**ENGINEERING SPECIFICATIONS**

**BL 229 Toll Barrier**

# SECTION 08 34 56 – Security Gates

# SECTION 28 13 00 – Access Control

# SECTION 34 71 13 – Vehicle Barriers

## **PART I – GENERAL**

* 1. **SECTION INCLUDES**
     + - 1. This section covers the furnishing and installation of a toll rising barrier.
  2. **REFERENCES**
     + - 1. The rising barrier shall be compliant with EC standards.
  3. **SYSTEM REQUIREMENTS**
     + - 1. The toll barrier gate must control and restrict vehicle traffic entering toll areas.
         2. Must feature gate barrier arm to block vehicles and control access to toll areas.
         3. Must be mechanically locked at the vertical (up position), and the horizontal (down position).
         4. Must be able to automatically operate.
         5. Must be configurable in one of three (3) states:

Open - arm remains in the open or up position.

Closed - arm remains in the closed or down position.

Automatic - arm is normally in the closed position and controlled by the associated entry/exit hardware.

* + - * 1. Must be able to use the access control system to grant or deny access to the toll area and operate with a variety of user authentication devices such as card reader devices, ticketing systems or barcode reader systems.
        2. Must permit the operator to automatically raise the gate.
        3. The arm must be made of either aluminum or carbon fiber with a weatherproof protected cushion in polyester with PVC coating.
        4. Barrier’s arm must offer a swing-off device to avoid damage to the arm mechanism if an impact occurs.
        5. Design of the unit must provide visual notification option for intuitive process.
  1. **SUBMITTALS**
     + - 1. Submit product data: equipment description, dimensions, electrical wiring diagrams for installation, and manufacturer's technical manuals on each product to be used, including:

Preparation instructions and recommendations.

Storage and handling requirements and recommendations.

Installation methods.

Operation and maintenance manuals.

* + - * 1. Provide shop drawings and indicate component connections and location, anchorage methods and location, and installation details.
  1. **DELIVERY, STORAGE AND HANDLING**
     + - 1. Deliver equipment to job site in manufacturer’s packaging, undamaged and complete with installation instructions.
         2. Store indoors in a controlled environment, protected from construction activities and debris.
  2. **PROJECT/SITE CONDITIONS**
     + - 1. Install the rising barrier on leveled concrete base.
  3. **QUALITY ASSURANCE**
     + - 1. The rising barrier must be manufactured in the European Union.
         2. Manufacturer Qualifications:

Manufacturer shall be a company specialising in designing and manufacturing rising barriers with a proven minimum experience of forty-five (45) years

Manufacturer shall have a Quality Management System compliant with ISO 9001

* + - * 1. Source Limitations: obtain the rising barrier from Automatic Systems.

###### WARRANTY

* + - * 1. Automatic Systems warranties its products against parts defects for a period of two (2) years from the date of invoicing. This warranty excludes normal wear on finishes or damage that occurs due to abuse or misuse. Obtain full warranty terms from Automatic Systems.

## **PART II – PRODUCTS**

* 1. **MANUFACTURERS**
     + - 1. Manufacturers: subject to compliance with requirements, provide products by one of the following:

AUTOMATIC SYSTEMS, 5 Avenue Mercator, 1300 Wavre, BELGIUM

Homepage : [www.automatic-systems.com](http://row.automatic-systems.com/home/index.html)   E-mail : [asmail@automatic-systems.com](mailto:asmail@automatic-systems.com)

* + - * 1. Products:

Toll barrier, Model BL229 Toll

* 1. **CONSTRUCTION**
     + - 1. Operator frame

Frame must be manufactured of folded and welded sheet steel from 2 to 6 mm thick, protected by cataphoresis and two coats of structured paint (standard colour: orange RAL 2000).

* + - * 1. Access panels

The top and side panels must be removable to allow easy access to both the electromechanical drive and electronic control units.

Openings must be key-locked.

* + - * 1. Arm

Left or right mounted arm,

\*\* NOTE TO SPECIFIER \*\* Round aluminum arm is the standard for the rising barriers BL229 Toll. At an additional cost, other materials and features are available [as option listed in brackets].

Delete the following subparagraphs in brackets if no optional material is required, or retain the material that is appropriate for the project.

To be oval and manufactured from aluminum (section 80 x 54 mm with maximum 4m length), lacquered white with red reflective strips with swing-off device included the swing-off detection device.

[*To be round and manufactured from carbon fiber with a weatherproof protected cushion in polyester with PVC coating (made up of a tube called “lining” in aluminum alloy with a diameter of 34.5mm, covered with a tube called “composite” made up of fiberglass, carbon fiber and an epoxy resin with a diameter of 38mm, covered with two veined and glued “half-shells” in expended polystyrene with a diameter of 100mm, covered with a thermorectractable film in polyethylene which is covered with a cushion in polyester with PVC coating with a thickness less than a millimeter in order to have an arm with an external diameter of 100mm with 3m length) with a swing-off device included the swing-off detection device.*]

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* + - * 1. Enclosure

Design of the unit’s enclosure shall ensure an IP 44 degree of protection

* 1. **DIMENSIONS**
     + - 1. Arm length:

The arm length for equipment must be 3m.

* + - * 1. Operator dimensions:

Overall dimensions BL229 Toll operator:

Height: 1052 mm

Footprint: 355 x 400 mm

Rotation axis height

872 mm

* 1. **OPERATION**
     + - 1. Automatic mode (arm Normally Closed & Controlled by a loop or access control device):

Command to barriers. In stand-by position, the passageway must be blocked by the arm.

Upon receipt of a signal from the access control system or the inductive loop, the arm must open, freeing the passageway.

The obstacle immediately closes after passage or after a configurable delay.

* + - * 1. Power Failure

\*\* NOTE TO SPECIFIER \*\* In case of power failure, the barrier can be open automatically as a standard. It is possible to configure it to be unlocked manually.

Delete the following subparagraphs in brackets if no optional material is required, or retain the material that is appropriate for the project.

In case of power failure, the barrier can be unlocked automatically.

[*In case of power failure, the barrier can open/close manually once the mechanical lever is unlocked*.]

After the power has been restored, the unit must return to its previous operating mode.

* + - * 1. Emergency Operation

The unit can be set to remain open upon receiving an emergency signal. The obstacle opens and allows unobstructed exit / entrance.

This operating mode continues as long as the emergency signal is active.

After the emergency signal has been turned off, the unit must return to its previous operating mode.

* 1. **SECURITY**
     + - 1. Must provide operator and arm to securely block the passageway:
         2. Must have mechanical locking integrated. The arm must be mechanically locked in the closed position to prevent any attempted break-in.
         3. The cabinet’s side panels and top cover must be key-locked.

* 1. **SAFETY**
     + - 1. In case of emergency or power failure, the operator must allow opening automatically, or be set for manual opening.
         2. Must provide minimum 3m wide passageway.
         3. Passage can be monitored in both directions by means of a loop detector, infrared beams, or other means of monitoring, to ensure user safety and prevent arm from closing when a vehicle is crossing the passageway:

If a presence is detected in the obstacle safety area during the opening motion, the arm will complete its opening.

If a presence is detected in the safety area during a closing motion, the arm can be set to either immediately stop or re-open depending on the selected mode. The obstacle will operate again after the safety zone has been cleared

* + - * 1. The arm controller motor must have a provision for an entrapment protection device that automatically reverses or stops the movement whenever the arm strikes an object during a closing action.
        2. The barrier gate must be equipped with an inductive analog sensor for precise arm positioning detection.
  1. **VEHICLE GUIDANCE**
     + - 1. Visual notification with clear graphics can be incorporated in each direction to control flow and to warn users.
  2. **DRIVE UNIT**
     + - 1. Three-phase asynchronous geared motor combined with crankshaft-rod linkages ensuring perfect mechanical locking in both extreme positions.
         2. Arm shaft mounted on two life-lubricated ball bearings.
         3. Frequency converter ensuring progressive accelerations and controlled decelerations, for a vibration-free movement and enhanced protection of the mechanism
  3. **CONTROLLER**
     + - 1. Microprocessor-based controller with the following characteristics:

The logic must be equipped with:

LED indicators showing the status of the inputs and outputs,

One (1) analog and fourteen (14) digital inputs,

Three (3) output relays, four (4) digital outputs and one (1) analog output.

Two (2) loop detector connectors when loops are used as safety or to control the barrier opening/closing.

One (1) RJ45 connector for a serial RS232 communication.

The barrier operator may be equipped with an extension module that adds four (4) digital inputs and four (4) digital outputs.

* + - * 1. The controller must have equipment diagnostic capability and the ability to be configured:

The Human Machine Interface:

Digital screen,

Five (5) push buttons

* 1. **POWER SUPPLY**
     + - 1. Power supply:

\*\* NOTE TO SPECIFIER \*\* 230 Volts AC 50/60 Hz is the standard power supply. For an additional cost, 120 Volts AC 60 Hz is available as an option in brackets.

Delete the following subparagraphs in brackets if no optional material is required, or retain the material that is appropriate for the project.

230 Volts AC 50/60 Hz

[*120 Volts AC 60 Hz*]

* + - * 1. Consumption in operation:

At rest : 50W maximum

Peak : 335W maximum

* 1. **PERFORMANCES**
     + - 1. Opening Time & Closing Time

The obstacle opening time: 0.6 to 1.7 seconds depending on arm length

The obstacle closing time: 1 to 2 seconds depending on arm length

* + - * 1. Operating Temperatures: -20 to +50 degrees Celsius
        2. MCBF: 10.000.000 average number of cycles between breakdowns, when respecting manufacturer’s recommended maintenance
  1. **OPTIONAL EQUIPMENT**

\*\* NOTE TO SPECIFIER \*\* Delete the following subparagraphs in brackets if no optional equipment is required, or add as necessary.

*[Hood and door intrusion information]*

*[Push buttons box for opening-closing-stop]*

*[Key switch on housing for automatic-locked open-locked closed modes]*

*[Vehicle detection loop]*

*[Presence detector for detection loop]*

*[Photoelectric cell for opening-closing-safety]*

*[Cell assembly on housing]*

*[Cell support post]*

*[Ultrasonic detector]*

*[Totaling counter]*

*[Extension card for inputs, outputs]*

*[LED traffic lights]*

*[Support post for traffic lights]*

*[Paint of another RAL color (other than standard colors)]*

*[Thermostatic heater for operation down to -35°C]*

*[Raised base]*

## **PART III – EXECUTION**

* 1. **INSPECTION**
     + - 1. Installer must examine the installation location and advise the Contractor of any site conditions inconsistent with proper installation of the product. These conditions include but are not limited to the following:

Rising barrier for parking area operator must be installed on a level concrete pad,

Power supply and control wiring must be installed. Follow manufacturer’s recommendations.

* + - * 1. Proceed with installation only after unsatisfactory conditions have been corrected.
  1. **INSTALLATION**
     + - 1. Install rising barrier in strict accordance with manufacturer’s instructions. Set units level. Anchor securely into place.
  2. **ADJUSTMENT**
     + - 1. Installer must adjust rising barrier for proper performance after installation.
  3. **INSTRUCTION**
     + - 1. A factory trained installer must demonstrate to the owner’s maintenance crew the proper operation and the necessary service requirements of the equipment, including exterior maintenance.
  4. **CLEANING**
     + - 1. Clean barrier operator and area carefully after installation to remove excess caulk, dirt and labels.
  5. **MAINTENANCE**
     + - 1. Maintain the equipment according to the manufacturer’s instructions.

**Automatic Systems reserves the right to change this specification at any time without notice.**

END OF SECTION