# VW-5 VERTICAL WARNING GATE Specifications

***GENERAL***: The warning gate shall be Model VW-5, as manufactured by B&B Roadway, (888) 560-2060.

***APPLICATIONS***: The gate shall be designed for use as a warning, traffic control and access control gate. The gate shall be explicitly designed for traffic control on movable bridges and similar applications.

***HOUSING***: The operating mechanism and main control components shall be contained in a weatherproof housing. The housing shall be constructed of .375" (9.5 mm) carbon steel, hot dip galvanized after fabrication. Exterior surfaces shall be painted aluminum. All fasteners shall be corrosion resistant. Arm shaft openings shall incorporate O-ring seals.

***OPERATING MECHANISM***: The warning arm shall pivot in the vertical plane via a mechanical 4-bar linkage. The linkage shall utilize cranks keyed to the main arm shaft and transmission shaft and an adjustable connecting rod between a pair of self-aligning spherical rod ends. The connecting rod shall be of AISI 4140. The linkage shall be driven by a fully enclosed, double reduction, worm gear speed reducer. Gear ratio used shall produce an operation time of 13 seconds. An auxiliary crank shall be used, paired with the transmission crank, to reduce the load on the transmission and to better balance and stabilize the load on the housing and mounting structure. The auxiliary crank shall be mounted in a permanently lubricated bronze bearing. The velocity of the arm shall follow a sinusoidal pattern to provide smooth operation. The arm shall begin and end its full motion path with zero velocity and accelerate smoothly to maximum velocity at mid-travel.

***TRANSMISSION***: The mechanism linkage shall be driven by a fully enclosed, heavy duty worm gear, double reduction speed reducer. The transmission shall have an occasional momentary peak load rating of not less than 30,000 inch-pounds. The output shaft shall be 2" in diameter. Gear ratio used shall produce an operation time of approximately 13 seconds [*option: contact factory for other speed options*].

***TORQUE LIMITER***: For installations requiring heavy arms and/or high wind loads, a heavy duty torque limiter shall be provided to limit the torque transmitted to the operating mechanism due to excessive wind loads, physical obstruction to the arm or instant reversing of heavy arm assemblies. The torque limiter shall be capable of being set anywhere within a range of 10,000 to 75,000 in-lbs torque. Each torque limiter shall be factory set for the load recommended by the manufacturer, based on installation requirements. Each torque limiter shall be adjusted and tested at the factory, under over-load conditions, for a minimum of 5 minutes to verify the setting. The gate limit switch assembly shall be driven from the output side of the torque limiter so that slippage of the torque limiter will have no effect upon the limit settings.

***MOTOR***: The motor voltage and phase shall be as specified by the customer. The motor horsepower shall be as recommended by the gate manufacturer to suit the installation, typically 1 hp. The motor shall be a C-face design and shall be mounted directly to the transmission. The motor shall be instantly reversing and overload protected.

***LIMIT SWITCH***: The gate limit switch assembly shall be a self-contained unit. The standard assembly shall provide 8 independent SPDT control switches. *[Option: A 10 circuit or a 12 circuit limit switch assembly shall be provided when specified.]* Switches shall be rated for 15 amps, 480 VAC. Switches shall be controlled by individually adjustable cams. The limit switch assembly design shall permit adjustment of all cams with the gate in any position. The limit switch assembly shall have a removable cover to help prevent accidental contact with switch terminals. Shaft, cams, bushings and housing pieces shall be of non-ferrous corrosion resistant materials.

***BRAKING MECHANISM***: The motor shall be equipped with a solenoid-release, automatic brake. The brake shall have a manual release lever to permit manual operation of the gate during emergencies or setup.


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***ARM SHAFT***: The main arm shaft shall be 2.50" (63mm) diameter AISI 4140 high strength alloy steel with a minimum tensile strength of 140,000 psi. The shaft shall be mounted in heavy duty sealed ball bearings with lubrication fittings.

***DOORS:*** Front and rear access doors shall be mounted on full cross straps. Hinges shall be of the slip-off type and shall have stainless steel pins. Door latches, two per door, shall use a vise action to compress a neoprene bulb-type gasket to seal the door openings. *[Option: Alternate door latches may be provided upon request.] [Option: A padlockable strap shall be provided suitable for heavy duty standard padlocks or shackleless padlocks (padlocks provided by others).]*

***ARM MOUNTING TUBES***: A pair of carbon steel rectangular tubes, hot dip galvanized, painted aluminum, shall be rigidly affixed to the ends of the main arm shaft. The tubes shall be offset to place the arm centerline at 44" (1118mm) above the housing base. [*OPTION: Tubes shall be offset to provide a custom arm centerline height*.] The tubes and a steel cross-member shall provide a sturdy mount for the arm, arm base assembly and counterweights.

***COUNTERWEIGHTS***: At the rear end of the side arm tubes, hot dip galvanized counterweights shall be mounted to balance the arm. Counterweights shall be sectional and shall permit approximately 10% adjustment.

***ARM***: The gate arm shall be 4" (102mm) square, 6005-T5 aluminum extruded tubing. [*Option: A double rail aluminum tube design shall be provided when specified*.] Maximum arm length shall be 50' (15m) from the centerline of the housing. Stainless steel truss cables and a roadway bumper rod shall be furnished with longer arms at the discretion of the manufacturer. Front and rear arm surfaces shall be covered with alternating red and white high intensity reflective sheeting. Stripes shall be 16" (406mm) wide, and vertical according to MUTCD. Remaining exposed surfaces shall be painted white.

***ARM BASE***: The arm base shall be designed with a shear pin mechanism to minimize damage to the gate and vehicle in the event of a collision. In the event of an impact, the shear pin shall break, allowing the arm to swing approximately 75 to 80 degrees. At the full open position, a spring-loaded latch shall engage, preventing the arm from swinging back into traffic. Arm shall be easily reset by manually releasing the latch, rotating the arm back into position and replacing the shear pin. [*OPTION: A rigid base (primarily for use with longer or double rail arms) shall be provided when specified*.]

***MOUNTING***: The gate shall be fixed to a suitable foundation, as specified by the project engineer, using four 3/4" (20mm) diameter anchor bolts. The gate housing base shall provide four 1.00" (25mm) holes on a 20 1/4" (514mm) square pattern. (Mounting holes in standard base shall be slotted to allow for a 19 1/2" x 20 1/4" (495mm x 514mm) mounting pattern to accommodate some existing bolt patterns.)

***HANDCRANK***: Both a hand crank and a drill crank shall be provided with each gate to facilitate manual operation.

***SAFETY SWITCHES, TERMINAL BLOCKS AND WIRING***: A manual disconnect switch shall be provided, pre-wired at the factory to break the main motor leads, to protect personnel during service. A handcrank safety switch shall be provided to prevent powered actuation of the gate during manual operation. Safety switches shall be installed and set at the factory to break the control circuit when either access door is opened. Door safety switches shall have a pull-to-override feature for test operation and shall automatically reset when doors are closed. Control components and terminal blocks shall be mounted inside an electrical enclosure, which shall mounted inside the operator housing, with roadway side access, except where customer requirements prevent this arrangement. Pressure-type, modular terminal blocks shall be fully labeled and clearly coded to wiring diagrams. All control wiring shall be clearly coded to wiring diagrams and shall terminate at the terminal block. Connections to screw-type terminals shall have lugs. Conductors shall be type XHHW #14 AWG stranded, minimum.

***ACCESSORIES AND MODIFICATIONS***: All common accessories and modifications shall be available. Custom modifications and accessories shall be available through coordination with manufacturer.

***WARRANTY***: A 1 year warranty shall cover the gate and related equipment against defective material and components. Manufacturer shall furnish replacement parts for a minimum of 10 years. Replacement parts for standard components shall normally be available within 1 working day. Lamps, fuses and other components designed for a life less than 1 year shall be covered for the rated life of the component or the warranty period of the component manufacturer.


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***PARTIAL LIST OF AVAILABLE OPTIONS***:

Aluminum or Stainless Housing
Anchor Bolts (provided by manufacturer)
Mounting Template
Alternate Door Handle Styles
Rigid Arm Base
Custom Offset Side Arm Tubes
Special Swing Angles
Sidewalk Arm
Arm Finishes, Striping Materials and Colors
Fiberglass Arm Section (at end of arm)
Alternate Arm Designs
Arm Lights
Flasher
Gong
Vibrating Bell

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