



## **ACE ACCELERATOR-BRAKE Hand Control Owner's Manual**




- Compact  
Computer Controlled and Monitored  
Three Independent Motors
- Accelerator
  - Main Brake
  - 4-Wheel Emergency Brake

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**Warning**

The Owner's Manual must remain in the vehicle at all times.



**Warning**

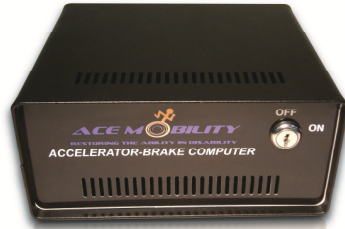
Read manual before operating System. Failure to do so may result in serious bodily injury and/or property damage.

**ACE Accelerator - Brake Hand Control Components**

**Location of Components**



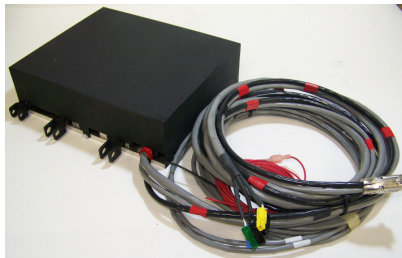
Hand Control Command Module



Accelerator -Brake Computer Control Module



Accelerator - Brake Display



Accelerator - Brake Actuator Module 3 Independent Motors



Accelerator - Brake Auxiliary Battery



Accelerator - Brake Hardware

ACE Hand Control Command Module \_\_\_\_\_  
(serial number located on bottom of command module)

ACE Actuator Module \_\_\_\_\_ Driver's side lower dash  
(serial number located on bottom of actuator module)

ACE Computer Control Module \_\_\_\_\_  
(serial number located on computer housing)

ACE Auxiliary Battery \_\_\_\_\_

ACE Accelerator-Brake Display \_\_\_\_\_  
(serial number located on back of display module)

Access to ACE Accelerator-Brake Hand Control Driving System On/Off Switch \_\_\_\_\_

**Location of System circuit protection:**

6A circuit breaker \_\_\_\_\_

ing dealer or service representative. Ace Mobility will not be obligated for any warranty claim for repairs or replacement of parts not completed by a factory authorized dealer or service equipment representative.

The factory authorization date and the identification of the factory authorized dealer can be obtained by either written or a telephone request to the Ace Mobility.

## System Description



The ACE Accelerator-Brake Hand Control Driving System is a durable and reliable low effort accelerator and brake hand controlled servo system. The effort required to activate the O.E.M. (Original Equipment Manufacturer) accelerator and brake systems have been greatly decreased using the ACE Accelerator - Brake Hand Control Driving System. The System consists of a Hand Control Command Module (user interface), Computer Control Module (data processor), Actuator Module (Accelerator motor with clutch mechanism, Primary Brake motor, and 4-Wheel Emergency Brake motor), Display, Auxiliary battery, and mounting, accelerator and brake pedal hardware. The ACE Accelerator-Brake Hand Control Driving System allows individuals with very limited strength and/or range of motion in both the lower and/or upper extremities to drive a vehicle. Proper instruction and training must be obtained before operation.

The ACE Accelerator-Brake Hand Control Driving System has been designed for installation into mini- or full-sized Chrysler, Ford, and General Motors vans and can be custom-fitted to most other vehicles. The ACE Accelerator - Brake Hand Control Driving System is modular, "bolt-on / plug-in" design. No major vehicle modifications are necessary. It is compact and the Hand Control Command Module can be mounted for right or left hand use. Single-pin, bi-pin, tri-pin, knob, palm grip, and custom orthotic devices are available.

The ACE Accelerator-Brake Hand Control Driving System does not prohibit able-bodied drivers from using the O.E.M. steering wheel, brake pedal, and accelerator pedal. The O.E.M. accelerator and brake pedals remain as a functional part of the vehicle.

The System incorporates two independent power sources, the main and Auxiliary batteries. The voltage level of both batteries are continuously monitored and evaluated by the Computer Control Module. When deemed necessary power source switching is automatically activated and the user is notified of the change (see **Battery Indicator** under **System Indicators** section).

The ACE Accelerator-Brake Hand Control Driving System and Accelerator clutch mechanism complies with all applicable Federal Motor Vehicle Safety Standards (FMVSS).

## **Statement of Warranty**

Ace Mobility LLC. warrants against defects in material and workmanship for three (3) years parts and labor to the original owner, provided the equipment is installed, operated, and maintained per owner's manual instructions.

The warranty is limited to the original owner and does not cover defects in the motor vehicle on which it is installed or defects in the equipment caused by a defect in any part of the motor vehicle.

The warranty commences on the date the equipment is put into service.

Under no circumstances shall charges for labor, consequential damage, or repair expenses be allowed unless prior approval of Ace Mobility is obtained.

This warranty does not cover normal maintenance or periodic adjustment necessitated by normal use or wear.

Ace Mobility will under no circumstances accept liability for loss of use of the equipment, or loss of use of vehicle in which the equipment is installed, or loss of time.

The warranty shall become null and void if the equipment is damaged through accident, misuse, neglect, or if the equipment is altered in any respect.

The vehicle and/or ACE Accelerator-Brake Driving System must be returned to an authorized servicing dealer for inspection before repair or replacement at our option can be made.

This is in lieu of any warranty or condition including merchantability or fitness for a particular purpose.

All repair or replacement of parts must be performed by an authorized servic-

### **TRAINING:**

Do not use this ACE Accelerator - Brake Hand Control Driving System if you are untrained or unfamiliar with its use. This System is intended for use by a person with a physical disability. Consult the owner's manual for correct operation and precautions. Do not operate ACE Accelerator-Brake Hand Control Driving System without reading and thoroughly understanding the owner's manual. Failure to properly operate this System could result in serious bodily injury, death, and/or property damage

### **TRANSMISSION IN PARK:**

When shutting the vehicle's ignition off always insure that the vehicle is in park.

### **WARNING:**

Failure to follow any of these warnings could result in serious injury or death.

### **4 WHEEL EMERGENCY BRAKE:**

The 4-Wheel Emergency Brake is for use in stopping the vehicle during emergency situations only. Use of the 4-Wheel Emergency Brake for anything other than it's intended purpose is prohibited. Failure to follow this warning can result in damage to the 4-Wheel Emergency Brake.

### **Operating Instructions**

- **You must obtain a driver evaluation and proper training from a certified driver rehabilitation specialist before using this equipment.**
- **You must obtain the required state authorization before you attempt to drive your modified vehicle on any public road.**

### **Activating the ACE Hand Control Driving System**

The ACE Accelerator-Brake Hand Control Driving System On/Off switch is a key switch located on the front of the Computer Control Module (see Figure 1). To activate the ACE Accelerator-Brake Hand Control Driving System the vehicle's ignition must be ON and the On/Off switch must be in the ON position. Indicators on the Accelerator-Brake Display labeled IGNITION and BATTERY will be illuminated green, indicating the System is ready for use.



Figure 1: On/Off Switch

## Driving with the ACE Hand Control Driving System

A driver controls the accelerating and braking of the vehicle by the Hand Control Command Module (see Figure 2). Pulling rearward on the Command handle activates the vehicle's accelerator. The more rearward the travel of the Command handle the more the vehicle's accelerator pedal is pressed. Pushing forward on the Command handle activates the vehicle's brake. The more forward travel of the Command handle the more the vehicle's brake pedal is pressed. Full forward travel of the Command handle activates an independent 4-Wheel Emergency Brake. The 4-Wheel Emergency Brake uses the available Ant-Lock Brake and Stability system of the vehicle the system is installed in. Allowing all safety features the vehicle encompasses. **The forward brake and rearward acceleration action is safety engineered to prevent an inadvertent application of the accelerator during hard-stop driving situations.** The brake and accelerator operation can be reversed if deemed necessary during the evaluation process.



Figur2: Hand Control Command Module

## HAND CONTROLS:

Keep objects off of the Hand Control Command Module. The handle must be allowed to freely return to the center position when released by the user.

## INSPECTION:

The ACE Accelerator-Brake Hand Control Driving System must be inspected as outlined in the maintenance section of this owner's manual

## INTERFERENCE:

Radio waves are a form of electro-magnetic energy. When this energy unintentionally affects the operation of an electronically-controlled device, it is called electro-magnetic interference (EMI.) Radio waves are emitted from the antennas of cellular phones, mobile two-way radios, hand held two-way radios, commercial video and/or radio transmitters, amateur radio transmitters, wireless computer links, microwave sources and paging transmitters, etc. These radio waves may cause erratic behavior in you're ACE Hand Control Driving System. Do not use any portable or stationary transmitting or receiving devices while driving this vehicle. You could be seriously injured or killed if the above mentioned items are activated while you are driving.

## MODIFICATION:

Do not alter or modify the System in any way. Failure to follow this warning may result in serious bodily injury, death, and/or property damage.



### **ACCIDENT:**

Do not operate ACE Accelerator-Brake Hand Control Driving System if you have been involved in an accident. The ACE Accelerator-Brake Hand Control Driving System must be returned to the Ace Mobility or authorized servicing dealer for a complete evaluation.

### **ADJUSTABLE PEDALS:**

If vehicle is equipped with adjustable accelerator and brake pedals, do not reconnect adjustable pedals while the ACE Accelerator-Brake Hand Control Driving System is installed. Failure to do so may result in serious bodily injury, death, and/or property damage.

### **CERTIFIED DRIVER:**

It is necessary for you to obtain a driver evaluation and proper training from a certified driver evaluator before attempting to drive your modified vehicle on any public road. It is necessary that you obtain the required state authorization before attempting to drive your modified vehicle on any public road.

### **CHANGE OF ADDRESS:**

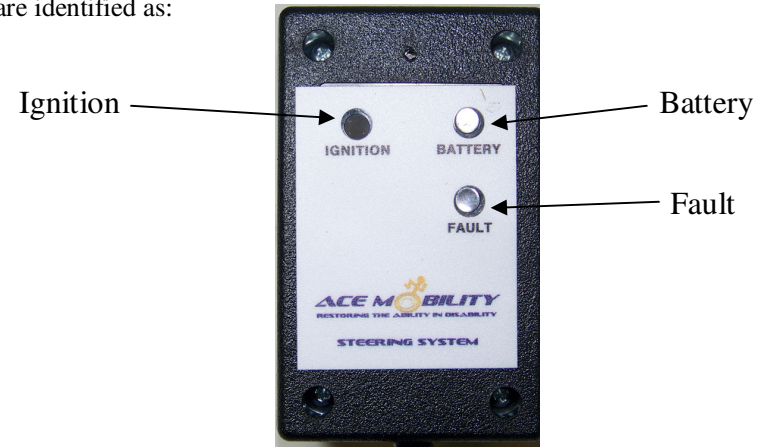
It is the User's responsibility to inform the manufacturer and installing dealer of any address and/or phone number changes. It is vital that the User's information be kept up-to-date and accurate.

### **DRIVING SYSTEM:**

Keep all foreign debris away from the entire ACE Accelerator-Brake Hand Control Driving System. Refer to "ACE Accelerator-Brake Hand Control Driving System Components" section for main components.


### **System Indicators**

The Accelerator-Brake Display contains the System Indicators for ACE Accelerator-Brake Hand Control Driving System. The 3 visual indicators are identified as:



### **Ignition Indicator**

The Ignition Indicator displays a **green** color when an ignition ON signal is present to the Computer Control Module. An ignition ON signal is present only when the vehicle's ignition is ON and the On/Off Switch is ON. The ACE Accelerator-Brake Hand Control Driving System is only operational when the Ignition Indicator is **green**.

  
**Warning**

Should the Battery Indicator turn **amber** or **red**, indicating a problem. The vehicle must be stopped as soon as possible. Failure to do so may result in serious bodily injury and/or property damage.

## **Battery Indicator**

The Battery Indicator is tri-colored (**green/amber/red**). The green color indicates that the ACE Accelerator-Brake Hand Control Driving System is operating on the main battery. The **amber** color indicates the ACE Accelerator-Brake Hand Control Driving System is operating on the main and Auxiliary batteries. A **red** color indicates the ACE Accelerator-Brake Hand Control Driving System is operating completely on the Auxiliary battery. Should the Battery Indicator be **amber** or **red** in color the vehicle should be stopped as soon as possible, and then call for assistance. The vehicle must not be driven any further.



## **Fault Indicator**

The Fault Indicator stays off during normal use of the System. When a fault is detected an audible pulsating tone will sound and the indicator will turn **red**. The vehicle should be stopped as soon as possible, and then call for assistance. The vehicle must not be driven any further. The Fault Indicator may or may not activate momentarily (<1 second) during each initial startup of the System, this is normal operation of the System and does not signify that there is anything wrong with the System.



## **VEHICLE OR SYSTEM PERFORMANCE:**

Do not attempt to operate Vehicle or System if either operates in a substandard manner. The System Indicators will alert the user of a reduction in performance of the System. Should the System Indicators display any warnings the vehicle should be stopped as soon as possible, and then call for assistance. The vehicle must not be driven any further. Refer to "System Indicators" section for details.

## **SYSTEM TESTING:**

Before driving the vehicle, all of the following systems must be tested and/or checked.

**Do not drive** the vehicle if any of these systems are malfunctioning or have substandard performance.

1. ACE Accelerator-Brake Hand Control Driving System.
2. 4-Wheel Emergency Brake.
3. All adaptive equipment.
4. O.E.M. power steering system.
5. All secondary systems: turn signals, horn, wipers, dimmer, lights, etc.
6. Proper tire inflation.
7. O.E.M. brake system and brake warning light.
8. Vehicle performance.
9. O.E.M. vehicle warning indicators.

**Maintenance Instruction**



**Warning**

Maintenance procedures must be performed, as instructed, by an authorized servicing dealer.

Proper maintenance is necessary to ensure trouble free operation. Routine inspection and maintenance of the ACE Accelerator-Brake Hand Control Driving System must be performed by an authorized Ace Mobility Servicing Dealer. These intervals are a general guideline for scheduling maintenance procedures and will vary according to System use and conditions. ACE Accelerator-Brake Hand Control Driving Systems exposed to severe conditions (weather, environment, contamination, heavy usage, etc) may require inspection and maintenance procedures to be performed more often than specified in chart below.

Time	Description	Procedure
2 w eeks	Hand Control Command Module	Inspect
	Accelerator - Brake Actuator Module	Inspect
	Accelerator - Brake Computer Control Module	Inspect
	Accelerator - Brake Display	Inspect
	Accelerator - Brake Auxiliary Battery	Inspect
	Test Operation	Report Findings
6 w eeks	All cables and connections	Inspect
	Fasteners	Inspect
	Fault Codes	Retrieve, Repair as needed
	Test Operation	Report Findings
6 months	All cables and connections	Inspect
	Battery Condition	Inspect, Test, and Clean
	Fasteners	Inspect
	Test operation	Report Findings
1 Year	Perform all of the above annually	

**4-Wheel Emergency Brake**

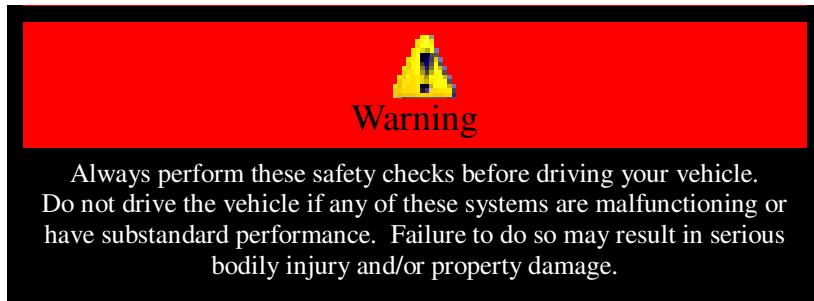


**Warning**

The 4-Wheel Emergency Brake is only to be used to stop the vehicle in emergencies. Failure to follow this warning can result in damage to the 4-WheelEmergency Brake.

The purpose of 4-Wheel Emergency Brake is to enable the driver to stop the vehicle if there is any indication of substandard performance of the ACE Accelerator-Brake Hand Control Driving System. To activate, push the Hand Control Command handle in the brake direction to its maximum position. **The 4-Wheel Emergency Brake is for use in stopping the vehicle during emergency situations only uses the available Ant-Lock Brake and Stability system of the vehicle. Use of the 4-Wheel Emergency Brake for anything other than it’s intended purpose is prohibited. Failure to follow this warning can result in damage to the 4-Wheel Emergency Brake.** The 4-Wheel Emergency Brake should be tested before each use of the System. The 4-Wheel Emergency Brake should operate with the vehicle’s ignition ON or OFF and/or the ACE Hand Control Driving System On/Off Switch ON or OFF.

When the 4-Wheel Emergency Brake is applied an audible pulsating tone will sound. The System does not use the parking brake for an emergency brake back-up. Using a parking brake will not stop a moving vehicle safely. If a parking brake is applied while a vehicle is moving, it will lock the rear wheels, and the operator will lose control of the vehicle. The ACE Accelerator-Brake System uses an independent electric motor located in the Accelerator-Brake Actuator Module to apply full force to the vehicle's braking system. Thus utilizing the vehicle's designed Anti-Lock Braking and Stability Systems.



### **Safety Checks**

Before driving the vehicle, all of the following systems must be tested and/or checked.

**DO NOT DRIVE THE VEHICLE IF ANY OF THESE SYSTEMS ARE MALFUNCTIONING OR HAVE SUBSTANDARD PERFORMANCE.**

1. ACE Accelerator-Brake Hand Control Driving System.
2. 4-Wheel Emergency Brake.
3. All adaptive equipment.
4. O.E.M. power steering system.
5. All secondary systems: turn signals, horn, wipers, dimmer, lights, etc.
6. Proper tire inflation.
7. O.E.M. brake system and brake warning light.
8. Vehicle performance.
9. O.E.M. vehicle warning indicators.

### **Deactivating the ACE Hand Control Driving System**

Deactivating the ACE Accelerator-Brake Hand Control Driving System can be done one of two ways: (1) shut the vehicle's ignition OFF, or (2) turning the On/Off Switch to the OFF position. The On/Off switch must be turned OFF whenever someone besides the approved user of the System is driving the vehicle to avoid inadvertent operation of the ACE Accelerator-Brake Hand Control Driving System. Failure to properly operate this System could result in serious bodily injury, death, and/or property damage.

