MONOXIVENT®

Source Capture Systems

Operation and Maintenance Manual

Auto Start Installation Instructions

MONOXIVENT - SOURCE CAPTURE SYSTEMS

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The Monoxivent Gen 1 Radio Start System, designed for use with gasoline or diesel powered emergency vehicles in conjunction with vehicle exhaust systems, is an ideal and reliable approach to exhaust extraction. This system not only activates the exhaust fan prior to starting the vehicle automatically, it also activates the exhaust fan prior to the vehicle entering quarters automatically.

A radio transmitter, which is FCC approved for this type of application, is mounted in the emergency vehicle and is wired to the ignition system of the engine. When the vehicle engine is supplied with battery power the Auto Start Transmitter will pulsate once. The initial pulse will activate the fan. This all occurs prior to the operator actually starting the vehicle engine. As long as the engine is running, the Auto Start Transmitter will continue to pulsate once every eleven (11) seconds; thus keeping the fan running without the need for flow switches, heat sensors or mechanical pressure switches; all of which have to be installed within the hostile environment of the exhaust system. When the vehicle exits quarters and travels out of reception range, the fan runs for whatever time the Control Board timer is set to. When the vehicle returns to quarters and is outside the building waiting for the garage door to open, the next radio pulse comes along automatically and activates the fan. This will help protect firehouse personnel from breathing hazardous fumes while placing the exhaust hose on the tailpipe. The vehicle then enters quarters, turns off and the Control Board timer then shuts off the fan after its set timed cycle.

To guarantee the proper function of the Auto Start system while incurring minimal service, it is important to read and understand the information in this instruction manual. The manual contains important warning directions, which have to be read and followed.

These instructions have been broken down into three (3) separate sections.

1) Determining the number and placement of receivers.
2) Installing the Radio Receiver(s).
3) Installing the Radio Transmitter(s).

For the most part, all aspects of the installation are simple and straightforward. Since this product must comply with Part 15 of the F.C.C.'s rules and regulations, there are some conditions which cannot be controlled. Therefore, some thought and consideration must be exercised, especially when installing receivers and transmitters. Factors such as Fire Department Policy (i.e., Trucks Back-In vs. Drive-Through) number of vehicles; size of the house and construction of house must be weighed in determining the number and placement of Radio Receivers.

DETERMINING THE NUMBER AND PLACEMENT OF RADIO RECEIVERS

Typically, one (1) Radio Receiver is required for up to four (4) vehicles parked side-by-side in a **Back-In Bay** situation (approximately 30' radius). In this simple example the Radio Receiver is placed outside the building, centered between the four (4) vehicles. **{SEE DIAGRAM #1}** Ignoring building composition, hang the receiver between 12' – 15' A.F.F. ***NOTE:*** Building composition does affect radio wave reception. Wood, plastic, glass and light masonry materials are relatively impervious to radio waves, whereas metal and heavy masonry impede radio transmission. Therefore, in our simple example where the building front is all metal with metal doors, the system may require the installation of a second Radio Receiver mounted inside the firehouse in addition to the first receiver mounted outside. **{SEE DIAGRAM # 2}**

Moving on to a Drive-Through application, the same rule applies as before with the number of vehicles per receiver. However, the depth of the bay also determines the number of receivers and their placement. In this example, four (4) vehicles are **Drive-Through** Vehicles and the entrance doors, exit doors, and building are made of wood and light masonry. One (1) receiver is placed outside on the entrance side of the building and a second receiver is placed inside of the building on the exit side. This arrangement will also provide adequate coverage in the event that the building composition is of metal or heavy masonry. **{SEE DIAGRAM # 3}**

Next is an example of a firehouse that, although it has **Drive-Through** capability, the fire trucks are all **Back-In Bay** vehicles that leave and enter opposite sides of the building. Again, the four (4) vehicle (30' radius) rule applies, and depending on the building composition, will require either two (2) outside receivers or two (2) outside and one (1) inside receiver. In the case that the vehicles are parked in the above outlined manner, and the building composition is of wood or light masonry, two (2) outside receivers are placed on opposite sides of the building 12' – 15' A.F.F. **{SEE DIAGRAM # 4}** When the building composition is of all metal with metal doors, or there is heavy masonry with metal doors, a third indoors receiver might be necessary for proper system function. **{SEE DIAGRAM # 5}**

SEE FOLLOWING PAGES 5 TO 9
FOR DIAGRAMS #1- #5

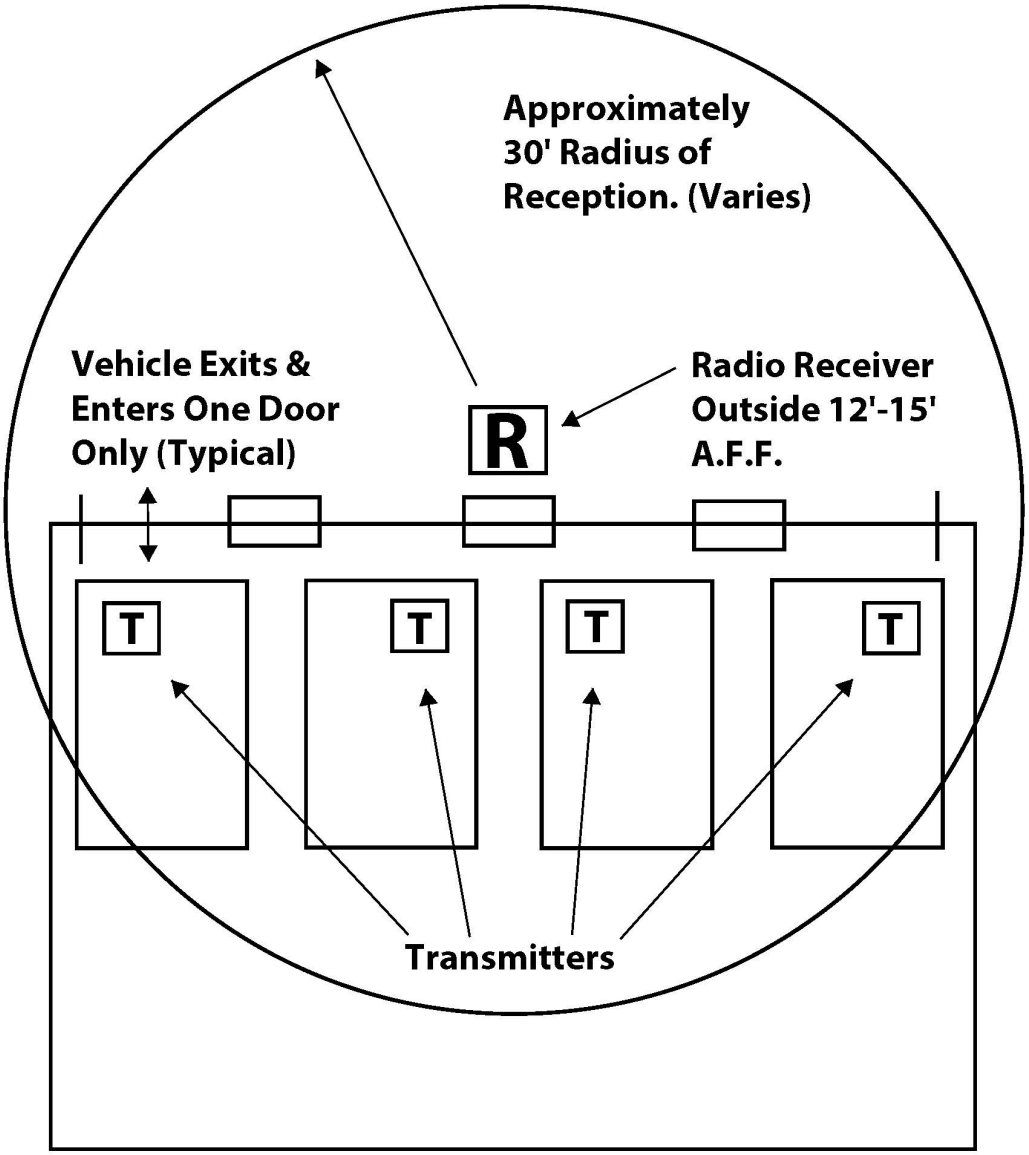

Diagram #1

Four (4) Vehicles / Back In Bays with one (1) receiver mounted outside. Wood or light masonry building.

AutoStart System - Reciever Placement Location

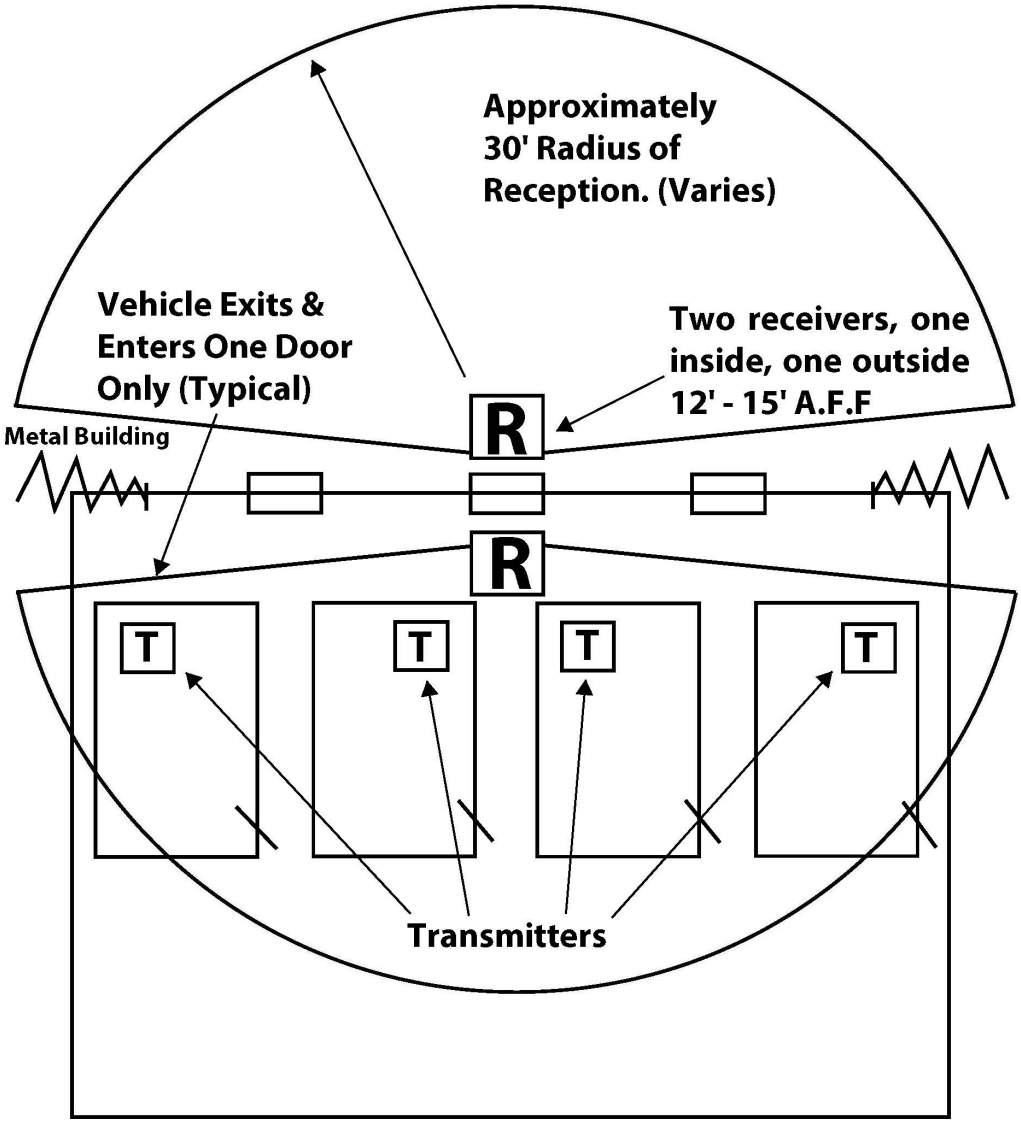

Diagram #2

Four (4) Vehicles / Back-In Bays with two (2) receivers, one (1) inside and one (1) outside. Metal building, front with metal doors.

AutoStart System - Reciever Placement Location

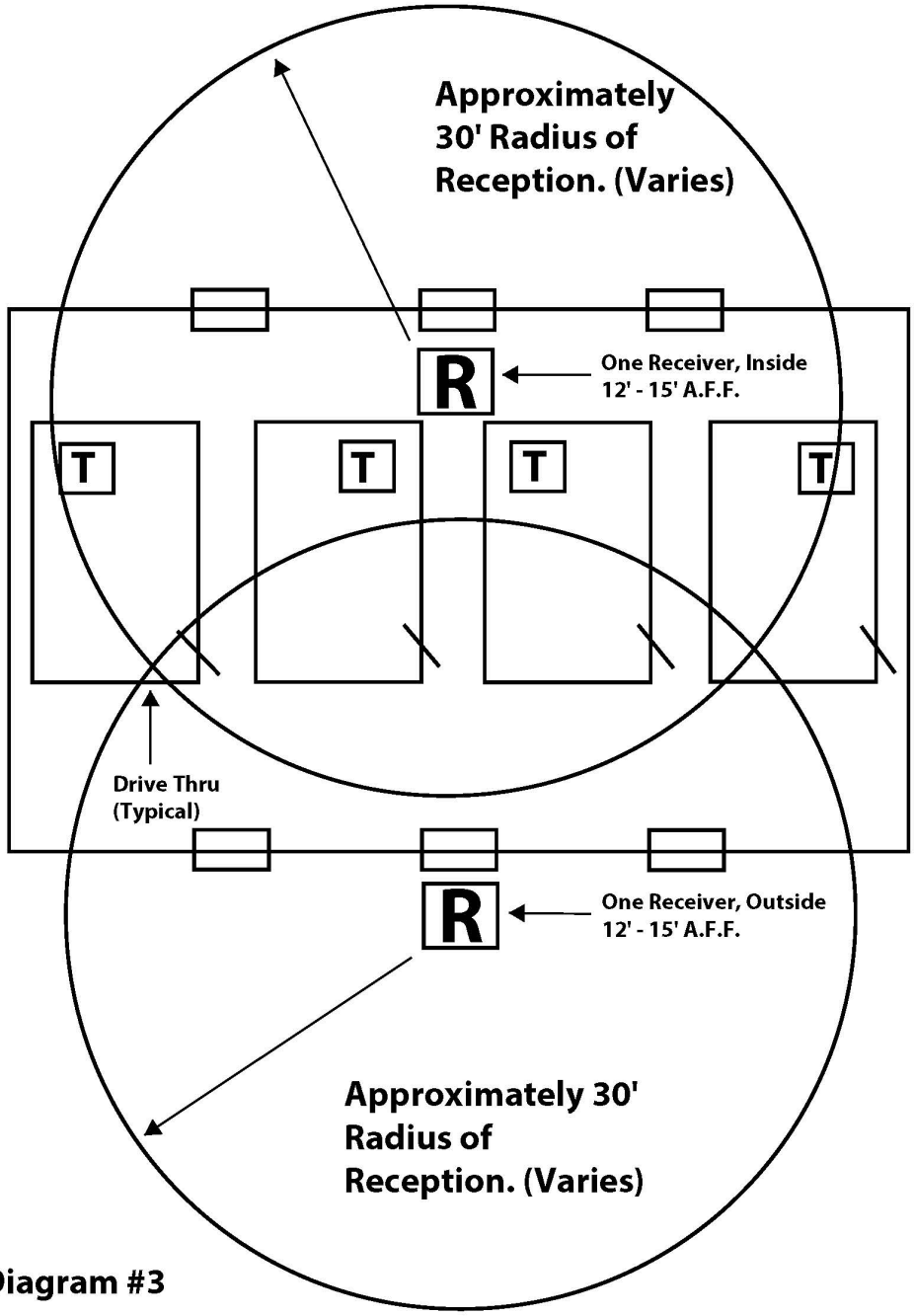

Diagram #3

Four (4) vehicles / Drive Through, with one (1) inside (exiting) and one (1) outside (entering) regardless of building composition.

** T = Transmitters

AutoStart System - Reciever Placement Location

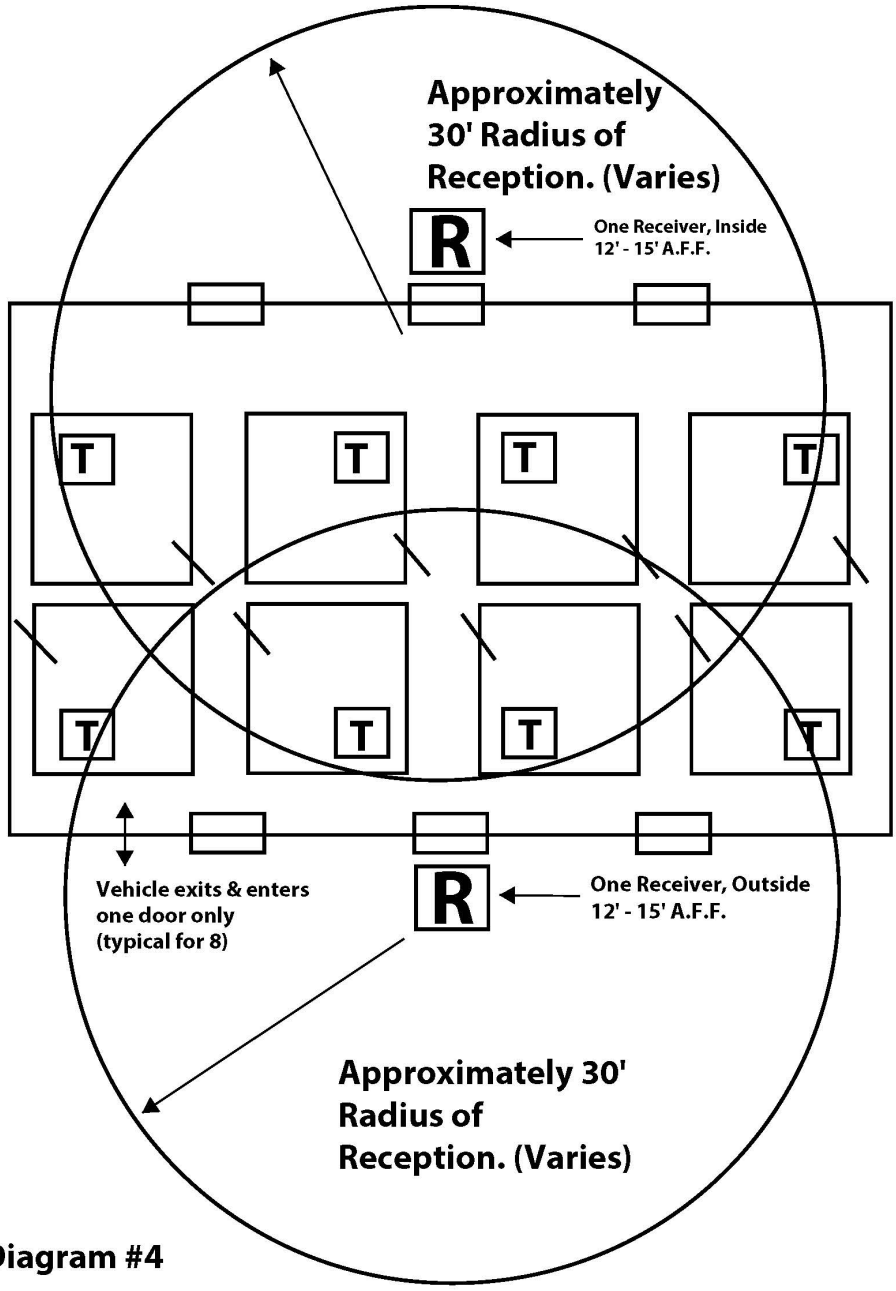

Diagram #4

Eight (8) vehicles / Back-In Bays on opposite sides of building with two (2) receivers, both outside. Wood or light masonry building

** T = Transmitters

AutoStart System - Reciever Placement Location

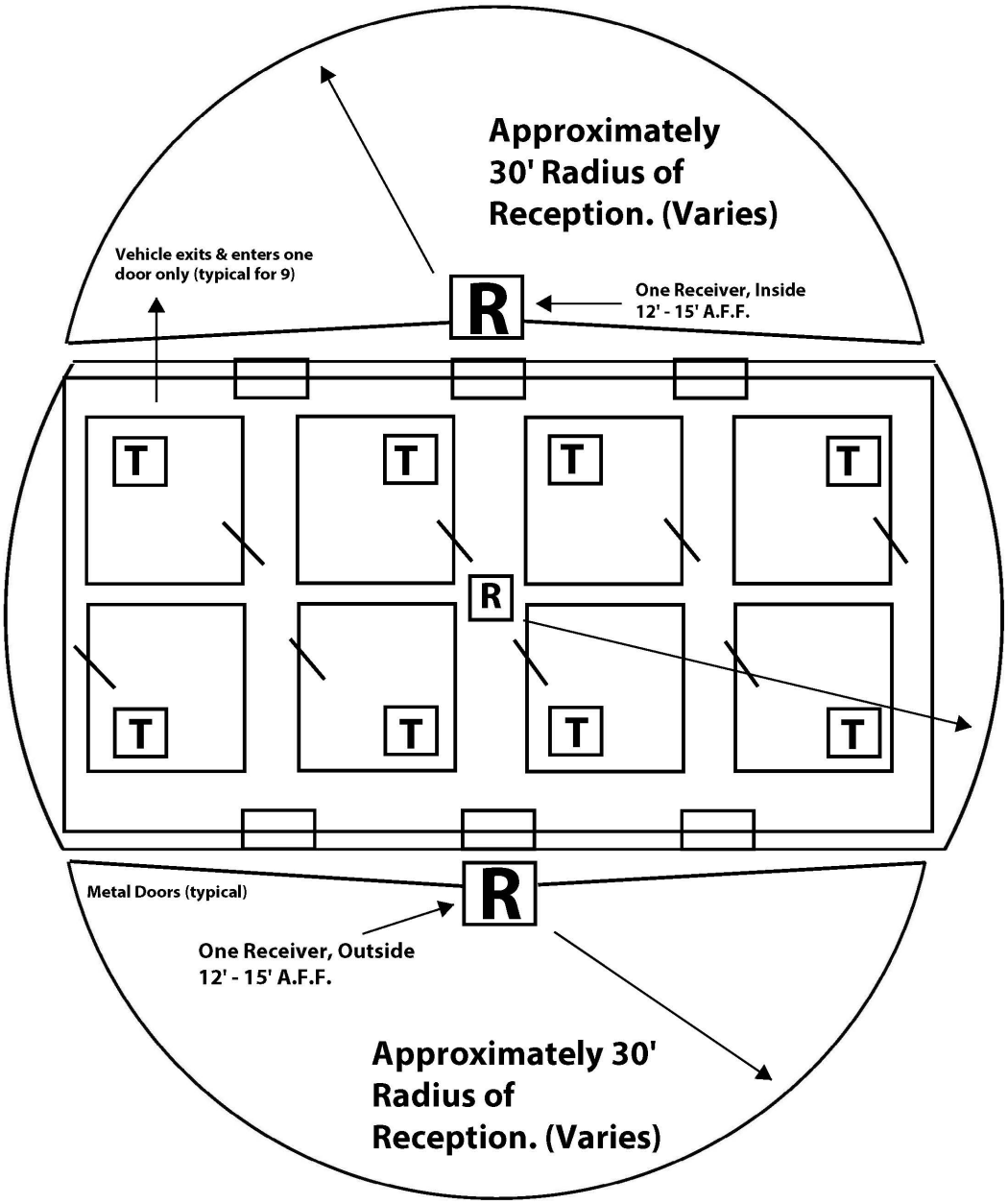

Diagram #5

Eight (8) vehicles / Back-In Bays on opposite sides of building with three (3) receivers; two (2) outside and one (1) inside. Metal building or heavy masonry with metal doors.

** T = Transmitters

AutoStart System - Reciever Placement Location

INSTALLING RADIO RECEIVER(S)

The Monoxivent Gen 1 Receiver is designed as a universal receiver that can be used either as a direct replacement part in existing or new radio controlled Vehicle Exhaust Systems or as a retro-fit upgrade item for timer controlled non-radio Vehicle Exhaust Systems. Therefore, depending on the type of installation, there will be two options on how the receiver interacts with the existing or new control board.

Option #1 - For use in an Existing or New Radio Control System

Mount the Radio Receiver on the wall or ceiling in the location(s) outlined in the section above. Connect Radio Receiver to the existing or new Control Box (supplied by others) with four (4) 18 AWG conductors as per local electric codes for low-voltage wiring. The Radio Receiver requires a 24 VAC input from the Control Board and in turn, it sends out a DC voltage back to the Control Board when it receives a proper signal from the transmitter.

1. Connect 24 VAC from the Control Board to Terminals B & C (POWER) in the receiver **{SEE DIAGRAM # 6}**.
2. Connect Terminals D & E in the receiver to the component in the Control Board set to accept 33 VDC; i.e. DC Relay, voltage Buffer, etc.
3. Terminals F & G will not be used with this option.

Improper connection will cause damage to Radio Receiver and/or Control Panel and will **void all warranties on the Receiver.**

On installations that use multiple Radio Receivers, connect from Radio Receiver to Radio Receiver with four (4) 18 AWG conductors as per local electric code for low-voltage wiring. Connect terminals in receiver box (marked **B, C, D,** or **E**) to terminals in next receiver box (marked **B, C, D,** or **E**). Connect **"B"** to **"B"**, **"C"** to **"C"**, and so on. Improper connection will cause damage to Radio Receiver(s) and/or Control Panel and will **void all warranties on the Receiver.**

Set the dip switch code on Radio Receiver(s) to match those set on the Transmitter(s). The Receiver will not operate without matching codes. Use a small screwdriver or awl to move numbered switches on receiver either on or off. Make sure switches are fully thrown either on or off.

Option #2 - For use as a Retrofit to Existing Non-Radio Control System

Mount the Radio Receiver on the wall or ceiling in the location(s) outlined in the section above. Connect the Radio Receiver to the existing Control Board with four (4) 18 AWG conductors as per local electric codes for low-voltage wiring. The Radio Receiver requires a 24 VAC input from the Control Board and in turn, it sends out a DC voltage back to the Control Board when it receives a proper signal from the transmitter.

1. Connect 24 VAC from the Control Board to Terminals B & C (POWER) in the receiver {**SEE DIAGRAM # 6}.**
2. Connect Terminals F & G in the receiver to the START contacts of the timer in the Control Board. Typically, this is where pressure switches or manual start contacts are connected to
3. Terminals D & E will not be used with this option.

Improper connection will cause damage to Radio Receiver and/or Control Panel and will **void all warranties on the Receiver.**

On installations that use multiple Radio Receivers, connect from Radio Receiver to Radio Receiver with four (4) 18 AWG conductors as per local electric code for low-voltage wiring. Connect terminals in receiver box (marked **B, C, F,** & **G**) to terminals in next receiver box (marked **B, C, F,** & **G**). Connect **"B"** to **"B", "C"** to **"C"**, and so on. Improper connection will cause damage to Radio Receiver(s) and/or Control Panel and will **void all warranties on the Receiver.**

Set the dip switch code on Radio Receiver(s) to match those set on the Transmitter(s). The Receiver will not operate without matching codes. Use a small screwdriver or awl to move numbered switches on receiver either on or off. Make sure that switches are fully thrown either on or off.

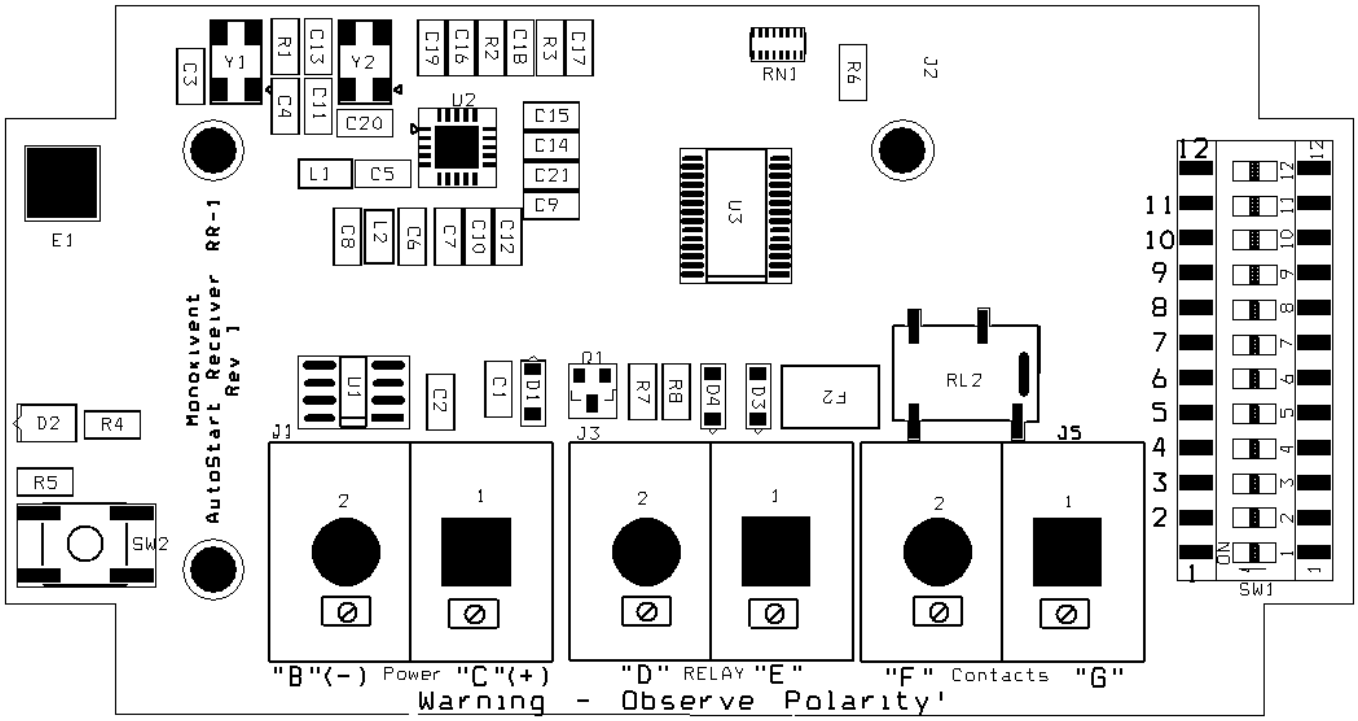

Diagram #6 Radio Receiver Connections

INSTALLING THE RADIO TRANSMITTER

Generally speaking, the Transmitter should be placed as high as possible in the vehicle. **DO NOT** mount Radio Transmitter under the dashboard, as this will seriously cut down on signal strength. The Transmitter must be installed in a fixed horizontal position on the vehicles dash board.

On negative ground vehicles, connect the ***black wire* to a solid ground**. Connect the ***red wire* to a source of ignition voltage**. This voltage should be present only when the ignition is "on". This allows the operator to supply the vehicle with power in order to check lights, radios, equipment, etc., without actually starting the vehicle, and not starting the exhaust fan. When the ignition switch is then turned on, with power supplied by the battery switch, the transmitter will then pulsate once – starting the fan. **DO NOT connect red wire to voltage on starter** as this source is commonly bypassed when vehicle is in gear. **DO NOT connect red wire to gauges on dashboard**, as these voltage sources commonly do not supply enough power to sufficiently energize the transmitter. On older positive ground vehicles, simply reverse black and red wires.

Make sure that nothing is placed on top of the Transmitter, as this will also affect signal strength. Make sure the twelve (12)-digit code inside the Transmitter matches the twelve (12)-digit code set on the Radio Receiver(s).

FCC Notices

Model: TR-GEN 1 FCC ID: 2AHHNTR-GEN1

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 received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

- This device may only be used with the approved antenna that is shipped with the unit and installed per the installation instructions. The use of any other antennas will invalidate the units' FCC Part 15 certifications.
- To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication. Operating the device with the supplied antenna will ensure that this requirement is met.

This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. A separation distance of 20 cm should be observed to maintain compliance with the FCC's RF exposure guidelines set out in OET Bulletin 65.