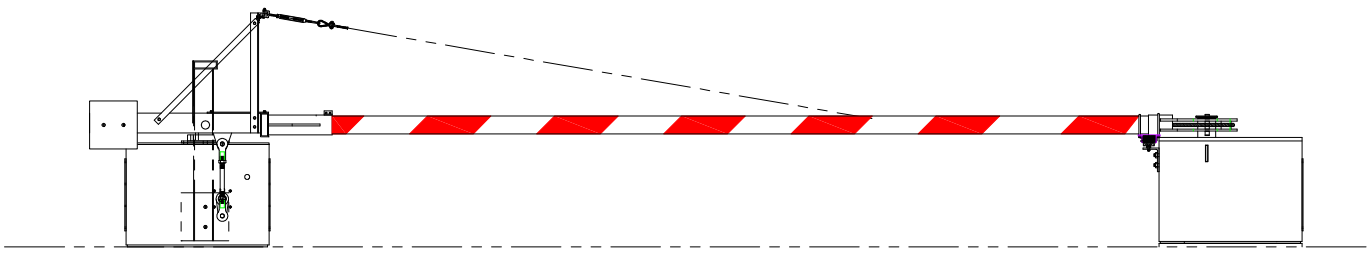
MODEL CR-25E
Cable Beam Barrier

INSTALLATION AND OPERATIONS MANUAL



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MADE IN THE USA

INTRODUCTION

Welcome

Congratulations on your purchase of a B&B ARMR warning gate. We have years of experience in all aspects of perimeter security and related disciplines, and our products are used throughout the world to control access and to protect people, equipment, and facilities. Your warning gate is designed to give you years of smooth, trouble-free operation.

In addition to providing detailed operating instructions, this manual describes how to install, maintain, and troubleshoot your vehicle barrier. To make it easy to locate the information you need, we've included a detailed Table of Contents immediately following this Introduction. All of this is important information, so be sure to keep the manual available for reference.

If you need help with any aspect of your vehicle barrier's installation or operation, please contact us. We offer a broad range of vehicle barrier and related security services, so you can also call on us for:

- Turnkey installations
- Routine barrier preventative maintenance or emergency repairs (including work on non-B&B ARMR 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 so on)

Safety

Your safety is important to us. If you have any questions or are in doubt about any aspect of the equipment, please contact us. While B&B ARMR does not assume responsibility for injury to persons or property during installation, operation, or maintenance, we can provide verbal guidance, additional written instructions, or the services of a factory engineer. We're here to help you operate your vehicle barrier safely and effectively.

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:

- Be aware of and 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 experienced staff, properly trained, to install, operate, and maintain the equipment.
- Ensure that all repairs are performed correctly, using properly trained staff and the right tools and equipment.

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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Table of Contents

1. INSTALLATION, ADJUSTMENT AND MAINTENANCE

1.1 CR-25E Installation Instructions (Reference Drawing: 0025-0050-A)

NOTE: Failure to install your barrier properly could cause damage to the operating mechanism.

1. Read the instructions and review the drawings thoroughly. If you do not understand any part of these instructions, please contact the manufacturer.

2. Check the anchor bolt locations and prepare the foundation for the barrier. Set the barrier operator and be sure to seal the bottom with duct seal. Housing must be level. Anchor bolts must be tightened evenly.

3. Make sure the local power supply for the motor and control circuit are correct. *Reference the enclosed electrical drawing in the back of the handbook.

IMPORTANT: All conduit must be sealed and the housing grounded.

4. Using the hand crank, turn the drive crank 45 degrees noting rotation of the drive crank should be clockwise.

5. Open main disconnect switch (S1) and connect the power. Connect the control circuit if separate. If power is supplied from the motor circuit, check the connections at the terminals.

NOTE: At this point in the installation, no counterweights or arms should have been installed.

6. "Bump" test barrier operator for correct motor rotation.

NOTE: The drive cranks should rotate upwards toward roadway to raise barrier arm (viewing barrier operator from either drive crank side of the housing).

7. Run barrier operator (without arms or counterweights) through several complete cycles. Leave the barrier operator in the closed to traffic position and open the main disconnect switch.

NOTE: This barrier has been completely assembled and test run through 24 complete cycles under full power at the factory. If satisfactory operation is not displayed in step #7, recheck all electrical connections carefully. CONSULT FACTORY IF PROBLEM IS NOT FOUND.

8. Remove side arm tube cover plate (Item #2). Locate pillow block bearings (Item #12). Do not tighten set screws. Now center assembly with housing. When assembly is correctly centered, tighten bearing set screws.

9. Insert arm, with endlock intact, into the main arm tube base. Push tube far enough to make the cable, connections at the pivot. After cables have been securely bolted to the pivot mechanism, extend arm so that the endlock saddles satisfactorily over the anchor assembly (on the bollard). Slide lock coller into place and tighten allen bolts.

NOTE 6: If endlock fails to line up properly, loosen bearing bolts and rotate laterally. Re-tighten bolts. Now tighten arm base bolts securely. Replace side arm tube cover plate (tighten bolts securely).

10. With the arm in the down position, install the allotted amount of counterweights (Item #3) on the side arm tube assembly. Tighten bolts securely.

11. Close the main disconnect switch (S1) and operate the control circuit. If all connections are made correct, barrier arm will operate to fully up or fully down. The limit switch will automatically stop the motor at the extreme 90-degree movement of the arm.

12. With the barrier in the lowered position, check endlock mechanism for any type of hindrance with bollard post and adjust accordingly if required.

IMPORTANT: IF THREE PHASE POWERE CONNECTIONS TO THE MOTOR ARE REVERSED, THE LIMIT SWITCH WILL AUTOMATICALLY DISCONNECT THE MOTOR WHEN THE DRIVE CRANK HAS ROTATED ABOUT 30 DEGREES IN THE INCORRECT DIRECTION, DEPENDING ON THE POSITION OF THE CONTROLS, i.e., UP OR DOWN. DRIVE CRANK MUST THEN ROTATE BACK TO ORIGINAL (VERTICAL) POSITION USING HANDCRANK, IN ORDER TO RESET BARRIER.

If this problem occurs, phase must be reversed. The limit switch has been set at the factory and should NOT REQUIRE ADJUSTMENT. Arm should be raised or lowered by lengthening or shortening of the connecting rod not by adjustment of the limit switch cams.

1.2 CR-25E Start Up Instructions

NOTE: These instructions assume installation has been completed. If necessary, refer to the enclosed installation instructions.

1. Remove the rear operator door.
2. Connect power by flipping the disconnect switch to the "ON" position.
3. Test operate the barrier to be sure it is functioning properly.

1.3 CR-25E Shut Down Instructions

1. Remove the rear operator door.
2. Disconnect power by flipping the disconnect switch to the "OFF" position.

1.4 CR-25E Emergency Operation Instructions

1. Remove the rear operator door.
2. Disconnect power by flipping the disconnect switch to the "OFF" position.
3. Locate the hand-crank mounted inside the housing.
4. Slip the hand-crank onto the shaft extending through the brake. The brake will automatically release.
5. Turn the hand-crank to raise or lower the barrier, as needed. A tag on the brake indicates crank direction for opening or closing the barrier. (Clockwise for “Close”, counter clockwise for “Open”).
6. Remove the hand-crank.
7. Flip the disconnect switch back to the "ON" position to resume powered operation.

1.5 CR-25E Lubrication Instructions (Reference Drawing: 0025-0053-B)

Mechanism lubrication should be checked at least once per month.

Transmission (Item 5 on Assembly drawing):
First gear drive box (High speed housing):

1. Remove the front door of the housing (roadway side).
2. Check oil by removing the oil level plug located on the left-hand vertical surface of the transmission a few inches below the motor.
   Note: Some barriers may have site glasses.
   a. If oil is visible, oil level is adequate - replace plug and go to next section.
   b. If oil is not visible, go to step 3.
3. Remove fill plug of first gear box located on top of gear box facing door).
4. Fill the case to the level plug or site glass (removed in step two) with multi-grade Mobil SHC 629 or a direct replacement. (See recommended replacement oils on the following page.)
5. Replace plugs.

Final drive gear box (Low speed housing):

1. Remove the back door of the housing (counterweight side).
2. Check the oil level by removing the oil level plug located on the left-hand vertical surface of transmission. *Note: Some barriers may have site glasses.*
   a. If oil is visible, oil level is adequate - replace the plug and go to next section.
   b. If oil is not visible, go to Step 2.
2. Remove oil fill plug on final gear box, on the left-hand vertical surface, top.
3. Fill the case to the level plug or site glass (removed in step one) with multi-grade Mobil SHC 629 or a direct replacement. (see recommended replacement oils on the following page)
4. Replace plugs.

Pillow Block Bearings:

1. Grease with Texaco Marfak 2 or equal.
2. Wipe off excess.

NOTE: 1 pillow block bearing is located inside unit on main shaft.

Connecting Rod Ends (Items11 & 13):

1. Grease with Texaco Marfak 2 or equal.
2. Wipe off excess.

Limit Switch Drive Chain (Item 8):

1. Spray chain with any good aerosol chain lube.
2. Wipe off excess.

1.6 Lubrication Replacement Instructions

Lubricate mechanism every 12 months with a manufacturer approved lubricant.

First gear drive box (High speed housing):

1. Standing in front of the operator (roadway side) remove the door.
2. Locate drain plug on the bottom horizontal surface of the gear change box directly under the motor. (Motor is horizontally mounted).
3. Position catch pan under drain plug.
4. Remove the oil fill plug on the top of gear box facing door.
5. Remove the drain plug until the oil is completely drained, then replace plug.
6. Remove the oil level plug.
7. Refill gear change box until oil flows from the oil level hole. Replug the oil fill hole and the oil level hole.

Final drive gear box (Low speed housing):

1. Remove back door. Oil fill plug is located on the left-hand vertical surface, top. Remove oil fill plug.
2. Standing in front of the operator (roadway side), remove the door.
3. Locate drain plug on the vertical surface of the final output gear box.
4. Position catch pan under drain plug.
5. Remove the drain plug until the oil is completely drained, then replace plug.
6. Remove the oil level plug.
7. Refill final output box until oil flows from the oil level hole. Replug the oil fill hole and the oil level hole.

1.7 Recommended Replacement Oils for CR-25E

Direct replacement of oils is very complicated and should be considered carefully when doing so. The following oils are recommended by the manufacturer of the transmissions on the warning gates and barriers.

The multi-grade **Mobil SHC 629** synthetic oil is the manufacturers first choice. If this oil is not available, **Exxon Terrestic SHP 150** can be used as a direct replacement. The temperature range is -30°F to 165°F.

If neither of the two above mentioned oils is available, almost any **ISO Grade 150** or **AGMA Lubricant #4** with a pour point of -40°F or less & a viscosity of approx. 726 (SUS@100°F) is acceptable.

The following grease is recommended by the manufacturer of the flange type bearings used on both the warning gates and barriers.

Texaco Marfax or Texaco Starplex grease is the manufacturers first choice. If this grease is not available, consult your local supplier for an equivalent.

1.8 Brake Assembly Instructions (Reference Drawing: 0040-0023-C)

IMPORTANT: Unless specified, the replacement brake assembly does not include a solenoid or a brake drum. If these items are required, they must be requested separately, please specify the motor voltage.

WARNING: DISCONNECT BARRIER POWER BY THROWING THE MAIN POWER SWITCH (S1) OFF BEFORE REMOVING THE OLD BRAKE ASSEMBLY.

Item numbers refer to the brake drawing included in the major components section of this handbook.

To remove the old assembly:

1. Remove the Brake Release Stub (Item 9) from its bracket.
2. Remove the Brake Drum (Item 2) set screw. The set screw is located on the side of the brake drum, even with the key in its center.
3. Pull the drum off of its shaft.

4. Disconnect the wires from the brake release solenoid (Item 5).
5. Remove the brake assembly mounting bolts, and lift off the brake assembly.

To mount the new assembly:

1. Place the new brake assembly on top of the motor, align the mounting holes, and tighten the mounting bolts.
2. Unless a new solenoid was requested, the brake solenoid from the old brake assembly will need to be re-mounted on the new assembly.
   - Disconnect the solenoid arm from the solenoid release rod (Item 7).
   - Remove the solenoid mounting screws.
   - Place the solenoid (Item 5) on the new brake assembly, align the holes and replace the mounting bolts.
   - Reconnect the solenoid plunger to the solenoid release rod.
   - Reconnect power wires to the solenoid.
3. Insert the brake drum onto the keyed shaft and tighten the set-screw.
4. Re-install the manual release stub onto its mounting bracket.
5. Re-apply power to the barrier, and test the brake by running the operator.
6. If the solenoid makes a loud buzzing sound, it is binding and needs to be adjusted.
   - Loosen the mounting bolts and activate the operator. The solenoid should seat itself properly.
   - Re-tighten the mounting bolts.

If the solenoid continues to buzz, the solenoid release rod may be out of alignment. Loosening the screw between the Solenoid Plunger and Release Rod (Item 7) should alleviate this. If the problem persists, contact the manufacturer.

1.9 Motor Replacement Instructions

IMPORTANT: Before replacing the motor, check that the new motor is identical to the old in voltage, phase and horsepower.

WARNING: DISCONNECT BARRIER POWER BY THROWING THE MAIN POWER SWITCH (S1) OFF BEFORE CHANGING MOTORS.

1. Remove the brake assembly (see previous instructions)
2. Have a qualified electrician disconnect the motor wires from the junction box on the side of the motor.
3. Remove the four motor mounting bolts located at the base of the motor.
4. Pull the motor up, out of the transmission, making sure the feather key comes out with the motor shaft.
5. Mount the new motor, inserting the keyed shaft into the transmission and aligning the mounting holes.
6. Have a qualified electrician reconnect the motor wires at the junction box on the side of the motor.
7. Re-mount the brake assembly (see previous instructions).
8. Re-apply power to the operator and run the barrier several times. If the barrier does not run satisfactorily, contact the manufacturer.

1.10 Limit Switch Replacement Instructions

WARNING: DISCONNECT BARRIER POWER BY THROWING THE MAIN POWER SWITCH (S1) OFF BEFORE BEGINNING.

1. Remove the old limit switch from the barrier limit switch assembly by removing the mounting screws and connecting wires.

NOTE: Mark chain and drive sprocket for proper reinstallation alignment.

2. Install the new limit switch by aligning the mounting holes, replacing the mounting screws and re-connecting wires as removed from defective switch.

NOTE: Visually set cams and drive sprocket to match defective unit before installation.

3. Apply power to the barrier and run it several times. If the barrier does not operate satisfactorily, contact the manufacturer.

1.11 Field Balancing Instructions

IMPORTANT: EVERY BARRIER IS BALANCED AT THE FACTORY BEFORE IT IS SHIPPED. IF ANY ADDITIONS OR CHANGES ARE MADE TO THE BARRIER ARM IN THE FIELD, THE BARRIER MAY REQUIRE RE-BALANCING. AN UNBALANCED ARM MAY DAMAGE THE OPERATOR.

If any additions or changes are made to the barrier, the following guidelines will help you determine what changes, if any, need to be made to the barrier balance:

1. Make the desired changes to the barrier arm.

2. Secure the tip end of the arm to prevent injury or accident.

3. Disconnect the connecting rod which runs between the upper and lower cranks, this will free the arm to be balanced.

INDICATIONS	PROBLEM	SOLUTION
Barrier arm tends to raise Requires more than 20 lbs. to keep it closed to traffic.	Barrier is counterweight heavy.	1. Counterweights can be removed.
Barrier arm tends to lower Requires more than 20 lbs. to keep it open to traffic.	Barrier is arm heavy.	1. Counterweights can be added.

A properly balanced barrier can be manually operated by one person pushing on the end of the counterweight mounting channel. It should require only 20 lbs. of force to manually operate the barrier. For detailed instructions on balancing the operator with weights, refer to the next page.

1.12 Gate Arm Balancing Instructions

These adjustments are set at the manufacturing facility and should not need to be adjusted in the field unless the arms have been modified, causing the weight of the arm to change.

Calculating Counterweight Requirements

1. Disconnect arm drive by removing top connecting rod bolts located on each side of the operator.
2. Mark any place on the barrier arm and attach a weighing scale to the arm at that point.
3. Measure how much weight, in pounds, it takes to start raising the barrier arm. (arm lbs.)
4. Measure, in inches, the distance from the weight point to the center of the pivot point (arm distance).
5. Measure, in inches, the distance from center of pivot point to center of counterweight (counterweight distance).
6. Follow this formula to get the proper amount of counterweight to add to barrier.

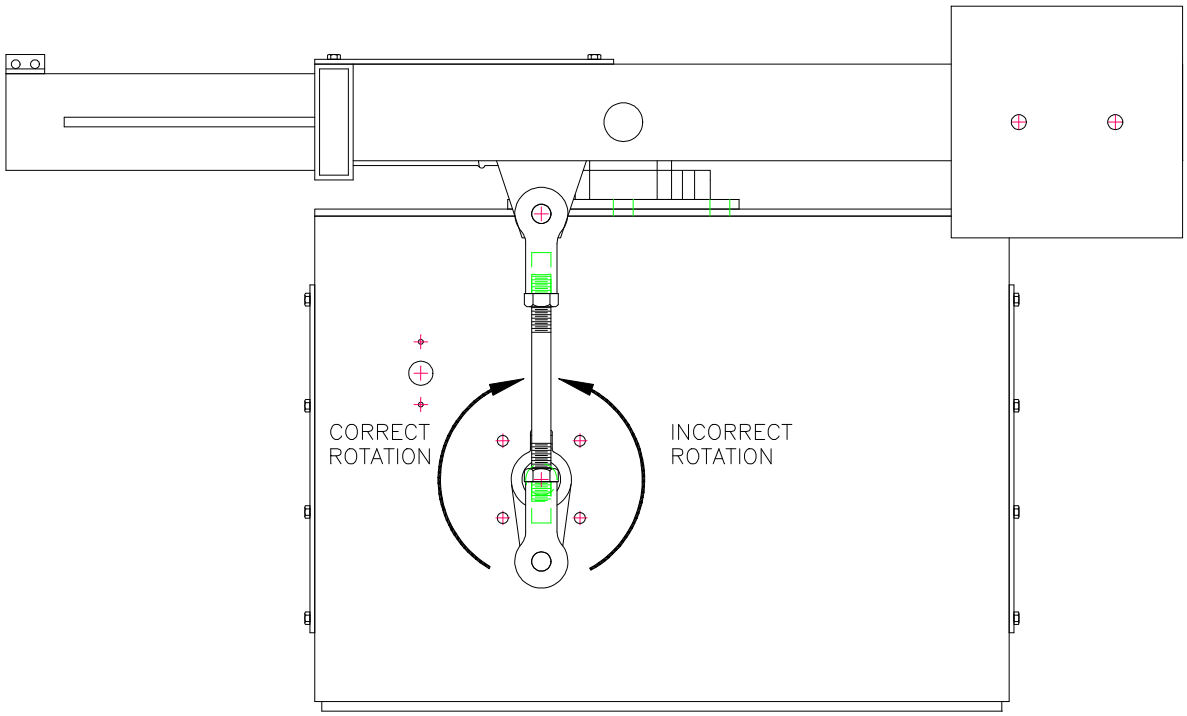
$$\frac{\text{arm lbs. x arm dist.}}{\text{cw dist.}}$$

COUNTERWEIGHT SIZES

12”X12”X1” THICK	**=**	**41 POUNDS**
12”X12”X2” THICK	**=**	**82 POUNDS**

1.13 Adjusting the Barrier Movement

When installing or maintaining a CR-25 barrier, setting the limit switches and connecting rod length properly can be confusing at times. The following instructions are intended to clarify this process. The steps can be broken into two sections, setting crank orientation, and setting barrier starting and stopping points.



SECTION 1: SETTING THE CRANK ORIENTATION AND ROTATION USING THE LIMIT SWITCHES

A standard CR-25 barrier operator with 90 degrees of travel is designed so that the barrier arm accelerates and decelerates smoothly as it pivots. This is achieved through the lengths of the two crank arms. In order to optimize this "sinusoidal" movement, the following steps should be followed when installing the operator.

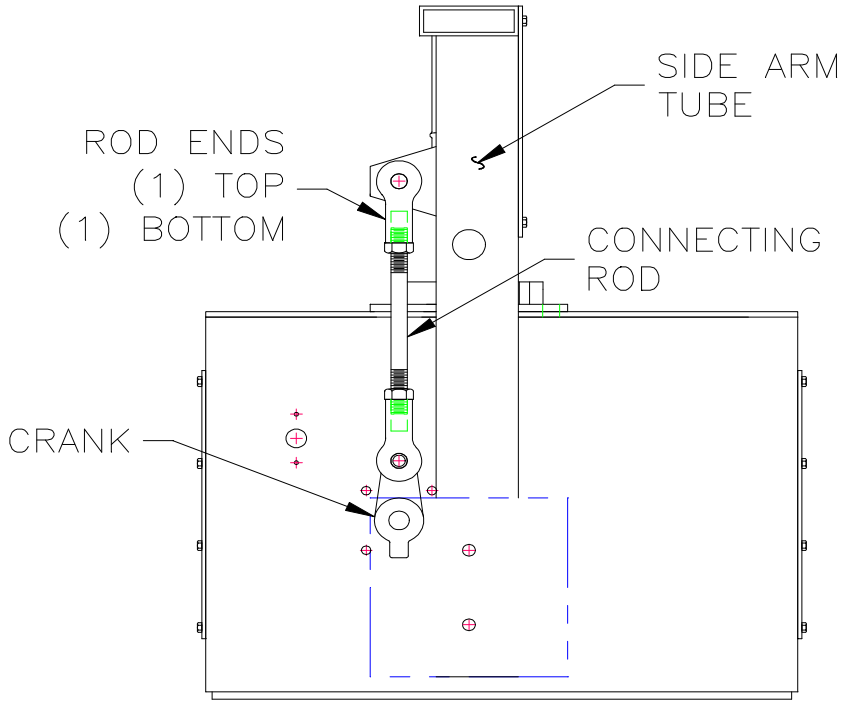
1) Determine the direction of rotation of the cranks. In a standard installation, the cranks pivot toward the motor, and the roadway.

The limit switch cams rotate the same direction that the pivot rotates. Cam 1 is always the raise stop, Cam 2 is always the lower stop, Cam 3 generally controls the arm lights if there are any.

IMPORTANT: Always power down at the main switch before adjusting the limit switches.

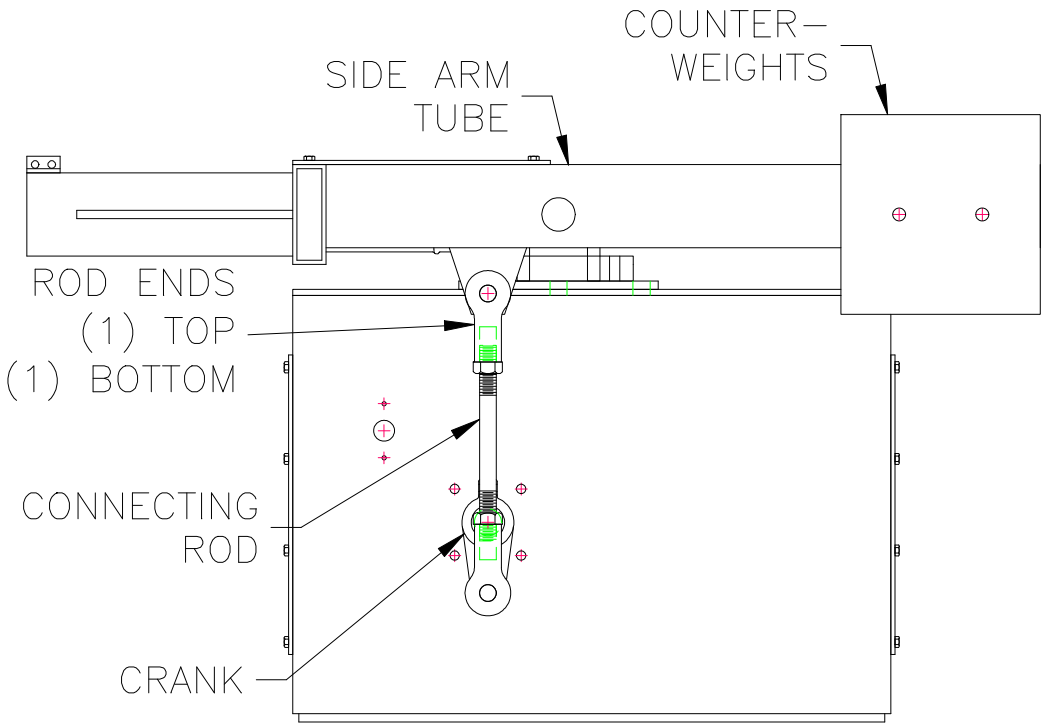
2) Manually rotate the barrier into its fully open to traffic (raised) position by inserting the manual crank onto the shaft extending from the top of the motor and turning it until the barrier reaches the desired position.

Note: At fully open, the connecting rods should be parallel with the sides of the operator and with the cranks. The cranks should be pointing straight up.



3) With an allen wrench loosen the limit switch cams just enough so that they will turn, but not so much that they are loose.

4) Rotate Cam 1 until the limit switch follower just falls off of the edge of the cam. Keep the direction of rotation of the cam in mind as you set it to ensure that when the barrier rotates, the limit switch follower will move back onto the cam.



5) Manually rotate the barrier into its fully closed to traffic position.

Note: At fully closed, the lower drive crank should have rotated through 180 degrees, and should be pointing straight down. The connecting rods should be parallel with the sides of the housing and the cranks.

6) Rotate Cam 2 until the limit switch follower just falls off of the edge of the cam. Keep the direction of rotation of the cam in mind as you set it to ensure that when the barrier rotates, the limit switch follower will move back onto the cam.

7) Re-apply power and run the barrier open and closed. If the cams require more adjustment it is important to disconnect power before moving the limit switch cams. Be sure to re-tighten the limit switch cams once they have been properly set.

NOTE: At this point in the adjustment, the crank orientation is more important than the barrier position. At the fully open and fully closed positions, the connecting rods should be parallel with the sides of the housing, and the drive cranks should point directly up or directly down.

STEP TWO: ADJUSTING THE STOPPING AND STARTING POINTS OF THE BARRIER ARM

If the starting and stopping points of the barrier arm need to be adjusted, this will be done using the connecting rods. This should only be done if the cranks and connecting rods positions are correct as described above.

8) With the barrier in the fully raised or lowered position, loosen the lock nuts on the connecting rods and turn the rods to increase or decrease their length. Adjust the rods until the barrier arm is in the desired position.

NOTE: Adjusting the connecting rods changes both the raised and lowered position by the same amount.

9) Run the barrier through several cycles to ensure proper starting and stopping points.

10) If the barrier panel travels slightly too far in either the open or closed direction, this can be adjusted using the limit switches. It is important to note that adjusting the limit switch at this point will stop the barrier arm before it has fully decelerated.

2. SPECIFICATIONS

APPLICATIONS
The CR-25 Electromechanical Crash Beam Barrier Gate will typically be used as a safety barrier. Typical applications will include embassies, nuclear facilities, "High-Risk" At-Grade crossings, government facilities where safety is an important consideration.

ENERGY ABSORPTION CAPACITY
The manual version of the CR-25 crash beam with 3/4" cable has been successfully crash tested per U.S. Navy specifications (OR-98-09-88 and M-56-86-05 with a level 1/L2 rating) and Department of the Army rating level of KN1-LN2. It is also listed by the U.S. Army Corps of Engineers in their document Protection Against Malevolent Use of Vehicles at Nuclear Power Plants (NUREG/CR-6190 Vol. 2, Rev. 1).

HOUSING
The housing will be fabricated from 3/8-inch steel plate and will be hot dip galvanized after fabrication. Formed, channel shaped side plates will be used to produce a strong configuration without welded corners. The housing will receive a finish coat of aluminum paint.

Access doors will be provided to service the operating mechanism and electrical equipment. The doors will be sealed with neoprene strip gaskets and bolted in place with corrosion-resistant, hex-head bolts.

The housing base will provide twelve 1-1/4 inch holes for mounting on the customer's foundation. Anchor bolts and template will be supplied by the gate manufacturer. Standard anchor bolts size will be 1.125-7 UNC X 2’-9” Long hot dip galvanized.

ARM
The beam arm will be constructed from 4-inch 6061-T6 aluminum pipe which will contain the wire rope assembly. Maximum arm length will be 25 feet.

Dimension "A", Shall be measured from the centerline of the pivot to the centerline of the bollard, will not exceed 322 inches. See Installation drawings for arm lengths.

Gate arms will be covered with 16-inch alternating red and white engineering grade reflective sheeting.

ARM MOUNTING TUBES
Arm mounting tubes will be hot dip galvanized carbon steel. The roadway arm shaft centerline will be 30-1/2 inches above the base line of the gate housing.

COUNTERWEIGHTS
Each gate will be equipped with suitable hot dip galvanized steel counterweights of the sectional, bolt-on type.
ARM SHAFTS

The main arm shaft will be mounted in heavy duty ball bearings. The main arm shaft will be not less than 2 inches in diameter. Shaft material will be ASTM A311 Class B high strength, stressproof steel.

TRANSMISSION
The transmission will be a fully enclosed, all gear, direct drive unit running in an oil bath. The drive train will not use belts or chains and will be connected to the arm shaft with a connecting rod having self-aligning ball ends. The connecting rod will be constructed of ASTM A311 Class B high strength stressproof steel.

During the opening and closing cycles, the gate arm will begin with zero velocity and accelerate smoothly reaching maximum velocity at mid-stroke (45 degrees). The arm will then decelerate smoothly to zero velocity at full stroke (90 degrees) preventing bounce or whip of the arm. Standard operating time to open or close the gate will be 13 seconds. Consult the factory for other available speeds.

MOTOR
A 110V, 1/2HP Single Phase motor will be supplied. The motor will be of the flange mounted type, attached to the transmission case with not less than four bolts. The motor will be of the instant reversing type to permit reversing movement of the arms at any point of travel. Motor data will appear in the manual.

BRAKING MECHANISM
A solenoid release, automatic motor brake will be furnished as part of the gate drive mechanism. The brake will automatically release when the handcrank is inserted to manually operate the gate.

HANDCRANK
A handcrank and drill crank will be included with each gate to operate the gate during power failure. An automatic safety disconnect switch will automatically break the control circuit power when the handcrank is inserted to allow for manual operation.

LIMIT SWITCH
The gate limit switch will be a unit assembly containing eight individual switches having one set of normally open and one set of normally closed contacts each. Contacts will be totally enclosed and will have U.L. rating of not less than 15 amperes at 220 volts AC. Limit switch will be readily accessible and easily replaced with normal hand tools. Each individual switch will be controlled by an independent cam, which will be adjustable with a hex socket cap screw. The limit switch body, shafts and cams will be of corrosion resistant non-ferrous materials.

SAFETY SWITCHES, TERMINAL BLOCKS AND WIRING

To protect operating and maintenance personnel from injury during service or installation, a manual disconnect switch will be furnished, installed and fully wired in the main motor leads. Automatic disconnect switches will be arranged to break the control circuit when either door is opened. Pressure type terminal blocks will be provided and installed inside the housing on the roadway side. All control wires will terminate on these blocks. Each terminal will be clearly labeled and all conductors will be color coded and/or numbered. The wiring diagram will reflect such colors or numbers. A GFI receptacle will be supplied in the gate housing. No conductor will be smaller than #16 AWG stranded. Each housing will contain a laminated electrical schematic secured to the inside of the housing for reference by service personnel.

ENERGY ABSORPTION CABLES

A 7/8-inch diameter galvanized, double-extra improved plow steel 6 x 9 IWRC (independent wire rope center) wire rope will provide the primary vehicle restraint capability of the barrier. The cable will have closed, cad-plated swage sockets on each end. Both ends of the cable will be anchored securely at the operator end of the beam doubling the cable. The cable assembly will be enclosed inside the arm and will form a loop at the end of the beam arm.

CABLE ANCHORING SYSTEM

The cable assembly will be designed to securely engage an anchor post at the arm end on impact. The engaged assembly will be designed to anchor the cable assembly at each end of the beam at all times when the arm is in the closed position to withstand collision loads.

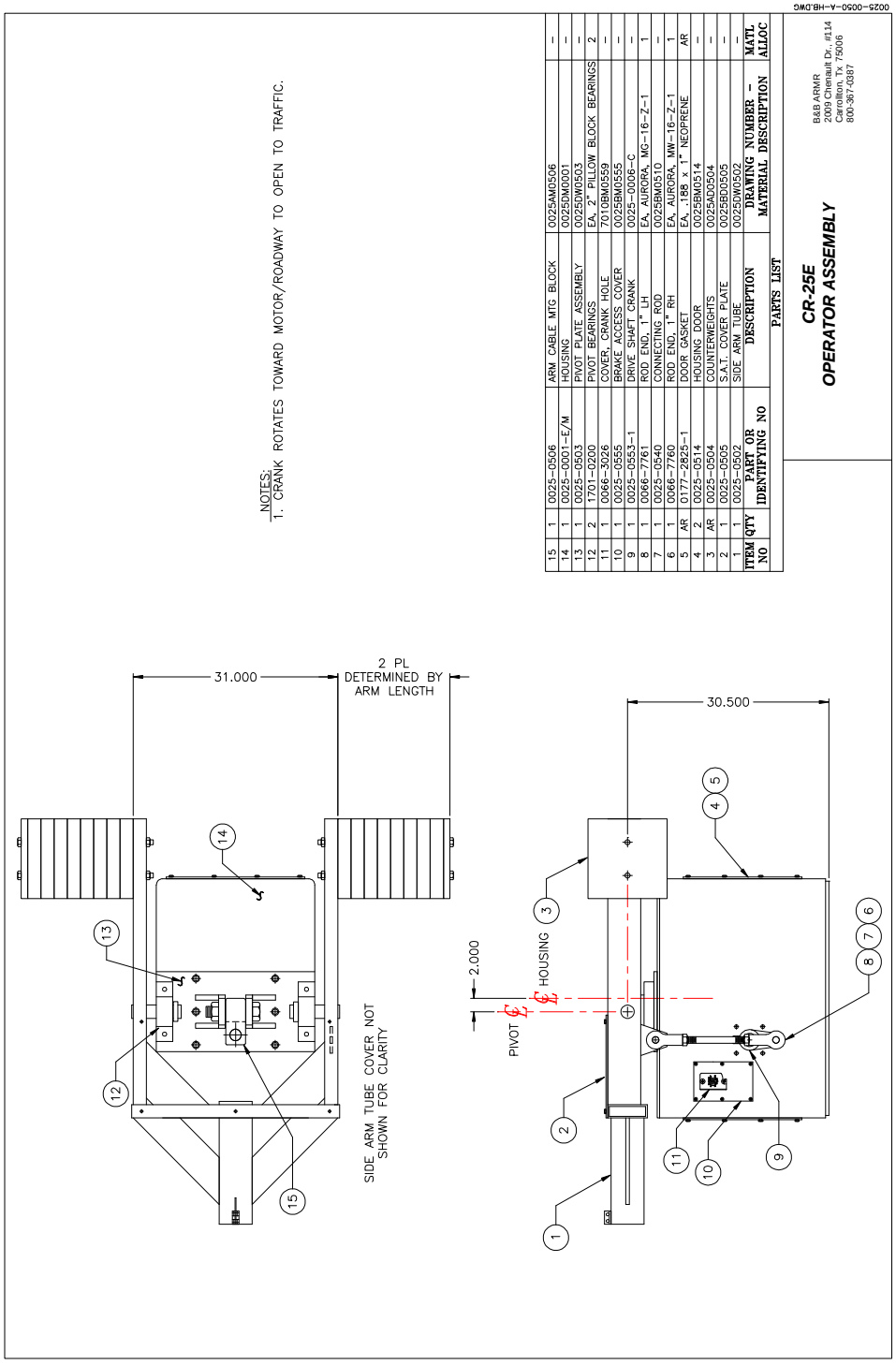
Engagement of the anchoring assemblies at each end will not rely upon any electrical, hydraulic, magnetic or other powered devices. A clevis mounted on the end of the crash beam will be designed to securely and passively engage and lock itself to the bollard upon vehicle impact with the beam.

QUALITY ASSURANCE

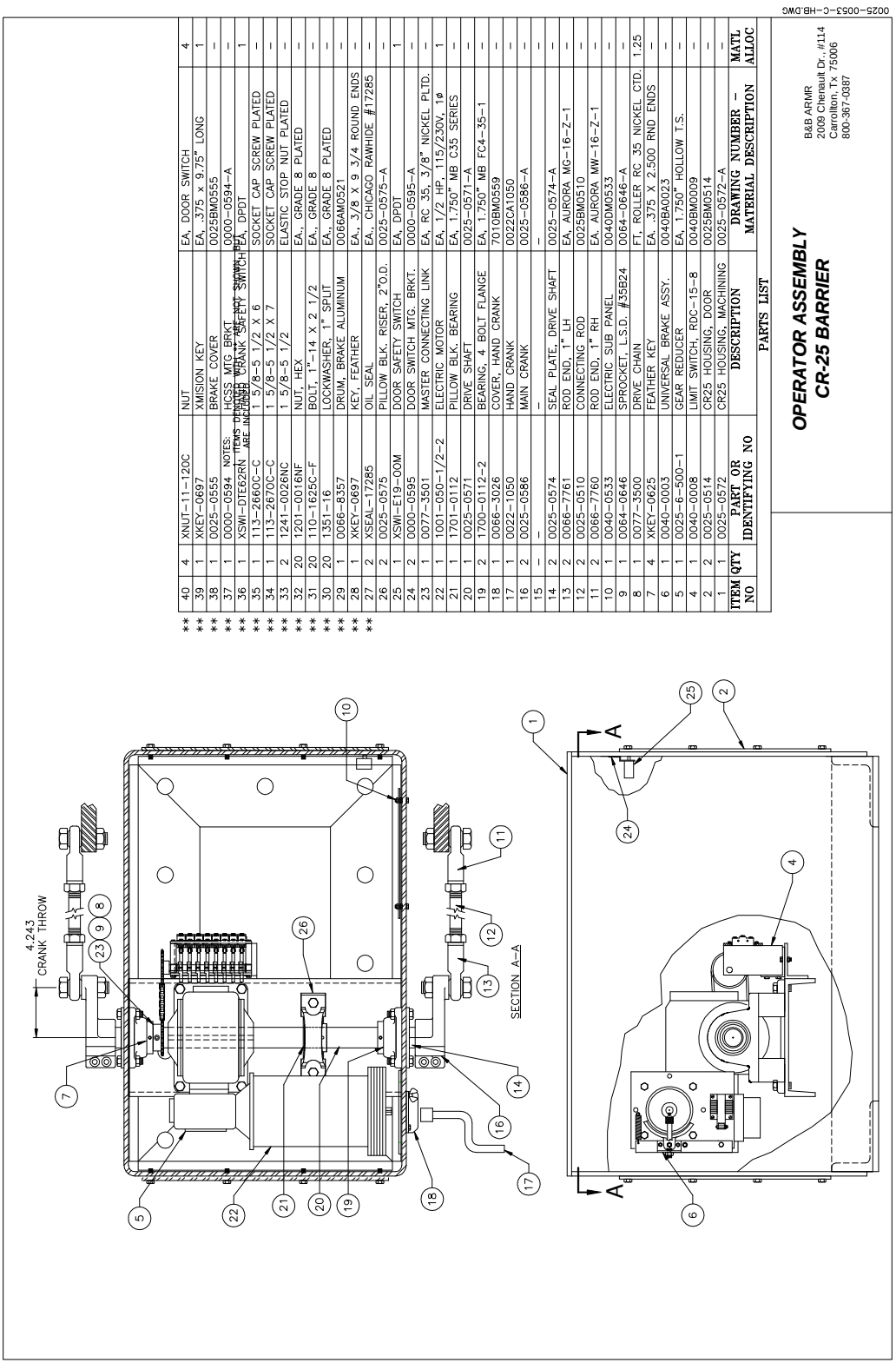
Manufacturer of the traffic control gate operator will have a minimum of five years experience in the manufacture of industrial gate operators and barriers, and will make available replacement parts for 10 years. All gates are individually inspected at time of final assembly and test. Each gate will be tagged "ACCEPTED" upon completion of inspection and “Certification of Testing” will be supplied in the handbook for validation of meeting internal Quality Assurance standards.

3. ACCESSORIES AND MAJOR COMPONENTS

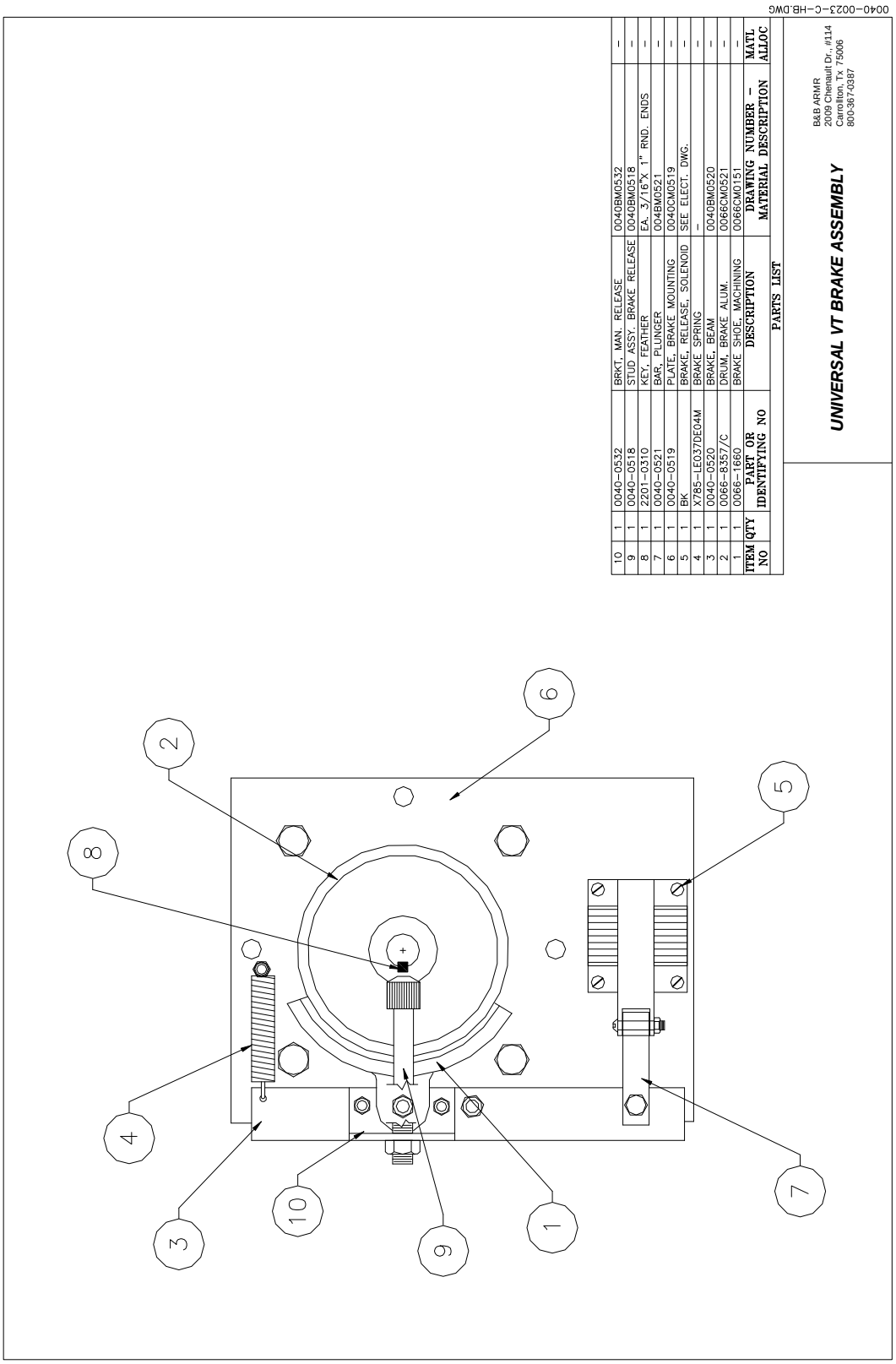
3.1 Housing Assembly – 0025-0050-A



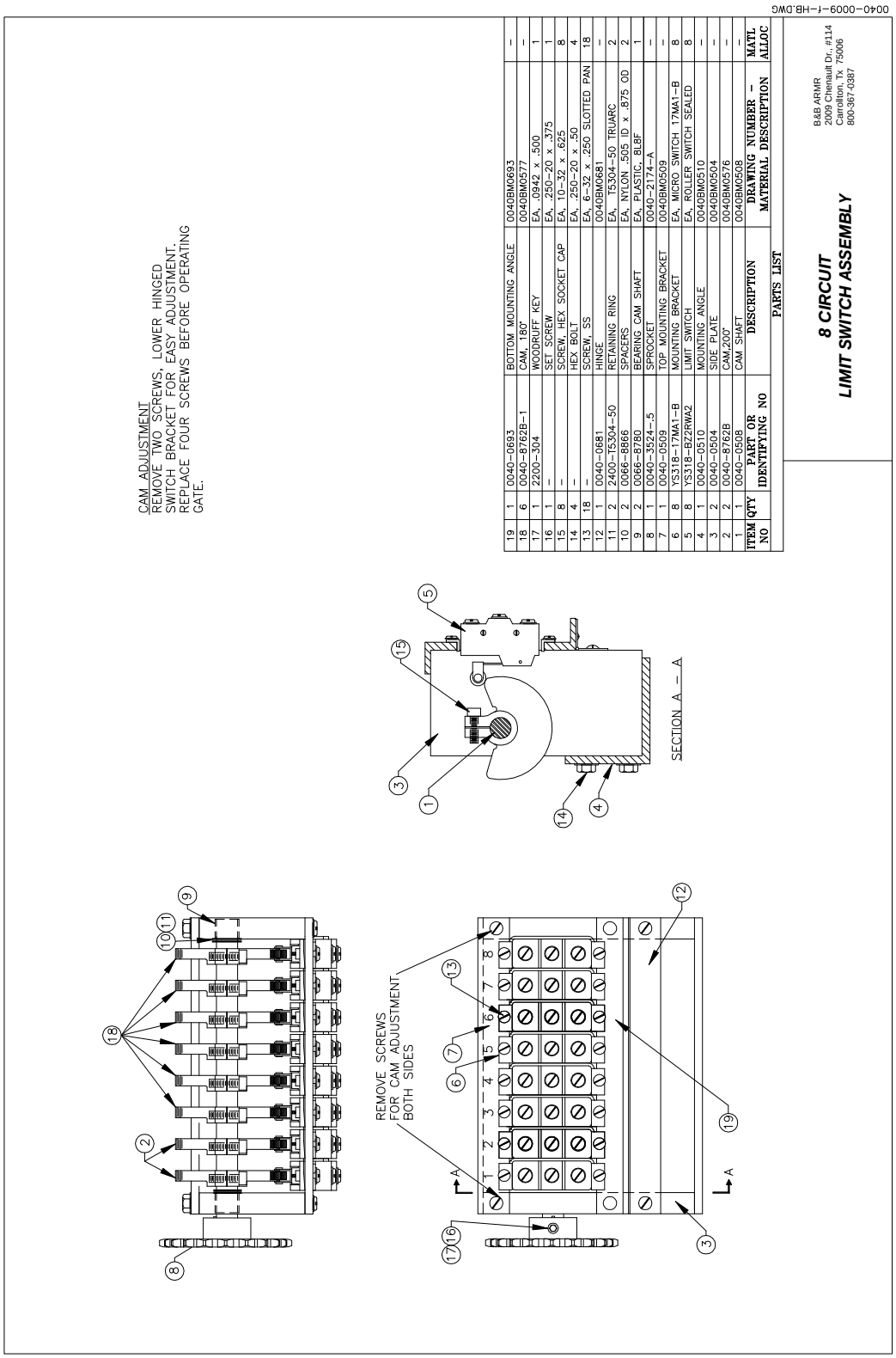
3.2 Operator Assembly – 0025-0053-B



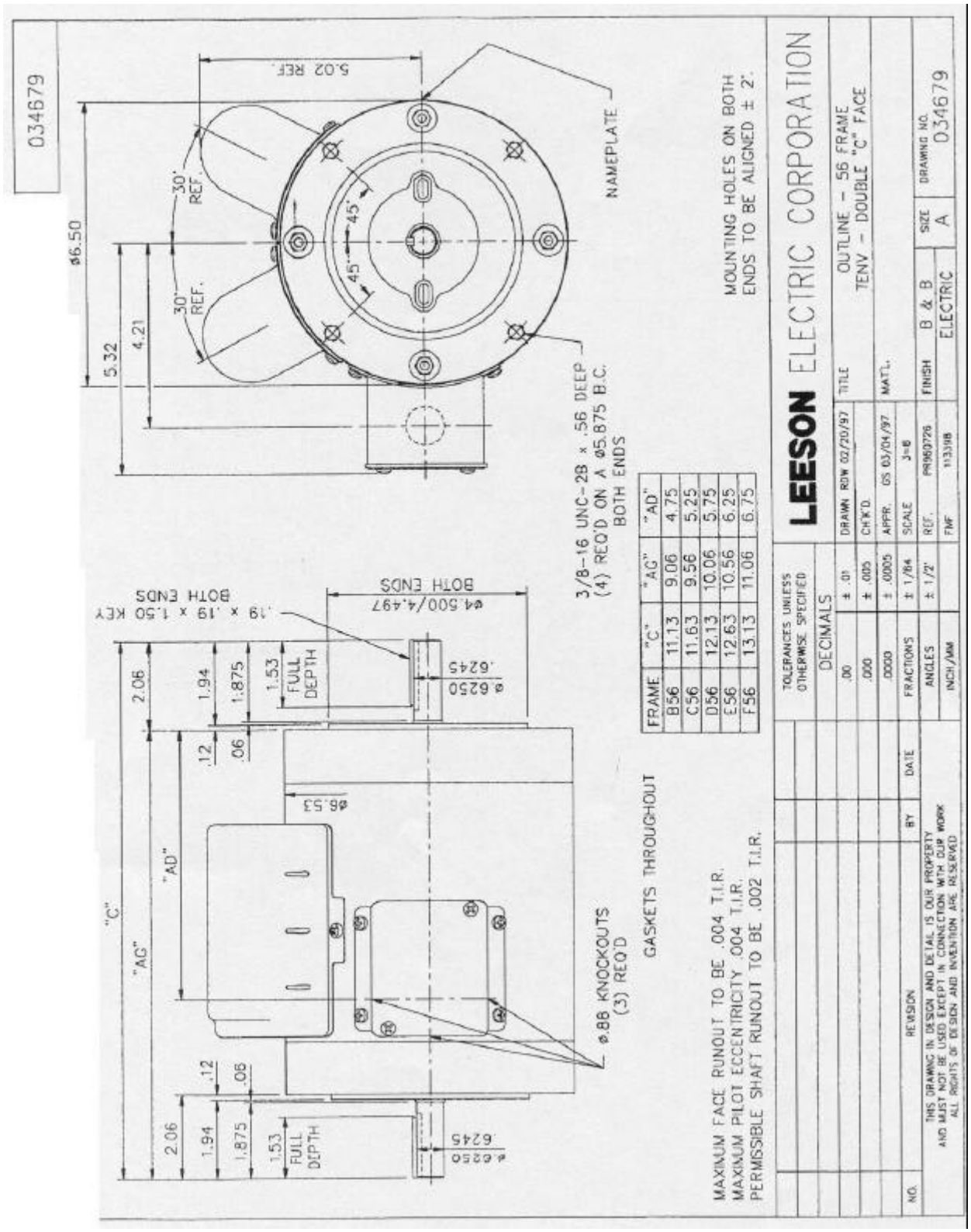
3.3 Brake Assembly – 0040-0023-C



3.4 Limit Switch Assembly - 0040-0009-F

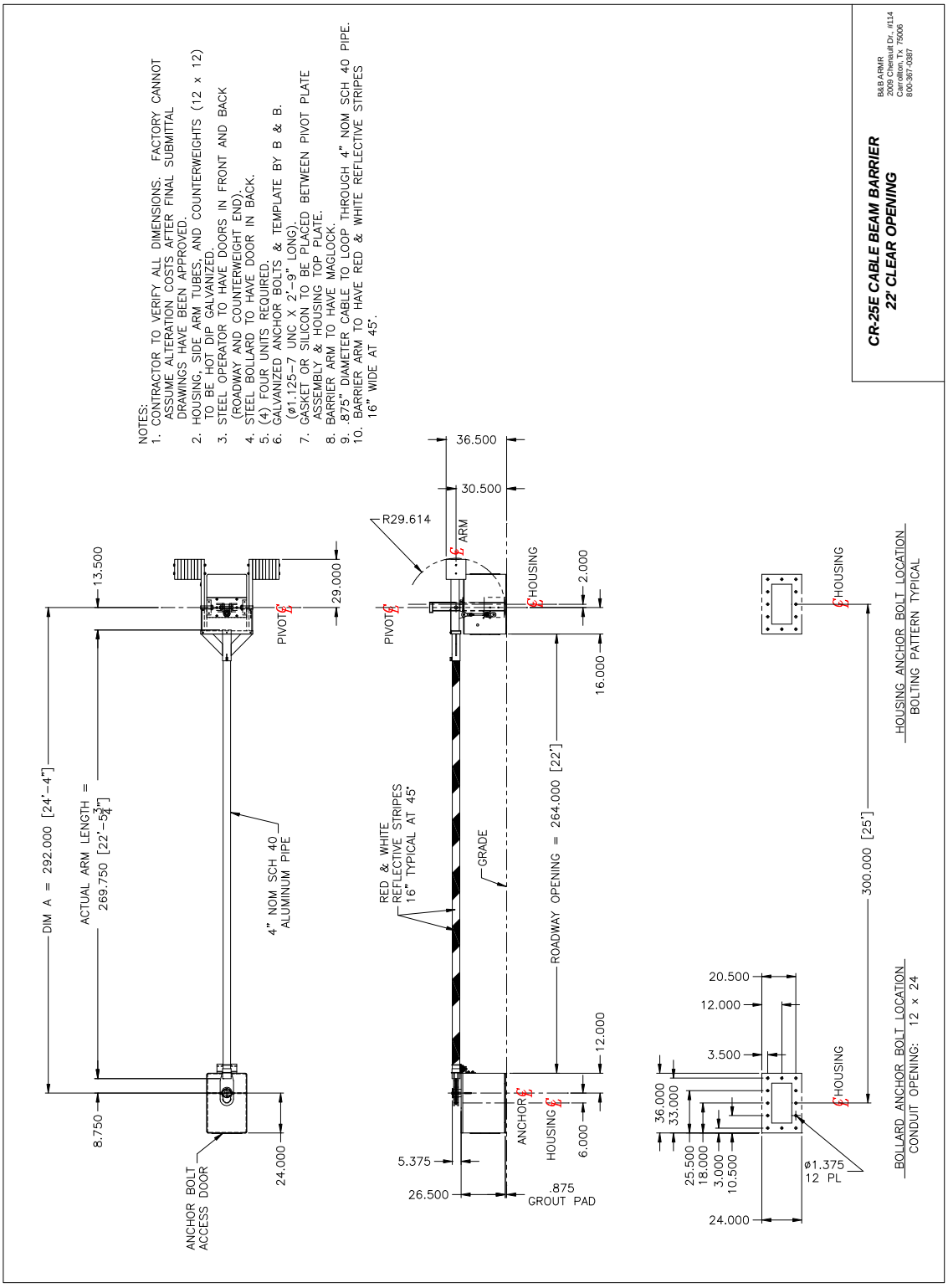


3.5 Motor Cut Sheet

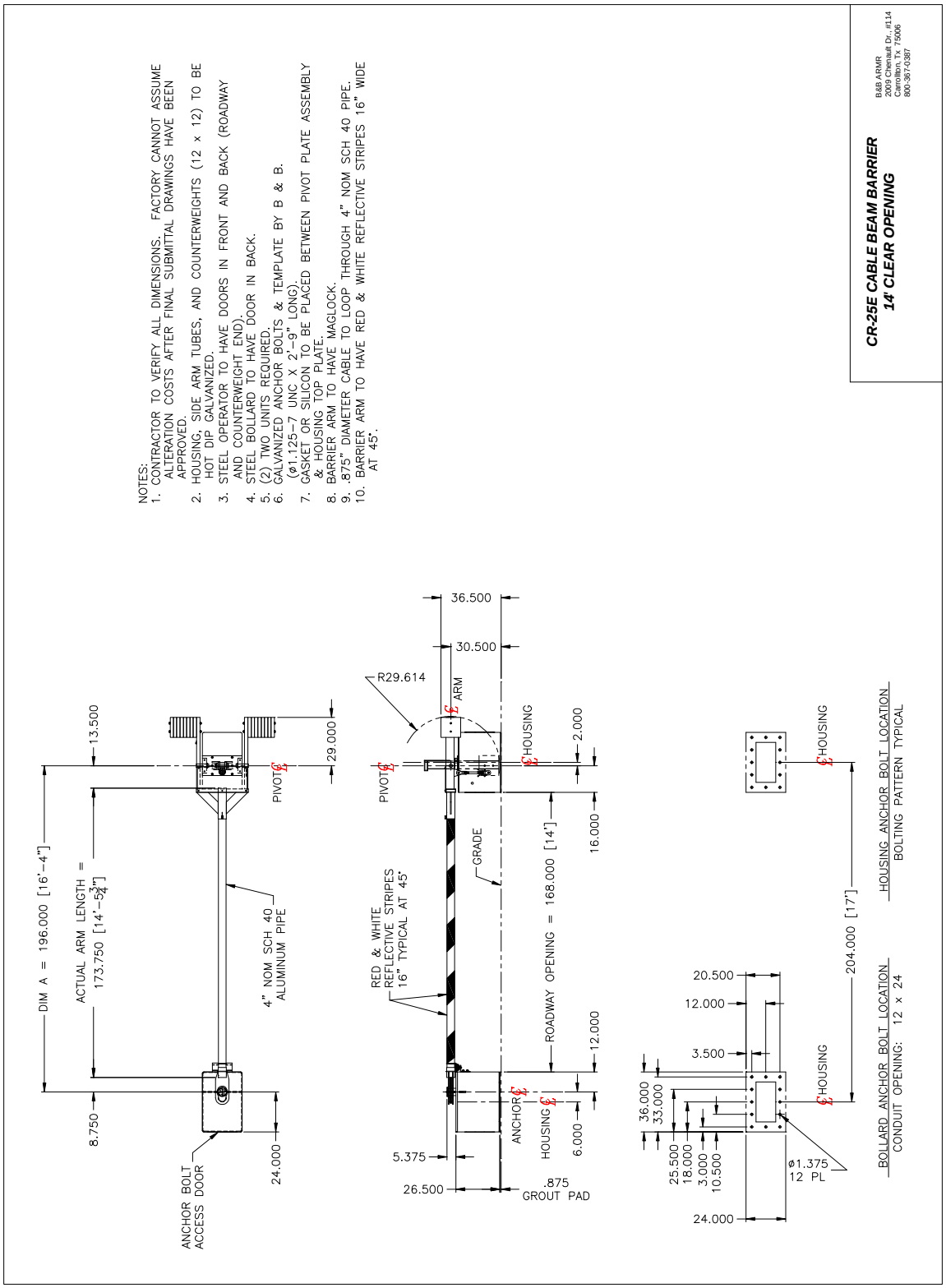


4. SYSTEM DRAWINGS

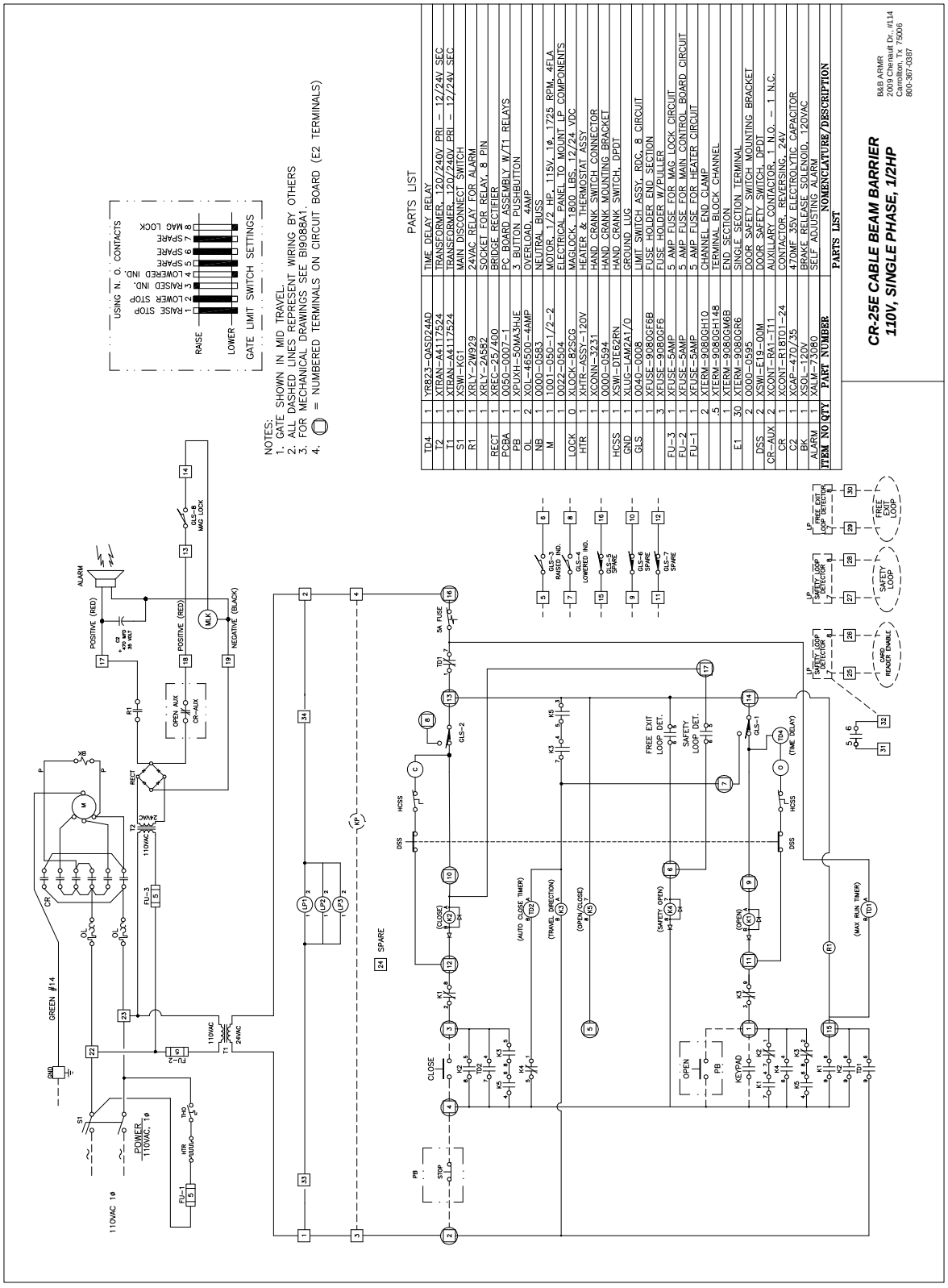
4.1 Installation – 22' Clear Opening



4.2 Installation – 14' Clear Opening



4.3 Wiring



5. WARRANTY

B&B-ARMR CORPORATION warranties for a period of one year, after delivery F.O.B. plant, unless otherwise specified by Supplier, from failure of operation in ordinary use and against defects due to faulty material or workmanship. Any defective equipment in the Barrier shall be returned to the factory, at Supplier's option, for repair or replacement, and Supplier assumes no responsibility for service at any consumer site. Supplier 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 the end user. Supplier shall not have any liability under these specifications, other than for repair or replacement as described above for 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 Supplier personnel, nor by Supplier authorized personnel, failure to perform manufacturer's suggested routine maintenance, modifications, misuse, accident, catastrophe, neglect, natural disaster, act of God or if at any time the power supplied to any part of the Security Barrier falls short or exceeds the rate of tolerance for the equipment.

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

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 B&B-ARMR will render the warranty herein as null and void.