



# MODEL 730 SERIES BEAM BARRIER

## OPERATIONS & MAINTENANCE MANUAL



### **B&B ARMOR**

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**MADE IN THE USA**



Your safety is extremely important to us. If you have any questions or are in doubt about any aspect of the equipment, please contact us.

# INTRODUCTION

## Welcome!

Congratulations on your purchase of a B&B ARMOR vehicle barrier. In addition to providing detailed operating instructions, this manual describes how to install, maintain, and troubleshoot your vehicle barrier. If you require additional assistance with any aspect of your vehicle barrier's installation or operation, please contact us.

With years of experience in all aspects of perimeter security and related disciplines, our products are used throughout the world to control access and to protect people, equipment, and facilities. We offer a broad range of vehicle barrier and related security services:

- Turnkey installations
- Routine barrier preventative maintenance or emergency repairs (including work on non-B&B ARMOR products)
- Spare or replacement parts
- Custom designs or special installations
- Equipment upgrades (modernize your old equipment with state-of-the-art hydraulics and control systems)
- Ancillary security equipment such as security guard enclosures, card readers, security lighting, and many other security related products.
- Technical support via telephone and possible on site support with advanced scheduling.

## Safety



**SYMBOL MEANING:**

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of non-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the product.

B&B ARMR does not assume responsibility for injury to persons or property during installation, operation, or maintenance. As the user, you are responsible for correct and safe installation, operation, and maintenance of this equipment. Users must follow the specific instructions and safety precautions located in this manual. In addition they must: Follow the safety standards of the Occupational Safety and Health Administration (OSHA), as well as other applicable federal, state, and local safety regulations and industry standards and procedures. For installation outside the United States, users must also follow applicable international, regional, and local safety standards. Engage only trained and experienced staff to install, operate, and maintain the equipment. Ensure that all repairs are performed correctly, using properly trained technicians and the correct tools and equipment.



This steel barrier is heavy and may drop suddenly if installed improperly. **EXTREME** care should be given to ensure a safe installation barrier is completed.

Additional system safety devices may be included with this barrier system:

- Vehicle loop detector(s) – Safety loop
- Traffic arms
- Traffic lights

## How to Contact Us

If you have any questions or experience any problems with your vehicle barrier—or if we can help you with any other facility security issues—please contact us directly at:

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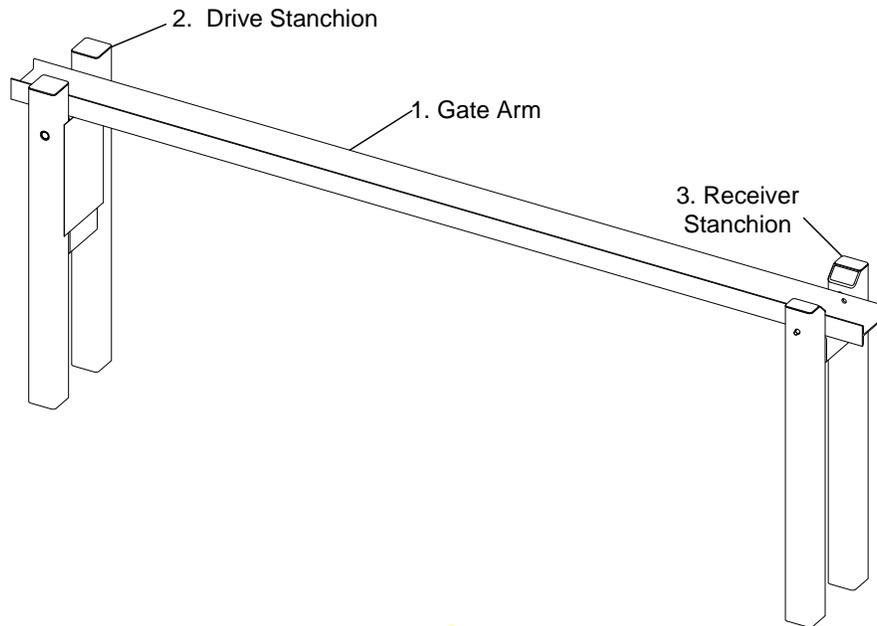
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# 1 ORIENTATION

## 1.1 Overview

The Model 730 vehicle barrier is designed to contain a high-speed vehicle impact and prevent that vehicle from entering a restricted access control area. The barrier consists of cast in place foundation stanchions and a barrier beam designed to raise and lower with the aid of a hydraulic cylinder.



**Figure 1: Model 730 Gate Beam Barrier**

Figure 1 orients you to the basic components of the Model 730 vehicle barrier:

### 1.1.1 Gate Arm

The steel gate arm is engineered to distribute the crash impact load over the drive and receiver stanchion. Coupled with the specified concrete bases, the stanchion frames ensure the barrier does not move on impact.

### 1.1.2 Drive Stanchion

The drive stanchion includes both the hinge pin assembly and the drive system solution. The product is offered in several configurations both manual and automatic. Either solution employs the use of a hydraulic cylinder to push the barrier beam open or allow gravity to lower the beam in a controlled descent. It is engineered using a “H” frame structure to assure strength and rigidity. The drive stanchion is cast in place in a subterranean concrete pour and has elevation grade locators to aid the installation. The installation requires no above-grade concrete.



**CAUTION:** This barrier is made of heavy steel components. Ensure all personnel are cleared of area during operation.

### 1.1.3 Receiver Stanchion

The receiver stanchion accepts the barrier beam as it lowers and provides the structure that transfers the crash impact energy to the surrounding ground. It is also engineered using a “H” frame structure to assure strength and rigidity. The receiver stanchion is cast in place in a subterranean concrete pour and has elevation grade locators to aid the installation. The installation requires no above-grade concrete.

### 1.1.4 Options

The Model 730 vehicle barrier is available with a broad array of options and field installed kits. Consult your ordering documentation to determine whether your system has the optional equipment.

- A traffic control gate arm to warn the vehicle operator. This arm is positioned in front of the gate and does not rise until the gate is fully open, and it closes before the gate starts to close.
- Red/amber traffic lights. The light remains red if the gate is in any position except fully open.
- Infrared safety beams to detect pedestrian traffic or as an additional vehicle sensing device.

## 2 OPERATION

### 2.1 Introduction

The barrier is moved to the up position with a single, center mounted, cylinder. The cylinder is single acting to reduce wear on the hydraulic system. The HPU pulls the beam barrier up and gravity pushes the beam to the lowered position.

### 2.2 First Time Operation

1. Turn on the power at the master power switch located on the control circuit box. Have someone remain at the power switch during the initial operation in case there is a malfunction and the unit must be shut down.
2. Working from the control panel, raise the gate arm. (The procedure for doing this will vary depending on the design of your particular control panel.)
3. Carefully observe the gate and make sure it is operating correctly. To achieve proper arm travel, the hydraulic cylinder can be adjusted.
4. The arm will stop when it contacts the limit switch or if the control unit times out. The gate arm motion may not be smooth for the first several operations due to air in the hydraulic lines.

5. If necessary, adjust the limit switch so the switch activates, the gate arm stops at the correct position, and the hydraulic pumping unit shuts off when the arm is in the fully up position.
6. Make sure the gate arm stops smoothly in the receiver post and does not oscillate, contact hard, or make excessive noise.

## **2.3 Control**

The 730 barrier is controlled by the flow of hydraulic fluid under pressure from the HPU to the cylinder. All control components are connected to the HPU.

## **2.4 Operating Time**

The operating time for the 730 barrier is field adjustable at the HPU by varying the hydraulic fluid flow from the HPU as required. Normal operation cycles range from 15-20 seconds for both up and down. These times may be adjusted to meet application requirements. Please consult a B&B ARMR technical support person if required.

## 3 MAINTENANCE



Do not attempt repairs unless you are trained and qualified. This vehicle barrier can cause equipment damage and severe injury if it is operated or maintained improperly.

### 3.1 Introduction

The Model 730 Series vehicle barriers are designed to be largely maintenance free. As with any complex electromechanical device however, they must be regularly inspected to ensure they are operating correctly. We recommend a simple monthly visual inspection and a more thorough biannual inspection as described below. Please contact B&B ARMR Technical Service Support for assistance with inspections, maintenance, or repairs if needed.

Component damage is likely if a vehicle strikes the barrier. If this occurs, contact B&B ARMR. We can help you assess the damage to make sure there is no hidden damage that will compromise safety or effectiveness and help you determine which components should be replaced.

### 3.2 Monthly Inspections

We recommend you perform the following visual inspections monthly on the barrier system. An equipment maintenance log is supplied in the appendix to assist in the logging.

- Inspect the condition of the finish. If rust is present, wire brush and sand the area then paint with a primer and a matching color.
- Check oil for level, pressure, and condition in the HPU (Recommended oil: Mobil EAL 224)
- If oil is contaminated, report and replace immediately (Recommended oil: Mobil EAL 224).
- Check barrier for operation through normal cycles.
- Adjust barrier speed to ensure proper operation.
- During the opening and closing cycles, verify the barrier operates smoothly and does not bind. Also verify that the barrier does not hit with excessive force when it contacts its full-open or full-closed positions. If necessary, adjust the barrier's speed.
- Check the hydraulic pumping unit for leaks at all points.
- Visually inspect the operation and electrical contacts.
- Tighten electrical contacts if required.
- Check, adjust, and tighten all sensors (limit switches, proximity switches).
- If applicable, check traffic lights and replace any burned bulbs or LEDs.
- Check safety devices (loop, IR, etc.) for proper operation and report any anomalies (if applicable).
- Check the PLC for normal operation of all logic and functions.

- Lubricate all pivot points and the clevis pin.
- Inspect hinge pins.
- Inspect the cylinder.
- Check hoses for wear or abrasions.
- Check the operation of the control panel(s).
- Check the control panel's buttons and lights for proper operation and replace if necessary.
- Update the operation and maintenance log.

### 3.3 Six-Month Inspections

We recommend you perform the following inspections every six months.

- Repeat the visual inspections in the monthly inspection list.
- Turn the master power switch on the control circuit box to the OFF position.
- Inspect the hydraulic system for signs of oil leaks.



**CAUTION:** The hydraulic system when in operation is under extreme pressure. Verify pressure on the barrier is completely relieved prior to removal of any hydraulic fittings.

- Check all fittings for tightness.
- Inspect the oil level in the HPU by opening the tank.
- Add oil as necessary. We recommend using environmentally safe oil such as Mobil EAL 224.
- Measure the resistance in any traffic loops and log the measurements and report anomalies (if applicable).
- Open the hydraulic oil tank in the HPU and inspect the oil for dirt or water.
- When the inspection is complete, turn the power on and test cycle the barrier to verify operation and control.

### 3.4 Annual Maintenance Inspections

We recommend you perform the following inspections annually.

- Perform all quarterly maintenance steps.
- Replace the hydraulic fluid.

## 4 TROUBLESHOOTING

### 4.1 Model 730 Troubleshooting Guide

The table below provides guidance on identifying and correcting any problems with your Model 730 Series vehicle barrier. Please refer to the HPU O&M manual for more detailed troubleshooting guides referring to the pumping unit. If you encounter problems that you cannot fix, contact B&B ARMR and we will gladly work with you to correct them.

Symptom	Actions
Barrier does not raise up when commanded on control panel	<ol style="list-style-type: none"> <li>1. Check power</li> <li>2. Check for binding between beam and frame. Check connection of linkage between beam and frame. Check for foreign debris.</li> <li>3. Check pressure gauge(option not standard on all units)</li> <li>4. Check overload protector</li> <li>5. Manually raise the barrier by using the manual hand crank to see if problem is mechanical or electrical.</li> <li>6. Check PLC input on pumping unit.</li> <li>7. Check that safeties are clear.</li> <li>8. Check PLC output on pumping unit</li> <li>9. Check push button operation</li> </ol>
Barrier does not close when commanded on control panel	<ol style="list-style-type: none"> <li>1. Check power</li> <li>2. Check for binding between beam and frame. Check connection of linkage between cylinder and beam. Check for foreign debris.</li> <li>3. Check pressure gauge(option not standard on all units)</li> <li>4. Check overload protector</li> <li>5. Determine if it is electrical or mechanical by manually lowering the barrier arm. Open the cartridge valve located below the motor on the pump. Push in and turn the blue knob counter clockwise. This will manually dump the pressure in the lines and lower the barrier arm. When finished, push in the blue knob and turn clockwise to engage the cartridge valve to its normal state.</li> <li>6. Check PLC input on pumping unit.</li> <li>7. Check that safeties are clear.</li> <li>8. Check PLC output on pumping unit</li> <li>9. Check push button operation</li> </ol>
HPU pump will not build up pressure but is running	<ol style="list-style-type: none"> <li>1. Check power</li> <li>2. Close pressure relief valve</li> </ol>

Symptom	Actions
HPU pump will not turn on	<ol style="list-style-type: none"> <li>1. Check power</li> <li>2. Check motor overload, press start.</li> <li>3. Check motor starter.</li> <li>4. Check low level switch.</li> <li>5. Check pressure switch.</li> </ol>
Barrier makes noise during operation	<ol style="list-style-type: none"> <li>1. Check linkage between beam and frame. Be sure it is secure and properly lubricated (dry graphite spray).</li> <li>2. Check hinge area for debris and proper lubrication (dry graphite spray).</li> <li>3. Check hydraulic cylinder clevis pins for lubrication (multi-grade grease).</li> <li>4. Check bearing grease.</li> </ol>
Hydraulic unit excessively hot	<ol style="list-style-type: none"> <li>1. Check that the pressure relief valve is closed (fully clockwise).</li> <li>2. Check that the limit switch is adjusted correctly and not allowing the HPU to run excessively.</li> <li>3. Check for correct voltages.</li> </ol>
Barrier moves too slowly	<ol style="list-style-type: none"> <li>1. Check for mechanical binds.</li> <li>2. Check flow control valve.</li> <li>3. In extreme cold temperatures, a higher grade hydraulic fluid may be required to keep viscosity constant.</li> </ol>
Traffic indicator light does not change	<ol style="list-style-type: none"> <li>1. Check proper limit switch operation.</li> <li>2. Check bulbs.</li> <li>3. Check PLC outputs.</li> </ol>

## 5 WARRANTY

BBRSS warranties for a period of one (1) year FOB manufacturing facility, unless otherwise specified by BBRSS in writing, from defects due to faulty material or workmanship. Damage due to handling during shipment and installation are not covered under warranty. BBRSS assumes no responsibility for service at customer site. BBRSS is in no event responsible for any labor costs under the warranty. Subject to the above limitation, all service, parts, and replacements necessary to maintain the equipment as warranted shall be furnished by others. BBRSS shall not have any liability under these specifications, other than for repair or replacement as described above for faulty product material or workmanship. Equipment malfunction or equipment failure of any kind, caused for any reason, including, but not limited to unauthorized repairs, improper installation, installation not performed by BBRSS authorized personnel, incoming supply power is outside the tolerance for the product, failure to perform manufacturer's suggested preventative maintenance, modifications, misuse, accident, catastrophe, neglect, natural disaster, are not under warranty.

The exclusive remedy for breach of any warranty by BBRSS shall be the repair or replacement at BBRSS's option, of any defects in the equipment. **IN NO EVENT SHALL BBRSS BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGES OR ANY KIND OF PERSONAL DAMAGES.** Except as provided herein, BBRSS makes no warranties or representations to consumer or to anyone else and consumer hereby waives all liability against BBRSS as well as any other person for the design, manufacture, sale, installation, and/or servicing of the Products.

**THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NO OTHER WARRANTIES EXIST.**

Any modification or alteration by anyone other than BBRSS will render the warranty herein as null and void.

## Equipment Maintenance Log Form



**Product Type:** \_\_\_\_\_

**B&B ARMOR**  
800-367-0387

**Location:** \_\_\_\_\_

techsupport@bb-armr.com

	Date	Performed By	Checklist Complete	Anomalies	Notes
Jan			Yes No		
Feb			Yes No		
Mar			Yes No		
Apr			Yes No		
May			Yes No		
Jun			Yes No		
Jul			Yes No		
Aug			Yes No		
Sep			Yes No		
Oct			Yes No		
Nov			Yes No		
Year			Yes No		

	Date	Performed By	Checklist Complete	Anomalies	Notes
Jan			Yes No		
Feb			Yes No		
Mar			Yes No		
Apr			Yes No		
May			Yes No		
Jun			Yes No		
Jul			Yes No		
Aug			Yes No		
Sep			Yes No		
Oct			Yes No		
Nov			Yes No		
Year			Yes No		