DYNOMET GPS V3 Pro
(software v.1.0x)

Safety during measurements
The safe use of the road dynamometer requires careful reading of the operating instructions before first use. Failure to follow these instructions absolves the manufacturer of any liability for any damage caused to the user or third parties.

During setup and testing, please follow these rules:

- **Measurement location**: Tests and measurements of vehicle parameters may only be carried out on race tracks or closed, traffic-free road sections.
- **Focus on the road**: The driver is prohibited from tampering with the device in any way during the test. For safety reasons, the driver may not operate the device (computer) while driving.
- **GPS installation**: Make sure the external magnetic antenna is securely attached to the roof (use tape to ensure safety) and the cable is securely inserted into the interior. The module must not obstruct the driver's view.
- **Cable management**: The antenna cable must not be routed near the steering wheel, pedals, or other vehicle controls. The device inside the cabin must be securely secured to prevent movement.

If you have any doubts about correct installation, please contact us.

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1. Installing the application

Open the installation file you received a link to in the email. Click the link, and a browser window will open. Browsers often block the download of .exe files, so you'll likely see a warning in the upper right corner: Allow your browser to save the file.
After downloading, run the installation file. A blue screen may appear warning you about a dangerous file. Click "more information" and select "run anyway." You'll receive a license file attached to the email. After installation, copy the license file to the folder on your c:\gpsdyno drive—this is the folder created by the program and where all measurement files are saved by default. The license will also be permanently saved there, and the program will reference it each time you launch it.

2. Launching the program and licensing

Before launching the program, connect the GPS module to your computer; Windows should install the drivers automatically. Windows will install the GPS module on a new virtual COM port. After the drivers are installed correctly, run the program. The Dynomet GPS Activation window will appear. If you've installed the license in the correct location and the GPS module has been installed correctly, this window will disappear after about a second or two and proceed to the analysis window.

If something went wrong, a message will appear at the bottom explaining the problem: either it doesn't see the license file or it doesn't see the module. Check if you've assigned a license to the folder and if the drivers were installed correctly in Device Manager. The device should be listed in COM ports as a USB serial port with its number in parentheses. To be sure it's the correct device, you can disconnect it now and see if the port number disappears and reappears after reconnecting it.
If you have launched the application without a connected GPS module, you can only enable the analysis window or connect the GPS module and press the "Scan GPS Module" button, which will check the COM ports. If the application finds a GPS device connected to the computer, it will launch in the full version with the power measurement module available.

If you're reading this, you've probably just installed the program for the first time and want to know how to measure your car's power. Here's a step-by-step guide.

3. **Mounting the GPS module**:

The Dynomet V3 Pro is an advanced device that uses not only GPS but also a built-in internal accelerometer and gyroscope (called an IMU module). Therefore, it requires horizontal mounting and the direction of travel. The device is pre-assembled and attached to a windshield suction cup. Attach the module to your windshield, preferably in the upper right corner so it doesn't obstruct visibility. Loosen the screw, level the module, and point it in the direction of travel, as indicated by the arrows on the housing. The antenna output should point in the direction of travel, as shown in these photos:

The device can be attached to any window in the vehicle, just remember to keep it level and correctly positioned in the direction of travel (side windows, rear windows, etc.)
If I have attached the module, go to the tab at the top **power measurement (**red button)

4. **Power measurement step by step.**

1. Choose **Power measurement (**Red button) at the top of the screen - after switching to the Power Measurement tab, the program will ask you to select a folder for the car you'll be measuring. Each car should have its own measurement folder. Click "Change Folder" and create a new folder in the c:\gpsdyno directory for the car you want to measure (a typical Windows Explorer window will open, with a "Create Folder" button at the top left. Use this button to create a folder inside the gpsdyno folder). Name it, for example, "Toyota Supra - registration number xxxx," so you can easily find the car later. Once you've created the new folder, click "Select Folder" at the bottom right.

2. After selecting the folder, the main power measurement window will open. On the right side, you should already see the GPS signal status: either red - no signal (no fix), or if you're already outdoors and have mounted the antenna on your car, 3D fix should already appear. The time it takes to acquire a fix outdoors shouldn't exceed 1 minute. Additionally, every GPS device acquires the best fix after about 3 to 5 minutes of startup, after which the 3D fix text will change to 3D fix diff best. It's worth waiting for the GPS to acquire this mode, as then the measurements are most accurate. This process can be sped up – during this time, the module reads the current satellite positions, which takes about 4 minutes.
3. In the meantime, let's move on to setting the car's parameters. In the upper left corner, enter the file name you want to appear as the name of these measurements. The program will automatically rename them with each subsequent measurement, adding a number in the series 01 02 03, and so on, to the end of each file name.
   Below is a table with car data. Here, we provide the car's parameters, such as the make, model, and engine type. However, the most important parameter you need to enter is the car's weight. Enter the car's weight, including yourself and any passengers, luggage, and fuel. Enter weather data, pressure, and ambient temperature. Also, add a note in the comments section whether the car has already been modified or if you're measuring a series—this will help organize your measurements.
4. After completing the vehicle parameters, you can start driving. Press the blue gear measurement button. A window for measuring the gear ratio will appear on the screen. Drive in your previously selected gear at 3,000 rpm and confirm this speed with the spacebar. The gear ratio will be calculated and saved in the vehicle parameters. The program remembers the last time you pressed the spacebar; you can measure multiple times; the last measurement will be saved. Press the Escape or Enter button to exit this window, and the value will be saved in your measurement. Now we can proceed. If you don't know which gear to use for the measurement, skip to the end of this tutorial, where it's explained (Chapter 6).
5. Once you have the measured gear ratio, press the red "record" button. A power measurement window will appear with a speed preview and a live graph showing the recorded vehicle speed. When you're ready to measure, slow down to minimum engine speed in the selected gear, press the spacebar to start the measurement, and begin accelerating. When you reach maximum RPM, depress the clutch or shift into neutral in the automatic transmission and let the car roll. The program will automatically begin a 12-second resistance measurement. After that time, it will save the file with the next name and number (e.g., series_01, series_02, etc.). If you want to start another measurement, simply press the spacebar again, and the program will start recording again to the next file.
   The measurement can be manually ended before the 12 seconds have elapsed by pressing the spacebar. If you end the resistance measurement too early, there's no guarantee the program will have enough data to correctly calculate the engine power. If your measurement conditions are truly ideal, you can try to shorten this time, but less than 10 seconds is usually insufficient.

5. Measurement analysis module

After recording the measurements, the measurement files should be located in the folder you selected earlier. Now we can go to the Analysis tab, and in the upper left corner, you can open the file you just recorded (the program will load the most recently recorded measurement).

The program will automatically select standard graph smoothing filters upon opening the file. After opening the file, the parameters you previously entered will appear to the right of the file name, along with the gear ratio the program calculated and the weight you entered. If you haven't done so already, also provide weather data such as air pressure and ambient temperature. If you are measuring a turbocharged car, leave the pressure entered at 1013, as atmospheric pressure corrections should not be applied to turbocharged cars, which compensate for this themselves. In such cases, provide only the ambient temperature. For naturally aspirated cars without a turbocharger, the actual pressure value should be entered. The pressure and temperature are required for the DIN 70020 standard, which corrects power and torque values for prevailing atmospheric conditions.

Under the car parameters, you have two important options: smoothing, which allows you to smooth the graph more or less. Remember that changing this parameter also slightly changes the power values because you're

smoothing the data retrieved from the GPS. The more you smooth it, the less information it will contain. There's also a power compensation button. If you think the result is too high or too low, you can always compensate with this parameter, but remember that the default value of 1.00 should usually remain unchanged if you've entered the correct car weight and measured the car on a level road. The result you achieve is usually the correct power measurement.

If you've already taken measurements before and after the modification, you can open file B below file A, and both files will be plotted on the graph. You have the same options for editing file parameters, compensating, and smoothing the graph as in file A. Confirm any parameters you begin changing by pressing Enter or clicking the icon to confirm the value change. Automatic changes are plotted on the graph. Below the power graph, you have several options for adding additional information to the graph, such as additional vehicle parameters and company data such as your phone number or website. You can also add a logo there, which will appear as the background of the graph. You can also add a title above the graph, for example, with the car's name.

6. You can change parameters on the graph, such as the colors of the lines for Power A and Power B measurements, as well as the background color of the graph itself and the font. You can also specify whether you want to display data from your license, such as your company name, or show the losses during the measurement. However, the measurement losses are only for your information and are slightly different each time. Below the graph, there's a button to export the file to a PNG image, which you can then print or email to the client. The file is exported in the proportions of an A4 sheet of paper printed horizontally.
7. If you've measured a car's acceleration, after opening the file, you can press the "acceleration" button under the file name. An additional window will appear that will draw an acceleration curve and calculate parameters such as acceleration from 0 to 100 km/h, 100 to 200 km/h, quarter-mile time and speed, and also a speed range that you can edit. The speed graph can be exported to a PNG file; there's an export button under each graph.

If you have connected the GPS module to your computer and Windows does not detect the device, check whether the diode under the letter D on the housing is not flashing orange rapidly.
If so, unscrew the antenna, connect the device to the computer again, Windows should detect it normally, and then screw the antenna back on.

6. Car weight for measurement

Weight – this is the total weight of the car, including the driver, passengers, fuel, etc. This is the most important measurement parameter – this is where measurement errors typically occur. For example, if you're off by 5% with the weight, the power measurement will also be off by 5%.
Note that for measurements before and after a modification, we want to know the difference in power, and for this we don't need a perfectly accurate scale. However, if we want to know the actual power, the weight should also be accurate.
For example, if we measure a VW Golf 2.0 TDI 150 HP, which really weighs 1500 kg, and we give the weight as 1450 kg, which is about 3% less, then the measured power will be about 145 HP (assuming, of course, that it has 150 HP as it should), if we give the weight as 1550 kg, the power will be about 155 HP.
After modification, let's assume that 30 HP was gained, for a weight of 1450 kg the result will be about 175 HP and for a weight of 1550 kg about 185 HP, so the increase of 30 HP will be clearly visible despite the incorrectly entered weight.

7. In which gear should I measure power?

Power measurement should be performed in the gear where the car accelerates from low RPM (i.e., around 1000-1200 rpm) to maximum RPM in about 10-15 seconds. How do you know this? It's best to simply check – select a gear, say 3rd, and measure the time it takes the car to accelerate from 1000 rpm to maximum RPM in that gear. If it's less than 10 seconds, test in 4th gear. If it's also less than 10 seconds in 4th gear, test in 5th, etc. The minimum sensible measurement time is about 10 seconds; the maximum time is arbitrary, but it's not worth exceeding about 20 seconds. For most cars, this will be 3rd or 4th gear.
Why is the optimal measurement/acceleration time around 10-15 seconds?

If acceleration from idle to maximum RPM takes less than 10 seconds, there's a risk that the engine might not have generated 100% power with such a short acceleration time because it might not have been fully loaded. For example, if we have a petrol car that accelerates from 1,000 RPM to maximum RPM in 3rd gear in less than 10 seconds, it means it's a fairly fast car, has a large or turbocharged engine, or has an automatic transmission with 8 or more gears.
Diesel cars with 8-speed transmissions often have a very short third gear, limited to 80 km/h or less. Such cars likely won't generate maximum power in the first two gears, and often not even in third.
What should you do if your car accelerates in less than 10 seconds in 3rd gear? You can use 4th gear, which will extend the acceleration time; the downside is that you'll reach higher speeds. You can also stay in 3rd gear, but for the duration of the measurement, add 2-3 passengers. This will increase the car's weight by 200-300 kg and extend the measurement time. This isn't ideal, but if you don't have access to a long, level stretch of road where you can reach higher speeds, it might be a solution. Of course, the additional weight must be entered in the program.

8. Measurement conditions -IMPORTANT!
It's worth having a fixed location for measurements. Road conditions, slope, unevenness, etc., all affect the results! So, always measure in the same place, preferably driving in the same direction. Otherwise, comparing results from different locations will result in discrepancies due to varying road conditions.
The road should be as level as possible. If it's uphill or downhill, it's crucial that the gradient remains constant throughout the measurement – you can't accelerate downhill and measure resistance uphill; you'll significantly overestimate the result. Accelerating uphill and measuring resistance downhill will underestimate the result. Only a constant gradient guarantees accurate results!
It's worth having a set section where you always test. A chassis dynamometer uses rollers to simulate a perfectly smooth road, hence its high repeatability. If you test on a poor road and in different locations, the results won't be repeatable.
Of course, since this is a GPS dynamometer, the road cannot have a tunnel during the measurement!

- **Route selection:**Choose straight, level sections without significant changes in slope (vertical road profiles affect measurement accuracy). Test away from sky barriers: trees, viaducts, tunnels, and tall buildings. When comparing results, always run along the same route.
- **GPS signal:**Place the antenna horizontally on the highest point of the roof. Don't start measuring until the device confirms a stable satellite connection (3D fix, or preferably 3D fix Diff).
- **Cable protection:**Route the antenna cable so that it won't get caught in doors or tangled around the pedals. Avoid sharp bends.
- **Module mounting:**Secure the device's position in the cabin. Loose equipment poses a risk of being caught under the brake or gas pedal during acceleration or braking.
- **SMA antenna connector:**Gently screw the SMA connector onto the socket. Pulling or tugging the cable hard can damage the delicate coaxial connection. Do not pull on the antenna cable; it's easy to pull the pin out of the antenna connector, which will result in a loss of connection.

9. Truck measurements
We measure delivery vans and vans just like passenger cars. This section teaches you how to measure a "truck."
To measure a truck (we are talking about tractor units), we need to change the rpm at which the dynamometer measures the gear ratios from 3000 rpm to 1500 rpm.
The rest is done in the same way as when measuring passenger cars.
To measure a truck correctly, it must be loaded; a tractor-trailer alone is too light to adequately stress the engine. It's necessary to drive with a trailer, preferably a full trailer. Of course, we provide the weight of the entire combination. The rest is done the same way as for a passenger car. The gear in which we will measure power should be selected the same as for a passenger car – the acceleration time from minimum to maximum rpm should be approximately 15 seconds. However, it's important to remember that it should not exceed 90 km/h, as the vehicle has a 90 km/h speed limiter.

10. Acceleration measurement.
If you want to measure acceleration instead of power, record it the same way you would measure power. Go to the power measurement module, create a new file name, e.g., "acceleration_seria," in the car's folder, and select the red record button. From the moment you press the spacebar, everything you do with the car is recorded, such as acceleration from any speed or quarter-mile measurement. Press the spacebar to stop the measurement.

To measure from 0 to 100 km/h, simply stop the car, turn on the meter, and then start again at any time. Press the spacebar to end recording. After opening the measurement file, the program will automatically detect when you started and display the time to 100 km/h. The same applies to measurements from 100 to 200 km/h or a quarter mile.
You also have the option to manually select any acceleration measurement - from any speed to any.

When you open a file for analysis, the "Show Acceleration" icon will appear under this button, along with an additional speed-versus-time graph. The program will highlight all measured parameters, such as 0-60 mph, quarter-mile time, or any other parameters you've selected.
In addition to this graph, you can switch to the speed graph on the main power graph, where you can, for example, overlay the acceleration graph before and after the modification. You can also specify the speed range the program should compare. The program will then show you which measurement was faster and by how much. This is an interesting feature for showing the customer how much flexibility improved in the specific gear in which the power was measured.

11. Advanced settings of the V3 Pro module.
The Pro module has 2 additional settings compared to the basic V3.
The first is the ability to record parameters (power or acceleration) with speed.**25 times per second**In the power measurement window, under the record button, you can change the frequency from the standard 10Hz to 25Hz. This requires creating a new file, as the data format will change. Plotting the data 10 times per second is perfectly sufficient, but for maximum precision, enable 25Hz.

The second additional setting relative to V3 is **IMU function**- accelerometer and gyroscope.
If for some reason you want to disable the IMU function (i.e., the accelerometer and gyroscope) because you don't want to mount the module to the windshield, you can do so here as well. By default, the IMU will always be enabled after a software restart. If you don't disable the IMU and the dyno module isn't mounted correctly (horizontally and in the direction of travel), the data collected will be significantly lower quality.
We do not recommend turning off the IMU- without IMU, the measurement accuracy drops to the level of the basic V3 dynamometer.
At the moment, this feature is in the testing phase and is not available in version 109 (as of June 21, 2026).

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