HYD1000 SLIDE GATE SPECIFICATIONS

SLIDING GATE OPERATORS

1. General: Furnish and install positive drive hydraulic slide gate operators.

2. Operation: Slide gate operation shall be by means of a non-metallic rack passing over a solid metal pinion. Operator motor shall be hydraulic, roller stator/gerotor type, and system shall not include belts, drive wheels, pulleys, roller chains or sprockets to transfer power from operator to gate panel. The operator and motor shall follow gate vertical motion over 6" vertical range caused by uneven ground surface. The operator shall be capable of generating a minimum horizontal pull of 750 pounds without slipping and without distortion of supporting structure. Hydraulic force adjustment shall be available to meet applicable UL-325 requirements. The operator shall be capable of handling gates weighing up to 4000 pounds. Gate panel velocity shall meet applicable UL-325 standards requirements. Operator shall sequence gate motion as required by UL-325 standard for the appropriate class of installation.

3. Mechanical Components: Standard mechanical components shall include as a minimum:
   A. Supporting arms: Welded steel construction with UHMW component inserted for ease of travel in the vertical motion to maintain engaged with gate over a 6” range.
   B. What the above means is that when the operator is locked on to the pinion, with the lock down wheel, the gate operator will not disengage from the gate.
   C. Drive release: Hydraulic locking via electric solenoid valve with factory-installed option of fail-safe or fail secure.
   D. Limit switches: Sealed magnetic limit switches for open and closed indication. Sensing gap to be 2” with 24” armored shielded cable.
   E. Electrical enclosure: Oversized, metal, with hinged lid for protection from intrusion of foreign objects, and providing ample space for the addition of accessories.
   F. Chassis: 1/2” steel base plate with welded structural elements. Structure bolted to concrete base per manufacture’s drawings.
   G. Low friction UHMW components for quiet operation with no lubrication requirements.
   H. Cover: 16-gauge aluminum sheet metal with a rubberized finish. All joints welded, filled and ground smooth. Finished corners square and true with no visible joints.
   I. Finish: Fully rubberized then finish coat of high gloss.
   J. Drive wheel: 4” diameter metal pinion matched to non-metallic rack.
   K. Drive rack: Non metallic, self-lubricated polymer material with pre-drilled mounting holes and end matched profile for smooth operation.
   L. Hydraulic hose: Shall be 1/4” synthetic, rate to 2750 p.s.i. with swivel fittings at drive motor.
   M. Hydraulic lock valve: Shall be individually replaceable cartridge type, in an integrated hydraulic pump manifold and available as fail-safe or fail secure.
   O. Adjustable relief valves to allow meeting UL-325 standard requirements for class of installation.
   P. The hydraulic fluid reservoir shall be formed from a single piece of metal, non-welded, and shall be integral with pump and electric motor assembly.

4. Electrical Components: Minimum standard electrical components shall be Industrial grade and include:
   A. Pump motor: Shall be a 1/3 HP, 56C, continuous duty motor, with a service factor of 1.15 or greater. 120 VAC-60 Hz, 1ph motor to be provided with internal thermal protection.
   B. Controls: To be listed by recognized testing laboratory as meeting UL-325 requirements.
1. inherent entrapment sensor;
2. built in “warn before/while adjustable operate” system;
3. built in time to close;
4. max. operating timers for opening and closing;
5. programmable operating mode options;
6. anti-tailgate mode;
7. built-in power surge/lightening strike protection.

C. Transformer: energy efficient 30VA adjustable for 120 VAC or 240 VAC operation.
D. Control circuit: 24 VAC
E. External sensor provisions for photo eyes or gate edges or a combination thereof to be installed such that the gate is capable of reversing in either direction upon sensing an obstruction.
F. Optional control devices: card reader, key-switch, radio control, push buttons, vehicle detectors, or keypads.
G. Optional alert devices: flashing lights or rotating beacon.

5. Slide gate operator shall be Byan Systems, Inc. model # HYD-1000.
   A. Gate operator Factory Testing:
      1. Fully assemble and test, at the factory, each gate operator to ensure smooth operation, sequencing and electrical connection integrity.
      2. Check all mechanical connections for tightness and alignment. Check all welds for completeness and continuity. Check welded corners and edges to assure they are square and straight.
      3. Inspect finish for completeness. Touch up any imperfections prior to shipment.
      4. Check all hydraulic hoses and electrical wires to assure that chafing cannot occur.
HYD 1000
HYDRAULIC VEHICULAR SLIDE GATE OPERATOR

INSTALLATION AND TECHNICAL MANUAL

BYAN SYSTEMS, INC. OF LUSK, WYOMING, DEMANDS THAT YOU AS THE INSTALLER INFORM YOUR CUSTOMER OF ALL SAFETY EQUIPMENT THAT SHOULD BE INSTALLED ON EACH JOB SITE. THIS IS IN ACCORDANCE WITH YOUR LEGAL LIABILITY TO YOUR CUSTOMER. ENSURE THAT THE PROTECTION AND WARNING SIGNALING DEVICES ARE OPERATIONAL AND VISIBLE. THESE STEPS WILL AID IN YOUR DEFENSE SHOULD YOU BECOME INVOLVED IN LITIGATION REGARDING INJURY AND/OR DEATH OR DAMAGE.
## HYD 1000 VEHICULAR SLIDE GATE OPERATOR

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ELECTRIC MOTOR</strong></td>
<td>115 VOLT AC</td>
</tr>
<tr>
<td></td>
<td>60HZ</td>
</tr>
<tr>
<td></td>
<td>SINGLE PHASE</td>
</tr>
<tr>
<td></td>
<td>3 AMP DRAW</td>
</tr>
<tr>
<td></td>
<td>1/3 HORSEPOWER</td>
</tr>
<tr>
<td></td>
<td>325 RPM</td>
</tr>
<tr>
<td><strong>HYDRAULIC FLUID</strong></td>
<td>ISO 15</td>
</tr>
<tr>
<td><strong>OPERATING TEMP.</strong></td>
<td>-40 TO +240F</td>
</tr>
<tr>
<td><strong>DUTY RATING</strong></td>
<td>CONTINUOUS</td>
</tr>
<tr>
<td><strong>SPEED</strong></td>
<td>1 FOOT/SEC.</td>
</tr>
<tr>
<td><strong>MAX GATE LENGTH/WEIGHT</strong></td>
<td>DEPENDS ON INSTALLATION</td>
</tr>
</tbody>
</table>

### DIMENSIONS

- **HEIGHT**: 20-1/4 INCHES
- **WIDTH OVER PINION**: 18-1/2 INCHES
- **FRONT WIDTH**: 16-1/2 INCHES

This operator with its unique design can handle a 10 inch crown in the road and is listed for use as a Class I, Class II, or Class IV slide gate operator.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Issues</td>
<td>3</td>
</tr>
<tr>
<td>Gate Operator Category</td>
<td>6</td>
</tr>
<tr>
<td>Usage Classes for Vehicular Gates</td>
<td>7</td>
</tr>
<tr>
<td>Gate Types</td>
<td>8</td>
</tr>
<tr>
<td>Placard Placement &amp; Requirements</td>
<td>9</td>
</tr>
<tr>
<td>Pre-Installation</td>
<td>10</td>
</tr>
<tr>
<td>Concrete Pedestal Installation</td>
<td>11</td>
</tr>
<tr>
<td>Hydraulic Operator Installation</td>
<td>14</td>
</tr>
<tr>
<td>Electrical Installation</td>
<td>18</td>
</tr>
<tr>
<td>Mechanical Maintenance Items</td>
<td>19</td>
</tr>
<tr>
<td>Electrical Maintenance Items</td>
<td>22</td>
</tr>
<tr>
<td>Pre-Wired Electronic Control Panel</td>
<td>23</td>
</tr>
<tr>
<td>G2M Control Board</td>
<td>25</td>
</tr>
<tr>
<td>Warranty</td>
<td>30</td>
</tr>
<tr>
<td>End User Safety</td>
<td>31</td>
</tr>
<tr>
<td>Customer Acknowledgement</td>
<td>33</td>
</tr>
</tbody>
</table>
SAFETY ISSUES

A. Important Safety Instructions

<table>
<thead>
<tr>
<th>WARNING – To reduce the risk of injury or death:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. READ AND FOLLOW ALL INSTRUCTIONS.</td>
</tr>
<tr>
<td>2. Never let children operate or play with gate controls. Keep the remote control away from children.</td>
</tr>
<tr>
<td>3. Always keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.</td>
</tr>
<tr>
<td>4. Test the gate operator monthly. The gate MUST reverse on contact with a rigid object or stop when an object activates the non-contact sensors. After adjusting the force or the limit of travel, re-test the gate operator. Failure to adjust the gate operator properly can increase the risk of injury or death.</td>
</tr>
<tr>
<td>5. Use the emergency release only when the gate is not moving.</td>
</tr>
<tr>
<td>6. KEEP THE GATE PROPERLY MAINTAINED. Read the owner’s manual. Have a qualified serviceperson make repairs to the gate hardware.</td>
</tr>
<tr>
<td>7. The entrance is for vehicles only. Pedestrians must use a separate entrance.</td>
</tr>
<tr>
<td>8. SAVE THESE INSTRUCTIONS.</td>
</tr>
</tbody>
</table>

B. Install the gate operator only when:

1. The operator is appropriate for the construction of the gate and the usage classification of the gate (see Gate Classification Section in this manual.)

2. All openings of a horizontal slide gate are guarded or screened from the bottom of the gate to a minimum of 4 fee (1.2 M) above the ground to prevent a 2-1/4” diameter sphere from passing through the openings anywhere in the gate, and in that portion of the adjacent fence that the gate covers in the open position.

3. All exposed pinch points are eliminated or guarded.

4. Guarding is supplied for exposed rollers.
C. The operator is intended for installation only on gates used for vehicles. Pedestrians must be supplied with a separate access opening.

D. The gate must be installed in a location so that enough clearance is supplied between the gate and adjacent structures when opening and closing to reduce the risk of entrapment.

E. Controls must be far enough from the gate so that the user is prevented from coming in contract with the gate while operating the controls. Controls intended to be used to reset the operator after two sequential activations of the entrapment protection device or devices must be located in the line-of-sight of the gate. Outdoor or easily accessible controls shall have a security feature to prevent unauthorized use.

F. End User Safety:

   • The gate automation and access control manufacturer has no control over the gate system you have automated. The word “system” herein refers to the gatepost, gate leaf, hinging, all automation equipment, accessory devices, the construction and installation thereof.

   • Vehicular gate operating systems provide convenience and security to their users. Because these machines produce such high levels of force, all gate system designers, installers and end users must be aware of the potential hazards associated with improperly designed, installed or maintained systems.

   • Each component must work in unison to provide the end user, visitors, and subsequent owners with proper operation of all automation, safety and access control equipment.

   • It is the responsibility of the designer, installer, and purchaser, to ensure the total system is safe for the particular application.

   • The end users’ responsibility is always present. Assurance of safety rests with the user of the gate system.

   • Gate systems should be protected as may be necessary from children and pets by whatever means necessary. Moving devices always present people, pets, and property with certain risks and have potential for harm.

   • The following list of precautions has been prepared for you review. This list is no all–inclusive nor is it represented as such. Please ask your installer any questions you have now or later about the installation, operation, or safety features of your gate system.

       1. Be sure the operating and safety instructions are available to all persons that will operate the gate system.
2. Keep the gate system operating area clear of all obstructions. Stay clear of the operating area when the gate system is in use.

3. Do not allow children or pets near the gate system. In a residential or multi-family dwelling it may be necessary to fence off portions of the system. It may be necessary to mount protection devices in the area, on the gate, or on the equipment itself.

4. **CAUTION!!** Never allow children to ride on the gate(s) or play around the electrical enclosures.

5. Never operate a gate system without visual contact so it can be suspended if necessary.

6. Secure and label power cabinets or equipment covers.

7. If the gate has an open roller, each must have a guard suitable to protect persons, pets and clothing that could be entrapped, no matter how unlikely it may appear at first glance.

8. Ensure all safety devices are tested regularly.

9. Do not tighten clutches or increase pressures to compensate for a poor gate system design and/or gate leaf.

10. Install warning placards on both sides of the gate leaf.

11. Have proper lighting installed for nighttime use.

12. Never become complacent with the operation of a gate system. Schedule periodic inspection and/or maintenance.
GATE OPERATOR CATEGORY

A vehicular gate operator or vehicular barrier (arm) operator shall have provisions for, or be supplied with, at least one independent primary and one independent secondary means as specified in the table below to protect against entrapment.

**Gate Operator Category:**

<table>
<thead>
<tr>
<th>Vehicular Usage Class</th>
<th>Horizontal Slide Vertical Lift</th>
<th>Vertical Pivot</th>
<th>Swing Gate Vertical Barrier (Arm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary Type</td>
<td>Secondary Type</td>
<td>Primary Type</td>
</tr>
<tr>
<td>Class I &amp; II</td>
<td>A</td>
<td>B1, B2, D</td>
<td>A or C</td>
</tr>
<tr>
<td>Class III</td>
<td>A, B1, B2</td>
<td>A, B1, B2, D, E</td>
<td>A, B1, C</td>
</tr>
<tr>
<td>Class IV</td>
<td>A, B1, B2, D</td>
<td>A, B1, B2, D, E</td>
<td>A, B1, C, D</td>
</tr>
</tbody>
</table>

NOTE – The same type of device shall not be utilized for both the primary and secondary entrapment protection means. Use of a single device to cover both the opening and closing directions is in accordance with the requirements; however, a single device is not required to cover both directions. A combination of Type B1 for one direction and on Type B2 for the other direction is the equivalent of one device for the purpose of complying with the requirements of either the primary or secondary entrapment protection means.

**Entrapment Protection Types:**

Type A: Inherent entrapment sensing system.

Type B1: Provision for connection of, or supplied with, a non-contact sensor (photoelectric sensor or equivalent)

Type B2: Provision for connection of, or supplied with, a contact sensor (edge device or equivalent)

Type C: Inherent adjustable clutch or pressure relief device.

Type D: Provision for connection of, or supplied with, an actuating device requiring continuous pressure to maintain opening or closing motion of the gate.

Type E: An inherent audio alarm.
CLASS I – RESIDENTIAL VEHICULAR GATE OPERATOR

A vehicular gate operator (or system) intended for use in a one to four family dwelling, or a garage or parking area associated therewith.

CLASS II – COMMERCIAL/GENERAL ACCESS VEHICULAR GATE OPERATOR

A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single-family units), hotel, garages, retail store, or other buildings servicing the general public.

CLASS III – INDUSTRIAL/LIMITED ACCESS VEHICULAR GATE OPERATOR

A vehicular gate operator (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not intended to service the general public.

CLASS IV – RESTRICTED ACCESS VEHICULAR GATE OPERATOR

A vehicular gate operator (or system) intended for use in a guarded industrial location or building such as an airport security area or other restricted access locations not servicing the general public, in which unauthorized access is prevented via supervision by security personnel.
GATE TYPES

Gate:

A moving barrier such as a swinging, sliding, raising, lowering, rolling or the like, barrier, that is a stand-alone passage barrier or is that portion of a wall or fence system that controls entrance and/or egress by persons or vehicles and completes the perimeter of a defined area.

Vehicular Barrier (arm) Operator (or system):

An operator (or system) that controls a cantilever type device (or system), consisting of a mechanical arm or barrier that moves in a vertical arc, intended for vehicular traffic flow at entrances or exits to areas such as parking garages, lots, or toll areas.

Vehicular Vertical Pivot Gate Operator (or system):

A vehicular gate operator (or system) that controls a gate that moves in an arc in a vertical plane that is intended for use for vehicular entrances or exits to a drive, parking lot, or the like.

Vehicular Horizontal Slide Gate Operator (or system):

A vehicular gate operator (or system) that controls a gate which slides in a horizontal direction that is intended for use for vehicular entrance or exit to a drive, parking lot, or the like.

Vehicular Swing Gate Operator (or system):

A vehicular gate operator (or system) that controls a gate which swings in an arc in a horizontal plane that is intended for use for vehicular entrance or exit to a drive, parking lot, or the like.

Vehicular Swing Gate Operator (or system):

A vehicular gate operator (or system) that controls a gate which moves in the vertical direction and is intended for use for vehicular entrance or exit to a drive, parking lot, or similar location.

Note: this manual applies to the Vehicular Horizontal Slide Gate Operator.
PLACARD PLACEMENT AND REQUIREMENTS

Placard Placement:

1. The gate shall have a warning placard installed on each side of the gate.
2. Each placard shall be visible to person located on the side of the gate on which the placard is installed.
3. The placard shall contain the word “WARNING” in upper-case letters, preceded by a safety alert symbol consisting of an orange exclamation mark, a black solid equilateral triangle background with the point of the triangle oriented upward. The word “WARNING” and the safety alert symbol shall be centered on one line and shall be in letters at least 1 inch high on an orange background.
4. The pictorial panel shall be positioned between the signal word panel and the message panel. The pictorial panel shall have a minimum height of 4 inches.
5. The message panel shall include a statement: A possible risk and consequence of a moving gate is the potential of inflicting serious injury or death. The letters shall be bold, upper and lower case with the first letter of each word in uppercase. The letter height of the uppercase letters shall not be less than 1/2 inch high.
6. Your gate operator is shipped with two placards, similar to the following:
PRE-INSTALLATION

Before Installation:

1. Automatic slide gates require a number of safe guards against entrapment and pinch points. Verify that protective devices have been installed to prevent bodily injury and/or death. If none are present, advise the customer before continuing the installation.

2. Move the existing slide gate forward and backward by hand, noting any areas that need maintenance, and also note any elevation changes in the road surface grade that may exist. If the gate does not travel smoothly, perform the necessary maintenance before beginning the installation. **We recommend a V-wheel on a v-track or pipe track, or some other means of ensuring the gate moves forwards and back on a straight line and with smooth operation.** Special precautions must be taken to ensure that smooth operation results when using cantilevered gates.

3. Locate the commercial power source that will be used to supply power to the gate control panel. Identify the breakers and visually confirm that they are rated for the application and in the “Off” position. Install an approved lockout device on the breakers to prevent them from being accidentally energized during the installation of the operator.

4. If the commercial power wiring has already been installed, inspect the installation for compliance to pertinent electrical codes prior to making any connections.

5. If any discrepancies are found that compromise life-safety and or entrapment, do not install the automatic gate equipment until the discrepancies are corrected.
CONCRETE PEDESTAL INSTALLATION

(Refer to Fig. 1 for details)

1. The automatic gate operator requires a concrete pedestal with a size of 16’ x 16” x 8” (min.) thick, complete with four (4) 1/2” anchor bolts. (J type) Study Fig. 1, paying close attention to the proper placement of the pedestal and anchor bolts in relationship to the existing gate rail.

2. Determine the desired location for the concrete pedestal and form it, setting the top elevation to allow free movement of the operator through the full range of vertical motion of the gate. Keep in mind that the rack and rack support structure will need to be installed onto the existing gate, and thus the elevation of the pedestal should be set with this in mind.

3. Mix the concrete per manufacturer’s instructions, and place it in the forms. Level and trowel the top of the concrete, keeping it nearly flush with the tops of the forms, but allowing expansion room of the anchor bolts. Make sure the conduit runs up through the pedestal in the correct position by measuring the template provided.

4. Using the template furnished, (See Fig. 4) locate the four (4) 1/2” J-bolts (not supplied) and fasten them to the template using the nuts as shown. The J-bolts shall extend 2-1/2” minimum above the finished top elevation of the pedestal. Make sure that the entire amount of exposed J-bolt is fully threaded. Push the bolts down into the wet concrete, locating the bolts at the required elevation and location to match the gate. Consolidate the concrete by vibrating it or by pounding on the sides of the form.

5. Allow the concrete to cure per manufacturer’s recommendations. Secure the template on the pedestal top for several hours until the concrete cures enough to ensure the anchor bolts are secure.

6. Once concrete is set, and the template is removed and the operator is mounted, you may wish to grout the opening between the bottom of the operator plate and the top of the concrete pedestal for sealing and appearance.
FIG. 1, CONCRETE PEDESTAL
HYDRAULIC OPERATOR INSTALLATION

Note: Refer to Fig. 2 and 3 for general assembly and part references for the operator. Part references will be referred to as (Item 1) etc. throughout the text below.

1. Screw four (4) 1/2” diameter heavy hex galvanized nuts (Item 15) onto the four (4) J-bolts, (Item 14) and level them as close as possible. Start with the tops of the nuts at about 1” above the concrete pedestal.

2. Place the operator assembly (Item 1) onto the J-bolts and rest it on the leveling nuts. Using a bubble level, adjust the four nuts until the operator base plate is level in all directions.

3. Slide the gate into position, and measure clearances between the gate rail (Item 22) and the pinion face. (Item 6)

4. Determine the rack support structure (Item 20) you wish to use. We recommend a steel angle of 1-1/2” x 1-1/2’ x 1/8”, but other structural members can be used as required to fit the existing gate structure. Pay close attention to clearance issues as you choose your rack support. **The gate must move freely, and keep the rack aligned with the pinion.** We highly recommend that you use a V-wheel on a v-track or pipe for gate alignment and operation.

5. Bolt the rack (Item 21), supplied from the factory in four foot lengths, to the rack support structure using four 3/16” x 1-1/2” galvanized bolts. (Item 23) The rack comes pre-drilled for your convenience. You may need to bevel the top inside edge of the rack in order for it to seat squarely into the corner of the angle. (See Fig. 3).

   **Note: When installing the rack, use a short piece (12” or so) of rack turned upside down to use as a template to line up the gear teeth on both sides of the splice. Tooth alignment is critical for the successful operation of the rack and pinion drive.**

6. Determine the initial slide plate (Item 4) height location required for the road grade and/or existing gate structure, and block the plate at this elevation. This step is critical, since setting the operator at the wrong height initially can produce adverse results.

7. Locate the rack support structure (Item 20) onto the gate rail, (Item 22) using the pinion teeth (Item 6) and rack (Item 21) as a guide for proper height placement. Rack support structure shall be suitably attached to the gate rail, using either bolts or welds. Rack structure shall be attached level.

8. Loosen the roller swing arm nut (Item 9) and the lock-bolt and nut (Item 11 and 12) and then engage the pinion teeth and the rack. Once the pinion and rack are properly aligned, swing the roller arm (Item 10) down until the roller makes contact with the top of the gate rail.
rack structure. Torque the swing arm nut (Item 9) and then tighten the lock bolt and lock nut (Item 11 and 12) down against the top of the roller swing arm.

9. Manually move the gate forward and back, checking clearances and pinion/rack function. Make any necessary adjustments at this time to ensure smooth operation. The final clearance between the pinion face and the face of the rack support angle shall be 1/8”.

10. Install physical stops at the fully open and fully closed positions.
FIG. 2, CONTROLLER ASSEMBLY

<table>
<thead>
<tr>
<th>REF #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CONTROLLER FRAME</td>
</tr>
<tr>
<td>2</td>
<td>SLOTTED HOLES FOR J-BOLTS</td>
</tr>
<tr>
<td>3</td>
<td>REPLACEABLE SLIDE BEARING</td>
</tr>
<tr>
<td>4</td>
<td>PINION SLIDER PLATE</td>
</tr>
<tr>
<td>5</td>
<td>ROLLER</td>
</tr>
<tr>
<td>6</td>
<td>PINION</td>
</tr>
<tr>
<td>7</td>
<td>HYDRAULIC DRIVE MOTOR</td>
</tr>
<tr>
<td>8</td>
<td>PUMP AND RESERVOIR</td>
</tr>
<tr>
<td>9</td>
<td>ROLLER SWING ARM NUT</td>
</tr>
<tr>
<td>10</td>
<td>ROLLER SWING ARM</td>
</tr>
<tr>
<td>11</td>
<td>LOCK BOLT</td>
</tr>
<tr>
<td>12</td>
<td>LOCK NUT</td>
</tr>
<tr>
<td>13</td>
<td>RESERVOIR FILLER PLUG</td>
</tr>
<tr>
<td>14</td>
<td>J-BOLT (1/2&quot;)</td>
</tr>
<tr>
<td>15</td>
<td>HEAVY-HEX LEVELING NUT (1/2&quot;)</td>
</tr>
<tr>
<td>16</td>
<td>OVERTURE WASHER (1/2&quot;)</td>
</tr>
<tr>
<td>17</td>
<td>HEX-NUT (1/2&quot;)</td>
</tr>
<tr>
<td>18</td>
<td>HYDRAULIC HOSE</td>
</tr>
<tr>
<td>19</td>
<td>HYDRAULIC HOSE</td>
</tr>
</tbody>
</table>
FIG. 3, RACK SUPPORT DETAILS

<table>
<thead>
<tr>
<th>REF #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>ROLLER</td>
</tr>
<tr>
<td>6</td>
<td>PINION</td>
</tr>
<tr>
<td>11</td>
<td>GALVANIZED LOCK BOLT</td>
</tr>
<tr>
<td>12</td>
<td>GALVANIZED LOCK NUT (HEX)</td>
</tr>
<tr>
<td>20</td>
<td>RACK SUPPORT STRUCTURE</td>
</tr>
<tr>
<td>21&quot;</td>
<td>RACK</td>
</tr>
<tr>
<td>22</td>
<td>GATE RAIL SECTION</td>
</tr>
<tr>
<td>23</td>
<td>GALVANIZED BOLT 3/16&quot; x 1 1/2&quot;</td>
</tr>
<tr>
<td>24</td>
<td>GALVANIZED WASHER</td>
</tr>
<tr>
<td>25</td>
<td>GALVANIZED NYLOCK NUT (3/16&quot;)</td>
</tr>
</tbody>
</table>

* BEVEL TOP CORNER FOR FLUSH FIT
ELECTRICAL INSTALLATION

1. Mount the “pre-wired” electronic control panel in a suitable location. Have a qualified electrician run power to the panel and connect it into the TB1 Terminal block.

2. Run 1/2” electrical conduit to the concrete pedestal location as discussed earlier.

3. Connect the wiring from the TB3 terminal block, located in the “pre-wired” electronic control panel, to the gate operator. See Figure 5 for wiring diagram.

4. Remove the lockout device from the circuit breakers at the service panel and label them “Gate operating equipment.” Switch breakers to the “On” position to energize the system.

5. Operate the gate and make necessary adjustments to ensure safety, correct speed, and smooth operation. Refer to the sections below for instructions on how to adjust the operator.

6. Determine the amount of force it takes to stop the movement of the gate, and adjust the relief valve settings as required. The maximum allowable force to meet UL325 4th edition is forty (40) pounds.

7. Test all safety reversing and access control devices for correct response.

8. Install the sheet metal cover over the operator frame and fasten with the bolts provided.

9. Run a final test of the entire system.

10. Hang placards and any audio warning devices in highly visible and audible areas.

11. Instruct the end user and all parties having access to the vehicular gate operating equipment on the operation of the gate controller, and on the operation procedures in the event of a power failure.
MECHANICAL MAINTENANCE ITEMS

In order to ensure safe and trouble free operation of your gate operator system, we recommend that you perform periodic maintenance and inspection of the system. As a minimum, we recommend the following on a continuing basis:

**Gate and Structure:**

1. Inspect the rack teeth for uneven wear, or tooth damage. Misalignment of the drive system will show up quickly in the wear pattern on these teeth, and can cause tooth breakage. Replace worn or broken teeth immediately.

2. Inspect the rack support structure attachment to the gate, making sure the welds and/or bolts are tight and sound. Tighten bolts and/or repair welds as required.

3. Check the clearance between the pinion and the gate structure through the entire range of gate motion to ensure no interference exists. Make adjustments as required.

4. Manually slide the gate back and forth through the full range of motion to ensure smooth operation. Adjust as necessary for smooth operation.

5. Inspect the v-track (or other track) for wear, misalignment, or material buildup. Make adjustments or replacements as necessary.

6. Grease or oil the gate rollers and any other moving parts in the system requiring lubrication.

7. Check all guards to ensure that they are tight and in place on all exposed moving rollers and at any pinch point areas.

8. Inspect the screening system to ensure that all openings in the gate structure and adjacent fence that would allow a 2-1/4” diameter sphere to pass through are covered.

9. Clean all components of the system, including warning placards.

**Hydraulic Operator:**

1. Inspect the hydraulic pump and motor for damage or leakage. Check the torque on the mounting bolts that secure the motor and pump to the frame. Tighten as necessary.

2. Inspect all hydraulic hoses and fittings for tightness, leakage, damage or age cracking. Replace as necessary.

3. Check the hydraulic fluid level in the hydraulic reservoir. If low, add fluid, using ISO 15.
4. Inspect the alignment roller for material buildup and wear. Clean or replace as necessary.

5. Inspect the vertical slide bearing material for material wear. Manually raise and lower the drive motor to ensure smooth operation of the slide bearings. Clean and replace as necessary.

6. Check torque on the roller swing arm nut, and on the lock bolt/nut assembly that maintains the roller in the correct position on the rack support.

7. Inspect the pinion gear for wear ran material buildup. Clean or replace as necessary.

8. Check the torque on the anchor bolt nuts that secure the operator frame to the concrete pedestal. Tighten if necessary.

9. Test the operator monthly, making sure the gate reverses on contact with a rigid object as required. Check the force required to stop the unit. This value cannot exceed forty (40) pounds of force. Adjust the relief valve settings to meet this requirement.

10. After replacing the metal over that protects the operator, torque bolts.

11. Clean all components of the operator assembly, removing dust and material build up to ensure smooth and safe operation.
FIG. 5, CABINET TO MOTOR WIRING
ELECTRICAL MAINTENANCE ITEMS

In order to ensure safe and trouble free operation of your gate operator system, we recommend that you perform periodic maintenance and inspection of the system. As a minimum, we recommend the following on a continuing basis:

**Electrical:**

1. Clean all dust and dirt from “pre-wired” electronic control panel
2. Verify all wiring connections are tight and secure
3. Inspect all wiring and operating mechanism to insure no wiring are pulled or contacting moving parts
4. Test all safety devices
“PRE-WIRED” ELECTRONIC CONTROL PANEL

Refer to Figure 6 for a graphical representation of the “pre-wired” electronic panel unit and locations of the terminal blocks.

**TB1 Commercial Power Input Terminal Block:**
1. 115V AC Line Power (Black)
2. 115V AC Neutral (White)
3. Earth Ground (Green)

**TB2 115V AC Accessory Power Output Terminal Block**
1. 115V AC Line Power (Black)
2. 115V AC Neutral (White)
3. Ground (Green)

**TB3 Operator Motor Run Terminal Block**
1. Motor #1 Ground (Green)
2. Motor #1 Directional (Black)
3. Motor #1 Directional (Red)
4. Motor #1 Common (White)
5. To Key Switch for Solenoid Lock
6. To Solenoid Valve on Motor (Black from motor)
7. To Solenoid Valve on Motor (White from motor)

**TB4 Accessory Terminal Block**
1. 24V AC Common (Black)
2. 24V AC Positive (Red)
3. People Safe N/C (White)
4. Common for Safety Reversing (Yellow)
5. Car Safe N/C (Blue)
6. Common for Command Inputs (Green)
7. Command Open N/O (Purple)
8. Command Reversing (Orange)

**TB5 Loop Connection Terminal Block**
Optional for Safety, Shadow, and Free Exit

**TB6 Limit Switch Terminal Block**
1. Common for Limit Switch
2. Closed Limit Switch
3. Open Limit Switch
FIG. 6, "PRE-WIRED" CONTROL PANEL
G2M CONTROL BOARD

Description:

This 115V/220V single-phase electronic control unit is suitable for single-phase motors, and can drive up to two different motors. There is a leaf delay incorporated with the use of the plug in car. Nine dip-switches can select different options for the control unit.

There are three possible timing potentiometers: opening time, automatic closing time, and the closing time. A dip-switch can double the opening and closing time.

Characteristics:

Buttons

Reversing Button: The first activation will make the gate operate. The second activation will make the gate stop. The third activation will reverse the gate direction while dip-switch 2 is on. With dip-switch 3 off, during the close cycle the gate will auto reverse to open.

Opening Button: Used only to open and hold open the gate.

Closing Button: Used only to close the gate.

Stop Button: (Normally closed contact) Stops the gate in opening/closing.
Three Adjustable Timers

Blue Timer: Opening timer only controls the opening time between 3 and 30 seconds.

Red Timer: Closing timer only controls the close time between 3 and 30 seconds.

Green Timer: Automatic close timer. When the gate is completely open, the timer is activated and will automatically close after the programmed time.

Note: Built in 2 second timer to stop gate before reversing operation occurs.

Open/Close Limit Switches: These switches stop the opening and/or closing operation. You must remove the two jumper wires from terminal 11 to 12 and 13 if used.

Entrapment Safety Contact: If activated, the result is reversing the movement in both opening and closing for 2 seconds. Then it stops, and if the safety contact is still active the alarm will sound.

Safety Reversing Contact: The result is reversing back to open while the gate is closing. This is not active when the gate is opening.

Power Output: You can connect motors up to 3/4 HP.

Timer Table

<table>
<thead>
<tr>
<th>COLOR</th>
<th>DESCRIPTION</th>
<th>MINIMUM</th>
<th>MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREEN</td>
<td>AUTOMATIC CLOSING TIME</td>
<td>1 SECOND</td>
<td>2 MINUTES</td>
</tr>
<tr>
<td>BLUE</td>
<td>OPENING TIME</td>
<td>3 SECONDS</td>
<td>30 SECONDS</td>
</tr>
<tr>
<td>RED</td>
<td>CLOSING TIME</td>
<td>3 SECONDS</td>
<td>30 SECONDS</td>
</tr>
</tbody>
</table>
DIP Switch  Operation Mode Selection

<table>
<thead>
<tr>
<th>No</th>
<th>OPTION</th>
<th>ON</th>
<th>OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reversing Stroke Function (Operator will close for 1 second)</td>
<td>ACTIVE</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>2</td>
<td>Step-by-step function*</td>
<td>ACTIVE</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>3</td>
<td>Automatic Closing Function</td>
<td>ACTIVE</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>4</td>
<td>Reversing Button is not operative during opening</td>
<td>ACTIVE</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>5</td>
<td>Closing order by cars safety contact</td>
<td>ACTIVE</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>6</td>
<td>See note below REF JP1</td>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td>7</td>
<td>Cars safety contact is operative during opening</td>
<td>ACTIVE</td>
<td>INACTIVE</td>
</tr>
</tbody>
</table>

*Step-by-step: Each activation of the reverse button will stop the gate before changing direction.

Note: There is a jumper JP1 (below the remote control card connector) that changes the selectable option no. 6 in the following manner:

**JP1 Open:**

- No. 6 **ON**  In the power on state, unit will do a closing function.
- **OFF**  In the power on state, unit will do an opening function.

**JP1 Closed:**

In the power on state, the door remains paused. In this case the switch No. 6 controls the function of the traffic lights.

- No. 6 **ON**  The traffic lights card will act as a flashing light card (upper relay) and a garage light card (lower relay).
- **OFF**  The traffic lights card will act as green and red lights.

**Selectable Options Switch S3**

<table>
<thead>
<tr>
<th>No</th>
<th>OPTION</th>
<th>ON</th>
<th>OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Extends Run Time</td>
<td>Opening and Closing Time (30 Seconds to 1 Minute)</td>
<td>Opening and Closing Time (3-30 Seconds)</td>
</tr>
<tr>
<td>2</td>
<td>Repositioning the Door *</td>
<td>ACTIVE</td>
<td>INACTIVE</td>
</tr>
</tbody>
</table>

* With this option active and the door closed, the door is closed for 2 seconds every hour, and if the door is opened the door is opened for 2 seconds every hour.
TERMINAL BOARD

Power Terminals (From top to bottom)

1. Power Supply
2. Power Supply
3. Open Motor 1
4. Close Motor 1
5. Common Motor 1
6. Open Motor 2
7. Close Motor 2
8. Common Motor 2

Accessory Terminals from Left to Right

1. Output People or Animals Alarm Contact (N/O)
2. Output People or Animals Alarm Contact (N/O)
3. 24V AC @ 1 AMP Max. (Common)
4. 24V AC @ 1 AMP Max. (Power)
5. Output Electric Lock 12V DC @ 1 AMP MAX.
6. Output Electric Lock 12V DC @ 1 AMP MAX.
7. Input Reset Alarm (N/O)
8. Input Safety People or Animals (N/C)
9. Common for Safety
10. Input Safety Car (N/C)
11. Common Limit Switch
12. Input Open Limit Switch (N/C)
13. Input Close Limit Switch (N/C)
14. Input Stop Button (N/C)
15. Common for Stop Button
16. Common to Command Buttons
17. Input Close Button
18. Input Open Button
19. Input Reversing Button
<table>
<thead>
<tr>
<th>TERMINAL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ENTRAPMENT ALARM OUTPUT</td>
</tr>
<tr>
<td>2</td>
<td>ENTRAPMENT ALARM OUTPUT</td>
</tr>
<tr>
<td>3</td>
<td>24VAC OUTPUT @ 1 AMP MAX.</td>
</tr>
<tr>
<td>4</td>
<td>24VAC OUTPUT @ 1 AMP MAX.</td>
</tr>
<tr>
<td>5</td>
<td>ELECTRIC LOCK RELEASE 12VDC</td>
</tr>
<tr>
<td>6</td>
<td>ELECTRIC LOCK RELEASE 12VDC</td>
</tr>
<tr>
<td>7</td>
<td>ENTRAPMENT ALARM RESET</td>
</tr>
<tr>
<td>8</td>
<td>ENTRAPMENT SAFETY CONTACT</td>
</tr>
<tr>
<td>9</td>
<td>COMMON TO SAFETY CONTACT</td>
</tr>
<tr>
<td>10</td>
<td>REVERSING SAFETY CONTACT</td>
</tr>
<tr>
<td>11</td>
<td>COMMON TO LIMIT SWITCH</td>
</tr>
<tr>
<td>12</td>
<td>CLOSE LIMIT SWITCH</td>
</tr>
<tr>
<td>13</td>
<td>OPEN LIMIT SWITCH</td>
</tr>
<tr>
<td>14</td>
<td>STOP BUTTON</td>
</tr>
<tr>
<td>15</td>
<td>COMMON TO STOP BUTTON</td>
</tr>
<tr>
<td>16</td>
<td>COMMON TO CONTROL CONTACT</td>
</tr>
<tr>
<td>17</td>
<td>CLOSE COMMAND</td>
</tr>
<tr>
<td>18</td>
<td>OPEN COMMAND</td>
</tr>
<tr>
<td>19</td>
<td>REVERSE COMMAND</td>
</tr>
</tbody>
</table>
FOUR YEAR LIMITED WARRANTY

This warranty pertains only to products manufactured for/or by **Byan Systems, Inc.** for gate operating systems, accessories, and equipment. These products are warranted against all defective material for forty-eight months from the date of sale.

Defective material returned must be prepaid and accompanied by a **Byan Systems, Inc.** return authorization number within the warranty period for repair or replacement at **Byan Systems, Inc.** option. **Byan Systems, Inc.** will return warranted item freight prepaid ground service via **U.P.S.**

The warranty extends only to wholesale customers who buy direct from **Byan Systems, Inc.** through normal distributor channels. **Byan Systems, Inc.** does not warranty its products to the end user/consumer. Consumer should inquire from their selling dealer as to the nature and extent of the dealer’s warranty, if any. There are no obligations or liabilities on the part of **Byan Systems, Inc.** for consequential damages arising out of or in connection with the use or performance of these products or other indirect damages with respect to loss of property, revenue or profit, cost of removal, original installation or reinstallation.

Warranty will be considered void if damage or malfunction was due to improper, inadequate or negligent installation or use of improper power source, or damage was caused by fire, flood, lightning, electrical power surge, explosion, windstorm or hail, aircraft or vehicles, vandalism, riot or civil commotion, or acts of god. All implied warranties for fitness are limited in duration to forty-eight months from date of sale. Some states do not allow how long an implied warranty lasts, so this limitation may not apply to you. This warranty by **Byan Systems, Inc.** is in lieu of all warranties expressed or implied.

Product delivery time is subject to availability. **Byan Systems, Inc.** is not responsible for any damages caused by delays in shipping or product availability.
END USER SAFETY

“THE GATE AUTOMATION AND ACCESS CONTROL MANUFACTURER” HAS NO CONTROL OVER THE GATE SYSTEM YOU HAVE AUTOMATED. THE WORD “SYSTEM” HEREIN REFERS TO THE GATE POST, GATE LEAF, HINGING, ALL AUTOMATION EQUIPMENT, ACCESSORY DEVICES, THE CONSTRUCTION AND INSTALLATION THEREOF.

VEHICULAR GATE OPERATING SYSTEMS PROVIDE CONVENIENCE AND SECURITY TO THEIR USERS. BECAUSE THESE MACHINES PRODUCE SUCH HIGH LEVELS OF FORCE, ALL GATE SYSTEM DESIGNERS, INSTALLERS AND END USERS MUST BE AWARE OF THE POTENTIAL HAZARDS ASSOCIATED WITH IMPROPERLY DESIGNED, INSTALLED OR MAINTAINED SYSTEMS.

EACH COMPONENT MUST WORK IN UNISON TO PROVIDE THE END USER, VISITORS AND SUBSEQUENT OWNERS WITH PROPER OPERATION OF ALL AUTOMATION, SAFETY AND ACCESS CONTROL EQUIPMENT.

IT IS THE RESPONSIBILITY OF THE DESIGNER, INSTALLER AND PURCHASER, THAT THE TOTAL SYSTEM IS SAFE FOR THE PARTICULAR APPLICATION.

THE END USERS RESPONSIBILITY IS ALWAYS PRESENT. ASSURANCE OF SAFETY RESTS WITH THE USER OF THE GATE SYSTEM, AT ANY PARTICULAR TIME.

GATE SYSTEMS SHOULD BE PROTECTED AS MAY BE NECESSARY FROM CHILDREN AND PETS BY WHATEVER MEANS NECESSARY. MOVING DEVICES ALWAYS PRESENT PEOPLE, PETS AND PROPERTY WITH CERTAIN RISKS AND HAVE POTENTIAL FOR HARM.

THE FOLLOWING LIST OF PRECAUTIONS HAS BEEN PREPARED FOR YOUR REVIEW. THIS LIST IS NOT ALL-INCLUSIVE NOR IS IT REPRESENTED AS SUCH. PLEASE ASK YOU INSTALLER ANY QUESTIONS YOU HAVE NOW, OR LATER, ABOUT THE INSTALLATION, OPERATION, OR SAFETY FEATURES OF YOUR GATE SYSTEM.

1. BE SURE THE OPERATING AND SAFETY INSTRUCTIONS ARE AVAILABLE TO ALL PERSON THAT WILL OPERATE THE GATE SYSTEM.

2. KEEP GATE SYSTEM OPERATING AREA CLEAR OF ALL OBSTRUCTIONS. STAY CLEAR OF THE OPERATING AREA WHEN THE GATE SYSTEM IS IN USE.

3. DO NOT ALLOW CHILDREN OR PETS NEAR THE GATE SYSTEM. IN A RESIDENTIAL OR MULTIFAMILY DWELLING, IT MAY BE NECESSARY TO FENCE OFF PORTIONS OF THE SYSTEM. IT MAY BE NECESSARY TO MOUNT
PROTECTION DEVICES IN THE AREA, ON THE GATE, OR THE EQUIPMENT ITSELF.

4. **“CAUTION!!!”** NEVER ALLOW CHILDREN TO RIDE ON THE GATE(S) OR PLAY AROUND THE ELECTRICAL ENCLOSURES

5. NEVER OPERATE A GATE SYSTEM WITHOUT VISUAL CONTACT SO IT CAN BE SUSPENDED IF NECESSARY.

6. SECURE AND LABEL POWER CABINETS OR EQUIPMENT COVERS.

7. IF THE GATE HAS AN OPEN ROLLER, EACH MUST HAVE A GUARD SUITABLE TO PROTECT PERSONS, PETS AND CLOTHING, WHICH COULD BE ENTRAPPED, NO MATTER HOW UNLIKELY IT MAY APPEAR AT FIRST GLANCE.

8. ENSURE ALL SAFETY DEVICES ARE TESTED REGULARLY.

9. DO NOT TIGHTEN CLUTCHES OR INCREASE PRESSURES TO COMPENSATE FOR A POOR GATE SYSTEM DESIGN AND/OR THE GATE LEAF.

10. INSTALL WARNING SIGNS ON BOTH SIDES OF THE GATE LEAF.

11. HAVE PROPER LIGHTING INSTALLED FOR NIGHT TIME USE.

12. NEVER BECOME COMPLACENT WITH THE OPERATION OF A GATE SYSTEM. SCHEDULE PERIODIC INSPECTION AND/OR MAINTENANCE.
CUSTOMER ACKNOWLEDGMENT

DEAR _________________________________
(CUSTOMER/COMPANY NAME)

VEHICULAR GATE OPERATING SYSTEMS PROVIDE CONVENIENCE AND SECURITY TO THEIR USERS. BECAUSE THESE MACHINES PRODUCE SUCH HIGH LEVELS OF FORCE, ALL GATE OPERATING SYSTEM DESIGNERS, INSTALLER AND END USERS NEED TO BE AWARE OF THE POTENTIAL HAZARDS ASSOCIATED WITH IMPROPERLY DESIGNED, INSTALLED OR MAINTAINED SYSTEMS.

EACH COMPONENT MUST WORK IN UNISON TO PROVIDE THEIR END USER, VISITORS AND SUBSEQUENT OWNER WITH CONVENIENCE, SECURITY AND SAFETY.

“BYAN SYSTEMS” ROQUET HYDRAULIC GATE OPERATORS AND ACCESSORY EQUIPMENT ARE INTENDED TO BE PART OF A TOTAL OPERATING SYSTEM. WE HIGHLY ENDORSE AND RECOMMEND THE USE OF SAFETY ACCESSORIES AND VISUAL WARNING INDICATORS IN THE FORM OF LIGHTS, SOUNDERS AND PLACARDS PROPERLY PLACED.

IT IS THE RESPONSIBILITY OF THE PURCHASER, DESIGNER AND INSTALLER, THAT THE TOTAL SYSTEM IS SAFE FOR THE PARTICULAR APPLICATION.

WE ARE PLEASED YOU HAVE SELECTED “BYAN SYSTEMS” ROQUET OPERATORS FOR YOUR VEHICULAR GATE AUTOMATION. ON BEHALF OF OUR DISTRIBUTION AND DEALER NETWORK, MAY I EXTEND TO YOU OUR GRATITUDE AND COMMITMENT TO FUTURE SUPPORT.

THANK YOU FOR REVIEWING THIS INFORMATION. VERIFY WITH YOUR INSTALLER THAT YOU UNDERSTAND ALL THE OPERATING EQUIPMENT AND THE FUNCTIONS OF THE SAFETY ACCESSORIES.

PLEASE SIGN AND DATE THIS FORM ACKNOWLEDGING YOU HAVE READ, UNDERSTAND AND RATIFY THE INFORMATION HEREIN.

________________________________________ DATE: ___/___/___