



MCL-3014 gauge kit

Thank you for purchasing the Dakota Digital MCL gauge kit for your Harley Davidson Touring bike. This kit is designed to be a direct plug in replacement for all touring models from 2014 and up. The kit includes the following gauges and features:

Gauge readings: Speedometer, Tachometer, Voltage, Fuel Level, Oil Temperature, Oil Pressure*, Air Temperature*, Cylinder Head Temperature*, and Gear Position.

Message Center readings: Odometer, two Trip Meters, count down Service miles, Hour Meter, Miles to Empty, Clock, Metric/English speed conversion, 0-60 time, quarter mile time, quarter mile speed, high speed recall, and high RPM recall.

Indicators: Left Turn, Right Turn, High Beam, Driving Lights, Neutral, Engine, Security, ABS*, Low Oil, High Temperature, Reverse*, Parking Brake*, and Low Fuel.

Optional Readings: Boost Pressure with MBM-09, Front or Rear Air Suspension Pressure with MBM-19

*When available. Some readings may not be available with all models.

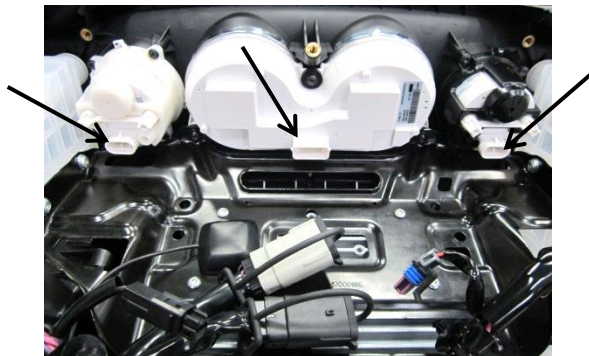
IMPORTANT NOTE! This gauge has an odometer preset option that is only available for the first 100 miles (160km) of operation. See "preset odometer" for instructions.

INSTALLATION

Remove the outer fairing, fairing vent, and factory gauges. Set aside stock hardware, it will all be reused for assembly. Please follow the service manual to expose the wiring and gauges.



1. Disconnect the three (3) gauges and remove the ten (10) screws securing the amplifier tray to the radio and the speaker enclosures in order to flip the amplifier tray out of the way.



2. Remove the remaining seven (7) screws for removal of the gauges. Ensure the Speed and Tach bezels remain in the fairing.



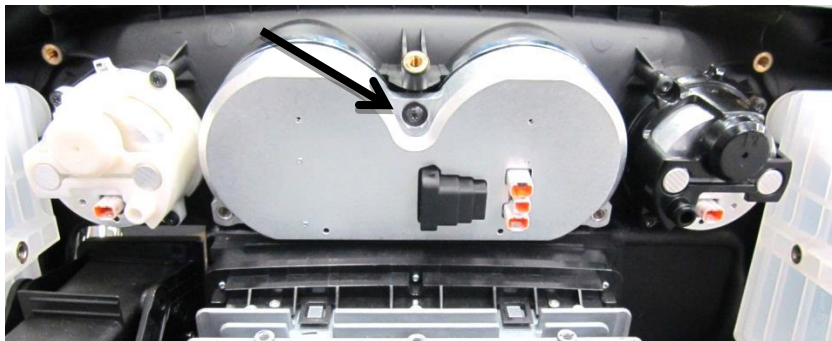
3. The Fuel and Volts bezels and mounting cups will be reused. There are three (3) tabs on the bezels that need to be carefully pushed back through the mounting cup to separate the bezel from the mounting cup and to release the factory gauge.



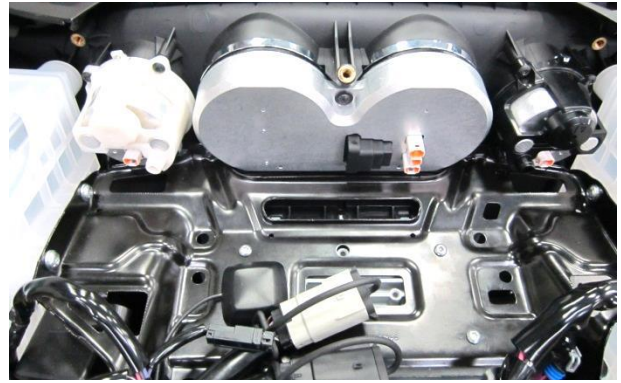
4. The new OIL TEMP gauge will use the existing black Fuel mounting cup and the new VOLTS gauge will use the existing white Volts mounting cup. Place the new VOLTS and OIL TEMP gauges in the appropriate housings and secure the bezel in place by lining up the tabs.



5. Secure the new VOLTS and OIL TEMP gauges to the fairing with the stock Volts and Fuel housings in the factory locations. The SPEED/TACH gauge can be held in place for further assembly by loosely torquing the top center screw.



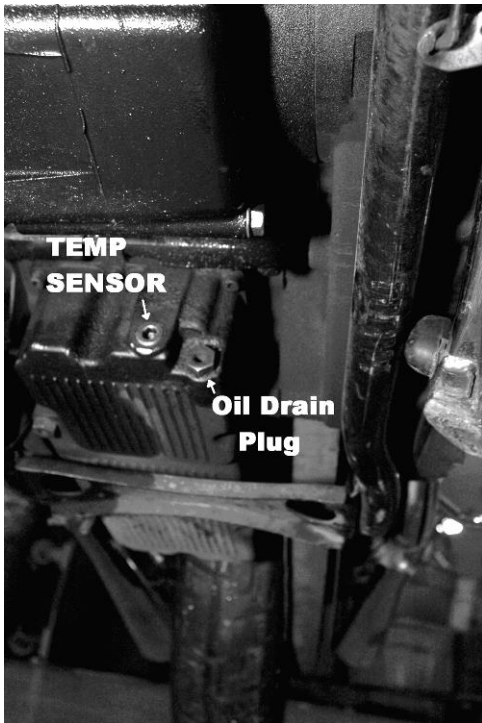
6. Reassemble the amplifier tray to the radio and speaker enclosures using the factory hardware; also give the top center Speed/Tach screw a final torquing with the gauge aligned to the fairing and amplifier tray.



7. Install the included oil temp sensor and run the harness to the Speed/Tach gauge.

The supplied oil temperature sensor replaces one of the oil pan plugs. You can do this at an oil change so you do not have to worry about losing oil, or be quick and you should only lose a small amount of oil. First locate the allen head plug on the front bottom side of the oil pan. The plug is on the right of the oil pan drain plug that is used to drain the engine oil for an oil change. It is a 3/8" NPT allen head plug that should be flush with the oil pan. See photo for the correct plug.

NOTE: Check oil level after install of this sensor, refill oil as needed



Bottom of oil pan



Remove 3/8" npt allen plug

Wipe any road grime and oil from around the plug so the area is clean. Use a 3/8" allen wrench to remove the plug. Have the sensor ready to thread in so minimal oil is lost. Tighten the new oil temp sensor with a 3/4" wrench.



Thread sender into oil pan



Tighten temp sensor with a 3/4" wrench

Plug in the sealed two pin connector and route the wires over to the bottom right side frame rail up towards the neck. Use zip-ties to secure the wire harness along the frame.



Installed oil temp sensor and harness plug



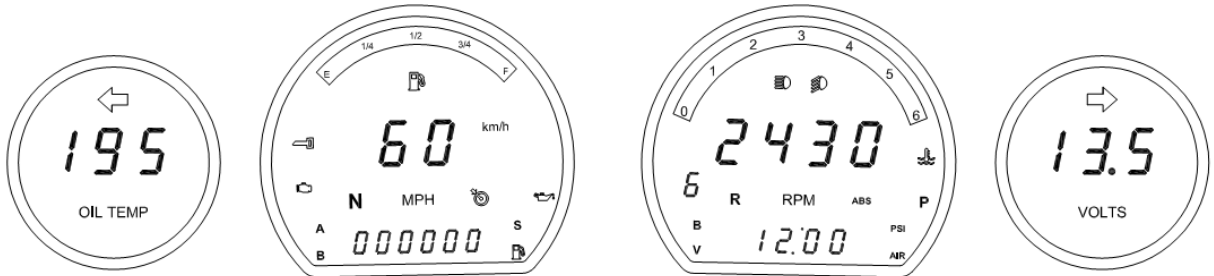
8. You are now ready to make the gauge connections; the Speed/Tach uses the factory Speed/Tach connector, the Volts and Oil Temp use the two (2) provided interconnect harnesses with one end connected to each gauge and the other ends going to the Speed/Tach. The stock Fuel and Volts connector can be held aside using provided zip ties.



9. You can now reassemble the vent and outer fairing to the bike and familiarize yourself with your new gauges by reading the rest of the manual.



STATUS AND WARNING INDICATORS



Several indicators are supplied on the stock wiring harness. Some of these may not be active on your motorcycle. These include the turn signals (green arrows), high beam (blue head light symbol), driving lights (green head light symbol), neutral (green 'N'), low oil pressure (red oil can symbol), high engine temperature (red temperature symbol), security (red key symbol), engine (red engine symbol), ABS (red 'ABS'), low fuel (amber fuel pump symbol), reverse (red 'R'), parking brake (amber 'P'), and cruise control (red or green arrow and circle symbol).

GAUGE SETUP AND CALIBRATION

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

Menu	Description	
dIAG	(Eng InE, SECUrE, ABS, dOnE)	read diagnostic codes
AdjUSt SPEED	(FRStEr, SLdUEr) (75 - 125)	adjust calibrate speed
UnIt SPEED	(MPH, km/h)	select speed unit
S SEt SPEED	(OFF, 500 - 7500)	miles to service setting
PERF	(On, OFF)	turn on/off performance displays
LIghTS WJArn	(On, OFF)	turn on/off parking brake indicator
nIghT	(On, OFF)	turn on/off automatic night dimming
UPdAtE tRCh	(1, 2, 3)	set digital RPM update rate
WJArn tRCh	(2000 - 7660)	set RPM shift warning point
COLOr tRCh	(shown on bar graph)	select RPM and fuel bar graph color, red or green
WJArn VOLt	(9.0 - 12.1)	set low volt warning point
WJArn OIL PSI	(1.0 - 36)	set low pressure warning point
SEt FC OIL	(F, C)	select temperature unit
HIF-C OIL	(200F - 420F or 93C - 215C)	set temperature warning point
GEAR	(dOnE, PrESEt, LEArn)	transmission gear display selection
FUEL	(dOnE, SEndEr)	fuel sender setup
	(Hd, CSt)	setup fuel gauge for stock or custom sender
rRnGE	(On, OFF)	enable distance to empty reading
	(dOnE, rESEt)	reset initial range learn
Add on r7b77	(SEAn, WJArn, dOnE)	set warning points for add on MBM's
InfO		display gauge revision code on speedometer
odOm77-		one-time odometer preset

SPEEDOMETER SETUP

Press and hold the switch while turning the key on. Press and release the switch to change the menu selection.

d IAG Diagnostics mode for checking/clearing trouble codes

- Press and release the switch until "d IAG" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The display will show "EnG InE", "SECUrE", "AbS", or "donE".
- Press and release the switch to change the selection; press and hold the switch until " - " is displayed to begin reading the stored codes for the particular system.
- Release the switch. The display will show the current codes, "nonE", or "no rSP". Press and release the switch to move to the next stored code. After all codes are displayed, the module part number will be scrolled across the screen. To clear codes, press and hold the switch when "end" is displayed. Consult a service manual for trouble code descriptions.

SPEED CALIBRATION

The speed calibration is not required unless you have changed the rear pulley, sprocket, stock transmission, or stock tires.

RdJwSt Adjust speedometer calibration

- Press and release the switch until "RdJwSt" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The display will show "FAStEr" or "SlOw". Faster will allow you to increase the speedometer reading, slow will allow you to decrease the speedometer reading.
- Press and release the switch to change; press and hold the switch to continue. The display will change to "CL" and a number from 75 to 125. This is the calibration ratio that is applied to the reading that the ECM is providing. 110 will be 10% faster, 90 will be 10% slower. Think of the number displayed as a percentage.

$$\frac{\text{Actual speed}}{\text{speedometer reading}} \times \text{current Cal ratio (100 by default)} = \text{new Cal ratio}$$

- Press and release the switch to change the cal ratio. When the desired cal ratio is shown, press and hold the switch to save it.

un It Speed unit

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

5 SEt Miles to Next Service setup

The service mileage is a countdown mile meter. The service mile display can be disabled or can be set to count down from 500 – 7500 miles. If the service mileage is enabled and it gets to 0 miles it will display "S - dUe" each time the key is turned on. If the push button switch is pressed and held while "S - dUe" or "5" and a mileage is displayed, the service miles will be reset to your preset value.

- Press and release the switch until "5 SEt" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The current setting will be displayed, "OFF" or a mileage from 500 - 7500.
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed.

PErF Performance menu setup

The performance readings can be turned on or off. When they are turned off the message display will only toggle through the mileage readings.

- Press and release the switch until "PErF" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The current setting will be displayed (on or off).
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed.

n I9Ht Night Dimming

Your display system has a dimming feature that dims the display intensity automatically at night. Normally the system is at full brightness for daytime viewing. To have the system at full brightness all of the time, go into the setup menu as described above and select "n9t" (night). Press and release the trip switch to select "OFF" instead of "on". Press and hold the trip switch to save the new setting.

- Press and release the switch until "n I9Ht" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The current setting will be displayed. (On, OFF).
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed to save the setting.

TACHOMETER SETUP

The digital tachometer update rate can be adjusted between slow, mid, and fast. The RPM warning/shift point can be adjusted from 2000 – 7660 RPM. The bar graph color can also be changed from green with a red warning to red with a green warning.

UPDTE TACH Display update setup

The display update will select how quickly the digital tachometer reading will respond.

- Press and release the switch until "UPDTE" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The update setting will be displayed. (1=slow, 2=mid, 3=fast).
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed to save the setting.

WARN TACH RPM warning setup

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

COL OR TACH Bar graph color selection

- Press and release the switch until "COL OR TACH" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The tach bar will light up in the current color (green or red).
- Press and release the switch until the desired color is displayed.
- Press and hold the switch until " - " is displayed to save the setting.

WARN VOL T Voltage warning setup

- Press and release the switch until "WARN V" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The current warning point will be displayed (9.0 – 12.1).
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed to save the setting.

WARN OIL PSI Pressure warning setup

The oil pressure is read from the stock harness when available.

- Press and release the switch until "WARN P" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. LO and number from 5-36 will be displayed for the low pressure warning point.
- Press and hold the switch until " - " is displayed to save the setting.

SELE FC OIL Temperature unit setup

The temperature gauge can be set to read in Fahrenheit or Celsius.

- Press and release the switch until "SELE FC" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The current sender unit will be shown. (400F, 200C).
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed to save the setting.

HIF-C OIL Temperature warning setup

- Press and release the switch until "HIF-C" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. H and number from 200F – 420F or 93C – 215C will be displayed.
- Press and release the switch until the desired value is displayed.
- Press and hold the switch until " - " is displayed to save the setting.

GEAR- Gear Indicator setup

This gauge has a single digit display for gear position. The gauge can learn the gear ratios based on speed and RPM so no sensors are needed, just what you've already connected. It will work with 4, 5, 6, or 7 speed transmissions. 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. Subsequent shifts to sixth gear will not have the delay. You can also program each gear position for aftermarket transmissions or if you've changed wheel size or pulley/gearing size. To program the gear positions, begin at a section of road where you can gradually shift through all of the gears. Press and hold the switch while turning the key on and starting the engine. Once the engine is running, release the switch.

- Press and release the switch until "GEAR" is displayed, press and hold the switch until "- " is displayed.
- The display will show "done", "PRESET", "PSET 3", or "LEARN". "done" will exit the menu. "PRESET" will set the indicator for an original factory transmission. "PSET 3" will set the indicator for an original trike transmission. "LEARN" allows it to work with virtually any transmission option.
- To program each gear individually, press and release the switch until "LEARN" is displayed, then press and hold the switch.
- The message will show "LOW ECH" if the engine RPM is below 1500, or "LOW SPD" if the vehicle speed is below 5 mph.
- Begin driving in 1st gear. The display should show GEAR 1 and the "1" should be flashing. Drive at a steady speed until the "1" stops flashing, it should only take about 20 seconds if the speed and RPMs are steady.
 - *Optionally: If the gear does not stop flashing you can manually override and jump to the next gear by pressing and releasing the switch to store the gear position quicker.*
- Shift to 2nd gear and drive at a steady speed. The display will change to a flashing "2".
- Wait until the "2" stops flashing. Shift to the next gear and a "3" should start flashing.
 - *Optionally: If the gears do not stop flashing you can manually override and jump to the next gear by pressing and releasing the switch to store the gear position quicker.*
- Repeat this through each gear. When you are done, come to a complete stop or press and hold the switch until the display shows "SETUP" and then release it.
- Turn the key off and then on again to restart the gauges in normal operation, verify the gear position by riding through each gear and checking if positions agree.

LIGHTS LAMP- Gauge indicator lights setup

The parking brake indicator in the gauge face can be turned on or off. If the parking brake is not present this can be disabled.

- Press and release the switch until "LIGHTS" is displayed, then press and hold the switch until "- " is displayed.
- Release the switch. The current setting will be displayed (on or off). The "P" indicator will light when on is selected.
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until "- " is displayed.

FUEL Fuel sender setup

- Press and release the switch until "FUEL" is displayed, then press and hold the switch until "- " is displayed.
- The display will show "SENDER" or "done". Press and release the switch to change to the desired setting.
- Press and hold the switch until "- " is displayed to select the setting.
- Selecting SENDER will access the following menus
 - Hd (set to factory default sending unit)
 - CURV (set to a custom fuel curve)
 - SET 00 (set new empty reading)
 - SET 33 (set new 1/3 reading)
 - SET 66 (set new 2/3 reading)
 - SET 99 (set new full reading)
 - done (exit sender setup)
 - When entering the custom fuel setup, the current sender resistance will be shown on the large tachometer display and the currently stored resistance will be shown on the small tachometer message display.
- Press and release the switch to select the desired fuel setup menu, press and hold it until "- " is displayed, and then release the switch to view or go on.
- A press and hold will save the setting or exit back to the menu.

rRn9E Distance to Empty setup

The range reading will initially show the word *rRn9E* until a tank of gas has been driven to allow the gauge to complete its setup based on your driving. Begin with a full tank of gas and do not refill it until it gets below ¼ tank of gas. This can be done on multiple trips as long as no fuel is added before it gets low enough. After the initial setup the display will show *r* followed by the calculated distance to empty. This will count down, making adjustments as necessary, until the range is 35 miles (56km) or less and then it will show *r L0*. The gauge will continue to make adjustments to match your driving habits with each fill up. After the initial setup you are not required to wait for the fuel to get below ¼ tank before refilling.

- Press and release the switch until "*rRn9E*" is displayed, then press and hold the switch until " - " is displayed.
- The display will show "*OFF*" or "*on*". Press and release the switch to change to the desired setting.
- Press and hold the switch until " - " is displayed to select the setting.
- *OFF* turns the range display off.
- Turning the function *on* will access the following menus
 - *donE* (exits the setup)
 - *rESEt* (resets the gauge to beginning of the initial range learning)
- Press and release the switch to select the desired fuel setup menu, press and hold it until " - " is displayed, and then release the switch to view or go on.
- A press and hold will save the setting or exit back to the menu.
- *donE* is the first menu displayed, a press and hold will exit fuel set up at this point.
- *rESEt* will begin the initial range learning again. You must begin with a full tank of gas and then ride it down to less than ¼ tank. This can be done in multiple trips as long as the tank is not filled in between. The range display will show *rRn9E* until this is completed and then begin showing the distance to empty.

Info Info menu

Displays the current software revision on the tach message display (no changes can be done in this menu).

odm77 Odometer preset

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

WARNING!!: This only allows setting odometer to the nearest mile. Do not use tenths! For example a mileage of 65432.1 should be set to "065432" using this method. If the tenths digit is used, the odometer will read 10 times too high.

- Press and release the switch until "*odm77*" is displayed, then press and hold the switch until " - " is displayed.
- The current ECM odometer reading will be displayed with the left most digit flashing.
- Press and release the switch to increment the digit. Press and hold the switch to move to the next digit to the right.
- Continue until the right most digit has been set. Press and hold the switch and the speed display will show "*no*".
- Press and hold the switch while "*no*" is displayed to go back and continue changing the odometer display. Turn the key off to cancel any changes.
- Press and release the switch to change to speed display to "*YES*". Press and hold the switch while "*YES*" is displayed to save the current odometer reading.

TRIP SWITCH

The trip switch on the left handle bar allows access to all of the mileage, RPM, and performance information. Pressing and releasing the trip switch toggles through the different displays under the speedometer. Press and holding the switch will reset the current display. If the switch is pressed while the key is off the clock and odometer can be displayed.

To make changes to the display under the tachometer, hold the info switch on the right handle bar while pressing the trip switch on the left handle bar.

The display sequence is as follows:

Left side

ODOMTR	>	000000	odometer mileage
TRIP A	>	^A 000.0	trip meter mileage A
TRIP B	>	^B 000.0	trip meter mileage B
SERVIC	>	0000 ^S	miles since last service (if programmed)
KPH	>	=====	metric speed conversion (to mph if metric unit is selected)
* HI SPD	>	H I 00	high speed recall
* 0-60 T	>	60 00.0	0-60mph time (0-100kph)
* QUARTR	>	25 00.0	quarter mile time
* QT MPH	>	25 00	quarter mile speed
RANGE	>	250.0 or RANGE	distance to empty (if turned on)

Right side

CLOCK	>	12:00	12 hour clock
* HI RPM	>	H 0000	high RPM recall
PRESSURE	>	00 PSI	oil pressure reading
CYLINDER HEAD TEMP	>	c 000F	temperature reading, "C" if metric
AIR TEMP	>	000 F _{AIR}	temperature reading, "C" if metric
HOURS	>	Hr 0.0	re-settable hour meter
**BOOST	>	^B 00 PSI	boost pressure reading with optional MBM-09
**AIR PSI	>	00 ^{AIR} PSI	air bag pressure reading with optional MBM-19
**FRONT AIR PSI	>	F 00 ^{AIR} PSI	front air bag pressure reading with optional MBM-19

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

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

** MBM-09 and MBM-19 are sold separately.

Clock Setting

- Begin with the key on and gauges operating.
- While holding the info switch, press and release the trip switch until the clock is displayed underneath the tachometer.
- With the clock displayed, press and hold both the info switch and the trip switch until the hours begin flashing.
- With the hours flashing, press and release the trip switch to change the hours. Press and hold the trip switch to adjust the minutes.
- The minutes will begin flashing. Press and release the trip switch to change the minutes. Press and hold the trip switch to end the clock setup.

Troubleshooting guide

Problem	Possible cause	Solution
Gauge will not light up.	Red/Orange wire does not have power. Black/Green wire is not getting a good ground. CAN bus wiring open or short. Ignition switch not connected or damaged. Gauge is damaged.	Inspect and repair stock harness. Inspect and repair stock harness. Inspect and repair stock harness. Inspect and repair stock switch or harness. Return gauge for repair (see instructions).
Gauge lights up, but speed will only show zero.	No data from ECM. Sensor is not sending a speed signal.	Check engine trouble codes. Check wiring and test sensor.
Speed reading is incorrect.	Gauge is not calibrated correctly.	Gauge must be calibrated (see instructions).
Gauge lights up, but tach will only show zero.	No data from ECM.	Check engine trouble codes.
Volt or Temp will not light up.	Bus cable disconnected. Damaged bus cable.	Check cable connections on gauges. Repair or replace cable.
Gauge will not dim.	Auto dimming is disabled.	Check setting under "night" menu.
Gauge remains dim at all times.	Light sensor is covered.	Make sure the bottom center of the gauge lens is clean and not obstructed.
Pressure reading does not show up.	Pressure sender is not connected. Sender wire is loose or broken. ECM does not support the oil pressure reading.	Sender must be connected before the reading will be displayed. Check all wire connections and inspect wire for breaks. Oil pressure will not be available
Temperature reading shows "E E".	Temperature sender is not connected. Sender wire is loose or broken.	Sender must be connected before the reading will be displayed. Check all wire connections and inspect wire for breaks.
Pressure or temperature reading shows "- -".	Sender is shorted to ground.	Inspect wire for bare insulation or pinching.
Low Fuel Light flashing.	Wiring short or open.	Check gauge and fuel sender connections.

SERVICE AND REPAIR

DAKOTA DIGITAL offers complete service and repair of its product line. In addition, technical consultation is available to help you work through any questions or problems you may be having installing one of our products. Please read through the Troubleshooting Guide. There, you will find the solution to most problems. **Should you ever need to send the unit back for repairs, please call our technical support line, (605) 332-6513, to request a Return Merchandise Authorization number.** Package the product in a good quality box along with plenty of packing material. Ship the product by UPS or insured Parcel Post. Be sure to include the RMA number on the package, and include a complete description of the problem with RMA number, your full name and address (street address preferred), and a telephone number where you can be reached during the day. Any returns for warranty work must include a copy of the dated sales receipt from your place of purchase. Send no money. We will bill you after repair.

Dakota Digital 24 Month Warranty

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

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

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



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