

RSS-2000 Electric Wedge

Maximum Security Vehicle Barrier



Summary

RSSI Barriers, LLC (hereafter "RSSI" or "RSSI Barriers") manufactures anti-ram vehicle barriers that reliably operate in all climates with minimal maintenance. This specification defines the Model RSS-2000 wedge barrier series manufactured by RSSI Barriers, which includes the RSS-2000 (4 post), RSS-2000V (5 post barrier) and RSS-2000VI (6 post barrier) electric active vehicle barrier (AVB).

Crash tests have been performed and data compiled by approved independent agencies certifying that the barrier meets performance evaluations per DOS specification K12 and ASTM specification M50. The barrier is listed on the DOS and ASTM approved anti-ram vehicle barrier list. The design and structural materials of the vehicle barrier furnished will be the same as those used in the crash tested barrier.

The barrier's vault assembly is hot dipped galvanized and requires foundation depth of 24". The barrier unit that rotates to an above ground position is constructed of reinforced tubular steel connected by a crash bar and supported by greaseless split bearings. A hot dipped galvanized anchor chain connects the post to the vault base structure. Removable nonskid roadway plates, secured by tamperproof flush bolts, provide easy access to the maintenance and service points of the barrier without the use of heavy equipment.



In the "UP" position, the barrier presents a visible obstacle to approaching vehicles capable of stopping and destroying heavily loaded trucks moving at high speeds with negative penetration. In other words, the cargo bed was stopped before ever reaching the crash bar. The height of the vehicle-arresting element is 36" measured from the roadway surface to the top of the crash bar. Red strobe lights on the outer posts flash to provide caution when the barriers are deployed, and reflective safety tape is placed along the crash bar. Upon impact, forces are transferred through the posts into the foundation.

In the "DOWN" position, the barrier is completely flush with the roadway and will not damage tires, snowplows, sweeping machines, etc.

A servo electromechanical actuator operates the barrier. The barrier is capable of 200 complete UP / DOWN cycles per hour. The barrier motion is reversible and at normal operating speed the barrier raises in 3 seconds. With the emergency fast operation circuit installed, the barrier raises in 1.5 seconds.

In the event of a power failure, the barrier is designed to remain in the last commanded position. The barrier can be operated by a battery back-up system or manually using standard hand tools or a drill fitted with the proper drive.

All major components, including the actuator, the control and logic modules, and the cabinet, are built to withstand heavy industrial traffic control requirements. These components, together with any specified options, are housed in a weather resistant cabinet designed to withstand the anticipated environmental conditions of the installation site.

The control and logic modules are field programmable by a professional installer to meet the widest range of operating requirements, including interface with remote control stations and buried detectors. A range of optional inputs can be used to command the barrier, such as: vehicle loop detectors, access control systems, remote hard wired control, remote radio, card reader, key switch, local guard operator console, or a combination thereof.

The wedge barrier and accessories provide for easy maintenance, such that local maintenance technicians can perform routine and annual maintenance tasks without the use and assistance of heavy equipment.

RSSI Barriers provides a three (3) year electrical warranty and a five (5) year mechanical warranty from the date the barrier leaves our manufacturing facility. Parts only. Freight not included. Extended warranty options may be available. Please inquire.

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Barrier and Vault

1. **Materials of Construction:** The barrier vault is constructed of steel and hot dipped galvanized. Properly installed, the vault is encased in a rebar reinforced concrete foundation a minimum of 24" below grade. The active barrier component that raises and lowers is constructed of reinforced steel tubular posts connected by a crash bar and reinforced by galvanized chain.
2. **Foundation Depth:** 24" below grade.
3. **Barrier Height:** 36" measured from the top of the vault to the top of the barrier crash bar in its fully UP position.
4. **Safety & Visibility:** Red LED safety lights shall be installed on the outer posts to provide caution when barrier is deployed. Reflective tape shall be placed along the crash bar. A safety horn, if installed, will sound when the barrier is being raised or lowered.
5. **Serviceability Plates:** Removable top plates provide access to the all maintenance and service points with standard hand tools. Plates are secured with tamper-resistant flush fasteners.
6. **Gravity Drain:** A gravity drain access hole is positioned in the left and right sides of the front of each barrier vault. This allows the installer to connect a 4" PVC drain outlet. Either or both drains can be connected, as dictated by the crown of the roadway.
7. **Sump Pump:** An automatic, self-priming pump is mounted in the barrier vault to remove water from the barrier vault. The pump is capable of removing 1800 gph and operates on 120 volt, single phase, 60 Hz power.
8. **Finish:** The roadway plates have a non-skid diamond plate steel surface painted grey with cold galvanized paint. The barrier post assembly is powder coated with yellow paint. Custom colors are available, but could affect lead time.



Electromechanical Actuator

1. **Powered Operation:** The barrier is operated by a Servo Electromechanical Actuator capable of rapid reverse at any point in its cycle and protected by thermal overload by a suitable interrupt device.
2. **Voltage:** The control panel operates from 120 / 208 - 240 volt 60 Hz single phase power requiring conductors: L1, L2, Neutral and Ground.
3. **Back-up & Manual Operation:** In the event of a power failure, the barrier can be operated by an optional battery back-up system or manually using standard hand tools or a drill fitted with the proper drive.

Power Unit Enclosure

1. **Control Panel:** A control panel and control circuits (also referred to as "EPU") shall be provided to interface between all operator control stations and the power unit. This control panel shall contain all control circuits, relays, timers, and other devices necessary for barrier operation. All device interconnect lines shall be run to terminal strips.
2. **Voltage:** The control panel operates from 120 / 208 - 240 volt 60 Hz single phase power requiring conductors: L1, L2, Neutral and Ground.
3. **Enclosure:** A NEMA 3R type enclosure as specified in NEMA 250 shall be provided to enclose the control panel. The enclosure shall be designed for easy removal of the power unit components and other accessories without complete removal of the enclosure. An access door with hinges and an inside and outside operable lockable exterior door latch shall be provided. Equipment within the enclosure shall be placed and configured so that all periodic maintenance can be performed through the access door without removal of the equipment. The enclosure is equipped with weatherproof louver vents appropriately sized and located to dissipate internal heat generation retaining the enclosure's NEMA 3R rating. NEMA 4 or NEMA 4X rated enclosures can be provided as an option.

Operator Console

1. **Operator Console** to be provided by others unless otherwise specified.
2. **Dry Contacts:** The barrier will ship from the factory with dry contacts. RSSI will provide UP / DOWN / Position / EFO / EFO Reset.

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Optional Equipment

1. Emergency Fast Operation (EFO): An EFO circuit can be provided to achieve operating speeds of less than 1.5 seconds UP.
2. Traffic Arm Gate: An electrically operated traffic arm signal gate can be supplied to alert vehicle drivers of the barrier position. The gate operation shall interface with the barrier at the control panel. The control panel shall control the gate based on the customer approved Sequence of Operation. The traffic arm shall correspond to the lane width and be striped with reflective tape. Red LED safety lights are optional.
3. Stop & Go Traffic Control Lights: Red/Flashing Yellow (or Green) 8" stand alone traffic control lights can be supplied to visually alert vehicle drivers of the barrier position. The flashing yellow (or green) light shall indicate that the barrier is in the fully DOWN position. All other positions shall cause the red light to illuminate. The traffic control light operating voltage is 120 VAC. A 24 VDC model is available as an option.
4. Safety Horn: A 100dB (adjustable) safety horn can be supplied to sound when the barrier is being raised or lowered.
5. Battery Back-up: When commercial power is not available the battery back-up system automatically transfers power from the batteries to operate the barrier. A single battery back-up system is capable of powering two barriers, provided the barriers are located within 50 feet of each other. A fully charged and properly maintained battery back-up system should provide 200 continuous barrier cycles. * Additional batteries to extend standby are available.
6. Barrier Heating System: An electric heating system inside the barrier vault allows the barrier to operate in ambient temperatures as low as -30 F. Barrier design allows the barrier to rise and lower through snow build up and melt snow and ice allowing the gravity drain and/or sump pump to remove the water. A heater unit and system thermostat may also be located in the EPU. NOTE: Barrier vault heat elements may not prevent ice from forming inside gravity drainpipes and a heat trace element in gravity drainpipe is NOT included.
7. Barrier Cooling System: An air conditioning unit and system thermostat located in the EPU allows the barrier to operate in temperatures up to 130 F.
8. Corrosive Resistant Enclosures: NEMA 4X stainless steel, aluminum, or fiberglass enclosures available for harsh environments. Note: These are special order items with potentially longer lead times.
9. Operator's Control Panel: An operator's control panel may be supplied to control barrier operation. This panel shall have a key lockable main switch with main power "ON" and panel "ON" lights. Buttons to raise and lower each barrier shall be provided. Barrier "UP" and "DOWN" indicator lights shall be included for each barrier. An emergency fast operation circuit (EFO) shall be operated from a push button larger than the normal controls and have a flip safety cover installed over the push button or toggle switch. The EFO shall be furnished with an EFO-active light and reset function. Alternatively, a touch screen panel can be selected.

Performance & Stopping Activity

1. Barrier is designed to provide positive control of normal traffic in both directions for 200,000 continuous cycles without failure and be capable of 60 complete up/down cycles per hour.
2. Barrier is designed to stop a vehicle weighing 15,000 lbs traveling at 50 mph in the active, or priority, direction per DOS certification K12.
3. Barrier is designed to immobilize and destroy the front suspension system, steering linkage, engine crank case and portions of the drive train of non-armored and nontracked vehicles weighing 15,000 lbs traveling at 50 mph in the active, or priority, direction.
4. Barrier vault and foundation should be fully functioning after successfully stopping vehicle.
5. Brake System: When power fails, the barrier is designed to remain in the last commanded position.
6. Safety Loop Detection: Vehicle safety loops are supplied to prevent the barrier from being accidentally raised under a vehicle. The detector has automatic tuning for stable and accurate long-term reliability.
7. Maintenance: The barrier and accessories shall provide for easy maintenance, such that any local maintenance technician can perform routine and annual maintenance tasks without the use and assistance of heavy equipment.

Speed of Operation

1. Normal Operation: 3 seconds UP and 3 seconds DOWN.
2. Emergency Fast Operation (EFO): Less than 1.5 seconds UP and less than 3 seconds DOWN.
3. Custom Operation: Speeds other than the manufacturer's normal and EFO can be programmed by the manufacturer. Please specify if other.

Sequence of Operation

1. Provided by client.

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Environmental Data

1. Normal Temperature Range: Properly configured, the barrier's ambient temperature range for operation is -20 degrees F to 130 degrees F.
2. Extreme Cold: A heating system is provided as an option allowing the barrier to operate in ambient temperatures below -20 degrees F.
3. Extreme Heat: An air conditioning system is provided as an option allowing the barrier to operate in temperatures above 130 degrees F.
4. Rainfall: Barriers have a gravity drain to remove rainwater. Gravity drain access holes are located in the left and right sides of the front of each barrier vault, allowing the installer to connect a 4" gravity drain pipe. One or both gravity drains can be connected. In addition to the gravity drain, barriers are equipped with a sump pump to remove water. All components in the barrier vault are capable of submersion.
5. Snow and Ice Conditions: With the optional heating system installed, the barrier design allows the barrier to operate, raising or lowering, through snow and ice buildup.

Quality Assurance

1. Previous Successful Use: RSSI Barriers has more than 500 barrier units in the field of operation of equivalent size and resistance ratings, and more than 2 years documented field experience of all major components and designs.
2. Crash Test: The barrier has passed full-scale crash tests performed by approved independent agencies per DOS specification K12 and ASTM specification M50. The RSS-2000 successfully passed a full-scale crash test performed, and data compiled, by approved independent agency (Transportation Institute, Penn State University, May 2004) certifying that the barrier meets performance evaluations per DOS specification K12. The barrier is listed on the DOS approved anti-ram vehicle barrier list. The RSS- 2000IV successfully passed a full-scale crash test performed, and data compiled, by approved independent agency (KARCO, March 2010) certifying that the barrier meets performance evaluations per ASTM specification M50. The barrier is listed on the ASTM approved anti-ram vehicle barrier list. The design and structural materials of the vehicle barrier furnished will be the same as those used in the crash tested barriers.
3. Manufacturer's Testing: A quality control test is performed on each barrier prior to shipping. The test includes raising and lowering the barrier, both electrically and manually, through its complete range of motion. The barrier is continuously cycled for not less than 30 minutes to verify correct functioning of components and operating speeds. The quality control test verifies:
 1. Equipment has not been damaged in transportation.
 2. Equipment has been properly installed.
 3. Each part and all parts function together in the manner intended.
 4. Equipment is not overheating.
 5. Equipment is not overloading any parts.
 6. Equipment does not show undue vibration.
 7. Equipment has no electrical or mechanical defects.
 8. Compliance with performance and design parameters.
 9. Equipment operability under all control schemes.
4. Routine Maintenance: The barrier and its accessories provide for easy maintenance, such that local maintenance technicians can perform routine and annual maintenance tasks without the use and assistance of heavy equipment.
5. Warranty: The manufacturer's warranty covers all electrical equipment for a period of 3 years following substantial completion and all mechanical equipment for a period of 5 years. Parts only; freight is NOT included.
6. Identification: A nameplate with manufacturer's name, model number, serial number and year built shall be located within the maintenance access area of each barrier, and on each EPU control panel.
7. Workmanship: The barrier and subsystems shall have a neat and professional appearance.
8. Verification of Dimensions: Principal dimensions shall be checked against drawings and ordering information.
9. Finish and Final Product: Finish coatings shall be checked against drawings, ordering information and specification requirements. It shall be in workmanlike appearance.
10. Shipping: The barrier system and its accessory components ship fully assembled, except where partial disassembly is required by transportation requirements or for protection of components. The barrier and its accessories shall be neatly packed to help prevent damage during shipping. The barrier and any accompanying pallets or skids shall be of sufficient structural integrity to enable the assembly to be lifted and transported by overhead crane or forklift.