



INSTRUCTIONS

FAST™ Air/Fuel Meter

Thank you for choosing FAST™ products; we are proud to be your manufacturer of choice. Please read this instruction sheet carefully before beginning installation, and also take a moment to review the included limited warranty information.

Warning: Read these instructions completely before attempting to tune with your FAST™ Air/Fuel Meter. Failure to do so may result in damage to your engine and/or vehicle. FAST™ is not responsible for damage or injuries caused by improper use of this unit.



Kit Parts List

<u>SINGLE SENSOR KIT</u>	<u>QTY.</u>	<u>DUAL SENSOR KIT</u>	<u>QTY.</u>
Air/fuel meter	1	Air/fuel meter	1
12 ft. sensor/power cable	1	12 ft. sensor/power cable	1
6 ft. plug-in power cable	1	12 ft. sensor only cable	1
O ₂ sensor	1	6 ft. plug-in power cable	1
Weld-in threaded sensor bushing	1	O ₂ sensor	2
Sensor bushing plug	1	Weld-in threaded sensor bushing	2
		Sensor bushing plug	2



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What makes the FAST™ Air/Fuel Meter work so well:

- Our single or dual oxygen sensor kits give you accurate air/fuel ratios for tuning your engine to perfection.
- Single sensor version that can be upgraded later to the two sensor technology. Simply purchase an additional cable and sensor, plug it in, and the air/fuel meter is ready to go!
- With the FAST™ Air/Fuel Meter, you can read two sensors individually or have them averaged together for super accurate readings of the engine's true air/fuel ratio.
- Simple, built-in data-logger doesn't require you to download to a laptop/computer.
- Advanced features include outputs for external data-loggers, digital gauges, as well as a narrow-band simulator function that allows you to feed your engine's computer a factory signal while using the wide-band sensor for air/fuel measurement.

Quick Start Reference Guide:

O₂ sensor location: For maximum accuracy, install the oxygen sensor just upstream of the catalytic converter. You can install the sensor after the converter, but the readings will register slightly leaner than if measured before the converter. Do not install the oxygen sensor in the 6 o'clock position in the exhaust pipe. If this is done, condensation may puddle in the sensor, causing corrosion and damage to the sensor. Do not install the O₂ sensor closer than 20 inches from the cylinder head flange, the excess heat can cause damage to the sensor. It is preferred that the sensor be installed in or after the collector area.

Use of leaded fuel: The use of leaded fuel will significantly reduce the lifespan of the oxygen sensor. Depending on the leaded fuel that is used, the sensor will provide 50-500 hours of accurate reading. When the sensor begins to read inaccurately, simply replacing the sensor with a new one will return the air/fuel meter to perfect operating condition.

Un-powered sensor: When an engine is running and the sensor or sensors are installed in exhaust pipe, for maximum sensor life, it is advisable to be in the active air/fuel display mode. When in the active air/fuel display mode, power is applied to the heating element of the oxygen sensor, and this helps to reduce the build-up of exhaust deposits on it. If the sensor is not powered-up, exhaust deposits may build-up on the sensor element and reduce its accurate life expectancy.

Stand-by power consumption: When the FAST™ Air/Fuel Meter is powered down, a small amount of current is required to maintain its standby. If the unit is in a vehicle that will not be run in the next 15 days, it is recommended to simply unplug the unit from the cigarette lighter.

Installation Instructions:

- 1. Install threaded sensor bushing.** For maximum accuracy, install the oxygen sensor just upstream of the catalytic converter. You can install the sensor after the converter, but the readings will register slightly leaner than if measured before the converter. Do not install the oxygen sensor in the 6 o'clock position in the exhaust pipe. If this is done, condensation may puddle in the sensor, causing corrosion and damage to the sensor. Mark the spot where you would like to install the threaded sensor bushing, drill a .750 diameter hole, and weld the bushing centered on the hole. If you do not have access to a welder, any competent exhaust

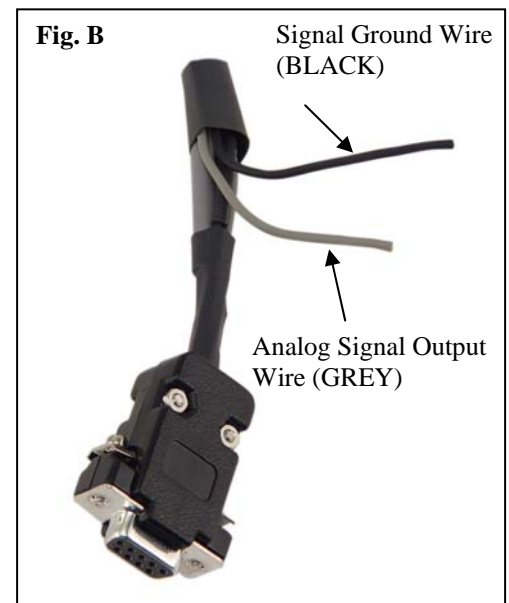
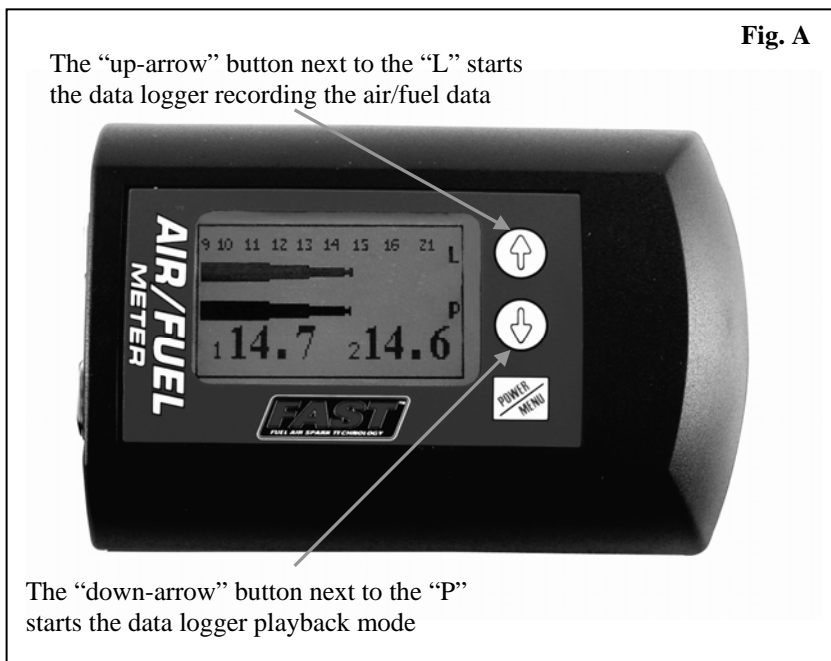


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shop can install the threaded bushing for you. It is still advisable to locate where you would like the sensor mounted, mark it, then let the shop drill the hole and weld the bushing in place.

- 2. Run sensor cable to interior of vehicle.** Attach the cable's sensor connector to the oxygen sensor and then route the cable to the interior of the vehicle.
- 3. Connect cable to power and display.** Plug in the cigarette lighter power adaptor and connect it to the sensor cable. Plug in the sensor cable to the side of the display housing. The unit should automatically power-up at this point.
- 4. Follow the on-screen menu options.** Select the sensor options, wait for the unit to warm-up, and then read your air/fuel ratio. There are several sensor options to choose from. Single sensor mode will measure only one sensor. Dual sensor mode will measure two sensors. In dual sensor mode you can read these sensors individually (Fig. A) or as a combined average.



Operational Features & Descriptions

Data Logging:

- In any live air/fuel display screen, you may press the up-arrow button (the button next to the L on the display screen) to begin recording your air/fuel ratio (Fig. A). When pressed, the L will begin to flash, indicating that you are now recording. The FAST™ Air/Fuel Meter contains enough memory to record up to 50 minutes of data in single sensor mode and up to 25 minutes in the dual sensor mode. When you are finished recording, simply press the up-arrow button (L) again. The L will stop flashing and your data log is saved. If you press the up-arrow button (L) again, the old log is erased and a new log will be created.

2. To review the data log in real-time play back, simply press the down-arrow button (the button next to the P on the display screen) (Fig. A). The log will load, the P will begin flashing, and the data log will immediately begin its play back. At any time you can pause the playback by pressing the down arrow (P) button. By pressing it again, you will resume playback from the point you originally paused it at. When the log is finished playing, it will prompt you to decide if you want to replay again. If you select no, you will be put back into the live air/fuel screen. If you select yes, it will reload the log and begin playback again.

Advanced Options:

- **Fuel Type:** Gasoline and alcohol (i.e. methanol) fuel calibrations can be selected, depending on the type of fuel you chose to run. Once this is selected, it will become the default value when the unit is powered up. You can go back later and change the fuel type at any time.
- **Analog Output Mode:** When reading air/fuel in this mode, an additional analog signal output is provided that will run most external, electronic air/fuel gauges and/or feed an external data logger (Fig. B). This signal is sent via two wires that are factory contained under the connector heat-shrink wrap at the display housing end of the wiring harness (Fig. B). Simply cut the shrink wrap back and pull out the black and grey wires. The black wire is the signal ground wire and the grey wire is the analog signal output wire.
- **Simple Mode:** This takes the output voltage and multiplies it by 10 to calculate the actual air/fuel ratio. Many external electronic air/fuel gauges use this signal type.
- **High Res Mode:** This provides a 0 - 4.096 volt output signal. Certain digital gauges and data acquisition systems use this type of signal.
- **Narrow Band Simulator Mode:** This provides a narrow band output signal that simulates many OEM style air/fuel sensors. This will allow you to use the wide-band style sensor the FAST™ Air/Fuel Meter uses not only to serve the air/fuel meter, but to also run the engine's computer. This mode is compatible only with pre-OBDII vehicles.

Tuning Advice

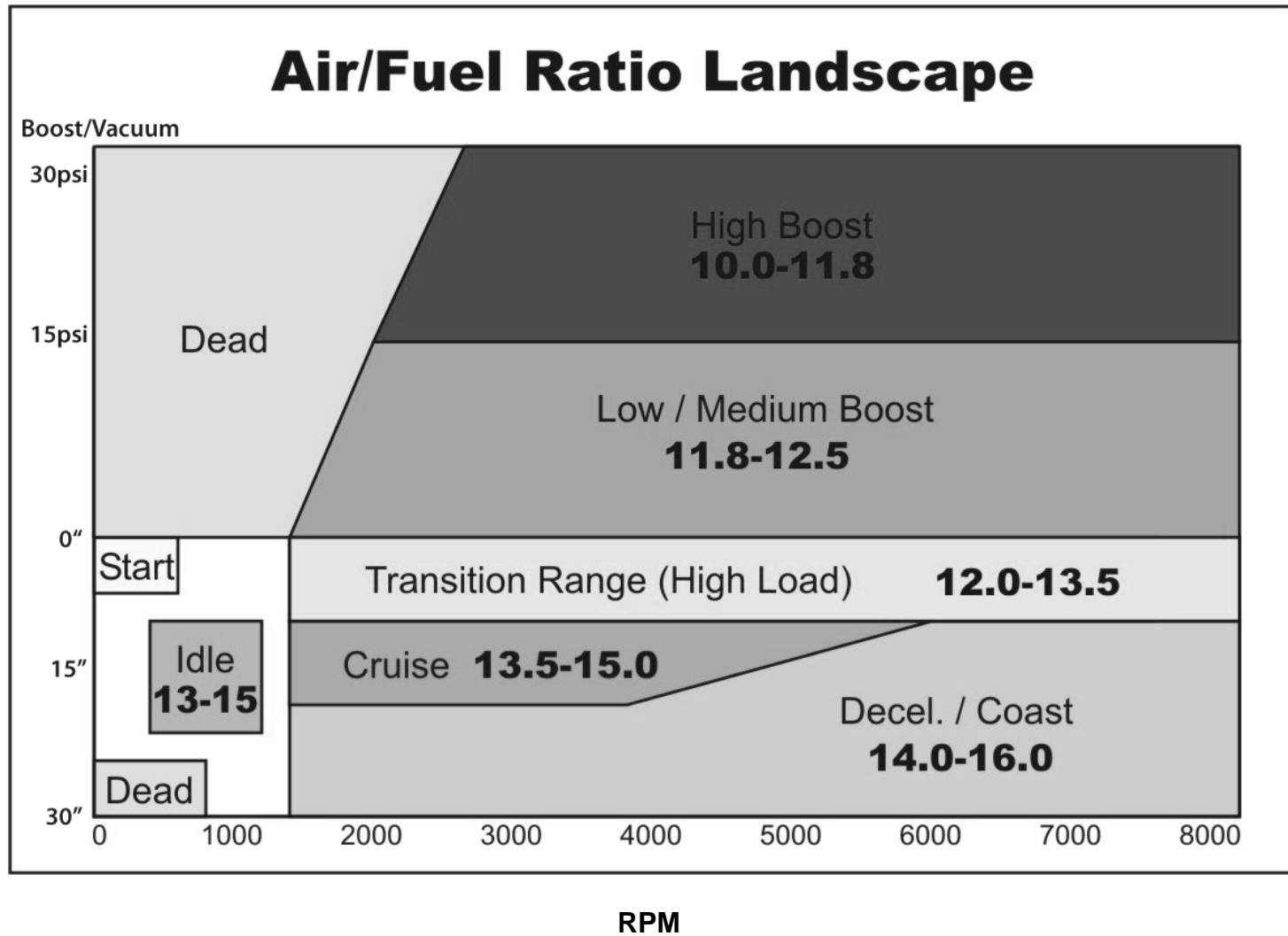
Air/fuel ratio requirements vary greatly from application to application, but some generalities can be found to get a tuner "in-the-ballpark" when tuning an engine. Below is a graphical chart that represents the normal operating environment for most engines using gasoline for fuel. The left side vertical column reads boost pressure or vacuum in the engine's manifold. The horizontal bottom row is the engine's rpm. For those running methanol, the proper air fuel ratio changes dramatically. At part throttle cruising and idle, the proper air/fuel ratio is around 6.4 to 1. At wide open throttle, an air/fuel ratio of 5.5 to 1 is a good starting point for maximum power production.



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GASOLINE Tuning Chart



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Limited Warranty

FAST, Inc. warrants that all of its products are free from defects in material and workmanship for a period of 1 year from the date of purchase. This limited warranty shall cover the original purchaser.

FAST, Inc.'s obligation under this warranty is limited to the repair or replacement of its product. To make a warranty claim, the part must be returned within 1 year of purchase to the address listed below, freight prepaid. Items covered under warranty will be returned to you freight collect. It is the responsibility of the installer to ensure that all of the components are correct before installation. We assume no liability for any errors made in tolerances, component selection, or installation.

There is absolutely no warranty on the following:

- Any parts used in racing applications.
- Any product that has been physically altered, improperly installed or maintained.
- Any product used in improper applications, abused, or not used in conjunction with the proper parts.
- Damage due to excessive manifold pressure, i.e. nitrous backfires, engine misfire, etc.

There are no implied warranties of merchantability or fitness for a particular purpose. There are no warranties, which extend beyond the description of the face hereof. FAST, Inc. will not be responsible for incidental and consequential damages, property damage or personal injury damages to the extent permitted by law. Where required by law, implied warranties or merchantability and fitness are limited to a term of 1 year from the date of original purchase.

This warranty gives you specific legal rights and you may also have other legal rights, which vary from state to state.



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