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Saimatic Aster Gate Operator, Automation System Manual

WARNINGS AND PRECAUTIONS

- Read the instructions carefully before installing the gate automation system. Keep these instructions for future reference.

- Installation, electrical wiring, and adjustments must be carried out in compliance with current safety standards.

- Distributors and dealers of SAIMATIC products cannot be held responsible for damages or injuries caused by improper installation of gates or gate automation systems.

- Before installing the gate automation system, make all necessary structural modifications to ensure that any cutting, entrapment, or crushing areas are mechanically or electronically protected.

- This equipment should be used only for the purpose for which it has been designed and intended for. Any other use should be considered improper and therefore dangerous. The suppliers cannot be held responsible for damage or injury caused by improper, incorrect, or unreasonable use.

- Before carrying out any cleaning or maintenance operations, switch off electrical power supply and / or unplug the power connector from the controller circuit board.

- The yellow / green wire of each operator MUST be connected to a good electrical ground point.- The end-user must avoid any attempt to repair or adjust the automation personally; these operations must be carried out exclusively by qualified personnel.

- Use only SAIMATIC original spare parts for maintenance operations.

- The installer must supply all information regarding manual operation of the system in the event of an electrical failure or other emergency.

- The automation is equipped with an anti-crush safety system that is a torque control device which
guarantees the utmost safety and reliability **if properly adjusted.**

- In any event, the suppliers of this product always recommend the installation of other safety devices, taking into consideration current local safety standards, installation site, system operation logics (programming), and the dimensions and weight of the gates.

- Safety devices such as photo-switches, safety edges, vehicle detectors, etc. will protect the crushing and entrapment areas of the gates and the automation system.

- G.E.M. is not responsible for anything not installed by G.E.M.

ASTER AUTOMATION SYSTEM

The Aster Automation System for swing gates comprises one or two electromechanical operators which drive the gate leaves by means of a worm screw.

The operators lock mechanically, which means that their pistons cannot be extended or retracted by physical means, except when the special unlocking device has been turned by a unique key. Thus, no electric lock is required.

The system can be fitted with an electric lock in order to prevent damage to the gates or the operators by persons forcing the gates. Even the use of electric locks cannot prevent damage caused by extreme forces. Gate automation systems are NOT security systems, they are only intended to provide users with a convenient means of opening and closing the gates. All electric locks have special mounting requirements. Installers should plan ahead to ensure that they have prepared the gate properly.

The Electronic Controller supplied with the system enables programming and control of system operation.

SITE PREPARATION

To ensure trouble-free operation for many years, the gates and the automation must be installed properly. Failure to observe the following points may cause many problems and / or damage to the system.

1. The roadway beneath double gates should be level to within one inch, or it should slope away from the open gates. The gates should not open 'uphill' or toward the hill. Be sure single swing gates are not hindered by the slope of the driveway.

2. The pillars or posts that the gates are hinged from should be planned with the automation in mind. Due to the mounting requirements of the operators, some popular methods of mounting the gates do not work well with this type of operators.

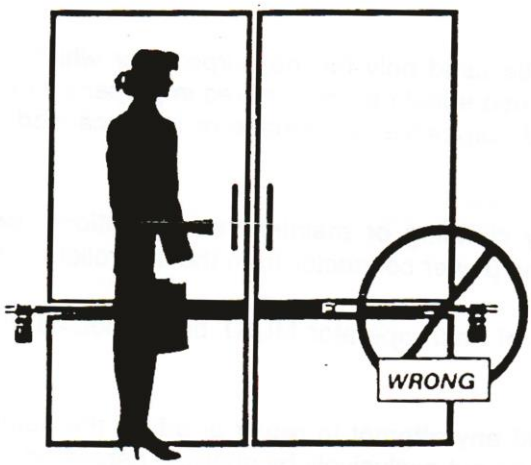
3. The design of the gates should be planned in accordance with the requirements of the automation system. Certain gate designs may need to be altered or improved before any attempt is made to automate them.

4. The electrical requirements of the system and of any accessories should be considered well in advance of commencing work on the site. Poor planning of electrical requirements is the most common cause of problems and increased costs.

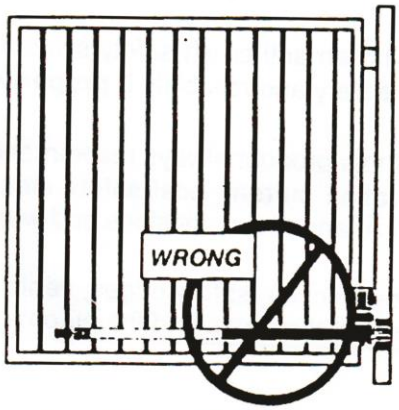
5. One of the advantages of the ASTER automation system is its ability to close the gates tightly together and properly aligned .... each and every time. In order for this to occur, it is imperative that gate travel limiters be installed for both the open and the closed positions of the gates.

PRECAUTIONS

NOT FOR INSTALLATION ON ANY PEDESTRIAN GATES.

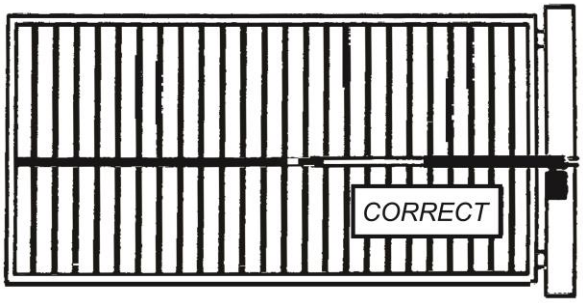


NOT FOR INSTALLATION ON ANY PASSAGES OR DOORWAYS.

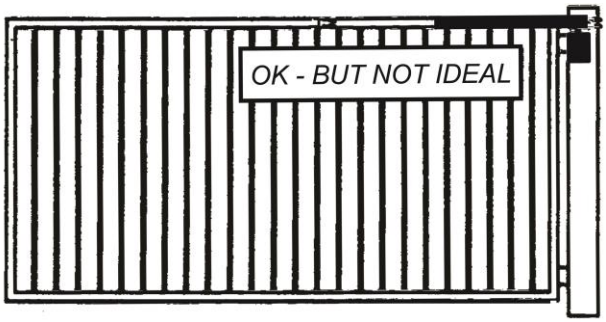


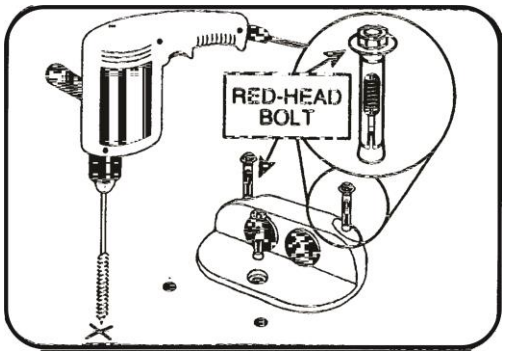
DO NOT INSTALL UPSIDE DOWN, AS WATER WILL GET IN VENT HOLES ON BOTTOM OF OPERATOR AND DAMAGE IT.

PRECAUTIONS



FOR STRENGTH PURPOSES, THE FRONT BRACKET MUST BE WELDED IN AN AREA THAT CAN WITHSTAND HEAVY FORCES. DO NOT WELD A CROSS BAR ON JUST A FEW PICKETS OR THE PICKETS WILL BEND. WELD A CROSS BAR ACROSS ALL OF THE PICKETS OR WELD THE FRONT BRACKET AT THE TOP OF THE GATE DIRECTLY TO THE FRAME.





POSITIVE STOP :
DETERMINE THE LOCATION, MARK AND DRILL THE HOLES. USE 1/2" RED-HEAD BOLTS.
CAUTION: MOUNT THE POSITIVE STOP ON CONCRETE ONLY.

MECHANICAL PREPARATION

The ASTER automation system can be used to open swinging gates which swing outward (push out) or inward (pull in). In either case, the ASTER operators should be located inside the property for their protection.

The ASTER operators should be mounted at a height, which aligns with one of the horizontal members of the gate leaf. If there is no convenient member to attach to, one should be provided. The ideal location for such a member is 16 to 24 inches higher than the lower frame member of the gate. **It is not recommended to attach the ASTER to only 2 or 3 pickets of the gate, as they may be damaged.** Mounting of the ASTER near the top of the gate may cause the gate to twist when the bottom of the gate meets its travel limit stopper. **Never mount the ASTER upside down as water will get in the vent holes on the bottom of the motor casing.**

The rear mounts (stationary end) can be welded or bolted securely to the posts or pillars, which support the gates. The front mounts (attached to the horizontal members) can also be welded or bolted on.

The dimensions A and B as given in the following drawings are very important for the correct operation of the system. If, for some reason, the dimensions cannot be followed as given, then the difference between A and B must be limited to 1 1/2 inches or less.

If the gates are to be hung from large posts or pillars (more than 6 inches square), then it is recommended that the hinges be located near the inside corner of the post or pillar. This will avoid the need for a recess in the pillar.

If the dimensions of the gate post or position of the hinge do not allow for the specified dimensions, then make a recess in the gate post as shown below, or change the design of the system to a "push out" configuration. If neither of these options are possible, then order an ASTER 600 system. ASTER 600 operators have a stroke of 23 inches and can accommodate pillars up to 24 inches square.
Remember that solid, mechanical travel limits must be provided to absorb the inertia of the moving gates. The ASTER is not intended to be used to stop the gate. Under no circumstances should the telescoping shaft of the ASTER ever be allowed to extend fully under power. To do so may cause the shaft to jam or come apart.

INSTALLATION DIMENSIONS

CALCULATING INSTALLATION DIMENSIONS: GENERAL RULES

The dimensions 'a' and 'b' as referred to in Fig. A , are very important for the proper operation of the gate system. These dimensions vary with each installation, due to choice of operator, opening angle, and length of gate.

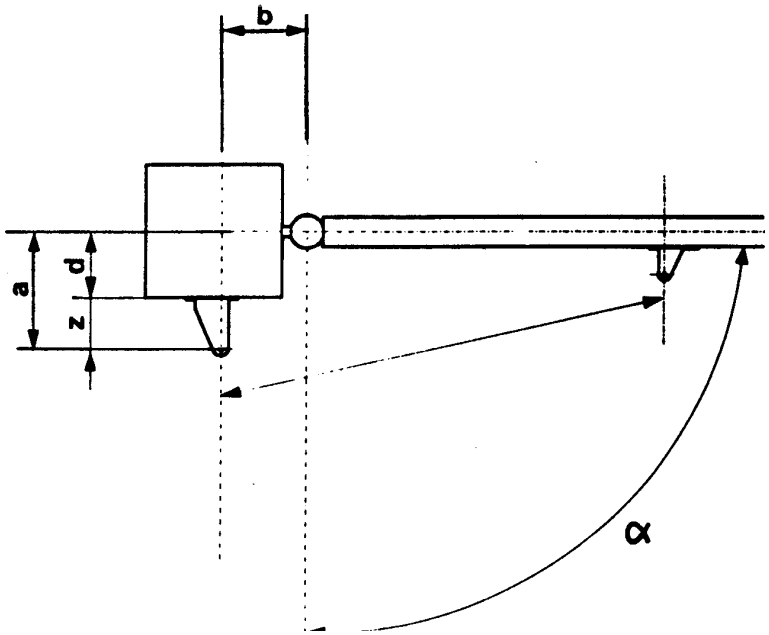


Fig. A

TABLE A : Note that the calculations are based on typical opening angles of 90 degrees. For gates, which have opening angles other than 90 degrees, use the formulas as given, and then modify the dimensions "a" and "b" according to the following table:

Opening Angle degrees	**dimension "a"**	**dimension "b"**
60	increase by 30%	decrease by 30%
70	increase by 20%	decrease by 20%
80	increase by 10%	decrease by 10%
100	decrease by 10%	increase by 10%
110	decrease by 20%	increase by 20%
120	decrease by 30%	increase by 30%

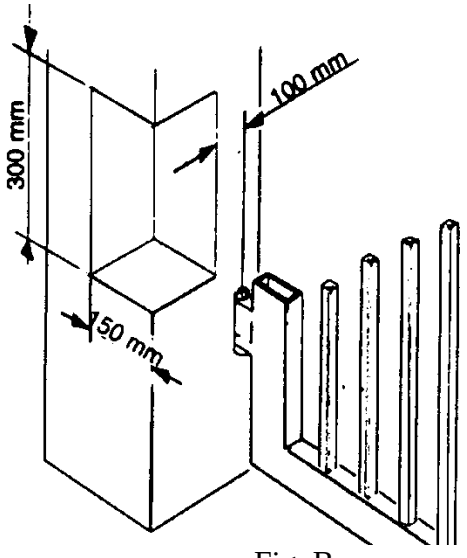


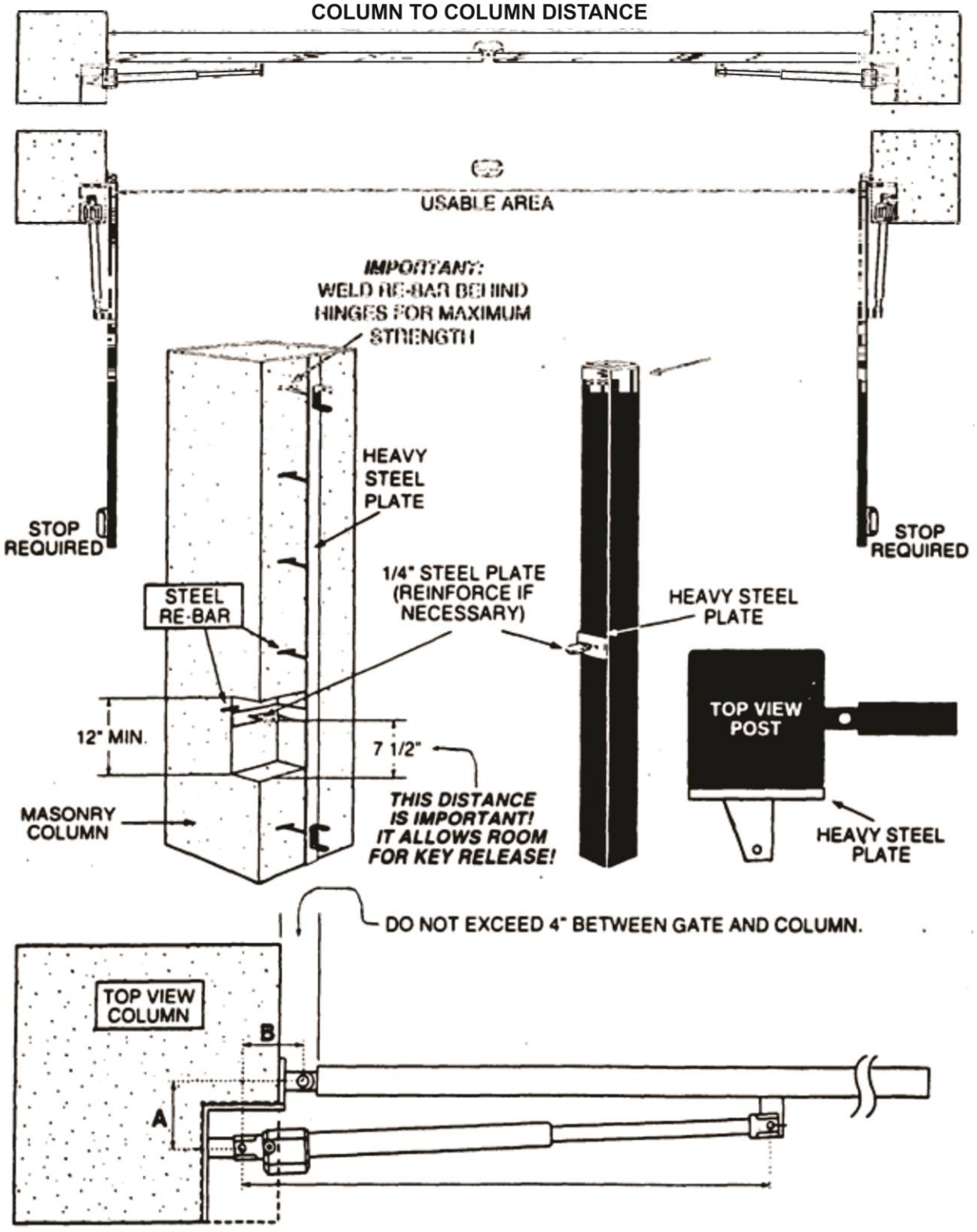
Fig. B

For reasons of operator clearance, the minimum value for 'z' is 1 1/2 inches. If the dimensions of the gate post or position of the hinges do not allow for the specified distance of 'a', then a recess must be made in the gate post as shown in Fig. B.

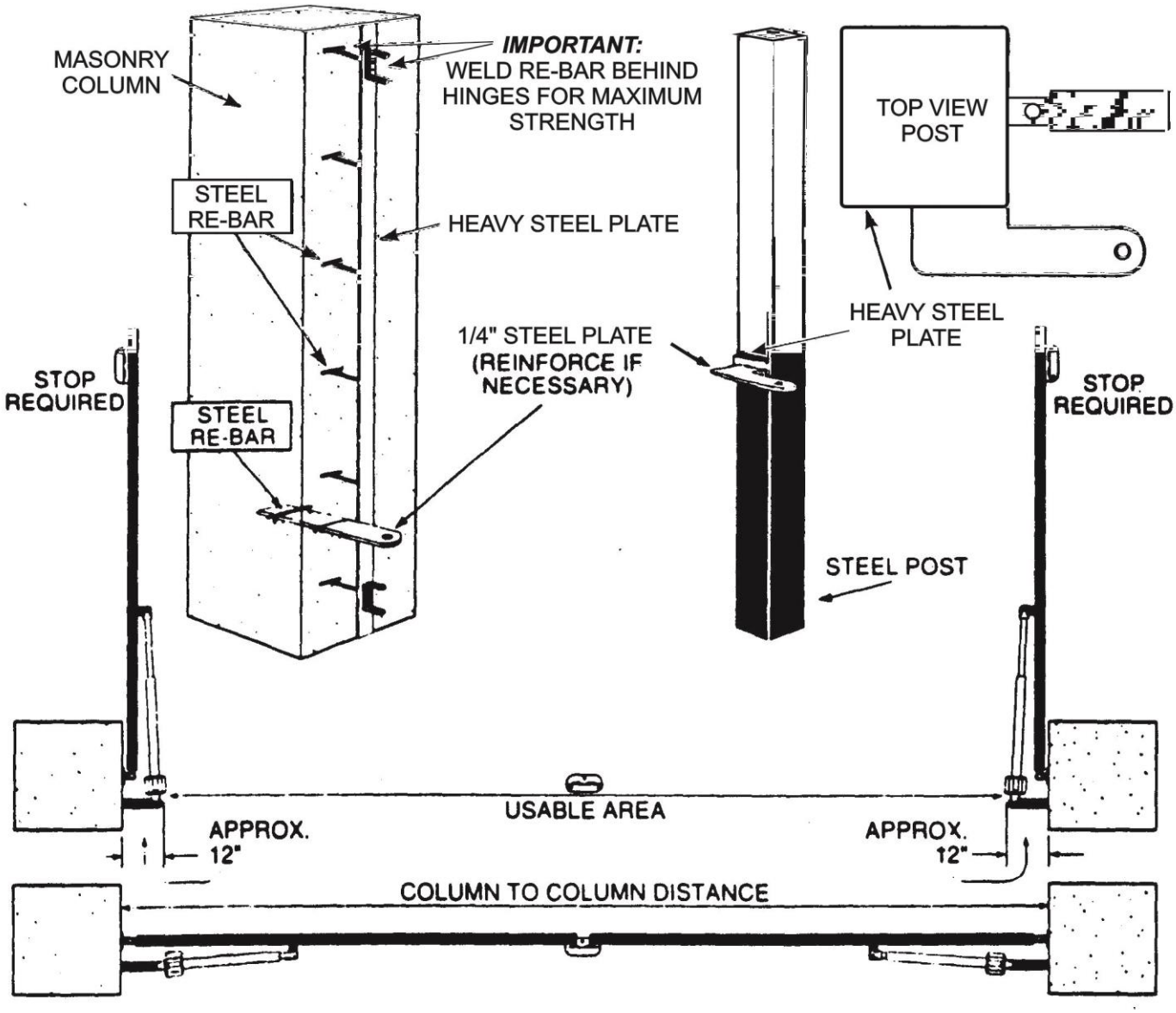
* As a basic rule - For a gate opening 90 degrees & spanning 10 feet "a" should total 6" and "b" should be equal. Less span can be 5-1/2" for both values, more span should be 6-1/2 to 7".

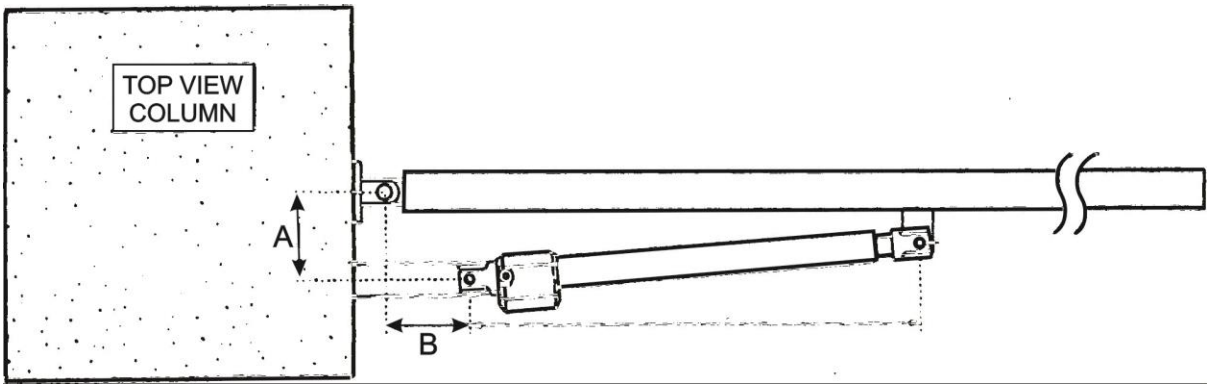
NOTE: Lesser values will result in damaged brackets, mount points, and gate whipping.

OPEN TO THE INSIDE
GATE INSTALLATION & PREPARATION



OPEN TO THE OUTSIDE
GATE INSTALLATION & PREPARATION





INSTALLATION OF THE OPERATORS

1. Fix the rear mount to the post or pillar according to the instructions in Table A, on page 7. It may be necessary to adjust the length of the bracket.
Warning: Observe the specified dimensions to ensure proper functioning.
In the case of brick, stone, or concrete pillars, the bracket will need to be welded to a wall plate, which will then be drilled and fixed to the pillar.

2. Fix the ASTER to the rear mount using the pins and screw-plugs provided.
Note that ASTER is provided in left and right hand versions.
Left and right are determined by standing on the driveway looking toward the street.

3. Unlock the operator with the special key provided (1/2 turn in direction of arrow on casting near lock). Fig 3 next page.

4. Extend the shaft to the end of its stroke.

5. Lock the operator with the key.

6. Rotate the extended shaft 1 full turn clockwise. The shaft will retract about 3/4 inch. Fig 6 next page.

7. Fit the front mount with the pin and screw-plug provided.

8. Close the gate leaf against its limit stop and, keeping the operator perfectly horizontal, locate the attachment position of the front mount.

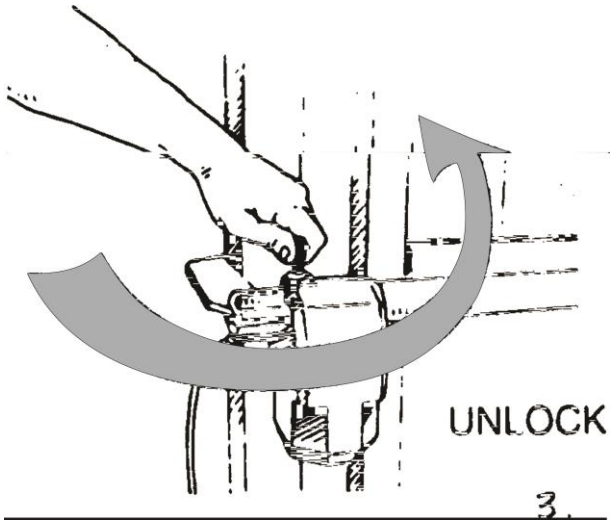
9. Fix the front mount temporarily with a clamp or vise-grip. Fig 9 next page.

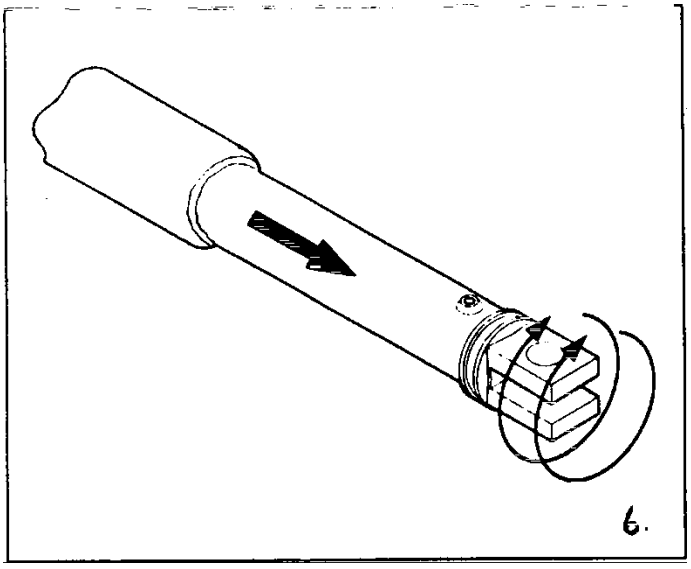
10. Again unlock the ASTER with the key, and ensure that the gate opens smoothly and that it stops on the travel limit stops, and that the telescoping shaft does not bottom out when fully retracted or fully extended.

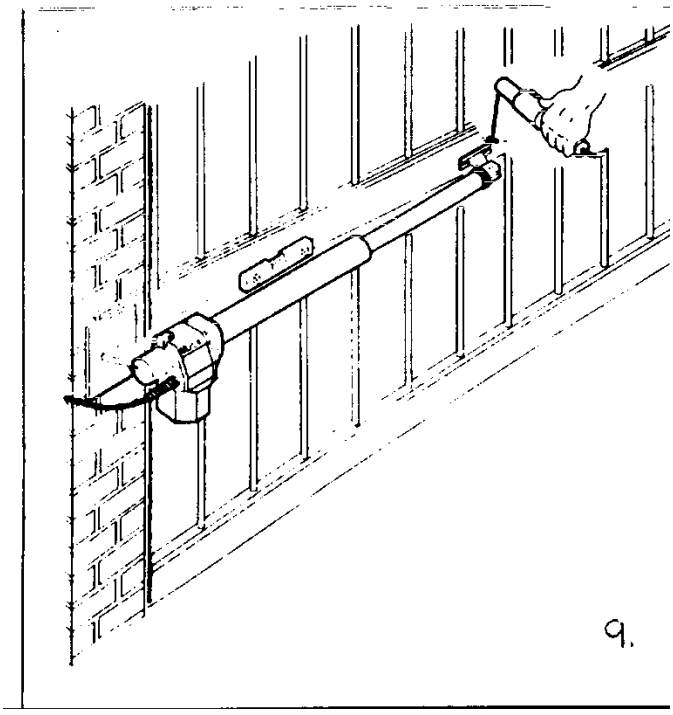
11. Permanently attach the front mount to the horizontal member of the gate. If welding, detach the ASTER first to prevent splatter from damaging the stainless shaft. Fig 11 next page.

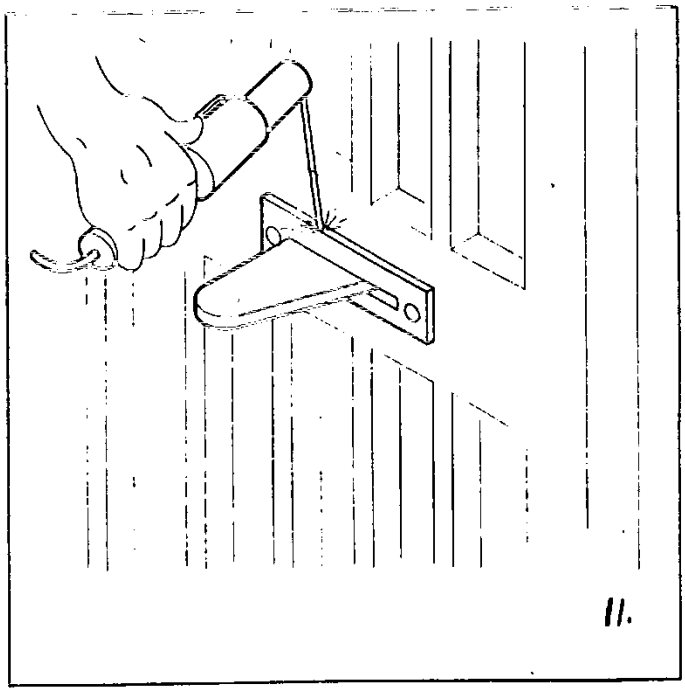
12. Repeat the above operations for the second ASTER, if applicable.

INSTALLATION OF THE OPERATORS









ELECTRICAL PREPARATION

Electrical power to the system should be a dedicated (not shared with other devices) line directly from the electrical service panel to the Electronic Controller. The controller can be located on the nearest gate post or it can be located on a nearby wall or fence. It should be within plain view of the gates so that the gates can be observed during setup and programming.

Electronic Controllers:

AUTUN2 110V
AUTUN2 220V
CTR 500 12/24V

Power supply required, 110 or 220 Volts A.C. single phase (no neutral required on 220V operators). From the controller, a 3-wire feed for 110V or 220V is required to each ASTER (2 wire for 12V). The preferred cable is 3c/14 gauge NMWU or TECK or 4 single conductors in a proper PVC electrical conduit.

For sites that will have a number of accessories such as vehicle detector loops, safety photo-beams, digital entry keypads, card readers, key switches, intercoms (audio and video),TV cameras, electric strikes for passage gates, etc., it is strongly recommended that a large outdoor electrical enclosure be provided for the controller and all the accessory devices. When using a large enclosure, all conduits and wiring from all sources and devices will terminate within the enclosure, and it will become the master junction box.

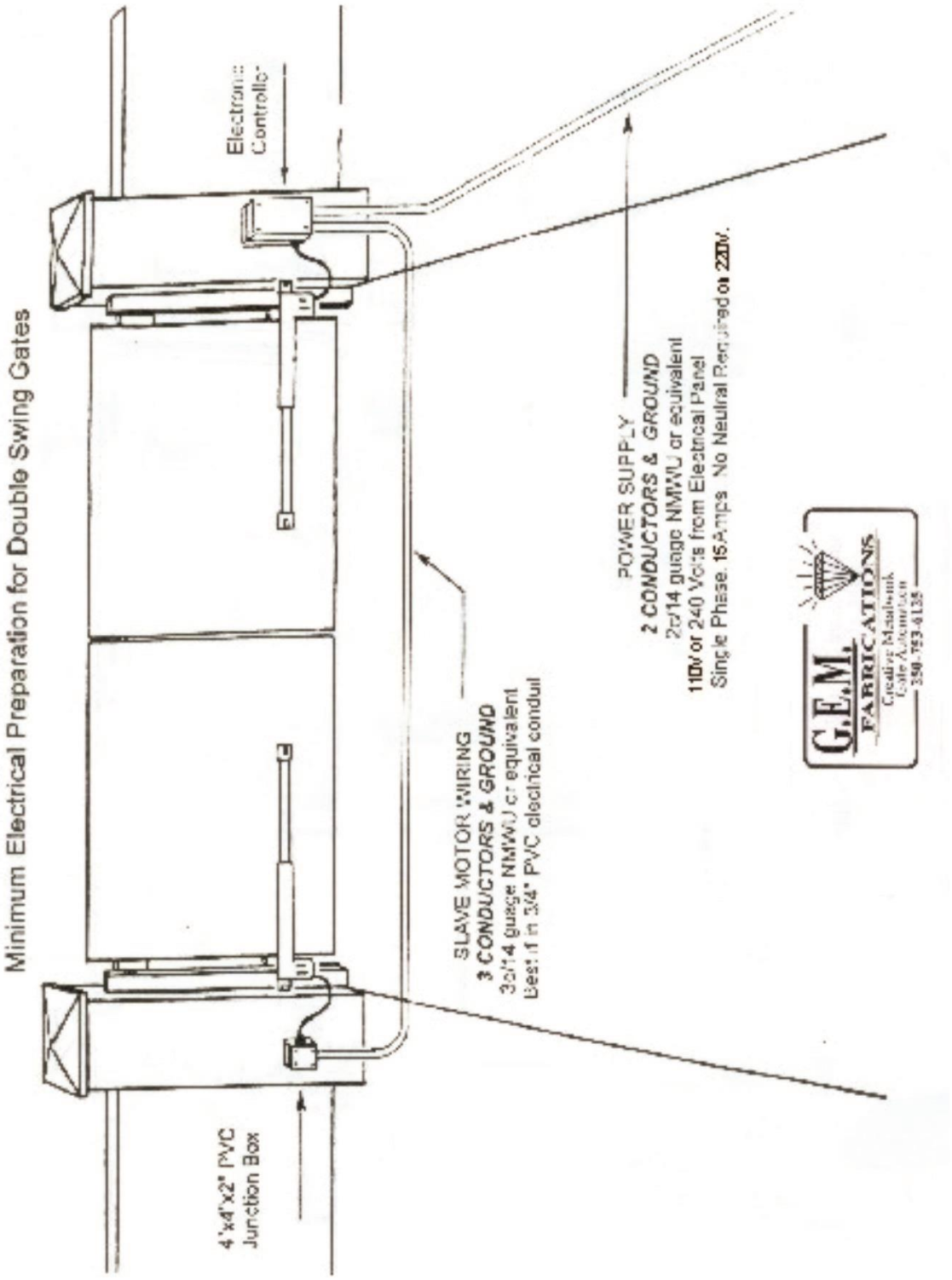
In most cases, a 14" x 16" NEMA 4X enclosure with internal back panel is preferred. Rob-Roy Stahlin J1614HW and BP1614AL is highly recommended as it is made of fiberglass and is corrosion free and easy to drill. It also will pass radio waves from the remote controls to the receiver inside without the need for an external antenna and coaxial cable.

For smaller and simpler installations, one or two standard outdoor junction boxes will usually suffice for all interconnections. Note that low voltage wiring and junction boxes should be separated from those used for high voltage. Two 4"x4"x2" outdoor electrical boxes mounted below the controller box (high voltage on the left / low voltage on the right) will be ideal for most installations.

Example Electrical Preparation

Minimum Electrical Preparation for Double Swing Gates

Photo-beam located just outside of gates when closed.
Power supply needs vary with voltage required by operator.

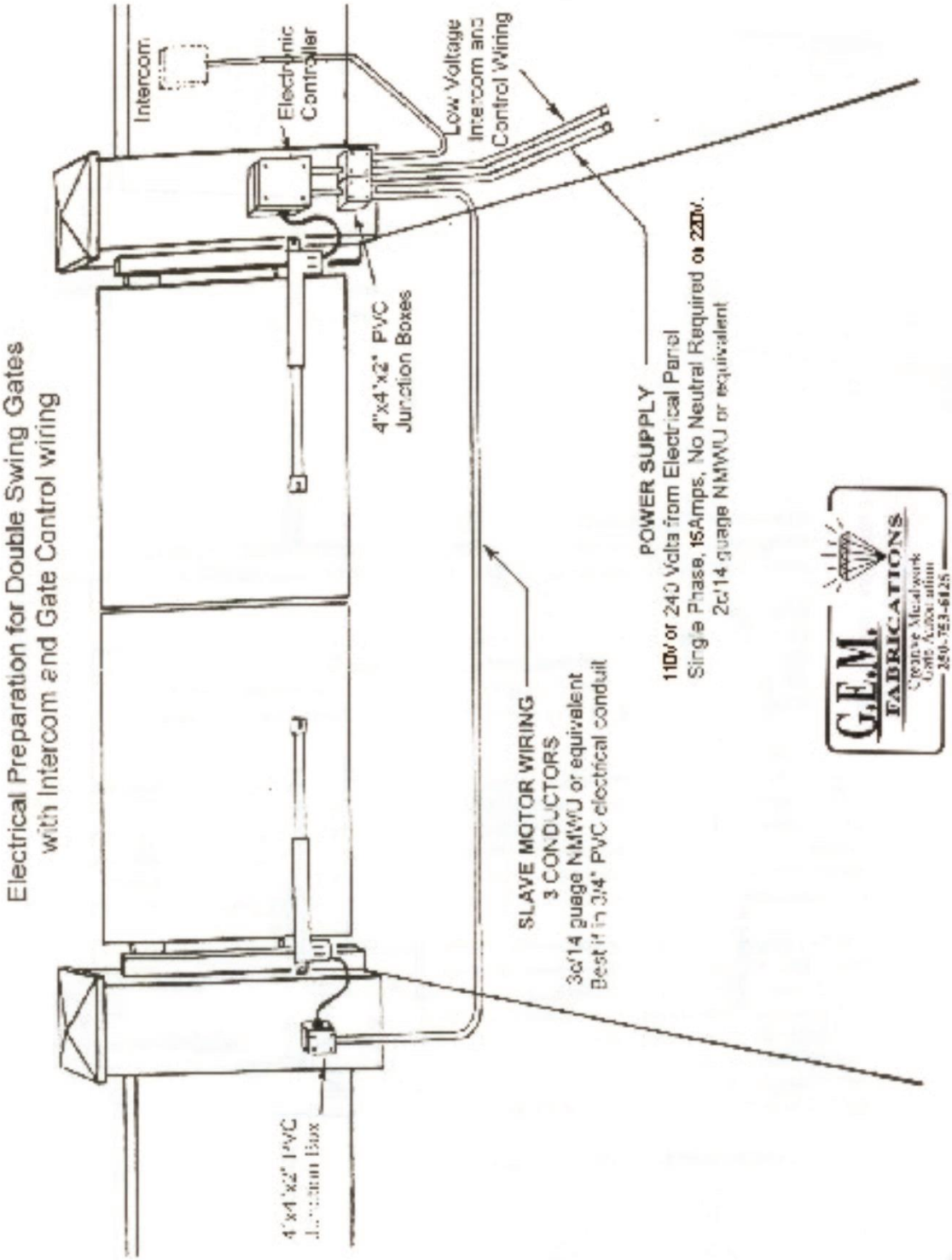


Example Electrical Preparation

Electrical Preparation for Double Swing Gates with Intercom & Gate Control Wiring

Photo-beam located just outside of gates when closed.

Power supply needs vary with voltage required by operator.



INSTALLATION OF THE ELECTRONIC CONTROLLER

Choose a convenient location for the controller. It can be surface mounted or recessed into the pillar or wall. If it is recessed, accurate planning is required in order for all conduits and wires to enter the controller's enclosure properly. In most cases, surface mounting is preferred. If the controller is located within reach of the power cord of the nearest ASTER, the cord can be routed directly into the control box without the need for an intermediate junction box.

Drill 2 holes in the bottom of the enclosure, one for high voltage wiring and one for low voltage. In some cases there may be no external low voltage wiring, and both holes can then be dedicated for high voltage conduits. Screw the backside of the enclosure for mounting to any flat surface. Never drill holes through the sides of the enclosure as rainwater will enter the sealed area and possibly ruin the circuit board. If it is necessary to bring wires into the enclosure, **always enter at the bottom surface** and use a good sealant to prevent insects and water from entering the enclosure.

An 8 uF capacitor for 220V or 25 uF capacitor for 110V are provided with each ASTER, and it is to be connected between the brown and black wires in the cord of each ASTER. An ideal location for this capacitor is inside the junction box where the ASTER's cord is spliced to the wires coming from the control unit.

If there is a flap or "astragal" on one of the leaves in a two gate system, it must arrive at the closed position before the opposite leaf. An adjustable electronic delay is available for motor M2 only. When connecting the motor wires to the control board terminal strip, be certain to connect the wires from the motor on the gate with the astragal to M1, so that the delay on M2 affects the opposite leaf. When the gates are opened, the leaf with the astragal (Ml) will delay for 1 1/2 seconds. This opening delay is not adjustable.

Follow the wiring diagrams with care, using 18 to 22-gauge wire for low voltage devices, and 14-gauge wire for the operators. Wires and cables should be rated for use in wet locations.

If safety devices are not being used, the three positions of the terminal strip marked N.C. should be jumped to common. The three LED indicators (2 yellow, 1 red) above the terminal strip must be lighted before the system will operate. The 2 green LEDs are for the two positions marked N.O. They are normally dark.

START-UP

1. Program the Electronic Controller to set the specific requirements of the system. See the accompanying sheet for detailed instructions.

2. Connect the system to the power supply and check that the green "Alimentazione" LED is lit. Check also that the two yellow and one red LEDs above the terminal strip are all lit.

3. Unlock each ASTER with the special key and move each leaf to its mid-point position. Relock each ASTER.

4. Provide the controller with a "start" signal via the remote controls or another device, and check that the gates begin to move. You should hear a rhythmic clicking of one of the relays within the controller. If the gates do not move, check that the trimmer on the torque adjustment card is set to its mid-point. Use a small 'jewelers' screwdriver. If the gate still does not move, check that the ASTER is locked and that the capacitor has been properly installed.

5. If one or both gates **begin to close**, disconnect the power and reverse the wires in the terminal strip labeled AP and CH for the motor which is closing. This will swap the positions of the brown and black wires of the operator, and will cause the Aster to reverse directions. (see circuit board manual)

6. Re-connect the power and give the controller a start signal. Both gates should now open. Let them time-out before giving a close signal. Open and close the gates several times and check that the motors stay energized for a few seconds after they bump against their travel limit stops. Adjust trimmer "lavoro" and try again until the motors remain energized for about 3 or 4 seconds longer that it takes to effect a full opening or closing cycle. **Changes to the trimmer 'lavoro' only take effect at the commencement of the next opening cycle.**

7. In the case of overlapping leaves (one fitted with an astragal), it is possible to delay the closing of the leaf driven by motor M2. To adjust the delay time, set trimmer "SFASAM" so that the delayed leaf closes approx. 2 seconds after the opposite leaf. Start with the trimmer at the 9 o'clock position.

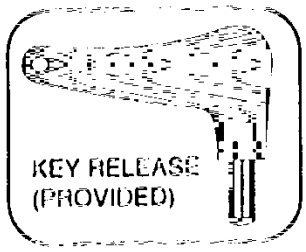
8. For gate systems that are configured to close automatically after a certain time has elapsed, trimmer "PAUSA" will set the delay time. **Safety devices** such as photo-beams or vehicle **detector loops MUST be fitted in such cases.**

9. The Electronic Controller is fitted with an electronic anti-crushing safety system which limits the amount of thrust which can be exerted by the gates. When the obstacle is removed, the gate will again proceed until the set operation time has expired. To adjust the pressure that the gates can exert, use the trimmer on the torque adjustment card. **Note that the speed of the gates cannot be influenced by this adjustment.** The dimensions "a" and "b" as referred to earlier determine gate speed. Always use the minimum amount of thrust, which will still move the gates reliably in all weather conditions. (eg. wind or cold temperatures)

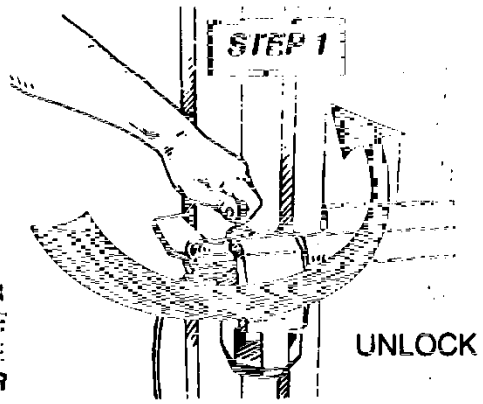
10. Check that all hardware has been properly tightened, that the hinges are greased, and that all accessory devices are operating properly. Finally, check that the gasket is properly installed and the cover of the controller is securely fastened. Congratulations, you should **now have completed your installation.**

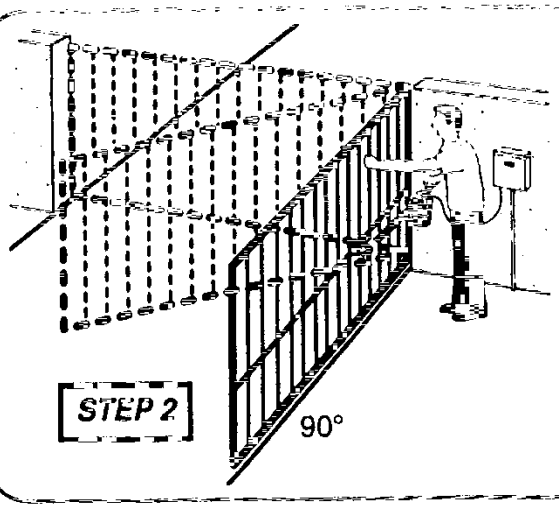
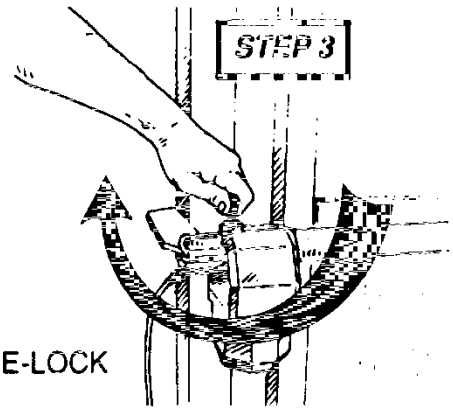
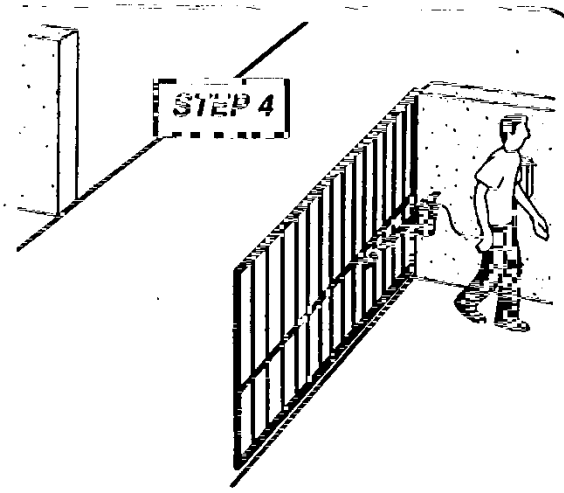
MANUAL RELEASE FUNCTION

In case of power outage or failure of system.



TO MOVE THE GATE DURING AN EMERGENCY OR POWER FAILURE, INSERT THE ***KEY RELEASE*** (STEP 1) INTO THE KEY RELEASE HOLE ON THE TOP OF THE OPERATOR AND TURN IT ***COUNTER***





MOVE THE GATE WITH YOUR HAND (STEP 2) TO THE FULL 90° OPENING AND RE-LOCK THE OPERATOR (STEP 3) BY TURNING THE ***KEY RELEASE CLOCKWISE***. THE OPERATOR CAN NOW RESUME NORMAL OPERATION AS SOON AS POWER IS RESTORED (STEP 4).