

# Traffic Counter Tester II

## User's Manual



**JAMAR**  
Technologies, Inc.

## **LIMITED WARRANTY**

JAMAR Technologies, Inc. warrants the Traffic Counter Tester II against defects in material and workmanship for a period of one (1) year limited warranty on parts and labor from the date of purchase. For information on extended warranty call 1-800-776-0940.

JAMAR Technologies, Inc. warrants each new instrument manufactured by the company to be free from defective material and workmanship and agrees to remedy any such defect. At its option, it may furnish a new part in exchange for any part of any instrument of its manufacture which, under normal installation, use and service discloses such defect. The instrument must be returned to our factory or authorized service agent intact, for examination, with all transportation charges prepaid.

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Questions concerning this warranty or any JAMAR Technologies, Inc. product should be directed by mail or telephone to:

JAMAR Technologies, Inc.  
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If you have any questions about the use of the Traffic Counter Tester II II, please call the following number:

**215-361-2244**

**Monday - Friday 8:00 AM to 5:00 PM Eastern time**

You may also contact us by e-mail at:

**[sales@jamartech.com](mailto:sales@jamartech.com)**

Address any correspondence to:

**JAMAR Technologies, Inc.  
1500 Industry Road, Suite C  
Hatfield, PA 19440**

## **Quick Setup Guide for the Traffic Counter Tester II**

1. Attach the air tubes to the air switch ports on the Traffic Counter Tester II (TCTII) and plug the power supply connector into it. **Note:** Only use the power supply provided with the TCTII. Substitutes may cause damage.

2. Plug the power supply into an electrical outlet (110V@60Hz) and turn on the TCTII by sliding the power switch to the ON position. **Caution:** Be sure to connect to the TCTII before plugging into the outlet.

3. At this point, the unit should be on, and the LCD should display the following:

<b>A,B</b>	<b>#V:00000</b>
<b>CLS: 2</b>	<b>SPEED:35</b>
<b>TUBE: 2 ft</b>	
<b>T:----</b>	<b>STOPPED</b>

4. Press TAB until **SET SPEED** is displayed at the top left corner of the display (this should take 4 presses). The TCTII is now in SET SPEED mode. This mode sets the vehicle speed for modes A,B; A to B, B to A; and Classify. Pressing DO in this mode will increase the speed by 5 MPH. The speed can be set from 5 to 80 MPH. Speeds in the range of 35 MPH to 55 MPH are recommended.

5. Press TAB until **SET TUBE** is displayed. This mode sets the distance between the road tubes. Pressing DO in this mode will cycle the road tube distance through the following options: 4 inches, 2 ft., 4 ft., 8 ft. and 16 ft. Set the tube spacing in the TCTII to match the tube spacing in the counter you are testing. This may require that the spacing in the counter be adjusted.

6. Press TAB again, and **SET TIME** will be displayed. This mode sets the length of time that a test will run. The options are 15 min., 30 min., 45 min., 1 hr., 2 hr., 5 hr., 24 hr., and “—”. When a test is started, it will run for the length of time specified and then stop. If “—” is selected, the test will run indefinitely, and must be stopped by pressing DO.

7. Set the **Output Dial** to a value of 10. This dial adjusts the strength of the air pulse that is generated. This can be used to test the functionality of

the air switches in the counter. A more in-depth discussion on this can be found in chapter 3.

8. The TCTII is now ready for use. The chosen settings have been saved, and will remain set in the future. Additional information on using the supplied software to configure tube spacing and classification can be found later in this manual.

## **Operating modes**

### **A,B**

Simulates a Class 2 vehicle with 9' wheelbase. For speeds of 35 MPH and above, 1 vehicle will be simulated every second. For speeds below 35 MPH, the time between vehicles will increase to allow the counter to recognize the new vehicle. Vehicles travel in the direction of A to B.

### **A to B, B to A**

Simulates a Class 2 vehicle with 9' wheelbase. For speeds of 35 MPH and above, 1 vehicle will be simulated every second. For speeds below 35 MPH, the time between vehicles will increase to allow the counter to recognize the new vehicle. Vehicles alternate directions. The vehicle count will increment after every second vehicle, to show the total for each direction. **Note:** The tube spacing for this mode is fixed to 4.5 inches.

### **Classify**

Simulates each of the FHWA classes traveling at the selected speed. Vehicles will be simulated at a rate of 1 vehicle every 6 seconds, or 10 vehicles per minute. The scheme simulates all 13 FHWA scheme F classes, with classes 2 and 3 repeated for a total of 15 vehicles. Vehicles travel in the direction of A to B.

### **Speeds**

Simulates a Class 2 vehicle with 9' wheelbase traveling at speeds from 35 to 80 MPH. Vehicles will be simulated at the rate of 1 vehicle every six seconds, with each vehicle increasing speed by 5 MPH. Vehicles travel in the direction of A to B.

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## **Chapter 1**

# **Introduction to the Traffic Counter Tester II**

## What is the Traffic Counter Tester II?

The JAMAR Traffic Counter Tester II (TCTII) is a tool used to test automatic road tube counters/classifiers by simulating vehicles passing over a pair of road tubes. It is capable of simulating a variety of vehicle classes (including all those in the FHWA Scheme F) traveling at speeds from 5 MPH to 80 MPH. The TCTII is designed to work with the JAMAR TRAX road tube counters/classifiers, but should also work with other brands of road tube counters.

**Note:** The TCTII is designed to test counters/classifiers. It is not designed to simulate all possible road tube configurations that could be used in the field. Specifically, it is not designed to simulate short tube-long tube setups, such as the L2, L11 and L12 layouts that can be used with TRAX counters.

The TCTII was designed to allow you to test the accuracy of your road tube counters in the office before placing them in the field to collect important data. This unit will allow you identify potential problems before they occur in the field, saving time and money.



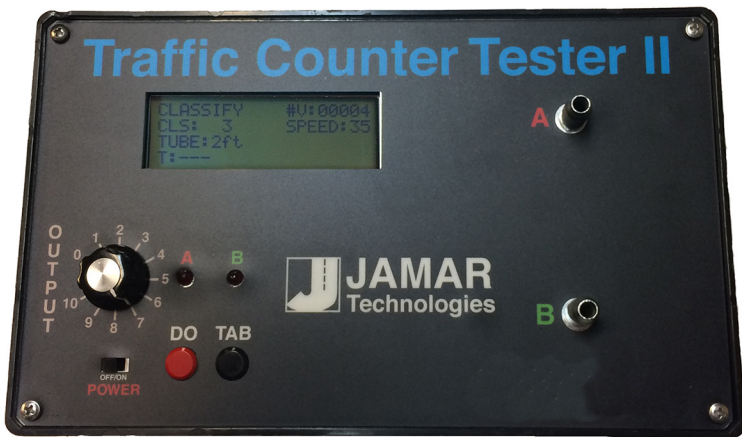


## **Chapter 2**

# **Operation of the Traffic Counter Tester II**

## Using the Traffic Counter Tester II

The front panel of the TCTII has several key components that must be identified. The first of these is the power switch. The power switch is located on the lower left corner of the front panel. Sliding this switch to the right will turn the tester on, and sliding it to the left will turn the tester off. The next components that must be identified are the two air hose nozzles on the right side, labelled A and B. These are the output of the TCTII, and are used to connect it to a counter. The third item is the LCD panel at the upper left. This panel displays the current configuration of the TCTII, information about the last vehicle to pass, as well as the current operating mode.



There are two push-button switches located at the bottom of the front panel. These buttons, labeled TAB and DO, are used to step through each operating mode, as well as to activate a mode. There are two LEDs located above the switches, labelled A and B. These LEDs correspond to the output nozzles, and give a visual indication of the air pulse. To the left of the LEDs is the Output dial. This dial controls the intensity of the air pulses generated by the TCTII.

## **Setting Up the Traffic Counter Tester II**

First, attach the air tubes to the nozzles on the TCTII, making sure that each tube is the same length. At this point, it may be useful to mark the tube for channel A with a piece of electrical tape to aid in identifying the two channels. Next, plug the TCTII power supply into an electrical outlet (110V@60Hz) and connect it to the TCTII.

**Caution:** Only use the power supply provided with the TCTII. Substitutes may damage the unit. Be sure to connect to the TCTII before plugging into the outlet.

Once the power supply has been connected, turn on the TCTII by sliding the power switch to the ON position. At this point, the unit should be on, and the display should show the following:

<b>A,B</b>	<b>#V:00000</b>
<b>CLS: 2</b>	<b>SPEED:35</b>
<b>TUBE: 2 ft</b>	
<b>T:----</b>	<b>STOPPED</b>

Connect the air tubes to the air switch inputs on traffic counter that you are going to test. If you are testing a four tube counter, the pair of splitters supplied with the tester should be connected to the end of the air tubes. The Output dial, which is used to adjust the strength of the air pulse generated, should be set to 10. Refer to chapter 3 for more information on the Output dial.

## **Operating Modes**

The TCTII can simulate two channel volume data in one direction (A,B), two channel volume data in two directions (A to B, B to A), class data and speed data. To choose the mode you would like to simulate, press the TAB key until the desired mode is shown at the top left of the display then press the DO key.

### **A,B**

This mode simulates a Class 2 vehicle with 9 ft. wheelbase. For speeds of 35 MPH and above, 1 vehicle will be simulated every second. For speeds below 35 MPH, the time between vehicles will increase to allow the counter to recognize the new vehicle. Vehicles travel in the direction of A to B.

### **A to B, B to A**

This mode simulates a Class 2 vehicle with 9 ft. wheelbase. For speeds of 35 MPH and above, 1 vehicle will be simulated every second. For speeds below 35 MPH, the time between vehicles will increase to allow the counter to recognize the new vehicle. Vehicles alternate directions. The vehicle count will increment after every second vehicle, to show the total for each direction. **Note:** The tube spacing for this mode is fixed to 4.5 inches.

### **Classify**

This mode simulates a variety of classes of vehicles traveling at the selected speed. Vehicles will be simulated at a rate of 1 vehicle every 6 seconds, or 10 vehicles per minute. The default scheme simulates all 13 Federal Highway Administration scheme F classes, with classes 2 and 3 repeated for a total of 15 vehicles. Refer to the Appendix for more information on the FHWA class scheme. Vehicles travel in the direction of A to B.

### **Speeds**

This mode simulates a class 2 vehicle with 9 ft. wheelbase traveling at speeds from 35 to 80 MPH, in 5 MPH increments. Vehicles will be simulated at the rate of one vehicle every six seconds, with each vehicle increasing speed by 5 MPH. Vehicles travel in the direction of A to B.

## Set Up Modes

Before you begin to simulate traffic with the TCTII, there are three setup modes that should be adjusted to your specifications.

### Set Speed

The Set Speed mode is used to set the speed of the vehicles to be simulated. This setting is shown on the second line of the display to the right. To set a speed, press the TAB key until

Set Speeds is shown at the top left of the display. Then press the DO key to increase the speed of the vehicles by 5 MPH. The speed can be set from 5 to 80 MPH. Speeds in the range of 35 MPH to 55 MPH are recommended for normal use. **Note:** This setting does not affect the SPEEDS operating mode.

<b>SET SPEED</b>	<b>#V:00000</b>
<b>CLS: 2</b>	<b>SPEED:35</b>
<b>TUBE: 2 ft</b>	
<b>T:---</b>	<b>STOPPED</b>

### Set Tube

The Set Tube mode is used to program the TCTII for the tube spacing you would like to simulate. This setting is shown on the third line of the display to the left. To set the tube spacing,

press the TAB key until Set Tube is shown at the top left of the display. Then press the DO key to cycle the road tube distance through 4 inches, 2 ft., 4 ft., 8 ft. and 16 ft.

<b>SET TUBE</b>	<b>#V:00000</b>
<b>CLS: 2</b>	<b>SPEED:35</b>
<b>TUBE: 2 ft</b>	
<b>T:---</b>	<b>STOPPED</b>

**Note:** This setting does not affect the A to B, B to A operating mode, which uses a default setting of 4.5 inches.

## Set Time

The Set Time mode is used to set the length of time that a test will run. This setting is shown on the fourth line of the display to the left. To set the time, press the TAB key until Set Time is

shown at the top left of the display. Then press the DO key to cycle through the options of 15 min., 30 min., 45 min., 1 hr., 2 hr., 5 hr., 24 hr., and “—”. When a test is started, it will run for the length of time specified and then stop. The option “—” is used to specify continuous operation.

<b>SET TIME</b>	<b>#V:00000</b>
<b>CLS: 2</b>	<b>SPEED:35</b>
<b>TUBE: 2 ft</b>	
<b>T:----</b>	<b>STOPPED</b>

## Set Default

The Set Default mode is used to restore the setting in the TCTII to the factory defaults. To restore the defaults, press the TAB key until Set Default is shown at the top left of the

display. Then press the DO key and you will be asked if you want to reset the TCTII to factory defaults. Select Continue to reset the TCTII or Cancel to return to the main menu without resetting to the defaults.

<b>SET DEFAULT</b>	<b>#V:00000</b>
<b>CLS: 2</b>	<b>SPEED:35</b>
<b>TUBE: 2 ft</b>	
<b>T:----</b>	<b>STOPPED</b>

## **Chapter 3**

# **Certifying Counters with the Traffic Counter Tester II**

## **Certifying Counters with the TCTII**

Once you are familiar with the how the TCTII is setup and operates, you can begin to use it to certify the accuracy of the counters you are using to collect data in the field. The tests described in the steps below will enable you to determine how accurate your equipment is, and whether or not a counter is in need of service.

### **Step 1 - Set the Time and Speed**

Set the time on the TCTII to 15 minutes by pressing the TAB key until Set Time is shown on the display, then pressing the DO key until 15 min. is listed. Next, set the speed to the typical speed expected for the upcoming study, normally between 35 to 55 mph, by pressing the TAB key until Set Speed is shown on the display, then pressing the DO key until the speed you want is listed.

### **Step 2 - Test the Air Switch Sensitivity**

To test the sensitivity of the air switch, set the Output dial to 0. Set the counter you are testing to display each axle hit as it occurs and start a count. Start the TCTII in A,B mode by pressing DO when A,B is listed on the display. Slowly turn up the Output dial until the axle hits begin to register on the counter. Continue to increase the output until the air switches are recording every pulse. For most air switches, every pulse should be picked up by the time dial is up to 4 or 5. Record the value of the dial to track the quality of the air switches over time.

If the output value is high, inspect the nozzles on the counter for an obstruction. Re-test to see if this has corrected the problem. **Note:** If a T connector is used to connect the tester to a 4 channel (or larger) counter, then the required Output setting will be higher.

### **Step 3 - Test Volume**

**Reset the Output dial to 10.** Reset the counter being tested for a volume count and restart the TCTII in A,B mode. The counter and the TCTII should increment their count at the same rate. After the 15 minutes has ended and the TCTII has stopped, both the counter and the TCTII should display the same count values.

Next, test the A to B, B to A mode. If your counter does not have the capabilities for a bi-directional count with a tube spacing of 4.5 inches, or it has been deemed unnecessary to certify this mode, then proceed



to step 4. Otherwise, set the counter to operate in this mode, and start a count. Start the TCTII in A to B, B to A mode. The TCTII will simulate a 9 foot vehicle in alternating directions. The count on the display will be updated after every second vehicle. After the 15 minutes has ended, both directions should have the same value as is shown on the TCTII display.

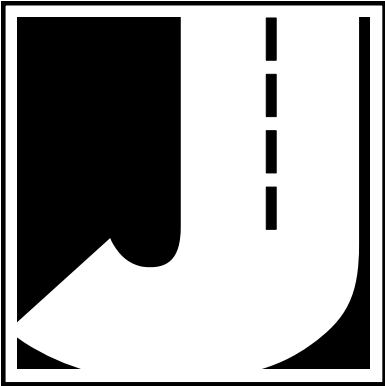
### **Step 4 - Test Class**

**Reset the Output dial to 10.** To test the classification mode of your counter (if it has the capabilities to do so), set the TCTII to CLASSIFY mode and setup the counter to classify with two road tubes. After ensuring that the counter and the TCTII are set to the same tube spacing, start the count and the TCTII. The class of the vehicles that are then shown on the counter should match the TCTII.

### **Step 5 - Test Speeds**

**Reset the Output dial to 10.** To test the counter's ability to measure speeds, set the TCTII to SPEEDS mode and setup the counter to measure speeds. After ensuring that the tube spacings are the same on the counter and TCTII, start the count and the TCTII. The speed of the vehicles that are then shown on the counter should match the TCTII. After the TCTII has stopped, use your analysis software to verify the results. Each speed (in steps of 5 mph) should have the same number of counts, with the possibility of the higher speeds being low by 1 or 2 depending on your speed groupings. The total number of vehicles recorded should match the number on the TCTII.

If you encounter a discrepancy during any of these steps, double check your setup to be sure the tubes you are using for the testing are the same length. Also check that the Output dial is set to the proper level and that there is no blockage in the counter's nozzles. Once you have verified your setup, retest the counter. If the same discrepancy occurs, the counter may need to be serviced.



# Appendix

## **FHWA Type F Vehicle Classification Scheme**

**Class 1 - Motorcycles.** This class includes all two- or three-wheeled motorized vehicles. These vehicles typically have a saddle-type of seat and are steered by handlebars rather than a steering wheel. This includes motorcycles, motor scooters, mopeds, and three-wheel motorcycles.

**Class 2 - Passenger cars.** This class includes all sedans, coupes and station wagons manufactured primarily for the purpose of carrying passengers, including those pulling recreational or other light trailers.

**Class 3 - Pickups, Vans and other 2-axle, 4-tire single unit vehicles.** This class includes all two-axle, four tire vehicles other than passenger cars, which includes pickups, vans, campers, small motor homes, ambulances, minibuses and carryalls. These types of vehicles which are pulling recreational or other light trailers are included.

**Class 4 - Buses.** This class includes all vehicles manufactured as traditional passenger-carrying buses with two axles and six tires or three or more axles. This includes only traditional buses, including school and transit buses, functioning as passenger-carrying vehicles. All two-axle, four tire minibuses should be classified as Class 3. Modified buses should be considered to be trucks and classified appropriately.

**Class 5 - Two-Axle, Six-Tire Single Unit Trucks.** This class includes all vehicles on a *single frame* which have *two axles and dual rear tires*. This includes trucks, camping and recreation vehicles, motor homes, etc.

**Class 6 - Three-Axle Single Unit Trucks.** This class includes all vehicles on a *single frame* which have *three axles*. This includes trucks, camping and recreation vehicles, motor homes, etc.

**Class 7 - Four or More Axle Single Unit Trucks.** This class includes all vehicles on a *single frame* with *four or more axles*.

**Class 8 - Four or Less Axle Single Trailer Trucks.** This class includes all vehicles with *four or less axles* consisting of *two units*, in which the pulling unit is a tractor or single unit truck.


























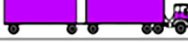









**Class 9 - Five-Axle Single Trailer Trucks.** This class includes all *five-axle* vehicles consisting of *two units* in which the pulling unit is a tractor or single unit truck.

**Class 10 - Six or More Axle Single Trailer Trucks.** This class includes all vehicles with *six or more axles* consisting of *two units* in which the pulling unit is a tractor or single unit truck.

**Class 11 - Five or Less Axle Multi-Trailer Trucks.** This class includes all vehicles with *five or less axles* consisting of *three or more units* in which the pulling unit is a tractor or single unit truck.

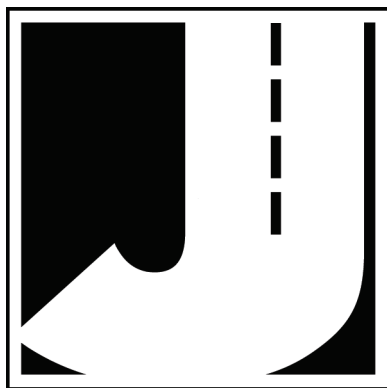
**Class 12 - Six-Axle Multi-Trailer Trucks.** This class includes all *six-axle* vehicles consisting of *three or more units* in which the pulling unit is a tractor or single unit truck.

**Class 13 - Seven or More Axle Multi-Trailer Trucks.** This class includes all vehicles with *seven or more axles* consisting of *three or more units* in which the pulling unit is a tractor or single unit truck.

<b>Class 1</b> Motorcycles		<b>Class 7</b> Four or more axle, single unit	
<b>Class 2</b> Passenger Cars			
			
		<b>Class 8</b> Four or less axle, single trailer	
			
<b>Class 3</b> Four tire, single unit		<b>Class 9</b> 5-axle tractor semitrailer	
			
		<b>Class 10</b> Six or more axle, multi trailer	
<b>Class 4</b> Buses			
		<b>Class 11</b> Five or less axle, multi trailer	
			
<b>Class 5</b> Two axle, six tire, single unit		<b>Class 12</b> Six axle, multi-trailer	
			
		<b>Class 13</b> Seven or more axle, multi-trailer	
<b>Class 6</b> Three axle, single unit			
			
			
			

We are pleased that you have chosen the Traffic Counter Tester II for your testing needs. We have strived to develop a unit that is easy to use, yet highly accurate. The Traffic Counter Tester II has undergone extensive testing to verify the accuracy of its operations, and each unit is tested before it leaves our facility. However, just like other complex electronic devices, problems can occur. We always suggested that users verify the continuing accuracy of any device they use. Verification should be performed on an annual basis to assure proper operations and results.

Should you detect any problems with any of our products, please notify JAMAR Technologies immediately and discontinue use of the unit until we have verified its operation.





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