

**PROCUREMENT SPECIFICATION
MODEL TT212EC(H) CRASH CERTIFIED DROP ARM BEAM BARRIER SYSTEM
HYDRAULIC OPERATING SYSTEM**

1.0 SCOPE

This specification defines the procurement of a hydraulically operated CRASH CERTIFIED DROP ARM BEAM BARRIER SYSTEM, Model TT212EC(H), consisting of a crash beam, support yoke and bearing assembly, hinge end support column with hydraulic actuator, locking end support column with provisions for a locking pin with padlock provision, mounting hardware, hydraulic power unit, remote control panel(s), control logic, with other options as defined herein.

1.1 U.S. PATENT LICENSE.

The CRASH CERTIFIED DROP ARM BEAM BARRIER SYSTEM shall be fully licensed for manufacture under U.S. Patent Number 4,844,653 dated July 4, 1989.

2.0 SYSTEM CONFIGURATION

- 2.1 Barrier Construction. Barrier shall be an above grade assembly containing a rigid crash beam hinged at one end, raised and lowered by means of a Hydraulic Power Unit. When in the down locked position the beam shall present a formidable obstacle to approaching vehicles. Upon vehicle impact, the force shall first be absorbed by the beam assembly and then transmitted to the foundation bollards of the unit.
- 2.2 Barrier Height. Height of the Barrier shall nominally be 34 inches (0,86 M) as measured from the roadway surface to the centerline of the crash beam. Height can be varied during installation to suit local security requirements.
- 2.3 Barrier Clear Opening. The standard clear opening shall be 187 inches (4,75 M) as measured inside to inside of the bollard supports. The Barrier can be specified with a clear opening from 120 inches [30,5 M] to 240 inches [6,1 M].*
- 2.4 Finish. The foundation base of the Barrier shall be asphalt emulsion coated for corrosion protection. Barrier top surface shall have a rust inhibiting painted surface. The drop arm beam shall be furnished with red reflective tape sufficient to provide alternate 20 inch (0,5 M) bands on the Barrier tube and Barrier Yoke.

* Optional features

** Customer specified data

3.0 PERFORMANCE

- 3.1 Experience. Barrier and auxiliary equipment shall be of a proven design. Manufacturer shall have 15 years documented experience with similar vehicle Barriers.
- 3.2 Qualification Tests. Barrier design shall have been successfully tested in full scale configuration in accordance with the Department of State Specification SD-STD-02.01 dated April, 1995 - with a certified rating of K4/L2.

4.0 OPERATION

- 4.1 Hydraulic Operation. The standard Barrier shall be capable of being raised or lowered in 12 seconds. The permissible minimum operating speeds of a Barrier is determined by the specified clear opening (see paragraph 2.3), as follows:

144 in. (3,65 M) to 168 in. (4,27 M) 9 seconds
168 in. (4,27 M) to 192 in. (4,88 M) 12 seconds
192 in. (4,88 M) to 216 in. (5,49 M) 16 seconds
216 in. (5,49 M) to 240 in. (6,1 M) 18 seconds*

- 4.1.1 A fixed pressure compensated flow control device shall be installed in each system in the hydraulic circuit to prevent operation below allowable minimums.
- 4.1.2 A field adjustable speed control element within the hydraulic circuit shall be provided to increase the operating time to fit local operating needs.
- 4.1.3 Barrier direction shall be instantly reversible at any point in its cycle from the control station(s).

5.0 HYDRAULIC POWER UNIT

- 5.1 Hydraulic Circuit. Unit shall consist of an electrically driven hydraulic pump which shall be connected to electrically actuated valves installed on a manifold to allow oil to be driven to the up or down side of a double acting hydraulic cylinder to raise or lower the Barrier. The hydraulic circuit shall include all necessary control logic, interconnect lines and valves.
- 5.2 Main Power. The electric motor driving the hydraulic pump shall be fed from (site voltage, phase and frequency, i.e. 230/3/60).** Motor shall be sufficiently sized for the expected number of Barrier operations.
- 5.2.1 Frequency of Operation. Barrier shall be capable of 120 complete up/down cycles per hour.

* Optional features

** Customer specified data

6.0 CONTROL AND LOGIC CIRCUITS - The following control circuits and stations shall be furnished:

6.1. Control Circuit. A control circuit shall be provided to interface between all Barrier control stations and the hydraulic power unit. This circuit shall contain all PLCs, relays, timers and other devices necessary for the Barrier operation.

6.1.1 Voltage. The control circuit shall operate from a (120 volt, 50/60 Hz, 240 volt, 50/60 Hz or 24 VDC **). An internally mounted transformer shall reduce this to 24 VAC (24 VDC) for all external control stations.

6.1.2 Power Consumption. The control circuit power consumption shall not exceed 250 watts basic load, plus 200 watts for each Barrier in the system. (Plus heater loads where specified.)

6.1.3 Construction. The control circuit shall be mounted in a general purpose enclosure. All device interconnect lines shall be run to terminal strips.

6.2 Standard Remote Control Station. A standard remote control station shall be supplied to control the Barrier operation. This panel shall have a key lockable main switch. Buttons to raise or lower the barrier shall be provided.

6.2.1 Construction. The control station shall be mounted in a weather resistant, minimum rating NEMA 4 (IEC IP65), electrical enclosure. All devices shall terminate on terminal stripes. The connection points shall be clearly identified and coded to the applicable Delta drawing(s).

6.2.2 Voltage. The control station shall operate on 24 volts.

6.2.3 * Annunciator. Panel shall be equipped with a timer circuit to notify the operator via an annunciator "squealer" that the Barrier has been left in the open (up) position for too long a time period. The time interval shall be customer selectable.

6.2.4 * Emergency Override Close. The panel shall be equipped with an emergency override close (EOC) button that shall close (lower) the Barrier whether or not any system safety devices would normally prevent the Barrier from closing. A panel light shall be provided to alert the operator that the EOC has been actuated. The system shall be locked in the closed and secure position until restored to normal operation by pressing a reset button.

6.3 * Secure Position Indicating Lights. The Barrier shall be supplied with a limit switch to actuate when the Barrier is securely down. The limit switch shall operate panel lights to indicate the Barrier secure and not secure condition.

* Optional features

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6.4 * Barrier Clear Position Indicating Lights. The Barrier shall be supplied with a limit switch to actuate when the Barrier is fully open (raised). The limit switch shall operate a standard red/green (or amber *) traffic signal(s) to indicate that it is safe to drive through the Barrier opening.

7.0 BEAM LOCKING METHOD. The following Barrier Beam locking device(s) shall be furnished:

7.1 Manual Locking Pin. The Barrier shall be provided with a locking pin with padlock locking point to secure the Barrier in the guard position. Padlock (7/16 inch [11mm] or smaller shackle) to be furnished by others.

7.2 *Maglock. The Barrier shall be provided with an electrically operated maglock to secure the Barrier in the down position. The maglock shall be synchronized by the control circuit to lock and unlock the Barrier at the proper operating points. In the event of a power outage, it shall be possible to manually release the Barrier.

8.0 ACCESSORY EQUIPMENT (* Any or all of the following may be selected):

8.1 * Stop/Go Traffic Lights. Red/Green (amber *) 8 inch [200mm] traffic lights shall be supplied to alert vehicle drivers of the Barrier position. The green (amber *) light shall indicate that the Barricade is fully up. All other positions shall cause the light to show red. Brackets shall be supplied to allow light(s) to be located on a (3.5 inch OD post *) (wall *) (3.5 inch OD post - back to back *). The light operating voltage shall be 120/240 volt, power consumption 40 watts per light.

8.2 * Safety Interlock Detector. A Barrier vehicle detector safety loop shall be supplied to prevent the Barricade from being accidentally closed over an authorized vehicle. The detector shall utilize digital logic have fully automatic tuning for stable and accurate long term reliability. The output of the detector shall delay any Barrier close signal (except for EOC command) when a vehicle is over the loop.

8.3 * Enhanced Power Off Capability. The hydraulic accumulator shall be sized to provide ____ full cycle operations of a single Barrier.

* Optional features

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9.0 QUALITY ASSURANCE PROVISIONS

- 9.1 Testing. Upon completion, the Barrier system will be fully tested in the manufacturer's shop. The following checks shall be made:
 - 9.1.1 Identification. A nameplate with manufacturer's name, model number, serial number and year built shall be located at the hinged end structure.
 - 9.1.2 Workmanship. The Barrier shall have a neat and workmanlike appearance.
 - 9.1.3 Dimensions. Principle dimensions shall be checked against drawings and ordering information.
 - 9.1.4 Finish. Coatings shall be checked against ordering information and shall be workmanlike in appearance.

10.0 PREPARATION FOR SHIPMENT

- 10.1 The Barrier system shall be crated or mounted on skids as necessary to prevent damage from handling. The shipping container(s) shall be of sufficient structural integrity to enable the assembly to be lifted and transported by overhead crane or forklift without failure.

* Optional features

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11.0 DISCLAIMER

11.1 Please note - careful consideration must be devoted to the selection, placement and design of a Drop Arm Barrier System installation. Just as in the case of any Barricade system, perimeter security device or security gate that blocks a roadway or drive, care must be taken to ensure that approaching vehicle as well as pedestrians are fully aware of the Barriers and their operation. Proper illumination, clearly worded warning signs, auxiliary devices such as semaphore gates, stop-go signal lights, audible warning devices, speed bumps, flashing lights, beacons, etc. should be considered. Delta has information available on many such auxiliary safety equipment not specifically listed herein. It is strongly recommended that an architect and or a traffic and or safety engineer be consulted prior to installation of a Barricade system. Delta will offer all possible assistance in designing the operating equipment, controls and the overall system but we are not qualified nor do we purport to offer either traffic or safety engineering information.

12.0 PROCUREMENT SOURCE The **Model TT212EC(H)** Drop Arm Barrier System shall be purchased from:

DELTA SCIENTIFIC CORPORATION

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* Optional features

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