

PROCUREMENT SPECIFICATION

MODEL TW4030 PHALANX® SURFACE MOUNT HYDRAULIC BARRICADE SYSTEM

1.0 SCOPE

This specification defines the procurement of a PHALANX® HYDRAULIC BARRICADE SYSTEM, Model TW4030 consisting of a Vehicle Barricade, a HYDRAULIC POWER SYSTEM, the CONTROLS AND LOGIC CIRCUITS, FEATURES and OPTIONS as defined herein.

2.0 SYSTEM CONFIGURATION

2.1 Barricade(s)

2.1.1 Barricade Construction. Barricade shall be a surface mount assembly consisting of a heavy steel barricade capable of being rotated from the free pass position to its guard position by means of a hydraulic actuator. The guard position shall present a formidable obstacle to approaching vehicles.

2.1.2 Barricade Height. Height of the Barricade shall be 21.0 (533 mm) inches as measured from the top of the foundation frame to the top of the barrier inclusive of the top road plate.

2.1.3 Barricade Length. Barricade clear opening width shall be designed to conform to site requirements (216 inch Max).

2.1.4 Finish. After fabrication, structure to be prepared for finishing by a combination of grinding, wire brushing and sandblast of welds, mill scale, slag, etc. All steel is then washed and phosphatized (28% phosphoric acid). All Barrier surfaces shall be primed with an acrylic enamel primer, HVLP sprayed. Finish coat will be acrylic enamel paint, HVLP sprayed. Color: (as specified). (Optional Corrosion Protection. Barrier ramp, ground plates, buttress and frame shall be hot dipped galvanized. Galvanize shall be in accordance with ASTM Specification ANSI/ASTM A 123-78.)

2.2 (Option) Hydraulic Power Unit (HPU)

2.2.1 Hydraulic Circuit. Circuit shall incorporate the design concepts as described by US Patent # 4,490,068. Unit shall consist of an electrically driven hydraulic pump, which shall pressurize a manifold connected to a hydraulic accumulator. Electrically actuated valves shall be installed on the manifold to raise and lower the Barricade. (Optional Emergency Fast Operation. The hydraulic circuit shall include all necessary control logic devices, interconnect lines and valves to override and lock out the normal speed control valve for emergency fast operation of the Barricade.)

- 2.2.2 Main Power. The electric motor driving the hydraulic pump shall be fed from (specify actual site voltage, phase and frequency, i.e. 230/3/60). Motor shall be sufficiently sized for the expected number of Barricade operations.
- 2.2.3 Manual Operation. A hand pump shall be furnished to allow the Barricades to be raised manually in the event of a prolonged power interruption.
- 2.2.4 Construction. The hydraulic power unit and accessories shall be mounted and wired on an integral steel skid. The HPU shall fit in an envelope 26 inches (660mm) Wide x 26 (660mm) inches Deep x 42 inches High (1.260). (Optional enclosure. The HPU shall be mounted in a weather resistant enclosure.)
- 2.2 (Option) Pneumatic Power Unit (PPU)
- 2.2.1 Pneumatic Circuit. Circuit shall incorporate the design concepts as described by U.S. Patent # 4,490,068.
- 2.2.2 Air Compressor Integral Pressure Source. The electric motor driving the compressor shall be sized to provide a supply of clean, dry, oiled and filtered air of sufficient quality and quantity to operate the system within the parameters as defined. Note: Specific power consumption for the compressor is determined based on the operating parameters of the overall system. The operating speed, normal cycle rate, peak cycle rate are some of the factors that determine the peak power consumption.
- 2.2.2.1 Main Power. The electric motor driving the compressor shall be fed from (specify actual site voltage, phase and frequency, i.e. 230/3/60). Motor shall be sufficiently sized for the expected number of Barricade operations.
- 2.2.2.2 Construction. The pneumatic compressor, storage tank, regulating valves and filters, oilers, accessories, etc. shall be mounted and wired on an integral steel skid. The power unit shall be suitable for mounting in a clean, indoor location. (Optional enclosure. The HPU shall be mounted in a weather resistant enclosure.)
- 2.2.4 (Option) Standby Power and Operating System. The Standby Power and Operating System shall be capable of full operation of the Barricade system, as defined herein, in the event of power outage, service disconnect or operator selection. In the case of interruption of power, the system will automatically go into standby mode until normal power or primary pneumatic pressure is restored.
- 2.2.4.1 The Standby Power and Operating System shall be sized so that it will be capable of full operation for (specify number of days or house) after full power disconnect while operating at an hourly rate of (specify the average rate of operation during the standby operation).

- 2.2.4.2 The system shall consist of a pneumatic pressure source, standby electrical power source, controls, logic module and interconnect elements.
- 2.2.4.3 The pressure source of operating the Barricade in the backup mode shall be a bank of compressed gas bottles or other pressure vessel(s) sized as dictated by the requirements set forth in paragraph 2.4.6, 4.4 and 4.5.
- 2.3 Control and Logic Circuits
The following circuits and control stations shall be furnished:
- 2.3.1 Control Circuit. A control circuit shall be provided to interface between all Barricade control stations and the hydraulic power unit. This circuit shall contain all relays, timers and other devices necessary for the Barricade operation.
- 2.3.1.1 Voltage. The control circuit shall operate from a 120/240 volt, 50/60 Hz supply (optionally 24 VDC). An internally mounted transformer shall reduce this to 24 VDC for all external control stations.
- 2.3.1.2 Power Consumption. The control circuit power consumption shall not exceed 250 watts basic load, plus 200 watts for each Barricade in the system.
- 2.3.1.3 Construction. The control circuit shall be mounted in a general-purpose enclosure. All device interconnect lines shall be run to terminal strips.
- 2.3.2 (Option) Remote Control Panel. A remote control panel shall be supplied to control the Barricade operation. This panel shall have a key lockable main switch with "main power on" and "panel on" lights. Buttons to raise or lower the Barricade shall be provided. Barricade up and down indicator lights shall be included. (Optional Emergency Fast Operation. The Emergency Fast Operate (EFO) feature shall be operated from a covered toggle switch (optionally a push button larger than the normal controls). The EFO shall also be furnished with EFO active light and reset button.)
- 2.3.2.1 Voltage. The remote control panel shall operate on 24 VDC.
- 2.3.2.2 Construction. The remote control station shall be a standard 19-inch electronics rack type surface mount panel with all devices wired to a terminal strip on the back.
- 2.3.2.3 (Option) Panel shall be equipped with a timer circuit to notify the operator via an annunciator "squealer" that the Barricade has been left in the down position for too long a time period. The time interval shall be customer selectable.

2.3.3 (Option) Remote Control Slave Panel. A remote control slave panel shall also be supplied to control the Barricade operation. This panel shall have a "panel on" light that is lit when enabled by a switch on the remote control master panel. Buttons to raise or lower the Barricade shall be provided. Barricade "up" and "down" indicator lights shall be included. (Optional Emergency Fast Operation. The Emergency Fast Operate (EFO) feature shall be operated from a push button larger than the normal controls (optionally a covered toggle switch). When the slave panel EFO is pushed, an EFO "active" lamp will light and operation of the Barricade will not be possible until reset at the master panel.)

2.3.3.1 Voltage. The remote control panel shall operate on 24 VDC.

2.3.3.2 Construction. The remote control station shall be a standard 19-inch electronics rack type surface mount panel with all devices wired to a terminal strip on the back.

2.3.3.3 (Option) Panel shall be equipped with a timer circuit to notify the operator via an annunciator "squealer" that the Barricade has been left in the down position for too long a time period. The time interval shall be customer selectable. The alarm is reset when the Barricades are returned to the up position.

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

3.1 Electro-Mechanical Signal Gate. An electrically operated wood arm signal gate shall be supplied to alert vehicle drivers of the Barricade position.

3.2 Stop/Go Traffic Lights. Red/Green 8-inch traffic lights shall be supplied to alert vehicle drivers of the Barricade position.

3.3 Safety Interlock Detector. A vehicle detector safety loop shall be supplied to prevent the Barricade from being accidentally raised under an authorized vehicle. The output of the detector shall delay any Barricade rise signal (except for EFO command) when a vehicle is over the loop.

3.4 Enhanced Power Off Capability. The hydraulic accumulator shall be sized to provide _____ half cycle operations of a single Barricade (or sets of Barricades).

4.0 PERFORMANCE

4.1 Experience. Barricade and auxiliaries shall be of proven design. Manufacturer shall have had 1,000 Phalanx® type Barricades in field operation for a minimum of 15 years with documented field experience for all major components and design features.

4.2 Qualification Test. Barricade design shall have successfully passed an actual full scale crash test conducted by a qualified independent agency; or analyzed and approved using a U.S. Government approved three dimensional vehicle impact program.

4.3 Stopping Capacity

4.3.1 Normal Operation. Barricade shall provide excellent security and positive control of normal traffic in both directions by providing an almost insurmountable obstacle to non-armored or non-tracked vehicles. The Barricade system shall be designed to stop a vehicle attacking from the priority direction when the vehicle is within the following weight and velocity characteristics:

5,000 lbs [22,200 Newtons] at 30 mph [48 kph]

4.3.2 High Energy Attack. Barricade shall be operational (excepting minor repairs and clean-up) after successfully stopping a vehicle, with the following weight and velocity:

6,000 lbs [26,700 Newtons] at 40 mph [64 kph]

4.4 Speed Of Operation

4.4.1 Normal Operation. Each Barricade shall be capable of being raised or lowered in 5 to 15 seconds (customer adjustable) when operated at a repetition rate not greater than specified in paragraph 4.5. Barricade direction shall be instantly reversible at any point in its cycle from the control stations.

4.4.2 Emergency Fast Operation. Barricade shall rise to a guard position from fully down to 1.5 seconds maximum when the emergency fast operate button is pushed, provided the system has not previously been exhausted by power off or manual operation or high speed cycle rates exceeding that specified. Barricade shall remain in the up and locked position (normal up/down buttons inoperable), until the EFO condition is reset.

4.5 Frequency Of Operation. Barricade shall be capable of ____ (specify up to 150 cycles per hour) complete up/down cycles per hour.

5.0 ENVIRONMENTAL DATA (specify the following):

Barricade shall operate satisfactorily under the following environmental conditions:

5.1 Extremes in temperature:

Yearly maximum drybulb temp _____ °F/°C

Yearly minimum drybulb temp _____ °F/°C

5.2 Rainfall:

Yearly average _____ inches (mm)

Maximum expected hourly rate _____ inches/hour (mm/hour)

5.3 Snowfall:

Maximum expected hourly rate _____ inches/hour (mm/hour)

Roadway will be (mechanically/manually/chemically) cleared _____.

6.0 QUALITY ASSURANCE PROVISIONS

6.1 Testing. Upon completion, the Barricade system will be fully tested in the manufacturer's shop. In addition to complete cycle testing to verify function and operating speeds, the following checks shall be made:

6.1.1 Identification. A nameplate with manufacturer's name, model number, serial number and year built shall be located within the maintenance access area.

6.1.2 Workmanship. The Barricade and subsystems shall have a neat and workmanlike appearance.

6.1.3 Dimensions. Principal dimensions shall be checked against drawings and ordering information.

6.1.4 Finish. Coatings shall be checked against ordering information and shall be workmanlike in appearance.

7.0 PREPARATION FOR SHIPMENT

The Barricade 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.

8.0 MANUFACTURER'S DATA

Drawings and installation data. The Barricade system drawings and installation, maintenance and operating manuals shall be sent to purchaser within 4 weeks of order. ____ additional copies shall be supplied (1 copy supplied at no cost).

9.0 DISCLAIMER

Please note - careful consideration must be devoted to the selection, placement and design of a Barricade 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 Barricades 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.

10.0 PROCUREMENT SOURCE

The **Model TW4030 Phalanx®** Surface Mount Barricade System shall be purchased from:

DELTA SCIENTIFIC CORPORATION

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