

How to get your Roehrig Engineering damper dynamometer running

Whether new or used, every Roehrig dyno. needs the same basic items to get running and operating. We will take you step by step through the procedure so that you can do it.

We need three things, always and all the time.



Figure #1: The three important parts

1 – Software key (green USB stick / or very old models might have a white parallel port device).

This device allows you to collect new data from the machine. It is your license to use our software to collect data. It is not required if you only want to look at data you already collected. Put our software on as many computers as you want.



Figure #2: Software key – Parallel (old) and USB (Shock 6 and up)

2 – Data-Card:

The data cable going from the data card on the dyno. to the computer itself. It should be a USB cable and on very old models we used internal data cards that used a large cable to connect. We no longer support the internal datacards.

- We use this USB cable to gather the sensor readings from the machine when it is running (Displacement, Force, Velocity and Temperature).
- IT MUST BE plugged directly into the computer, **DO NOT PLUG THIS INTO A HUB!** Please understand that this cable streams 8 channels of live 16 bit data; it is not a printer.
- The internal data cards are no longer supported by REI.

- The data-card has a light on it, if everything is working, the light is on. It may blink when sampling data.



Figure #3: Data card and Electronics board area

- The data cable from the data card must be plugged into the electronics board. The USB cable from the data card must get plugged into the computer.
- Some older machines that have been upgraded have the data card mounted on top of the dyno or are internally connected to the electronics board.

3 – Inverter / Motor control:

The motor control cable, this comes from the top of the dyno and is a 9 pin serial cable (looks like a video cable but many less pins).

- This cable connects to the inverter and allows the software to run the machine.
- A serial port is old technology and usually not available on computers. If you only have USB ports you must use a Serial to USB adapter with RS-232 capability. We use the KEYSpan (USA-19HS).
- When the inverter is powered, the key pad will read “0.0”
- If the inverter key pad reads “E”, someone has hit the E-Stop. Release the E-Stop and turn off main power for 45 seconds. The inverter has capacitors and will hold a charge – IT TAKES 45 SECONDS, not an off on switch.
- Warning: the ones that Radio Shack sell will work for a short time but they will fail eventually.



Figure #4: USB to Serial adapter - KEYSpan (USA-19HS)

- Once you connect the USB to Serial adapter to the computer, the computer assigns it a Comm. Port setting. You must identify this; it also lets you know the computer found it. If the computer cannot load and find this device, neither can your Shock software. Here is how:

Go to the “Start” menu at the bottom of the Windows screen. Find the “My Computer” listing and right click on “My Computer” icon and choose “Properties”. Under “Hardware” choose “Device Manager”. Scroll down till you find Ports (Com and LPT). You should see the KEYSpan driver and a port number (com #). Write down this number, it is the port we will use to talk to the motor. Close “Device Manager”.

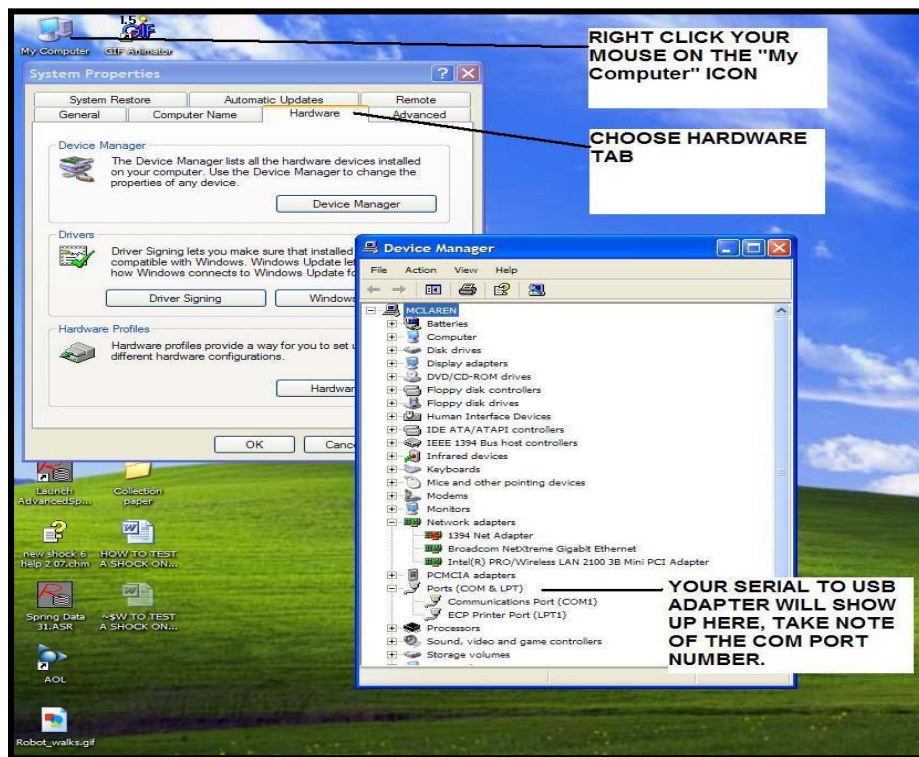


Figure #5: Device manager Serial port COMM #.

All three of these devices MUST be present and plugged into the computer and the dyno for things to work correctly.

When you start the Shock software, everything must be powered on and plugged in; the first thing your software does on starting is look for the Key, then the Inverter/Motor, and then the Data-card. If they are not on or connected, the software runs in demo mode and the unit will not work.

Click on the Shock icon to start the program.

Go to “Hardware”, select “Motor” click “yes”. Then choose “Configure” to set the “Com Port” we found earlier. Set the com port to the proper number and click okay, then okay again. Note: if you have a serial port and can plug directly into it with the motor control cable, your com port is “1”.

Then you must go back to the “Hardware”, “Motor” and “yes” to measure stroke. In the box, click “measure stroke”. The dyno should start, run slowly and a bar graph goes across the screen. When done, the dyno will stop at bottom dead center and tell you a stroke around 2.0”. If you ever change the stroke, you must re-measure using this feature.

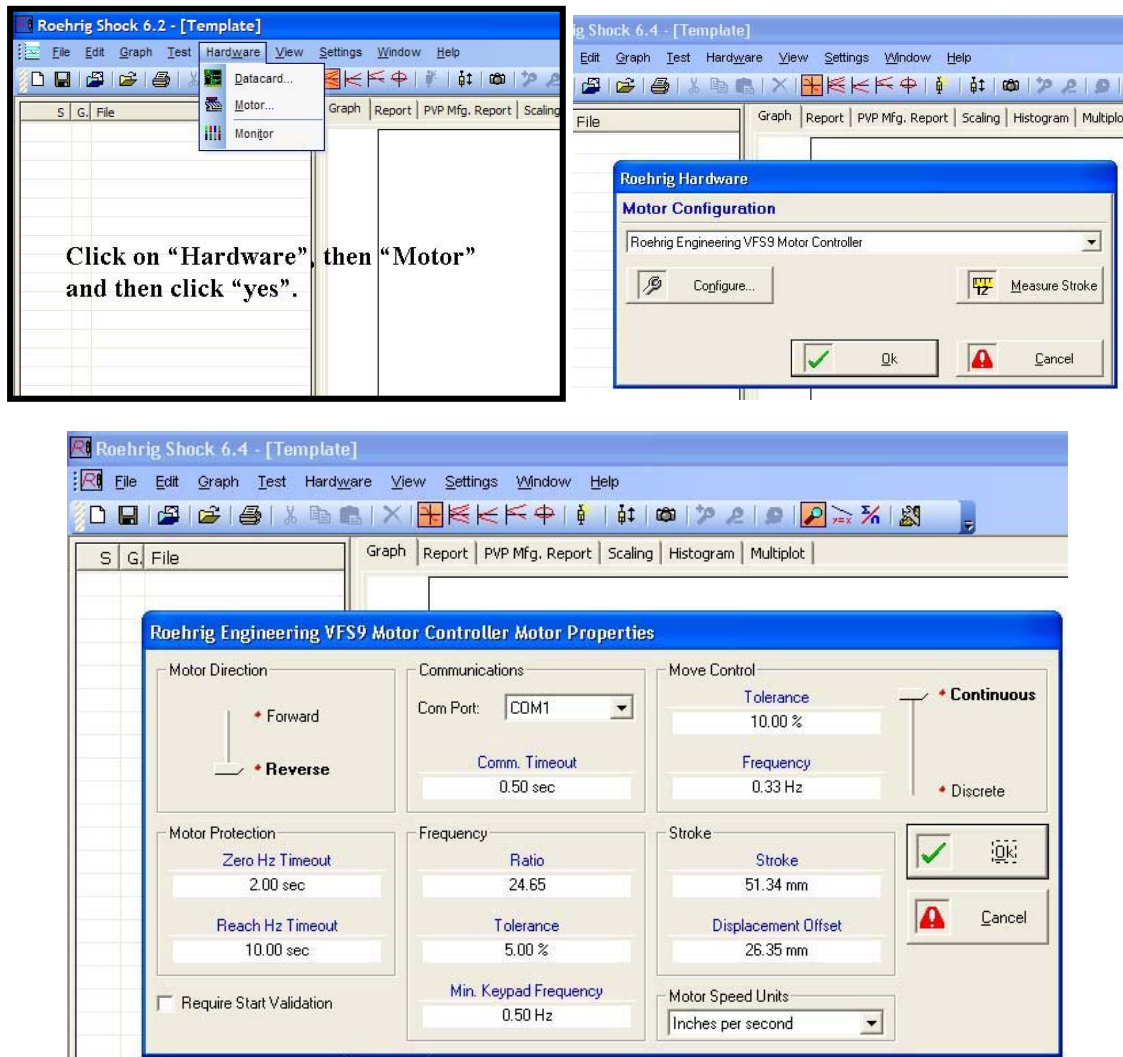


FIGURE #6: How to set the COM. Port in our software and the Measure Stroke

Measure Stroke:

- If the motor does not start, your connection to the motor is not complete.
 1. Make sure the right motor is chosen. New models are VFS9.
 2. Go back to device manager and check to see if the Serial to USB adapter is still recognized by the computer.
 3. If you are using a desktop computer make sure that there are not two serial port connections, being plugged into Serial 2 will cause problems. If so, connect to serial 1.
- If the motor starts but the stroke fails or invalid board shows up, then we can move on to the data card. We do know that we can control the motor and that is half the issue.

Data card:

- Go to “Hardware” then “Datacard” then see what is selected. Most models in the last 6 years are PMD-1608, before that we used the DT9801.
- Click on configure to see the calibration screen.
 1. Is there a “Displacement” channel?
 2. Is there a “Force”, “Velocity”, “Temperature”?
- If there are no channels then you have lost the calibration file and will need to get one either from your backup device or by calling Roehrig Engineering.
- If the sensors are listed then it is just a matter of connecting or powering your electronics and data card.

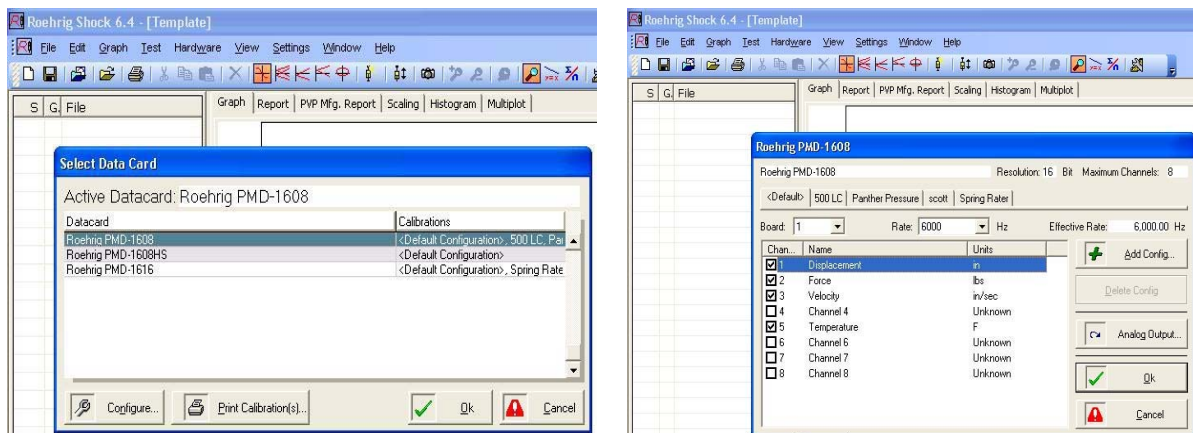
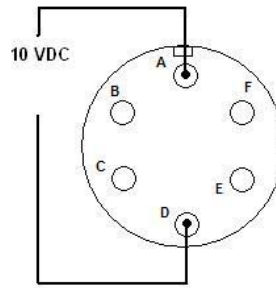


Figure #7: Data card configuration

Is your low voltage power plugged in? This would be the computer like power cord coming from the back of the dyno. It may have come loose or is on a power strip that is not on or not working.

- Note: Newer units have the low voltage power supply wired internally. If the inverter is on, this should be on as well.
- Do you have voltage at the load cell?
 1. Unscrew the loadcell connector at the load cell.

2. Check for 10-15 VDC between pins A and D (depends on age of the unit if 10 or 15 VDC).



- If you don't have VDC then there is a problem with the low voltage power or the electronics board.
- If you have VDC (10 to 15) then the computer has lost the datacard.
- This can happen for a few reasons.
 1. Data-card has failed and needs to be replaced.
 2. The computer has turned it off as a power savings feature on the USB root hubs.

Leave our program. Go to the "Start" menu, then "All Programs" and find the Roehrig Engineering folder. Go to Support and start "Instacal". This is the program that the data card uses. It will look for your data-card. If it can find it, Instacal will show it in the screen as "PMD-1608" with some number attached.

Another method is simply to unplug the data card and try a different USB port. This also forces the computer to find new hardware and thus establish communication.

How to turn off power savings of USB root hubs.

Go to: <http://www.roehrigengineering.com/index.php>

Click on the "Help-FAQs" tab and scroll to the bottom to view the video:

How to turn of USB power management. USB Power Management Video

Frequent Problems:

1 – Power is not on: keypad on the inverter does not say “0.0”.

- Turn on the main power.
- Have electrician check to see that there is in fact power going to the dyno. It will be one of the following:
220VAC single phase or 220 VAC three phase or 380 / 440 VAC three phase (usually anywhere outside the USA).

2 – E-Stop is pressed: inverter keypad is blinking “E”.

- Turn E-Stop knob to release it, it should “pop” up.
- Turn off main power for **45 seconds, anything less will not give enough time to power down.**
- Turn power back on and look for “0.0”

3 – Cables are not plugged into the computer and/or the dyno.

- No matter what you might think, we need all cables and software key to be plugged in correctly in order to collect data.

4 – Turned on the main power after you started the Shock program. This will not work as the software looks for the motor and data-card when it starts.

- Leave the program and start over.