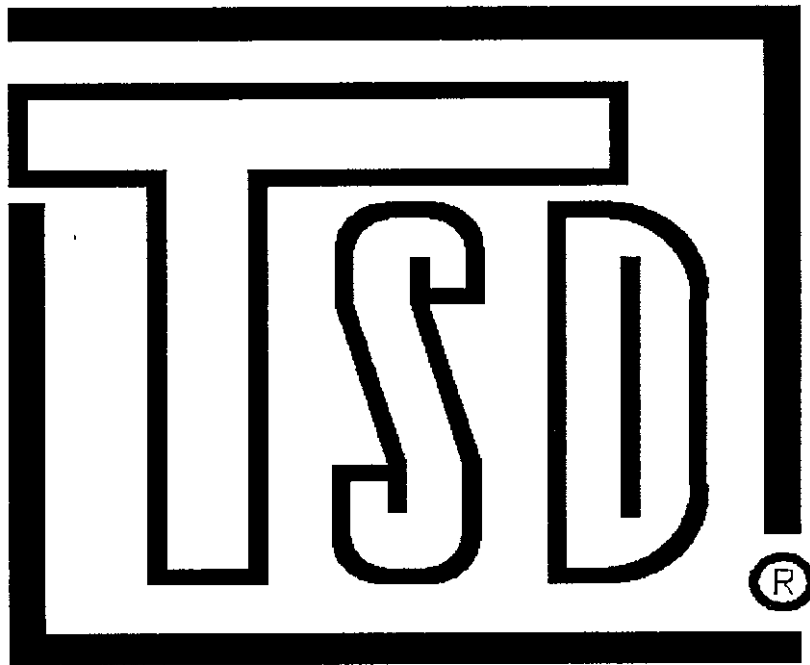


EXHIBIT 7
USER'S MANUAL

TRANSPORTATION SAFETY DEVICES, INC.

RR-16-MPX AND RR-08-MPX WIRELESS CONTROLLER INSTALLATION MANUAL



**For assistance please contact:
Transportation Safety Devices, INC.
TSD building
2400 Roosevelt Ave.
Indianapolis, Indiana 46218**

**Customer service 1-800-428-4449
Fax: 1-317-263-0977**

KEY FEATURES:

The TSD part number #RR-16-MPX and #RR-08-MPX wireless hand held controllers operate using digital multiplexing technology at 418 Mhz. Range for these units is approximately 100 feet. The key feature of the wireless hand held controllers is that up to 16 functions can be preformed without a cable. Both the RR-16-MPX and RR-08-MPX are designed to upgrade the HH-16-MPX and HH-08-MPX to wireless operation.

The reduction in overall hand held size makes these units very user friendly, as well as easier to store in the toolboxes.

One receiver board plugs into the Power Distribution Centers of both HH-16-MPX or HH-08-MPX units. Each set of transmitters and receivers have matching code so interference with other wireless remotes will not a problem.

Other key features include built in L.E.D. diagnostic for faster trouble shooting and quick field service.

Each keypad for the hand held controller has the actual word for the function pre-printed on it for ease of installation. Likewise each power distribution center has the actual functions printed onto the output relays to make installation and troubleshooting easier.

COMPONENTS:

Each hand held controller includes the following components:

- 1) One eight or sixteen function wireless hand held controller with battery charger.
- 2) One corresponding receiver printed circuit board (PCB).
- 3) Antenna kit and mounting hardware.
- 4) Installation manual with warranty information.

Carefully look over all of the components for any damage in shipping or any other notable problems. If any item appears to be damaged in any way, contact TSD's customer service department.

INSTALLATION PROCEDURES:

- 1) Before installation begins, 12 volts positive must be removed from the present hand held power distribution center. This can be done by either turning off the "Control" switch in the panel or in the Dual Control System if the vehicle is so equipped. If 12 volts positive is wired directly to the battery, disconnect this main battery feed wire at the battery.**
- 2) The receiver PCB plugs directly into the power distribution center. Mounting hardware is already present on the power distribution center. Remove the four Philips head screws on the standoffs in the power distribution center. Line up the four position header on the receiver PCB and the power distribution center. NOTE: the receiver PCB will only plug in one way. Push the receiver board all the way down making solid contact with the four standoffs. Install four Philips head screws and tighten. See figure #1 for exact placement of the receiver PCB.**
- 3) The Batteries need to be installed into the hand held units next. Remove the battery cover on the back of the hand held controller by removing the two Philips head screws. The batteries fit into the controller as shown on the sticker on the inside of the battery cover. Replace the battery cover.**
- 4) Locate a suitable location for the antenna and mounting bracket. One good location to use is the right rear top of the tool box, inside near on the boom side of the toolbox. Use the bracket as a drill template and drill two #10 holes. Use the provided hardware to mount the antenna bracket. Attach the antenna cable to the bracket and route the cable inside the tool box through some type of bulkhead grommet. The antenna cable needs to route into the PDC through one of the grommets and attach to the antenna connector (shown in figure #2) on the receiver PCB.**
- 5) Reattach the 12 volt positive feed wire back to the battery if this was removed.**

TESTING THE FULL UNIT:

After the batteries are installed, move the vehicle to a safe area and proceed with the steps listed below for testing.

NOTE: Make sure that you are out of the way of any of the moving components during these test.

Step #1: Turn the "Wireless" – "Wired" switch on the P.D.C. into the "Wireless" position. The wireless hand held controller will not function if this switch is in the "Wired" position.

Step #2: Verify that each switch on the keypad works the correct function on the vehicle. If any of these functions keys do not work the correct function on the vehicle, check the load wires on the power distribution center and on the solenoid valves to make sure none of the wires is attached to the wrong place. Correct the wiring if anything is attached to the wrong position and re-test.

TROUBLE SHOOTING:

NOTE: L.E.D.s are provided in various locations for help in trouble shooting. These L.E.D.s are shown in figure #1, figure #2 and located in the following locations:

- 1) On the face of the hand held controller.**
- 2) Three on the left center side of the receiver PCB.**
- 3) Two at the right center side of the receiver PCB.**
- 4) Located on the power distribution center near the circuit breakers.**
- 5) Located on the power distribution center beside the coil cord connector.**
- 6) Located on the power distribution center near the output terminals.**

PROBLEMS:

Unit does not operate any functions when any key is pressed:

- 1) Make sure the "Wireless" – "Wired" switch is in the "Wireless" position. L.E.D. #1 on the receiver board will be illuminated when in the "Wireless" position and L.E.D. #4 on the receiver will be illuminated when in the "Wired" position.**
- 2) Verify that ground and 12 volts positive is present on the printed circuit board at their respective connection studs. To do this locate the L.E.D.s located at these studs. When 12 volts or ground is present these L.E.D.s will be illuminated. If these L.E.D.s are not illuminated, check the ground and 12 volts positive connections at their source and the wiring for possible problems.**
- 3) Verify the L.E.D. in the Hand Held control illuminates green when any switch is pressed. If the L.E.D. does not illuminate, replace or recharge the batteries.**
- 4) Check that the hand held is communicating with the power distribution center. To do this locate L.E.D. #1, #2, #3, #4, and #5 on the receiver. When the switches in the Hand Held are pressed, these L.E.D.s will light up as follows:**
 - A) L.E.D. #1 will be illuminated red when the "Wireless" – "Wired" switch is in the "Wireless" position.**
 - B) L.E.D. #2 will be flashing on and off when any switch on the Hand Held is pressed.**
 - C) L.E.D. #3 will be illuminated on when any switch on the Hand Held is pressed.**
 - D) L.E.D. #4 will not be illuminated when the "Wireless" – "Wired" switch is in the "Wireless" position.**

E) L.E.D. #5 will be flashing on and off when any switch on the Hand Held is pressed. If the L.E.D.s do not operate in the above fashion, press the reset button on the P.D.C. and allow the system to totally reset.

- 5) Make sure that the dip switches in both the Hand Held and the receiver board are set to the same settings. Press any switch in the Hand Held control. When the dip switches are not matching, the L.E.D.s will act as follows: L.E.D. #1 will illuminate on the receiver. L.E.D. #2, #3, and #4 will not illuminate. L.E.D. #5 will be flashing on and off. Reset the dip switches on both the receiver P.C.B. and the Hand Held control to match the label on the back of the Hand Held control. Visually checking them both and press any switch on the Hand Held control. The L.E.D.s should illuminate as listed above in step #4.**
- 6) Check that the Hand Held is signaling the relays to turn on when any switch is pressed. To do this locate the L.E.D.s for each of the relay functions located at the circuit breaker. Press any of the switches in the Hand Held and the corresponding L.E.D. should illuminate. If the L.E.D. does not illuminate, contact the factory for further information. If the L.E.D. does illuminate, proceed to the next step.**
- 7) Verify the relays are operating when the switches on the Hand Held are pressed. To do this locate the L.E.D.s for the relay output next to the relays. Press any of the switches on the Hand Held and the corresponding L.E.D. should illuminate. If the L.E.D. does not illuminate, contact the factory for further information. If the L.E.D. does illuminate, check the wiring from the P.D.C. to the solenoid valves because the problem is not with the Hand Held control system.**

One or more of the functions do not work:

- 1) Verify that the non-working functions are signaling the relays to turn on when the switch in question is pressed. To do this locate the L.E.D. for the function in question located at the circuit breaker for that function. This L.E.D. is for switch input from hand held or radio remote. Press the switch key in question and this L.E.D. should illuminate. If this L.E.D. does not illuminate, check that the Hand Held control is properly communicating with the receiver. Proper communication is listed in step #4 in the above trouble shooting. If the Hand Held control is communication properly with the receiver, proceed to the next step. If the Hand Held control is not communicating with the receiver, consult the factory for further information.**
- 2) Verify the relays are operating when the switch in question is pressed. To do this locate the L.E.D. for the relay output next to the relays. Press the switch in question and this L.E.D. should illuminate. If this L.E.D. does not illuminate the relay is faulty and needs to be replaced. If this L.E.D. does illuminate but the function does not work, check the wiring from the relay output to the solenoid for proper operation. If the problem is not corrected, contact the factory for further information.**

Unit works, then stops functioning during any operation:

- 1) Watch the 12 volts positive and ground L.E.D.s on the printed circuit boards while operating the hand held. When the unit stops operating, note the illumination of these L.E.D.s. If the L.E.D.s are not illuminated proceed to step #2. If the L.E.D.s are illuminated, proceed to step #3.**
- 2) Verify that the ground and 12 volts positive wiring connections are good and solid. This problem can normally be traced to a loose or intermittent connection some where in the system.**
- 3) Check the batteries in the wireless remote. It is possible that these batteries are low enough to cause intermittent operation. If these batteries are fully charged, proceed to the next step.**
- 4) Verify the input L.E.D.s located at the circuit breakers remain illuminated when the units stops operating. If these L.E.D.s continue to illuminate, proceed to the next step. If these L.E.D.s do not continue to illuminate, consult the factory for further information.**
- 5) Verify that the output L.E.D.s are operating properly beside the relay outputs. If these L.E.D.s stay illuminated when the functions stops operating, proceed to step #6. If these L.E.D.s do not continue to illuminate consult the factory for further information.**
- 6) Check the output connections for the solenoid wiring. These connections should be tight and crimped properly. If these connections are correct, your problems are Not with the Hand Held control system. Check the solenoid system for proper operation.**

**IF ANY PROBLEMS REMAIN, CONTACT THE FACTORY FOR
HELP TROUBLESHOOTING.**

BATTERY CHARGER USAGE:

Each Radio Remote unit includes a plug-in battery charger. In order to use the battery charger, you must remove the black rubber cap from the charger port located next to the antenna. (NOTE: DO NOT DISCARD THIS PLUG. IT MUST BE INSTALLED BACK INTO THE CHARGER PORT WHEN THE CHARGER IS NOT BEING USED.) Plug the charger into the charger port and the vehicles power outlet.

It is a good idea to plug in the battery charger after each use of the Radio Remote unit. This will keep the batteries topped.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference that may cause undesired operation.

AGENCY NOTICE

Changes of modifications not expressly approved by the manufacture could void the User's authority to operate the equipment.

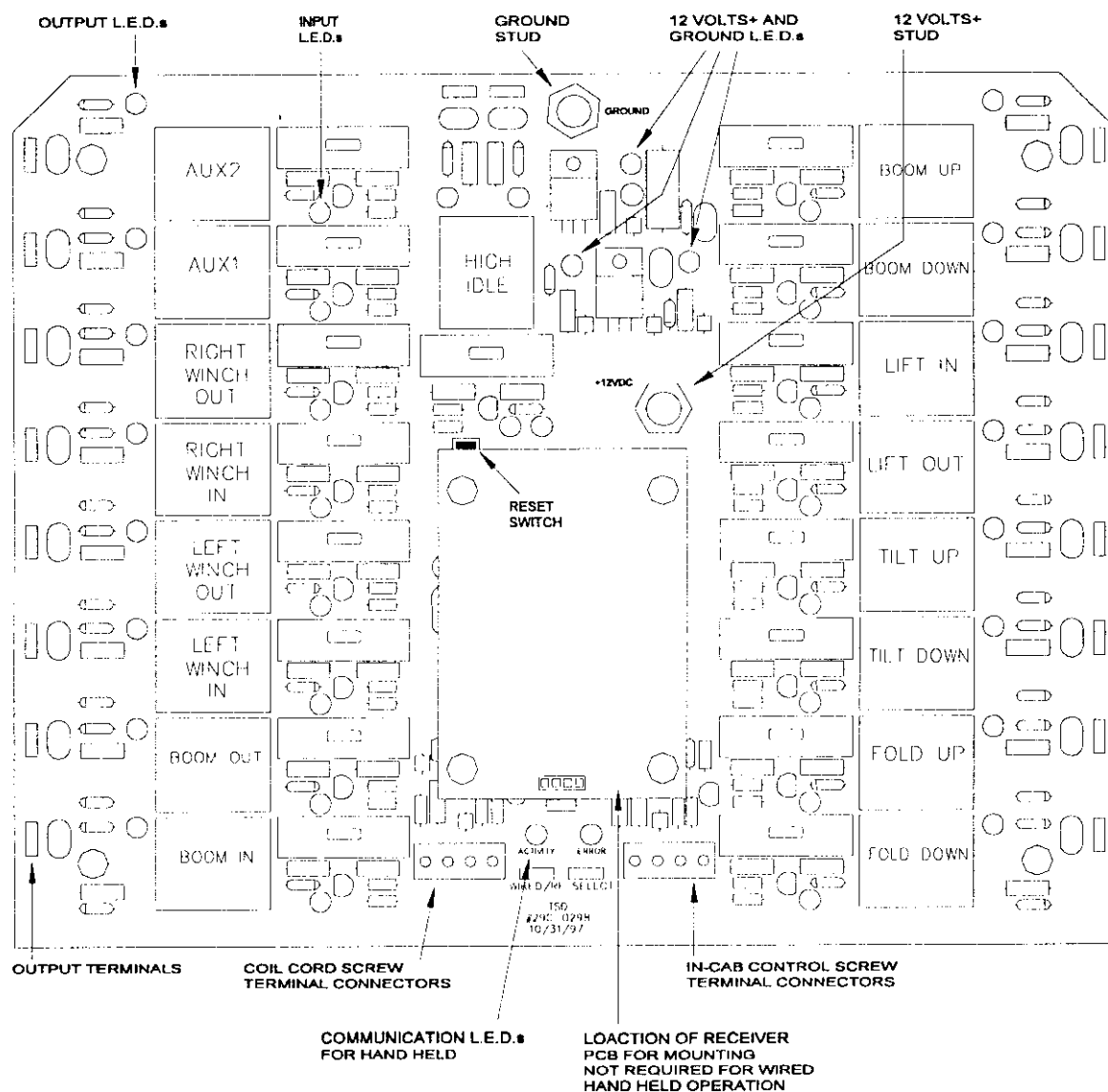


Figure #1

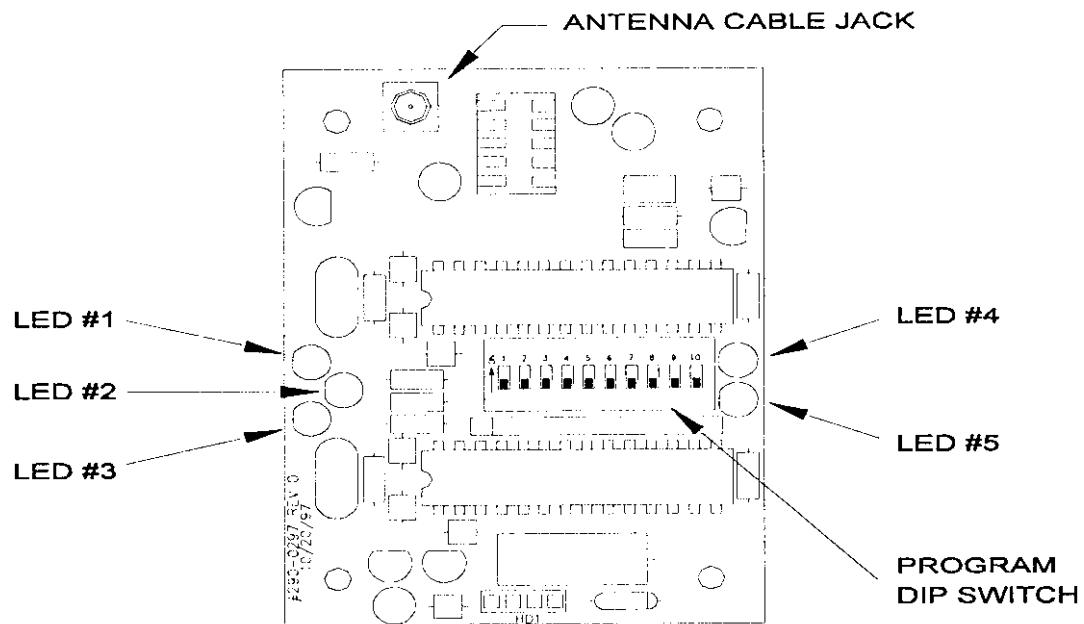


Figure #2