

Terratrip 303 Plus: Codriver's Guide

This document was created with the intended use of helping novice rally codrivers use the Terratrip 303 Plus for stage rallies. For TSD rallies or other types of events, you will want to research additional documents. This document contains no installation instructions and assumes that the computer is already installed.

Picture of Terratrip 303 Plus



Description of Key Functions

1 FRZ	Freezes the display and resets the interval odo
2 CAL	Shows the current factor
3 TSD	Enters and switches Time-Speed-Distance rally mode
4 CAL SET	Goes to Enter New Factor mode
5 DIS	Goes to odometer mode with overall and interval distances
6 DIS SET	Set the overall odo
7 TIME	Shows the time of day and has a stopwatch
8 TIME SET	Goes to the time of day setting mode
9 +/-	Switches in and out of Reverse mode (odos count down instead of up)
0 PROBE	Switches which probe is being used
CLR (upper)	Press and hold for three seconds to reset the overall odo
CLR (lower)	Reset the interval odo

There is also a power switch on the upper right side. Slide downward to turn the 303 on.

Initial Calibration Procedure

Going through the calibration procedure will result in a final number, called a factor, that equals the amount of pulses the computer receives during a one mile journey. These instructions assume that you are working with an "odo leg" or "odo check" where you are given a clearly defined distance between two clearly defined landmarks.

Calibration – Before You Begin

1. Check which probe you are using. Most cars only have active probes on Probe 1. Press the PROBE key to switch between probes.
2. Check that you are not in reverse mode. There should be no minus sign by the left of the total distance. Press the +/- key to toggle reverse mode.
3. Check that the display is not frozen. If so, there will be a small F in the upper left corner of the display. Press FRZ to unfreeze the display.
4. Make sure that the computer works at all. When you drive, the mileage shown should change.

Calibration Step 1 – Resetting the Odo

Drive the car to where the odometer check begins. Pick a part of your car (the front wheels is the most common) to act as the reference point, and line that up with the actual sign that describes the start of the odo leg. Once there, clear all your odometers. Press and hold the upper clear for three seconds to reset the overall odo, and then press the lower clear to reset the lower odo.

Calibration Step 2 – Standardize the Factor

Set the factor to 100. Do this by pressing CAL SET, the hit 0,1,0,0, and then the lower CLR button to enter.

Calibration Step 3 – Drive the Distance

Drive the car along the prescribed odo check. Pull up next to the sign or object that marks final instruction of the odo leg and align the reference mark (the front wheels) with the final sign.

Handy hint: Sometimes the final sign is in a place where it is not safe to stop and park. What you can do is slowly roll by the landmark, and hit FRZ just as you pass it. Then pull out of the way and safely do your calculations.

Calibration Step 4 – Compute the Factor

Write down the interval distance that is shown. Take this number and divide by the miles that you actually drove according to the odo leg. This is your new factor.

Example: You set the factor to 100, then drove the odo check. The odo check tells you that the last instruction is a stop sign at 3.2 miles. When you pull up next to the stop sign, your interval odo reads 3264. You divide this by 3.2 to get 1020. This 1020 is your new factor.

Write this factor down in your route book in case the computer resets or something goes wrong.

Calibration Step 5 – Enter the New Factor

Press "CAL SET". Key in the numbers of the new factor, then press the lower CLR button to enter.

Alternate No-Math Calibration

These instructions, like those above, assume that you are working with an “odo leg” or “odo check” where you are given a clearly defined distance between two clearly defined landmarks. However, the added assumption is made that the odo check is so simple, you don't need the rally computer to navigate it. If you have a working stock odo, you could do this as well.

Alternate Calibration Step 1 – Resetting the Odo

Drive the car to where the odometer check begins. Pick a part of your car (the front wheels is the most common) to act as the reference point, and line that up with the actual sign that describes the start of the odo leg. Once there, clear all your odometers. Press and hold the upper clear for three seconds to reset the overall odo, and then press the lower clear to reset the lower odo.

Alternate Calibration Step 2 – Enter the Odo Leg Distance

Set the factor to length of the odo leg. For example, if the odo leg is 3.25 miles, set the odo to 0325. Do this by pressing CAL SET, the hit 0,3,2,5, and then the lower CLR button to enter.

Alternate Calibration Step 3 – Drive the Distance

Drive the car along the prescribed odo check. Pull up next to the sign or object that marks final instruction of the odo leg and align the reference mark (the front wheels) with the final sign.

Handy hint: Sometimes the final sign is in a place where it is not safe to stop and park. What you can do is slowly roll by the landmark, and hit FRZ just as you pass it. Then pull out of the way and safely do your calculations.

Alternate Calibration Step 4 – View the Magic Factor

Presto! The number shown on the interval distance is your actual factor! Write this factor down in your route book in case the computer resets or something goes wrong.

Alternate Calibration Step 5 – Enter the New Factor

Press “CAL SET”. Key in the numbers of the new factor, then press the lower CLR button to enter.

On The Go Recalibration

You may discover that your factor is consistently off, either high or low. You can adjust your factor in this case. The key is to remember that your factor needs to change by the same proportion that your mileage is off by. So, the math:

New factor ratio = (the shown 303 mileage) divided by (the official mileage from the route book)

New factor = (the current factor) times (New Factor Ratio)

With a normal calculator, the step by step is simply:

(the shown 303 mileage) / (the official mileage from the route book) * (the current factor) =

and presto! The new factor will be on your calculator. Enter the new factor using "CAL SET". The lower CLR button acts as enter.

No-Math Factor Nudging

An alternate (but not as accurate method) can also be used if your odo is consistently off. First, consult this handy table:

Compared to the official mileage, my mileage is:	To correct this, my factor should be
Lower	Lower
Higher	Higher

So, just take the factor that you have, and change it! If your mileage is off by 2 hundredths over a mile, try, oh, subtracting 20 from your factor. This is obviously an experimental procedure that requires some confidence. Best to use on a long transit where you're really bored.

Usage During the Rally

In general, you will only be using the mileage displays during the rally. If the 303 is showing something else, hit "DIS" to go to odometer mode. Novice can forget the time of day, stopwatch, and everything else. Use your wristwatch for that.

There are two resets (or "Clears"), one for the overall mileage, and one for the interval mileage. The difference is that the overall CLR button needs to be held for 3 seconds before it will reset the overall odometer.

The interval odometer is most helpful when it is reset at each tulip instruction. Reset the overall at the start control of each stage where the route book indicates the 0.00 begins.

Speedometer

One of the TSD modes has a speedometer. You can use this on transits if you don't have a real speedometer to make sure your driver isn't breaking the speed limit. Press TSD to get to TSD Mode 1, then go to the third TSD mode (which involves holding the TSD button for 3 seconds) and the lower display will show speed. Tell your driver to pick a gear, then get to the right speed, and check their tach. They can then use their tach to know they aren't going too fast. After TSD Mode 4 you should get back to the normal screen.

Screen Saver

To activate the screen saver, press and hold the DIS and 9 keys for three seconds. All of characters on the display should activate in sequence. This dazzling display is handy for car shows or Parc Expose. Press any key to exit this mode.

Of course, LCDs don't really need a screen saver. This is actually a mode to test the display.

Setting the Time

Press TIME SET, the key in four numbers, just hours and minutes. Note that the 303 uses 24 hour military time. Once the four numbers are keyed in, the time starts when you press the lower CLR button. So, to sync to rally time, press CLR at the :00 second of the minute you keyed in. Novice users can safely ignore everything on this page.

Stopwatch

Press the TIME button to enter the time mode. It will show you the time of day and a stopwatch. The lower CLR button is the only thing that effect the stopwatch (in this mode). Press CLR to start the count, and press again to freeze the stopwatch (although it keeps counting internally). If you press and hold the lower CLR button for three seconds, it will reset the stopwatch.

The stopwatch will continue to run after you leave this mode.

Multi-Reset

Pressing and holding the 0 key for three seconds will zero the following:

- Overall mileage
- Interval mileage
- Stopwatch
- Time of day (set to midnight, 00:00:00)

One would imagine that you would use this at a stage start, but keep in mind several things if you try this:

1. Does the stage actually zero the mileage at the start line? FIA style timing generally will, other systems reset the mileage at the beginning of the control, which may be half a mile behind you. Check your route book.
2. It takes three seconds, so begin holding the button *during* the countdown.
3. The time of day is getting reset. So, count on your watch and not the 303.

If you're interested in timing your own stages, the best thing to do is still just note the time of day that you finish via a wrist watch. You'll want that info anyway to verify the time card.

Multiple Factors

The 303 can store two factors. Generally, you can ignore this feature. Perhaps if you have a "ice" calibration and a "transit" calibration, it might be useful. Most of the time, however, the problems caused by forgetting to switch are greater than the benefits derived from additional accuracy. In fact, you could set both factors to the same number for even greater safety.

When you press CAL, it displays the current factor. If you press CAL again within 3 seconds, it will show you, and switch to, the alternate factor. On the screen, the indicator will change from "CAL 1" to "CAL 2" If you want to keep using the original factor, press CAL *again* within 3 seconds. This will show you, and switch to, the original factor.

Once a factor is shown and switched to, you can adjusted it using the CAL SET button, and it will only effect that factor. The other factor will remain untouched.

Using Kilometers

There is neither a special mode for using kilometers, nor does the 303 provide a way to automatically switch between miles and kilometers.

If you are running a calibration leg and the route book is in kilometers, follow the same directions in the calibration section. Since you put all the numbers in as kilometers, the end result will be a factor for kilometers.

If you are already calibrated for miles, and want to switch to kilometers, look up the factor, manually divide it by 1.6, and then enter that new number as your new factor.

Author

Hi, I'm Anders (pronounced "Onders", it's Swedish) and I wrote this. I've been rallying since 1999. For my very first rally, my friend Jeff Denton and I built a custom rally computer, so I've been thinking about odometers, math, and calibration for a long time.

My current rally car is a Subaru Impreza with a 3.0 liter H6 engine. Yup, that swap was a tight fit. Starting with the 2006 event, I have been the chairman of the Sandblast Rally, which takes place in Cheraw, South Carolina. It's part of NASA Rally Sport's Eastern States Rally Championship.

The most recent version of this document will always be found at **LinaRacing.com** which is where I keep all the pictures, results, and information about my rallying efforts.

I don't sell, promote, or otherwise have any financial interest in the Terratrip line of odometers. I hope this manual helps, and best of luck to you with your rallying!

**Cheers,
Anders**



LinaRacing.com



SandblastRally.com



NASARallySport.com