

Quick Start Guide for Dyno DataMite USB

This sheet hits the major points for getting your dyno up and running quickly.

1) DO NOT plug in DataMite USB yet. Install the software from the CD and unlock the program by mailing or calling Performance Trends with your numbers as outlined on the sheets stapled to the CD envelope, or on page 3 in the manual. Note that the software will run for 10 days without any limitations, so you do NOT have to unlock it before going to the next steps below.

2) Plug in DataMite USB via USB cable to one of your computer's USB ports (either with or without power supply connected). You should hear the USB connect sound, and your computer should say "Found new hardware". It may ask if it should connect to the internet to find a driver. Say No, and when it asks for you for a CD, put the Performance Trends Installation CD in your computer. **Wait about 60 seconds to see if the Installation Wizard comes up.** If it does, then click on OK for the intro messages, then click on Stop in the lower left corner to shut it down. With the Installation Wizard gone, follow the instructions in the Found New Hardware Wizard.

3) Check the individual instruction sheets folded and placed in the user manual, or packaged with the individual sensors and parts. These give critical instructions especially for your particular dyno system. Pay particular attention to:

- Notes on Dyno Configuration. **Be sure to open the correct File from the Example Test Files when you start configuring the software for your dyno. You need to start with the correct example file to get your computer to communicate with your DataMite USB.**
- Dyno Software setup for DataMite USB.
- Various schematics showing how the DataMite connects to power and various sensors.
- Calibration sheets for various sensors. Calibrations are entered into the DataMite specs menu in the program as outlined in Section 2.5 in the manual, starting on page 51.
- Appendix 2: Hardware Installation and Operation in the manual on page 189 also has tips on system installation.

Additional important tips for installation

- Mount the data logger and your computer as far as practical from the engine to avoid electrical interference from the ignition system.
- Avoid mounting any electronic boxes on surfaces which vibrate from engine vibration or are exposed to exhaust or engine heat.
- Avoid **coiling up** excess length of sensor leads, as coils of wire are more apt to pick up electrical noise than cables stretched out.

3) Shakedown/Troubleshooting: Before you can run dyno tests, you must make sure that the sensors are all reading. This is most easily done in the "Current Readings" screen on page 75 in the manual. Example 4.1 on page 143 is also good reading for Black Box II installations and Example 4.3 on page 173 is good for DataMite II installations.

A common problem is not being able to initially communicate with the data logger. Check Appendix 3, Troubleshooting in the manual on page 199 and especially page 200 for help.

4) Running your dyno tests: Check Example 4.1 on page 143 for typical inertia dyno tests. Check Example 4.3 on page 173 for absorber dyno tests. For chassis dynos, check the Index under "Chassis Dyno" for pages discussing this type of dyno.

5) Page through the entire manual when you have time. We know no one will read it all, but at least look at the pictures and captions to fully understand all the features in this data logger package.

USB Driver Installation Sheet

This sheet hits the major points for getting your data logger communicating to your computer.

Plug in your Performance Trends USB device to one of your computer's USB ports You should hear the USB connect sound, and your computer should say "Found new hardware".



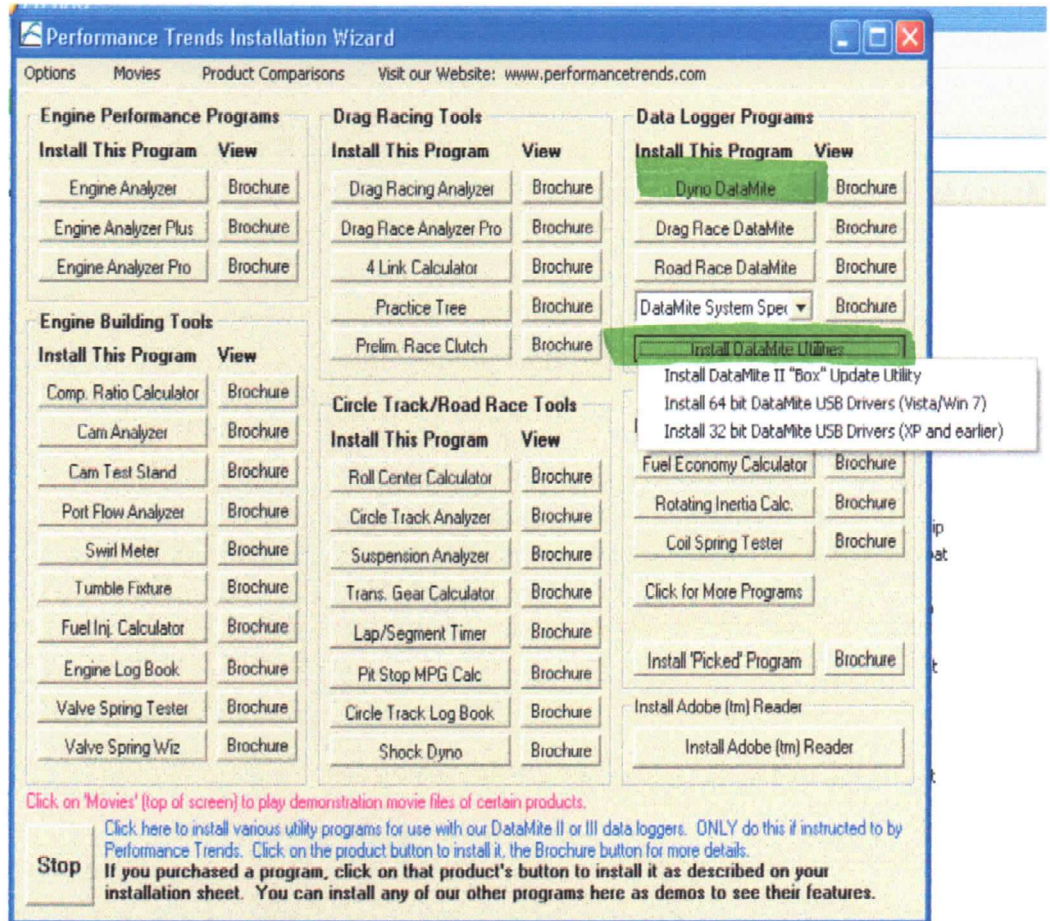
It may ask if it should connect to the internet to find a driver. Say No, and when it asks for you for a CD, put the Performance Trends Installation CD in your computer (the same CD which contains your data loggers software). When the Installation Wizard comes up, click on Stop at lower left corner.

Wait about 60 seconds to see if the USB Driver Installation Wizard comes up.

If it does, then click on OK for the intro messages, then click on Stop in the lower left corner to shut it down. With the Installation Wizard gone, follow the instructions in the Found New Hardware Wizard. When complete, it should now say "Your hardware is ready to use."

If it does NOT, then unplug your USB cable from the computer. Remove and reinstall the Performance Trends Installation CD again. When the Installation Wizard comes up click on the "Install DataMite Utilities" button in the "Data Logger Programs" section at the upper right corner.

Choose "Install 64 bit DataMite USB Drivers" (for most new, 64 bit computers). Follow program instructions for installing USB Driver, accepting all default suggestions if offered. Once completely done installing, click on "Stop" at lower left corner of the Installation Wizard and remove the CD. Start up your software and see if it communicates now.



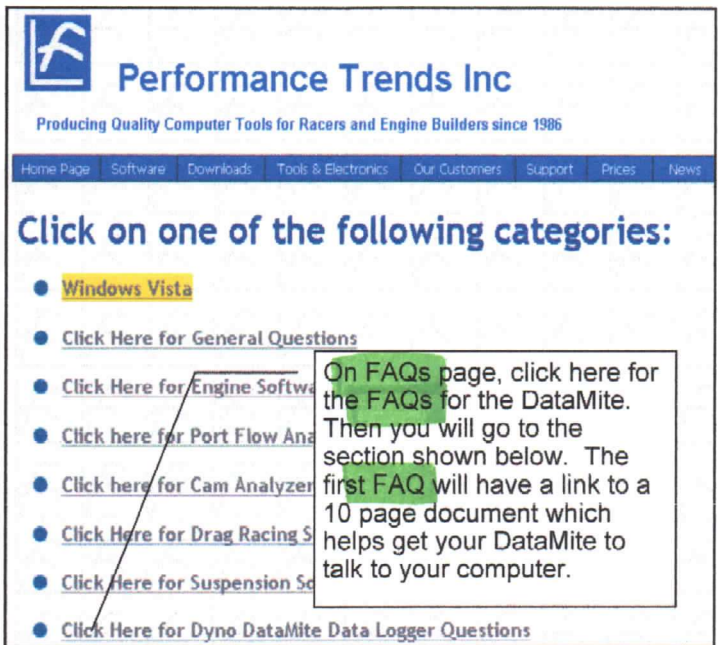
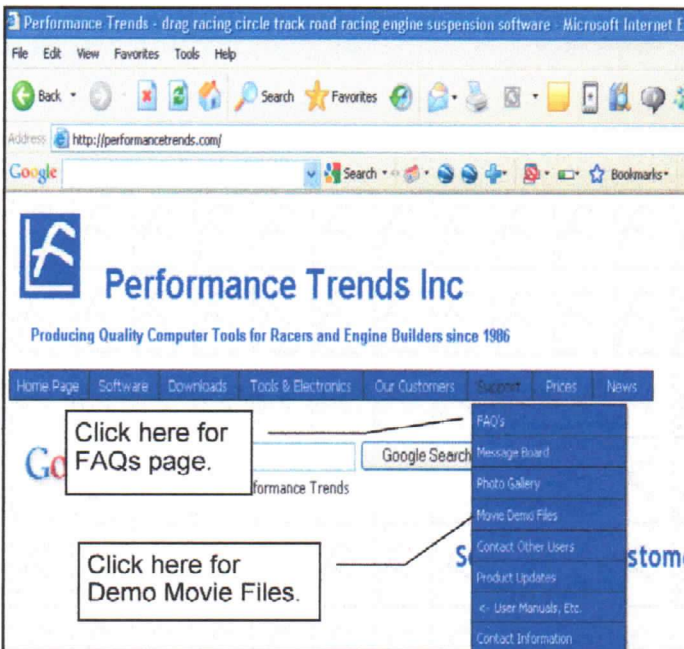
DataMite Info on our Website and CD

If you go to our website www.performancetrends.com there are lots of tools to help you understand the hardware and software, and get going quickly.

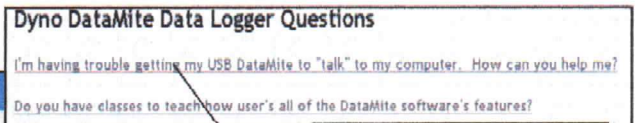
If you have Internet Explorer, you can click on "Help" at top of main screen of your DataMite software, then "Performance Trends on the Web" to go to www.performancetrends.com automatically.

Once on our website, click on "Support" at top of main menu bar, then "FAQs". At the FAQs page, select "Click Here for Dyno DataMite Data Logger Questions". The first FAQ of "I'm having trouble getting my USB DataMite to talk to my computer. How can you help me." has some excellent info for getting going.

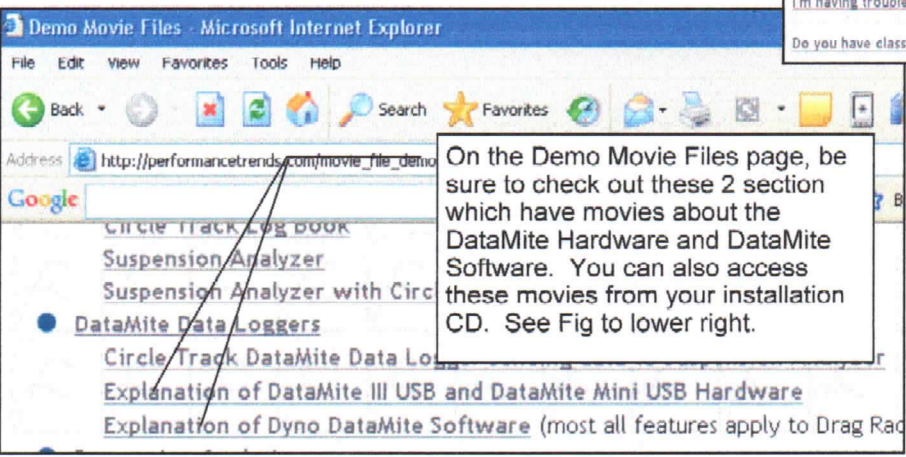
Once on our website, you can also click on "Support" at top of main menu bar, then "Movie Demo Files", then choose either of the "DataMite Hardware" or "DataMite Software" section of movie files. There are about 20 narrated, instructional movie files, each about 6-12 minutes in length. These movies are also available on your CD, but clicking on Movies at the top of the Installation Wizard, then "DataMite Hardware" or "DataMite Software".



On FAQs page, click here for the FAQs for the DataMite. Then you will go to the section shown below. The first FAQ will have a link to a 10 page document which helps get your DataMite to talk to your computer.

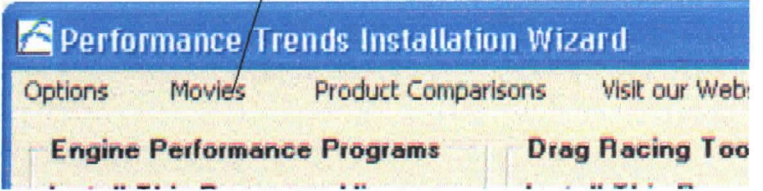


Be sure to check out this FAQ to get going.



On the Demo Movie Files page, be sure to check out these 2 section which have movies about the DataMite Hardware and DataMite Software. You can also access these movies from your installation CD. See Fig to lower right.

You can insert your Installation CD to bring up the Installation Wizard screen, then click on Movies to bring up the same Demo Movies you can access on our website. This can be very helpful if you have a slow internet connection.



Tips for Using your Keyboard to Navigate Screens Quickly

Here are some tips to navigate through our programs more quickly. If you move your mouse and click on, say, the Yes or No answers to questions, it can waste time.

Fig 1 shows a typical Yes/No question. You will notice that the "Yes" is highlighted with an outline on the button. If you just tap the Enter or Space Bar keys, it will accept the default Yes. We design the program so the default is the answer most everyone will answer, so tapping the Space Bar will likely get through several of these type of messages very quickly.

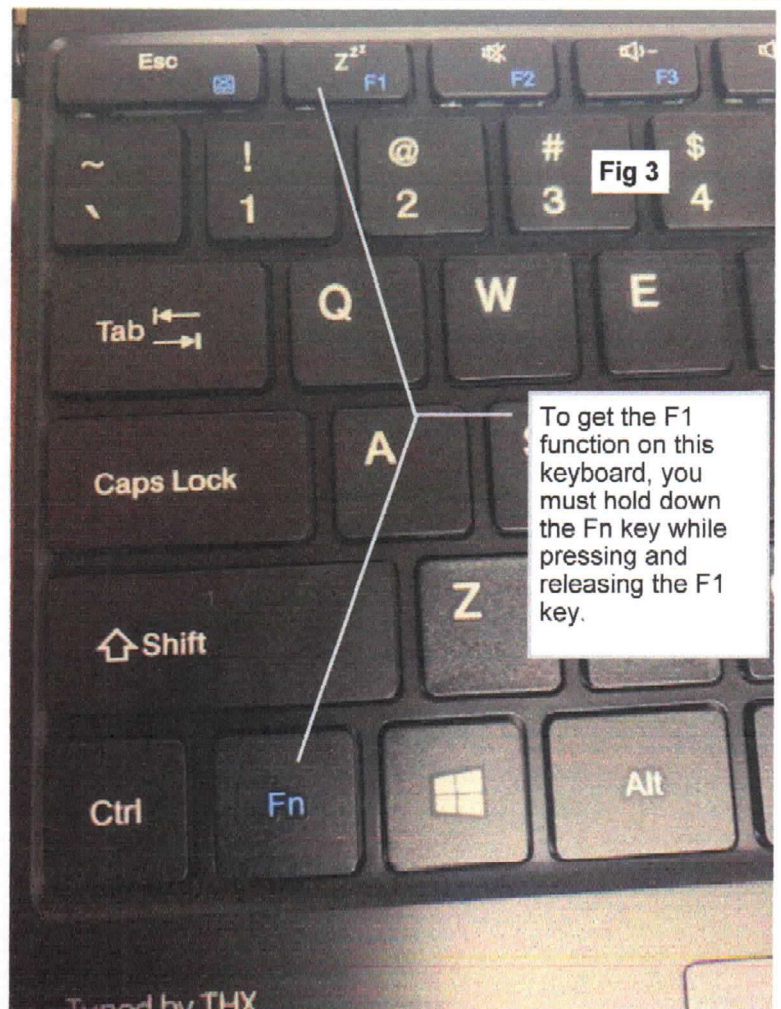
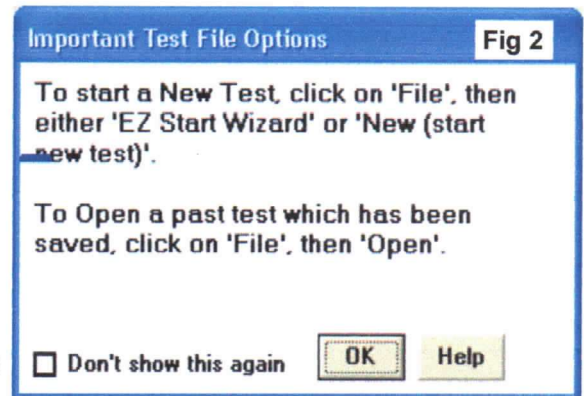
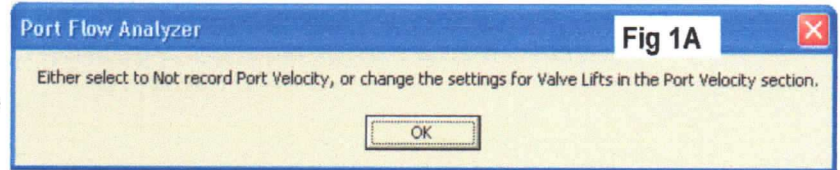
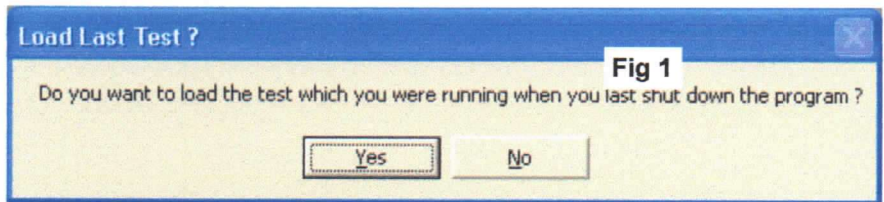
Also, when you have a Yes/No question, many times if you tap the "Y" key it will be the Yes answer and tapping the "N" key will be the No answer, independent of which key is the default.

For OK messages, simply tap the Space Bar or Enter Key. Fig 1A.

Fig 2 is a typical "tip" message. Again, tapping the Enter or Space Bar key will be like clicking the "OK" key because that is the default. But also, once you have read and understood the message, you can click the "Don't show this again" check box and you will not have to see this message again. Note that there is typically a Preference button where you can turn these messages back On if you think you want to see them again.

Many of our programs use the Function keys to produce various actions, like the F1 key which starts recording data. Many new keyboards have these Function keys do two actions like shown in Fig 3. Here if you tap the F1 key, it will put the computer in Sleep Mode, indicated by "Zzz". You need to hold down the "Fn" key in the lower left to get the F1 function for our programs.

Sometimes you need to hold down 2 keys for an action, like Shift key and F7 key to start the motor on our Shock Dyno. If your keyboard requires the Fn key to be pressed, you will have to press 3 keys. Hold down the Shift and Fn key and press and release the F7 key. Then release the Shift and Fn keys.



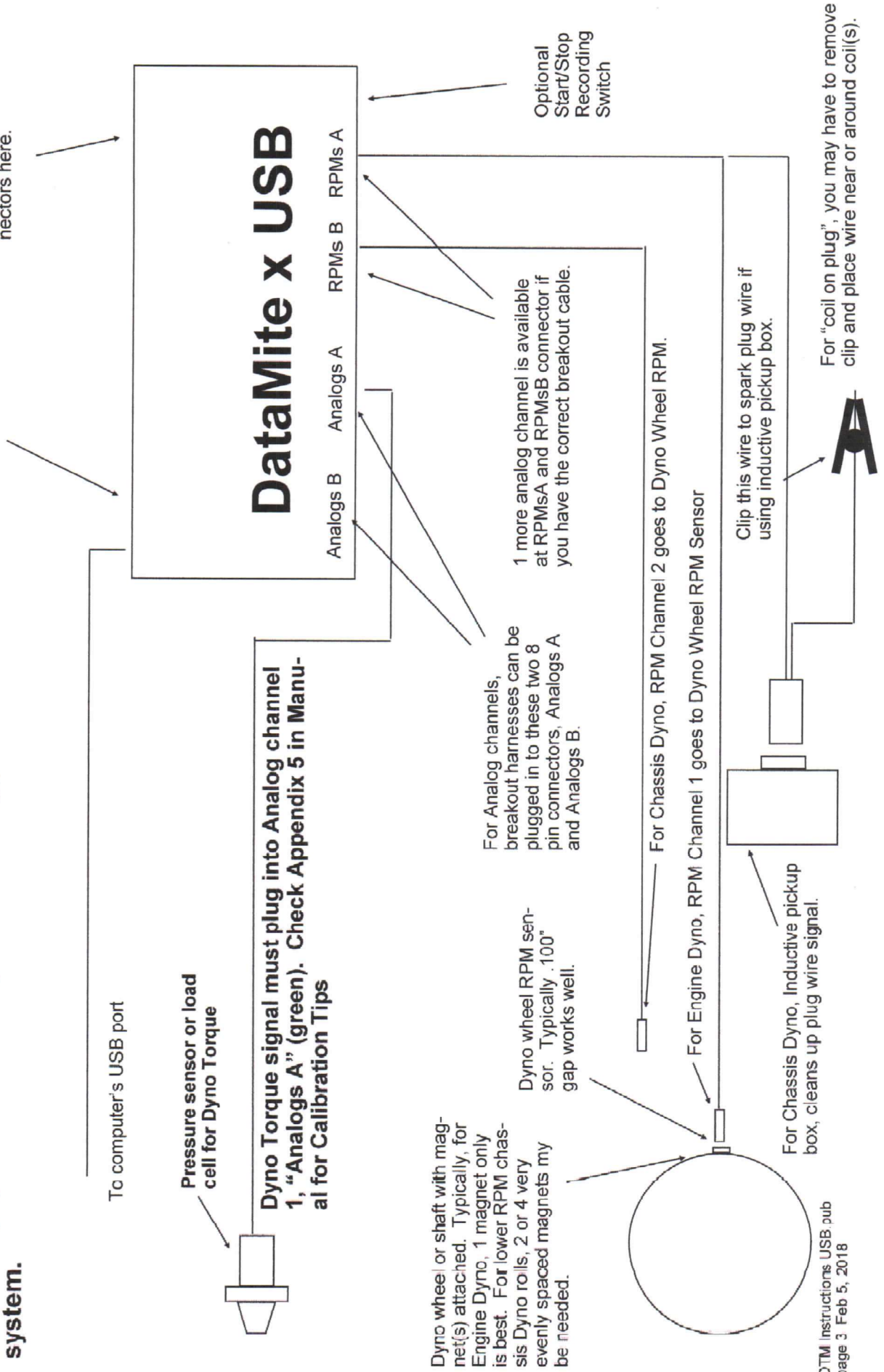
System Overview

DataMite III/4 USB Wiring for Absorber Dyno

Check Appendix 2, starting on page 189, especially Section 4 Selecting Locations for Mounting your DataMite III on page 192 for more tips on installing your system.

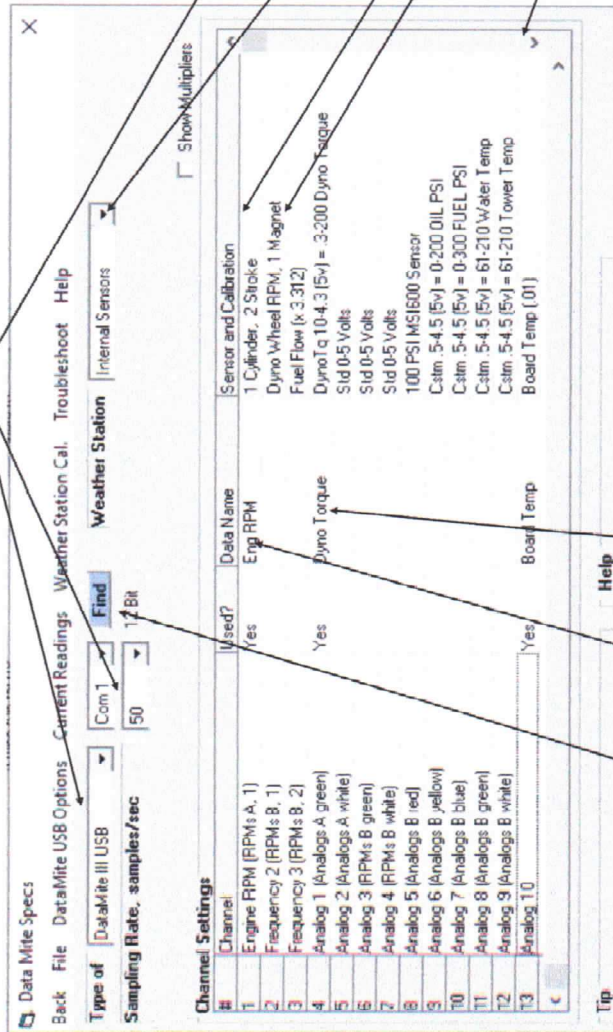
DC power in. Note, system may function with just USB power, but results will not be accurate without this DC power connected.

Thermocouples for temperature measurements plug into 4 connectors here.



DataMite USB Dyno Software Setup

If you Open the correct Example Test File **BEFORE** setting up the software (see "Notes on Your Dyno Configuration" sheet) then most critical settings will be correct when you open this screen.



Configure DataMite III Channels by first clicking on DataMite at top of main screen.

Select "DataMite III USB", "DataMite 4 USB", or "DataMite Mini USB" (whichever you have) as the "Type" as shown here and select 50 samples per second (or slower).

Assign Internal Sensors if you have Internal Weather Station.

For Inertia Dynos, you typically use both RPM channels as shown here. Most all single cylinder Kart engines (Briggs included) will use the Engine RPM config of 1 Cylinder, 2 Stroke.

For most DataMite III & 4 systems with thermocouples, you will use internal Thermocouple Channels. Slide the slide bar down to see these channels, which are below the section of screen shown here.

IMPORTANT:

Click on the "Find" button to find possible Com ports. To start, choose the highest Com Port # shown (except possibly 3).

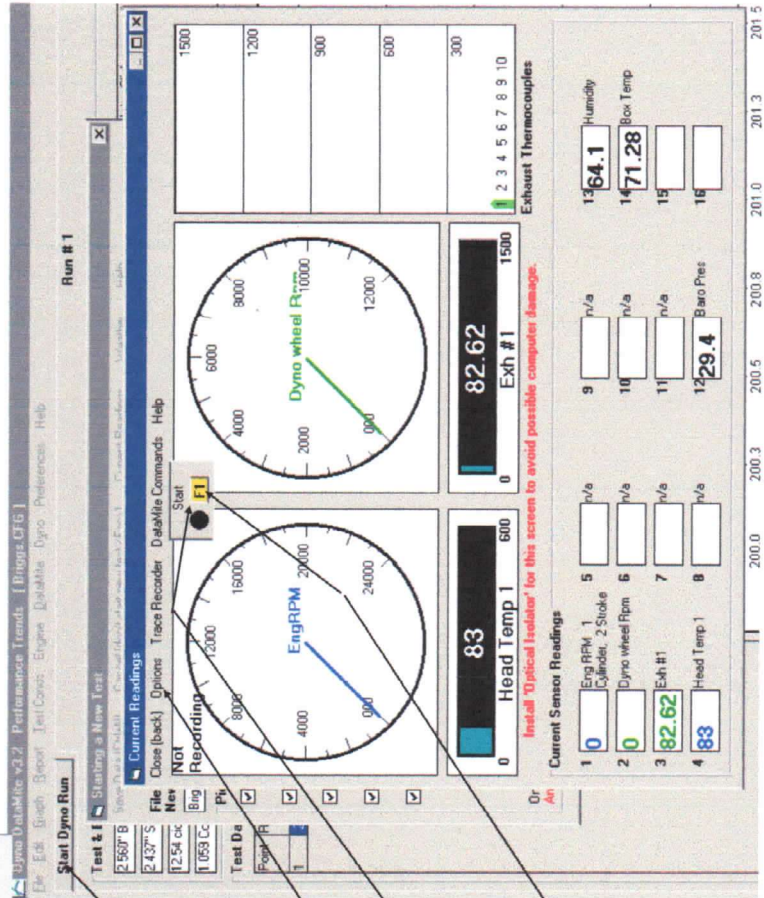
For Absorber Dynos, like a water brake, Stuska™, Go Power™, use Analog Channels 1 or 2 for Dyno Torque. Also, because the dyno is typically direct drive to the dyno, you will assign Engine RPM as 1 Cylinder, 2 Stroke and use RPM Channel 1 for Dyno RPM. Channel 2 RPM will typically NOT be used.

To start a test, click on Start Dyno Run button

Click on Options to set which channels show up on these Gauges

Press <F1> key to start recording data for the test.

Press <F2> key at the end of the test.

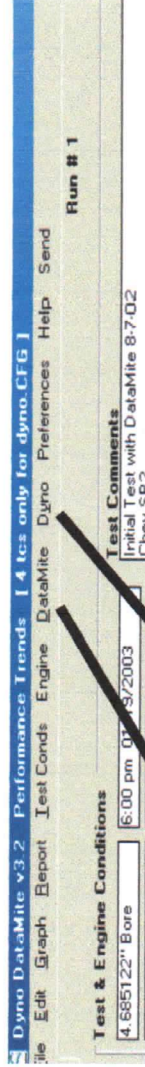


Notes on Your Dyno Configuration

Click on "File", then "Open (from all saved tests)", then choose this Example test to start building your first test file, which will configure your DataMite and Dyno Specs.

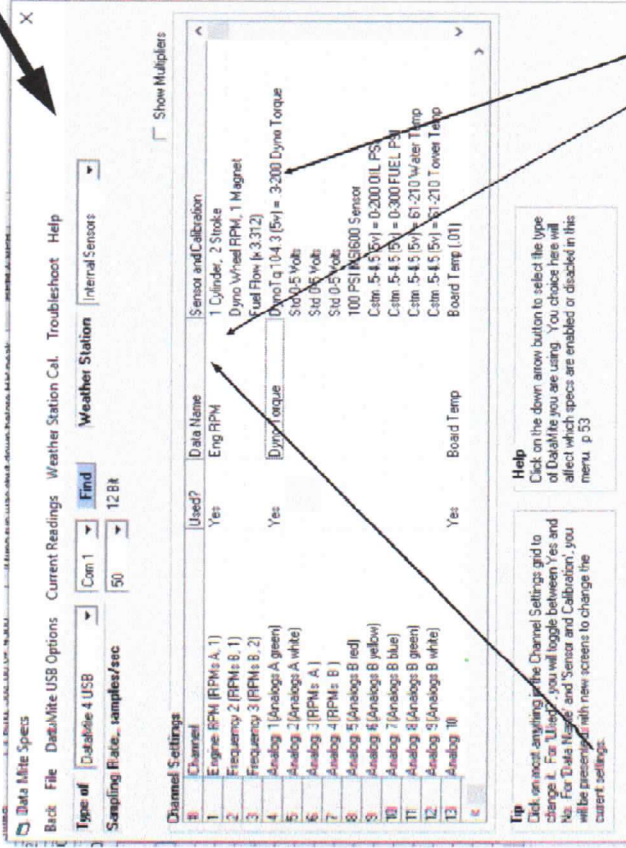
- ___ Stock Briggs.cfg ___ ALC-MAG.cfg
- ___ Black Box II.cfg ___ USB DataMite Dyno.cfg
- ___ DataMite Mini ___ DataMite 4 Absorber w Fuel.cfg

First click on File, then Open (from all saved tests) to open an example test file, similar to the dyno and DataMite system you have. Then click on



Click on Torque Measurement to tell program you have:

- 1) An inertia dyno
- 2) An absorber (torque arm) dyno (see Appendix 5 in manual).

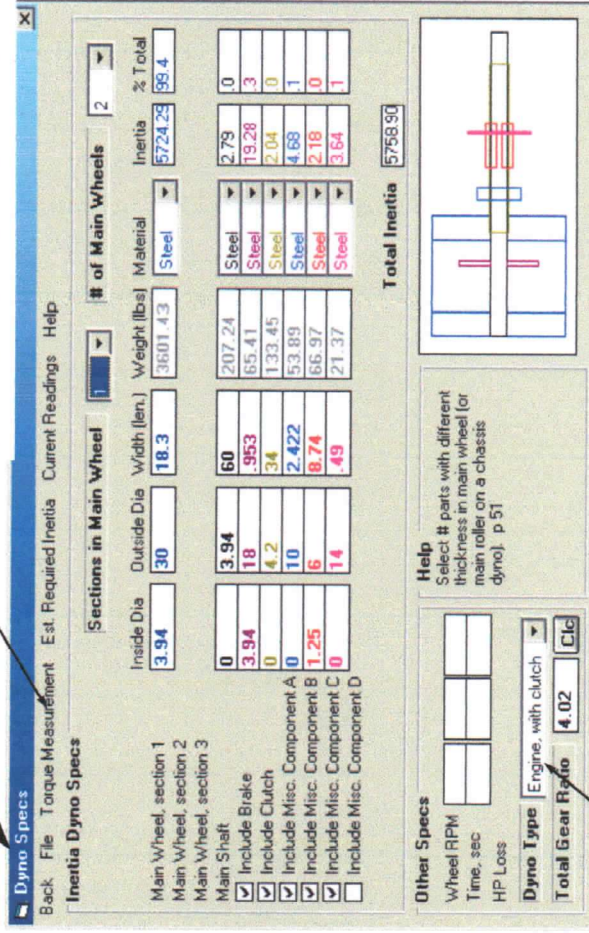


First row, Engine RPM:

1 cylinder, 2 stroke for 1 magnet

Row 2 (frequency row 2):
N/A

If Absorber Type Dyno: Analog 1 set to
Analog A (green) = dyno.tq



Dyno Type setting determines if you will measure both engine and dyno RPM, or if you need to. We recommend you select:

- Engine, direct drive Chassis Dyno
- Engine, with clutch Chassis Dyno, no eng RPM
- Engine, No clutch Chassis Dyno

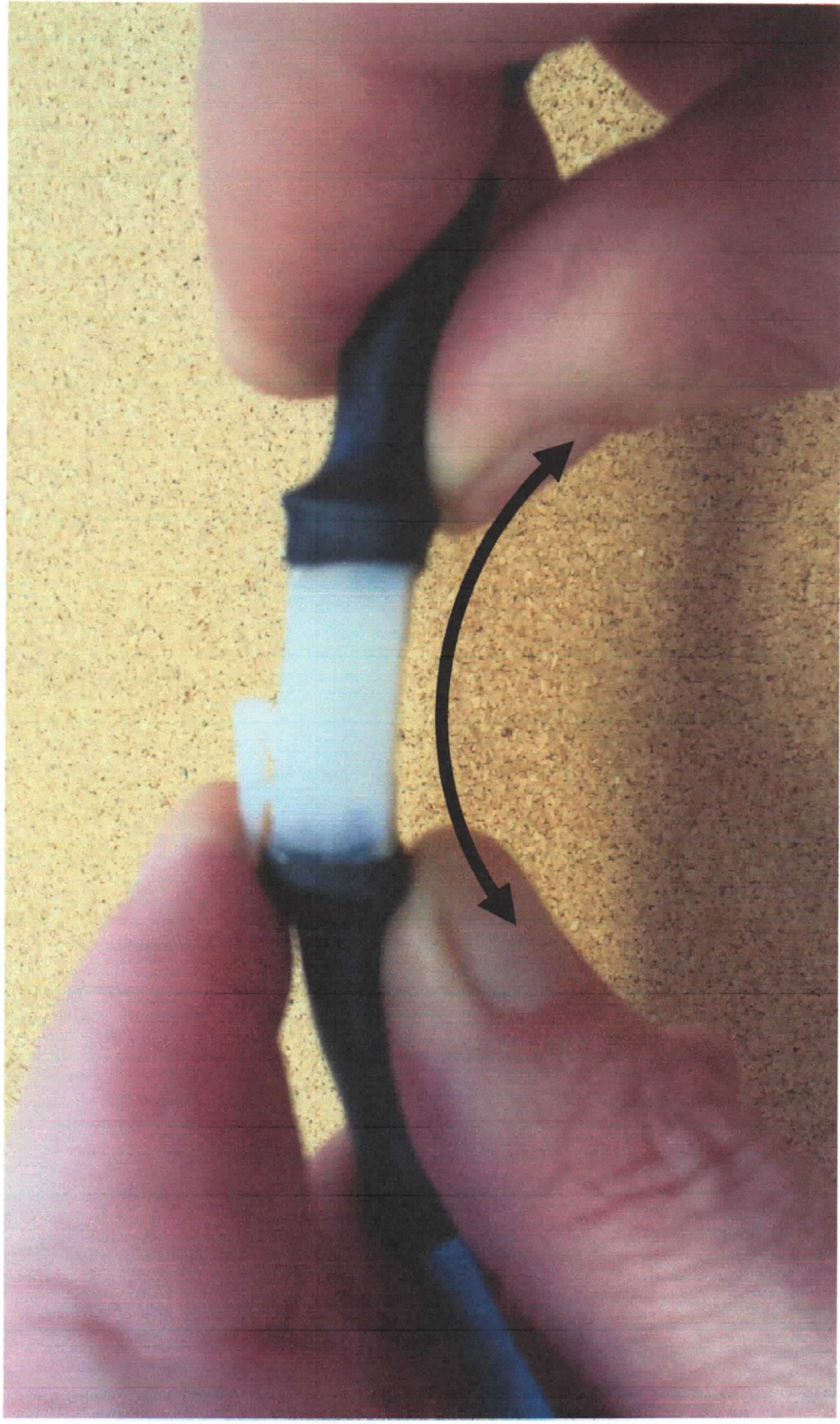
Total Gear Ratio is then: Used only for clutch slip calculations
Critical to enter correctly

Vehicle info for Chassis Dyno are entered in Test Conds screen (Pro version only)

Once you have made these critical changes, click on File at the top of these screens, then Save as Master DataMite (or Dyno) specs.

Releasing (unhooking) Molex Connectors w Shrink Tubing Strain Reliefs

Some connectors come with shrink tubing to act as the strain relief. On the connector with the latch, the shrink tubing can make it difficult to press the latch far enough to unhook it. However, if you grab both connectors by the shrink tubing and connector, and bend them as shown below, it makes it much easier to unlatch them.



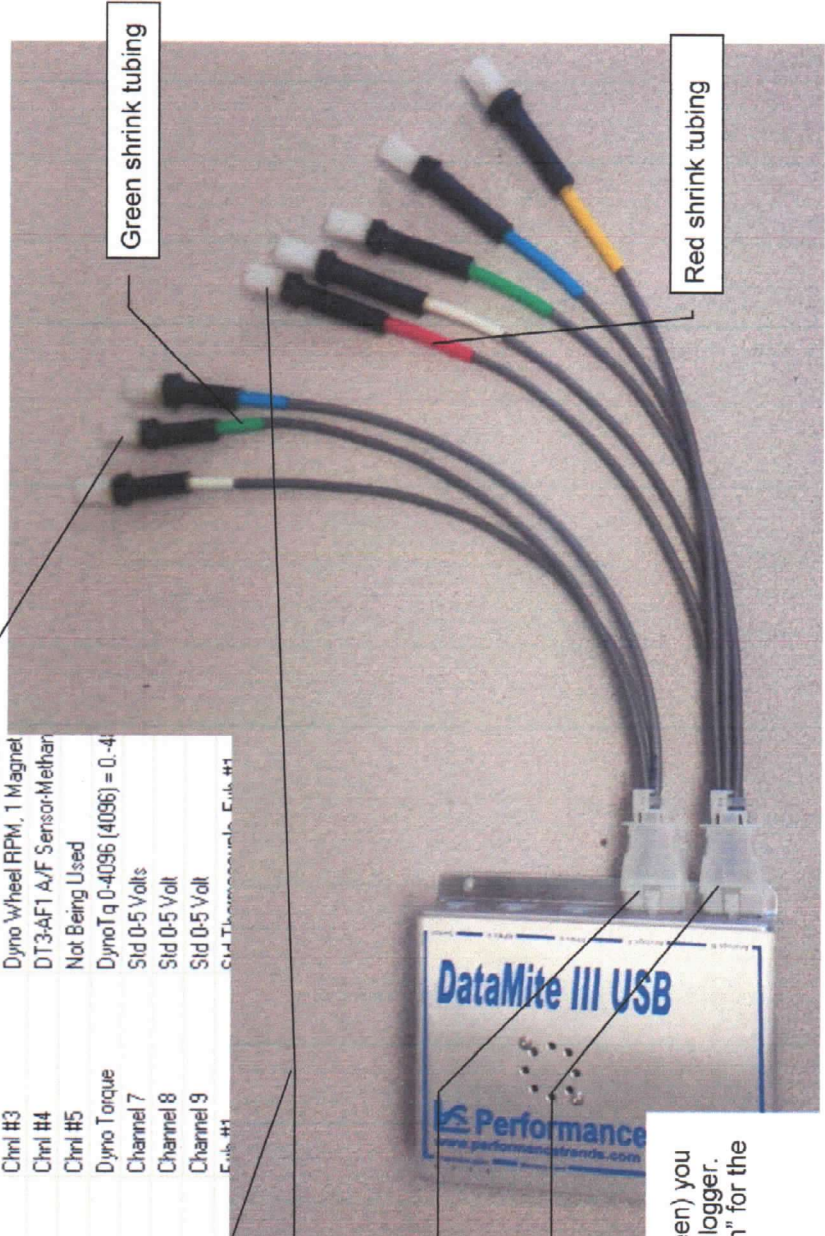
DataMite III and 4 Analog Breakout Cable

To keep the DataMite logger small, but still provide a lot of channels required us to keep the number of connectors on the box low. To access many channels through a single connector, we provide "breakout cables", with 1 connector on the end that plugs into the DataMite box and many connectors on the other end for individual sensors.

The location of the breakout cable (Analog A or Analog B) and the color of the shrink tubing on the 4 pin connector determine which channel is assigned to this particular sensor in the software. For example, Analog 1 (Analog A green) is the sensor and calibration for the sensor plugged into the green connector on the breakout cable plugged into the Analog A connector on the box. As shown in the software to the left, this connector would be for reading a DT3-AF1 A/F sensor.

The screenshot shows the 'DataMite Specs' window in the DataMite software. The 'Type of' dropdown is set to 'DataMite III USB'. The 'Sampling Rate, samples/sec' is set to 50. The 'Channel Settings' table is as follows:

Channel #	Channel	Used?	Data Name	Sensor and Calibration
1	Engine RPM (RPMs A, 1)	Yes	EngRPM	Dyno, 1 Magnets
2	Frequency 2 (RPMs B, 1)		Chnl #2	Dyno Wheel RPM, 1 Magnet
3	Frequency 3 (RPMs B, 2)		Chnl #3	Dyno Wheel RPM, 1 Magnet
4	Analog 1 (Analog A green)	Yes	Chnl #4	DT3-AF1 A/F Sensor-Methan
5	Analog 2 (Analog A white)		Chnl #5	Not Being Used
6	Analog 3 (RPMs B green)		Dyno Torque	Dyno Tq 0-4096 (4096) = 0.4
7	Analog 4 (RPMs B white)		Channel 7	Sid 0-5 Volts
8	Analog 5 (Analog B red)		Channel 8	Sid 0-5 Volt
9	Analog 6 (Analog B yellow)		Channel 9	Sid 0-5 Volt
10	Analog 7 (Analog B blue)		Chnl #1	Sid 0-5 Volt



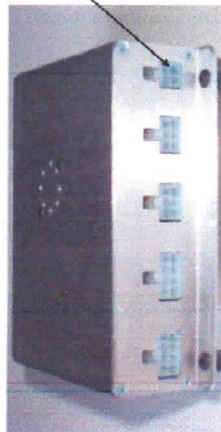
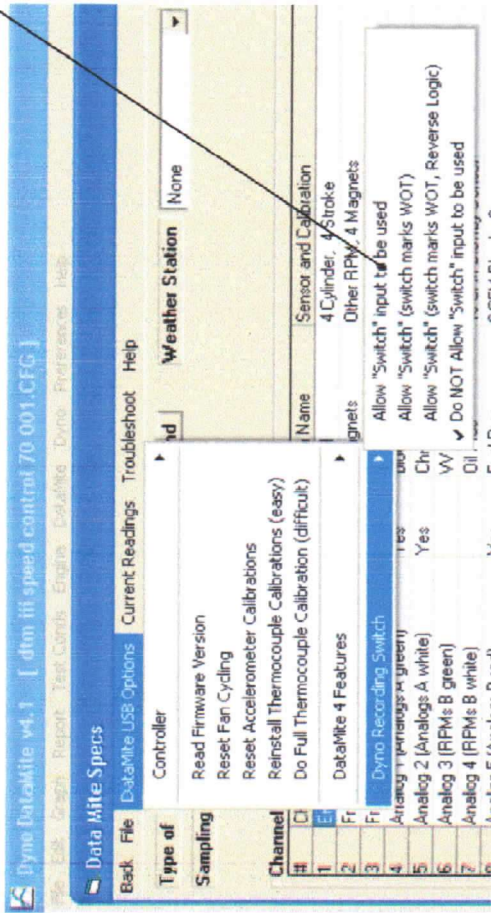
Analog B red is connected to the red connector on the breakout cable plugged into Analog B.

Analog A, provides for 3 channels with DataMite III and 5 channels with DataMite 4.

Analog B, provides for 5 channels with both DataMite III DataMite 4.

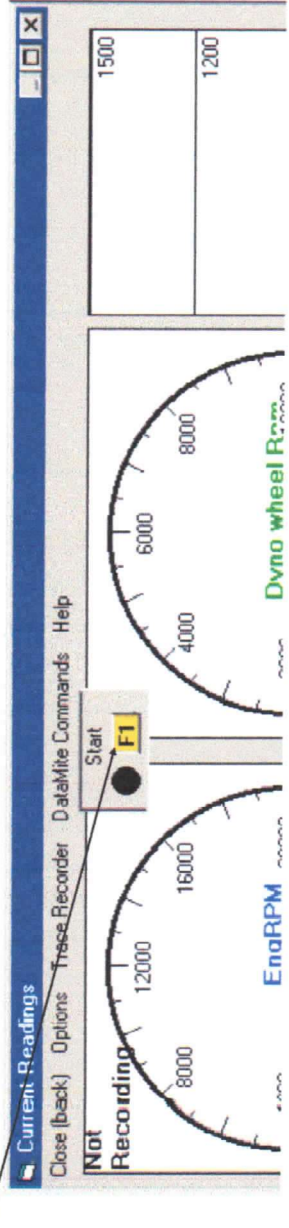
Except for Dyno Tq (which must plug into Analog A green) you can connect any analog sensor into any channel on the logger. You just must assign the correct "Sensor and Calibration" for the sensor connected to that particular channel.

DataMite III USB Recording Switch Operation



Plug the Switch into the 4 pin connector marked "Switch" on the DataMite III USB logger box as shown to the right.

Now when you run a test, you can still press F1 or F2 to Start and Stop recording, or click on the F1 (then F2) button. But you can also press and hold the Record switch button (for about 1 second) to start recording. Then after the recording has started, release the button. When you are finished recording, press the button again for about 1 second to stop recording. **IMPORTANT:** The software expects a test to be at least 3 seconds long. It will not stop recording with 1 button press until 3 seconds have passed (but typically will with 2 button presses).



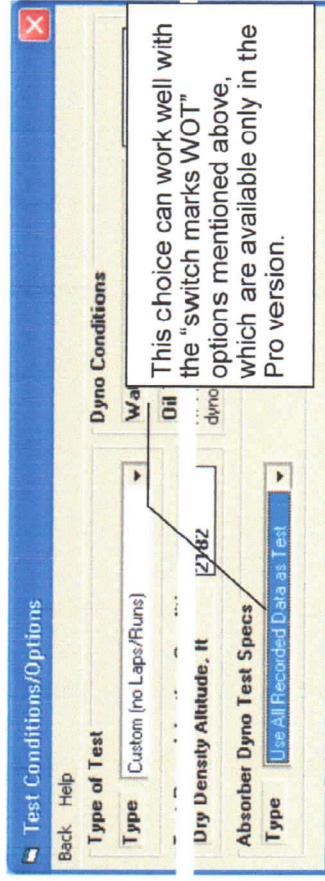
IMPORTANT: If you do not have the switch plugged into the correct channel, recording may start automatically as soon as you go to the Current Readings screen.

Go into DataMite specs, click on DataMite USB Options, then Dyno Recording Switch, then Allow "Switch" input to be used. **NOTE:** You must have Firmware Version 1.06 or later (starting around Oct 2008) in your DataMite III USB for this to work. If you are not sure, click on DataMite USB Options, then Read Firmware Version to check this.

"Allow Switch Input to be used" The software will start and stop recording on either the <F1> or <F2> keys on the keyboard, or pressing (for about half a second) **and releasing** a special switch from Performance Trends which plugs into the DataMite III USB's 4 pin "Switch" input. See Figure below left.

"Allow Switch (switch marks WOT)" Pressing and holding the switch will start recording. When you release the switch, recording will stop. This method is very useful when the engine is accelerating or decelerating erratically. If you also set your Type of Absorber Dyno Specs in Test Conds screen, to "Use All Recorded Data as Test", then all data recorded while holding the switch will be used as the dyno run. See Figure below. For good accuracy, you must ensure the switch is only pressed when the engine is at full throttle. This is typically used for a normally closed switch.

"Allow Switch (switch marks WOT, Reverse Logic)" This option reverses the On/Off operation of the switch. If you are trying to wire into an existing switch which may start a dyno controller, you may need this option rather than the option above. Use this setting with Depac ADL Lite and connect black and white switch wires between "Test Output" terminals shown as "Switch" on ADL Lite label. This is typically used for a normally open switch.



Load Cell and Torque Calibration Information

DataMite Calibration Sheet for Std & Custom Sensors

For sensors that do NOT have a pre-programmed calibration in the DataMite software, specify it as a Custom sensor as follows:

- Click on **DataMite** at the top of the Main Screen.
- Click on the **Sensor and Calibration** (rightmost column) for the channel where the Custom sensor will be installed. Be sure this channel is configured in the DataMite II box as an Analog channel and not a Thermocouple channel. A screen similar to the one to the right will be displayed.
- Select **Custom (user supplies specs)** for the Sensor Type and **0-5 Volts** for Signal Based On.
- Enter the **Analog Sensor Specs** in the lower section as written in the menu shown to the right. You can also enter a **Data Name**, with a suggested name shown to the right.
- When finished, click on **Keep Specs**. In the DataMite screen, this channel will now be listed as:

Cstm xxx-xxx Hz = xx-xx xxxx

This will produce the calibration (conversion from DataMite signal to actual units) recommended by the factory.

Notes:

Dyno Tq

See appendix 5, page 211 in orange book

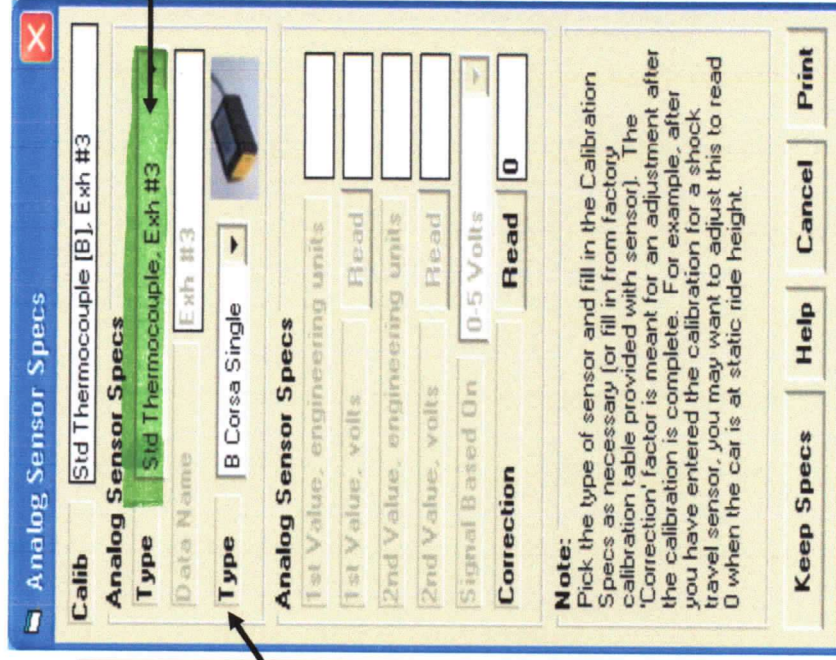
If you have a pump dyno and are using this pressure sensor for torque, see separate sheet "Notes for Pressure Sensors"

For Thermocouples, pick this "Type":

- ___ A DTM II Internal
- ___ B Corsa (tm)
- ___ C Large
- ___ D Dual Compact
- ___ E Quad 4 Channel

For Stainless Pres Sensor and Blowby, enter: _____ Range

For A/F Sensors, choose the type of fuel: Gasoline, Methanol, Propane, Ethanol, CNG, E85, or choose Lambda. **Lambda of 0.85 to 0.90 is a good number for best performance for any fuel.**



Possible Choices Include:

- Std 0-1.5 PSI
- Std 0-70 PSI
- Head Thermocouple
- Std 0-1.50 PSI
- Std 150-230 Deg
- Std Thermocouple
- Std 0-5 Volts
- Std 0-20 Volts
- Std PTI-CFM3 1.5
- Std PTI-CFM3 1.0
- Std Frequency (Hz)

- Stainless Pres Sensor Range _____
- Blowby Range _____
- DT2-AFx Sensor
- DT2-AFG Gauge
- DT3-AF1 Sensor
- DT2-AF4 Sensor
- Dyno Torque, ft.lbs

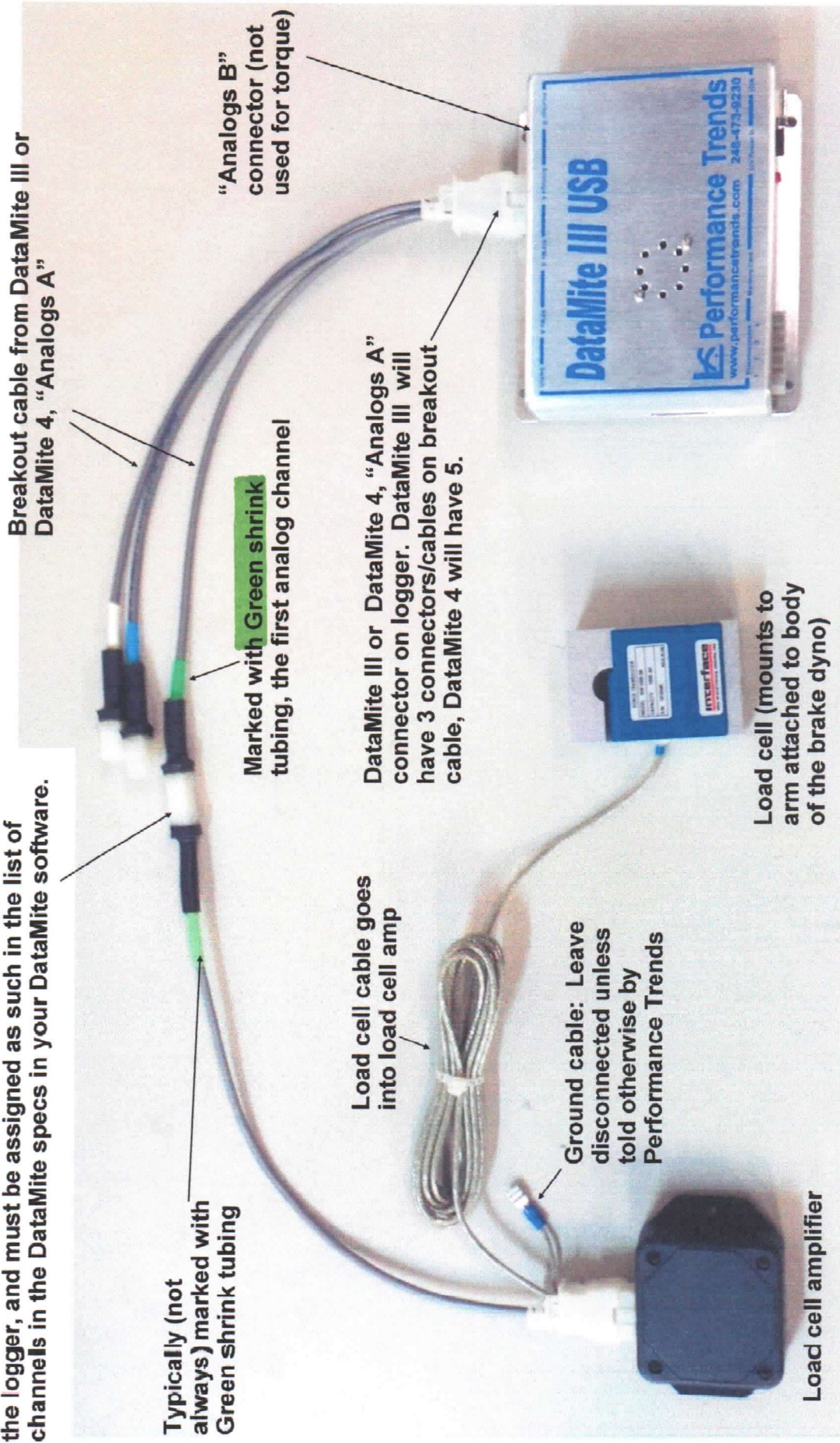
- Std Accel., Forward
- Std Accel., Side
- Std Accel., Up
- Custom Accel., Forward
- Custom Accel., Side
- Custom Accel., Up
- RF Shock Travel
- LF Shock Travel
- RR Shock Travel
- LR Shock Travel
- Steering
- Throttle
- Brake

- Std RTD Air Temp
- Std RTD Fluid Temp
- DT2-AFx A/F Sensor-Gas
- DT2-AFG A/F Gauge-Gas
- Custom (user supplies specs)
- Custom (user supplies table)

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Load Cell Wiring for Dyno Torque

Amplified output from amp goes to DataMite logger. For DataMite III and DataMite 4, this is "Analog A, Green" as shown here. For DataMite III, DataMite 4 and DataMite Mini, dyno torque must be connected to first *Analog* channel in the logger, and must be assigned as such in the list of channels in the DataMite specs in your DataMite software.



DataMite logger, shown here is DataMite III, which is almost identical to DataMite 4

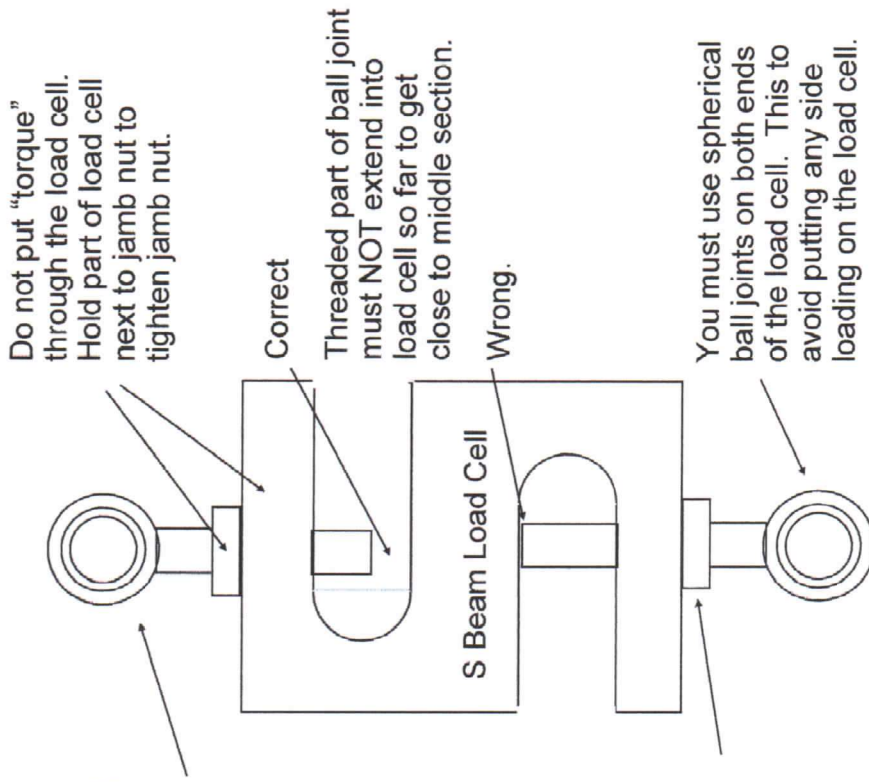
Dynamometer Load Cell Installation Instructions

Correct mounting of the load cell is important to accuracy and durability. Not following these guidelines will void the load cell warranty.

There must be **ABSOLUTELY NO LASH** in the mounting. Use high quality ball joints. (See Below.)

If you can force any movement in the dynamometer load arm with the load cell installed, then there IS lash and your load cell may fail.

Jamb nut to ensure there is no lash in the thread mounting of the ball joints in the load cell.



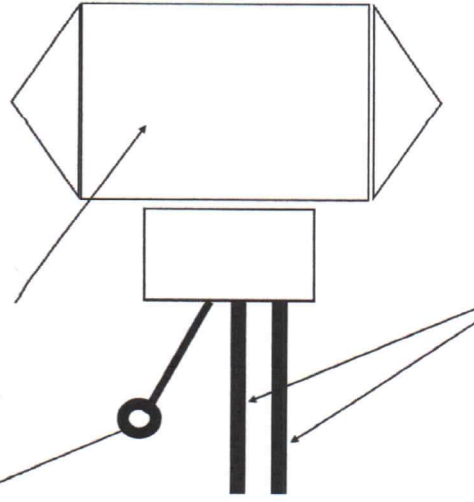
We've been told by load cell manufacturers that Aurora makes good ball joints (Heim joints). For example, the MM-4 is good for 1/4 x 28 fine thread load cell mounting holes. Aurora joints can be ordered at: <http://www.aircraftspruce.com>

For tips on hanging weights to calibrate your dyno load cell, go to the www.performancetrends.com website. Under "Support", then "FAQ's", then "Click Here for Dyno DataMite Data Logger Questions", then "How do I hang weights on my dyno for calibrating the load cell for torque?"

Amp Connections

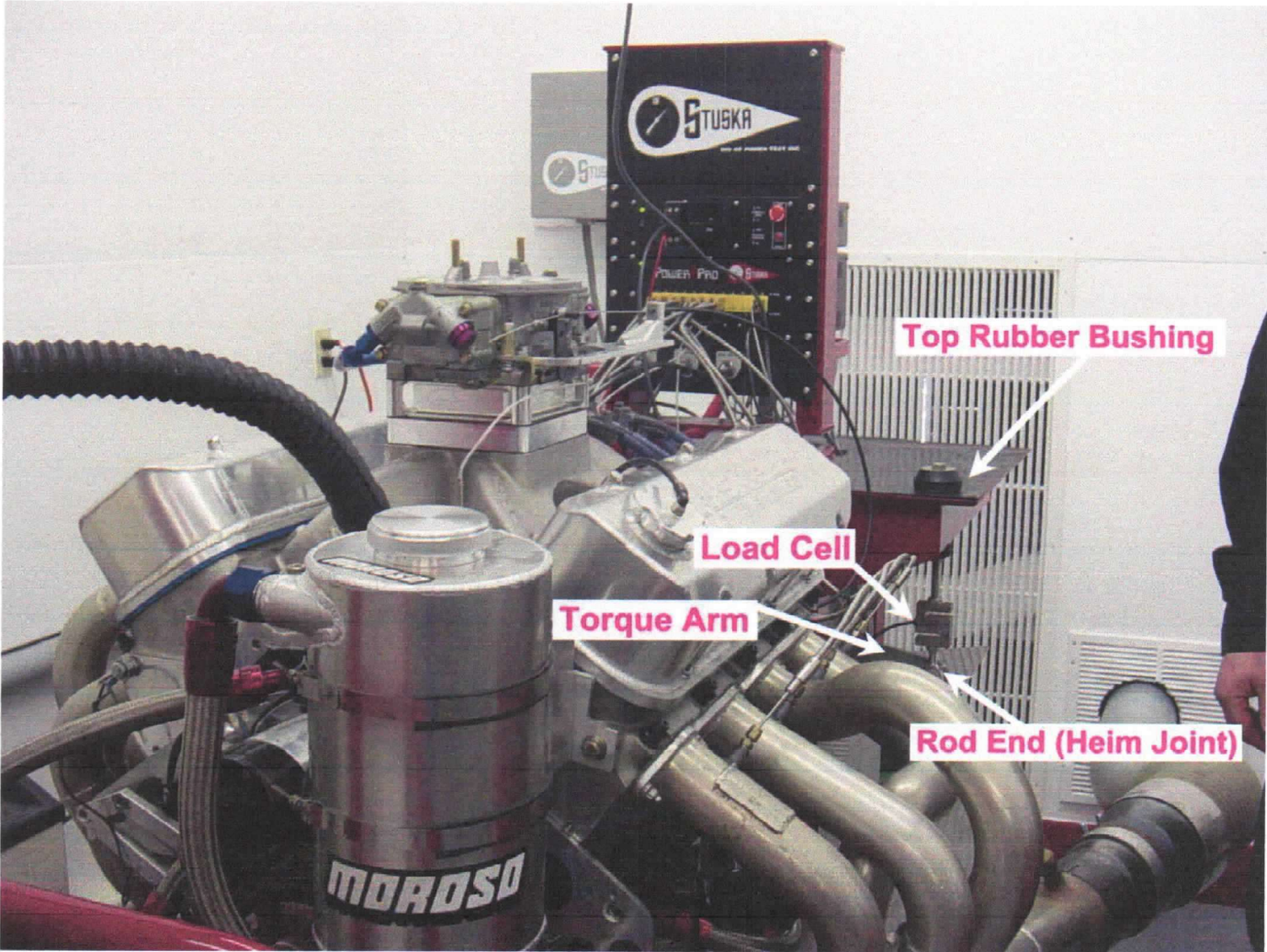
Shield wire terminal. Do not attach this to anything unless told so by Performance Trends.

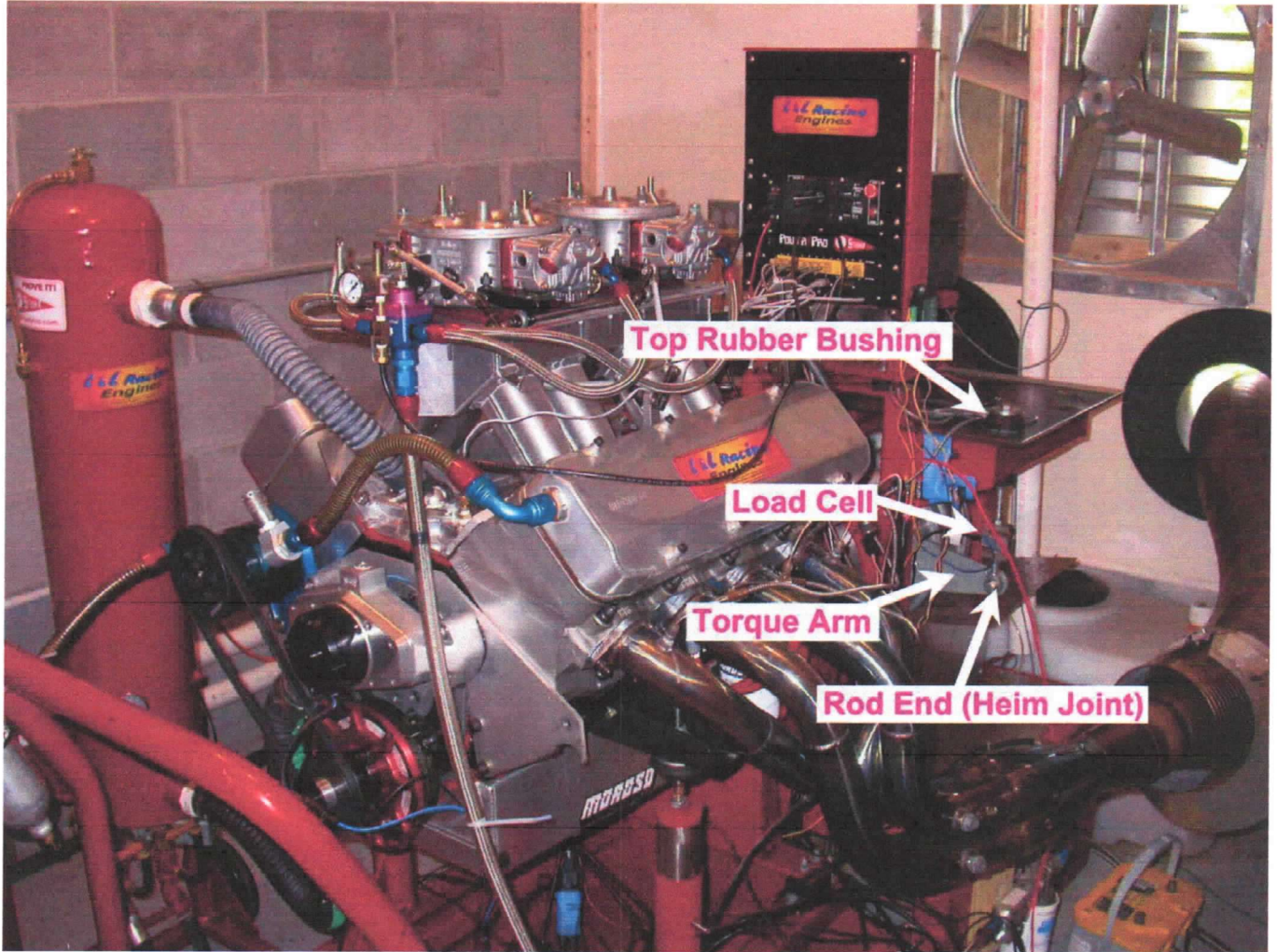
"Internal" Load Cell Amp. This amp can be mounted inside the data logger (hence the name "internal") but typically comes in its own small enclosure as shown here.



Leads to Load Cell and data logger. Do not route these leads by electric motors, welders, engine ignition wires, etc to eliminate electrical noise. **DO NOT** modify the lead going to the load cell.

Stuska Pics of Load Cell and Rubber Mounting





DataMite Scott Furlong\Stuska Pics of Load Cell and Rubber Mounting.pub

RPM Sensor Setup

Installing Magnets for RPM Measurements

Most of the DataMite RPM sensors will trigger off magnets. The 2 wire sensors trigger off either a North or South pole, the 3 wire sensors only trigger off a South pole only. For Dynos, it may be necessary to isolate the sensor from vibration, like mounting the bracket in rubber.

For Dynos: For shafts or wheels which reach RPMs of 1600 RPM or greater, it is recommended to use **ONLY 1 MAGNET**. This eliminates any spacing issues which produces erratic RPM readings. The Black Box II does not have a magnet spacing problem, so on the Black Box II, 2 magnets can be used, but only if you need RPM measurements below 400 RPM.

For Road Racing/Circle Track Racing: Two (2) magnets per wheel or driveshaft work well.

For Drag Racing (where it is critical to catch RPM the moment things start to turn): Four (4) magnets per wheel work well. On Driveshafts, where the RPM can get quite high, it is still recommended you use 2 magnets.



Mount the magnet on the surface of the shaft with quick set, 2 part epoxy.

Countersinking the magnet into the shaft or wheel is **NOT** recommended as it seems to weaken the magnet's strength.

IMPORTANT: An epoxied magnet can eventually come loose and fly off. If people can be around the rotating component, put a shield around it to prevent the magnet from injuring yourself or bystanders.



Magnet with South side of magnet marked with "S" is side to sensor.

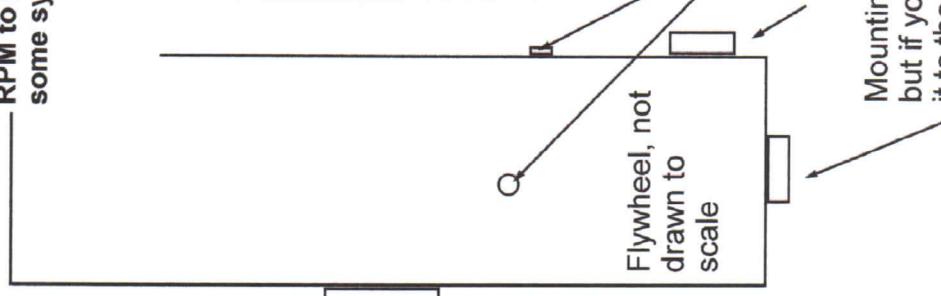
To check if a magnet and RPM sensor is working, you must get the wheel or shaft spinning to some minimum RPM to get a reading. This can be as high as 450 RPM on some systems with just 1 magnet installed.



Apply epoxy to wheel or shaft and place magnet into it. If steel, magnet will attach to wheel. Then place additional epoxy over top of magnet and let set.

Smaller, rare earth magnets can also work well.

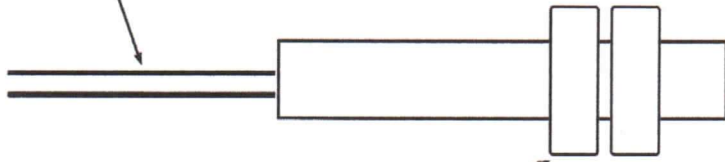
Mounting magnets on the side of the flywheel can work, but if you encounter "noise", we will recommend moving it to the outside edge, as described below.



For most Kart inertia dynos, we have the best luck mounting one magnet on the outside edge of the wheel.

DTM-RPMA

Note: Do NOT overtighten these nuts as you may crack the body of the sensor.



This sensor is simply an On/Off switch and does not have polarity. It does not matter which lead you hook to which side of your circuit.

If you are replacing a sensor, you will attach one side of this sensor to the black wire.

Depending on the type of harness you have, you will either attach the other wire to:

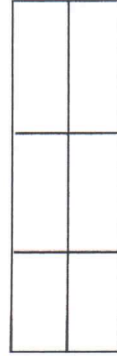
The white wire (if present)

Or the red wire (if no white wire is present).

To check if a sensor is working: Switch your volt meter to ohms Ω (resistance) and disconnect the sensor from the DataMite logger. Put the probes across the 2 terminals connected to the black and either red or white wire terminals as described above (pins 1 and 4 in picture to lower left). You may have to remove the strain relief "cap" from the connector to see the color of the wires. (Note: Some cables will have a terminal for the red wire even if there is also a terminal for the white wire. In those cases the red wire is not used.)

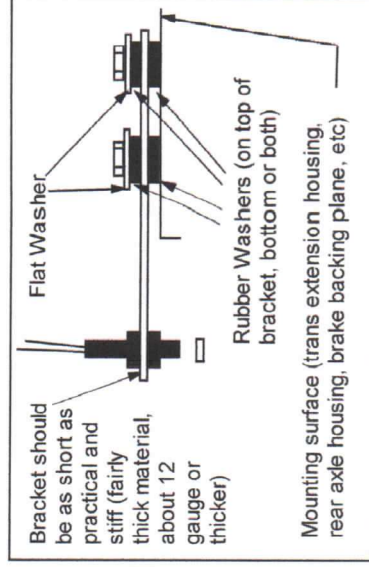
With no magnet, the resistance ohms should be very high (infinity). With a magnet at the tip of the sensor (either north or south pole), the resistance should be less than 5 ohms.

6 5 4



3 2 1

Typical 6 pin connector attached to cable to this type RPM sensor. Pins 1 and 4 are typically connected to this sensor. Pin 6 may be present but is not used for this type sensor.



Occasionally vibration will induce noise spikes on the RPM channel. If this happens, check the suggestions for mounting the magnets. Also, consider mounting your RPM bracket between rubber washers or absorbers. See picture to the right.

Weather and Thermocouple (temperature sensor) Information

USB DataMite Black Box Internal Weather Station

Mount your DataMite in the same room as the engine, so the DataMite sees the same air as the engine. The Barometric Pressure and Humidity of the air at the engine WILL be the same as the engine as it is at the DataMite. However, the temperature may be different.

For improved accuracy, you can mount a thermocouple at the air inlet to the engine and assign that thermocouple as "Std Thermocouple, Eng Intake Air" in the Sensor and Calibration column in the DataMite specs and the software will then use that channel for performance corrections. If you purchased one of these air thermocouples, separate instructions will explain this in more detail.

You must configure the DataMite software for the Black Box weather station as shown below.

Fan Operation: The DataMite III and Mini USB have recirculating fans which cycle on and off for improved weather sensor accuracy and long fan life. The default fan operation for the DataMite III is with the fan cycling on and off whenever it is powered up, by the power supply or the USB cable. The Mini's fan only comes on when the "Current Readings" screen has been displayed at least once. Then it stays on for as long as the program runs, until you shut down the program. You can have the DataMite III operate much like the Mini (turning off the fan when the program is not running) by going into Preferences, the "Calculations (cont" tab, and set "Turn Fan Off When Shutting Down" to Yes. However, if you turn off power to the DataMite III, then turn power back on, it will revert to the default condition with the fan cycling on and off whenever power is on to the DataMite III.

Calibration #s for sn _____

Select: **Internal Sensors**
as the weather station in the
DataMite specs.

Type in the numbers written below, then click
on 'Use Calc. Value' so the program can more
accurately read the weather station's readings.
For most all situations, these numbers are "0"

Weather Station Cal Specs

Calib. Data from: 06/17/2002

Calibration Factors

Barometer	0
Temp	0
Humidity	0

Note:
Enter the numbers from the Calibration Sheet or Calibration Sticker on the bottom of the Performance Trends 'Black Box' Weather Station.

Use Calc Value Help Cancel Print

Click on Weather Station Cal. (visible only after you select 'Black Box' as the weather station) to bring up the calibration screen shown to the right.

DataMite Dual Thermocouple Converter Installation Tips



The Dual Thermocouple Converter lets you read 2 K thermocouples as a 0-5 volt signal. It is both very precise and very affordable. Here are some tips for mounting and using it.

Keep it away from heat sources.. Mount at least 3 feet away from very hot surfaces, like exhaust surfaces. When possible put some type of heat shield between the converter and the heat source. Note: The shield should "hide" the converter from the heat source but still allow good air circulation around the converter.

Isolate the converter from vibration. It is best to let it dangle, suspended from the lead to the 6 pin connector. If you mount it with the tabs, use rubber isolators and ideally mount it off the engine dyno test stand.

The thermocouple connectors grip the terminals of the yellow K thermocouple connector very tightly. Avoid repeatedly connecting and disconnecting these connectors if possible.

Set up the calibration in the DataMite software following the 4 steps shown to the right.

Setting up Calibration in DataMite Specs Screen

The screenshot shows the 'Analog Sensor Specs' window in the DataMite software. The window title is 'Analog Sensor Specs' and it has a close button (X) in the top right corner. The main area is divided into several sections:

- Calib:** A dropdown menu showing 'Std Thermocouple [D], Exh #1'.
- Analog Sensor Specs:** A section with a 'Type' dropdown set to 'Std Thermocouple, Exh #1' and a 'Data Name' field containing 'Exh #1'. Below this is a 'Details' button.
- Type:** A dropdown menu with 'D Dual-Compact' selected. A callout box (3) points to this menu, stating: '3) Choose "D Dual Compact" as the Type of thermocouple channel.'
- Analog Sensor:** A list of sensor types: 'A DTM II Internal', 'B Corsa Single', 'C Large', 'D DualCompact', and 'E Quad (4channel)'. A callout box (1) points to this list, stating: '1) In DataMite Specs, click here to display the "Analog Sensor Specs" screen for this channel.'
- 1st Value:** A field containing '0-5 Volts'.
- 2nd Value:** A field containing '0-5 Volts'.
- 3rd Value:** A field containing '0-5 Volts'.
- 4th Value:** A field containing '0-5 Volts'.
- 5th Value:** A field containing '0-5 Volts'.
- 6th Value:** A field containing '0-5 Volts'.
- 7th Value:** A field containing '0-5 Volts'.
- 8th Value:** A field containing '0-5 Volts'.
- 9th Value:** A field containing '0-5 Volts'.
- 10th Value:** A field containing '0-5 Volts'.
- 11th Value:** A field containing '0-5 Volts'.
- 12th Value:** A field containing '0-5 Volts'.
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- 14th Value:** A field containing '0-5 Volts'.
- 15th Value:** A field containing '0-5 Volts'.
- 16th Value:** A field containing '0-5 Volts'.
- 17th Value:** A field containing '0-5 Volts'.
- 18th Value:** A field containing '0-5 Volts'.
- 19th Value:** A field containing '0-5 Volts'.
- 20th Value:** A field containing '0-5 Volts'.
- 21st Value:** A field containing '0-5 Volts'.
- 22nd Value:** A field containing '0-5 Volts'.
- 23rd Value:** A field containing '0-5 Volts'.
- 24th Value:** A field containing '0-5 Volts'.
- 25th Value:** A field containing '0-5 Volts'.
- 26th Value:** A field containing '0-5 Volts'.
- 27th Value:** A field containing '0-5 Volts'.
- 28th Value:** A field containing '0-5 Volts'.
- 29th Value:** A field containing '0-5 Volts'.
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- 40th Value:** A field containing '0-5 Volts'.
- 41st Value:** A field containing '0-5 Volts'.
- 42nd Value:** A field containing '0-5 Volts'.
- 43rd Value:** A field containing '0-5 Volts'.
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- 59th Value:** A field containing '0-5 Volts'.
- 60th Value:** A field containing '0-5 Volts'.
- 61st Value:** A field containing '0-5 Volts'.
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- 63rd Value:** A field containing '0-5 Volts'.
- 64th Value:** A field containing '0-5 Volts'.
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- 81st Value:** A field containing '0-5 Volts'.
- 82nd Value:** A field containing '0-5 Volts'.
- 83rd Value:** A field containing '0-5 Volts'.
- 84th Value:** A field containing '0-5 Volts'.
- 85th Value:** A field containing '0-5 Volts'.
- 86th Value:** A field containing '0-5 Volts'.
- 87th Value:** A field containing '0-5 Volts'.
- 88th Value:** A field containing '0-5 Volts'.
- 89th Value:** A field containing '0-5 Volts'.
- 90th Value:** A field containing '0-5 Volts'.
- 91st Value:** A field containing '0-5 Volts'.
- 92nd Value:** A field containing '0-5 Volts'.
- 93rd Value:** A field containing '0-5 Volts'.
- 94th Value:** A field containing '0-5 Volts'.
- 95th Value:** A field containing '0-5 Volts'.
- 96th Value:** A field containing '0-5 Volts'.
- 97th Value:** A field containing '0-5 Volts'.
- 98th Value:** A field containing '0-5 Volts'.
- 99th Value:** A field containing '0-5 Volts'.
- 100th Value:** A field containing '0-5 Volts'.

At the bottom of the window, there are buttons for 'Keep Specs', 'Help', 'Cancel', and 'Print'. A callout box (4) points to the 'Keep Specs' button, stating: '4) Click on Keep Specs to copy these settings back to DataMite Specs.'

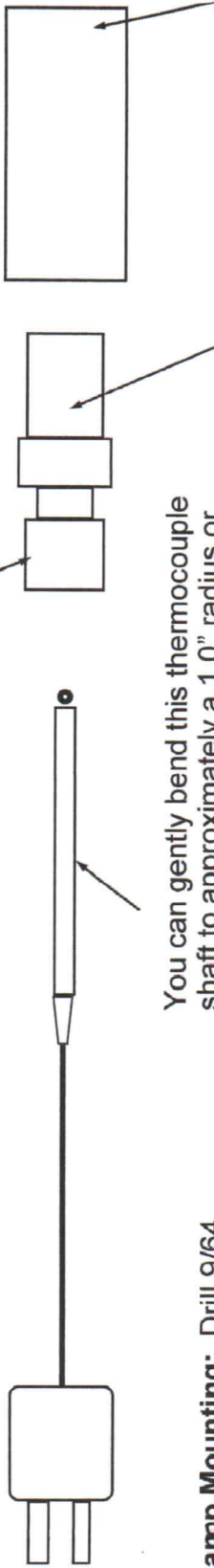
Another callout box (2) points to the 'Type' dropdown, stating: '2) Pick one of the Thermocouple channels from this list.'

A large callout box at the bottom of the window contains the following text: 'calibration table provided with sensor). The "Correction" factor is meant for an adjustment after the calibration is complete. For example, after you have entered the calibration for a shock travel sensor, you may want to adjust this to read 0 when the car is at static ride height.'

DataMite Thermocouple Mounting Hardware

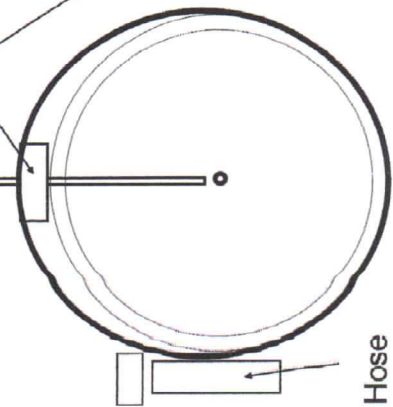
For systems reading a fluid temperature (or air temperature below 250 deg F): The ferrule in the steel fitting is replaced by 2 or 3 neoprene O rings. **After installation, be sure to check for fluid leaks.**

After ferrule crimp fitting is installed, slide thermocouple through it and the ferrule inside. Adjust the thermocouple to the depth you need. Then tighten the end cap to crimp the ferrule to the thermocouple shaft. **You can not adjust the depth once the ferrule has been crimped.**



Hose Clamp Mounting: Drill 9/64 or 5/32 hole in exhaust pipe. Slide thermocouple through hose clamp hole, then collar, then hole in exhaust pipe. Adjust depth of thermocouple and tighten screw in collar. Then tighten hose clamp on exhaust pipe.

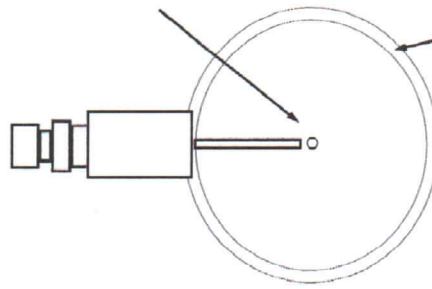
Collar with screw to tighten on thermocouple.



Do not overtighten screw or you will kink the thermocouple sheathing.

You can gently bend this thermocouple shaft to approximately a 1.0" radius or greater. Be careful not to kink.

Typical mounting in exhaust pipe. Position tip to center of pipe, then tighten down fitting to lock thermocouple in place. **NOTE: On very high HP engines (blown, high nitrous, etc., use sheathed (covered) tips and position the tip only 0.5" into flow to prevent bending from pulsations.**



For individual cylinder exhaust temps, most dyno operators place the exhaust thermocouple 1.5 inches or closer to the exhaust port.

Ferrule crimp fitting with ferrule inside. The ferrule is the small ring, some people call a "wedding ring" or "wedding band". This is what gets crimped to the thermocouple shaft. **Once it is crimped, you can not adjust the depth of the thermocouple**

Weld pipe nipple to exhaust pipe. If you already have a pipe thread to fit the ferrule crimp fitting, you don't need this fitting.

NOTE: High exhaust heat will cause components to seize up. Use anti-seize compound on parts you want to disassemble in the future.

DataMite III Eng Intake Air for Weather Corrections

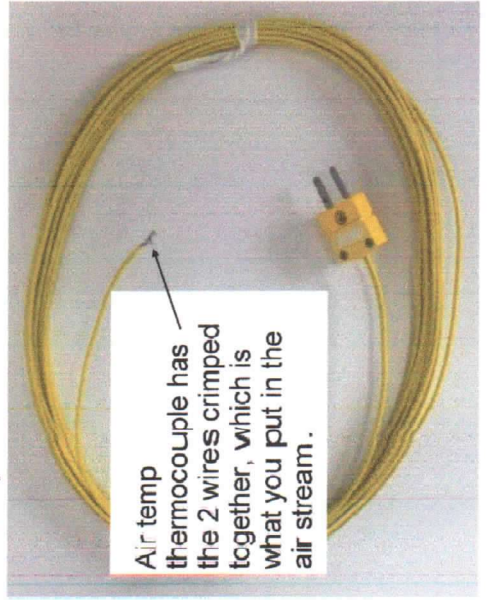
An engine's output will vary with the weather conditions it is running in. The DataMite software can correct for these changes to give Corrected torque and HP numbers. When making comparisons from different days, Corrected torque and HP are more repeatable and are therefore the numbers you should use.

To do accurate weather corrections, accurate barometric pressure, humidity and temperature of the air entering the engine must be done. Barometric pressure, humidity and temperature sensors can be built into the DataMite III box. The barometric pressure at the box is EXACTLY the same at the engine, even if they are in different rooms. The humidity at the box is typically very close to that at the engine, even if they are in different rooms. However, the temperature at the box can be quite different between the box and the engine.

For that reason, you can chose to measure the air temp at the engine for more precise corrected data. There is a special thermocouple channel you can choose to do this with, called Eng Intake Air. If you pick this calibration for one of the thermocouple channels, and mount that thermocouple in the air inlet stream to the engine, the program will use this temperature for correction factors.

To do this:

- 1 Click on DataMite at the top of the Main Screen.
- 2 Click on the Sensor and Calibration for one of the thermocouple channels and choose Intake Eng Air.
- 3 Mount a thermocouple with an exposes tip or a special "air temperature" type thermocouple in the air stream going directly to the engine. **NOTE:** Space this back from the engine inlet enough so that fuel "stand off" or "back spray" from the carb does not get fuel on the thermocouple. This will cool the thermocouple and record too low a temperature.



1) Click on DataMite

2) Use scroll bars to scroll down to bottom of DataMite III channels, to find the thermocouple channels. Click in the Sensor and Calibration channels for one of these Thermocouple channels.

3) Pick Eng Intake Air as the calibration

4) Click on Keep Specs

#	Channel	Used?	Data Name	Sensor and Calibration
10	Analog 7 (Analog 8 blue)		an 7	Std 0.5 Volts
11	Analog 8 (Analog 8 green)		an 8	Std 0.5 Volt
12	Analog 9 (Analog 8 white)		an 9	Std 0.5 Volt
13	Analog 10	Yes	Board Temp	Board Temp Deg F
14	Analog 11	Yes	Power Volts	Box Power Volts
15	Analog 12	Yes	Baro Pres	Std. Baro Pres Calibration
16	Analog 13	Yes	Humidity	Std. Humidity Calibration
17	Analog 14 (Analog 8 blue)	Yes	Box Temp	Std. Box Temp Calibration
18	Analog 15	Yes	Exh #1	Std Thermocouple [A] Exh #1
19	Analog 16	Yes	Exh #1	Std Thermocouple [A] Exh #1
20	Analog 17	Yes	Exh #6	Std Thermocouple [A] Exh #6
21	Analog 18	Yes	Exh #8	Std Thermocouple [A] Exh #8

Note: Pick the type of sensor and fill in the Calibration Specs as necessary (or fill in from factory calibra

Correct the calibration you use travel sensor, you may want to adjust units to read 0 when the car is at static ride height.

Pressure Sensor Information

Notes for Pressure Sensors:

Pressure sensor for measuring torque: Stuska™, Go Power™ and other dyno manufacturers often use hydraulic cylinders connected to pressure gauges as a way to measure torque, a "hydraulic load cell". We can Tee a pressure sensor into this hydraulic line to get an electrical signal proportional to torque, much like an electronic load cell. This is typically much easier and much cheaper than using an electronic load cell.

These hydraulic lines typically have a restrictor in them to dampen the strong pulsations from the engine firing. You want to tee the pressure sensor in the line on the pressure gauge side (downstream) of the restrictor. Stuska has this restrictor right at the load cell at the dyno, so you can place the sensor most anywhere in the hydraulic line. Stuska also has a quick connect before the line goes into the pressure gauge at the console. **DO NOT remove that quick connect** to tee the pressure sensor on the gauge side of this quick connect. You could introduce air into the gauge, which would require you sending it to Stuska for bleeding and refilling. Performance Trends can provide a quick connect Tee (pn DTM-STK for \$60) to make this easier.

The hydraulic line should also not have significant air or bubbles in it. Stuska provides procedures for bleeding this line should it be necessary after installing a pressure sensor.

IMPORTANT: The pressure sensor itself *should* have some air in it. That is so you do not create a very high pressure because the trapped hydraulic fluid has no where to go as you tighten up the sensor. We have had sensors fail because they were tightened up on a solid column of liquid, with no air inside.

Safety Note: Wetted areas of Ashcroft pressure sensors are made of stainless steel and are rated as being compatible with fluids compatible with this stainless steel. However, the manufacturer DOES NOT rate it specifically for fuels. You are using it at your own risk if you use it to measure fuel pressure. Performance Trends does not recommend its use for measuring fuel pressure.

When measuring any pressure on an engine, use only high quality parts. Low quality, brass or thin wall fittings may crack under the high pressure and constantly vibrating conditions of being attached to a running engine. Do not "stack up" several fittings between the engine and the sensor. The longer the fittings, the higher the stress from vibrations shaking the sensor. Use high pressure, flexible lines and place the sensor 2 feet or more away from the engine.

Installation Notes: If you are using a sensor to measure pressure from a positive displacement pump (like diesel fuel pump), you want to include some trapped air in the sensor, and some extra line (1-2 feet, preferable flexible line) so the trapped air stays trapped in the line tee to the main line. This trapped air and flexible line acts like a shock absorber to prevent high pressure spikes from damaging the sensor.

If you are measuring high temperature pressures (like exhaust pressure), provide a copper or steel line 2 ft or more in length from the pressure tap to the sensor. Then ideally provide a high pressure flexible line between this copper/steel line and the sensor to help dampen vibration keep the sensor cool.

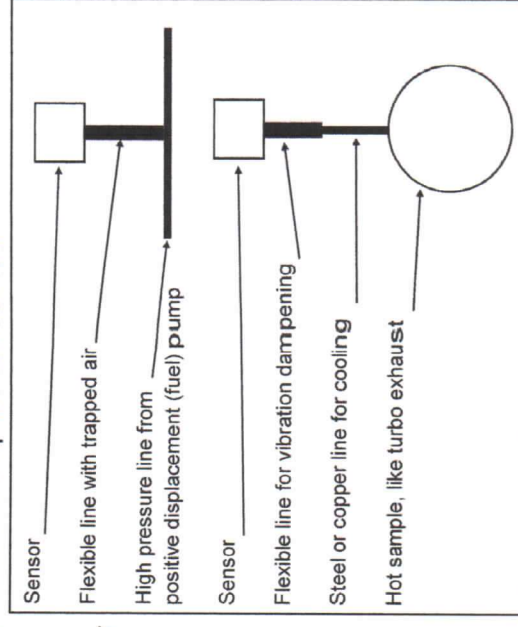
See "IMPORTANT" note above about keeping some air in sensor when installing it.

If you have a pump dyno, which typically has output pressures of 1000 psi or more, there is no way to calibrate the pressure sensor to read torque. Use the starting calibration from your Torque Pressure Sensor Calibration Sheet and run some tests. **Typically this is 1st Value Engineering Units of 0 ft lbs, .5 V for 1st Value Volts and 50 ft lbs for the 2nd Value Engineering Units and 4.5 V for the 2nd value volts.** Once you have repeatable numbers of peak HP, adjust the "2nd value, ft lbs torque" as follows.

New 2nd value, ft lbs torque = Current 2nd value, ft lbs torque x HP engine should produce / HP from DataMite

Once you have made this change, do not adjust for other engines.

Labeling: The part number gives the pressure range of the sensor. For example, the numbering for Ashcroft sensors is as follows: G27M02RMF2xxx#G where the "xxx" is the pressure range, for example "100" is 100 PSI. Ashcroft also gives the actual range, like 0-100 psig (g means gauge pressure).



DataMite Calibration Sheet for Std & Custom Sensors

For sensors that do NOT have a pre-programmed calibration in the DataMite software, specify it as a Custom sensor as follows:

- Click on **DataMite** at the top of the Main Screen.
- Click on the **Sensor and Calibration** (rightmost column) for the channel where the Custom sensor will be installed. Be sure this channel is configured in the DataMite II box as an Analog channel and not a Thermocouple channel. A screen similar to the one to the right will be displayed.
- Select **Custom (user supplies specs)** for the Sensor Type and **0-5 Volts** for Signal Based On.
- Enter the **Analog Sensor Specs** in the lower section as written in the menu shown to the right. You can also enter a **Data Name**, with a suggested name shown to the right.
- When finished, click on **Keep Specs**. In the DataMite screen, this channel will now be listed as:

Cstm xxx-xxx Hz = xx-xx xxxx

This will produce the calibration (conversion from DataMite signal to actual units) recommended by the factory.

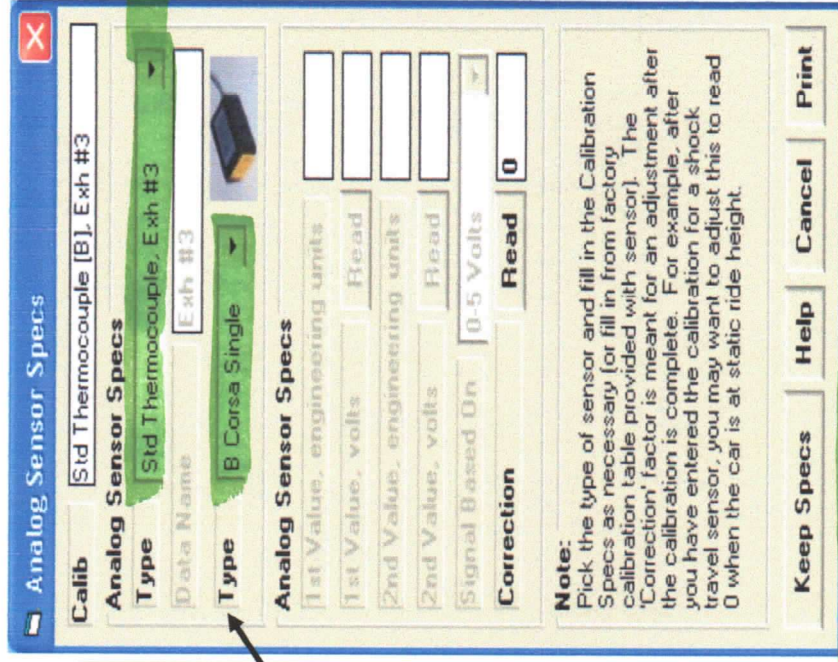
Notes: **For 150 PSI SENSOR**

For Thermocouples, pick this "Type":

- ___ A DTM II Internal
- ___ B Corsa (tm)
- ___ C Large
- ___ D Dual Compact
- ___ E Quad 4 Channel

For Stainless Pres Sensor and Blowby, enter: **150** Range

For A/F Sensors, choose the type of fuel: Gasoline, Methanol, Propane, Ethanol, CNG, E85, or choose Lambda. **Lambda of 0.85 to 0.90 is a good number for best performance for any fuel.**



Possible Choices Include:

- Std 0-15 PSI
- Std 0-70 PSI
- Head Thermocouple
- Std 0-150 PSI
- Std 150-230 Deg
- Std Thermocouple
- Std 0-5 Volts
- Std 0-20 Volts
- Std PTI-CFM3 1.5
- Std PTI-CFM3 1.0
- Std Frequency (Hz)

- Std Accel., Forward
- Std Accel., Side
- Std Accel., Up
- Custom Accel., Forward
- Custom Accel., Side
- Custom Accel., Up
- RF Shock Travel
- LF Shock Travel
- RR Shock Travel
- LR Shock Travel
- Steering
- Throttle
- Brake

- Std RTD Air Temp
- Std RTD Fluid Temp
- DT2-AFx A/F Sensor-Gas
- DT2-AFG A/F Gauge-Gas
- Custom (user supplies specs)
- Custom (user supplies table)

DataMite Calibration Sheet for Std & Custom Sensors

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- Select **Custom (user supplies specs)** for the Sensor Type and **0-5 Volts** for Signal Based On.
- Enter the **Analog Sensor Specs** in the lower section as written in the menu shown to the right. You can also enter a **Data Name**, with a suggested name shown to the right.
- When finished, click on **Keep Specs**. In the DataMite screen, this channel will now be listed as:

Cstm xxx-xxx Hz = xx-xx xxxx

This will produce the calibration (conversion from DataMite signal to actual units) recommended by the factory.

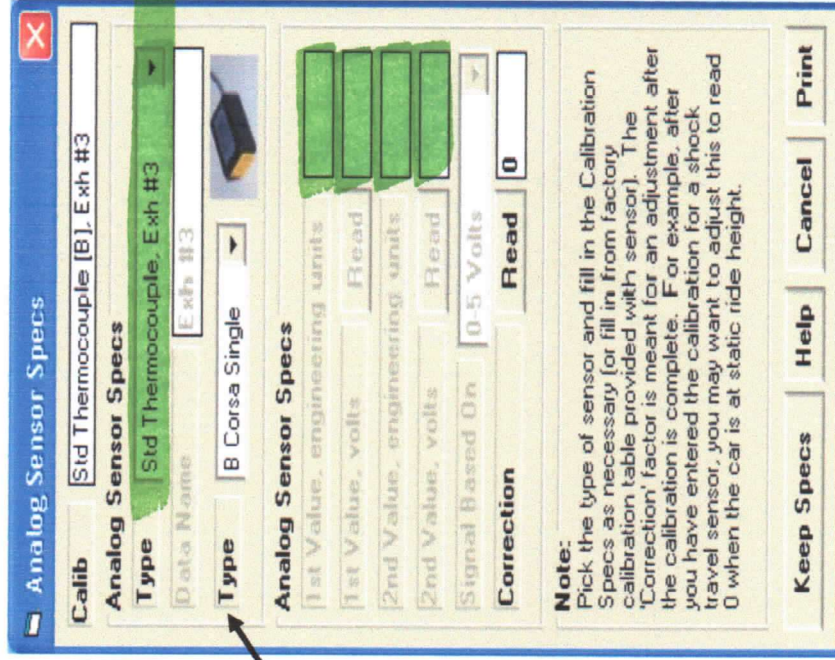
Notes: **FOR VAC/BOOST SENSOR**

For Thermocouples, pick this "Type":

- ___ A DTM II Internal
- ___ B Corsa (tm)
- ___ C Large
- ___ D Dual Compact
- ___ E Quad 4 Channel

For Stainless Pres Sensor and Blowby, enter: _____ Range

For A/F Sensors, choose the type of fuel: Gasoline, Methanol, Propane, Ethanol, CNG, E85, or choose Lambda. **Lambda of 0.85 to 0.90 is a good number for best performance for any fuel.**



Possible Choices Include:

- Std 0-15 PSI
- Std 0-70 PSI
- Head Thermocouple
- Std 0-150 PSI
- Std 150-230 Deg
- Std Thermocouple
- Std 0-5 Volts
- Std 0-20 Volts
- Std PTI-CFM3 1.5
- Std PTI-CFM3 1.0
- Std Frequency (Hz)

- Stainless Pres Sensor Range _____
- Blowby Range _____
- DT2-AFx Sensor
- DT2-AFG Gauge
- DT3-AF1 Sensor
- DT3-AF4 Sensor
- Dyno Torque, ft lbs

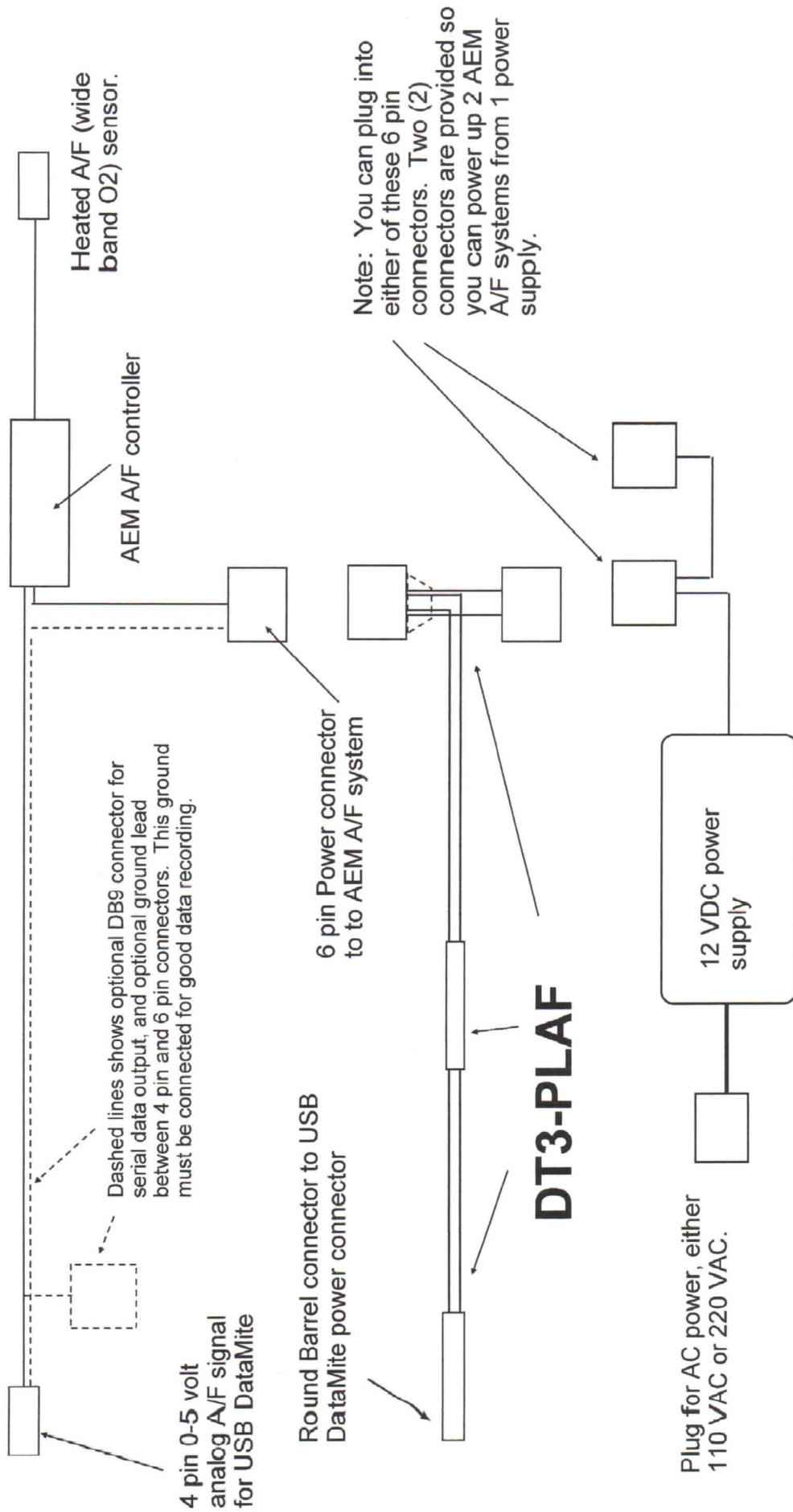
- Std Accel., Forward
- Std Accel., Side
- Std Accel., Up
- Custom Accel., Forward
- Custom Accel., Side
- Custom Accel., Up
- RF Shock Travel
- LF Shock Travel
- RR Shock Travel
- LR Shock Travel
- Steering
- Throttle
- Brake

- Std RTD Air Temp
- Std RTD Fluid Temp
- DT2-AFx A/F Sensor-Gas
- DT2-AFG A/F Gauge-Gas
- Custom (user supplies specs)
- Custom (user supplies table)

A/F Sensor Information

DataMite III & 4 Power (DT3-PLAF) Leads w A/F power supply Installation

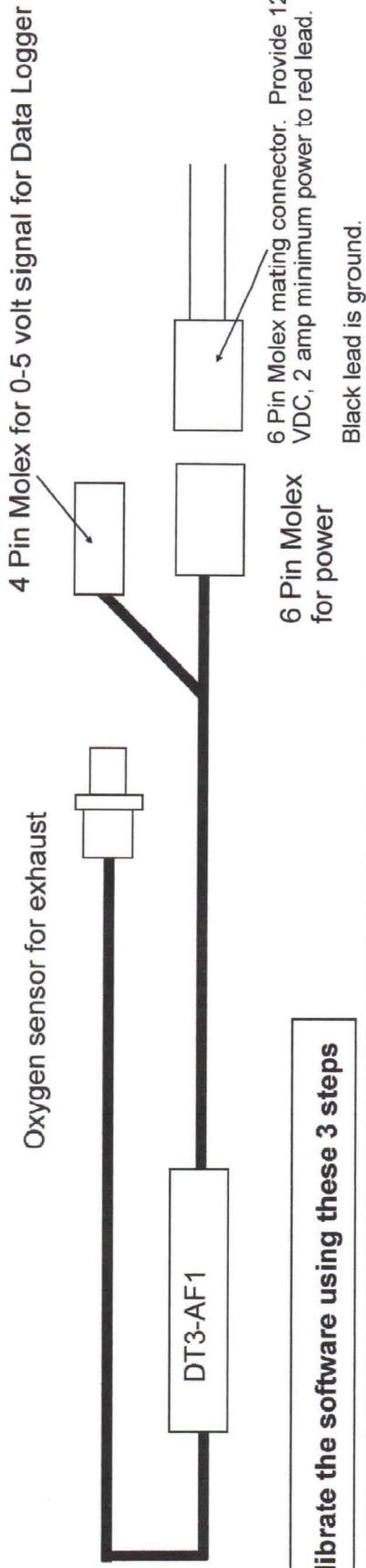
For the AEM A/F system to provide a good signal to the DataMite, we must power up the DataMite from this same power supply as the AEM A/F system. The DT3-PLAF lead lets you do this as shown below.



12 VDC power supply for A/F system. For the AEM A/F system to provide a good signal to the DataMite, we must power up the DataMite from this same power supply.

DT3-AF1 Options

DT3-AFCK Connector Kit



Calibrate the software using these 3 steps

1) To calibrate the A/F sensor, click on DataMite, then click on the Channel Calibration to which the sensor is wired.

2) Choose the appropriate A/F sensor, in this case DT3-AF1 as the Type. Enter a Data Name like "A/F" or "Air Fuel". Choose the type of fuel you are running, or choose Lambda. NOTE: Lambda is convenient because a lambda of .85 to .90 is approximately best power richness (10% to 15% rich) for all fuels.

3) Click on Keep Specs to keep this calibration. This calibration will be loaded back into the DataMite's Calibration Table.

DO NOT reverse this voltage

For vehicle system, this is typically wired into battery power

Note: Pick the type of sensor and fill in the Calibration Specs as necessary (or fill in from factory calibration table provided with sensor). The "Correction" factor is meant for an adjustment after the calibration is complete. For example, after you have entered the calibration for a shock travel sensor, you may want to adjust this to read 0 when the car is at static ride height.

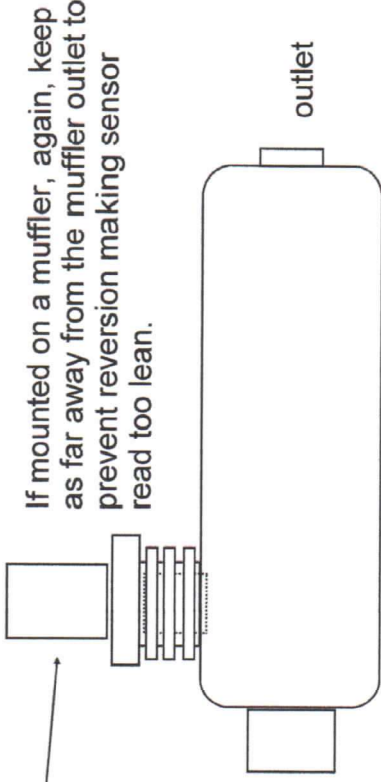
Tip: Click on most anything in the Channel Settings grid to change it. For "Used?", you will toggle between Yes and No. For "Data Name" and "Sensor and Calibration", you will be presented with new screens to change the current settings.

Help: Click on the down arrow button of DataMite you are using. You will be presented with a menu. p 53

DataMite Oxygen A/F Sensor Mount on Exhaust Pipe

New: PN DTM-EBSE (Exhaust Oxygen Sensor Boss Extended-Finned) will mount the sensor out of the flow to reduce flow restriction. This can be used on a kart muffer or straight pipe (shown below). Fins also keep sensor cooler, very good for turbo'd engines.

Note: If used on a straight pipe, keep sensor as close to the engine as possible to reduce the amount of reversion (room air being pulsed back up the pipe to the sensor). Reversion will make the sensor read too lean.

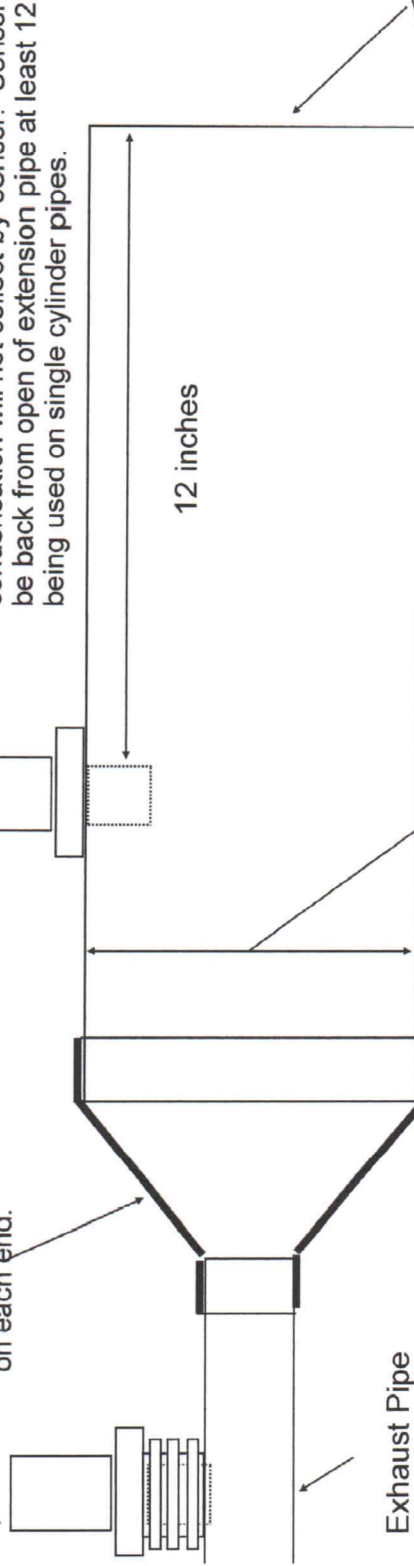


If mounted on a muffer, again, keep as far away from the muffer outlet to prevent reversion making sensor read too lean.

outlet

Some type of reducer to create an air tight seal between the exhaust pipe and the extension pipe. This would typically be made from rubber with hose clamps on each end.

Using standard mounting boss, which positions sensor in the flow, the sensor can be a flow restriction. Mount A/F sensor in extension pipe. Position sensor near top side of pipe so water condensation will not collect by sensor. Sensor should be back from open of extension pipe at least 12 inches if being used on single cylinder pipes.



12 inches

This end open to atmosphere.

This diameter should be 3 times larger than the diameter of the exhaust pipe IF that part of the exhaust pipe affects engine tuning, like the single pipe header of Kart motor, or the tip of a 2 stroke expansion chamber. If the exhaust pipe is just routing of the exhaust out from under the car (after a muffer, several feet from the engine), then this diameter can be as small as the same size as the exhaust pipe.

Note: If you put a small restriction on this end, like a muffer or orifice plate (about 1.5 times larger than the engine's exhaust pipe or header), this will tend to create a small amount of backpressure. This will help ensure that any leaks will **not** allow room air to leak **into** the exhaust, producing readings which are too lean.

Miscellaneous Sensor Information

DataMite Calibration Sheet for Fuel Flow Sensor

Fuel Flow sensors come in different ranges with different calibration factors. They are typically read using one of the RPM channels. Plug the sensor's cable into an RPM channel that is NOT channel 1. Then enter the calibration factor as follows:

- Click on **DataMite** at the top of the Main Screen.
- Click on the **Sensor and Calibration** (rightmost column) for the frequency (RPM) channel where the Fuel sensor will be installed. The screen at the right will be displayed.
- Select **Fuel Flow** for the Sensor Type .
- Determine the Multiplier as follows:

$$\text{Multiplier} = 29977.2 / K \text{ (pulses/gallon) } *$$
 For example, if the K factor was 21629, the multiplier would be 1.386
- Enter the **Multiplier** determined above and a name in **Data Name**, with a suggested name shown to the right.
- When finished, click on Keep Specs. In the DataMite screen, this channel will now be listed as:

Fuel Flow (x .xxxx)

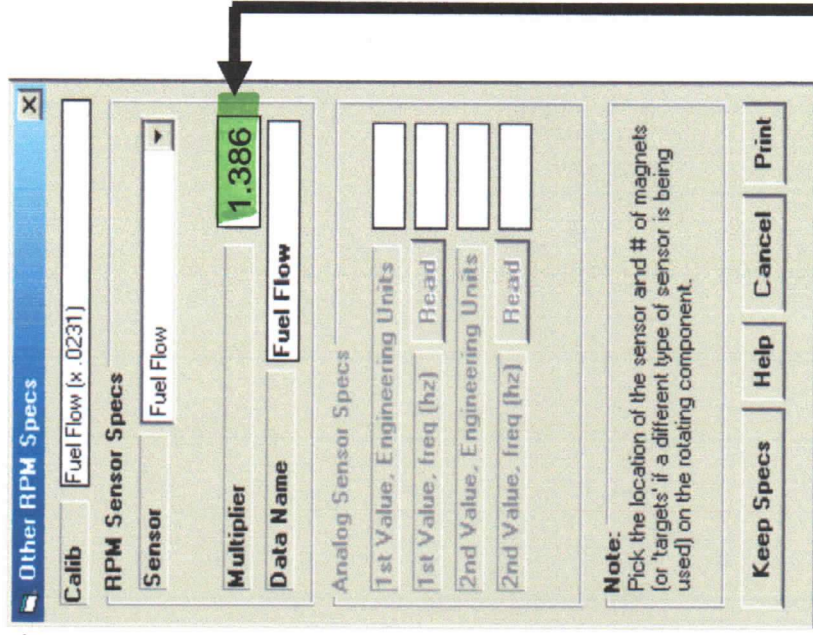
This will produce the calibration (conversion from DataMite signal to actual units) recommended by the factory.

Notes:

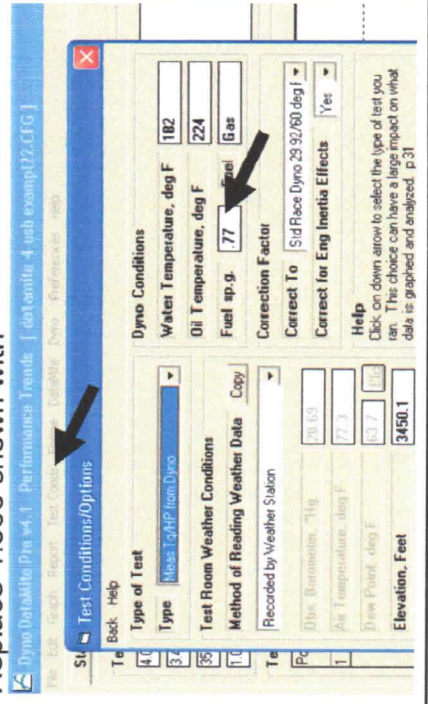
IMPORTANT: To obtain correct fuel flow in lb/hr, you must also enter the spec. gravity of the fuel you are using in the Test Conditions screen in the DataMite software. If nothing is entered, the program assumes .70.

* 29977.2 is a constant based on 8.327 lb/gal water and 60 min per hour.

NOTE: Fuel Flow sensors are typically powered from DataMite power, and can be damaged if more than 12.5 volts are used. Always use a regulated 12 volt power supply for your DataMite if you are using a fuel flow sensor.



Replace 1.386 shown with



Limited 1 Year Warranty

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