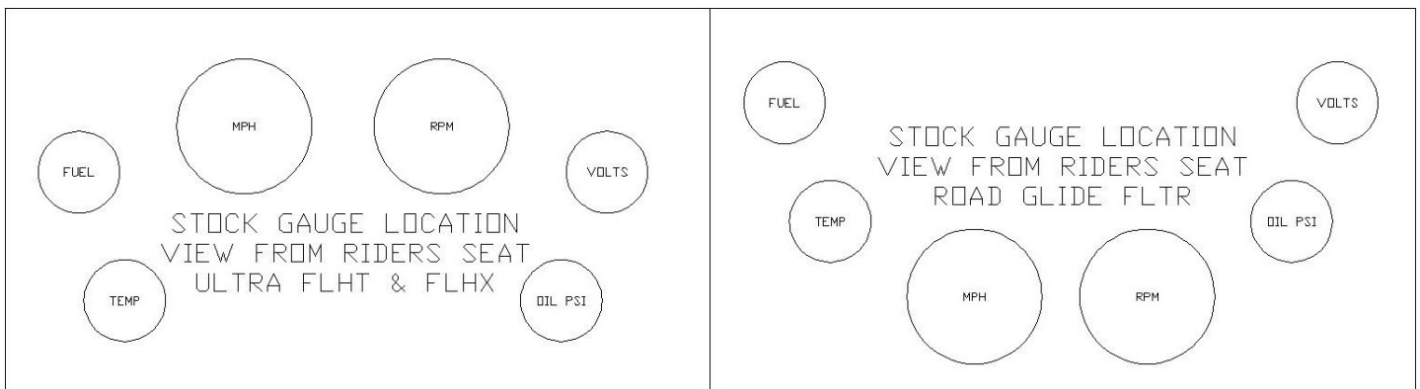
Installation: Oil temperature sensor

The supplied oil temperature sensor replaces one of the oil pan plugs. You can do this during an oil change, but if you move quickly you should only lose a small amount of oil. First, wipe any road grime and oil from the area, then locate the appropriate plug on the front, bottom side of the oil pan. Remove the plug to the right of the main oil drain plug using a 3/8" allen wrench. See photo for the correct plug.

NOTE: Check oil level after install of this sensor, refill oil as needed
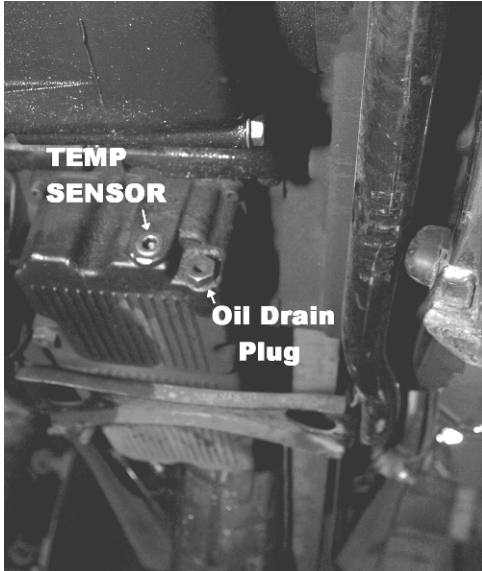
Bottom of oil pan, front view   **Remove 3/8"NPT allen plug**
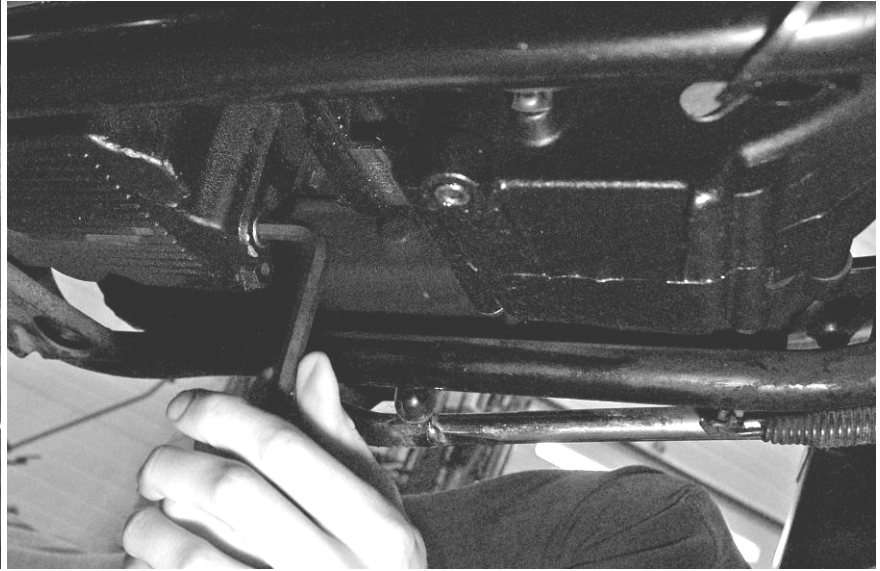
Thread sender into oil pan   **Tighten sensor with a ¾" wrench**

Installation: Wiring

1. Plug in the sealed two pin connector, then route the wires over to the right side frame rail and up into the neck along with the clutch cable. Use cable ties to secure the wire harness along the frame.

Installed oil temp sensor and harness plug

2. Plug the original speed and tachometer connectors into the new gauges. The 3-pin connectors on the back of the speed and tach provide the sender connections. The speed 3-pin connector provides ground, fuel level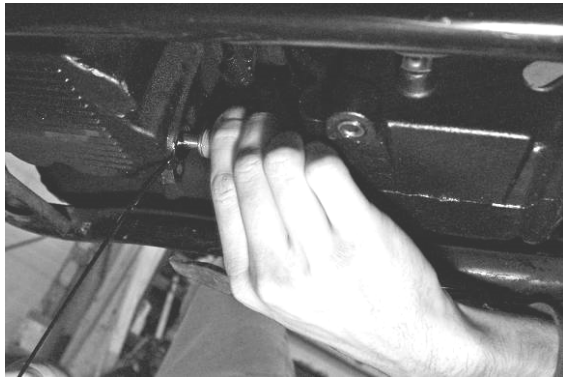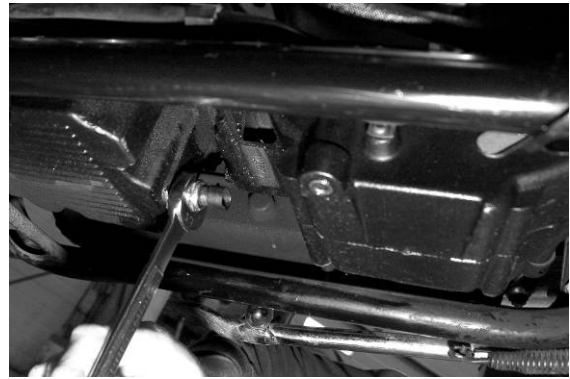, and air temperature with spade connectors for easy connection to the factory plugs. The tach 3-pin connector provides oil temperature and oil pressure.

   Connect the speed 3-pin yellow wire to the factory fuel gauge connector yellow wire. The speed 3-pin black wire is the main system ground; connect it to the fuel gauge connector black wire. Connect the speed 3-pin blue wire to the air temperature gauge connector blue wire. Connect the tach, 3-pin, brown wire to the oil pressure gauge connector brown wire.

   Use provided zip ties to secure connections and loose harnesses/connectors.

MLX-8404 kits do not contain Gauges 3 & 4.

GAUGE 4 VOLTS

GAUGE 3 OIL PSI

TACH
Stock HD Plug
TO SUPPLIED OIL TEMP
TAN OIL PSI

SPEED
Stock HD Plug
YELLOW FUEL
BLACK
BLUE AIR TEMP
Primary System Ground

GAUGE 2 OIL TEMP

GAUGE 1 FUEL
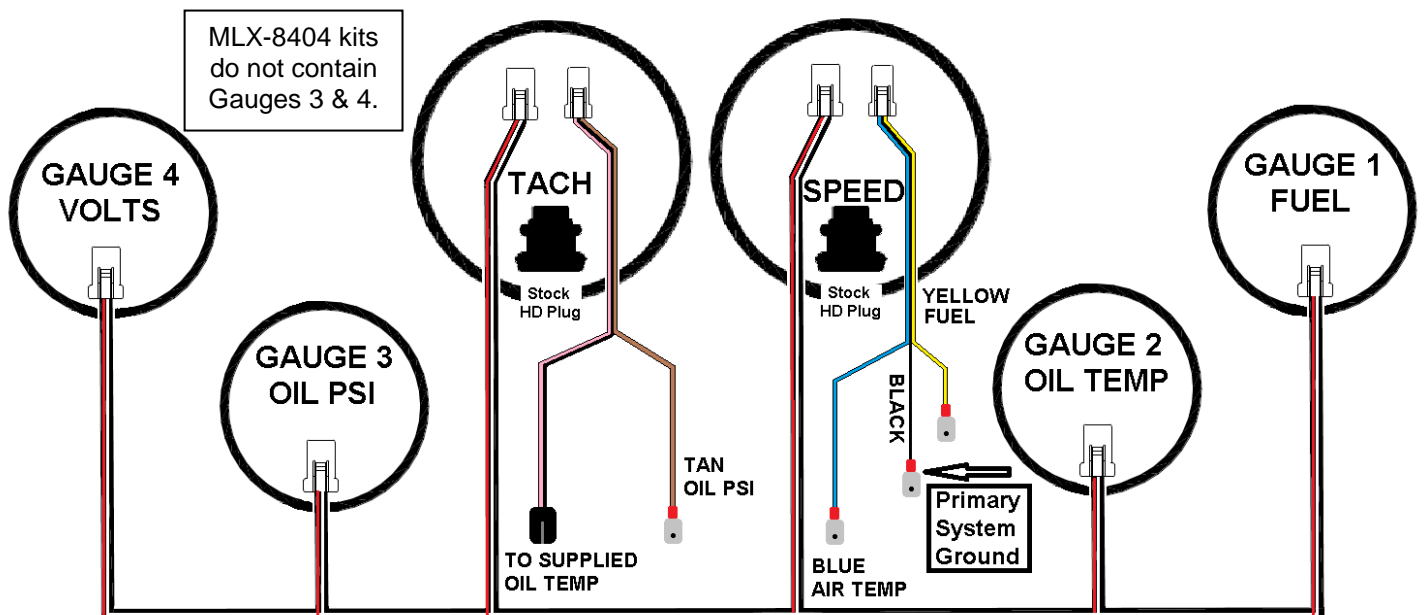
Typical Gauge Layout - looking at the gauges from the front of the bike, with the fairing removed

3. A 4-pin, three wire harness with six connectors is included. This will plug into the back of each gauge; these wires provide power, ground, and data. Route this harness to the back of each gauge and plug it in. It does not matter which connector goes to each gauge.

TO SENSOR

Oil Temp Sensor and Harness

Interconnect Harness
Connects to each gauge

TO TACHOMETER

TO OIL PSI HARNESS

Sensor Connect Harness

TO SPEED 3-PIN CONNECTOR
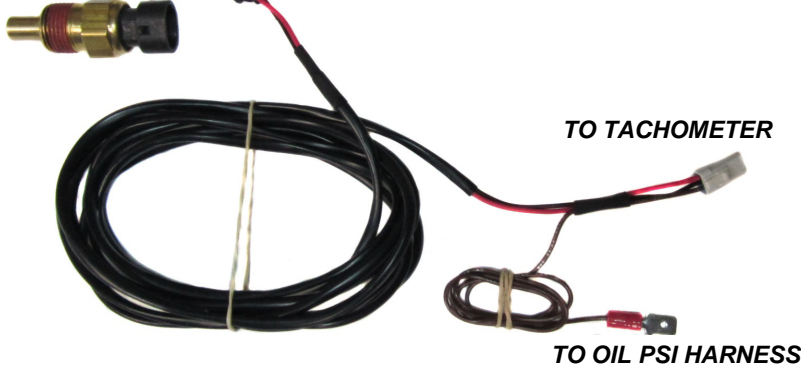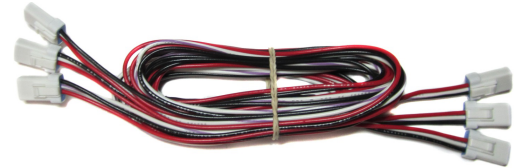
YELLOW WIRE TO FUEL GAUGE CONNECTOR YELLOW WIRE

BLACK WIRE TO FUEL GAUGE CONNECTOR BLACK WIRE

BLUE WIRE TO AIR TEMP CONNECTOR BLUE WIRE

FUEL GAUGE GROUND UPDATE

The gauge system ground (black wire from the three pin speed connector) will normally connect to the stock fuel gauge connector (middle spade socket). On some 2004-2007 motorcycles, the factory grounding can cause errors in the fuel gauge reading. In order to correct this, a ground extension harness is included in your kit. It has a long wire to go to the fuel sender with a spade connector on the other end. The speedometer ground wire will connect to this extension wire instead of going to the fuel gauge connector. The other end of the long ground wire should be routed under the tank and connect as close to the fuel pump connector as possible. Locate the three or four wire harness going to the fuel pump and fuel sender connector near the gas cap (shown below). The new fuel gauge ground should be attached to the black ground wires on this harness. Three wire harnesses will have one black wire and four wire harnesses will have two black wires, connect to the black ground wire in position C (3rd location). Soldering and covering with heat shrink is the preferred method for attaching the ground wire but a properly used butt connector will also work. Scotch lock style connectors are not recommended.

- Strip back the insulation on the black wire.
- Wrap the end of the new fuel gauge harness around the exposed wire.
- Solder the connection, making sure the solder flows into the wires.
- Wrap the splice with electrical tape to insulate it.

Reinstall the outer fairing. Road Glide applications: plug in and install speed/tach assembly to complete the physical installation.

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System features
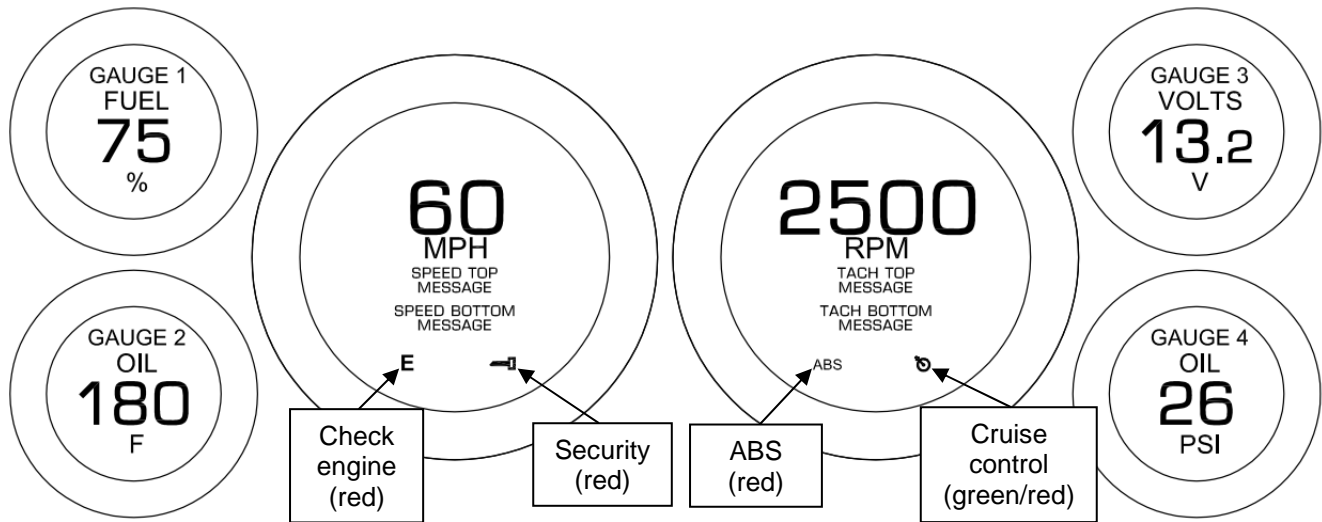
LOCATIONS

There are four message locations available to display additional information; two under the speedometer and two under the tach. They are labeled Speed top/bottom and Tach top/bottom 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.

Warning messages, such as low fuel, high temperature etc will appear in the speed message locations.

The displays in the large gauges will always be speedometer (0-250MPH/400km/H) and tachometer (0-9,990 RPM).

Gauges 1-4** (satellites) can be programmed to your preferred reading. They can also optionally display two readings at the same time. The following information can be displayed in the satellite gauges: voltage, fuel level, oil temperature, oil pressure*, air temperature*, and cylinder head temperature*. MBM-09, MBM-17, and MBM-19 can be added to expand the readings available to display.

*When available. Some readings may not be available with all models.
**MLX-8404 contains two satellite gauges

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 (0-7,500, or "SERVICE DUE")
TRIP HR	Hours gauge has been on with engine running (0-999.9)
SPEED km/h	Alternate speed unit conversion
OIL TEMP (when gauge is not present)	Engine oil temperature
OIL PSI (when gauge is not present)	Engine oil temperature
VOLTS (when gauge is not present)	System voltage
FUEL (when gauge is not present)	Fuel level
DISTANCE TO E MI (km) (when enabled)	Distance to empty
HEAD TEMP	Head temperature from ECM if supported
GEAR/CLOCK	Gear position and 12 hour clock display

Performance readings – (will display after SPEED km/h (SPEED MPH) when enabled)

HIGH MPH (km/h)	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)

Programming, clock set, service reset

FUNCTION SWITCH
The factory trip reset switch is used as the main function switch. During normal operation, the function switch allows access to information including mileage, RPM, and performance information which is located within four message locations on the Speed/Tach gauge. The message locations have arrows indicating which message location is currently selected. Press and release the function switch to change the displayed information.

If you would like to change the information on the other message location press and hold the function switch. You'll see a scrolling bar titled "MOVE LINE" being filled while holding the switch. Once the scrolling bar is filled "RELEASE TO MOVE" will be displayed. Release the switch and the other message location will now be selected and have arrows indicating it's currently selected.
The focus arrows will move from top to bottom on the speedometer and then top to bottom on the tachometer.

To clear or reset information such as Trip A, Trip B or performance readings, press and hold the function switch until you see the scrolling bar filling. Once the scrolling bar is full continue to hold the switch and it will then start filling from the other direction and be titled "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 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. Momentarily pressing the switch will change the hours, holding the switch will move to the minute tens set and the tens digit will begin flashing. Momentarily pressing the switch will now change the minute tens, holding the switch will move to the minute ones set and the ones digit will begin flashing. Momentarily pressing the switch will now change the minute ones. Holding the switch will 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.

SETUP MENU

   To simplify setup and configuration, 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 stock trip function switch while turning the key on.

- 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 save an option, also.

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
	RESET	Resets Bluetooth options for pairing
DIAGNOSTICS	ENGINE	Read diagnostic codes from engine module
	SECURITY	Read diagnostic codes from security module
	ABS	Read diagnostic codes from ABS module
LIGHTING	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
	DIMMING	Set dimming method
	SUNLIGHT	Set sunlight brightness method
	RESET	Returns all colors and settings to factory default
SPEED	ADJUST	Adjust speed calibration +/- 25%
	UNIT	Select MPH or km/h unit
	SERVICE RESET	Set miles to service reset value or turn off
	PRESET ODO	Odometer preset **(Can only be set within the first 100 miles)**
TACH	HIGH WARNING	Set high RPM warning point
OIL TEMP	UNIT	Select F or C for temperature unit
	SENDER	Turning sender on or off
	HIGH WARNING	Set high warning point
	TEST	Display sender resistance for troubleshooting
OIL PSI	SENDER	Select pressure sender
	LOW WARNING	Set low warning point
	TEST	Display sender resistance for troubleshooting
FUEL	SENDER	Select fuel sender
	RANGE TO EMPTY	Enable/Disable/Reset distance to empty
	TEST	Display sender reading for troubleshooting
VOLT	LOW WARNING	Set low warning point
DISPLAYS	SPEED TOP	Show/Hide performance readings in Speed top message location
	SPEED BTM	Show/Hide performance readings in Speed bottom message location
	TACH TOP	Show/Hide performance readings in Tach top message location
	TACH BTM	Show/Hide performance readings in Tach bottom message location
	GAUGE 1	Set Gauge 1 reading (*dependent if physical gauge is installed*)
	GAUGE 1 DUAL	Set Gauge 1 second reading (*if supported*)
	GAUGE 2	Set Gauge 2 reading (*dependent if physical gauge is installed*)
	GAUGE 2 DUAL	Set Gauge 2 second reading (*if supported*)
	GAUGE 3	Set Gauge 3 reading (*dependent if physical gauge is installed*)
	GAUGE 3 DUAL	Set Gauge 3 second reading (*if supported*)
	GAUGE 4	Set Gauge 4 reading (*dependent if physical gauge is installed*)
	GAUGE 4 DUAL	Set Gauge 4 second reading (*if supported*)
	MBMS	Show MBM's connected to the system and set warning points
GEAR	PRESET	Set gears based on factory setup
	TRIKE	Set gears for factory trike setup
	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

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Programming procedure

PRESS AND HOLD THE STOCK TRIP SWITCH WHILE TURNING IGNITION ON. Release the switch.
For speed calibration: **HOLD THE STOCK TRIP SWITCH WHILE <u>STARTING </u>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 save an option, also.
Current selections within a sub menu are denoted with an asterisk (*)
Each small gauge installed will say GAUGE 1, 2, 3, or 4 on them. This will be useful in the DISPLAYS setup.

Exiting Setup
At the end of most setup sections, 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
- 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 smartphone or tablet.
  - Gauges MUST be in setup mode prior to using setup section in the app.
- When ">BLUETOOTH" is displayed hold the trip switch until "RELEASE" is displayed, and release the switch.
  - Under the word SETUP BLUETOOTH, 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".
- Press and release the switch to the option wanted, then press and hold until "RELEASE", then release the switch.
- 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.
- Exit setup.

DIAGNOSTICS Diagnostics mode for checking/clearing trouble codes
- **The "run/kill" switch on the bike MUST be ON prior to running diagnostics.**
- When ">DIAGNOSTICS" is displayed, hold the trip switch until "RELEASE" is displayed, and release the switch.
- The setup options are: "ENGINE", "SECURITY", "ABS", and "BACK".
- Press and release the switch to change the selection.
- Press and hold the switch until "RELEASE", then release the switch.
- Each section will show either the current codes, "NONE", or "NO RESPONSE"
  - "NONE" means no codes exist.
  - "NO RESPONSE" means either that module is not active or the run switch is off.
- If a code is shown, press and release to move on to the next code, or to the end of the list.
  - Consult a service manual for trouble code descriptions.
- After all codes have been displayed, the display will show ">YES" and "NO".
  - To leave the codes, press and release the switch to move to ">NO".
  - Press and hold until "RELEASE", then release the switch.
- To clear codes, when the display shows ">YES" hold the switch until "RELEASE". then release the switch.
- "Done" will momentary display and then the part number of the module will be displayed.
- Press and release the switch to exit back to the Diagnostic menu.
- If "NO" codes exist, press and release the switch to show the module part number and again to exit.
- Press and release to move to move to the next section, or to "BACK" to exit.

LIGHTING **Lighting menu for color changes**
- When ">LIGHTING" is displayed, press and hold the switch until "RELEASE" is displayed, and release the switch.
- The color menu options are "COLOR THEMES", "SET ALL COLOR", "DISPLAY COLOR", "LABEL COLOR", "MESSAGE COLOR", "DIMMING" , "SUNLIGHT", "RESET" or "BACK".
- Since the color menu options are so expansive the selection process is the same in all sections listed below.
    - 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.
- 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.
- BACK: Exits menu.

SPEED **Speed setup menu**
- When ">SPEED" is displayed hold until "RELEASE" is displayed, and release the switch.
- The selectable options are: "ADJUST", "UNIT", "SERVICE RESET", "PRESET ODO", or "BACK".
- Press and release the switch to change the selection. Press and hold the switch to select it.

ADJUST Speed Calibration
The speedometer is calibrated by the engine computer, but the speedometer reading can be adjusted through the gauge. The adjustment is set a value from 75% – 125% with 100% being no change.
- When ">ADJUST" is displayed, then press and hold the switch until "RELEASE", then release the switch
- The display will show the current calibration value, default is "*100".
- Press and release the switch to increase the value.
- The percentage will increase up to 125%. Once it reaches 125 it will roll back over to 75.
    - If you calculate that you need to reduce speed by 10%, click the switch until 90% is shown.
- Press and hold the switch until "RELEASE", to save the currently displayed value.

UNIT MPH/km/h Selection
- **It is very important to set the speed unit PRIOR to setting the odometer!**
- When ">UNIT" is displayed, then 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 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 500MI increments.
- The kilometers begin at 800 and go up to 12,000km 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.

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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 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.
  - o If incorrect, hold the button until "RELEASE" is displayed, then release the switch.
  - o You can now step through the process again and correct your readings.
  - o 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", then release the switch.
- When ">HIGH WARNING" is displayed, press and hold the switch until "RELEASE", then release the switch.
- The default high warning of "*5500" is shown with a range of 2200 – 8400 RPMs.
- Press and release the switch to increase the value by 100 RPMs.
- Once reaching 8400 RPMs the next number will roll back to 2200 RPMs.
- Once you choose a valid warning, press and hold the switch until "RELEASE", then release the switch.
- Exit menu.

OIL TEMP Engine oil temperature setup menu
- When ">OIL TEMP" is displayed, press and hold the switch until "RELEASE", then release the switch.
- The Oil Temp options are "UNIT", "SENDER", "HIGH WARNING", "TEST", and "BACK".
- Press and release the switch to choose and option.
  ### UNIT Temperature unit selection
- When ">UNIT" is displayed, press and hold until "RELEASE", then release the switch.
- The options are "F", "C", or "BACK".
- Press and release to select the unit.
  - o **Setting this temperature unit will also change the ambient air temp unit.**
- Press and hold until "RELEASE", then release the switch.
  ### SENDER Enable or disable temp sender
- When ">SENDER" is displayed, press and hold until "RELEASE", then release the switch.
- The options are "ON" or "OFF" depending on whether the reading is currently enabled.
- Press and release the switch to select value.
- Press and hold until "RELEASE", then release the switch.
  ### HIGH WARNING High oil temperature warning setup
- When ">HIGH WARNING" is displayed, then press and hold the switch until "RELEASE", then release the switch.
- The low and high temperature warning points range from 225F – 375F (107 – 190C).
  - o If a gauge displays OIL TEMP, a red band warning will appear on that gauge; otherwise it will be in SPEED TOP.
- Press and release the switch to select value.
- Press and hold until "RELEASE", then release the switch.
  ### TEST Resistance test
- A good troubleshooting tool if the pressure readings seem incorrect, and for aiding technical support.
- When ">TEST" is displayed, then press and hold the switch until "RELEASE", then release the switch.
- The display with show "OIL TEMP", "TEST", and "xxx OHMS".
  - o The "xxx" should be a value in numbers.
  - o If not connected "OPEN" will appear.
- Press and release the switch to exit.
- Exit setup.

OIL PSI Engine oil pressure setup menu
- When ">OIL PSI" is displayed, then press and hold the switch until "RELEASE", then release the switch.
- The options will be "SENDER", "LOW WARNING", "TEST", or "BACK".
  ### SENDER Oil pressure sender selection
  - When ">SENDER" is displayed, then press and hold the switch until "RELEASE", then release the switch.
  - The options to select between are "HD 60", "DD 75", "OFF", and "BACK".
    - o HD 60 – Using stock 60 PSI sender.
    - o DD 75 – Using Dakota Digital SEN-1032, 75 PSI sender.
    - o OFF – Turns off the option to read oil pressure.
  - Press and release the switch to select sender option.
  - Press and hold the switch to save selection.
  ### LOW WARNING Low oil pressure warning setup
  - When ">LOW WARNING" is displayed, then press and hold the switch until "RELEASE", the release the switch.
  - The low oil pressure warning points will range from 0 – 30 PSI.
    - o If a gauge displays OIL PSI, a red band warning will appear on that gauge, otherwise it will be in SPEED TOP.
  - Press and release the switch to change the low pressure warning point.
  - Press and hold the switch until "RELEASE" is displayed, and release.
  ### TEST Resistance test
  - A good troubleshooting tool if the pressure readings seem incorrect, and for aiding technical support.
  - When ">TEST" is displayed, then press and hold the switch until "RELEASE", then release the switch.
  - The display with show "OIL PSI", "TEST", and "xxx OHMS".
    - o The "xxx" should be a value in numbers.
    - o If not connected, "OPEN" will appear.
      - ▪ The stock HD sensor will typically show OPEN when there is no oil pressure. During normal operation, the gauge will not show an error for open since this is normal on the stock sender for 0 PSI.
  - Press and release the switch to exit.
- Exit menu.

FUEL Fuel level setup menu
A low warning will be displayed on either the fuel gauge or Speed Top as a red band warning when fuel reaches 10%.
- When ">FUEL" is displayed, then press and hold the switch until "RELEASE", then release the switch.
- The options to select between are "SENDER", "RANGE TO EMPTY", "TEST", and "BACK".
- Press and release the switch to change the selection, press and hold the switch to select it.
  ### SENDER Fuel sender selection
  - When ">SENDER" is displayed, then press and hold the switch until "RELEASE", then release the switch.
  - The options to select between are "HD 2004", "HD 2008", "FAT BAGGER", "CUSTOM" and "BACK".
  - Press and release the switch to change to the proper sender.
    - o "FAT BAGGER" is only for the Fat Bagger Inc. fuel tanks.
  - Press and hold the switch until "RELEASE", then release the switch
  - **Exit fuel setup to confirm fuel selection**
    - o CUSTOM is only for rare occasions if a stock sender is not being used.
    - o If CUSTOM is selected, you will be prompted to Program.
    - o When ">PROGRAM" is displayed, press and hold until "RELEASE", then release the switch.
    - o The display will show "SET EMPTY" with an OHM reading.
    - o With an empty tank, press and hold until "RELEASE", then release the switch.
    - o The display will show "SET 1/3" with an OHM reading.
    - o Add fuel to 1/3 of a tank. The OHMs should change.
    - o Press and hold until "RELEASE", then release the switch.
    - o The display will show "SET 2/3" with an OHM reading.
    - o Add fuel to 2/3 of a tank. The OHMs should change.
    - o Press and hold until "RELEASE", then release the switch.
    - o The display will show "SET FULL" with an OHM reading.
    - o Top off the tank. The OHMs should change.
    - o Press and hold until "RELEASE", then release the switch.
    - o **Exit setup to confirm fuel selection.**

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RANGE TO EMPTY Distance to empty (fuel) setup
- ✓ The range to empty option will calculate an estimate of miles until empty.
- ✓ This will vary on riding conditions and will change as it continually monitors fuel usage and speeds.
- ✓ The process will begin with a full tank, and then enter into the FUEL menu, RANGE TO EMPTY, and LEARN RESET.
- ✓ Once the reset has been done, you may ride until the tank is below ¼.
- ✓ This can be done over multiple trips as long as no fuel is added until the level is less than 25%, then it must be filled.
- ✓ When the system is working, the DIST TO E screen will have a countdown odometer.
- ✓ When the DIST TO E odometer reaches 35 miles or 56km, it show a "RANGE LOW" warning.
- ✓ Once the RANGE TO EMPTY is working, you may fill your tank normally, when needed.
- When ">RANGE TO EMPTY" is displayed, then press and hold the switch until "RELEASE", and release the switch.
- The options to select are "ON", "OFF", and "BACK".
- Press and release the switch to select an option.
- Press and hold the switch until "RELEASE", then release the switch.
- If ON is selected, the next option is "LEARN RESET" and "BACK".
- "LEARN RESET" will tell the gauge to learn fuel usage while riding. It can be reset again if the process failed.
  - o Once the fuel tank is full, you may select "LEARN PRESET".
  - o Press and hold the switch until "RELEASE", then release the switch.
  - o **Exit setup**
  - o Cycle the ignition then you may ride until fuel is less than 25%.
  - o Only then, you may refill the tank. Once full, the process will complete itself.
  - o Filling and refilling must be done the same way, either both on kick stand or both upright.

TEST Gauge reading test
- Press and release the switch until "TEST" is displayed, then press and hold the switch until "RELEASE" is displayed.
- The display with show "FUEL", "TEST", and "xxx OHMS".
  - o The "xxx" should be a value in numbers.
  - o If not connected "OPEN" will appear.
- Exit setup.

VOLT Low voltage warning setup
- When ">VOLT" is displayed, press and hold the switch until "RELEASE", then release the switch.
- 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**
- When ">DISPLAYS" is displayed, press and hold the switch until "RELEASE" is displayed, and release.
- The display options are "SPEED TOP", "SPEED BTM", "TACH TOP", "TACH BTM", "GAUGE 1", "GAUGE 2", "GAUGE 3", "GAUGE 4", "MBMS", or "BACK".
- The Speedometer and Tachometer have only two options: PERFOMANCE HIDE / SHOW.
    - If "PERFORMANCE SHOW" is selected, the options of "HIGH SPEED RECALL", "0-60 TIME", "¼ MILE TIME, with ¼ MILE SPEED", and "HIGH RPM RECALL" will be added to the display options available while riding.
    - These options will appear after "SPEED km/h", (or SPEED MPH if the speedometer is set to kilometers).

SPEED TOP **Speed Top message screen information**
- When ">SPEED TOP" is displayed press and hold until "RELEASE", the release the switch.
- The options will be "PERFORMANCE HIDE", "PERFORMANCE SHOW", and "BACK"
- Press and release to select the option.
- Press and hold the switch to select your preference.

SPEED BTM **Speed Bottom message screen information**
- When ">SPEED BTM" is displayed, then press and hold until "RELEASE", the release the switch.
- The options will be "PERFORMANCE HIDE", "PERFORMANCE SHOW", and "BACK".
- Press and release to select the option.
- Press and hold the switch to select your preference.

TACH TOP **Tach Top message screen information**
- When ">TACH TOP" is displayed, then press and hold until "RELEASE", the release the switch.
- The options will be "PERFORMANCE HIDE", "PERFORMANCE SHOW", and "BACK".
- Press and release to select the option.
- Press and hold the switch to select your preference.

TACH BTM **Tach Bottom message screen information**
- When ">TACH BTM" is displayed, then press and hold until "RELEASE", the release the switch.
- The options will be "PERFORMANCE HIDE", "PERFORMANCE SHOW", and "BACK".
- Press and release to select the option.
- Press and hold the switch to select your preference.

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DISPLAYS (continued)

- Up to four small gauges can be installed, each labeled 1 through 4.
- Each gauge can be programed to the base options of FUEL, VOLTS, OIL PSI, and OIL TEMP.
- MBM-09 adds the BOOST option.
- MBM-17 adds the COMPASS and AIR TEMP options.
- MBM-19 adds the FRONT PSI, REAR PSI, and DUAL PSI options.
- If equipped on the motorcycle, HEAD TEMP will also be an option.
- As selections are being made, the gauge chosen will display that data.
- Two readings can be displayed at the same time on one gauge by selecting the GAUGE x DUAL menu.
    - o This menu is only displayed if the connected gauge supports it.
    - o Compass with air temp and dual air psi are already dual reading selections. Selecting one of them will prevent GAUGE x DUAL menu option from being available.
    - o Selecting NONE under the GAUGE x DUAL menu will go back to a traditional, single reading display.

    GAUGE 1 Gauge 1 setup
- When ">GAUGE 1" is displayed, press and hold until "RELEASE", then release the switch.
- Press and release the switch to scroll through the available selections.
- Press and hold the switch on the option you would like to display, until "RELEASE", then release the switch.

    GAUGE 1 DUAL Gauge 1 two reading setup
- When ">GAUGE 1 DUAL" is displayed, press and hold until "RELEASE", then release the switch.
- Press and release the switch to scroll through the available selections.
- Press and hold the switch on the option you would like to display, until "RELEASE", then release the switch.

    GAUGE 2 Gauge 2 setup
- When ">GAUGE 2" is displayed, press and hold until "RELEASE", then release the switch.
- Press and release the switch to scroll through the available selections.
- Press and hold the switch on the option you would like to display, until "RELEASE", then release the switch.

    GAUGE 2 DUAL Gauge 2 two reading setup
- When ">GAUGE 2 DUAL" is displayed, press and hold until "RELEASE", then release the switch.
- Press and release the switch to scroll through the available selections.
- Press and hold the switch on the option you would like to display, until "RELEASE", then release the switch.

    GAUGE 3 Gauge 3 setup
- When ">GAUGE 3" is displayed, press and hold until "RELEASE", then release the switch.
- Press and release the switch to scroll through the available selections.
- Press and hold the switch on the option you would like to display, until "RELEASE", then release the switch.

    GAUGE 3 DUAL Gauge 3 two reading setup
- When ">GAUGE 3 DUAL" is displayed, press and hold until "RELEASE", then release the switch.
- Press and release the switch to scroll through the available selections.
- Press and hold the switch on the option you would like to display, until "RELEASE", then release the switch.

    GAUGE 4 Gauge 4 setup
- When ">GAUGE 4" is displayed, press and hold until "RELEASE", then release the switch.
- Press and release the switch to scroll through the available selections.
- Press and hold the switch on the option you would like to display, until "RELEASE", then release the switch.

    GAUGE 4 DUAL Gauge 4 two reading setup
- When ">GAUGE 4 DUAL" is displayed, press and hold until "RELEASE", then release the switch.
- Press and release the switch to scroll through the available selections.
- Press and hold the switch on the option you would like to display, until "RELEASE", then release the switch.

    MBMS Display which MBMs are connected and adjust warnings
    To troubleshoot MBM connections, the speedometer can indicate which senders it sees connected.
- When ">MBMS" is displayed, press and hold until "RELEASE", then release the switch.
- The screen will show "NONE" if there are no MBMs present.
- If MBMs are present you will see a list of the MBMs are connected.
- Press and release to scroll through the available MBMs that are connected.
- Press and hold the switch to enter warning setup (does not apply to all) for attached MBMs.
- Press and release the switch to scroll through available warning settings.
    - o See the separate MBM manual for additional details.

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GEAR Gear indicator setup

Optional gear readout will be displayed to the left of the clock only.
No programming is required with stock gearing and tire size.
The gauge can 'learn' the gear ratios based on speed and RPM, no additional sensors are needed.
This feature will work with various transmissions up to seven speed models.
The factory preset option will preset the indicator to work with a stock 5 or 6 speed drive train
With a stock 6 speed, there will be a slight delay the first time you shift to sixth gear as the system verifies the gear
When "learning" 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 to enter setup <<**
- 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", "TRIKE", "LEARN", or "BACK".
    - "PRESET" set the gear reading to factory gearing and tire size.
    - "TRIKE" set the gear reading to factory gearing and tire size for a trike application.
    - "LEARN" starts the leaning process of speed and RPMs to calculate your gear reading.
- To set the gear for a factory setup select "PRESET" or "TRIKE".
    - 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, press and hold the switch until the display shows "MOVE LINE" 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.

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Speedometer troubleshooting guide

Problem	Possible cause	Solution
Gauge will not light up.	Brown/Gray wire does not have power.	Inspect and repair stock harness.
	Orange/White wire does not have power.	Inspect and repair stock harness.
	Orange wire does not have power.	Inspect and repair stock harness.
	Black wire is not getting a good ground.	Inspect and repair stock harness.
	Ignition switch not connected or damaged.	Inspect and repair stock switch or harness.
	Gauge is damaged.	Return gauge for repair. (see instructions)
Gauge lights up, but speed will only show zero.	No data from ECM.	Check engine trouble codes.
	Speed sensor not grounded properly.	Move ground to different location, preferable close to the speedometer ground.
	Sensor is not sending a speed signal.	Check for a damaged or malfunctioning speed sensor.
Speed reading is erratic or jumps around.	Speed sensor wire is loose or broken.	Check all wire connections and inspect wire for breaks.
	Poor ground connection.	Check ground connection on speedometer and sensor.
	Ignition interference	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).
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.
Engine indicator does not work	No data from ECM.	Check engine trouble codes.
ECM performance tune or reprogramming fails.	Stock service tools look for all stock gauges.	Unplug MLX and reprogram ECM. MLX can be plugged back in as soon as reprogramming is complete.
Speed message center shows "NO DATA"	Interconnect harness between speedometer and tachometer is unplugged.	Check interconnect harness on the back of the gauges.
GAUGE x DUAL doesn't show up in setup	Speed gauge must have software version MX614.12 or newer	Check SETUP -> VERSION to determine if your gauge supports this feature.
	Small gauges must have software version MX631.06 or newer	Check SETUP -> VERSION to determine if your gauge supports this feature.
	A dual reading is already selected.	Compass/air temp and dual psi are already dual readings.

Tachometer troubleshooting guide

Problem	Possible cause	Solution
Gauge will not light up	Interconnect harness between speedometer and tachometer is unplugged.	Check interconnect harness on the back of the gauges.
Gauge lights up, but tach will only show zero.	No data from ECM.	Check engine trouble codes.
Cruise Engage 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.

Small gauge troubleshooting guide

Problem	Possible cause	Solution
Gauge will not light up	Interconnect harness between speedometer and gauge is unplugged.	Check interconnect harness on the back of the gauges.
Gauge reading is erratic or jumps around.	Gauge signal wire is loose or broken.	Check all wire connections and inspect wire for breaks.
	Poor ground connection.	Check ground connection on gauge, engine, and sensor.
Gauge reading is incorrect.	Gauge is set up for wrong sensor type.	Change sensor setting in setup. (see instructions).
	Poor gauge grounding.	Repair or replace ground wire.
Oil Temp or Oil PSI gauge shows "NO DATA"	Interconnect harness between speedometer and tachometer is unplugged.	Check interconnect harness on the back of the gauges.
Gauge shows "OPEN"	Loose or broken sensor wire.	Check sensor wire for damaged or disconnected wire.
Gauge shows "SHORT"	Pinched or bare sensor wire.	Check sensor wire for damaged or pinched wire.

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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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