

**ELECTRIC BRAKE FORCE METER WITH
DYNAMIC LOAD SIMULATION AND CIRCUIT TESTING**

OPERATOR'S MANUAL

MADE IN USA

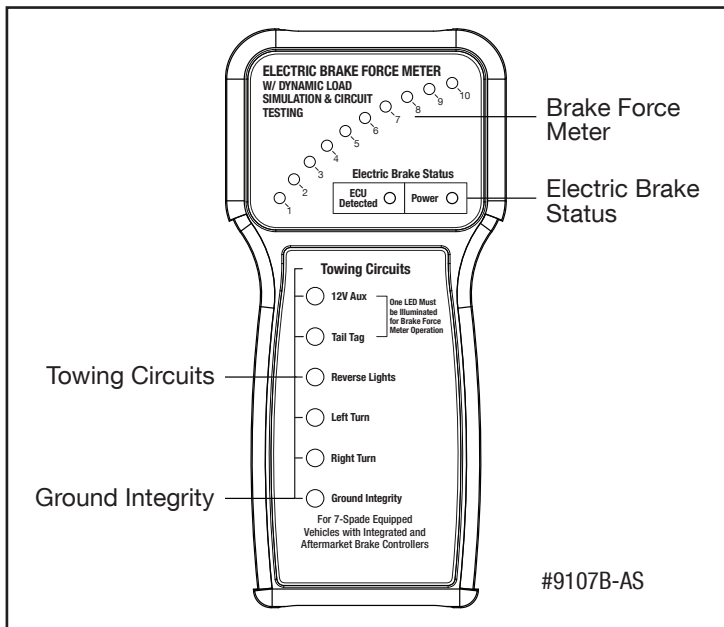


**OF GLOBAL
COMPONENTS**



**For 7-Spade Equipped Vehicles with
Integrated and Aftermarket Brake Controllers**

WHAT'S INCLUDED



INCLUDED PARTS AND ACCESSORIES

Soft Case
#9107-3



25 ft. 7-Flat Pin Cable
#KCBL-9107-AS



Use the Provided Reference Numbers When
Ordering Products and Parts Above
Toll Free: 888-786-7899

COMPATIBILITY

The **#9107B Electric Brake Force Meter with Dynamic Load Simulation and Circuit Testing** is designed to work with most all year/make/model vehicles equipped with 7-spade trailer connections including newer Ford and GM vehicles. If you suspect the Electric Brake Force Meter does not work with your application, please call us at 845-679-4500.

INTRODUCTION

The **#9107B Electric Brake Force Meter** is a professional, high-quality tool that allows you to test the electric brake controller output and all tow-lighting functions without a trailer present.

PRECAUTIONARY EXPLANATION

Before testing, it's important to note that there are several different methods utilized by OEMs for establishing connections to trailers and automatically adjusting gain. In most cases, each OEM takes their own approach to the design and function of Electric Trailer Brake Controllers. Additionally, the OEM's methods have evolved over the years. Never assume that any two makes or different year models will act the same way. For example, some controllers limit output gain unless the vehicle is moving. Others limit output gain unless the vehicle's sensors detect heavy braking under load while moving. Some others allow full output for a short period of time and then limit the output until the vehicle is moving. The purpose of this tool is to allow you to view the output of the vehicle in real time without a trailer present.

PRETEST SET-UP (MUST FOLLOW EACH USE!)

NOTICE: Brake Force Meter with Dynamic Load Simulation and Circuit Testing will not function unless Tail/Tag or 12V Aux Circuits have constant power. If your vehicle does not supply 12V Aux at the trailer connector, leave parking lights on while testing.

WARNING: SET-UP MUST BE COMPLETE BEFORE ATTACHING CABLE.

WARNING: WHEN TESTING IN CAB, DO NOT PINCH CABLE IN WINDOW OR DOOR.

SET-UP

1. With the meter disconnected from the cable, plug the 7-way connector into the back of the vehicle.
2. Bring the other end of the cable and the tester into the driver's compartment, leaving the tester disconnected.
3. Set the emergency brake.
4. Turn the vehicle engine ON and let it idle.
5. KEEP FOOT OFF BRAKE. ONLY AFTER engine is running, plug the 9-pin connector into the socket of the tester and lightly tighten the thumb screws.
6. Verify the 12V circuit is powered or turn on the Tail/Tag circuit.
7. Wait for the yellow ECU detection light to stop blinking.
8. For vehicles equipped with integrated controllers, look for the words "Trailer Connected" on your instrument panel and the ECU Detection light to remain steady within a few seconds of connecting the #9107B to a vehicle with the engine running.
9. Set-up is now complete.

ALTERNATIVE SET-UP PROCEDURE

In 2016 and 2017 models, some OEMs changed the way the brake controllers search for a trailer signal. If the basic method described in the set-up procedure does not establish a "Trailer Connected" message with these vehicles, press and hold the brake pedal during step 7.

TESTING

1. With the #9107B connected and the engine running, increase the brake force adjustment on the instrument panel to maximum output (usually 10).
2. Without applying pressure to the brake pedal, operate the manual brake lever on the controller and take note of the number of LEDs that illuminate. It is recommended to maintain application for up to 20 seconds and observe any changes.
3. Release the manual brake lever and apply moderate pressure to the brake pedal. Observe the series of 10 LEDs at the top of the tester as they sequentially illuminate. This indicates the extent of 12V power available at the connector to actuate trailer brakes.

4. While increasing brake pressure, you should see more of the 10 LED indicators illuminate. Some vehicles or brake controllers may limit output with brake pedal pressure, unless the vehicle is moving.
5. Release the brake pedal. If any abnormal results were noted, continue to Circuit Fault Troubleshooting on page 6.
6. Test other lighting and electrical functions such as Left and Right Turn Signals, Tail/Tag, Brake Lights etc.

WARNING: To avoid overheating, DO NOT hold foot on brake for intervals longer than 15 seconds.

NOTE: The Ground Integrity light will only illuminate when a circuit is completed. In other words, if you are only testing left or right directional circuits, you may notice the Ground Integrity light flashing in sequence with the directional. This is normal and expected.

NOTICE REGARDING 2019 AND NEWER VEHICLES

Some late model vehicles feature a module which monitors and controls power to all of the trailer circuits. These modules are typically powered from the 12V hot lead, which may be labeled as "Trailer Battery" in the fuse box.

When troubleshooting these vehicles, first check to see if the 12V LED on the tool is illuminated prior to troubleshooting. If the LED is not illuminated on the tool, check the vehicle's fuse and wire connections.

With the 12V power on, the tool will energize and immediately default into Trailer Simulation mode. Watch the LEDs on the tool and allow the vehicle's computer to complete its start-up/system status check sequence prior to testing. This start-up sequence can be monitored by watching the LED lights on the tool flicker on and off in sequence. The entire start-up sequence should take less than 30 seconds.

For questions or support, please contact IPA at 845-679-4500, or email tech247@ipatools.com.

ECU DETECTION LIGHT

The ECU Detected light indicates when the Electric Brake Force Meter detects a discovery pulse signal from the vehicle being tested. Modern vehicles with integrated controllers, as well as some aftermarket controllers, limit output to the Trailer Electric Brake circuit (blue wire) until they determine a trailer is connected. The way they determine this is by sending out a small amount of power and monitoring the load. The Electric Brake Force Meter looks for this trailer discovery pulse, and when it detects the pulse, commands the ECU Detected light to illuminate. Once the Electric Brake Force Meter determines the presence of the discovery pulse, it adjusts its built-in trailer simulation load accordingly.

If the ECU Detected light does not illuminate even though the vehicle is equipped with a modern brake controller, this indicates a faulty brake control module or relay, poor wire connection, or a blown fuse in the vehicle.

STATUS LIGHTS

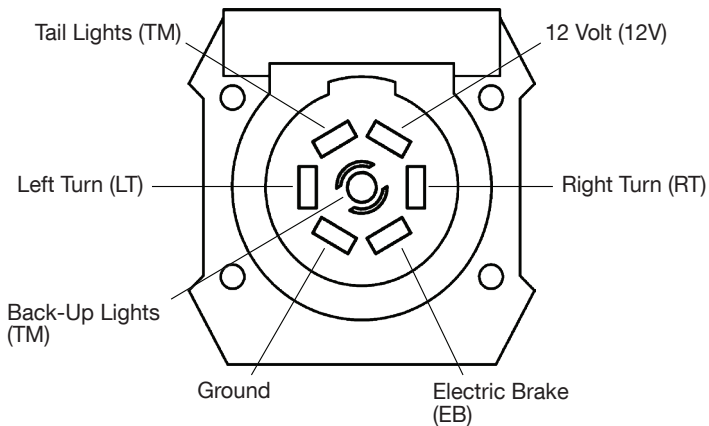
ECU Detected (Yellow)	Blinking	Determining if ECU is present
	Steady	ECU detected Dynamic load is active
	Not illuminated	No ECU detected Static load is available
Power (Red)	Intermittent blink	Indicates search signal from vehicle This is typical and expected from vehicles with an established ECU connection
	Steady	Electric Brake circuit has power and continuity
	Not illuminated	No power or continuity detected
ECU and Power Light	Blinking	Fault in wiring—check connections and trouble codes
Gain 1-10 (Blue)	Illuminated	Indicates gain from truck 1.0-1.5V increments

CIRCUIT FAULT TROUBLESHOOTING

When a circuit fault has been detected, the #9107B can monitor individual circuits while troubleshooting and repairing the vehicle.

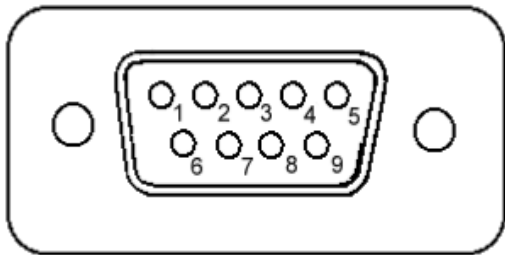
Circuit	Type of Fault	Diagnostic Procedure
Electric Brake	No indication when energized	Check for faulty connection, fuse, wiring fault or controller gain too low
	Low current output or intermittent	Check for faulty connection or controller gain too low
Turn Signals	No power indication when energized	Check for faulty connection
	One or both stay on with no blink	Check for faulty connection, fuse or defective flasher
	Intermittent or erratic illumination	Check for faulty connections for wiring fault
Brake Lights	No power indication when energized	Check for wiring fault, turn signal operation or fuse if turn signals are also dead
	Intermittent or erratic illumination	Check for wiring, fuse or connection faults
Tail/Tag Lights	No power indication when energized	Check for wiring, fuse or connection faults
	Intermittent or erratic illumination	
Reverse Lights	No power indication when energized	Check for wiring, fuse or connection faults
	Intermittent or erratic illumination	
Power (Red)	No power indication when energized	Check for wiring, fuse or connection faults
	Intermittent or erratic output	
Trailer Not Detected	Vehicle does not recognize the Brake Force Meter as a trailer	Check Set-up Procedure
		For 2016 and newer Ford models follow Alternative Set-up Procedure
		If you suspect your vehicle is not compatible with this tool, contact IPA® at tech247@ipatools.com or 845-679-4500 for available updates

7-WAY SPADE/FLAT VEHICLE FEMALE SOCKET (FRONT VIEW)



7-Way Spade Pin	Color	Circuit
1	Black	Tail Lights (TM)
2	Brown	12 Volt (12V)
3	Red	Right Turn (RT)
4	Green/Purple	Electric Brake (EB)
5	Orange/White	Ground
6	Blue	Back-Up Lights (BU)
7	Yellow	Left Turn (LT)

#9107B CABLE PIN OUT



D89 Female Pin	Color	Circuit
1	Green	Electric Brake
2	Yellow	Left Turn
3	Red	Right Turn
4	Blue	Reverse
5	White	Ground
6	Purple	Electric Brake (Redundant)
7	Black	Tail/Tag
8	Brown	12V + / AUX
9	Orange	Ground (Redundant)

LIMITED ONE-YEAR WARRANTY

#9107B Electric Brake Force Meter with Dynamic Load Simulation and Circuit Testing

Innovative Products of America® Incorporated has established a Limited One-Year Warranty Policy for the Electric Brake Force Meter w/ Dynamic Load Simulation and Circuit Testing, not including any wearable parts, i.e. batteries (30 day warranty), battery clips, etc.

One-Year Limited Warranty/Return or Replace Policy: The product is covered for one year from the date of original user purchase under the stipulations of the Standard Warranty.

The product is warranted to be free from defects in workmanship or material. If there is a problem due to workmanship or material defect, Innovative Products of America® Incorporated will repair or replace the product within 24 working hours after it is received by the IPA® Repair Service Center. In the event it is determined that the product has been tampered with, or altered in any way, the warranty is void and all claims against the product will not be honored. The Warranty Repair/Return procedures require that the proof of purchase must be established (either by warranty card from the seller or by point of purchase receipt/invoice) and the manufacturer makes every attempt to return ship the product within three business days from the receipt of the returned product, freight prepaid.

If it has been determined that the tool has been damaged due to misuse, Innovative Products of America® Incorporated will repair the tool at a cost we deem reasonable and these charges will be the responsibility of the user. We truly want you to be happy with our products, so if you have any questions, call us toll free at 888-786-7899.



(OEM) ORIGINAL EQUIPMENT MANUFACTURER USA

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