**Purchasing Division**

# Invitation for Bid

IFB-5131-22-KH
WWTP Improvements & Asset Replacement

## Responses Due:

November 14, 2022 prior to 2:00pm

***Accepting Electronic Responses Only***
***Responses Only Submitted Through the Rocky Mountain E-Purchasing System (RMEPS)***
**https://www.rockymountainbidsystem.com/default.asp**
**(Purchasing Representative does not have access or control of the vendor side of RMEPS. If website or other problems arise during response submission, vendor MUST contact RMEPS to resolve issue prior to the response deadline. 800-835-4603)**

NOTE: All City solicitation openings will continue to be held virtually. See Section 1.6 for details.

**Purchasing Representative:**
Kassy Hackett, Buyer
kassyh@gjcity.org
970-244-1546

This document has been developed specifically to solicit competitive responses for this solicitation, and may not be the same as previous City of Grand Junction solicitations. All vendors are required to thoroughly review this solicitation prior to responding. Submittal by **FAX, EMAIL or HARD COPY IS NOT ACCEPTABLE** for this solicitation.

# Invitation for Bids

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# 1. Instructions to Bidders

**NOTE:** It is the Contractor's responsibility to read and review all solicitation documentation in its entirety, and to ensure that they have a clear and complete understanding of not only the scope, specifications, project requirements, etc., but also all other requirements, instructions, rules, regulations, laws, conditions, statements, procurement policies, etc. that are associated with the solicitation process and project/services being solicited.

**1.1. Purpose:** The City of Grand Junction is soliciting competitive bids from qualified and interested companies for all labor, equipment, and materials required for improvements and asset replacements at the Persigo Wastewater Treatment Plant Orchard Mesa Office (251 27 Road). The work will include removal of existing asphalt, the removal of a Green Ash tree, installation of an 8" concrete parking lot, a chain link fence, a motorized gate, and parking lot striping. All dimensions and scope of work should be verified by Contractors prior to submission of bids.

**IFB Questions:**
Kassy Hackett, Buyer
kassyh@gjcity.org

The City would like to remind all Contractors, Sub-Contractors, Vendors, Suppliers, Manufacturers, Service Providers, etc. that (with the exception of Pre-Bid or Site Visit Meetings) all questions, inquiries, comments, or communication pertaining to any formal solicitation (whether process, specifications, scope, etc.) must be directed (in writing) to the Purchasing Agent assigned to the project or Purchasing Division. Direct communication with the City assigned Project Managers/Engineers is not appropriate for public procurement, and may result in disqualification.

**1.2. Mandatory Pre-Bid Meeting: Prospective bidders are required to attend a mandatory pre-bid meeting on October 21, 2022 at 9:00am.** Meeting location shall be onsite, located at 251 27 RD. The purpose of this visit will be to inspect and to clarify the contents of this Invitation for Bids (IFB). **NOTE: Bidders that arrive more than 10 minutes late to the meeting shall not be eligible to submit a bid response to this solicitation process for this project.**

**1.3. Prequalification Requirement:** Contractors submitting bids over $500,000 must be pre-qualified in accordance with the City's *"Contractors Prequalification Application*". All bids received by the specified time will be opened, but the City will reject bids over $500,000 from contractors who have not been prequalified. Application forms for prequalification are available by clicking the **Application Link** Call 970-256-4082 for additional information. Due to the time required to process applications, *all applications must be submitted no later than the application due date stated in the solicitation document.* Contractors may view their approved pre-qualified categories by clicking the Pre-Qualification List Link.

**1.4.** **The Owner:** The Owner is the City of Grand Junction, Colorado and is referred to throughout this Solicitation. The term Owner means the Owner or his authorized representative.

**1.5.** **Procurement Process:** Procurement processes shall be governed by the most current version of the City of Grand Junction Purchasing Policy and Procedure Manual.

**1.6.** **Submission:** ***Each bid shall be submitted in electronic format only, and only through the Rocky Mountain E-Purchasing website (https://www.rockymountainbidsystem.com/default.asp).*** *This site offers both "free" and "paying" registration options that allow for full access of the Owner's documents and for electronic submission of proposals. (Note: "free" registration may take up to 24 hours to process. Please Plan accordingly.)* Please view our "**Electronic Vendor Registration Guide"** at http://www.gjcity.org/business-and-economic-development/bids/ for details. (Purchasing Representative does not have access or control of the vendor side of RMEPS. If website or other problems arise during response submission, vendor **MUST** contact RMEPS to resolve issue prior to the response deadline. **800-835-4603**)

Solicitation Opening, WWTP Improvements & Asset Replacement IFB-5131-22-KH
Nov 14, 2022, 2:00 – 2:30 PM (America/Denver)

Please join my meeting from your computer, tablet or smartphone.
**https://meet.goto.com/969444045**

You can also dial in using your phone.
Access Code: 969-444-045
United States: +1 (786) 535-3211
- One-touch: tel:+17865353211,,969444045#

Join from a video-conferencing room or system.
Meeting ID: 969-444-045
Dial in or type: 67.217.95.2 or inroomlink.goto.com
Or dial directly: 969444045@67.217.95.2 or 67.217.95.2##969444045

Get the app now and be ready when your first meeting starts:
https://meet.goto.com/install

**1.7.** **Modification and Withdrawal of Bids Before Opening.** Bids may be modified or withdrawn by an appropriate document stating such, duly executed and submitted to the place where Bids are to be submitted at any time prior to Bid Opening.

**1.8.** **Printed Form for Price Bid:** All Price Bids must be made upon the Price Bid Schedule attached, and should give the amounts both in words and in figures, and must be signed and acknowledged by the bidder.

The Offeror shall specify a unit price in figures for each pay item for which a quantity is given and shall provide the products (in numbers) of the respective unit prices and quantities in the Extended Amount column. The total Bid price shall be equal to the sum

of all extended amount prices. When an item in the Price Bid Schedule provides a choice to be made by the Offeror, Offeror's choice shall be indicated in accordance with the specifications for that particular item and thereafter no further choice shall be permitted.

Where the unit of a pay item is lump sum, the lump sum amount shall be shown in the "extended amount" column and included in the summation of the total Bid.

All blank spaces in the Price Bid Schedule must be properly filled out.

Bids by corporations must be executed in the corporate name by the president or vice president or other corporate office accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown below the signature.

Bids by partnerships must be executed in the partnership name and signed by a partner whose title must appear under the signature and the official address of the partnership must be shown below the signature.

All names must be typed or printed below the signature.

The Offeror's Bid shall contain an acknowledgement of receipt of all Addenda, the numbers of which shall be filled in on the Contractor's Bid Form.

The contact information to which communications regarding the Bid are to be directed must be shown.

**1.9. Exclusions:** No oral, telephonic, emailed, or facsimile bid will be considered

**1.10. Contract Documents:** The complete IFB and bidder's response compose the Contract Documents. Copies of bid documents can be obtained from the City Purchasing website, https://co-grandjunction.civicplus.com/501/Purchasing-Bids .

**1.11. Additional Documents:** The July 2010 edition of the "City Standard Contract Documents for Capital Improvements Construction", Plans, Specifications and other Bid Documents are available for review or download on the Purchasing Bids page at https://co-grandjunction.civicplus.com/501/Purchasing-Bids.

**1.12. Definitions and Terms:** See Article I, Section 3 of the General Contract Conditions in the *Standard Contract Documents for Capital Improvements Construction*.

**1.13. Examination of Specifications:** Bidders shall thoroughly examine and be familiar with the project Statement of Work. The failure or omission of any Offeror to receive or examine any form, addendum, or other document shall in no way relieve any Offeror from any obligation with respect to his bid. The submission of a bid shall be taken as evidence of compliance with this section. Prior to submitting a bid, each Offeror shall, at a minimum:

a. Examine the *Contract Documents* thoroughly;

b. Visit the site to familiarize themselves with local conditions that may in any manner affect cost, progress, or performance of the Work;

c. Become familiar with federal, state, and local laws, ordinances, rules, and regulations that may in any manner affect cost, progress or performance of the Work;

d. Study and carefully correlate Bidder's observations with the *Contract Documents*, and;

e. Notify the Purchasing Agent of all conflicts, errors, ambiguities or discrepancies in or among the *Contract Documents* within the designated inquiry period.

On request, the Owner will provide each Offeror access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of a Bid. It shall be the Offeror's responsibility to make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (including without limitation, surface, subsurface and underground utilities) at or contiguous to the site or otherwise which may affect cost, progress or performance of the work and which the Offeror deems necessary to determine its Bid for performing the work in accordance with the time, price and other terms and conditions of the Contract Documents. Location of any excavation or boring made by Offeror shall be subject to prior approval of Owner and applicable agencies. Offeror shall fill all holes, restore all pavements to match the existing structural section and shall clean up and restore the site to its former condition upon completion of such exploration. The Owner reserves the right to require the Offeror to execute an access agreement with the Owner prior to accessing the site.

The lands upon which the Work is to be performed, rights of way, and access thereto, and other lands designated for use by Contractor in performing the Work, are identified on the Drawings.

Information and data reflected in the *Contract Documents* with respect to underground utilities at or contiguous to the site are based upon information and data furnished to the Owner and the Engineer by the owners of such underground utilities or others, and the Owner does not assume responsibility for the accuracy or completeness thereof, unless it is expressly provided otherwise in the *Contract Documents*.

By submission of a Bid, the Offeror shall be conclusively presumed to represent that the Offeror has complied with every requirement of these Instructions to Bidders, that the *Contract Documents* are not ambiguous and are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

**1.14. Questions Regarding Statement of Work:** Any information relative to interpretation of Scope of Work or specifications shall be requested of the Purchasing Representative, in writing, in ample time, prior to the inquiry deadline.

**1.15. Addenda & Interpretations:** If it becomes necessary to revise any part of this solicitation, a written addendum will be posted electronically on the City's website at http://www.gjcity.org/business-and-economic-development/bids/ . The Owner is not bound by any oral representations, clarifications, or changes made in the written specifications by Owner, unless such clarification or change is provided in written addendum form from the City Purchasing Representative.

**1.16. Taxes:** The Owner is exempt from State retail and Federal tax. The bid price must be net, exclusive of taxes.

**1.17. Sales and Use Taxes:** The Contractor and all Subcontractors are required to obtain exemption certificates from the Colorado Department of Revenue for sales and use taxes in accordance with the provisions of the General Contract Conditions. Bids shall reflect this method of accounting for sales and use taxes on materials, fixtures and equipment.

**1.18. Offers Binding 60 Days:** Unless additional time is required by the Owner, or otherwise specified, all formal offers submitted shall be binding for sixty (60) calendar days following opening date, unless the Bidder, upon request of the Purchasing Representative, agrees to an extension.

**1.19. Exceptions and Substitutions:** Bidders taking exception to the specifications and/or scope of work shall do so at their own risk. The Owner reserves the right to accept or reject any or all substitutions or alternatives. When offering substitutions and/or alternatives, Bidder must state these exceptions in the section pertaining to that area. Exception/substitution, if accepted, must meet or exceed the stated intent and/or specifications and/or scope of work. The absence of such a list shall indicate that the Bidder has not taken exceptions, and if awarded a contract, shall hold the Bidder responsible to perform in strict accordance with the specifications and/or scope of work contained herein.

**1.20. Collusion Clause:** Each bidder by submitting a bid certifies that it is not party to any collusive action or any action that may be in violation of the Sherman Antitrust Act. Any and all bids shall be rejected if there is evidence or reason for believing that collusion exists among bidders. The Owner may, or may not, accept future bids for the same services or commodities from participants in such collusion.

**1.21. Disqualification of Bidders:** A Bid will not be accepted from, nor shall a Contract be awarded to, any person, firm, or corporation that is in arrears to the Owner, upon debt or contract, or that has defaulted, as surety or otherwise, upon any obligation to the Owner, or that is deemed irresponsible or unreliable.

Bidders may be required to submit satisfactory evidence that they are responsible, have a practical knowledge of the project bid upon and that they have the necessary financial and other resources to complete the proposed Work.

Either of the following reasons, without limitation, shall be considered sufficient to disqualify a Bidder and Bid:

a. More than one Bid is submitted for the same Work from an individual, firm, or corporation under the same or different name; and

b. Evidence of collusion among Bidders. Any participant in such collusion shall not receive recognition as a Bidder for any future work of the Owner until such participant has been reinstated as a qualified bidder.

**1.22. Public Disclosure Record:** If the bidder has knowledge of their employee(s) or sub-contractors having an immediate family relationship with a City employee or elected official, the bidder must provide the Purchasing Representative with the name(s) of these individuals. These individuals are required to file an acceptable "Public Disclosure Record", a statement of financial interest, before conducting business with the City.

# 2. General Contract Conditions for Construction Projects

**2.1. The Contract:** This Invitation for Bid, submitted documents, and any negotiations, when properly accepted by the City, shall constitute a contract equally binding between the City and Contractor. The contract represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral. The contract may be amended or modified with Change Orders, Field Orders, or Addendums.

**2.2. The Work:** The term Work includes all labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in such construction.

**2.3. Execution, Correlation, Intent, and Interpretations:** The Contract Documents shall be signed by the Owner (City) and Contractor. City will provide the contract. By executing the contract, the Contractor represents that he/she has visited the site, familiarized himself with the local conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents. The Contract Documents are complementary, and what is required by any one, shall be as binding as if required by all. The intention of the documents is to include all labor, materials, equipment and other items necessary for the proper execution and completion of the scope of work as defined in the technical specifications and drawings contained herein. All drawings, specifications and copies furnished by the City are, and shall remain, City property. They are not to be used on any other project, and with the exception of one contract set for each party to the contract, are to be returned to the owner on request at the completion of the work.

**2.4. The Owner:** The Owner is the City of Grand Junction, Colorado and is referred to throughout the Contract Documents. The term Owner means the Owner or his authorized representative. The Owner shall, at all times, have access to the work wherever it is in preparation and progress. The Contractor shall provide facilities for such access. The Owner will make periodic visits to the site to familiarize himself generally with the progress and quality of work and to determine, in general, if the work is proceeding in accordance with the contract documents. Based on such observations and the Contractor's Application for Payment, the Owner will determine the amounts

owing to the Contractor and will issue Certificates for Payment in such amounts, as provided in the contract. The Owner will have authority to reject work which does not conform to the Contract documents. Whenever, in his reasonable opinion, he considers it necessary or advisable to insure the proper implementation of the intent of the Contract Documents, he will have authority to require the Contractor to stop the work or any portion, or to require special inspection or testing of the work, whether or not such work can be then be fabricated, installed, or completed. The Owner will not be responsible for the acts or omissions of the Contractor, and sub-Contractor, or any of their agents or employees, or any other persons performing any of the work.

**2.5. Contractor:** The Contractor is the person or organization identified as such in the Agreement and is referred to throughout the Contract Documents. The term Contractor means the Contractor or his authorized representative. The Contractor shall carefully study and compare the General Contract Conditions of the Contract, Specification and Drawings, Scope of Work, Addenda and Modifications and shall at once report to the Owner any error, inconsistency or omission he may discover. Contractor shall not be liable to the Owner for any damage resulting from such errors, inconsistencies or omissions. The Contractor shall not commence work without clarifying Drawings, Specifications, or Interpretations.

**2.6. Sub-Contractors:** A sub-contractor is a person or organization who has a direct contract with the Contractor to perform any of the work at the site. The term sub-contractor is referred to throughout the contract documents and means a sub-contractor or his authorized representative.

**2.7. Award of Sub-Contractors & Other Contracts for Portions of the Work:** Contractor shall submit with their bid response to the Owner, in writing for acceptance, a list of the names of the sub-contractors or other persons or organizations proposed for such portions of the work as may be designated in the proposal requirements, or, if none is so designated, the names of the sub-contractors proposed for the principal portions of the work. Prior to the award of the contract, the Owner shall notify the successful Contractor in writing if, after due investigation, has reasonable objection to any person or organization on such list. If, prior to the award of the contract, the Owner has a reasonable and substantial objection to any person or organization on such list, and refuses in writing to accept such person or organization, the successful Contractor may, prior to the award, withdraw their proposal without forfeiture of proposal security. If the successful Contractor submits an acceptable substitute with an increase in the proposed price to cover the difference in cost occasioned by the substitution, the Owner may, at their discretion, accept the increased proposal or may disqualify the Contractor. If, after the award, the Owner refuses to accept any person or organization on such list, the Contractor shall submit an acceptable substitute and the contract sum shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Change Order shall be issued. However, no increase in the contract sum shall be allowed for any such substitution unless the Contractor has acted promptly and responsively in submitting a name with respect thereto prior to the award.

**2.8. Quantities of Work and Unit Price:** Materials or quantities stated as unit price items in the Bid are supplied only to give an indication of the general scope of the Work, and are as such, estimates only. The Owner does not expressly or by implication agree that the

actual amount of Work or material will correspond therewith, and reserves the right after award to increase or decrease the quantity of any unit item of the Work without a change in the unit price except as set forth in Article VIII, Section 70 of the *General Contract Conditions*. The City also reserves the right to make changes in the Work (including the right to delete any bid item in its entirety or add additional bid items) as set forth in Article VIII, Sections 69 through 71 of the *General Contract Conditions*.

**2.9. Substitutions:** The materials, products and equipment described in the *Solicitation Documents* shall be regarded as establishing a standard of required performance, function, dimension, appearance, or quality to be met by any proposed substitution. No substitution will be considered prior to receipt of Bids unless the Offeror submits a written request for approval to the City Purchasing Division at least ten (10) days prior to the date for receipt of Bids. Such requests for approval shall include the name of the material or equipment for which substitution is sought and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for evaluation, including samples if requested. The Offeror shall set forth changes in other materials, equipment, or other portions of the Work including changes of the work of other contracts, which incorporation of the proposed substitution would require to be included. The Owner's decision of approval or disapproval of a proposed substitution shall be final. If the Owner approves a proposed substitution before receipt of Bids, such approval will be set forth in an Addendum. Offeors shall not rely upon approvals made in any other manner.

**2.10. Supervision and Construction Procedures:** The Contractor shall supervise and direct the work, using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the work under the contract.

**2.11. Warranty:** The Contractor warrants to the Owner that all materials and equipment furnished under this contract will be new unless otherwise specified, and that all work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All work not so conforming to these standards may be considered defective. If required by Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. If within ten (10) days after written notice to the Contractor requesting such repairs or replacement, the Contractor should neglect to make or undertake with due diligence to the same, the City may make such repairs or replacements. All indirect and direct costs of such correction or removal or replacement shall be at the Contractor's expense. The Contractor will also bear the expenses of making good all work of others destroyed or damaged by the correction, removal or replacement of his defective work.

**2.12. Permits, Fees, & Notices:** The Contractor shall secure and pay for all permits, governmental fees and licenses necessary for the proper execution and completion of the work. The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and orders of any public authority bearing on the performance of the work. If the Contractor observes that any of the Contract Documents are at variance in any respect, he shall promptly notify the Owner in writing, and any necessary changes shall be adjusted by approximate modification. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without

such notice to the Owner, he shall assume full responsibility and shall bear all costs attributable.

**2.13. Responsibility for Those Performing the Work:** The Contractor shall be responsible to the Owner for the acts and omissions of all his employees and all sub-contractors, their agents and employees, and all other persons performing any of the work under a contract with the Contractor.

**2.14. Use of the Site:** The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents, and shall not unreasonably encumber the site with any materials or equipment.

**2.15. Cleanup:** The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of work he shall remove all his waste materials and rubbish from and about the project, as well as all his tools, construction equipment, machinery and surplus materials.

**2.16. Insurance:** The Contractor shall secure and maintain such insurance policies as will provide the coverage and contain other provisions specified in the General Contract Conditions, or as modified in the Special Contract Conditions.

The Contractor shall file a copy of the policies or Certificates of Insurance acceptable to the City with the Engineer within ten (10) Calendar Days after issuance of the Notice of Award. These Certificates of Insurance shall contain a provision that coverage afforded under the policies shall not be canceled unless at least thirty (30) Calendar Days prior written notice has been given to the City.

**2.17. Indemnification:** The Contractor shall defend, indemnify and save harmless the Owner, and all its officers, employees, insurers, and self-insurance pool, from and against all liability, suits, actions, or other claims of any character, name and description brought for or on account of any injuries or damages received or sustained by any person, persons, or property on account of any negligent act or fault of the Contractor, or of any Contractor's agent, employee, sub-contractor or supplier in the execution of, or performance under, any contract which may result from proposal award. Contractor shall pay any judgment with cost which may be obtained against the Owner growing out of such injury or damages.

**2.18. Miscellaneous Conditions: Material Availability:** Contractors must accept responsibility for verification of material availability, production schedules, and other pertinent data prior to submission of bid. It is the responsibility of the bidder to notify the Owner immediately if materials specified are discontinued, replaced, or not available for an extended period of time. **OSHA Standards:** All bidders agree and warrant that services performed in response to this invitation shall conform to the standards declared by the US Department of Labor under the Occupational Safety and Health Act of 1970 (OSHA). In the event the services do not conform to OSHA standards, the Owner may require the services to be redone at no additional expense to the Owner.

**2.19. Time:** Time is of the essence with respect to the time of completion of the Project and any other milestones or deadline which are part of the Contract. It will be necessary for

each Bidder to satisfy the City of its ability to complete the Work within the Contract Time set forth in the Contract Documents. The Contract Time is the period of time allotted in the Contract Documents for completion of the work. The date of commencement of the work is the date established in a Notice to Proceed. If there is no Notice to Proceed, it shall be the date of the Contract or such other date as may be established therein, or as established as entered on the Bid Form. The Date of Final Completion of the work is the date certified by the Owner when all construction, and all other work associated to include, but not be limited to: testing, QA/QC, receipt of required reports and/or forms, grant requirements (if applicable), punch list items, clean-up, receipt of drawings and/or as-builts, etc., is fully complete, and in accordance with the Contract Documents.

**2.20. Progress & Completion:** The Contractor shall begin work on the date of commencement as defined in the Contract, and shall carry the work forward expeditiously with adequate forces and shall complete it within the contract time.

**2.21. Payment & Completion:** The Contract Sum is stated in the Contract and is the total amount payable by the Owner to the Contractor for the performance of the work under the Contract Documents. Upon receipt of written notice that the work is ready for final inspection and acceptance and upon receipt of application for payment, the Owner's Project Manager will promptly make such inspection and, when he finds the work acceptable under the Contract Documents and the Contract fully performed, the Owner shall make payment in the manner provided in the Contract Documents.

**2.22. Bid Bond:** Each Bid shall as a guaranty of good faith on the part of the Bidder be accompanied by a Bid Guaranty consisting of: a certified or cashier's check drawn on an approved national bank or trust company in the state of Colorado, and made payable without condition to the City; or a **Bid Bond** written by an approved corporate surety in favor of the City. The amount of the Bid Guaranty shall not be less than 5% of the total Bid amount. Once a Bid is accepted and a Contact is awarded, the apparent successful bidder has ten calendar days to enter into a contractor in the form prescribed and to furnish the bonds with a legally responsible and approved surety. Failure to do so will result I forfeiture of the Bid Guaranty to the City as Liquidated Damages.

Each bidder shall guaranty its total bid price for a period of sixty (60) Calendar Days from the date of the bid opening.

**2.23. Performance & Payment Bonds:** Contractor shall furnish a Performance and a Payment Bond, each in an amount at least equal to that specified for the contract amount as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. These bonds shall remain in effect for the duration of the Warranty Period (as specified in the Special Conditions). Contractor shall also furnish other bonds that may be required by the Special Conditions. All bonds shall be in the forms prescribed by the Contract Documents and be executed by such sureties as (1) are licensed to conduct business in the State of Colorado and (2) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Accounts, U.S. Treasury Department. All bonds singed by an agent must be accompanied by a certified copy of the Authority Act. If the surety on any bond furnished by the Contractor is declared bankrupt, or becomes

insolvent, or its rights to do business in Colorado are terminated, or it ceases to meet the requirements of clauses (1) and (2) of this section, Contractor shall within five (5) days thereafter substitute another bond and surety, both of which shall be acceptable to the City.

**2.24. Retention:** The Owner will deduct money from the partial payments in amounts considered necessary to protect the interest of the Owner and will retain this money until after completion of the entire contract. The amount to be retained from partial payments will be five (5) percent of the value of the completed work, and not greater than five (5) percent of the amount of the Contract. When the retainage has reached five (5) percent of the amount of the Contract no further retainage will be made and this amount will be retained until such time as final payment is made.

**2.25. Liquidated Damages for Failure to Enter Into Contract:** Should the Successful Bidder fail or refuse to enter into the Contract within ten Calendar Days from the issuance of the Notice of Award, the City shall be entitled to collect the amount of such Bidder's Bid Guaranty as Liquidated Damages, not as a penalty but in consideration of the mutual release by the City and the Successful Bidder of all claims arising from the City's issuance of the Notice of Award and the Successful Bidder's failure to enter into the Contract and the costs to award the Contract to any other Bidder, to readvertise, or otherwise dispose of the Work as the City may determine best serves its interest.

**2.26. Liquidated Damages for Failure to Meet Project Completion Schedule:** If the Contractor does not achieve Final Completion by the required date, whether by neglect, refusal or any other reason, the parties agree and stipulate that the Contractor shall pay liquidated damages to the City for each such day that final completion is late. As provided elsewhere, this provision does not apply for delays caused by the City. The date for Final Completion may be extended in writing by the Owner.

The Contractor agrees that as a part of the consideration for the City's awarding of this Contract liquidated damages in the daily amount of **$350.00** is reasonable and necessary to pay for the actual damages resulting from such delay. The parties agree that the real costs and injury to the City for such delay include hard to quantify items such as: additional engineering, inspection and oversight by the City and its agents; additional contract administration; inability to apply the efforts of those employees to the other work of the City; perceived inefficiency of the City; citizens having to deal with the construction and the Work, rather than having the benefit of a completed Work, on time; inconvenience to the public; loss of reputation and community standing for the City during times when such things are very important and very difficult to maintain.

The Contractor must complete the Work and achieve final completion included under the Bid Schedule in the number of consecutive calendar days after the City gives is written Notice to Proceed. When the Contractor considers the entire Work ready for its intended use, Contractor shall certify in writing that the Work is fully complete. Final Completion date is the date by which the Contractor shall have fully completed all clean-up, and all items that were identified by the City in the inspection for final completion. Unless otherwise stated in the Special Conditions, for purposes of this liquidated damages clause, the Work shall not be finished and the Contract time shall continue to accrue until the City gives its written Final Acceptance.

If the Contractor shall fail to pay said liquidated damages promptly upon demand thereof after having failed to achieve Final Completion on time, the City shall first look to any retainage or other funds from which to pay said liquidated damages; if retainage or other liquid funds are not available to pay said liquidated damages amounts, the Surety on the Contractor's Performance Bond and Payment Bond shall pay such liquidated damages. In addition, the City may withhold all, or any part of, such liquidated damages from any payment otherwise due the Contractor.

Liquidated damages as provided do not include any sums to reimburse the City for extra costs which the City may become obligated to pay on other contracts which were delayed or extended because of the Contractor's failure to complete the Work within the Contract Time. Should the City incur additional costs because of delays or extensions to other contracts resulting from the Contractor's failure of timely performance, the Contractor agrees to pay these costs that the City incurs because of the Contractor's delay, and these payments are separate from and in addition to any liquidated damages.

The Contractor agrees that the City may use its own forces or hire other parties to obtain Final Completion of the work if the time of completion has elapsed and the Contractor is not diligently pursuing completion. In addition to the Liquidated Damages provided for, the Contractor agrees to reimburse the City for all expenses thus incurred.

**2.27. Contingency/Force Account/Minor Contract Revisions:** Contingency/Force Account/Minor Contract Revisions work will be authorized by the Owner's Project Manager and is defined as minor expenses to cover miscellaneous or unforeseen expenses related to the project. The expenses are not included in the Drawings, Specifications, or Scope of Work and are necessary to accomplish the scope of this contract. Contingency/Force Account/Minor Contract Revisions Authorization will be directed by the Owner through an approved form. Contingency/Force Account/Minor Contract Revisions funds are the property of the Owner and any Contingency/Force Account/Minor Contract Revisions funds, not required for project completion, shall remain the property of the Owner. Contractor is not entitled to any Contingency/Force Account/Minor Contract Revisions funds, that are not authorized by Owner or Owner's Project Manager.

**2.28. Protection of Persons & Property:** The Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. Contractor shall erect and maintain, as required by existing safeguards for safety and protection, and all reasonable precautions, including posting danger signs or other warnings against hazards promulgating safety regulations and notifying owners and users of adjacent utilities. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct by the Contractor in the execution of the work, or in consequence of the non-execution thereof by the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or it shall make good such damage or injury in an acceptable manner.

**2.29. Changes in the Work:** The Owner, without invalidating the contract, may order changes in the work within the general scope of the contract consisting of additions, deletions or other revisions, the contract sum and the contract time being adjusted accordingly. All such changes in the work shall be authorized by Change Order and shall be executed under the applicable conditions of the contract documents. A Change Order is a written order to the Contractor signed by the Owner issued after the execution of the contract, authorizing a change in the work or an adjustment in the contract sum or the contract time. The contract sum and the contract time may be changed only by Change Order.

**2.30. Claims for Additional Cost or Time:** If the Contractor wishes to make a claim for an increase in the contract sum or an extension in the contract time, he shall give the Owner written notice thereof within a reasonable time after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the work, except in an emergency endangering life or property in which case the Contractor shall precede in accordance with the regulations on safety. No such claim shall be valid unless so made. Any change in the contract sum or contract time resulting from such claim shall be authorized by Change Order.

**2.31. Minor Changes in the Work:** The Owner shall have authority to order minor changes in the work not involving an adjustment in the contract sum or an extension of the contract time and not inconsistent with the intent of the contract documents.

**2.32. Field Orders:** The Owner may issue written Field Orders which interpret the Contract Documents in accordance with the specifications, or which order minor changes in the work in accordance with the agreement, without change in the contract sum or time. The Contractor shall carry out such Field Orders promptly.

**2.33. Uncovering & Correction of Work:** The Contractor shall promptly correct all work rejected by the Owner as defective or as failing to conform to the contract documents whether observed before or after substantial completion and whether or not fabricated installed or competed. The Contractor shall bear all costs of correcting such rejected work, including the cost of the Owner's additional services thereby made necessary. If within one (1) year after the date of completion or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the contract documents, any of the work found to be defective or not in accordance with the contract documents, the Contractor shall correct it promptly after receipt of a written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discover of condition. All such defective or non-conforming work under the above paragraphs shall be removed from the site where necessary and the work shall be corrected to comply with the contract documents without cost to the Owner. The Contractor shall bear the cost of making good all work of separate Contractors destroyed or damaged by such removal or correction. If the Owner prefers to accept defective or non-conforming work, he may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect an appropriate reduction in the payment or contract sum, or, if the amount is determined after final payment, it shall be paid by the Contractor.

**2.34. Amendment:** No oral statement of any person shall modify or otherwise change, or affect the terms, conditions or specifications stated in the resulting contract. All amendments to the contract shall be made in writing by the Owner.

**2.35. Assignment:** The Contractor shall not sell, assign, transfer or convey any contract resulting from this IFB, in whole or in part, without the prior written approval from the Owner.

**2.36. Compliance with Laws:** Bids must comply with all Federal, State, County and local laws governing or covering this type of service and the fulfillment of all ADA (Americans with Disabilities Act) requirements.

**2.37. Confidentiality:** All information disclosed by the Owner to the Contractor for the purpose of the work to be done or information that comes to the attention of the Contractor during the course of performing such work is to be kept strictly confidential.

**2.38. Conflict of Interest:** No public official and/or City/County employee shall have interest in any contract resulting from this IFB.

**2.39. Contract Termination**: This contract shall remain in effect until any of the following occurs: (1) contract expires; (2) completion of services; (3) acceptance of services or, (4) for convenience terminated by either party with a written *Notice of Cancellation* stating therein the reasons for such cancellation and the effective date of cancellation.

**2.40. Employment Discrimination:** During the performance of any services per agreement with the Owner, the Contractor, by submitting a Bid, agrees to the following conditions:

**2.40.1.** The Contractor shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age, handicap, or national origin except when such condition is a legitimate occupational qualification reasonably necessary for the normal operations of the Contractor. The Contractor agrees to post in conspicuous places, visible to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

**2.40.2.** The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, shall state that such Contractor is an Equal Opportunity Employer.

**2.40.3.** Notices, advertisements, and solicitations placed in accordance with federal law, rule, or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.

**2.41. Affirmative Action:** In executing a Contract with the City, the Contractor agrees to comply with Affirmative Action and Equal Employment Opportunity regulations presented in the General Contract Conditions.

**2.42. Immigration Reform and Control Act of 1986 and Immigration Compliance:** The Offeror certifies that it does not and will not during the performance of the contract employ

workers without authorization or otherwise violate the provisions of the Federal Immigration Reform and Control Act of 1986 and/or the immigration compliance requirements of State of Colorado C.R.S. § 8-17.5-101, *et.seq.* (House Bill 06-1343).

**2.43. Ethics:** The Contractor shall not accept or offer gifts or anything of value nor enter into any business arrangement with any employee, official, or agent of the Owner.

**2.44. Failure to Deliver:** In the event of failure of the Contractor to deliver services in accordance with the contract terms and conditions, the Owner, after due oral or written notice, may procure the services from other sources and hold the Contractor responsible for any costs resulting in additional purchase and administrative services. This remedy shall be in addition to any other remedies that the Owner may have.

**2.45. Failure to Enforce:** Failure by the Owner at any time to enforce the provisions of the contract shall not be construed as a waiver of any such provisions. Such failure to enforce shall not affect the validity of the contract or any part thereof or the right of the Owner to enforce any provision at any time in accordance with its terms.

**2.46. Force Majeure:** The Contractor shall not be held responsible for failure to perform the duties and responsibilities imposed by the contract due to legal strikes, fires, riots, rebellions, and acts of God beyond the control of the Contractor, unless otherwise specified in the contract.

**2.47. Independent Contractor:** The Contractor shall be legally considered an Independent Contractor and neither the Contractor nor its employees shall, under any circumstances, be considered servants or agents of the Owner. The Owner shall be at no time legally responsible for any negligence or other wrongdoing by the Contractor, its servants, or agents. The Owner shall not withhold from the contract payments to the Contractor any federal or state unemployment taxes, federal or state income taxes, Social Security Tax or any other amounts for benefits to the Contractor. Further, the Owner shall not provide to the Contractor any insurance coverage or other benefits, including Workers' Compensation, normally provided by the Owner for its employees.

**2.48. Nonconforming Terms and Conditions:** A bid that includes terms and conditions that do not conform to the terms and conditions of this Invitation for Bid is subject to rejection as non-responsive. The Owner reserves the right to permit the Contractor to withdraw nonconforming terms and conditions from its bid prior to a determination by the Owner of non-responsiveness based on the submission of nonconforming terms and conditions.

Items for non-responsiveness may include, but not be limited to:

a. Submission of the Bid on forms other than those supplied by the City;

b. Alteration, interlineation, erasure, or partial detachment of any part of the forms which are supplied herein;

c. Inclusion of unauthorized additions conditional or alternate Bids or irregularities of any kind which may tend to make the Bid incomplete, indefinite, or ambiguous as to its meaning;

d. Failure to acknowledge receipt of any or all issued Addenda;

e. Failure to provide a unit price or a lump sum price, as appropriate, for each pay item listed except in the case of authorized alternative pay items;

f. Failure to list the names of Subcontractors used in the Bid preparation as may be required in the Solicitation Documents;

g. Submission of a Bid that, in the opinion of the Owner, is unbalanced so that each item does not reasonably carry its own proportion of cost or which contains inadequate or unreasonable prices for any item;

h. Tying of the Bid with any other bid or contract; and

i. Failure to calculate Bid prices as described herein.

**2.49. Evaluation of Bids and Offerors:** The Owner reserves the right to:

- reject any and all Bids,
- waive any and all informalities,
- take into account any prompt payment discounts offered by Bidder,
- negotiate final terms with the Successful Bidder,
- take into consideration past performance of previous awards/contracts with the Owner of any Contractor, Vendor, Firm, Supplier, or Service Provider in determining final award. and
- disregard any and all nonconforming, nonresponsive or conditional Bids.

Discrepancies between words and figures will be resolved in favor of words. Discrepancies between Unit Prices and Extended Prices will be resolved in favor of the Unit Prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. The corrected extensions and totals will be shown in the tabulation of Bids.

The Owner may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the work as to which the identity of Subcontractors and other persons and organizations must be submitted. Operating costs, maintenance considerations performance data, and guarantees of materials and equipment may also be considered by the Owner.

The Owner will conduct such investigations as deemed necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Offeror, proposed Subcontractors and other persons and organizations to do the Work in accordance with the *Contract Documents* to the City's satisfaction within the Contract Time.

The Offeror shall furnish the Owner all information and data requested by the Owner to determine the ability of the Offeror to perform the Work. The Owner reserves the right to reject the Bid if the evidence submitted by, or investigation of such Offeror fails to satisfy the Owner that such Offeror is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein.

By submitting a Bid, each Offeror authorizes the Owner to perform such investigation of the Offeror as the Owner deems necessary to establish the responsibility, qualifications and financial ability of the Offeror and, by its signature thereon, authorizes the Owner to obtain reference information concerning the Offeror and releases the party providing such information and the Owner from any and all liability to the Offeror as a result of such reference information so provided.

The Owner reserves the right to reject the Bid of any Offeror who does not pass any evaluation to the Owner's satisfaction.

If the Contract is to be awarded, it will be awarded to the Offeror who, by evaluation, the Owner determines will best meet the Owner's interests.

The Owner reserves the right to accept or reject the Work contained in any of the Price Bid Schedules or alternates, either in whole or in part.

**2.50. Award of Contract:** Unless otherwise indicated, a single award will be made for all the bid items in an individual bid schedule. In the event that the Work is contained in more than one Bid Schedule, the City may award Schedules individually or in combination. In the case of two Bid Schedules which are alternative to each other, only one of such alternative Schedules will be awarded. Within forty-five (45) Calendar Days of Bid Opening, the City will issue a Notice of Award to the Successful Bidder which will be accompanied by four (4) unsigned copies of the Contract and the Performance and Payment Bond forms. Within ten (10) Calendar Days thereafter, the Successful Bidder shall sign and deliver four (4) copies of the Contract, Performance Bond, Payment Bond and Certificates of Insurance to the City. Within ten (10) Calendar Days thereafter, the City will deliver two (2) fully executed counterparts of the Contract to the Contractor. No contract shall exist between the Successful Bidder and the City and the Successful Bidder shall have no rights at law or in equity until the Contract has been duly executed by the City.

The Successful Bidder's failure to sign and submit a Contract and other documents set forth in this Paragraph within the prescribed time shall be just cause of annulment of the award, and forfeiture of the Bid Guaranty. The award of Contract may then be made to the next qualified Bidder in the same manner as previously prescribed.

**2.51. Ownership:** All plans, prints, designs, concepts, etc., shall become the property of the Owner.

**2.52. Oral Statements:** No oral statement of any person shall modify or otherwise affect the terms, conditions, or specifications stated in this document and/or resulting agreement. All modifications to this request and any agreement must be made in writing by the Owner.

**2.53. Patents/Copyrights:** The Contractor agrees to protect the Owner from any claims involving infringements of patents and/or copyrights. In no event shall the Owner be liable to the Contractor for any/all suits arising on the grounds of patent(s)/copyright(s) infringement. Patent/copyright infringement shall null and void any agreement resulting from response to this IFB.

**2.54. Remedies**: The Contractor and Owner agree that both parties have all rights, duties, and remedies available as stated in the Uniform Commercial Code.

**2.55. Venue**: Any agreement as a result of responding to this IFB shall be deemed to have been made in, and shall be construed and interpreted in accordance with, the laws of the City of Grand Junction, Mesa County, Colorado.

**2.56. Expenses:** Expenses incurred in preparation, submission and presentation of this IFB are the responsibility of the company and cannot be charged to the Owner.

**2.57. Sovereign Immunity:** The Owner specifically reserves its right to sovereign immunity pursuant to Colorado State Law as a defense to any action arising in conjunction to this agreement.

**2.58. Non-Appropriation of Funds:** The contractual obligation of the Owner under this contract is contingent upon the availability of appropriated funds from this fiscal year budget as approved by the City Council or Board of County Commissioners from this fiscal year only. State of Colorado law prohibit obligation of public funds beyond the fiscal year for which the budget was approved. Anticipated expenditures/obligations beyond the end of the current Owner's fiscal year budget shall be subject to budget approval. Any contract will be subject to and must contain a governmental non-appropriation of funds clause.

**2.59. Cooperative Purchasing:** Purchases as a result of this solicitation are primarily for the City/County. Other governmental entities may be extended the opportunity to utilize the resultant contract award with the agreement of the successful provider and the participating agencies. All participating entities will be required to abide by the specifications, terms, conditions and pricings established in this Bid. The quantities furnished in this bid document are for only the City/County. It does not include quantities for any other jurisdiction. The City or County will be responsible only for the award for its jurisdiction. Other participating entities will place their own awards on their respective Purchase Orders through their purchasing office or use their purchasing card for purchase/payment as authorized or agreed upon between the provider and the individual entity. The City/County accepts no liability for payment of orders placed by other participating jurisdictions that choose to piggy-back on our solicitation. Orders placed by participating jurisdictions under the terms of this solicitation will indicate their specific delivery and invoicing instructions.

**2.60. Keep Jobs in Colorado Act:** Contractor shall be responsible for ensuring compliance with Article 17 of Title 8, Colorado Revised Statutes requiring 80% Colorado labor to be employed on public works. Contractor shall, upon reasonable notice provided by the Owner, permit the Owner to inspect documentation of identification and

residency required by C.R.S. §8-17-101(2)(a). If Contractor claims it is entitled to a waiver pursuant to C.R.S. §8-17-101(1), Contractor shall state that there is insufficient Colorado labor to perform the work such that compliance with Article 17 would create an undue burden that would substantially prevent a project from proceeding to completion, and shall include evidence demonstrating the insufficiency and undue burden in its response.

Unless expressly granted a waiver by the Owner pursuant to C.R.S. §8-17-101(1), Contractor shall be responsible for ensuring compliance with Article 17 of Title 8, Colorado Revised Statutes requiring 80% Colorado labor to be employed on public works. Contractor shall, upon reasonable notice provided by the Owner, permit the Owner to inspect documentation of identification and residency required by C.R.S. §8-17-101(2)(a).

**2.60.1.** "Public project" is defined as:

(a) any construction, alteration, repair, demolition, or improvement of any land, building, structure, facility, road, highway, bridge, or other public improvement suitable for and intended for use in the promotion of the public health, welfare, or safety and any maintenance programs for the upkeep of such projects

(b) for which appropriate or expenditure of moneys may be reasonably expected to be $500,000.00 or more in the aggregate for any fiscal year

(c) except any project that receives federal moneys.

# 3. Statement of Work

**3.1. GENERAL:** The work request is for construction of a parking lot and associated improvements at the Persigo Wastewater Treatment Plan Orchard Mesa Office (251 27 Road).

**3.2. PROJECT DESCRIPTION:** The City of Grand Junction is soliciting competitive bids from qualified and interested companies for all labor, equipment, and materials required for improvements and asset replacements at the Persigo Wastewater Treatment Plan Orchard Mesa Office (251 27 Road). The work will include removal of existing asphalt, the removal of a Green Ash tree, installation of an 8” concrete parking lot, a chain link fence, a motorized gate, and parking lot striping. All dimensions and scope of work should be verified by Contractors prior to submission of bids.

**3.3. SPECIAL CONDITIONS & PROVISIONS:**

**3.3.1 Mandatory Pre-Bid Meeting: Prospective bidders are required to attend a mandatory pre-bid meeting on October 21, 2022 at 9:00am.** Meeting location shall be onsite, located at 251 27 RD. The purpose of this visit will be to inspect and to clarify the contents of this Invitation for Bids (IFB). **NOTE: Bidders that arrive more than 10 minutes late to the meeting shall not be eligible to submit a bid response to this solicitation process for this project.**

**3.3.2 QUESTIONS REGUARDING SOLICIATION PROCESS/SCOPE OF WORK:**
Kassy Hackett, Buyer

kassyh@gjcity.org

**3.3.3 Project Manager:** The Project Manager for the Project is Lisa Froshaug, Project Engineer, who can be reached at (970)244-1592. During Construction, all notices, letters, submittals, and other communications directed to the City shall be addressed and mailed or delivered to:

City of Grand Junction
Department of Public Works
Attn: Lisa Froshaug, Project Manager
250 North Fifth Street
Grand Junction, CO 81501

**3.3.4 Contract Administrator:** The Contract Administrator for the Project is Duane Hoff Jr., Contract Administrator, who can be reached at (970)244-1545. During Construction, contract related inquiries, issues, and other communications shall be directed to:

Duane Hoff Jr., Contract Administrator
duaneh@gjcity.org

**3.3.5 Pre-Qualification:** Contractors must be pre-qualified in the following categories to submit a bid response to this project:

1. Concrete Roadway Paving

Contractors may view their approved pre-qualified categories by clicking the Pre-Qualification List Link.

**3.3.6 Affirmative Action:** The Contractor is not required to submit a written Affirmative Action Program for the Project.

**3.3.7 Pricing:** Pricing shall be all inclusive to include but not be limited to: all labor, equipment, supplies, materials, freight (F.O.B. Destination – Freight Pre-paid and Allowed to each site), travel, mobilization costs, fuel, set-up and take down costs, and full-time inspection costs, and all other costs related to the successful completion of the project.

The Owner shall not pay nor be liable for any other additional costs including but not limited to: taxes, shipping charges, insurance, interest, penalties, termination payments, attorney fees, liquidated damages, etc.

**3.3.8 Freight/Shipping:** All freight/shipping shall be F.O.B. Destination – Freight Pre-Paid and Allowed to the project site(s), Grand Junction, CO.

Contractor must meet all federal, state, and local rules, regulations, and requirements for providing such services.

**3.3.9 Contract:** A binding contract shall consist of: (1) the IFB and any amendments thereto, (2) Additional Documents as stated in Section 1.10, (3) the bidder's response

(bid) to the IFB, (4) clarification of the bid, if any, and (5) the City's Purchasing Department's acceptance of the bid by "Notice of Award" or by "Purchase Order". All Exhibits and Attachments included In the IFB shall be incorporated into the contract by reference.

A. The contract expresses the complete agreement of the parties and, performance shall be governed solely by the specifications and requirements contained therein.

B. Any change to the contract, whether by modification and/or supplementation, must be accomplished by a formal contract amendment signed and approved by and between the duly authorized representative of the bidder and the City Purchasing Division or by a modified Purchase Order prior to the effective date of such modification. The bidder expressly and explicitly understands and agrees that no other method and/or no other document, including acts and oral communications by or from any person, shall be used or construed as an amendment or modification to the contract.

**3.3.10 Time of Completion:** The scheduled time of Completion for the Project is 45 Calendar Days from the starting date specified in the Notice to Proceed.

Completion is achieved when site cleanup and all punch list items (resulting from the final inspection) have been completed. Completion shall have the meaning set forth in Article I, Section 3 (Definitions and Terms) of the General Contract Conditions.

**3.3.11 Working Days and Hours:** The working days and hours shall be as stated in the General Contract Conditions or as mutually agreed upon in the preconstruction meeting with the following exception:

All work shall be performed between the hours of 7:00 AM to 5:00 PM.

**3.3.12 Licenses and Permits:** Contractor is responsible for obtaining all necessary licenses and permits required for Construction, at Contractors expense. See Section 2.12. Contractor shall supply to Owner all copies of finalized permits.

**3.3.13 Permits:** The following permits are required for the Project and will be obtained by the City at no cost to the Contractor:

None

The following permits are required for the Project and shall be obtained but not paid for by the Contractor:

None

The following permits are required for the Project and shall be obtained and paid for by the Contractor, with the costs included in the total bid price for the Project:

None

**3.3.14 City Furnished Materials:** The City will furnish the following materials for the Project:

- None

**3.3.15 Project Newsletters:** The work will not require public outreach.

**3.3.16 Project Sign:** Project signs, if any, will be furnished and installed by the City.

**3.3.17 Authorized Representatives of the City:** Those authorized to represent the City shall include Purchasing Agent, Engineers, and Inspectors employed by the City, only.

**3.3.18 Stockpiling Materials and Equipment:** All stockpiling/storage shall be in accordance with General Contract Condition Section 51.

**3.3.19 Traffic Control:** The Contractor shall provide and maintain traffic control in accordance with the approved Traffic Control Plan and the Manual on Uniform Traffic Control Devices. A Traffic Control Plan shall be prepared by the Contractor and reviewed by the City two days prior to the pre-construction meeting.

**3.3.20 Clean-Up:** The Contractor is responsible for cleaning up all loose materials that have been deposited or swept into gutters, and onto sidewalks and driveways as a result of sidewalk operations. The costs for all clean-up work shall be considered incidental and will not be paid for separately.

**3.3.21 Quality Control Testing:** Supplier shall perform Quality Control (QC) testing on the Asphalt. The Contractor shall provide QC throughout the Contract, with the use of their own QC Technicians or the use of a certified laboratory. In accordance with Section 401.06.3 of the City of Grand Junction Standard Specifications for Road and Bridge Construction, results of all QC tests shall be submitted to the Project Engineer and the City's Quality Assurance (QA) Technician within 4 hours of the time of sampling. Failure to do so may require that paving be suspended until all sampling results have been received, reviewed, and approved. The Contractor shall supply QC Lab personnel for night work for comparison of test data. If lab personnel is not supplied paving operations will be suspended until one is available. QC Field personnel shall remain on site during the duration of the paving operation or until in-place density are met.

The Contractor/Supplier shall perform QC testing on all concrete. The City will perform QA testing for concrete.

The Contractor, at their own discretion, may elect to forgo the soils QC field testing (in-place soils density) for placement of Embankment and Aggregate Base Course. QA testing for these items will be performed by the City, and laboratory results for submittal purposes will be provided by the contractor. However, if a sufficient number of failed test results are observed by the City and/or it's QA testing representatives, written notification will be provided to the contractor, and back payment to the City for failed location re-tests will be required.

**3.3.22 Schedule of Submittals:** Contractor shall deliver these submittals at least two days prior to the pre-construction meeting:

- Traffic Control Plans

- Project Schedule
- Concrete Mix Design
- Class 6 Base Course

**3.3.23 Uranium Mill Tailings:** It is anticipated that radioactive mill tailings will not be encountered on this Project.

**3.3.24 Fugitive Petroleum or Other Contamination:** It is anticipated that soil contamination from fugitive petroleum or other contaminants will not be encountered with the Project.

**3.3.25 Excess Material:** All excess materials shall be disposed in accordance with General Contract Condition Section 50.

**3.3.26 Existing Utilities and Structures:** Utilities were **not** potholed during design of this project. The location of existing utilities and structures shown on the Plans is approximate with the information gathered during design. It is the responsibility of the Contractor to pothole/locate and protect all structures and utilities in accordance with General Contract Condition Section 37.

**3.3.27 Incidental Items:** Any item of work not specifically identified or paid for directly, but which is necessary for the satisfactory completion of any paid items of work, will be considered as incidental to those items, and will be included in the cost of those items.

**3.3.28 Survey:** The Contractor shall give the City survey crew a minimum of 72 hours' notice for all requested survey.

**3.3.29 Work to be Performed by the City (Prior to Construction):**

- None

**3.3.30 Existing Concrete Sidewalks, Pans, Fillets, Curbs and Gutters:** The existing sidewalks, pans, fillets, curb and gutter are in good serviceable condition. In most instances the installation of new sidewalk and pavement will be adjacent to existing concrete. The Contractor will need to protect all concrete adjacent to construction. If the concrete is damaged during construction the Contractor will be responsible for its replacement at no cost to the City. The Contractor, the City Project Inspector, and/or the City Project Manager will walk and record any concrete that is deemed to be damaged before construction has started.

**3.3.31 ACI Concrete and Flatwork Finisher and Technician:** Hand finishing concrete will be permitted only when performed under the direct supervision of a craftsman holding the following certificate: ACI Concrete Flatwork Finisher and Technician (ACICFFT) or other Flatwork Finisher certification program approved by the City Engineering Manager.

**3.3.32 Privacy Fence Slats** Contractor shall utilize privacy fence slats specified in Appendix B or comparable product with approval from the project engineer.

**3.3.33 Motorized Gate** Contractor shall utilize privacy fence slats specified in Appendix C or comparable product with approval from the project engineer.

**3.4. SCOPE OF WORK:** See attached Construction Drawings/Specifications

**STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION:**

The City of Grand Junction Standard Specifications for Road and Bridge Construction are hereby modified or supplemented for this Project by the following modifications to The Standard Specifications for Road and Bridge Construction, State Department of Highways, Division of Highways, State of Colorado:

**SP-1 SECTION 202 – REMOVAL OF STRUCTURES AND OBSTRUCTIONS**

Section 202 of the Standard Specifications is hereby revised for this project as follows:
Subsection 202.12, add the following: Locations of saw cuts shall be determined and directed by the Construction Inspector or the Engineer. Saw cuts shall be incidental to work.

Tree removal shall be performed by a licensed tree service.

**SP-2 SECTION 208 – EROSION CONTROL**

Add the following to this subsection:
208.05(n) Add the Following:
Concrete Washout Structure: Water for clean-up of equipment used in the mixing or distribution of concrete shall not be discharged to any storm water facilities, drain ways, or deposited into any open fields. The wastewater used shall either be wasted on an open excavation area on in an onsite detention facility for future disposal.

Subsection 208.08 Payment for Best Management Practices.
The disposal of wash water shall be considered incidental to the concrete and will not be measured for or paid for separately.

**SP-3 SECTION 601 – STRUCTURAL CONCRETE**

Section 601 of the Standard Specifications is hereby revised for this project as follows:
Subsection 601.02, Classification:
CONCRETE SHALL MEET THE FOLLOWING REQUIREMENTS:

- 4,500 PSI Compressive at 28 Days
- 6% air ±1.5%
- Slump 4", Loads exceeding 4 ½" shall be rejected
- Maximum Water Cement Ratio no greater than 0.45.

Subsection 601.06, Batching:
This CDOT Specification has been added to this Project:
The Contractor shall furnish a batch ticket (delivery ticket) with each load for all concrete. Concrete delivered without a batch ticket containing complete information as specified shall be rejected. The Contractor shall collect and complete the batch ticket at the placement site and deliver all batch tickets to the Engineer or his representative at the end of each day. The Engineer or his representative shall have access to the batch tickets at any time during the placement. The following information shall be provided on each ticket:

1. Suppliers name and date
2. Truck number
3. Project name and location

4. Concrete class and designation number
5. Cubic yards batched
6. Type brand and amount of each admixture
7. Type, brand, and amount of cement and fly ash
8. Weights of fine and course aggregates
9. Moisture of fine and course aggregates
10. Gallons of batch water

The contractor shall add the following information to the batch ticket at time of placement:

1. Gallons of water added by the truck operator.
2. Number of revolutions of the drum for mixing
3. Discharge time

All concrete placed between October 1 and March 31 and at any other time when the ambient temperature is expected to drop below 40˚F during the curing period, shall be cured in accordance with Section 601.13 (d) Blanket Method unless otherwise specified or approved by the Engineer. Blankets shall be placed immediately after the concrete has been finished and the surface has set.

**SP-5 SECTION 630 - CONSTRUCTION ZONE TRAFFIC CONTROL**

Subsection 630.09, Traffic Control Plan, shall include the following:

The following guidelines and limitations shall apply to the traffic control:

1. Two-way traffic shall be maintained on all streets (unless otherwise approved).
2. Concrete activities shall be coordinated so that concrete trucks and other vehicles do not block the traffic lanes.
3. All incidental costs shall be included in the original contract price for the project. Flagging shall be considered incidental and included in Traffic Control (Complete in Place).

**3.5. Attachments:**

Appendix A: Construction Drawings
Appendix B: Fence Slat Specification
Appendix C: Gate Motor Specification

**3.6. Contractor Bid Documents:** For Contractor's convenience, the following is a list of forms/items to be submitted with the Contractor's bid response. However, should a form/item not be listed in this section, but required in the solicitation documents, it is the Contractor's responsibility to ensure all forms/items are submitted.

**- Contractor's Bid Form**
**- Sub-contractors Form**
**- Price Bid Schedule**

**3.7. IFB TENTATIVE TIME SCHEDULE:**

| | |
|---|---|
| Invitation For Bids available | October 14, 2022 |
| Mandatory Pre-Bid Meeting | October 21, 2022 |
| Pre-Qualification Application Deadline | October 28, 2022 |
| Inquiry deadline, no questions after this date | October 28, 2022 |
| Addendum Posted | November 7, 2022 |
| Submittal deadline for proposals | November 14, 2022 |

| | |
|---|---|
| City Council Approval | December 7, 2022 |
| Notice of Award & Contract execution | December 8, 2022 |
| Bonding & Insurance Cert due | December 15, 2022 |
| Preconstruction meeting | December 15, 2022 |
| Work begins no later than | Upon Receipt of Notice to Proceed |
| Final Completion | 45 Calendar Days from Notice to Proceed |
| Holidays: | January 2, 2022<br>January 16, 2022 |

# 4. Contractor's Bid Form

**Bid Date:** _____

**Project: IFB-5131-22-KH "WWTP Improvements & Asset Replacement"**

**Bidding Company:** _____

**Name of Authorized Agent:** _____

**Email** _____

**Telephone**_____ **Address**_____

**City**_____**State**_____**Zip**_____

The undersigned Bidder, in compliance with the Invitation for Bids, having examined the Instruction to Bidders, General Contract Conditions, Statement of Work, Specifications, and any and all Addenda thereto, having investigated the location of, and conditions affecting the proposed work, hereby proposes to furnish all labor, materials and supplies, and to perform all work for the Project in accordance with Contract Documents, within the time set forth and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this Contractor's Bid Form is a part.

The undersigned Contractor does hereby declare and stipulate that this offer is made in good faith without collusion or connection to any person(s) providing an offer for the same work, and that it is made in pursuance of, and subject to, all terms and conditions of the Instructions to Bidders, the Specifications, and all other Solicitation Documents, all of which have been examined by the undersigned.

The Contractor also agrees that if awarded the Contract, to provide insurance certificates within ten (10) working days of the date of Notification of Award. Submittal of this offer will be taken by the Owner as a binding covenant that the Contractor will be prepared to complete the project in its entirety.

The Owner reserves the right to make the award on the basis of the offer deemed most favorable, to waive any formalities or technicalities and to reject any or all offers. It is further agreed that this offer may not be withdrawn for a period of sixty (60) calendar days after closing time. Submission of clarifications and revised offers automatically establish a new thirty day (30) period.

Prices in the bid proposal have not knowingly been disclosed with another provider and will not be prior to award.

- Prices in this bid proposal have been arrived at independently, without consultation, communication or agreement for the purpose of restricting competition.
- No attempt has been made nor will be to induce any other person or firm to submit a bid proposal for the purpose of restricting competition.
- The individual signing this bid proposal certifies they are a legal agent of the offeror, authorized to represent the offeror and is legally responsible for the offer with regard to supporting documentation and prices provided.
- Direct purchases by the City of Grand Junction are tax exempt from Colorado Sales or Use Tax. Tax exempt No. 98-03544. The undersigned certifies that no Federal, State, County or Municipal tax will be added to the above quoted prices.
- City of Grand Junction payment terms shall be Net 30 days.
- Prompt payment discount of _____ percent of the net dollar will be offered to the Owner if the invoice is paid within _____ days after the receipt of the invoice. The Owner reserves the right to take into account any such discounts when determining the bid award that are no less than Net 10 days.

RECEIPT OF ADDENDA: the undersigned Contractor acknowledges receipt of Addenda to the Solicitation, Specifications, and other Contract Documents.

State number of Addenda received: _____.

It is the responsibility of the Bidder to ensure all Addenda have been received and acknowledged.

*By signing below*, the Undersigned agree to comply with all terms and conditions contained herein.

**Company:** _____

**Authorized Signature:** _____

**Title:** _____

The undersigned Bidder proposes to subcontract the following portion of Work:

| Name & address of Sub-Contractor | Description of work to be performed | % of Contract |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

The undersigned Bidder acknowledges the right of the City to reject any and all Bids submitted and to waive informalities and irregularities therein in the City's sole discretion.

By submission of the Bid, each Bidder certifies, and in the case of a joint Bid each party thereto certifies as to his own organization, that this Bid has been arrived at independently, without collusion, consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor.

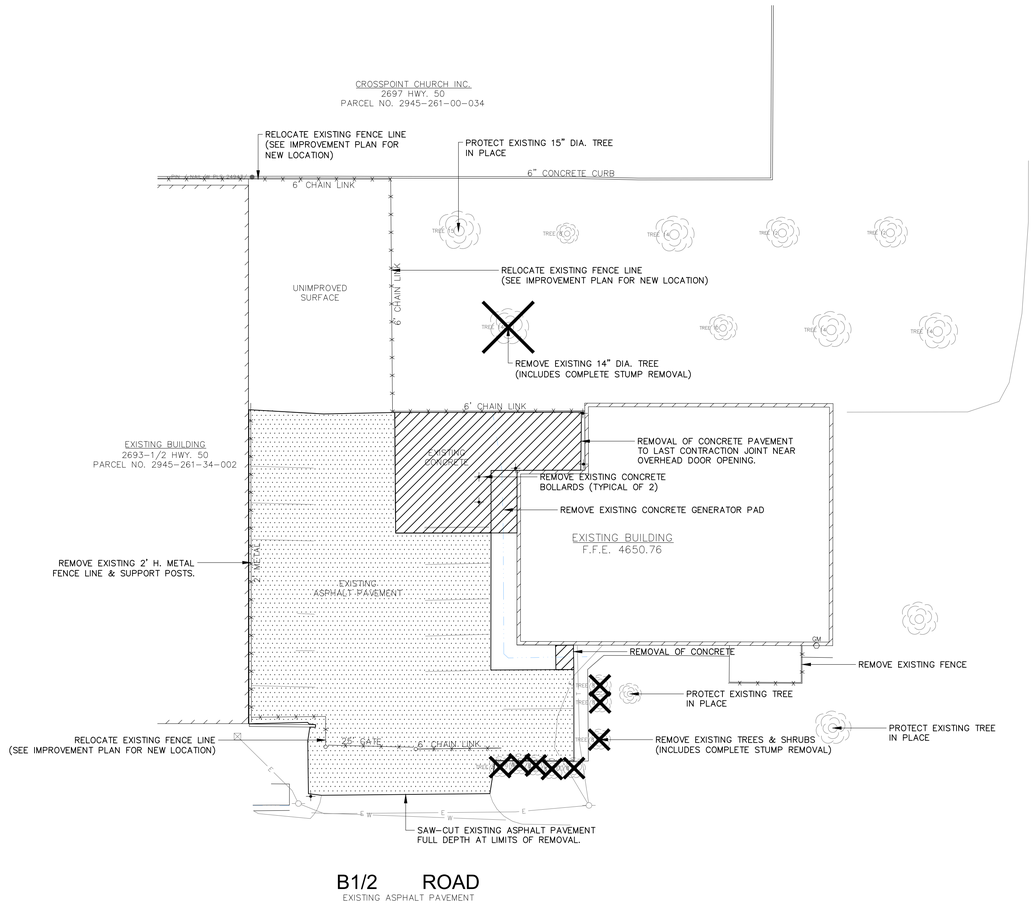
# Bid Schedule: WWTP Improvements & Asset Replacement

| Item No. | CDOT, City Ref. | Description | Quantity | Units | Unit Price | Total Price |
|---|---|---|---|---|---|---|
| 1 | 202 | Removal of Tree (Includes Complete Stump Removal) | 9. | EACH | _____ | _____ |
| 2 | 202 | Removal of Concrete (Includes unclassified excavation) | 164. | SY | _____ | _____ |
| 3 | 202 | Removal of Asphalt Mat (Includes unclassified excavation) | 732. | SY | _____ | _____ |
| 4 | 202 | Removal of Fence | 31. | LF | _____ | _____ |
| 5 | 202 | Removal of Bollard | 2. | EACH | _____ | _____ |
| 6 | 208 | Concrete Washout Facility | 1. | EACH | _____ | _____ |
| 7 | 210 | Reset Gate | 1. | EACH | _____ | _____ |
| 8 | 210 | Reset Chain Link Fence (6') | 237. | LF | _____ | _____ |
| 9 | 210 | Reset Landscape Ground Cover (Includes sprinkler system) | 1. | LS | _____ | _____ |
| 10 | 304 | Aggregate Base Course (Class 6) (6" Thick) | 42. | CY | _____ | _____ |
| 11 | 306 | Reconditioning (12" Deep) | 83. | SY | _____ | _____ |
| 12 | 412 | Concrete Pavement (8") | 1,360. | SY | _____ | _____ |
| 13 | 608 | Concrete Sidewalk (4") | 16. | SY | _____ | _____ |
| 14 | 609 | Concrete Curb Stop | 14. | EACH | _____ | _____ |
| 15 | 627 | Preformed Thermoplastic Pavement Marking (4" White Solid) | 278. | LF | _____ | _____ |
| 16 | 607 | Fence Chain Link (6') | 136. | LF | _____ | _____ |
| 17 | 607 | Privacy Fance Slats (Beige) | 361. | LF | _____ | _____ |
| 18 | 607 | Mororized Gate (Includes electrical wiring, motor, fire department access box, remotes, and keypad entry for existing 25' cantilever gate) | 1. | LS | _____ | _____ |
| 19 | 607 | Gate (4' x 6') | 1. | EACH | _____ | _____ |
| 20 | 607 | Gate (12' x 6') | 1. | EACH | _____ | _____ |
| 21 | 613 | 1 1/4" Electrical Conduit | 189. | LF | _____ | _____ |
| 22 | 620 | Sanitary Facility | 1. | EACH | _____ | _____ |
| 23 | 625 | Construction Surveying (Includes As-Built Drawings) | 1. | LS | _____ | _____ |
| 23 | 626 | Mobilization | 1. | LS | _____ | _____ |
| 24 | 630 | Traffic Control (Complete in Place) | 1. | LS | _____ | _____ |
| MC R | | Minor Contract Revisions | --- | --- | --- | $ 15,000.00 |
| | | | | **Bid Amount:** | | **$** _____ |

**Bid Amount:**

_____ **dollars**

# Appendix A: Construction Drawings

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## REMOVAL PLAN LEGEND

- CONCRETE PAVEMENT REMOVAL (164 SQ. YDS.)
- ASPHALT PAVEMENT REMOVAL (732 SQ. YDS.)
- TREE & TRUNK REMOVAL (AS SHOWN)

| DESCRIPTION | DATE |
|---|---|
| REVISION 1 REV 1 | DATE |
| REVISION 2 REV 2 | DATE |
| REVISION 3 REV 3 | DATE |
| REVISION 4 REV 4 | DATE |

DRAWN BY: HMC DATE: 2022
DESIGNED BY: LMF DATE: 2022
CHECKED BY: LMF DATE: 2022
APPROVED BY: LMF DATE: 2022

0 5' 10' 20' 40'
SCALE: 1" = 20'

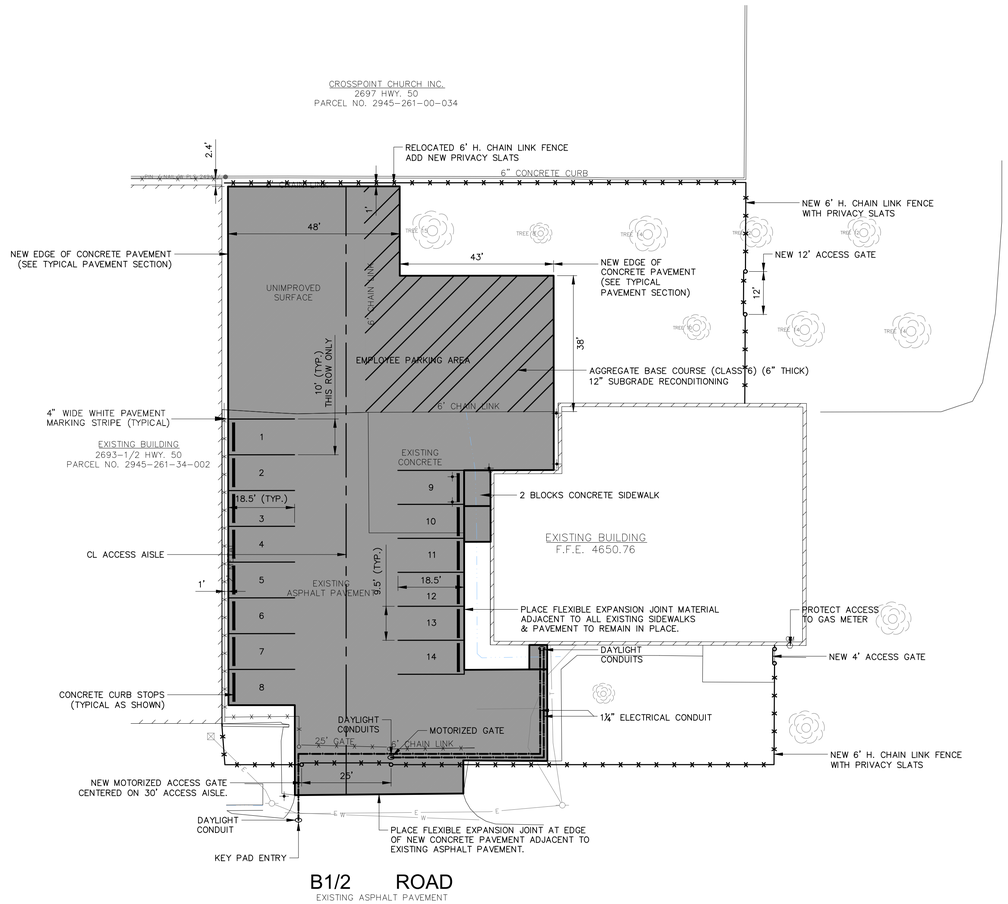
CITY OF Grand Junction COLORADO

PUBLIC WORKS
ENGINEERING DIVISION
PROJECT NO. F001052L

WWTP Improve. & Asset Replacements
PROJECT REMOVAL PLAN
October 6, 2022

01

N:\Landproj\F001052L WWTP Improvements & Asset Replacements\60CAD\Design\REMOVAL PLAN F001052L.dwg - PLOTTED 10/6/2022 2:44:56 PM

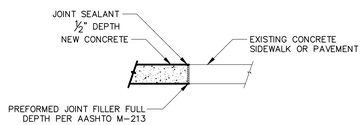



## IMPROVEMENT PLAN LEGEND

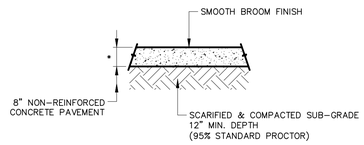
NON-REINFORCED CONCRETE PAVEMENT – 8"
(1361 SQ. YDS.)
SCARIFIED & COMPACTED SUB-GRADE – 12" MIN
(377 CU. YDS.).

NEW FENCE LINE
(SEE PLAN VIEW TYPE)

AGGREGATE BASE COURSE (CLASS 6) (6" THICK)
(42 CU. YDS.)
12" SUBGRADE RECONDITIONING
(83 CU. YDS.)




### TYPE "A" - ISOLATION JOINT
NOT TO SCALE




### TYPICAL PAVEMENT SECTION
NOT TO SCALE

REPAIR AND RELOCATE IRRIGATION
DAMAGED DURING CONSTRUCTION. GRAVEL
AREA WHERE TREES/BUSHES ARE REMOVED.

| DESCRIPTION | DATE |
|---|---|
| REVISION 1 REV 1 | DATE |
| REVISION 2 REV 2 | DATE |
| REVISION 3 REV 3 | DATE |
| REVISION 4 REV 4 | DATE |

| | | | |
|---|---|---|---|
| DRAWN BY: | HMC | DATE: | 2022 |
| DESIGNED BY: | LMF | DATE: | 2022 |
| CHECKED BY: | LMF | DATE: | 2022 |
| APPROVED BY: | LMF | DATE: | 2022 |

0 5' 10' 20' 40'
SCALE: 1" = 20'

CITY OF Grand Junction COLORADO

PUBLIC WORKS
ENGINEERING DIVISION
PROJECT NO. F001052L

WWTP Improve. & Asset Replacements
PROJECT IMPROVEMENT PLAN
October 6, 2022

02

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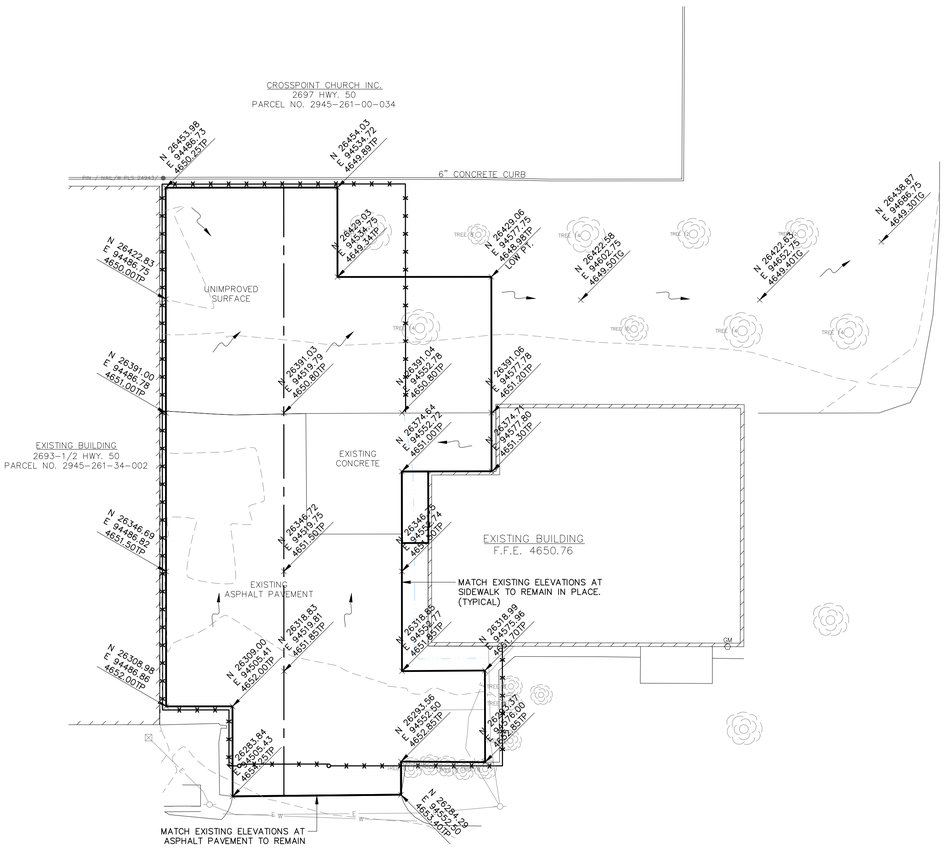


## STAKING PLAN LEGEND

PROPOSED TOP OF FINISHED GRADE ELEVATION (TOP OF PAVEMENT)

PROPOSED TOP OF FINISHED GRADE ELEVATION (TOP OF GROUND)

PROPOSED DRAINAGE DIRECTION

| DESCRIPTION | DATE |
|---|---|
| REVISION 1 REV 1 | DATE |
| REVISION 2 REV 2 | DATE |
| REVISION 3 REV 3 | DATE |
| REVISION 4 REV 4 | DATE |

| | | | |
|---|---|---|---|
| DRAWN BY: | HMC | DATE: | 2022 |
| DESIGNED BY: | LMF | DATE: | 2022 |
| CHECKED BY: | LMF | DATE: | 2022 |
| APPROVED BY: | LMF | DATE: | 2022 |

0 5' 10' 20' 40'
SCALE: 1" = 20'

CITY OF Grand Junction COLORADO

PUBLIC WORKS
ENGINEERING DIVISION
PROJECT NO. F001052L

WWTP Improve. & Asset Replacements
PROJECT STAKING PLAN
October 6, 2022

03

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Appendix B: Fence Slat Specification




# Bottom Locking Double Wall Slats

***Bottom Locking Double Wall Slats are an economical and attractive way to enhance any chain link fence. The bottom locking design makes this one of the easiest slats to install and assures a clean level finish.***

**Design** – Flat tubular shape with inside reinforced "legs" for extra durability. The locking channel creates a "snap-in" locking effect for security and deters vandalism.

**Installation** – Insert the locking channel horizontally through the bottom of the fence, then simply slide the slats vertically from the top towards the bottom channel and they will automatically lock into place.

**Standard Chain Link Fence Heights** – 4 ft., 5 ft., 6 ft., 7 ft., 8 ft., 10 ft., and 12 ft. (*Special heights available upon request)*

**Slat Length** – 3 1/2" shorter than the standard chain link fence height

**Wind Load and Privacy Factor** – Approximately 75% (*Based on wire/mesh used-stretch tension*)

**Limited Warranty** – 25 years pro-rata

## Specifications

| Slat Name | Slat Width | Mesh Size | Wire Gauge | Coverage Area |
|---|---|---|---|---|
| Bottom Lock 2" | 1 3/32" | 2" | 8, 9 or 11 | 10 linear feet |
| Bottom Lock 2 1/4" | 1 1/4" | 2 1/4" | 11 1/2 or 12 | 10 linear feet |
| Bottom Lock 1 3/4" | 7/8" | 1 3/4" 2" | 8, 9, or 11 6 | 10 linear feet |

## Available Colors (colors are approximations)

Beige | Redwood | Black | White | Royal Blue

Forest Green | Gray | Dark Brown | Sky Blue

*Exact representation of colors in printing is difficult. Please refer to actual color samples for accurate matching.* ***Samples available upon request.***

## Features and Benefits

**Materials** – ***Slat*Source®** slats are extruded from High-Density Polyethylene (HDPE), color pigments and ultraviolet (UV) inhibitors specially formulated to retard the harmful effects of the sun and lengthen the life of the slats.

**Durability** – Our slats are also resistant to severe weather conditions, salt water, sand, road dirt, most acids, alcohol, alkaline, ammonia, petroleum distillates, and common environmental pollutants.

**Maintenance** – Our slats are nearly maintenance free. They may be pressure cleaned of surface contaminants with plain water.

**Wind Load Disclaimer** – We will not be held responsible for fence damage resulting from wind load conditions due to insufficient structural support.

**Designations** – Meets ASTM Designation: F3000/F3000M

## HDPE Technical Properties

| Property | Values |
|---|---|
| Melt Index | (.35) Optimum extrusion processing conditions for Fence Slats |
| Density | (.945) Polyethylene ranges anywhere from .914 to .960 in density |
| Minimum Temp. | (-70° F) Under no stress, HDPE remains flexible at this temperature |
| Maximum Temp. | (180° F) Under no stress, HDPE will not distort at this temperature |
| Strength | (4,000 psi) HDPE will not distort at lesser loads or impacts |

MADE IN USA

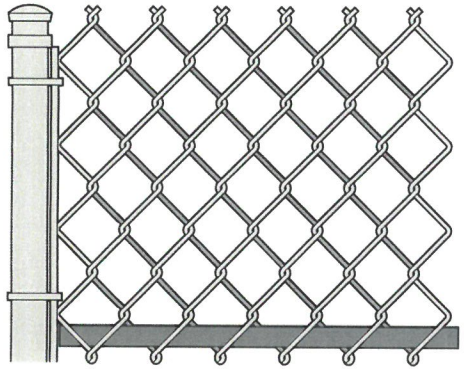
SlatSource®

A PrivacyLink® Company

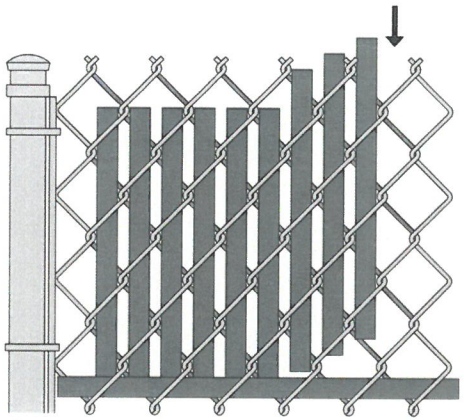
1.888.806.7528
www.eprivacylink.com
info@eprivacylink.com

# INSTALLATION INSTRUCTIONS

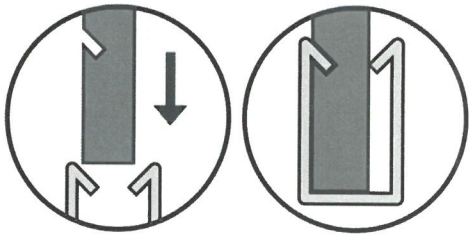
*(Suggested installation instructions. Instructions vary per job site conditions)*



**Step 1.** Insert the bottom channel horizontally into the first diamond at the bottom of the fence with open side facing up.

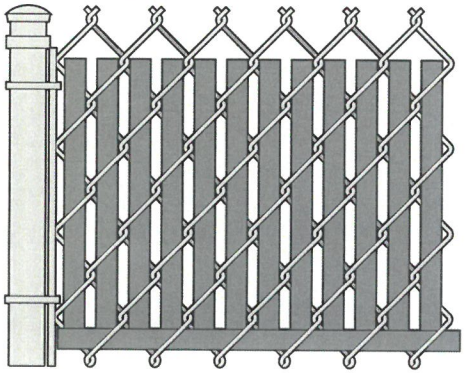


**Step 2.** Insert slats vertically with the beveled/notched end downward until slat engages and interlocks with the bottom channel.



**Step 3.** Push the vertical slat into the horizontal channel until the locking catch snaps into the cutout notch.

## COMPLETED FENCE



These easy to install slats provide a beautifully finished fence.

BOTTOM LOCKING SLAT SPECIFICATIONS

| SLAT NAME | SLAT WIDTH | MESH SIZE | WIRE GAUGE | COVERAGE AREA |
|---|---|---|---|---|
| BOTTOM LOCK 2" | 1 3/32" | 2" | 9 OR 11 | 10 LINEAR FEET |
| BOTTOM LOCK 2 1/4" | 1 1/4" | 2 1/4" | 11 1/2 OR 12 | 10 LINEAR FEET |
| BOTTOM LOCK 1 3/4" | 7/8" | 1 3/4"<br>2" | 9 OR 11<br>6 | 10 LINEAR FEET |

# Bottom Locking Fence Slats

SlatSource® by PrivacyLink®

130 West 700 South, Smithfield, UT 84335
eprivacylink.com • 1-800-574-1076

| PROJECT: | SUBMITTED BY: | DRAWING NO: |
|---|---|---|
| OWNER/GENERAL CONTRACTOR: | DATE: | |

# Appendix C: Gate Motor Specification

## COMMERCIAL DC

# VEHICULAR SLIDE GATE OPERATOR

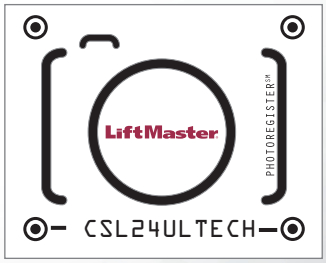
## INSTALLATION MANUAL

Model **CSL24UL**

OPERATOR REQUIRES A LIFTMASTER EXTERNAL MONITORED ENTRAPMENT PROTECTION DEVICE BE INSTALLED IN ALL ENTRAPMENT ZONES


- THIS PRODUCT IS TO BE INSTALLED AND SERVICED BY A TRAINED GATE SYSTEMS TECHNICIAN ONLY.
- This model is for use on vehicular passage gates ONLY and not intended for use on pedestrian passage gates.
- This model is intended for use in Class I, II, III and IV vehicular slide gate applications.
- Visit LiftMaster.com to locate a professional installing dealer in your area.
- This gate operator is compatible with MyQ® and Security+ 2.0® accessories.

**Access installation and technical support guides or register this product**




1. **Take a photo** of the camera icon including the points (◉).
2. **Send it in** by texting the photo to 71403.

c UL us LISTED

LiftMaster
300 Windsor Drive
Oak Brook, IL 60523

LiftMaster® ELITE SERIES®

# TABLE OF CONTENTS



# SAFETY

## Safety Symbol and Signal Word Review

When you see these Safety Symbols and Signal Words on the following pages, they will alert you to the possibility of ***Serious Injury or Death*** if you do not comply with the warnings that accompany them. The hazard may come from something mechanical or from electric shock. Read the warnings carefully.

When you see this Signal Word on the following pages, it will alert you to the possibility of damage to your gate and/or the gate operator if you do not comply with the cautionary statements that accompany it. Read them carefully.

***IMPORTANT NOTE:***

- *BEFORE attempting to install, operate or maintain the operator, you must read and fully understand this manual and follow all safety instructions.*
- *DO NOT attempt repair or service of your gate operator unless you are an Authorized Service Technician.*

**⚠ WARNING**

**MECHANICAL**

**⚠ WARNING**

**ELECTRICAL**

**⚠ CAUTION**

**WARNING:** This product can expose you to chemicals including lead, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to *www.P65Warnings.ca.gov*.

# SAFETY

## Usage Class

### Class I - Residential Vehicular Gate Operator

A vehicular gate operator (or system) intended for use in garages or parking areas associated with a residence of one-to four single families.

### Class II - Commercial/General Access Vehicular Gate

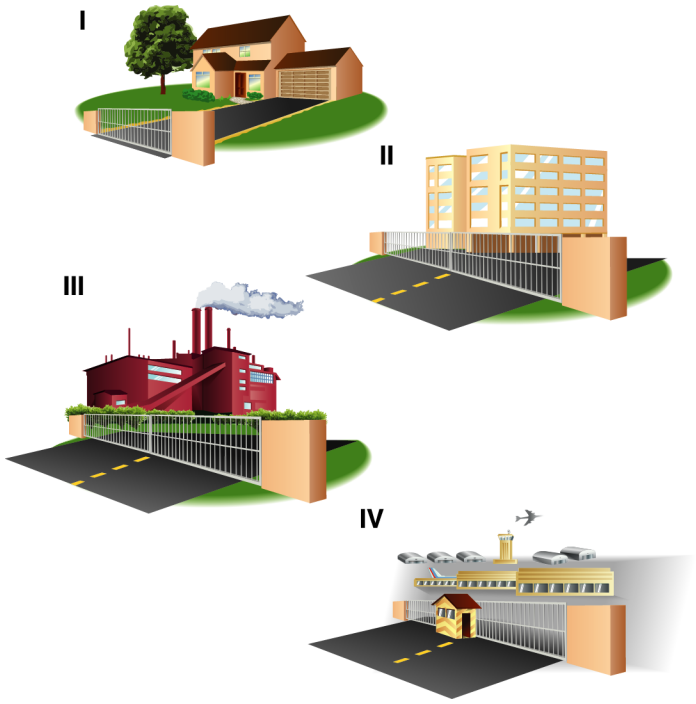
A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units), hotel, garages, retail store, or other buildings accessible by or servicing the general public.

### Class III - Industrial/Limited Access Vehicular Gate

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 accessible by or 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.




## UL325 Entrapment Protection Requirements

- A **minimum of two** independent* monitored entrapment protection devices are required to be installed at each entrapment zone
- Every installation is unique. It is the responsibility of the installer to install external monitored entrapment protection devices in **each entrapment zone**
- This vehicular slide gate operator will operate only after installation of a **minimum of two** independent* monitored entrapment protection devices in each direction; two in the open direction and two in the close direction.
- Entrapment protection device types include inherent (built into the operator), monitored external photoelectric sensors or monitored external edge sensors
- This operator is provided with an inherent entrapment protection device built into the operator that serves as one of the two independent devices

* Independent - the same type of device shall NOT be used for both entrapment protection devices.

## IMPORTANT SAFETY INSTRUCTIONS

**⚠ WARNING**

To reduce the risk of INJURY or DEATH:

- READ AND FOLLOW ALL INSTRUCTIONS.
- NEVER let children operate or play with gate controls. Keep the remote control away from children.
- ALWAYS keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.
- Test the gate operator monthly. The gate MUST reverse on contact with an object or reverse when an object activates the noncontact sensors. After adjusting the force or the limit of travel, retest the gate operator. Failure to adjust and retest the gate operator properly can increase the risk of INJURY or DEATH.
- Use the emergency release ONLY when the gate is not moving.
- KEEP GATES PROPERLY MAINTAINED. Read the owner's manual. Have a qualified service person make repairs to gate hardware.
- The entrance is for vehicles ONLY. Pedestrians MUST use separate entrance.
- **SAVE THESE INSTRUCTIONS.**

## Safety Installation Information

1. Vehicular gate systems provide convenience and security. Gate systems are comprised of many component parts. The gate operator is only one component. Each gate system is specifically designed for an individual application.
2. Gate operating system designers, installers and users must take into account the possible hazards associated with each individual application. Improperly designed, installed or maintained systems can create risks for the user as well as the bystander. Gate systems design and installation must reduce public exposure to potential hazards.
3. A gate operator can create high levels of force in its function as a component part of a gate system. Therefore, safety features must be incorporated into every design. Specific safety features include:
   - Edges Sensors (contact)
   - Guards for Exposed Rollers
   - Photoelectric Sensors
   - Screen Mesh
   - Vertical Posts
   - Instructional and Precautionary Signage
4. Install the gate operator only when:
   a. The operator is appropriate for the construction and the usage class of the gate.
   b. All openings of a horizontal slide gate are guarded or screened from the bottom of the gate to a minimum of 6 feet (1.8 m) above the ground to prevent a 2-1/4 inches (6 cm) 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.
   c. All exposed pinch points are eliminated or guarded, and guarding is supplied for exposed rollers.
5. The operator is intended for installation only on gates used for vehicles. Pedestrians must be supplied with a separate access opening. The pedestrian access opening shall be designed to promote pedestrian usage. Locate the gate such that persons will not come in contact with the vehicular gate during the entire path of travel of the vehicular gate.
6. 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.
7. The gate must be properly installed and work freely in both directions prior to the installation of the gate operator.
8. Permanently mounted access controls intended for users to activate, must be located at least 6 feet (1.8 m) away from any moving part of the gate and where the user is prevented from reaching over, under, around or through the gate to operate the controls. Outdoor or easily accessible controls shall have a security feature to prevent unauthorized use. Exception: Emergency access controls only accessible by authorized personnel (e.g. fire, police) may be placed at any location in the line-of-sight of the gate.
9. The Stop and/or Reset (if provided separately) must be located in the line-of-sight of the gate. Activation of the reset control shall not cause the operator to start.
10. A minimum of two (2) WARNING SIGNS shall be installed in the area of the gate. Each placard is to be visible by persons located on the side of the gate on which the placard is installed.
11. For a gate operator utilizing a non-contact sensor:
    a. Reference owner's manual regarding placement of non-contact sensor for each type of application. See Install Entrapment Protection section.
    b. Care shall be exercised to reduce the risk of nuisance tripping, such as when a vehicle trips the sensor while the gate is still moving.
    c. One or more non-contact sensors shall be located where the risk of entrapment or obstruction exists, such as the perimeter reachable by a moving gate or barrier.
12. For a gate operator utilizing a contact sensor such as an edge sensor:
    a. One or more contact sensors shall be located where the risk of entrapment or obstruction exists, such as at the leading edge, trailing edge and post mounted both inside and outside of a vehicular horizontal slide gate.
    b. A hard wired contact sensor shall be located and its wiring arranged so the communication between the sensor and the gate operator is not subject to mechanical damage.
    c. A wireless device such as one that transmits radio frequency (RF) signals to the gate operator for entrapment protection functions shall be located where the transmission of the signals are not obstructed or impeded by building structures, natural landscaping or similar obstruction. A wireless device shall function under the intended end-use conditions.

# Gate Construction Information

Vehicular gates should be installed in accordance with ASTM F2200: Standard Specification for Automated Vehicular Gate Construction. For a copy, contact ASTM directly at 610-832-9585 or www.astm.org.

## 1. General Requirements

1.1 Gates shall be constructed in accordance with the provisions given for the appropriate gate type listed, refer to ASTM F2200 for additional gate types.

1.2 Gates shall be designed, constructed and installed to not fall over more than 45 degrees from the vertical plane, when a gate is detached from the supporting hardware.

1.3 Gates shall have smooth bottom edges, with vertical bottom edged protrusions not exceeding 0.50 inches (12.7 mm) when other than the exceptions listed in ASTM F2200.

1.4 The minimum height for barbed tape shall not be less than 8 feet (2.44 m) above grade and for barbed wire shall not be less than 6 feet (1.83 m) above grade.

1.5 An existing gate latch shall be disabled when a manually operated gate is retrofitted with a powered gate operator.

1.6 A gate latch shall not be installed on an automatically operated gate.

1.7 Protrusions shall not be permitted on any gate, refer to ASTM F2200 for Exceptions.

1.8 Gates shall be designed, constructed and installed such that their movement shall not be initiated by gravity when an automatic operator is disconnected, in accordance with the following.

1.8.1 Vehicular horizontal slide gate. Shall not result in continuous, unimpeded movement in either lineal direction of its travel.

1.9 For pedestrian access in the vicinity of an automated vehicular gate, a separate pedestrian gate shall be provided. The pedestrian gate shall be installed in a location such that a pedestrian shall not come in contact with a moving vehicular access gate. A pedestrian gate shall not be incorporated into an automated vehicular gate panel.

## 2. Specific Applications

2.1 Any non-automated gate that is to be automated shall be upgraded to conform to the provisions of this specification.

2.2 This specification shall not apply to gates generally used for pedestrian access and to vehicular gates not to be automated.

2.3 When the gate operator requires replacement, the existing gate shall be upgraded to conform to the provisions of this specification.

2.4 When the gate of an automated gate system requires replacement, the new gate shall conform to the provisions of this specification.

## 3. Vehicular Horizontal Slide Gates

3.1 The following provisions shall apply to Class I, Class II and Class III vehicular horizontal slide gates:

3.1.1 All weight bearing exposed rollers 8 feet (2.44 m), or less, above grade shall be guarded or covered.

3.1.2 All openings shall be designed, guarded, or screened from the bottom of the gate to the top of the gate or a minimum of 6 ft. (1.83 m) above grade, whichever is less, to prevent a 2 1⁄4 in. (57 mm) 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. The gate panel shall include the entire section of the moving gate,including any back frame or counterbalance portion of the gate.

3.1.3 A gap, measured in the horizontal plane parallel to the roadway, between a fixed stationary object nearest the roadway, (such as a gate support post) and the gate frame when the gate is in either the fully open position or the fully closed position, shall not exceed 2 1/4 inches (57 mm). Exception: All other fixed stationary objects greater than 16 in. (406 mm) from the gate frame shall not be required to comply with this section.

3.1.4 Positive stops shall be required to limit travel to the designed fully open and fully closed positions. These stops shall be installed at either the top of the gate, or at the bottom of the gate where such stops shall horizontally or vertically project no more than is required to perform their intended function.

3.1.5 All gates shall be designed with sufficient lateral stability to assure that the gate will enter a receiver guide, refer to ASTM F2200 for panel types.

3.2 The following provisions shall apply to Class IV vehicular horizontal slide gates:

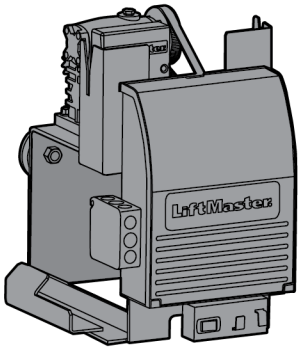
3.2.1 All weight bearing exposed rollers 8 feet (2.44 m), or less, above grade shall be guarded or covered.

3.2.2 Positive stops shall be required to limit travel to the designed fully open and fully closed positions. These stops shall be installed at either the top of the gate, or at the bottom of the gate where such stops shall horizontally or vertically project no more than is required to perform their intended function.

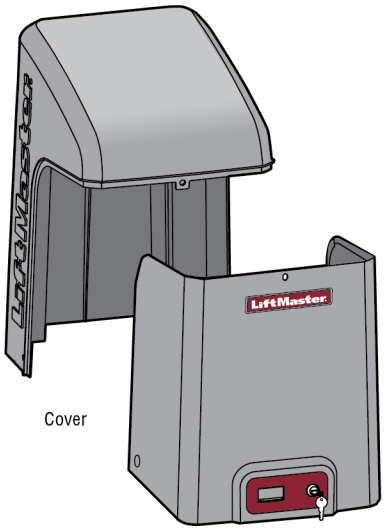
# INTRODUCTION

## Carton Inventory

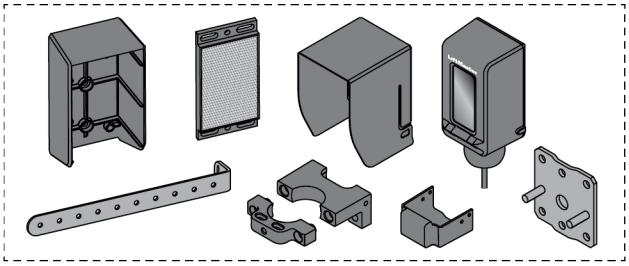
**NOT SHOWN:** Documentation Packet, Chain #41 - 30 feet, Eye Bolt Kit



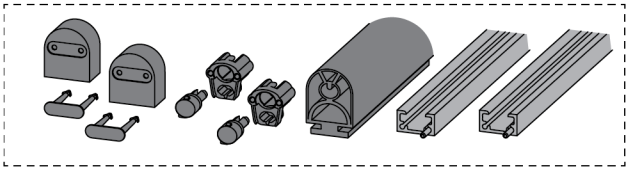

Operator



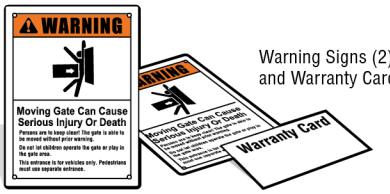

Cover



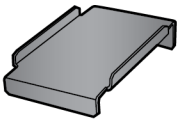
LiftMaster Monitored Retro-Reflective Photoelectric Sensor Model LMRRUL



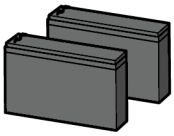
5 ft. Edge sensor kit




Warning Signs (2) and Warranty Card



Battery Tray

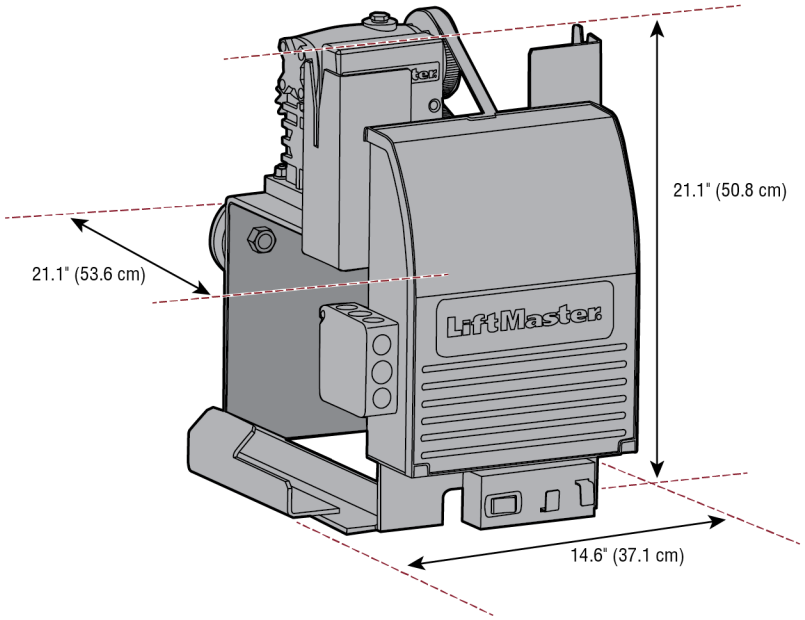


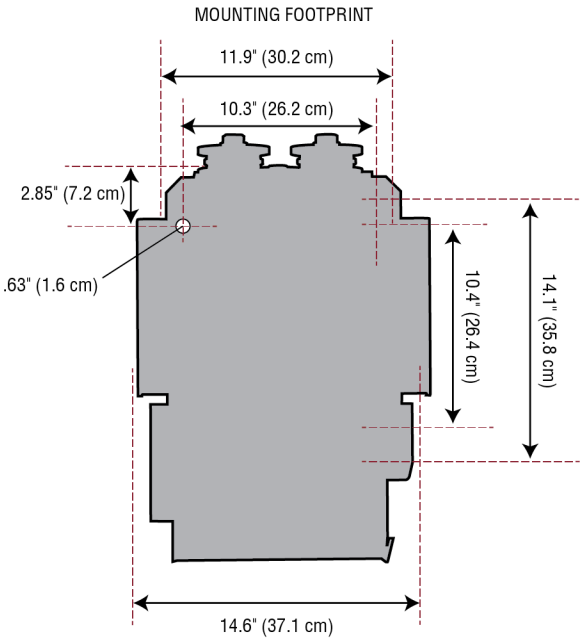
Battery 12 Vdc 7AH (2)

Key (2)

## Operator Specifications

| | |
|---|---|
| **Usage Classification** | Class I, II, III, & IV |
| **Main AC Supply** | 120 Vac, 4 Amps (10 Amps including Accessory Outlets) **OR** 240 Vac, 2 Amps<br>When Optional Transformer Kit Model 3PHCONV is installed in the field, operator is rated 208/240/480/575 VAC, 4.8/4.2/2.1/1.7 A, 60 Hz, 1 PH |
| **System Operating Voltage** | 24 Vdc Transformer Run / Battery Backup |
| **Accessory Power** | 24 Vdc, 500mA max. for ON + SW (switched) |
| **Solar Power Max** | 24 Vdc at 60 watts max. |
| **Maximum Gate Weight** | 1500 lbs. (680.4 kg) |
| **Minimum Gate Travel Distance** | 4 feet (1.2 m) |
| **Maximum Gate Travel Distance** | 50 feet (15.24 m) |
| **Maximum Gate Travel Speed** | 1 foot/second |
| **Maximum Daily Cycle Rate** | Continuous |
| **Maximum Duty Cycle** | Continuous |
| **Operating Temperature** | Without Heater: -20°C to 60°C (-4°F to 140°F)<br>With Optional Heater: -40°C to 60°C (-40°F to 140°F) |
| **Expansion Board** | Provided |
| **External Entrapment Protection Device Inputs (non-contact and/or contact)** | Main board - up to 2 close entrapment protection devices and 1 open entrapment protection device.<br>Expansion board - up to 3 entrapment protection devices configurable to either close or open and up to 4 edge sensors using wireless edge sensor kit model LMWEKITU . |



## Site Preparation

Check the national and local building codes **BEFORE** installation.

### Conduit and Concrete Pad

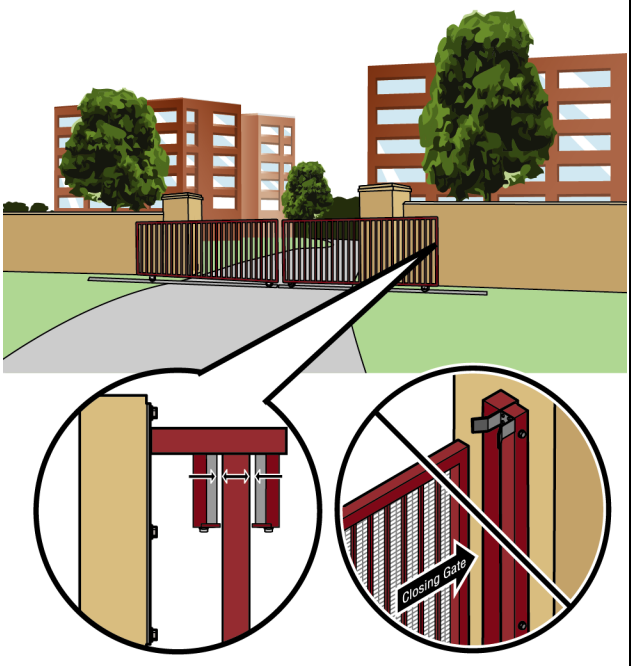
Trench and install conduit. Before trenching, contact underground utility locating companies. Conduit must be UL approved for low and high voltage. Consider the operator placement BEFORE installing the pad or post.


### Safety

Entrapment protection devices are required to protect against any entrapment or safety conditions encountered in your gate application. Install a warning sign (two provided) on the inside and outside of the property, where easily visible.


### Gate

Gate must be constructed and installed according to ASTM F2200 standards (refer to page 4). Gate must fit specifications of operator (refer to specifications).

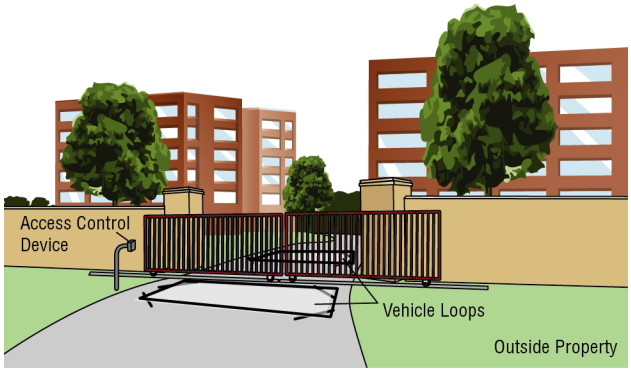



SAFETY CATCH ROLLERS
Install catch rollers with safety covers on the side of a post or wall with a minimal distance of half an inch between the rollers and gate

DO NOT use a gate catch post. Because the coasting distance may vary due to changes in temperature, it is NOT recommended to install a catch post in front of the gate's path. To do so will cause the gate to hit the post in certain instances.

### Additional Accessories

The vehicle loops allow the gate to stay open when vehicles are obstructing the gate path. Suggested for vehicles 14 feet (4.27 m) or longer. Vehicle loops are not required but are recommended. Before installing your Access Control Device(s) be sure to complete a site survey and determine the best device for your site needs.



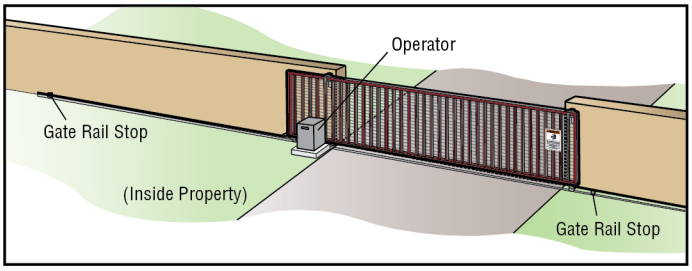
# INSTALLATION

## ⚠CAUTION

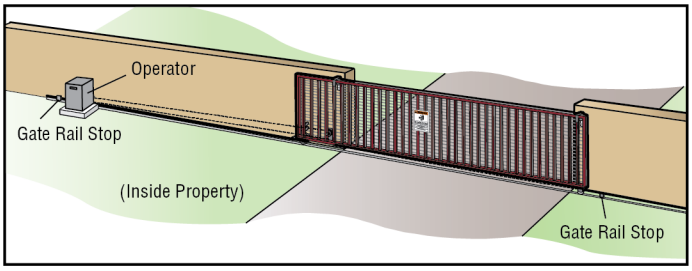
- To AVOID damaging gas, power or other underground utility lines, contact underground utility locating companies BEFORE digging more than 18 inches (46 cm) deep.
- ALWAYS wear protective gloves and eye protection when changing the battery or working around the battery compartment.

## Types of Installations

### Standard Installation




### Rear Installation



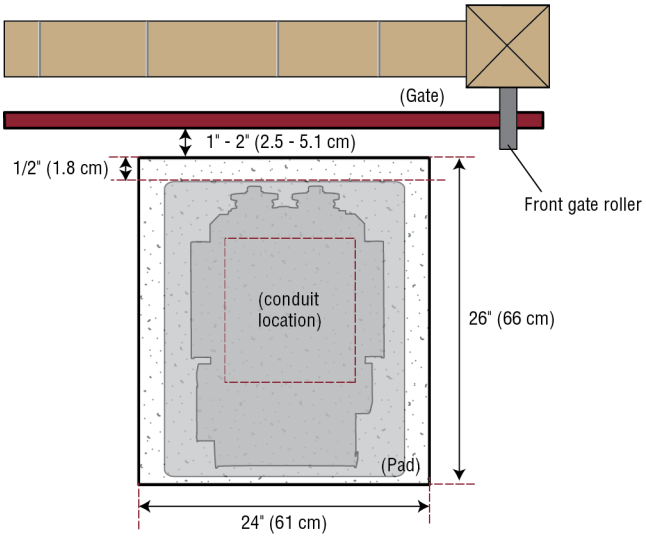
# INSTALLATION

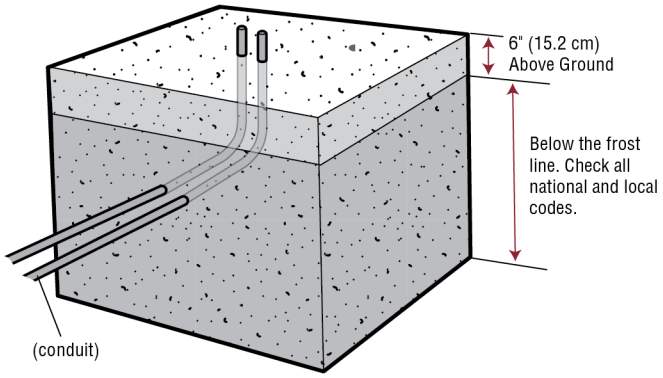
## Step 1 Determine Location for Operator

Check the national and local building codes before installation.

### Standard Installation

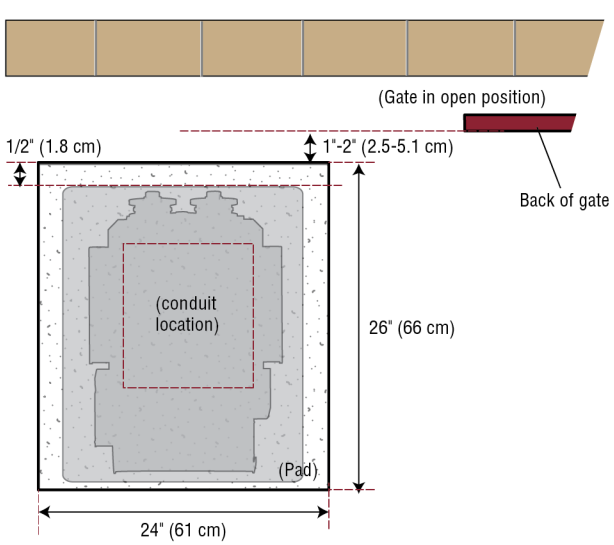
1. The gate operator should be installed near the front roller of the gate. Lay out the concrete pad.
2. Install the electrical conduit.
3. Pour a concrete pad (reinforced concrete is recommended).

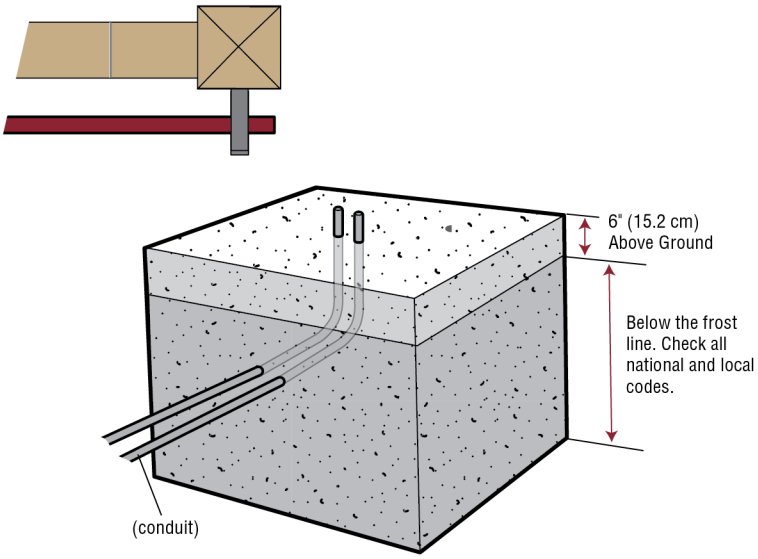



### Rear Installation

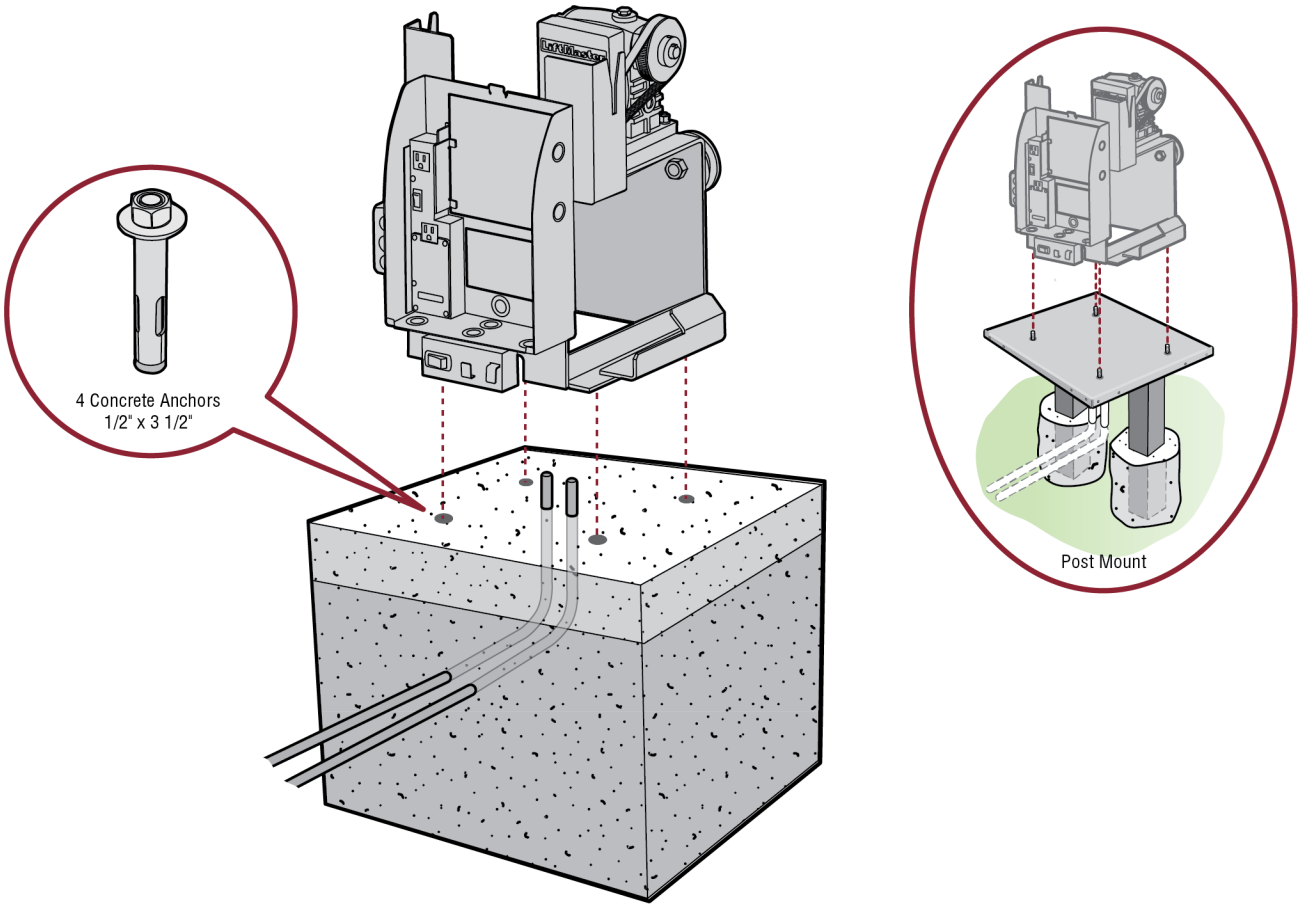
1. The gate operator should be installed near the back of the gate in the OPEN position. Lay out the concrete pad.
2. Install the electrical conduit.
3. Pour a concrete pad (reinforced concrete is recommended).

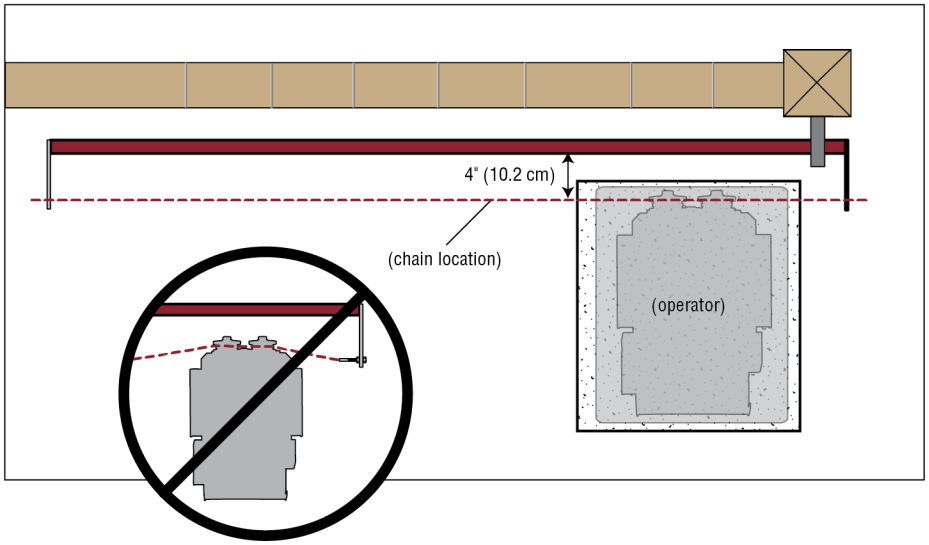


## Step 2 Install the Operator

Attach the operator to the concrete pad with appropriate fasteners. The gate operator should be installed near the front roller of the gate or near the back of the gate (in the OPEN position). The space between the gate and the output sprocket must be a minimum of 4 inches (10.2 cm). ***NOTE:*** *An alternative to a concrete pad is to post mount the operator (refer to Accessories).*



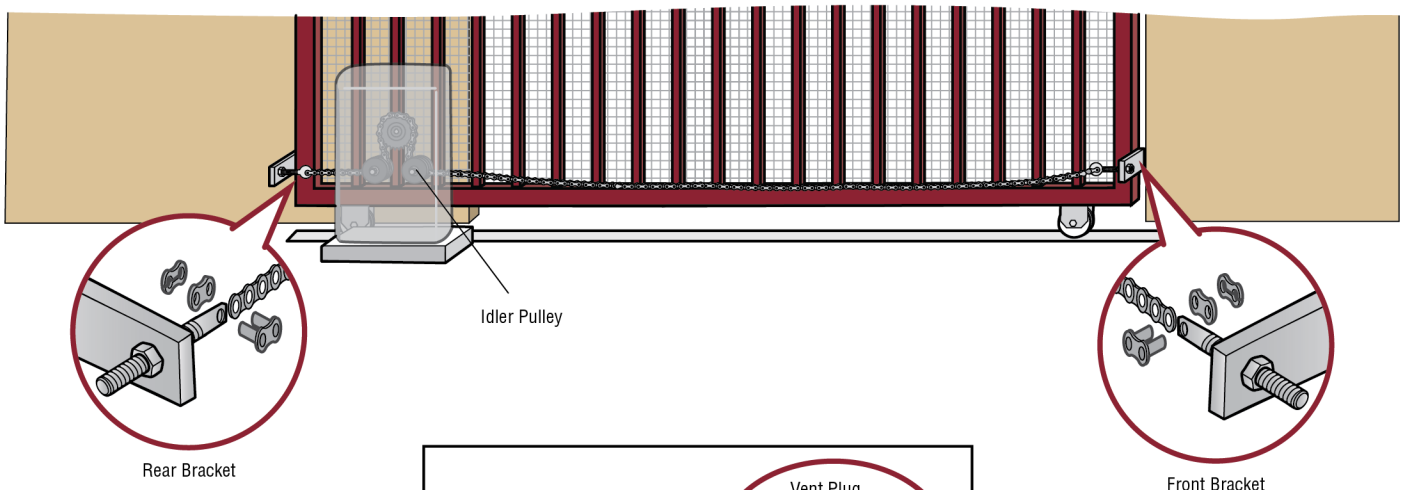
## Step 3 Attach the Chain

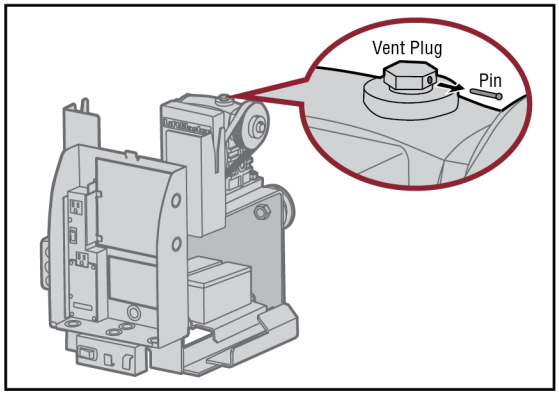
### Standard Installation

**DO NOT run the operator until instructed.**

1. Manually open the gate and line up the front bracket so the chain will be level with the idler pulley and parallel to the ground. Weld the front bracket in this position.
2. Manually close the gate and line up the rear bracket so the chain will be level with the idler pulley and parallel to the ground. Weld the rear bracket in this position.
3. Route the chain through the operator.
4. Connect the chain to the brackets using the eye bolt hardware. Chain should not be too tight or have excessive slack.
5. Remove the pin from the vent plug on the gear box.

***NOTE:*** *The chain should have no more than 1 inch (2.5 cm) of sag for every 10 feet (3 m) of chain length.*



# INSTALLATION

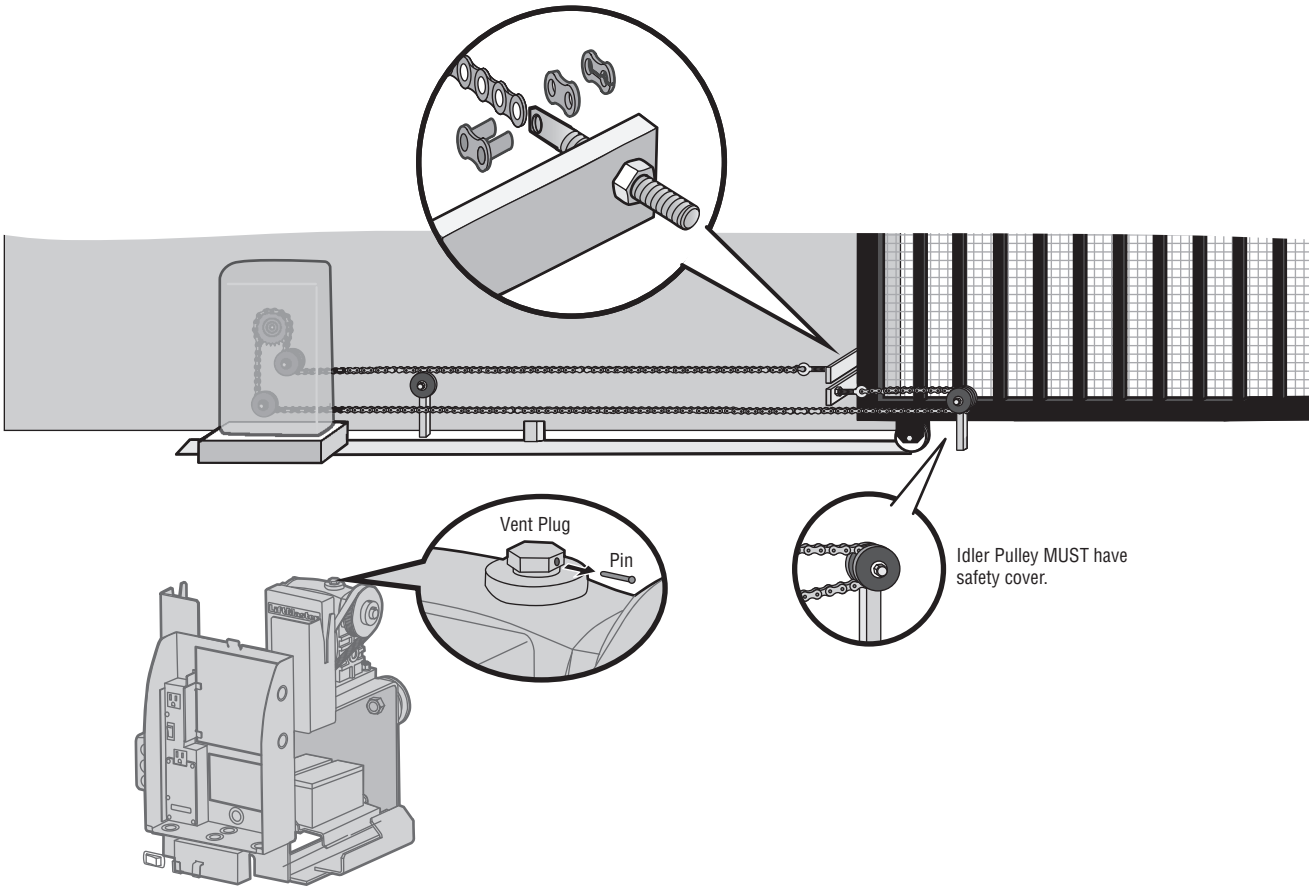
## Rear Installation

**DO NOT run the operator until instructed.**

***NOTE:*** *This installation will require two extra idler pulleys. Make sure all exposed pinch points are guarded. Refer to Gate Construction Information on page 4.*

1. Move the back pulley to the bottom hole in the operator.
2. Manually close the gate and align the bottom bracket so the chain will be level with the bottom idler pulley and parallel to the ground. Weld the bottom bracket in this position.
3. Align the top bracket so the chain will be level with the top idler pulley and parallel to the ground. Weld the upper bracket in this position.
4. Route the chain through the operator.
5. Connect the chain to the brackets using the eye bolt hardware. Chain should not be too tight or have excessive slack.
6. Remove the pin from the vent plug on the gear box.

***NOTE:*** *The chain should have no more than 1 inch (2.5 cm) of sag for every 10 feet (3 m) of chain length.*



## ⚠ WARNING

To prevent SERIOUS INJURY or DEATH from a moving gate:

- ALL gate operator systems REQUIRE two independent entrapment protection systems for each entrapment zone.
- Entrapment protection devices MUST be installed to protect anyone who may come near a moving gate.
- Locate entrapment protection devices to protect in BOTH the open and close gate cycles.
- Locate entrapment protection devices to protect between moving gate and RIGID objects, such as posts, walls, pillars, columns, or operator itself.

## Step 4 Install Entrapment Protection

Entrapment protection MUST be installed according to the following UL 325 requirements:

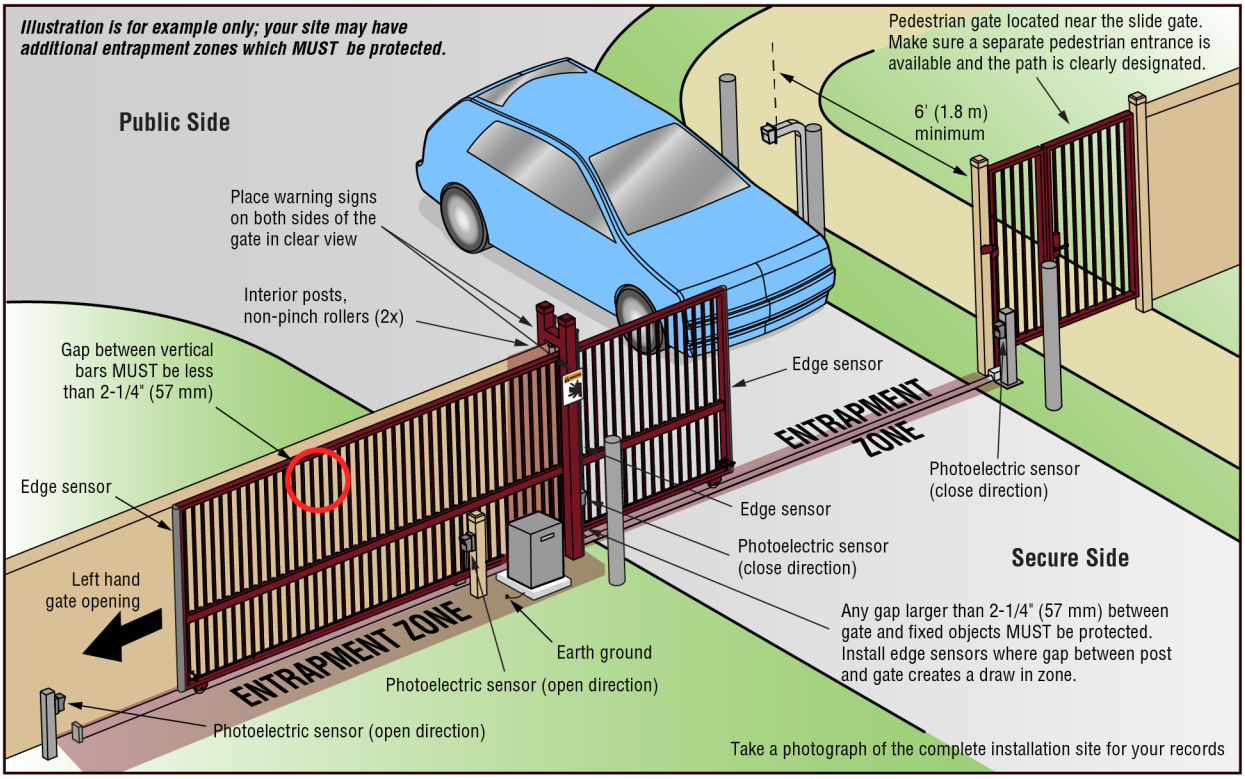
- Slide gate operators require a **minimum of two** external monitored entrapment protection devices to function; one in the open direction and one in the close direction.
- Every installation is unique. It is the responsibility of the installer to ensure that ALL entrapment zones are protected with an external monitored entrapment protection device, protecting both the open and close gate cycles.
- **LiftMaster monitored external entrapment protection devices MUST be used with LiftMaster operators to meet UL325 requirements, see *Accessories*.**
- Test ALL entrapment protection devices after completing installation of the operator. For testing instructions, refer to the manual provided with your entrapment protection device.

### Definitions

**ENTRAPMENT:** The condition when a person is caught or held in a position that increases the risk of injury.

**SLIDE GATE ENTRAPMENT ZONE:** An entrapment zone exists if at any point during travel, the gap between the gate and any opposing fixed edge or surface such as posts, walls, pillars, columns or operator itself, is less than 16" (406 mm) in a location up to 6 ft. (1.8 m) above grade.

*Illustrations provided by DASMA Gate Systems Safety Guide*



## Wire Entrapment Protection Devices

There are three options for wiring the entrapment protection devices depending on the specific device and how the device will function. Refer to the specific entrapment protection device manual for more information. These entrapment protection device inputs are for monitored devices, which include pulsed photoelectric sensors, resistive edge sensors, and pulsed edge sensors. **Only one monitored entrapment protection device may be wired to each input.** Additional entrapment protection devices may be wired to the expansion board.

## Control Board

### CLOSES EYES/INTERRUPT

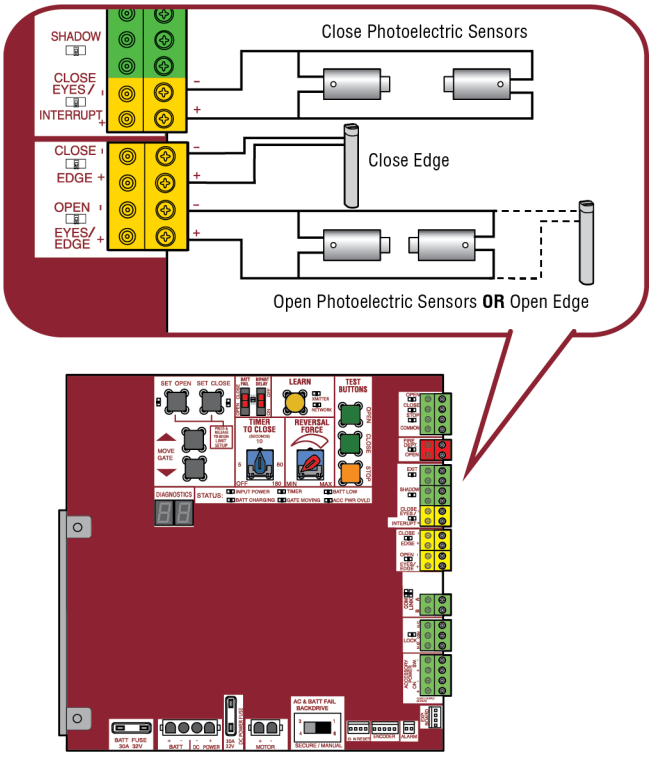
(2 Terminals) The CLOSE EYES/INTERRUPT input is for photoelectric sensor entrapment protection for the close direction. When an obstruction is sensed during gate closing the gate will open to the full open position and resets the Timer-to-Close. This input will be disregarded during gate opening.

### CLOSE EDGE

(2 Terminals) The CLOSE EDGE input is for edge sensor entrapment protection for the close direction. When an obstruction is sensed during gate closing the gate will reverse to the full open position, disengaging the Timer-to-Close. This input will be disregarded during gate opening.

### OPEN EYES/EDGE

(2 Terminals) The OPEN EYES/EDGE input is for photoelectric sensor or edge sensor entrapment protection for the open direction. When an obstruction is sensed during gate opening the gate will reverse for 4 seconds then stop. This input will be disregarded during gate closing.




## Expansion Board

### EYE ONLY and COM

Open or Close Direction Photoelectric Sensors, the functionality is based on the switch settings (located next to the terminals)

**Switch set to CLOSE:** gate reverses fully when an obstruction is sensed

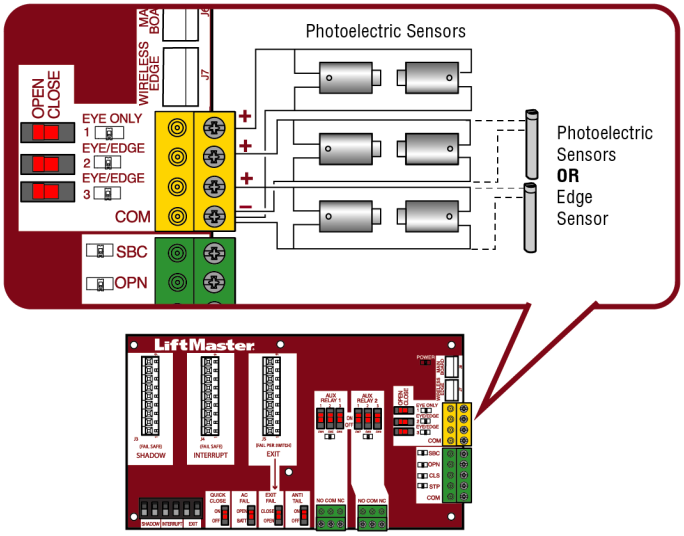
**Switch set to OPEN:** gate reverses 4 seconds when an obstruction is sensed

### EYE/EDGE and COM

Open or Close Direction Photoelectric Sensors or Edge Sensor, the functionality is based on the switch settings (located next to the terminals)

**Switch set to CLOSE:** gate reverses fully when an obstruction is sensed

**Switch set to OPEN:** gate reverses 4 seconds when an obstruction is sensed

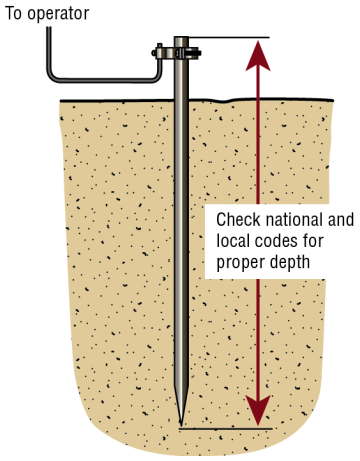


## Step 5 Earth Ground Rod

Use the proper earth ground rod for your local area. The ground wire must be a single, whole piece of wire. Never splice two wires for the ground wire. If you should cut the ground wire too short, break it, or destroy its integrity, replace it with a single wire length.

1. Install the earth ground rod within 3 feet (.9 m) of the operator.
2. Run wire from the earth ground rod to the operator.

***NOTE:*** *If the operator is not grounded properly the range of the remote controls will be reduced and the operator will be more susceptible to lightning and surge damage.*




## Step 6 Power Wiring

### ⚠ WARNING

To reduce the risk of SEVERE INJURY or DEATH:

- ANY maintenance to the operator or in the area near the operator MUST NOT be performed until disconnecting the electrical power (AC or solar and battery) and locking-out the power via the operator power switch. Upon completion of maintenance the area MUST be cleared and secured, at that time the unit may be returned to service.
- Disconnect power at the fuse box BEFORE proceeding. Operator MUST be properly grounded and connected in accordance with national and local electrical codes. ***NOTE:*** *The operator should be on a separate fused line of adequate capacity.*
- ALL electrical connections MUST be made by a qualified individual.
- DO NOT install ANY wiring or attempt to run the operator without consulting the wiring diagram.
- ALL power wiring should be on a dedicated circuit and well protected. The location of the power disconnect should be visible and clearly labeled.
- ALL power and control wiring MUST be run in separate conduit.

**The operator can be wired for either 120 Vac or 240 Vac or a solar panel (not provided). Follow the directions according to your application. An optional Transformer Kit (Model 3PHCONV) can be used to change the input voltage (208/240/480/575 Vac) to an output voltage of 120 Vac (refer to Accessories). For dual gate applications, power will have to be connected to each operator. Main power supply and control wiring MUST be run in separate conduits.**

**SOLAR APPLICATIONS:** For solar applications refer to *Solar Panels* section in the Appendix. Follow the directions according to your application.

***NOTE:*** *If using an external receiver use shielded wire for the connections and mount the receiver away from the operator to avoid interference from the operator.*

| MAXIMUM WIRE LENGTH | | | | | | | |
|---|---|---|---|---|---|---|---|
| AMERICAN WIRE GAUGE (AWG) | STANDARD OPERATOR | | | OPERATOR + ACCESSORIES POWERED BY TRANSFORMER KIT | | | |
| | 120 VAC, 10A (includes fully loaded outlets) | 120 VAC, 4A | 240 VAC, 2A | 208 VAC, 4.8A | 240 VAC, 4.2A | 480 VAC, 2.1A | 575 VAC, 1.7A |
| 14 | 100 (30.5 m) | 250 (76.2 m) | 1,000 (304.8 m) | 360 (109.7 m) | 480 (146.3 m) | 1,900 (579.1 m) | 2,800 (853.4 m) |
| 12 | 160 (48.8 m) | 400 (121.9 m) | 1,600 (487.7 m) | 570 (173.7 m) | 750 (228.6 m) | 3,000 (914.4 m) | 4,500 (1,371.6 m) |
| 10 | 250 (76.2 m) | 630 (192 m) | 2,500 (762 m) | 900 (274.3 m) | 1,200 (365.8 m) | 4,800 (1,463 m) | 7,100 (2,164.1 m) |
| 8 | 400 (121.9 m) | 1,000 (304.8 m) | 4,000 (1,219.2 m) | 1,400 (426.7 m) | 1,900 (579.1 m) | 7,600 (2,316.5 m) | 11,300 (3,444.2 m) |
| 6 | 636 (193.9 m) | 1,600 (487.7 m) | 6,400 (1950.7 m) | 2,300 (701 m) | 3,000 (914.4 m) | 12,100 (3,688.1 m) | 18,000 (5,486.4 m) |
| 4 | 1,000 (304.8 m) | 2,500 (762 m) | 10,100 (3,078.5 m) | 3,700 (1,127.8 m) | 4,800 (1,463 m) | 19,300 (5,882.6 m) | 28,500 (8,686.8 m) |
| *Chart assumes: copper wire, 65°C, 5% drop* | | | | | | | |

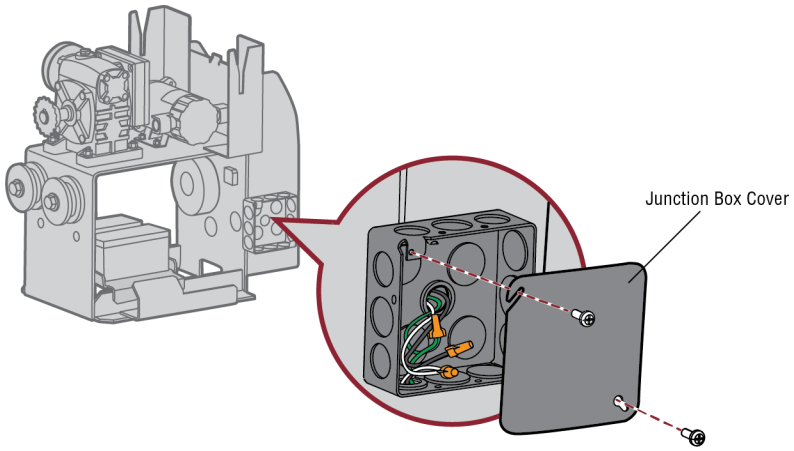
# INSTALLATION

All control wiring used to connect external devices to Class 2 circuits of the operator must be (QPTZ) Power-Limited Circuit Cables, Type CL2, CL2P, CL2R, or CL2X or other cable with equivalent or better electrical, mechanical, and flammability ratings.

## 240 VAC only

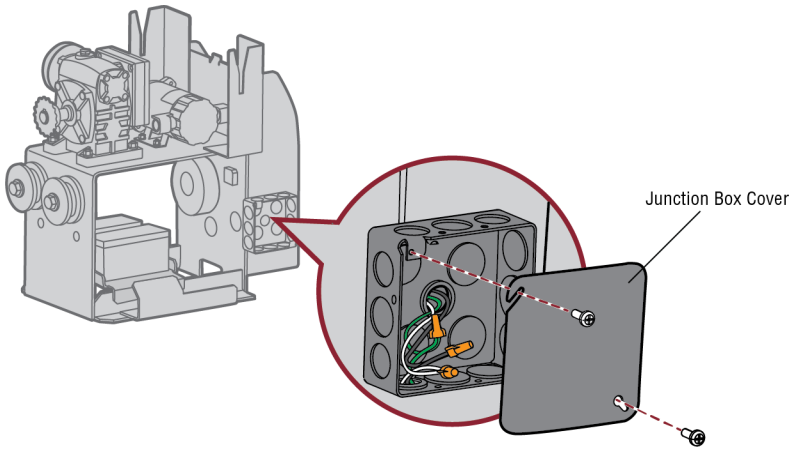
The accessory outlet is disabled and cannot be used with the 240 Vac option.

1. Remove the outlet housing from the electrical box by removing the screws (2).
2. Pull the outlet housing out and locate the power wiring connector on the EMI board.
3. Unplug the power wiring connector from the 120 Vac socket (factory default location) and plug it into the 240 Vac socket.
4. Replace the outlet housing by securing with the screws. The operator is now set for 240 Vac operation.



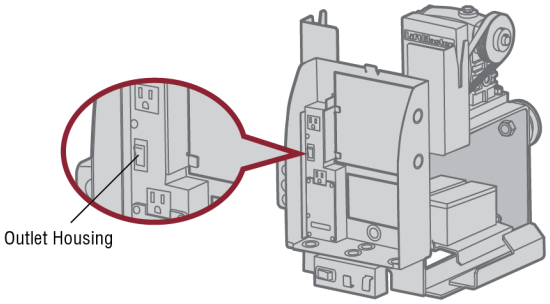

## 120 VAC and 240 VAC

1. Turn off the AC power from the main power source circuit breaker.
2. Run the AC power wires to the operator.
3. Remove the junction box cover.
4. Connect the green wire to the earth ground rod and AC ground using a wire nut. ***NOTE:*** *The earth ground rod can be grounded to the chassis.*
5. Connect the white wire to NEUTRAL using a wire nut.
6. Connect the black wire to HOT using a wire nut.
7. Replace the junction box cover. Ensure the wires are not pinched.



### AC power switch

The AC Power switch on the operator will turn the incoming 120/240 Vac power ON or OFF. The operator's AC Power switch ONLY turns off AC power to the control board and DOES NOT turn off battery power.

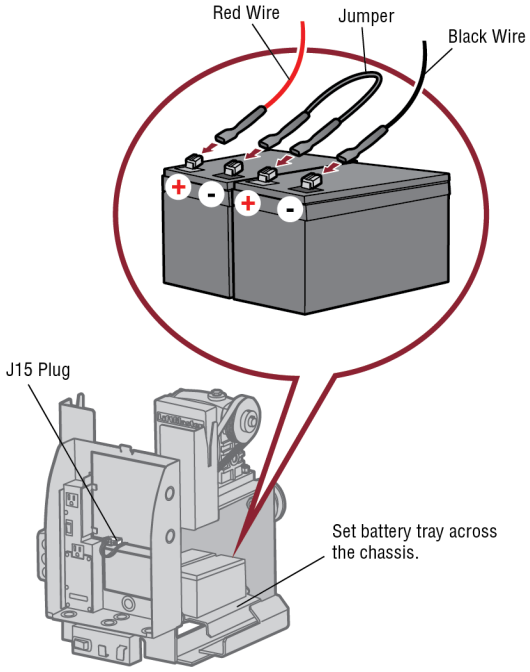



## Step 7 Connect Batteries

### 7AH battery

The batteries are charged in the circuit by the integrated transformer. The batteries are for battery backup.

1. Turn OFF AC power to the operator.
2. Unplug the J15 plug labeled BATT on the control board by squeezing the plug and pulling it from the control board. This disconnects the ac/dc power to the control board.
3. Connect a jumper between the positive (+) terminal of one battery to the negative terminal (-) of the other battery.
4. Connect the red wire from the J15 plug to the positive (+) terminal of the battery.
5. Connect the black wire from the J15 plug to the negative (-) terminal of the battery.
6. Plug the J15 plug back into the control board. This will power up the control board. ***NOTE:*** *You may see a small spark when plugging the J15 plug into the board.*
7. Turn ON AC power to the operator.
8. Turn ON the AC power switch on the operator.

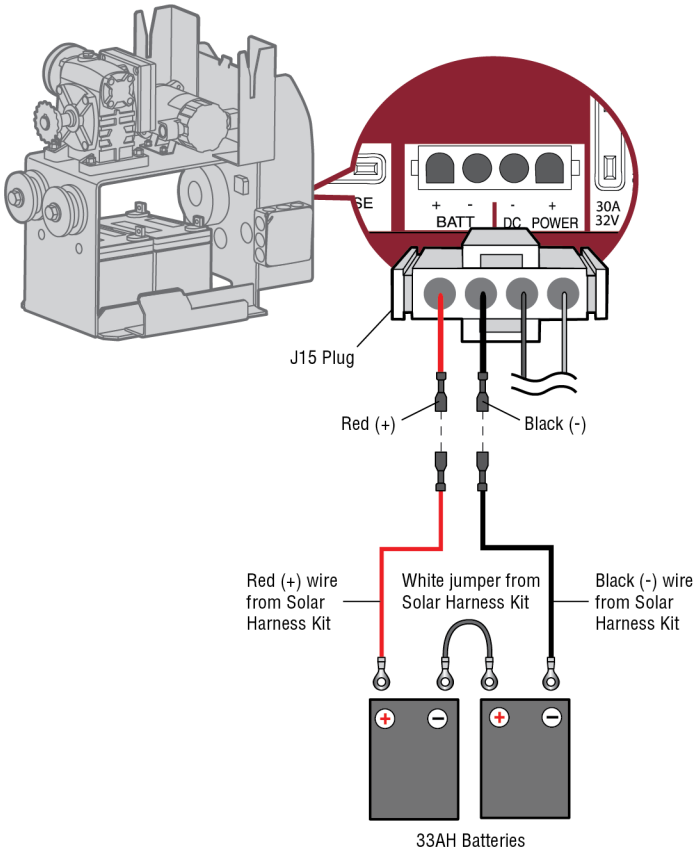


# INSTALLATION

## 33AH battery

The batteries are charged in the circuit by the integrated transformer. The batteries are for battery backup or solar installation. The 33AH application requires the Solar Harness Kit (Model K94-37236) and an additional battery tray (Model K10-34758-2).

1. Locate the J15 plug on the control board and disconnect it.
2. Connect the white jumper from the Solar Harness Kit between the positive (+) terminal of one battery and the negative (-) terminal of the other battery.
3. Connect one end of the red (+) wire from the Solar Harness Kit to the red wire from the J15 plug as shown. Connect the other end of the red (+) wire to the positive (+) terminal on the battery as shown.
4. Connect one end of the black (-) wire from the Solar Harness Kit to the black wire from the J15 plug as shown. Connect the other end of the black (-) wire to the negative (-) terminal on the battery as shown.
5. Turn ON AC power to the operator.
6. Turn ON the AC power switch on the operator.
7. Reconnect the J15 plug to the control board. ***NOTE:*** *You may see a small spark when plugging the J15 plug into the board.*



## Step 8 Dual gate setup

**There are two options for dual gate communication: wired or wireless. Follow the directions according to your application. Do not use wired and wireless communication simultaneously.** Wired dual gate applications will have a longer battery standby time than wireless applications.

### Wireless setup

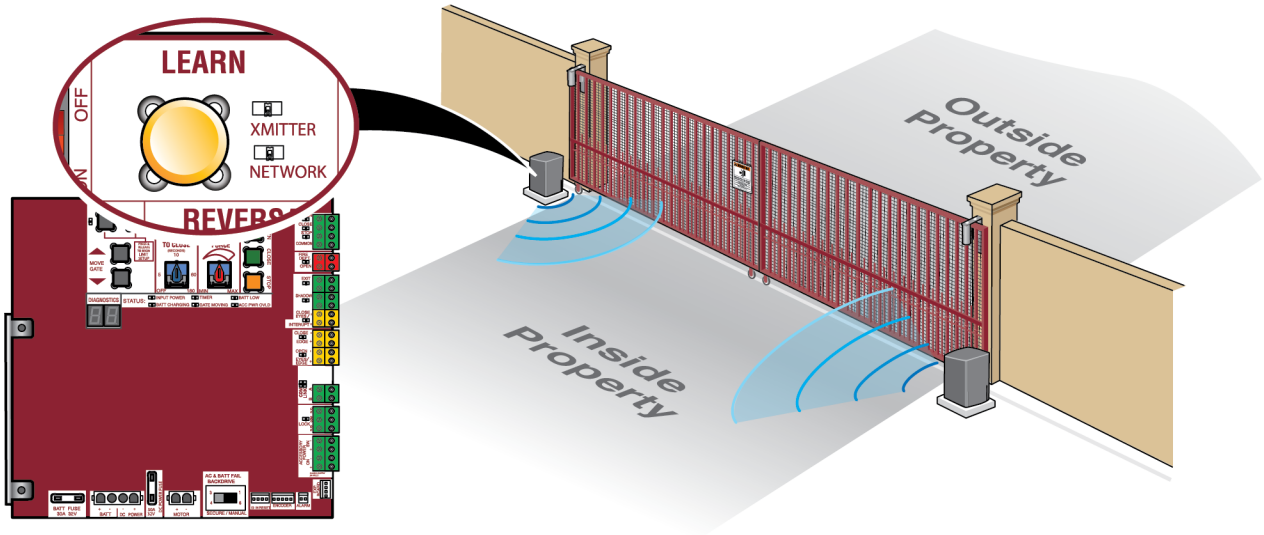
**To activate the wireless feature:**

1. Choose an operator to be the network primary operator. All wireless accessories will need to be programmed to the primary operator. ***NOTE:*** *We recommend that all accessories and board configurations are set on the primary operator.*
2. Press and release the LEARN button on the primary operator. The green XMITTER LED will light. ***NOTE:*** *The operator will time out of programming mode after 180 seconds.*
3. Press and release the LEARN button again on the primary operator. The yellow NETWORK LED will light.
4. Press and release the OPEN test button to assign this operator as network primary.
5. Press and release the LEARN button on the second operator. The green XMITTER LED will light.
6. Press and release the LEARN button again on the second operator. The yellow NETWORK LED will light.
7. Press and release the CLOSE test button to assign this operator as network second.

Both operators will beep and the yellow NETWORK LEDs will turn off indicating programming is successful.

**To deactivate the wireless feature:**

1. Press and release the LEARN button on either operator. The green XMITTER LED will light.
2. Press and release the LEARN button again on the same operator. The yellow NETWORK LED will light.
3. Press and hold the LEARN button for 5 seconds. The yellow NETWORK LED will blink (operator will beep) then turn off indicating successful deactivation.
4. Repeat the steps for the other operator.

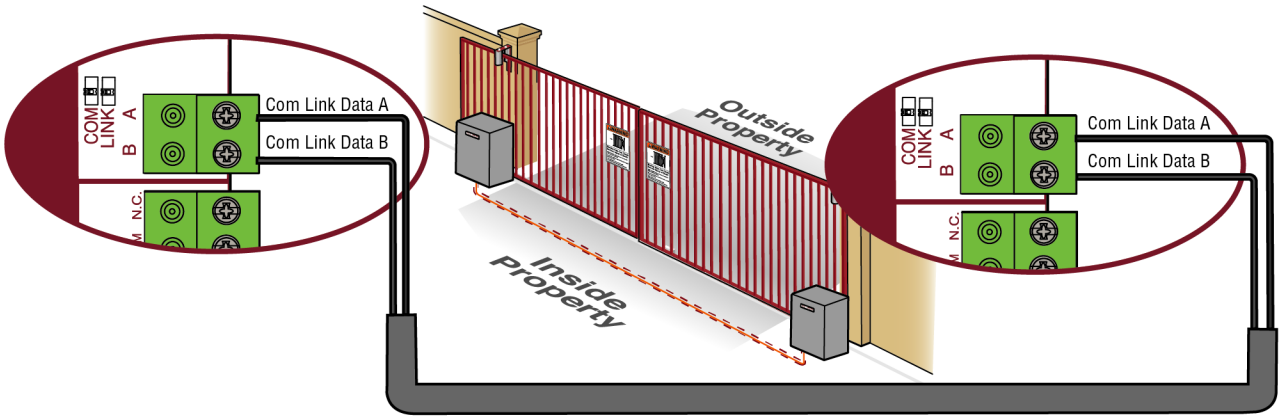


## Wired setup

Before digging, contact local underground utility locating companies. Use PVC conduit to prevent damage to cables.

1. **Disconnect ALL power to the operator and unplug the J15 plug from the control board.**
2. Trench across driveway to bury the shielded twisted pair cable.
3. Connect the wires from the shielded twisted pair cable to the Com Link terminals on the primary gate operator control board. ***NOTE:*** *We recommend that all accessories and board configurations are set on the primary operator.*
4. Route the shielded twisted pair cable to the secondary gate operator's control board.
5. Connect the wires from the shielded twisted pair cable to the Com Link terminals on the secondary control board (Com Link A to Com Link A and Com Link B to Com Link B). Ground the shield of the cable to the chassis ground of one operator.
6. **Connect ALL power to the operator and plug the J15 plug into the control board.**

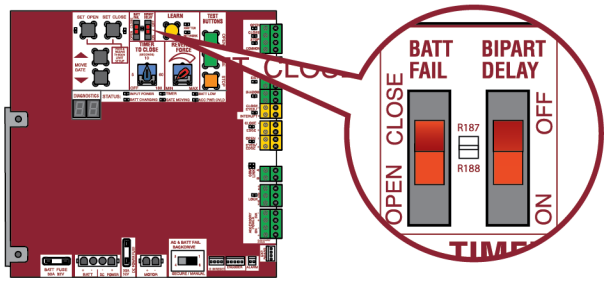
| DUAL GATE WIRE TYPE (SHIELDED TWISTED PAIR CABLE) | |
|---|---|
| 22AWG up to 200 feet (61 m) | 18AWG - 200-1000 feet (61-305 m) |
| **Wire must be rated at 30 Volt minimum** | |




## Bipart delay/synchronized close

The LOCK/BIPART DELAY switch is used only with dual gate applications and serves two functions:

- **BIPART DELAY**
  *SWING GATE APPLICATIONS:* The BIPART DELAY is used in applications where a mag-lock, solenoid lock, or decorative overlay would require one gate to close before the other. The operator with the LOCK/BIPART DELAY switch ON will delay from the close limit when opening and be the first to close from the open limit.
  SLIDE GATE APPLICATIONS: Not applicable, set to OFF.
- **SYNCHRONIZED CLOSE**
  The BIPART DELAY is also used in applications where one gate travels a longer distance than the other. To synchronize the closing of the gates, set the LOCK/BIPART DELAY switch to ON for both operators.

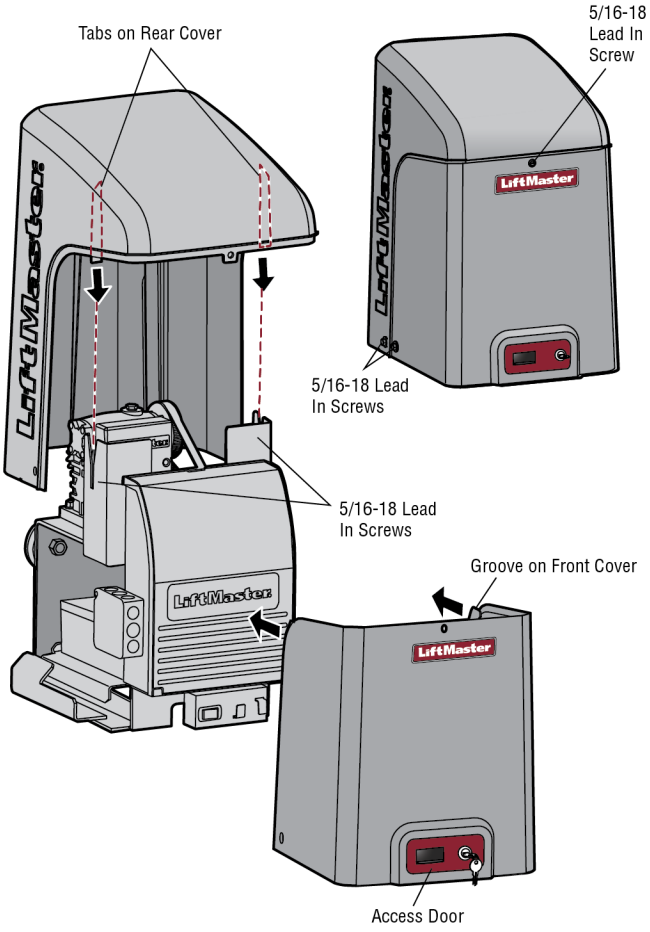


## Step 9 Install the cover

***Before installing the cover, follow the instructions in the Adjustment section to adjust the limits and force.***

The operator cover consists of two pieces: a rear cover and a front cover. The front cover can easily be removed to access the electrical box. To access the reset switch slide the access door up. The front cover and access door can be locked with the key.

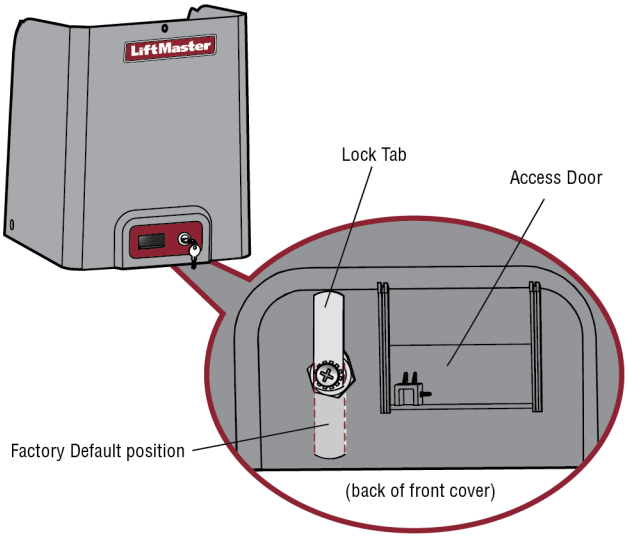
1. Align the tabs on the rear cover with the slots on the chassis and place the cover over the operator.
2. Secure both sides of the rear cover to the chassis with two 5/16-18 lead in screws.
3. Align the front cover with the back cover, making sure the grooves line up.
4. Secure the front cover to the chassis with two 5/16-18 lead in screws.
5. Secure the front cover to the rear cover using the 5/16-18 lead in screw.




### To Lock the Access Door

From the factory the access door for the reset switch will not be locked. To lock the access door follow the steps below:

1. Locate the lock tab on the back of the front cover and remove the screw securing the tab to the cover.
2. Turn the tab 180 degrees, then secure with the screw. The access door can now be locked.




**The basic installation is complete.**

# ADJUSTMENT

## Limit and Force Adjustment

### ⚠ WARNING

To reduce the risk of SEVERE INJURY or DEATH:

- Without a properly installed safety reversal system, persons (particularly small children) could be SERIOUSLY INJURED or KILLED by a moving gate.
- Too much force on gate will interfere with proper operation of safety reversal system.
- NEVER increase force beyond minimum amount required to move gate.
- NEVER use force adjustments to compensate for a binding or sticking gate.
- If one control (force or travel limits) is adjusted, the other control may also need adjustment.
- After ANY adjustments are made, the safety reversal system MUST be tested. Gate MUST reverse on contact with an object.

### Introduction

Your operator is designed with electronic controls to make travel limit and force adjustments easy. The adjustments allow you to program where the gate will stop in the open and close position. The electronic controls sense the amount of force required to open and close the gate. The force is adjusted automatically when you program the limits but should be fine tuned using the REVERSAL FORCE dial on the control board (refer to *Fine Tune the Force* section) to compensate for environmental changes. The limit setup LEDs (located next to the SET OPEN and SET CLOSE buttons) indicate the status of the limits, refer to the table to the right.

The limits can be set using the control board (below) or a remote control (refer to *Limit Setup with a Remote Control* in the Appendix). Setting the limits with a remote control requires a 3-button remote control programmed to OPEN, CLOSE, and STOP.

***NOTE:*** *The TEST buttons on the control board will not work until the limits have been set and the required entrapment protection devices are installed.*

| LIMIT SETUP LEDS | | | |
|---|---|---|---|
| **SET OPEN LED** | **SET CLOSE LED** | **OPERATOR MODE** | **EXPLANATION** |
| OFF | OFF | NORMAL MODE | Limits are set |
| BLINKING | BLINKING | LIMIT SETTING MODE | Limits are not set |
| BLINKING | ON | LIMIT SETTING MODE | Open limit is not set |
| ON | BLINKING | LIMIT SETTING MODE | Close limit is not set |
| ON | ON | LIMIT SETTING MODE | Limits are set |

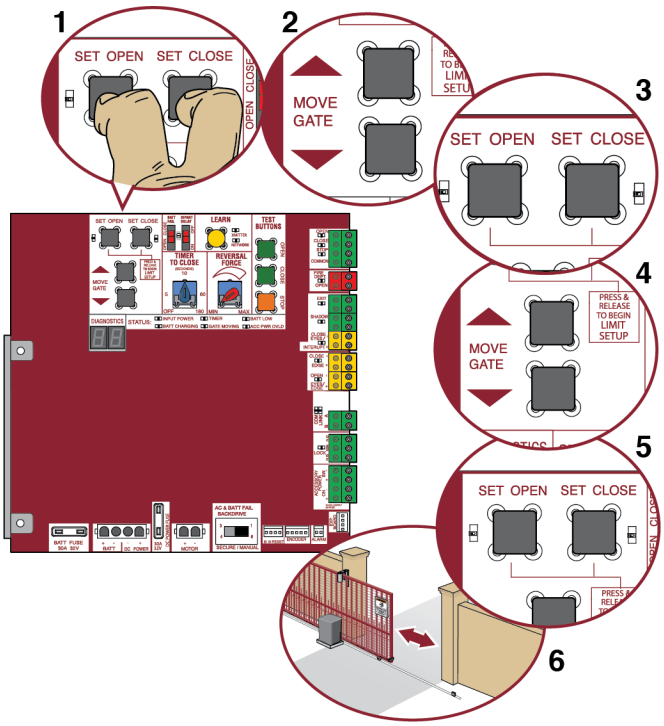
### Initial Limits and Force Adjustment

**For dual gate applications the limits will have to be set for each operator. The gate MUST be attached to the operator before setting the limits and force.**

**For slide gate applications the open limit and closed limit MUST be set at least four feet apart.**

1. Press and release the SET OPEN and SET CLOSE buttons simultaneously to enter limit setting mode.
2. Press and hold one of the MOVE GATE buttons to move the gate to the open or close limit.
3. Press and release the SET CLOSE or SET OPEN button depending on which limit is being set.
4. Press and hold one of the MOVE GATE button to move the gate to the other limit.
5. Press and release the SET CLOSE or SET OPEN button depending on which limit is being set.
6. Cycle the gate open and close. This automatically sets the force.

**When limits are set properly the operator will automatically exit limit setting mode.**

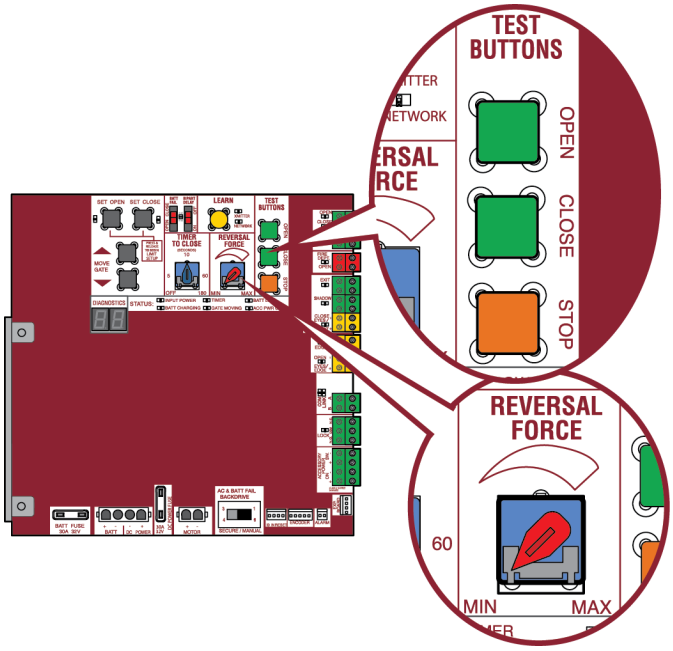


## Fine Tune the Force

Once the initial limits have been set, the REVERSAL FORCE DIAL on the control board is used for fine tuning the force where wind or environmental changes may affect the gate travel. The REVERSAL FORCE DIAL is set to minimum at the factory.

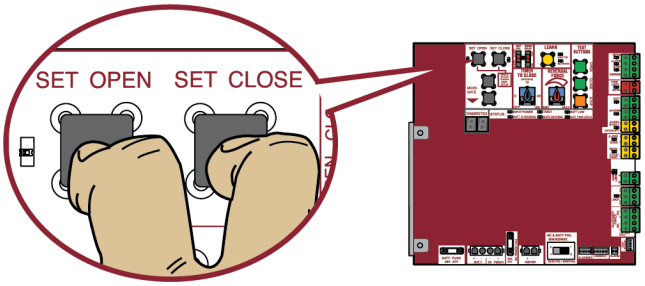
Based on the length and weight of the gate it may be necessary to make additional force adjustments. The force setting should be high enough that the gate will not reverse by itself nor cause nuisance interruptions, but low enough to prevent serious injury to a person. The force setting is the same for both the open and close gate directions.

1. Open and close the gate with the TEST BUTTONS.
2. If the gate stops or reverses before reaching the fully open or closed position, increase the force by turning the force control slightly clockwise.
3. Perform the "Obstruction Test" after every limit and force setting adjustment (see below).




## Adjust the Limits

After both limits are set and the operator is ready to run, one limit can be adjusted independently from the other by following steps 1-3 of the Initial Limit and Force Adjustment section.

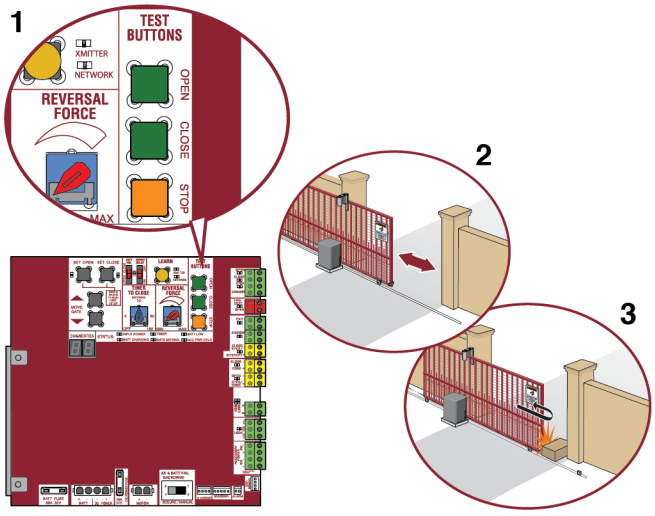



# Obstruction Test

The operator is equipped with an inherent (built in to the operator) obstruction sensing device. If the gate encounters an obstruction during motion, the operator will reverse direction of the gate and then stop. The following procedure will test ONLY the inherent (built in to the operator) obstruction sensing device:

1. Open and close the gate with the TEST BUTTONS, ensuring that the gate is stopping at the proper open and close limit positions.
2. Place an object between the open gate and a rigid structure. Make sure that any external entrapment protection devices will NOT be activated by the object.
3. Run the gate in the close direction. The gate should stop and reverse upon contact with the object. If the gate does not reverse off the object, reduce the force setting by turning the force control slightly counter-clockwise. The gate should have enough force to reach both the open and close limits, but MUST reverse after contact with an object.
4. Repeat the test for the open direction.

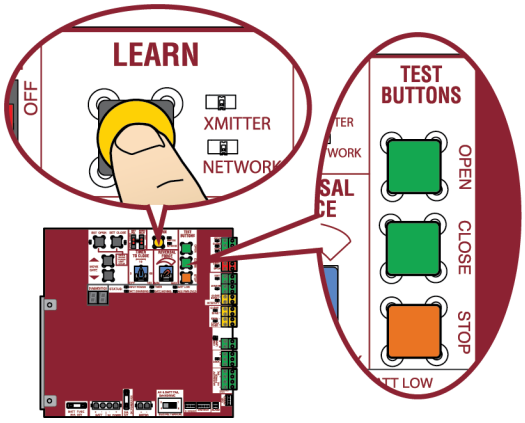
**Test the operator after any adjustments are made.**



# PROGRAMMING

## Remote Controls (Not Provided)

A total of 50 Security+ 2.0® remote controls or KPW250 keypads and 2 keyless entries (1 PIN for each keyless entry) can be programmed to the operator. When programming a third keyless entry to the operator, the first keyless entry will be erased to allow the third keyless entry to be programmed. When the operator's memory is full it will exit the programming mode and the remote control will not be programmed. The memory will need to be erased before programming any additional remote controls. ***NOTE:*** *If installing an 86LM to extend the range of the remote controls DO NOT straighten the antenna.*




**There are 3 different options for programming the remote control depending on how you would like the remote control to function. Choose a programming option:**

| OPTION | DESCRIPTION | PROGRAMMING STEPS |
|---|---|---|
| Single button as OPEN only | Program a single button on the remote control for open only. The Timer-to-Close can be set to close the gate. | 1. Press and release the LEARN button (operator will beep and green XMITTER LED will light). ***NOTE:*** *The operator will time out of programming mode after 30 seconds.*<br>2. Press the OPEN button.<br>3. Press the remote control button that you would like to program. |
| Single button (SBC) as OPEN, CLOSE, and STOP | Program one remote control button as an open, close, and stop. | 1. Press and release the LEARN button (operator will beep and green XMITTER LED will light). ***NOTE:*** *The operator will time out of programming mode after 30 seconds.*<br>2. Press the remote control button that you would like to program. |
| Three separate buttons as OPEN, CLOSE, and STOP | Program each remote control button as an open, close, and stop. | 1. Press and release the LEARN button (operator will beep and green XMITTER LED will light). ***NOTE:*** *The operator will time out of programming mode after 30 seconds.*<br>2. Press the OPEN, CLOSE, or STOP button, depending on the desired function.<br>3. Press the remote control button that you would like to program. |

The operator will automatically exit learn mode (operator will beep and green XMITTER LED will go out) if programming is successful. To program additional Security+ 2.0® remote controls or remote control buttons, repeat the programming steps above.

**Entering programming mode using external reset button or 3-button control station:**

1. Make sure gate/door is closed.
2. Give the operator an OPEN command.
3. Within 30 seconds, when the gate/door is at the open limit press and release the RESET/STOP button twice to put the operator into programming mode. ***NOTE:*** *The operator will time out of programming mode after 30 seconds.*

## LiftMaster Internet Gateway (not provided)

To program the operator to the LiftMaster Internet Gateway:

### Using the learn button on the opertaor's control board

1. Connect the ethernet cable to the LiftMaster Internet Gateway and the router.
2. Connect power to the LiftMaster Internet Gateway.
3. Create an online account by visiting www.myliftmaster.com.
4. Register the LiftMaster Internet Gateway.
5. Use an internet enabled computer or smartphone to add devices. The LiftMaster Internet Gateway will stay in learn mode for three minutes.
6. Press the Learn button twice on the primary operator (the operator will beep as it enters learn mode). The LiftMaster Internet Gateway will pair to the operator if it is within range and the operator will beep if programming is successful.

### Using the reset button on the operator

1. Connect the ethernet cable to the LiftMaster Internet Gateway and the router.
2. Connect power to the LiftMaster Internet Gateway.
3. Create an online account by visiting www.myliftmaster.com.
4. Register the LiftMaster Internet Gateway.
5. Use an internet enabled computer or smartphone to add devices. The LiftMaster Internet Gateway will stay in learn mode for three minutes.
6. Ensure gate is closed.
7. Give the operator an OPEN command.
8. Within 30 seconds, when the gate is at the open limit press and release the reset button 3 times (on primary gate) to put primary operator into High Band Learn Mode (the operator will beep as it enters learn mode). The LiftMaster Internet Gateway will pair to the operator if it is within range and the operator will beep if programming is successful.

The status as shown by the LiftMaster Internet Gateway app will be either “open” or “closed”. The gate operator can then be controlled through the LiftMaster Internet Gateway app.

## Erase All Codes

1. Press and release the LEARN button (operator will beep and green XMITTER LED will light).
2. Press and hold the LEARN button again until the green XMITTER LED flashes and then release the button (approximately 6 seconds). All remote control codes are now erased.

## Erase Limits

1. To erase the limits, press and hold the SET OPEN and SET CLOSE buttons simultaneously (5 seconds) until both the SET OPEN and SET CLOSE LEDs blink rapidly and the operator beeps.
2. Release the buttons and the SET OPEN and SET CLOSE LEDs will blink slowly indicating the limits will need to be set.

## Constant Pressure Override (CPO)

Constant Pressure Override is for use with KPW5 and KPW250 keypads (not provided). The KPW5/KPW250 wireless commercial keypads are security keypads and can only be programmed to ONE gate operator (see the KPW5/KPW250 manual for complete programming instructions).

The Constant Pressure Override feature is intended to temporarily override a fault in the entrapment protection system, in order to operate the gate until the external entrapment protection device is realigned or repaired. Use the feature only in line of sight of the gate when no obstructions to travel are present. External entrapment protection devices include LiftMaster monitored photoelectric sensors and LiftMaster monitored wired and wireless edge sensors. Be sure to repair or replace these devices promptly if they are not working properly.

**To use Constant Pressure Override:**

1. Enter a valid 4-digit PIN.
2. Press and hold # for 5 seconds to enter CPO. Continue to hold # to keep the operator in motion. A continuous tone will sound until limit is met and/or # is released.
3. The operator will stop when either the operator reaches a limit or the user releases #.

## Gate Hold Open Feature

The gate hold open feature will disable the timer and keep the gate at the open limit. The gate hold open feature can be activated through the Reset Button as described on Page 29 or through the KPW5 and KPW250 keypads (not provided).

**To use the gate hold open feature:**

1. Enter a valid 4-digit PIN when the gate is at the Open Limit and the timer is running
2. The Operator will chirp indicating the timer is canceled.

**To restart the gate:**

1. Re-enter the 4-digit PIN
2. Activate a Hard input or a programmed remote

## To Remove and Erase Monitored Entrapment Protection Devices

1. Remove the entrapment protection device wires from the terminal block.
2. Press and release the SET OPEN and SET CLOSE buttons simultaneously. The SET OPEN and SET CLOSE LEDs will turn on (entering learn limit mode).
3. Press and release both SET OPEN and SET CLOSE buttons again to turn off the SET OPEN and SET CLOSE LEDs (exiting learn limit mode).

## Gate operator setup examples

The following are example setups for the gate operator. Your specific site requirements may be different. Always setup the operator system to the site requirements, including all necessary entrapment protection devices.

**RESIDENTIAL:** One to four residential homes sharing a gated entrance/exit, allowing vehicle access trumps security concerns

**COMMERCIAL/GENERAL ACCESS:** A residential community (more than four homes) having one or more gated entrances/exits, allowing vehicle access trumps security concerns

**COMMERCIAL:** Business site where security (gate closed) is important

**INDUSTRIAL:** Large business site where security is required

| SETTING | RESIDENTIAL | COMMERCIAL/GENERAL ACCESS | COMMERCIAL | INDUSTRIAL |
|---|---|---|---|---|
| **Quick Close switch setting** | Normally set to OFF. Normal gate close (timer or control). | Normally set to OFF. Normal gate close (timer or control). | Normally set to OFF. Normal gate close (timer or control). | Set to ON, so that gate closes immediately after vehicle passes CLOSE EYES/Interrupt loop. |
| **AC Fail Open switch setting** | Normally set to BATT. Run on battery if AC power fails. | Normally set to BATT. For local jurisdiction requirement, set to OPEN so that the gate will open approximately 15 seconds after AC power fail. | Normally set to BATT. Run on battery if AC power fails. | Normally set to BATT. Run on battery if AC power fails. |
| **Low Battery switch setting** | Normally set to OPEN. If powered from battery and battery is low, gate automatically opens and stays open. | Normally set to OPEN. If powered from battery and battery is low, gate automatically opens and stays open. | Normally set to CLOSE. If powered from battery and battery is low, gate stays closed. | Normally set to CLOSE. If powered from battery and battery is low, gate stays closed. |
| **Anti-Tail switch setting** | Normally set to OFF. CLOSE EYES/Interrupt loop reverses a closing gate. | Normally set to OFF. CLOSE EYES/Interrupt loop reverses a closing gate. | Set to ON. In attempt to prevent vehicle tail-gating, CLOSE EYES/ Interrupt loop pauses a closing gate. | Set to ON. In attempt to prevent vehicle tail-gating, CLOSE EYES/ Interrupt loop pauses a closing gate. |
| **Bipart Delay switch setting** | For DUAL-GATE site, set to ON for gate that delays upon opening. | For DUAL-GATE site, set to ON for gate that delays upon opening. | For DUAL-GATE site, set to ON for gate that delays upon opening. | For DUAL-GATE site, set to ON for gate that delays upon opening. |
| **Aux Relay Out – Open Limit Switch** | Typically not required. | Use with SAMS (Sequence Access Management System). | 1. Use with SAMS (Sequence Access Management System).<br>2. Connect “Gate Open” indicator (e.g. light). | 1. Use with SAMS (Sequence Access Management System).<br>2. Connect “Gate Open” indicator (e.g. light). |
| **Aux Relay Out – Close Limit Switch** | Typically not required. | Typically not required. | Connect “Gate Close/Secure” indicator (e.g. light). | Connect “Gate Close/Secure” indicator (e.g. light). |
| **Aux Relay Out – Gate Motion** | Attach alert signal (audible or visual alert system). | Attach alert signal (audible or visual alert system). | Attach alert signal (audible or visual alert system). | Attach alert signal (audible or visual alert system). |
| **Aux Relay Out – Pre-Motion Delay** | Attach alert signal (audible or visual alert system). | Attach alert signal (audible or visual alert system). | Attach alert signal (audible or visual alert system). | Attach alert signal (audible or visual alert system). |
| **Aux Relay Out – Power** | Attach visual alert to know when system is charging batteries (i.e. not running on batteries). | Attach visual alert to know when system is charging batteries (i.e. not running on batteries). | Attach visual alert to know when system is charging batteries (i.e. not running on batteries). | Attach visual alert to know when system is charging batteries (i.e. not running on batteries). |
| **Aux Relay Out – Tamper (Slide Gates Only)** | Attach alert signal (audible or visual alert system) to indicate if gate is manually tampered with by being pushed off of close limit. | Attach alert signal (audible or visual alert system) to indicate if gate is manually tampered with by being pushed off of close limit. | Attach alert signal (audible or visual alert system) to indicate if gate is manually tampered with by being pushed off of close limit. | Attach alert signal (audible or visual alert system) to indicate if gate is manually tampered with by being pushed off of close limit. |
| **Cycle Quantity Feedback** | Use during servicing only to determine operator cycles. | Use during servicing only to determine operator cycles. | Use during servicing only to determine operator cycles. | Use during servicing only to determine operator cycles. |
| **Fire Dept Open Input** | Typically not required. | Connect emergency access system (Knox box switch, SOS system, etc.). | Typically not required. | Typically not required. |
| **Heater Accessory (Model HTR)** | The heater keeps the gearbox and batteries at a suitable temperature when the outside temperature is below -4°F. The thermostat MUST be set between 45°F and 60°F to ensure proper gate operation. | The heater keeps the gearbox and batteries at a suitable temperature when the outside temperature is below -4°F. The thermostat MUST be set between 45°F and 60°F to ensure proper gate operation. | The heater keeps the gearbox and batteries at a suitable temperature when the outside temperature is below -4°F. The thermostat MUST be set between 45°F and 60°F to ensure proper gate operation. | The heater keeps the gearbox and batteries at a suitable temperature when the outside temperature is below -4°F. The thermostat MUST be set between 45°F and 60°F to ensure proper gate operation. |

# OPERATION

## Control Board Overview

**1 SET OPEN Button:** The SET OPEN button sets the OPEN limit. See *Adjust Limits* section.

**2 SET CLOSE Button:** The SET CLOSE button sets the CLOSE limit. See *Adjust Limits* section.

**3 MOVE GATE Buttons:** The MOVE GATE buttons will either open or close the gate when the operator is in Limit setting mode. See Adjust Limits section.

**4 BATT FAIL:**

- When AC power is OFF and battery voltage is critically low the gate will latch at a limit until AC power is restored or batteries voltage increases.
- Option select switch set to OPEN forces gate to automatically open and then latch at the OPEN limit until AC power is restored or battery voltage increases.
- Option select switch set to CLOSE forces gate to latch at CLOSE limit if at CLOSE limit or on next CLOSE command until AC power restored or battery voltage increases.
- Constant pressure on a hard command input overrides to open or close the gate.
- Critically low battery is less than 23 V

**5 BIPART DELAY Switch:** The LOCK/BIPART DELAY switch is used only for dual gates. See Bipart Delay section.

**6 LEARN Button:** The LEARN button is for programming remote controls and the network.

**7 TIMER-TO-CLOSE dial:** The TIMER-TO-CLOSE (TTC) dial can be set to automatically close the gate after a specified time period. The TTC is factory set to OFF. If the TTC is set to the OFF position, then the gate will remain open until the operator receives another command from a control. Rotate the TIMER-TO-CLOSE dial to the desired setting. The range is 0 to 180 seconds, 0 seconds is OFF. ***NOTE:*** *Any radio command, single button control, or CLOSE command on the control board prior to the TTC expiring will close the gate. The TTC is reset by any signals from the open controls, loops, close edges, and close photoelectric sensors (IR's).*

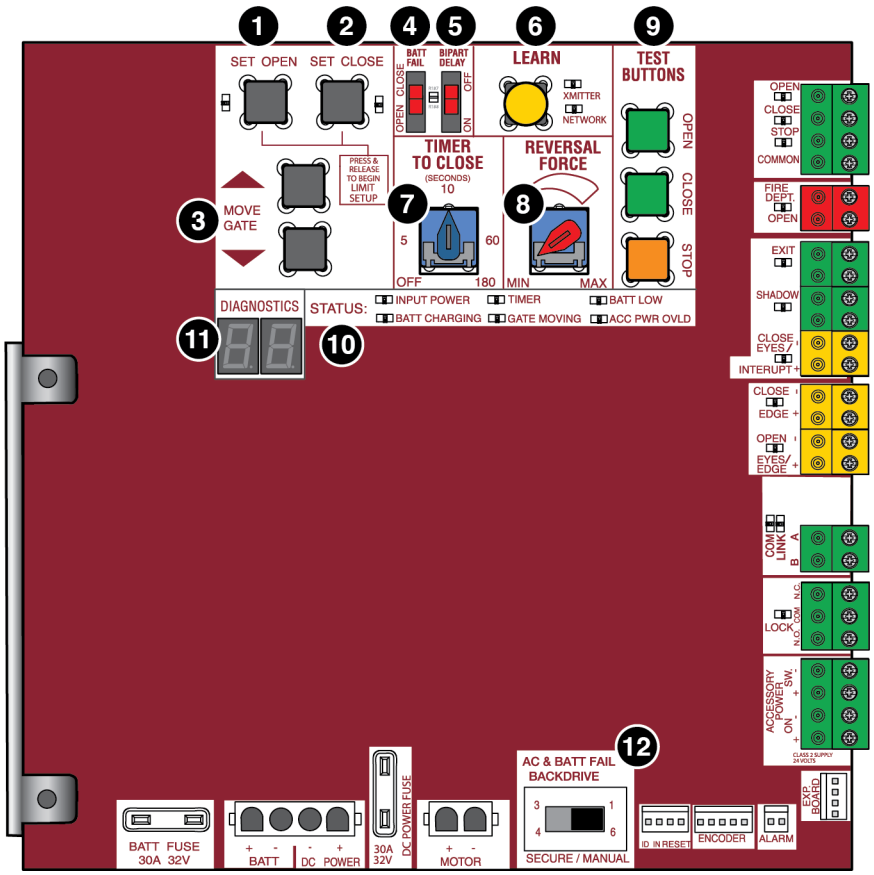
**8 REVERSAL FORCE dial:** The REVERSAL FORCE dial fine tunes the force. See *Force Adjustment* section.

**9 TEST BUTTONS:** The TEST BUTTONS will operate the gate (OPEN, STOP and CLOSE).

**10 STATUS LEDs:** The STATUS LEDs indicate the status of the operator. See Status LED Chart in the Troubleshooting section.

**11 DIAGNOSTICS Display:** The diagnostics display will show the operator type, firmware version, and codes. The operator type will display as "SL" followed by a "24" which indicates the operator type as CSL24UL. The firmware version will show after the operator type, example "1.2".

**12 BACKDRIVE Switch:** Set to MANUAL will allow the gate to be manually pushed open or closed if there is a loss of AC and battery power. Set to SECURE makes the gate difficult to push open or closed if there is a loss of AC and battery power.



# OPERATION

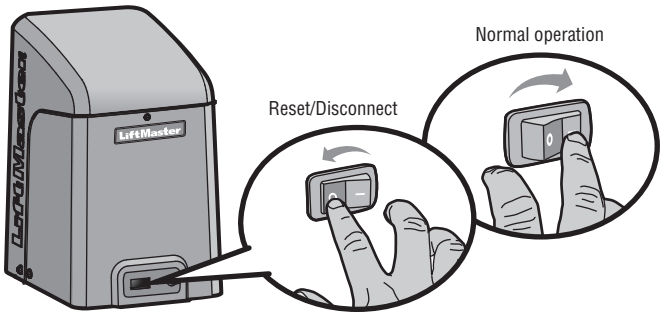
## Manual Disconnect

Press the reset switch to RESET/DISCONNECT. Release the handle on the operator arm to allow the gate to be opened and closed manually. On a dual gate application the handle must be released on both operators. To resume normal function tighten the handle by pushing it down.

## Reset Switch

The reset switch is located on the front of the operator and serves several functions.

Toggling the reset switch will stop a moving gate during a normal open/close cycle, like a stop button. The operator does not need to be reset after doing this. The reset switch will disable the gate in the present position and will energize the solenoid lock for two minutes and disable the maglock for two minutes.




## Operator Alarm

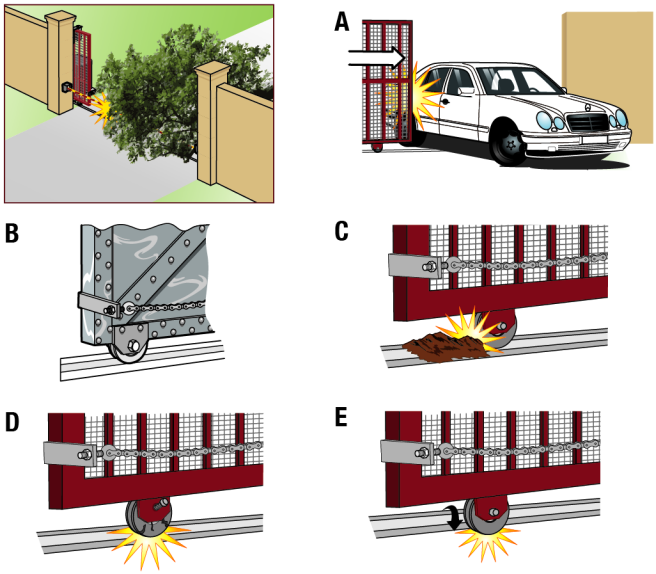
If a contact sensor detects an obstruction twice consecutively the alarm will sound (up to 5 minutes) and the operator will need to be reset.

When the inherent force of the operator (RPM/current sensor) detects the following (twice consecutively) the alarm will sound (up to 5 minutes) and the operator will need to be reset.

A. The gate is hitting a wall or vehicle.
B. The gate does not meet specifications.
C. Debris is on the gate's track such as mud, rocks, dirt, etc.
D. The gate has one or more broken axles or wheels.
E. The gate wheel is off the gate rail.

Remove any obstructions. Press the reset button to shut off the alarm and reset the operator. After the operator is reset, normal functions will resume.

The operator alarm will beep 3 times with a command if the battery is low.




## Remote control

### Single Button Control (SBC) Functionality

Once the remote control has been programmed the operator will operate as follows:

When gate is in the closed position, activation of the remote control button will open the gate. During the open cycle another activation of the remote control will stop the gate and the next activation of the remote control will close the gate.

When the gate is in the open position, activation of the remote control button will close the gate. If the remote control is activated while the gate is closing, the gate will stop and the next activation will open the gate.

# ACCESSORY WIRING

All control wiring used to connect external devices to Class 2 circuits of the operator must be (QPTZ) Power-Limited Circuit Cables, Type CL2, CL2P, CL2R, or CL2X or other cable with equivalent or better electrical, mechanical, and flammability ratings.

## External control devices

### EXIT (2 Terminals)

This input is a soft open command (maintained switch does not override external safeties and does not reset alarm condition). Used for exit probe, telephone entry, external exit loop detector, or any device that would command the gate to open.

- Opens a closing gate and holds open an open gate, if maintained, pauses Timer-to-Close at OPEN limit.

### SHADOW (2 Terminals)

This input is used for external shadow loop detector when loop is positioned under the swing of the gate.

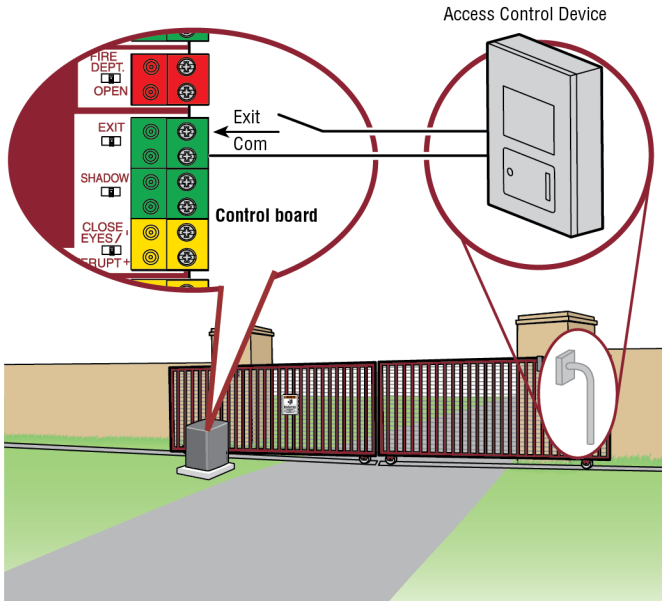
- Holds open gate at open limit
- Only active when the gate is at the OPEN limit, disregarded at all other times
- Pauses Timer-to-Close at OPEN limit

### INTERRUPT (2 Terminals)

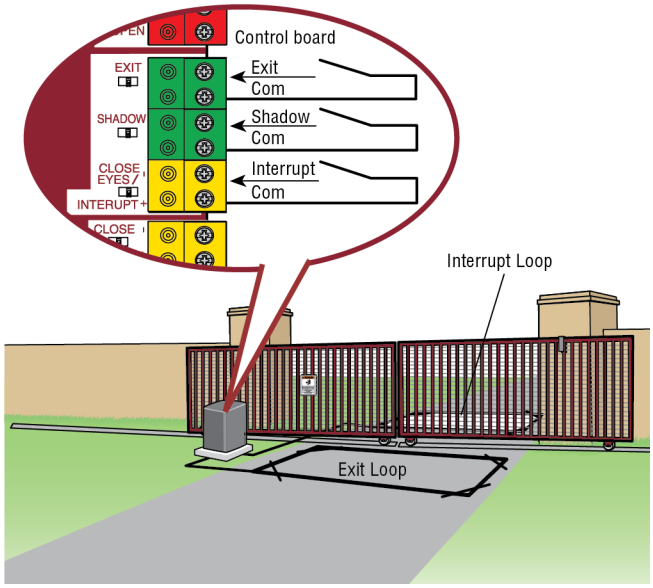
This input is used for photoelectric sensors and external interrupt loop detector when loop is on the outside of the gate.

- Holds open gate at open limit
- Stops and reverses a closing gate to open limit
- Pauses Timer-to-Close at OPEN limit, activates quick close and anti-tailgate features when enabled on the expansion board

**Access control device wiring**




**Loop wiring**



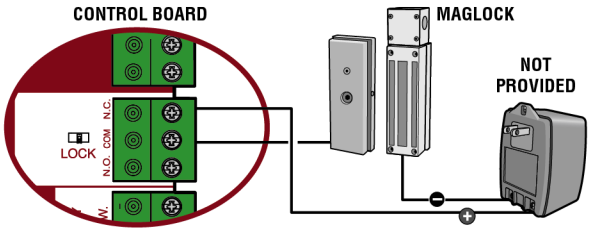
# ACCESSORY WIRING

## Locks

### Maglock (2 Terminals, N.C. and COM)

Relay contact output, Normally - closed (N.C.) output for maglocks.

Relay activates prior to motor activation and during motor run. Relay is off when motor is off.




## Miscellaneous wiring

### Three button control station (4 Terminals)

- OPEN and COM: Opens a closed gate. Hard open (maintained switch overrides external safeties and resets alarm condition). If maintained, pauses Timer-to-Close at OPEN limit. Opens a closing gate and holds open an open gate (within line-of-sight).
- CLOSE and COM: Closes an open gate. Hard close (maintained switch overrides external safeties and resets alarm condition within line-of-sight)
- STOP and COM: Stops a moving gate. Hard stop (maintained switch overrides Open and Close commands and resets alarm condition). If maintained, pauses Timer-to-Close at OPEN limit. Overrides Open and Close commands (within line-of-sight).

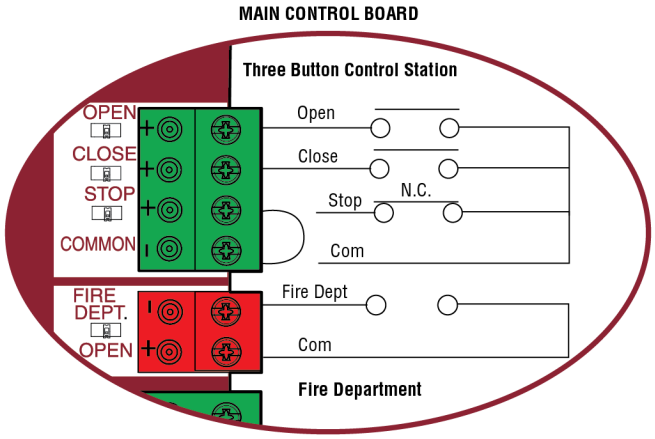
### Fire department open input (2 Terminals)

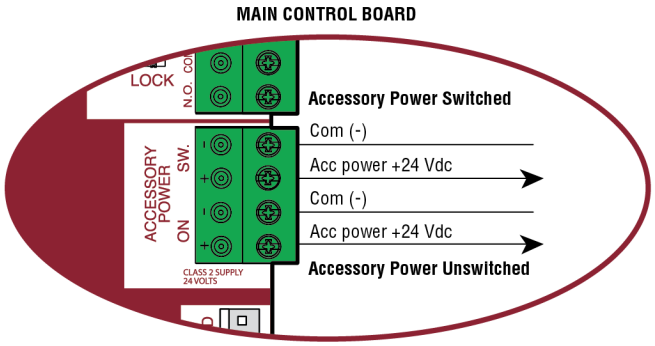
Acts as hard open.

Maintained input overrides (ignores) external safeties (photoelectric sensor and edge), pauses Timer-to-Close momentary input logic as single button control and safeties remain active, re-enables Timer-to-Close.

### Accessory power 24 VDC, MAX 500 mA (4 Terminals)

- SWITCHED: Switched ON with gate motion and at the open limit when Timer-to-Close is active. Turns off 5 seconds after motion.
- UNSWITCHED: 24 Vdc voltage out to power accessories, always ON.



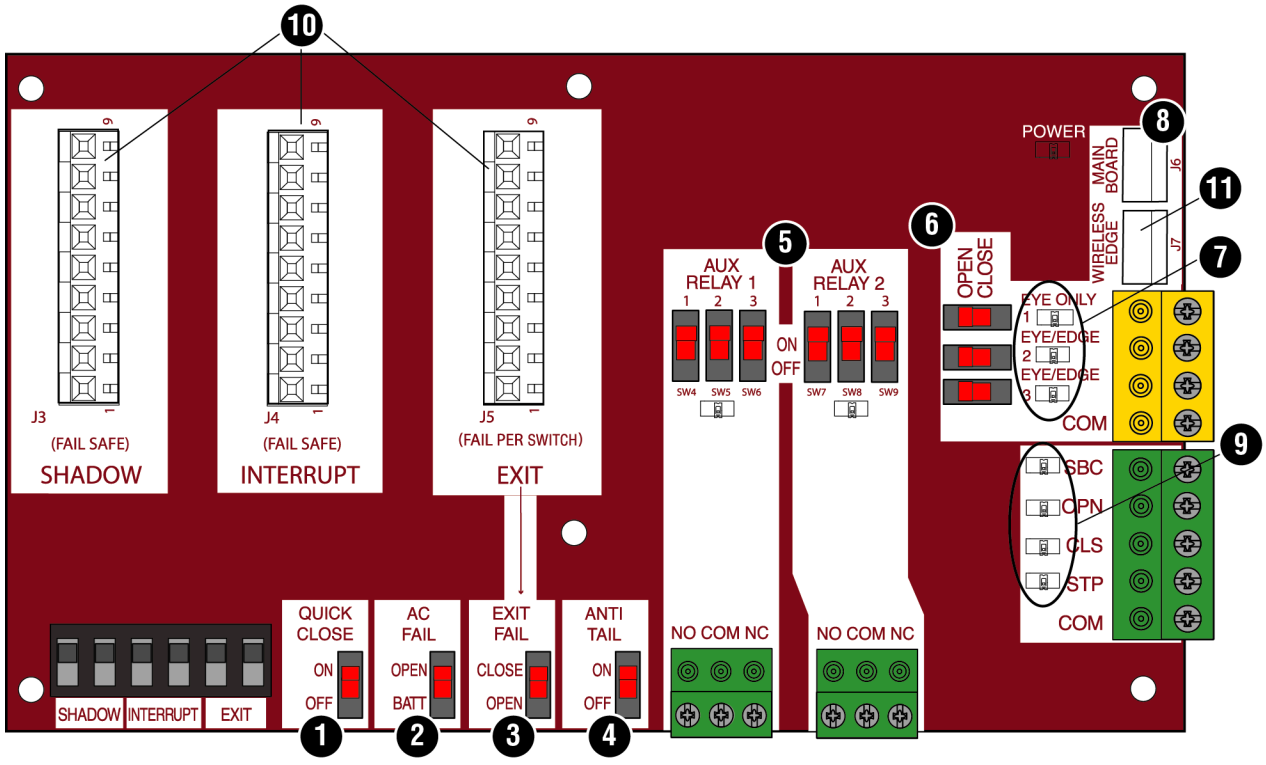
# EXPANSION BOARD

## ⚠CAUTION

- To AVOID damaging the circuit board, relays or accessories, DO NOT connect more than 42 Vdc (32 Vac) to the AUX relay contact terminal blocks.

## Expansion board overview

1. **QUICK CLOSE switch:**
   OFF: No change to the gate's normal operation.
   ON: When CLOSE EYES/Interrupt loop is deactivated it causes an opening or a stopped gate to close (ignores the Timer-to-Close).
2. **AC FAIL switch:**
   OPEN: Loss of AC power will cause the gate to open approximately 15 seconds after AC power fail and remain OPEN until AC power is restored (enabling the Timer-to-Close).
   BATT: With loss of AC power, gate will remain in present position and operator is powered from batteries.
3. **EXIT FAIL switch:**
   When set to OPEN, if the EXIT plug-in loop detector (Model LOOPDETLM) detects a fault, then the gate will open and remain open until fault is cleared. When set to CLOSE, then plug-in EXIT loop detector faults are ignored (EXIT loop is faulted and inoperative).
4. **ANTI-TAIL switch:**
   OFF: When CLOSE EYES/Interrupt loop is activated it causes a closing gate to stop and reverse.
   ON: When CLOSE EYES/Interrupt loop is activated it causes a closing gate to pause. Once the vehicle is clear the gate will continue to close.
5. **AUX RELAY switches:**
   Set the AUX RELAY switches as needed to obtain the desired function as shown on the following page.
6. **EYE/EDGE switches:**
   Set the EYE/EDGE switches as needed to obtain the desired OPEN or CLOSE functionality.
7. **1, 2, and 3 LEDs:**
   LEDs indicating the status of the EYE/EDGE inputs. Also used to check the firmware version of the expansion board:
   1. Locate the 1, 2, and 3 LEDs on the expansion board.
   2. Disconnect AC/DC power to the main control board for 15 seconds.
   3. Connect power. The 1, 2, and 3 LEDs will flash in sequence until the main control board firmware revision is displayed. When the green POWER LED glows solid the LED 1 will flash the version number, then stop, then the LED 2 will flash the revision number (for example: For version 5.1 when the green POWER LED is solid the LED 1 will flash 5 times, then stop, then the LED 2 will flash once).
8. **MAIN BOARD input:**
   Input Connection for the main board connector.
9. **Input LEDs:**
   LEDs indicating the status of the SBC, OPN, CLS, and STP inputs.
10. **Loop detector inputs:**
    Inputs for the Plug-In Loop Detectors (Model LOOPDETLM)
11. **Wireless edge input:**
    Input for the Wireless Edge Kit (Model LMWEKITU)



## Auxiliary relay 1 and 2

Normally Open (N.O.) and Normally Closed (N.C.) relay contacts to control external devices, for connection of Class 2, low voltage (42 Vdc [34 Vac] max 5 Amps) power sources only. Function of relay contact activation determined by switch settings.

| AUX RELAY SETTING | SWITCH SETTINGS | | | AUX RELAY 1 | AUX RELAY 2 |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | | |
| **Off (no feature selected)** | OFF | OFF | OFF | Relay always off. Use this Aux Relay setting to conserve battery power. | |
| **Open Limit Switch** | OFF | OFF | ON | Energizes at open limit. Use with SAMS (Sequenced Access Management System, jointly with barrier gate). | |
| **Close Limit Switch** | OFF | ON | OFF | Energizes when not at close limit. For an additional audible or visual display, connect an external light (low voltage). | |
| **Gate Motion** | OFF | ON | ON | Energizes when motor is on (gate in motion). For an additional audible or visual display, connect an external buzzer or light (low voltage). | |
| **Pre-Motion Delay** | ON | OFF | OFF | Energizes 3 seconds before gate motion and remains energized during gate motion. The onboard alarm will sound. For an additional audible or visual display, connect an external buzzer or light (low voltage). | Energizes 3 seconds before gate motion and remains energized during gate motion. For an additional audible or visual display, connect an external buzzer or light (low voltage). |
| **Power** | ON | ON | OFF | Energizes when AC power or solar power is present. There is approximately a 10-12 second delay before relay cutoff, after AC shutdown. | Energizes when on battery power. There is approximately a 10-12 second delay before relay cutoff, after AC shutdown. |
| **Tamper** | ON | OFF | ON | Energizes if gate is manually tampered with by being pushed off of close limit. For an additional audible or visual display, connect an external buzzer or light (low voltage). | |
| **Cycle Quantity Feedback*** | ON | ON | ON | The 1, 2, and 3 LEDs will blink out the cycle count (cycle count is stored on the control board). See below. | Red/green light functionality, see below. |

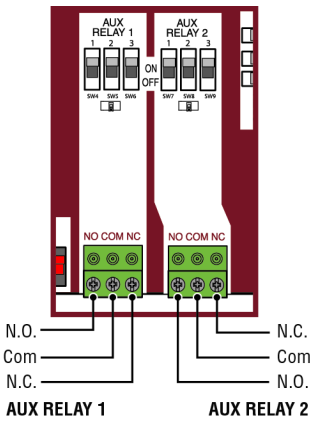
### * Cycle count

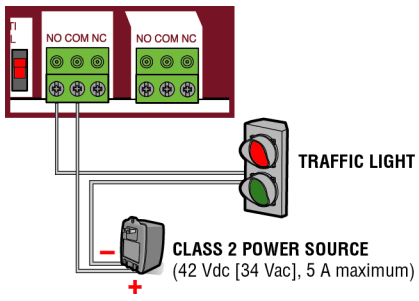
First, note the current Aux Relay switch positions. To determine the actual cycles that the gate operator has run (in thousands), set all three Aux Relay switches to the ON setting for Aux Relay 1. The Expansion Board's 1, 2, and 3 LEDs will blink out the cycle count, with 1 LED blinking 1000's, 2 LED blinking 10,000's, 3 LED blinking 100,000's, and simultaneously all three LED's blink 1,000,000's (e.g. 1 LED blinks 3 times, 2 LED blinks 6 times, and 3 LED blinks once. Cycle count is 163,000.). Cycle count displayed is between 1,000 and 9,999,000 cycles. After servicing, set Aux Relay switches back to their appropriate positions. Cycle count cannot be reset or changed. If under 1,000 cycles the 1, 2, and 3 LEDs will turn on for 10 seconds, then turn off.

***NOTE:*** *The expansion board will flash the cycle count 3 times then all the LEDs will turn on solid for 10 seconds then turn off.*

| RED/GREEN LIGHT FUNCTIONALITY | | | | | | |
|---|---|---|---|---|---|---|
| Red light wired to AUX RELAY 1. Green light wired to AUX RELAY 2. | | | | | | |
| **GATE STATE** | **AUX RELAY 1 SWITCHES** | | | **AUX RELAY 2 SWITCHES** | | |
| | **1 OFF** | **2 OFF** | **3 OFF** | **1 ON** | **2 ON** | **3 ON** |
| **Closed** | Red light OFF* | | | Green light OFF | | |
| **Opening** | Red light ON/Flash | | | Green light OFF | | |
| **Open** | Red light OFF | | | Green light ON | | |
| **Closing** | Red light ON/Flash | | | Green light OFF | | |
| **Defined Mid Stop** | n/a | | | n/a | | |
| **Undefined Mid Stop** | Red light ON | | | Green light OFF | | |
| **Timer more than 5 seconds** | Red light OFF | | | Green light ON | | |
| **Timer less than 5 seconds** | Red light ON/Flash | | | Green light OFF | | |
| * For red light ON when gate is closed, set switch 1 on AUX RELAY 1 to ON | | | | | | |

### Auxiliary relay wiring example

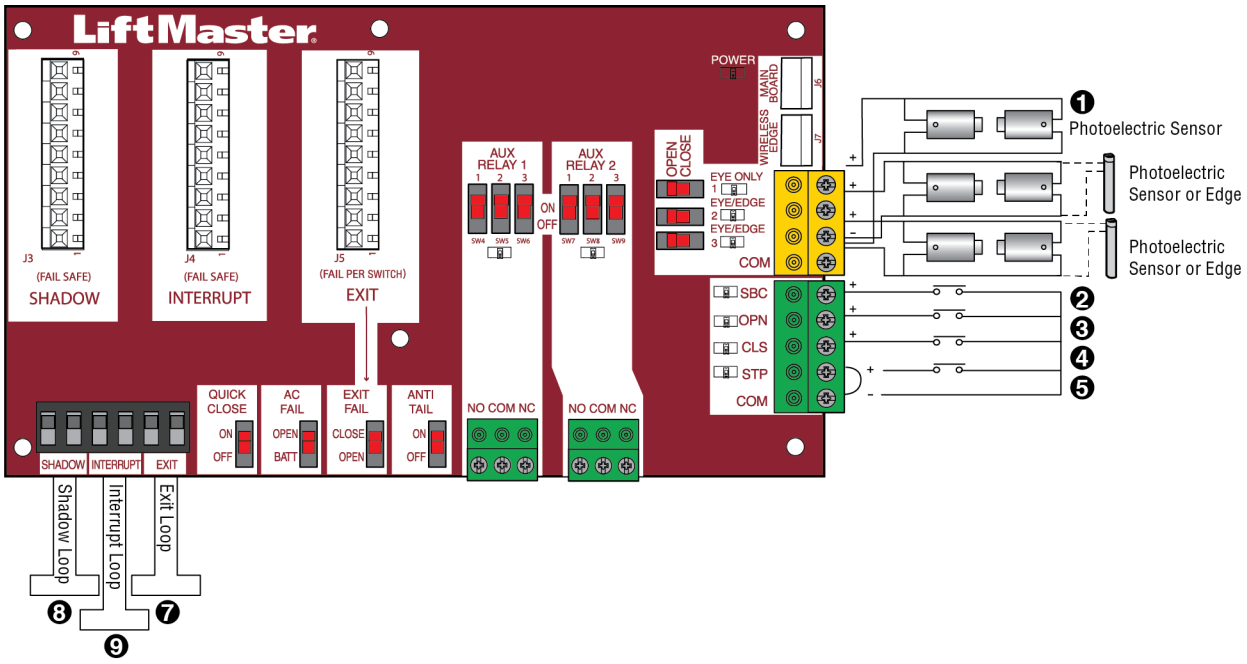


## Wiring accessories to the expansion board

Refer to the chart below and the corresponding image for a description of the expansion board inputs.

| | | |
|---|---|---|
| 1 | **Wireless edge** | Connection for wireless edge receiver |
| 2 | **Entrapment Protection Device Inputs (4 terminals total), Open or Close Direction based on switch setting next to inputs** | EYES ONLY Input: Open or Close Direction Photoelectric Sensors, Close: reverses fully, Open: reverses 4 seconds<br>EYES/EDGE Input(s): Open or Close Direction Photoelectric Sensors, Infra-red detector wired or Edge Sensor, reverses 4 seconds |
| 3 | **Single Button Control, SBC (2 terminals)** | Gate command sequence - Open, Stop, Close, Stop, ... Soft Open ,Soft Close, Soft Stop (maintained switch does not override external safeties and does not reset alarm condition) |
| 4 | **Open Input (& common) (3-Button Control Station, 4 terminals total)** | Open command - opens a closed gate.<br>Soft open (maintained switch does not override external safeties and does not reset alarm condition) If maintained, pauses Timer-to-Close at OPEN limit.<br>Opens a closing gate and holds open an open gate. |
| 5 | **Close Input (& common) (3-Button Control Station, 4 terminals total)** | Close command - closes an open gate.<br>Soft close (maintained switch does not override external safeties and does not reset alarm condition). |
| 6 | **Stop Input (& common) (3-PB station, 4 terminals total)** | Stop command - stops a moving gate.<br>Hard stop (maintained switch overrides Open and Close commands and resets alarm condition) If maintained, pauses Timer-to-Close at OPEN limit.<br>Overrides an Open or Close command. |
| 7 | **Exit Loop Input (2 terminals)** | Loop wire connection for plug-in loop detector when loop is inside secured area near gate.<br>Open command - opens a closed gate.<br>Soft open (maintained switch does not override external safeties and does not reset alarm condition) If maintained, pauses Timer-to-Close at OPEN limit.<br>Opens a closing gate and holds open an open gate. |
| 8 | **Shadow Loop Input (2 terminals)** | Loop wire connection for plug-in loop detector when loop is positioned under the gate.<br>• Holds open gate at open limit<br>• Disregarded during gate motion<br>• Pauses Timer-to-Close at Open Limit |
| 9 | **Interrupt Loop Input (2 terminals)** | Loop wire connection for plug-in loop detector when loop is along the side of the gate.<br>• Holds open gate at open limit<br>• Stops and reverses a closing gate<br>• Pauses Timer-to-Close at Open Limit |



# IMPORTANT SAFETY INSTRUCTIONS

## ⚠ WARNING

To reduce the risk of SEVERE INJURY or DEATH:

- READ AND FOLLOW ALL INSTRUCTIONS.
- ANY maintenance to the operator or in the area near the operator MUST NOT be performed until disconnecting the electrical power (AC or solar and battery) and locking-out the power via the operator power switch. Upon completion of maintenance the area MUST be cleared and secured, at that time the unit may be returned to service.
- Disconnect power at the fuse box BEFORE proceeding. Operator MUST be properly grounded and connected in accordance with national and local electrical codes. ***NOTE:*** *The operator should be on a separate fused line of adequate capacity.*
- NEVER let children operate or play with gate controls. Keep the remote control away from children.
- ALWAYS keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.
- The entrance is for vehicles ONLY. Pedestrians MUST use separate entrance.
- Test the gate operator monthly. The gate MUST reverse on contact with an object or reverse when an object activates the noncontact sensors. After adjusting the force or the limit of travel, retest the gate operator. Failure to adjust and retest the gate operator properly can increase the risk of INJURY or DEATH.
- Use the manual disconnect release ONLY when the gate is NOT moving.
- KEEP GATES PROPERLY MAINTAINED. Read the owner's manual. Have a qualified service person make repairs to gate hardware.
- ALL maintenance MUST be performed by a LiftMaster professional.
- Activate gate ONLY when it can be seen clearly, is properly adjusted and there are no obstructions to gate travel.
- To reduce the risk of FIRE or INJURY to persons use ONLY LiftMaster part 29-NP712 for replacement batteries.
- **SAVE THESE INSTRUCTIONS.**

## ⚠ CAUTION

- ALWAYS wear protective gloves and eye protection when changing the battery or working around the battery compartment.

## Maintenance Chart

**Disconnect all power (AC, solar, battery) to the operator before servicing.** The operator's AC Power switch ONLY turns off AC power to the control board and DOES NOT turn off battery power. ALWAYS disconnect the batteries to service the operator.

| DESCRIPTION | TASK | CHECK AT LEAST ONCE EVERY | | |
|---|---|---|---|---|
| | | MONTH | 6 MONTHS | 3 YEARS |
| Entrapment Protection Devices | Check and test inherent (built into the operator) and external devices for proper operation | X | | |
| Warning Signs | Make sure they are present and replace if worn or broken, see *Accessories* | X | | |
| Manual Disconnect | Check and test for proper operation | | X | |
| Sprockets and Chains | Check for excessive slack and lubricate | | X | |
| Gate | Inspect for wear or damage; ensure it still complies with ASTM F2200, see page 5 | X | | |
| Accessories | Check all for proper operation | | X | |
| Electrical | Inspect all wire connections | | X | |
| Chassis Mounting Bolts | Check for tightness | | X | |
| Operator | Inspect for wear or damage | | X | |
| Batteries | Replace | | | X |

***NOTES:***

- *Severe or high cycle usage will require more frequent maintenance checks.*
- *Limits may have to be reset after any major drive chain adjustments.*
- *If lubricating chain, use only lithium spray. Never use grease or silicone spray.*
- *It is suggested that while at the site voltage readings be taken at the operator. Using a digital voltmeter, verify that the incoming voltage to the operator is within ten percent of the operator's rating.*

# MAINTENANCE

## Batteries

Batteries will degrade over time depending on temperature and usage. The operator alarm will beep 3 times with a command if the battery is low. Batteries do not perform well in extremely cold temperatures. For best performance, the batteries should be replaced every 3 years. Use only LiftMaster part 29-NP712 for replacement batteries. The batteries contain lead and need to be disposed of properly.

The operator comes with two 7AH batteries. Two 33AH batteries (A12330SGLPK), with Solar Harness Kit (K94-37236) may be used in place of the 7AH batteries.

## Drive Train

Over time, the drive chain on the operator will stretch and need to be tightened. To tighten the drive chain adjust either of the two chain eye bolts. ***NOTE:*** *The chain should have no more than 1 inch of sag for every 10 feet of chain length.*

# TROUBLESHOOTING

## ⚠ WARNING

To protect against fire and electrocution:

- DISCONNECT power (AC or solar and battery) BEFORE installing or servicing operator.

For continued protection against fire:

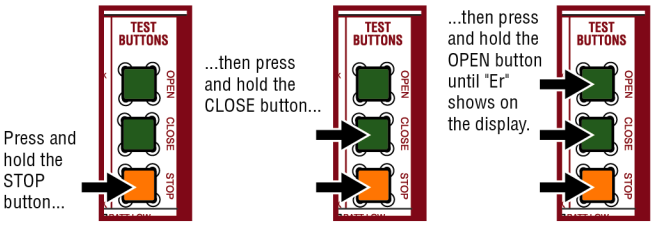
- Replace ONLY with fuse of same type and rating.

## Diagnostic Codes

***NOTE:*** *When cycling or disconnecting power (ac/dc) to the control board, it is recommended that you unplug the J15 plug.*

### To View the Codes

The codes will show on the diagnostic display.



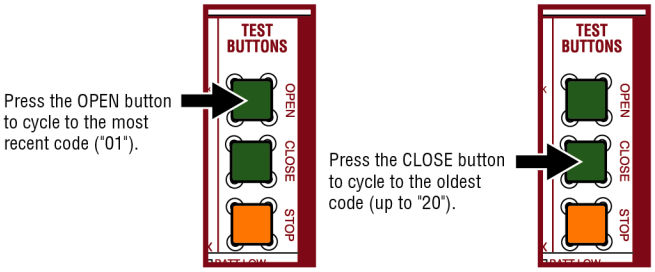

The operator will show the code sequence number followed by the code number:

**CODE SEQUENCE NUMBER**
The first number shown is the most recent code (example: "01"). The display will show the sequence of codes that occurred starting with "01" and going up to code "20".

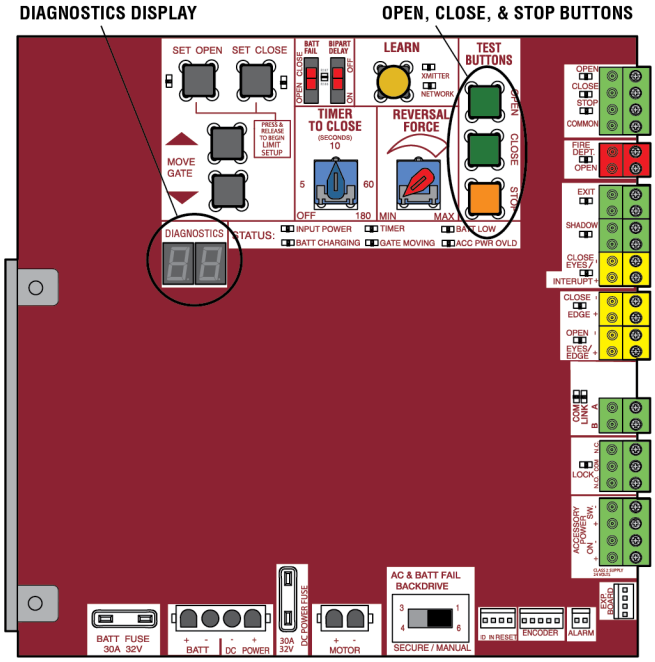
**A SECOND LATER....**

**CODE NUMBER**
The second number shown after the code sequence number is the code itself (31-99, example" "31"). Refer to the chart on the following page for an explanation of each code.


### To Scroll Through the Saved Codes




The operator will only keep track of up to 20 codes, then will start saving over the oldest codes as new codes occur.




### To Exit

Press and release the STOP button to exit. The display will also time out after two minutes of inactivity.

### To Reset the Code History

1. Press and hold the STOP button for six seconds. The display will show "Er" then "CL" alternately for six seconds.
2. Release the STOP button. The code history has now been reset and the display will show "- -" until a new code occurs.
3. Press and release the STOP button to exit.

## Diagnostic Codes Table

Some codes are saved in the code history and some are not. If a code is not saved it will briefly appear on the display as it occurs, then disappear.

LiftMaster System | Installed System | Informational | External Entrapment Protection | Inherent Entrapment Protection

| Code | Meaning | Solution | Saved |
|---|---|---|---|
| 31 | Main control board has experienced an internal failure. | Disconnect all power, wait 15 seconds, then reconnect power (reboot). If issue continues, replace main control board. | NO |
| 34 | Absolute Position Encoder Error, not getting position information from encoder | Check APE assembly and wiring connections. Replace the APE assembly if necessary. | YES |
| 35 | Max-Run-Time Exceeded Error | Check for an obstruction, then reprogram the limits. | YES |
| 36 | Product ID Error | Was the control board just replaced? If so, erase limits, enter limit setup mode and set limits. If not, disconnect all power, wait 15 seconds, then reconnect power before changing product ID harness. | YES |
| 37 | Product ID Failure | Unplug product ID harness then plug back in. Disconnect all power, wait 15 seconds, then reconnect power before replacing product ID harness. | YES |
| 38 | Hard Stop Limit (Arm 1) | Limit may be set too tightly against a non-resilient hard stop (re-adjust limit). Operator may be at end of travel (re-adjust mounting). | NO |
| 40 | Battery overvoltage | Too much voltage on the battery. Check harness. Make sure there is NOT a 24V battery on a 12V system. | YES |
| 41 | Battery overcurrent | Possible short of the battery charge harness. Check harness. Make sure you do NOT have a 12V battery on a 24V system. | YES |
| 42 | No battery at boot up | Check battery connections and installation. Replace batteries if depleted to less than 20V on a 24V system or less than 10V on a 12V system. Make sure there is NOT a single 12V battery on a 24V system. | YES |
| 43 | Exit Loop Error | Failure or missing loop (SHORT or OPEN - LiftMaster Plug-in Loop Detector only) Check loop wiring throughout connection. May be a short in the loop, or an open connection in the loop. | YES |
| 44 | Shadow Loop Error | | |
| 45 | Interrupt Loop Error | | |
| 46 | Wireless edge battery low | Replace batteries in wireless edge. | YES |
| 50 | Run-Distance Error | The limits are less than the minimum requirement or longer than what was learned. Check limit positions and proper switch function. Run-distance can be re-learned by setting the handing again. | YES |
| 53 | Brownout occurred | AC/DC board supply dipped below allowable level. Review power supply and wiring. If rebooting, ensure enough time for discharge of power to force a fresh boot. | YES |
| 54 | Wireless Second Operator Communication Error | Check the second operator for power. If OFF, restore power and try to run the system. If powered, deactivate the wireless feature and then re-learn the second operator. | YES |
| 60 | Minimum number of monitored entrapment protection devices not installed. | Review monitored entrapment protection device connections. Slide gate operators require a minimum of two external safety devices; one in the close and one in the open direction. | NO |
| 61 | CLOSE EYE/INTERRUPT held more than 3 minutes | Check wired input on main control board; check for alignment or obstruction. | YES |
| 62 | CLOSE EDGE held more than 3 minutes | | |
| 63 | OPEN EYE/EDGE held more than 3 minutes | | |
| 64 | CLOSE EYE/INTERRUPT held more than 3 minutes | Check wired input on expansion board; check for alignment or obstruction. | YES |
| 65 | CLOSE EYE/EDGE held more than 3 minutes | | |
| 66 | OPEN EYE/EDGE held more than 3 minutes | | |
| 67 | Wireless edge triggered more than 3 minutes | Check wired input for wiring issue or obstruction. | YES |
| 68 | Wireless edge loss of monitoring | Check wireless edge inputs. | YES |

# TROUBLESHOOTING

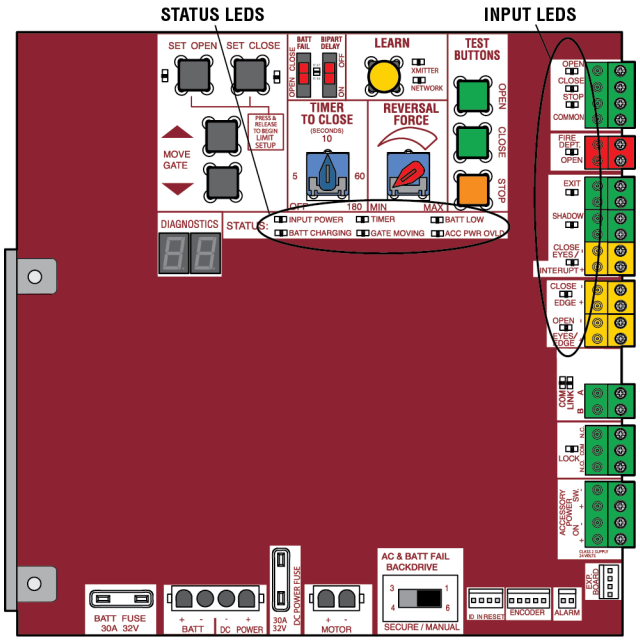
| Code | Meaning | Solution | Saved |
|---|---|---|---|
| 69 | Wireless edge triggered | IF an obstruction occurred, no action required. If an obstruction did NOT occur, check inputs and wiring. | NO |
| 70 | CLOSE EYE/INTERRUPT triggered, causing reversal, preventing close, or resetting TTC | IF an obstruction occurred, no action required. If an obstruction did NOT occur, check alignment, inputs, and wiring on main control board | NO |
| 71 | CLOSE EDGE triggered, causing reversal, NO preventing close, or canceling TTC | | |
| 72 | OPEN EYE/EDGE triggered, causing reversal or preventing opening | | |
| 73 | CLOSE EYE/INTERRUPT triggered, causing reversal, preventing close, or resetting TTC | IF an obstruction occurred, no action required. If an obstruction did NOT occur, check alignment, inputs, and wiring on expansion board. | NO |
| 74 | CLOSE EYE/EDGE triggered, causing reversal and preventing close or canceling TTC | | |
| 75 | OPEN EYE/EDGE triggered, causing reversal or preventing opening | | |
| 80 | Close input (EYE/EDGE) communication fault from other operator | Check inputs and communication method between operators, either wired bus or radio. Ensure operator is powered. May have to erase the wireless communication and reprogram the two operators. | YES |
| 81 | Open input (EYE/EDGE) communication fault from other operator | | |
| 82 | Close input (EYE/EDGE) communication fault (expansion board) | Check the connections between the main board and the expansion board. | YES |
| 83 | Open input (EYE/EDGE) communication fault (expansion board) | | |
| 84 | Non-monitored device detected on the wireless safety system | Non-monitored contact closure devices are not supported. Make sure connected devices are monitored. Check edges for proper orientation and resistive end cap connection. | YES |
| 91 | Force Reversal (Operator 1) | Check for obstruction. If no obstruction, check that the mechanical assembly is engaged and free to move. See section on Limit and Force Adjustment, and Obstruction Test. | YES |
| 93 | RPM / STALL Reversal (Operator 1) | Check for obstruction. If no obstruction, check the operator wiring and that the mechanical assembly is engaged and free to move. Replace APE assembly. | YES |
| 99 | Normal Operation | No action required | YES |

# TROUBLESHOOTING

## Control Board LEDs

| STATUS LEDS | | |
|---|---|---|
| **INPUT POWER** | OFF | OFF state |
| | ON | AC charger or Solar power available |
| **BATT CHARGING** | OFF | Not charging |
| | ON | Three stage battery charging |
| **TIMER** | OFF | The timer is disabled |
| | ON | The timer is enabled |
| | MEDIUM BLINK (1 blink per second) | The timer is running |
| | FAST BLINK (2 blinks per second) | The timer is paused |
| | FASTEST BLINK (8 blinks per second) | The timer is canceled |
| **GATE MOVING** | OFF | The gate is stopped |
| | ON | The gate is opening or closing |
| | MEDIUM BLINK (1 blink per second) | Operator is in E1 (single entrapment) |
| | FASTEST BLINK (8 blinks per second) | The operator is in E2 (double entrapment) |
| **BATT LOW** | OFF | No battery error |
| | ON | Battery low |
| | MEDIUM BLINK (1 blink per second) | Battery critically low |
| **ACC PWR OVLD** | OFF | Accessory power is okay |
| | ON | Accessory overload protector opened |

| INPUT LEDS | | |
|---|---|---|
| **OPEN, CLOSE, STOP INPUT** | OFF | Input inactive |
| | ON | Input active |
| | BLINK | Input active on other operator |
| **FIRE DEPT INPUT** | OFF | Input inactive |
| | ON | Input active |
| | BLINK | Input active on other operator |
| **EXIT** | OFF | Input inactive |
| | ON | Input active |
| | BLINK | Input active on other operator |
| **SHADOW** | OFF | Input inactive |
| | ON | Input active |
| | BLINK | Input active on other operator |
| **CLOSE EYES/INTERRUPT** | OFF | Input inactive |
| | ON | Input active |
| | BLINK | Input active on other operator |
| **CLOSE EDGE** | OFF | Input inactive |
| | ON | Input active |
| | BLINK | Input active on other operator |
| **OPEN EYES/EDGE** | OFF | Input inactive |
| | ON | Input active |
| | BLINK | Input active on other operator |
| **LOCK** | OFF | Maglock relay inactive |
| | ON | Maglock relay active |



# TROUBLESHOOTING

## Troubleshooting Chart

| SYMPTOM | POSSIBLE CAUSES | SOLUTIONS |
|---|---|---|
| **Operator does not run and diagnostic display not on.** | a. No power to control board<br>b. Open fuse<br>c. If on battery power only, low or dead batteries<br>d. Defective control board | a. Check AC and battery power<br>b. Check fuses<br>c. Charge batteries by AC or solar power or replace batteries<br>d. Replace defective control board |
| **Control board powers up, but motor does not run.** | a. Reset switch is stuck<br>b. Stop button active or jumper not in place for stop circuit<br>c. If on battery power only, low or dead batteries<br>d. Open or Close input active<br>e. Entrapment Protection Device active<br>f. Vehicle loop detector or probe active<br>g. Defective control board | a. Check reset switch<br>b. Check Stop button is not “stuck on”, or verify that the stop button is a normally closed circuit, or put a jumper on the stop circuit.<br>c. Charges batteries by AC or solar power or replace batteries<br>d. Check all Open and Close inputs for a “stuck on” input<br>e. Check all Entrapment Protection Device inputs for a “stuck on” sensor<br>f. Check all vehicle detector inputs for a “stuck on” detector<br>g. Replace defective control board |
| **Gate moves, but cannot set correct limits.** | a. Gate does not move to a limit position<br>b. Gate is too difficult to move<br>c. Limits are set too close (slide gate applications only) | a. Use manual disconnect, manually move gate, and ensure gate moves easily limit to limit. Repair gate as needed.<br>b. Gate must move easily and freely through its entire range, limit to limit. Repair gate as needed.<br>c. Ensure the gate moves at least four feet between the OPEN limit and the CLOSE limit. |
| **Gate does not fully open or fully close when setting limits.** | a. Gate does not move to a limit position<br>b. Gate is too difficult to move | a. Use manual disconnect, manually move gate, and ensure gate moves easily limit to limit. Repair gate as needed.<br>b. Gate must move easily and freely through its entire range, limit to limit. Repair gate as needed. |
| **Operator does not respond to a wired control/command (example: Open, Close, SBC, etc.)** | a. Check Open and Close command input LEDs<br>b. Stop button is active<br>c. Reset button is stuck<br>d. If on battery power only, low or dead batteries<br>e. Entrapment Protection Device active<br>f. Vehicle loop detector or vehicle probe active | a. Check all Open and Close inputs for a “stuck on” input<br>b. Check Stop button is not “stuck on”<br>c. Check Reset button<br>d. Charges batteries by AC or solar power or replace batteries<br>e. Check all Entrapment Protection Device inputs for a “stuck on” sensor<br>f. Check all vehicle detector inputs for a “stuck on” detector |
| **Operator does not respond to a wireless control or transmitter** | a. Check XMITTER LED when wireless control is active<br>b. Stop button is active<br>c. Reset button is stuck<br>d. Poor radio reception | a. Activate wireless control and check XMITTER LED is on. Re-learn wireless control/transmitter to control board. Replace wireless control as needed.<br>b. Check Stop button is not “stuck on”<br>c. Check Reset button<br>d. Check if similar wired control operates correctly. Check if wireless controls works properly when within a few feet of operator. Check operator’s antenna and antenna wire. Check other wireless controls or devices. |
| **Gate stops during travel and reverses immediately.** | a. Control (Open, Close) becoming active<br>b. Vehicle loop detector active<br>c. Low battery voltage | a. Check all Open and Close inputs for an active input<br>b. Check all vehicle detector inputs for an active detector<br>c. Battery voltage must be 23.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries |

# TROUBLESHOOTING

| SYMPTOM | POSSIBLE CAUSES | SOLUTIONS |
|---|---|---|
| **Gate opens, but will not close with transmitter or Timer-to-Close.** | a. Open control active<br>b. Vehicle loop detector active<br>c. Loss of AC power with AC FAIL set to OPEN<br>d. Low battery with LOW BATT set to OPEN<br>e. Fire Dept input active<br>f. Timer-to-Close not set<br>g. Close Entrapment Protection Device active | a. Check all Open inputs for an active input<br>b. Check all vehicle detector inputs for an active detector<br>c. Check AC power and AC Fail option setting<br>d. Check if AC power is available. If no AC power, then running on batteries and battery voltage must be 23.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries.<br>e. Check Fire Dept input<br>f. Check Timer-to-Close (TTC) setting<br>g. Check all Entrapment Protection Device inputs for an active sensor |
| **Gate closes, but will not open.** | a. Vehicle loop detector active<br>b. Low battery with LOW BATT option set to CLOSE | a. Check all vehicle detector inputs for an active detector<br>b. Check if AC power is available. If no AC power, then running on batteries and battery voltage must be 23.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries. |
| **Exit loop activation does not cause gate to open.** | a. Exit vehicle detector setup incorrectly<br>b. Defective Exit loop detector<br>c. Low battery with LOW BATT option set to CLOSE | a. Review Exit loop detector settings. Adjust settings as needed.<br>b. Replace defective Exit loop detector.<br>c. Check if AC power is available. If no AC power, then running on batteries and battery voltage must be 23.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries. |
| **Interrupt loop does not cause gate to stop and reverse.** | a. Vehicle detector setup incorrectly<br>b. Defective vehicle loop detector<br>c. Anti-tail set to ON | a. Review Interrupt loop detector settings. Adjust settings as needed.<br>b. Replace defective Interrupt loop detector.<br>c. Set anti-tail to OFF. |
| **Shadow loop does not keep gate at open limit.** | a. Vehicle detector setup incorrectly<br>b. Defective vehicle loop detector | a. Review Shadow loop detector settings. Adjust settings as needed.<br>b. Replace defective Shadow loop detector. |
| **Obstruction in gate's path does not cause gate to stop and reverse.** | a. Force adjustment needed | a. Refer to the Adjustment section to conduct the obstruction test and perform the proper force adjustment that is needed. |
| **Photoelectric sensor does not stop or reverse gate.** | a. Incorrect photoelectric sensor wiring<br>b. Defective photoelectric sensor | a. Check photoelectric sensor wiring. Retest that obstructing photoelectric sensor causes moving gate to stop, and may reverse direction.<br>b. Replace defective photoelectric sensor. Retest that obstructing photoelectric sensor causes moving gate to stop, and may reverse direction. |
| **Edge Sensor does not stop or reverse gate.** | a. Incorrect edge sensor wiring<br>b. Defective edge sensor | a. Check edge sensor wiring. Retest that activating edge sensor causes moving gate to stop and reverse direction.<br>b. Replace defective edge sensor. Retest that activating edge sensor causes moving gate to stop and reverse direction. |
| **Alarm sounds for 5 minutes or alarm sounds with a command.** | a. Double entrapment occurred (two obstructions within a single activation) | a. Check for cause of entrapment (obstruction) detection and correct. Press the reset button to shut off alarm and reset the operator. |
| **Alarm beeps three times with a command.** | a. Low battery | a. Check if AC power is available. If no AC power, then running on batteries and battery voltage must be 23.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries |
| **On dual-gate system, incorrect gate opens first or closes first.** | a. Incorrect Bipart switch setting | a. Change setting of both operator's Bipart switch settings. One operator should have Bipart switch ON (operator that opens second) and the other operator should have Bipart switch OFF (operator that opens first). |
| **Alarm beeps when running.** | a. Expansion board setting<br>b. Constant pressure to open or close is given | a. Pre-warning is set to "ON"<br>b. Constant pressure to open or closed is given |

# TROUBLESHOOTING

| SYMPTOM | POSSIBLE CAUSES | SOLUTIONS |
|---|---|---|
| **Expansion board function not controlling gate.** | a. Defective main board to expansionboard wiring<br>b. Incorrect input wiring to expansion board<br>c. Defective expansion board or defective main board | a. Check main board to expansion board wiring. If required, replace wire cable.<br>b. Check wiring to all inputs on expansion board.<br>c. Replace defective expansion board or defective main board |
| **Maglock not working correctly.** | a. Maglock wired incorrectly | a. Check that Maglock is wired to N.C. and COM terminals. Check that Maglock has power (do not power maglock from control board accessory power terminals). If shorting lock's NO and COM wires does not activate Maglock, then replace Maglock or Maglock wiring (refer to Wiring Diagrams). |
| **Solenoid lock not working correctly.** | a. Solenoid wired incorrectly | a. Check that Solenoid is wired to N.O. and COM terminals. Check that Solenoid has power (do not power solenoid from control board accessory power terminals). If shorting lock's NC and COM wires does not activate Solenoid, then replace Solenoid lock or Solenoid wiring (refer to Wiring Diagrams). |
| **Switched (SW) Accessory power remaining on.** | a. In limit setup mode | a. Learn the limits |
| **Accessories connected to Switch (SW) Accessory power not working correctly, turning off, or resetting.** | a. Normal behavior | a. Move accessory to accessory power "ON" |
| **Accessories connected to Accessory power not working correctly, turning off, or resetting.** | a. Accessory power protector active<br>b. Defective control board | a. Disconnect all accessory powered devices and measure accessory power voltage (should be 23 – 30 Vdc). If voltage is correct, connect accessories one at a time, measuring accessory voltage after every new connection.<br>b. Replace defective control board |
| **Quick Close not working correctly.** | a. Quick Close setting incorrect<br>b. Interrupt loop detector<br>c. Defective Expansion board | a. Check that Quick Close setting is ON<br>b. Check operation of Interrupt Loop detector<br>c. Replace defective Expansion board |
| **Anti-Tailgating not working correctly.** | a. Anti-Tail setting incorrect<br>b. Interrupt loop detector<br>c. Defective Expansion board | a. Check that Anti-Tail setting is ON<br>b. Check operation of Interrupt Loop detector<br>c. Replace defective Expansion board |
| **AUX Relay not working correctly.** | a. AUX Relay setting incorrect<br>b. AUX Relay wiring incorrect<br>c. Defective Expansion board | a. Check AUX Relay switches settings<br>b. Check that wiring is connected to either N.O. and COM or to N.C. and COM.<br>c. Set AUX Relay to another setting and test. Replace defective expansion board. |
| **Solar operator not getting enough cycles per day.** | a. Insufficient panel wattage<br>b. Excessive accessory power draw<br>c. Old batteries<br>d. Solar panels are not getting enough sunlight | a. Add more solar panels<br>b. Reduce the accessory power draw by using LiftMaster low power accessories<br>c. Replace batteries<br>d. Relocate the solar panels away from obstructions (trees, buildings, etc.) |
| **Solar operator, insufficient standby time.** | a. Insufficient panel wattage<br>b. Excessive accessory power draw<br>c. Battery capacity too low | a. Add more solar panels<br>b. Reduce the accessory power draw by using LiftMaster low power accessories<br>c. Use batteries with higher amp hour (AH) rating |

## Step 6 Solar Panel(s)

**SOLAR PANELS ARE NOT PROVIDED. SEE ACCESSORIES**

### Solar Application Requirements

- A minimum of two 10W solar panels in series (Model SP10W12V).
- A maximum of six 10W solar panels (Model SP10W12V).
- Solar Harness Kit (Model K94-37236).
- A heater cannot be used with a solar application.

### Solar Zones

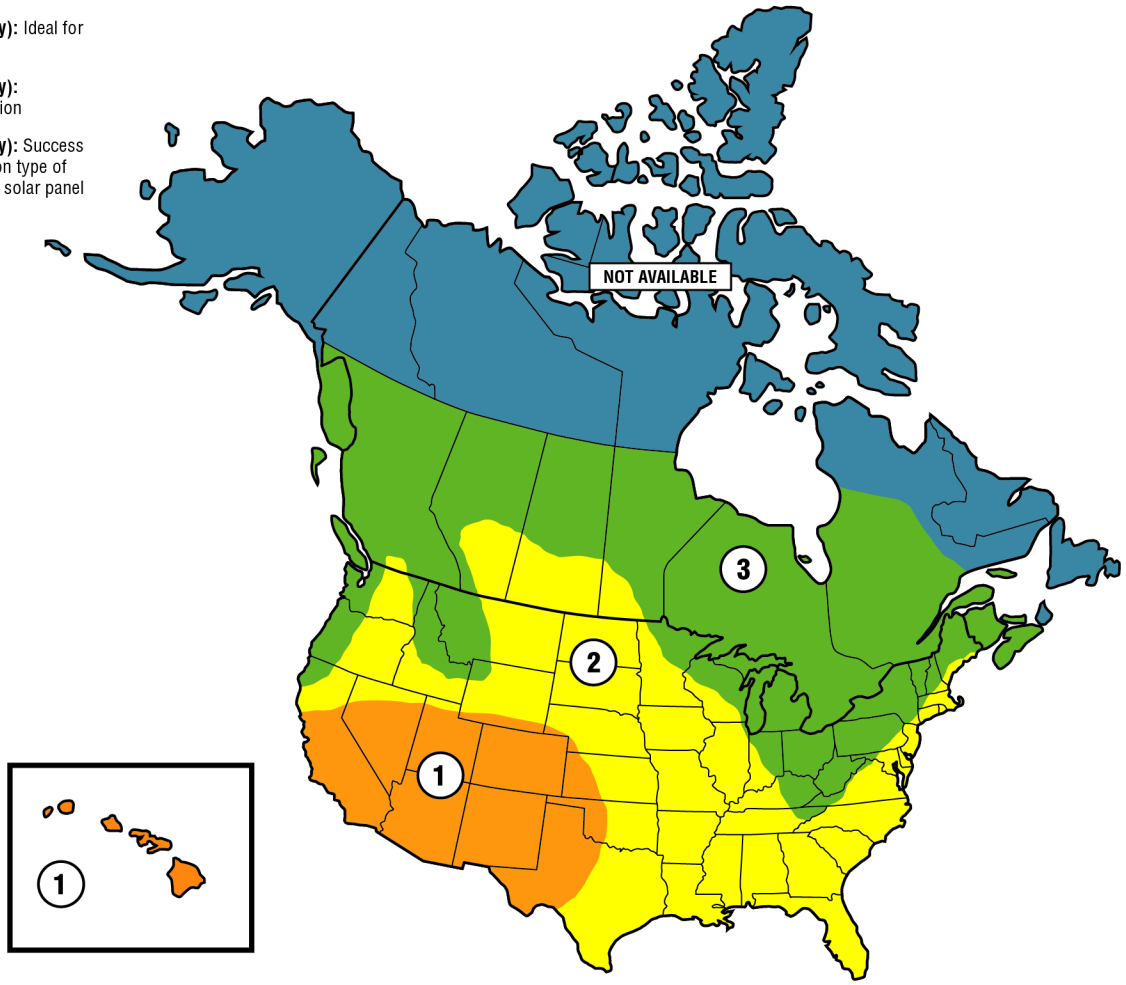
Solar panel recommendations are based upon the average solar radiation and the temperature effects on batteries in the given zones as shown on the map below. Local geography and weather conditions may require additional solar panels. Solar powered gate operator installations are not supported in northern climates due to cold weather and a reduced number of hours of sunlight during the winter months. The cycles/day ratings are approximations. Ratings vary based on gate construction, installation, and temperature. Solar panels cannot be installed in areas that experience long periods of heavy fog, lake effect snow, or rain.

1 **ZONE 1 (6 Hours of Sunlight/Day):** Ideal for solar application

2 **ZONE 2 (4 Hours of Sunlight/Day):** Recommended for solar application

3 **ZONE 3 (2 Hours of Sunlight/Day):** Success of solar application will depend on type of gate operator and location of the solar panel

**NOT AVAILABLE**



# APPENDIX

## Solar usage guide

| Typical System Standby Battery Current Consumption (mA) | |
|---|---|
| System voltage | 24V |
| Main board with no radios programmed | 2.7 mA |
| One or more LiftMaster® remote controls programmed | +1 mA |
| MyQ® device or wireless dual gate programmed | +2.4 mA |
| Expansion board | +11.1 mA |
| Per loop detector LOOPDETLM (up to 3 loop detectors can be plugged in to the expansion board) | +3.8 mA |
| Add up current draw by feature and accessory to determine total current draw | |

***NOTE:*** *The use of photoelectric sensor heaters (models LMRRUL and LMTBUL) is NOT recommended in solar applications.*

| SOLAR GATE CYCLES PER DAY | | | | | | | |
|---|---|---|---|---|---|---|---|
| | BATTERY CURRENT DRAW (mA) | ZONE 1 | | ZONE 2 | | ZONE 3 | |
| | | 7AH batteries | 33AH batteries | 7AH batteries | 33AH batteries | 7AH batteries | 33AH batteries |
| **10W SOLAR PANEL** | 5 | 26 | 28 | 15 | 17 | | |
| | 15 | 22 | 24 | 12 | 13 | | |
| | 20 | 20 | 22 | | 11 | | |
| | 40 | 12 | 14 | | | | |
| | 60 | | | | | | |
| **20W SOLAR PANEL** (Two 10W 12V panels in series) | 5 | 57 | 67 | 34 | 40 | 14 | 16 |
| | 15 | 52 | 62 | 30 | 36 | 10 | 12 |
| | 20 | 50 | 60 | 28 | 33 | | 11 |
| | 50 | 36 | 45 | 15 | 20 | | |
| | 100 | 15 | 23 | | | | |
| **40W SOLAR PANEL** (Two 20W 12V panels in series) | 5 | 108 | 152 | 65 | 92 | 27 | 38 |
| | 15 | 103 | 147 | 60 | 87 | 23 | 34 |
| | 20 | 100 | 144 | 58 | 84 | 21 | 32 |
| | 100 | 58 | 99 | 21 | 44 | | |
| | 200 | 14 | 47 | | | | |
| **60W SOLAR PANEL** | 5 | 134 | 240 | 81 | 146 | 34 | 61 |
| | 15 | 128 | 234 | 76 | 140 | 29 | 56 |
| | 20 | 125 | 231 | 73 | 137 | 27 | 54 |
| | 100 | 82 | 181 | 34 | 92 | | 18 |
| | 250 | 12 | 95 | | 20 | | |

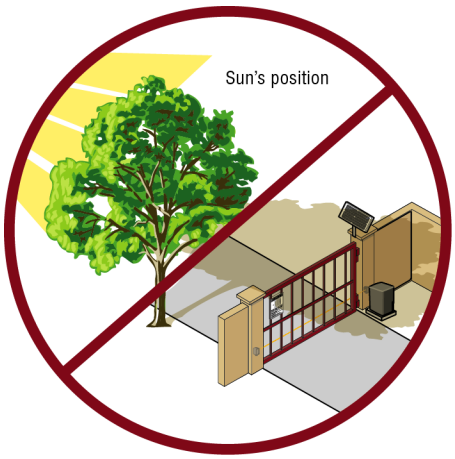
# APPENDIX

## Position

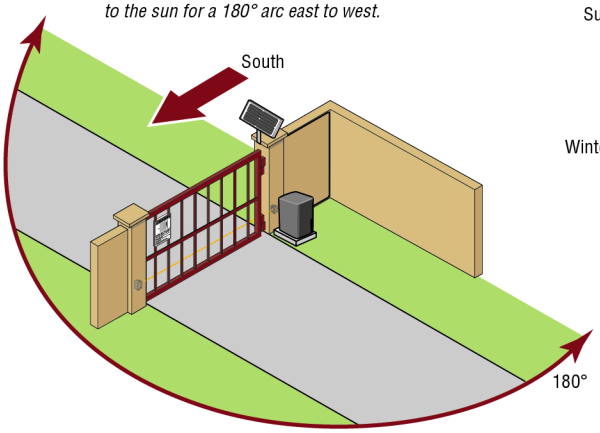
The location of the panel(s) is critical to the success of the installation. In general, the panel(s) should be mounted using the provided angle bracket facing **due south**. The solar panel(s) should be mounted in an area clear of all obstructions and shade from buildings and trees. If the panel(s) is not casting a shadow, the battery is not being charged.

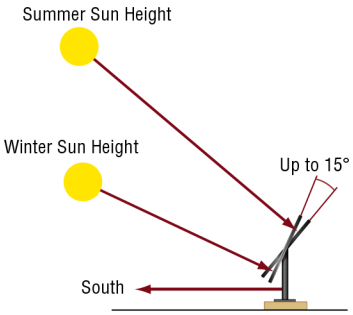
***NOTE:*** *Tall trees or buildings that do not shade the solar panel(s) in the summer could shade the solar panel(s) during the winter months when the sun sits lower in the sky.*

| MAXIMUM WIRE LENGTH | | | |
|---|---|---|---|
| AMERICAN WIRE GAUGE (AWG) | 20 WATTS OF PANELS | 40 WATTS OF PANELS | 60 WATTS OF PANELS |
| 16 | 235 (71.6 m) | 115 (35.1 m) | 80 (24.4 m) |
| 14 | 375 (114.3 m) | 190 (57.9 m) | 125 (38.1 m) |
| 12 | 600 (182.9 m) | 300 (91.4 m) | 200 (61 m) |
| 10 | 940 (286.5 m) | 475 (144.8 m) | 315 (96 m) |
| *Chart assumes: copper wire, 65°C, 5% drop, 30V nominal* | | | |




***TIP:*** *The area around the solar panel(s) should be clear of shadows or obstructions to the sun for a 180° arc east to west.*



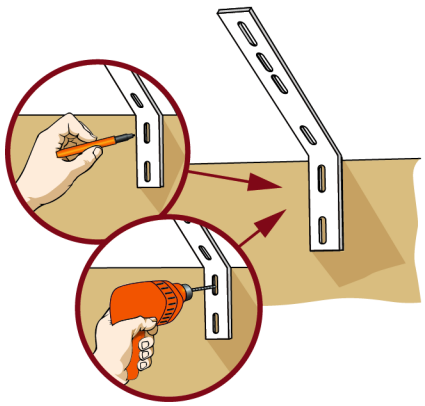

***TIP:*** *To optimize the system for winter operation the angle can be increased an additional 15° (solar panel(s) sits more vertical).*

## Installation

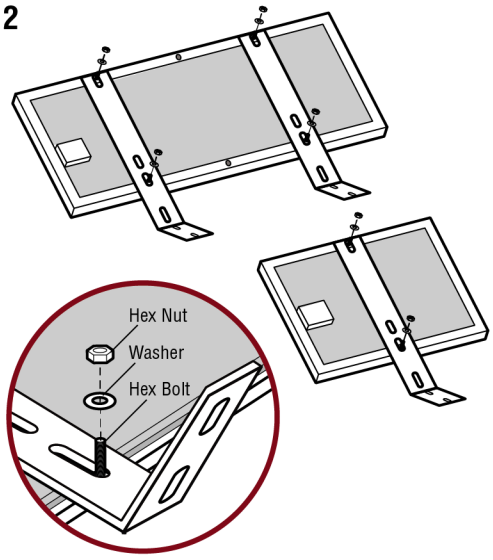
Solar panel(s) MUST be installed facing south. Use a compass to determine direction. Below are general instructions for installing the solar panel(s). Your installation may vary slightly depending on the solar panel purchased.

1. Position the mounting bracket on the mounting surface. Mark and drill holes.
2. Secure the solar panel to the mounting bracket using the hex bolts, hex nuts and washers provided.
3. Secure the solar panel to the mounting surface using lag screws provided.

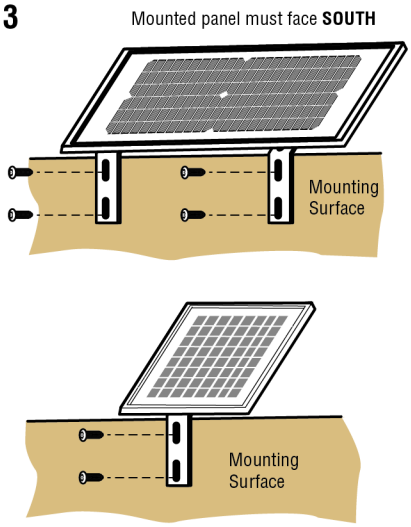
**1**



**2**



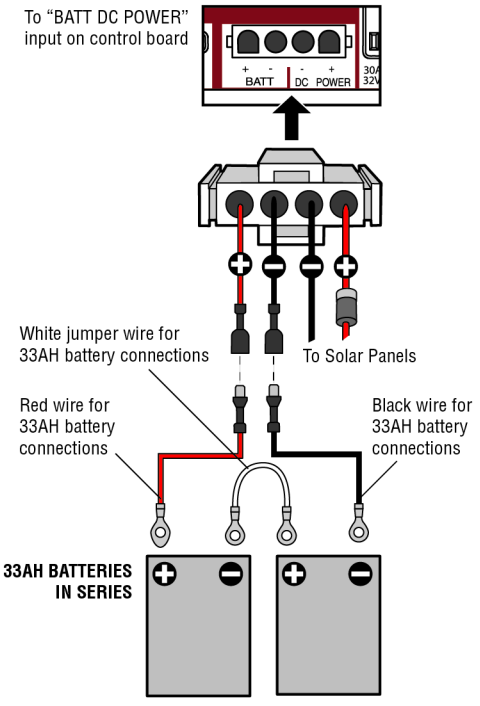

**3**

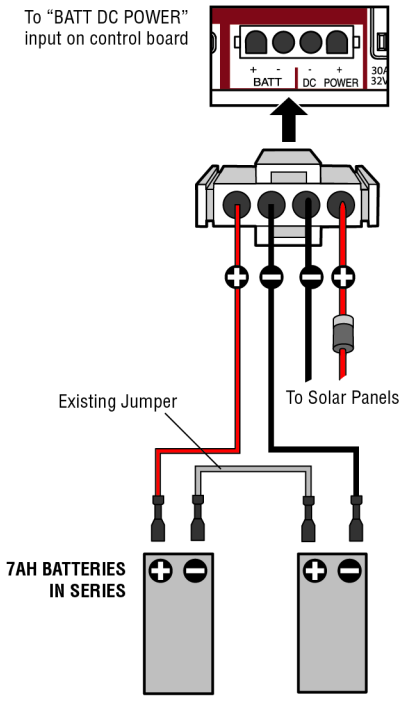


# APPENDIX

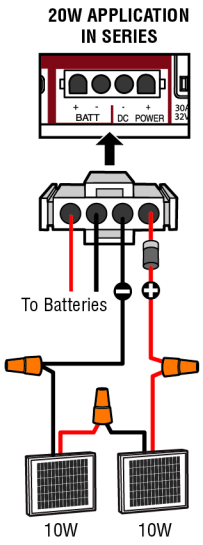
## Wire the Batteries

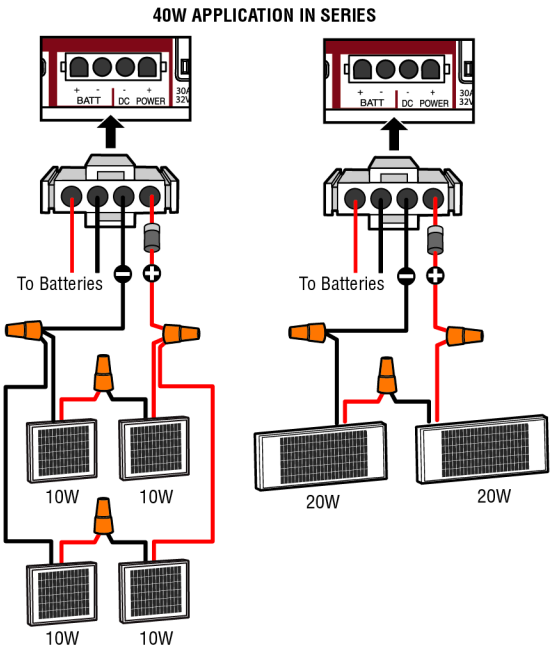
Solar panel applications require the Solar Harness Kit model K94-37236, see *Accessories*.

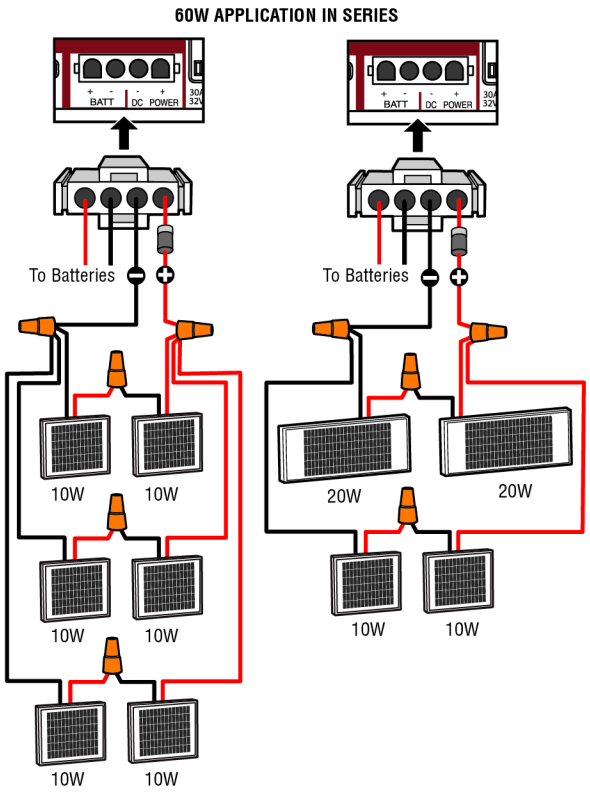



## Wire the solar panels



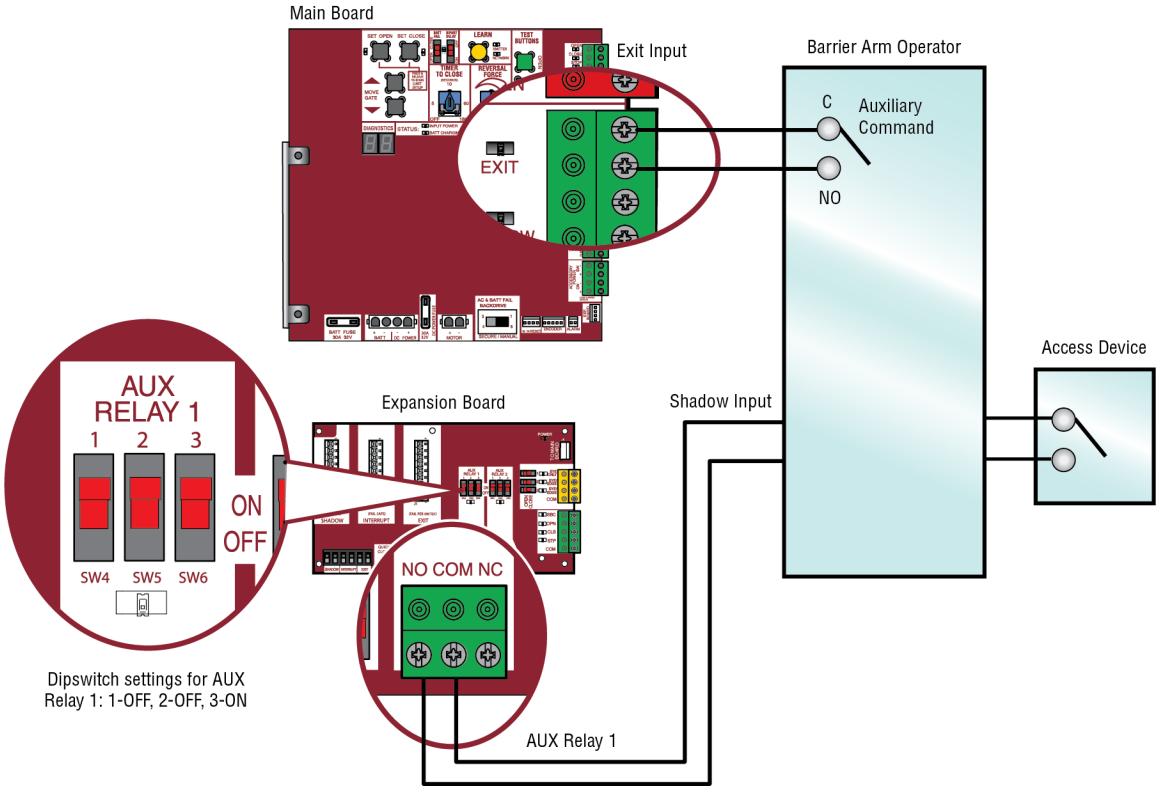




**Proceed to the Dual Gate section (if applicable) or proceed to the Adjustment section.**

# APPENDIX

## SAMS wiring with relays not energized




## Dual Gate Settings

***NOTE:*** *We recommend that all accessories and board configurations are set on the primary operator.*

### Main control board

| FEATURE | PRIMARY OPERATOR | SECONDARY OPERATOR |
|---|---|---|
| Timer-to-Close | Set the TTC dial to desired setting | OFF |
| Bi-Part Delay Switch | Bi-Part Delay: ON (will open last and close first)<br>Tandem Mode: OFF<br>Synchronized Close: ON | Bi-Part Delay: OFF (will open first and close last)<br>Tandem Mode: OFF<br>Synchronized Close: ON |

### Expansion board

| FEATURE | PRIMARY OPERATOR | SECONDARY OPERATOR |
|---|---|---|
| QUICK CLOSE Switch | ON | OFF |
| ANTI-TAIL Switch | ON | OFF |
| LOW BATT Switch | Battery Fail OPEN: OPEN<br>Battery Fail CLOSE: CLOSE | Battery Fail OPEN: OPEN<br>Battery Fail CLOSE: CLOSE |
| AC FAIL OPEN/BATT Switch | OPEN | OPEN |

### Accessories

| ACCESSORY | PRIMARY OPERATOR | SECONDARY OPERATOR |
|---|---|---|
| Remote Controls | Program remote controls 1 to 50 to the primary operator. | Program remote controls 51 to 100 to the secondary operator |
| LiftMaster Internet Gateway | Program to primary operator. | |
| Garage and Gate Monitor | Program to primary operator. | |

# Limit Setup with a Remote Control

To set the limits using a remote control, first you will need a 3-button remote control that has been programmed for OPEN, CLOSE, and STOP. Refer to the Programming section.

## Initial Limits and Force Adjustment

**For dual gate applications the limits will have to be set for each operator. The gate MUST be attached to the operator before setting the limits and force.**

Ensure the gate is closed.

1. Press and release the SET OPEN and SET CLOSE buttons simultaneously to enter limit setting mode.
2. Press and hold the OPEN or CLOSE button on the remote control until the gate reaches the desired open position. The gate can be jogged back and forth using the OPEN and CLOSE buttons on the remote control.
3. Once the gate is in the desired open position, press and release the STOP button on the remote control.
4. Press and release the OPEN button on the remote control again to set the open limit.
5. Press and hold the CLOSE or OPEN button on the remote control until the gate reaches the desired close position. The gate can be jogged back and forth using the OPEN and CLOSE buttons on the remote control.
6. Once the gate is in the desired close position, press and release the STOP button on the remote control.
7. Press and release the CLOSE button on the remote control again to set the close limit.
8. Cycle the gate open and close. This automatically sets the force.

When limits are set properly the operator will automatically exit limit setting mode.

Refer to the *Adjustment* section and follow the instructions for *Fine Tune the Force* and *Obstruction Test* . Perform the "Obstruction Test" after every limit and force setting adjustment.

## Adjust the limits

If the limits have already been set the operator will exit the limit setting mode after resetting each limit.

**Set the Close Limit Only**

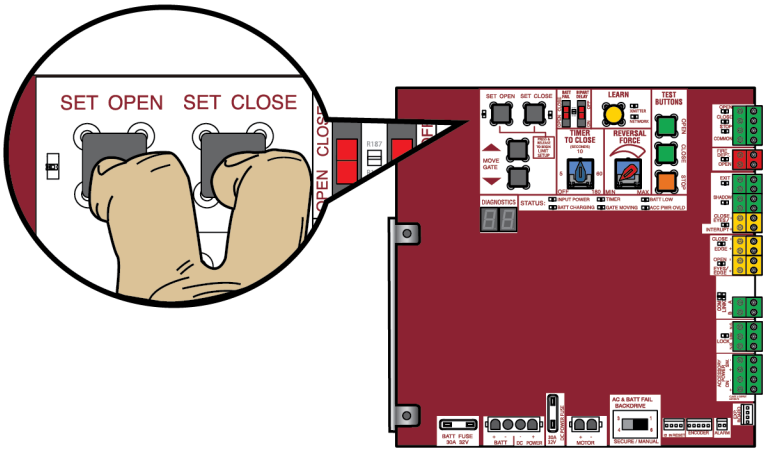
1. Press and release the SET OPEN and SET CLOSE buttons simultaneously to enter limit setting mode.
2. Press and hold the CLOSE button on the remote control until the gate reaches the desired close position. The gate can be jogged back and forth using the OPEN and CLOSE buttons on the remote control.
3. Once the gate is in the desired close position, press and release the STOP button on the remote control.
4. Press and release the CLOSE button on the remote control again to set the close limit.

When the close limit is set properly the operator will automatically exit limit setting mode.

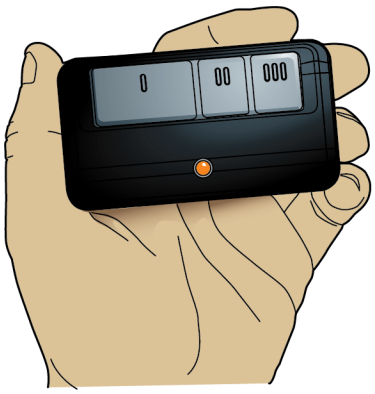
**Set the Open Limit Only**

1. Press and release the SET OPEN and SET CLOSE buttons simultaneously to enter limit setting mode.
2. Press and hold the OPEN button on the remote control until the gate reaches the desired open position. The gate can be jogged back and forth using the OPEN and CLOSE buttons on the remote control.
3. Once the gate is in the desired open position, press and release the STOP button on the remote control.
4. Press and release the OPEN button on the remote control again to set the open limit.

When the open limit is set properly the operator will automatically exit limit setting mode.




3-Button Remote Control programmed for OPEN, CLOSE, and STOP



# WIRING DIAGRAM

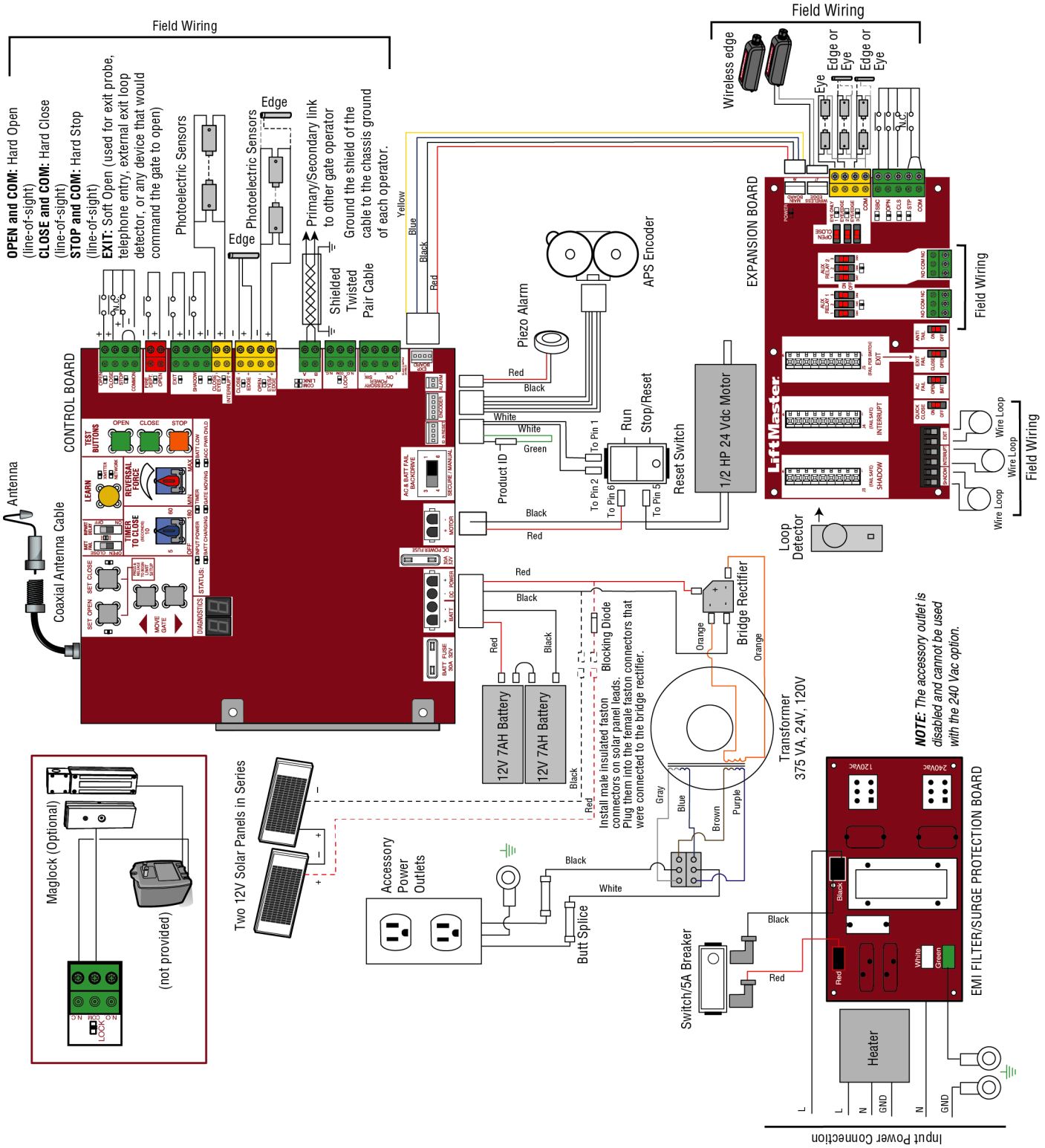
## ⚠ WARNING

To protect against fire and electrocution:

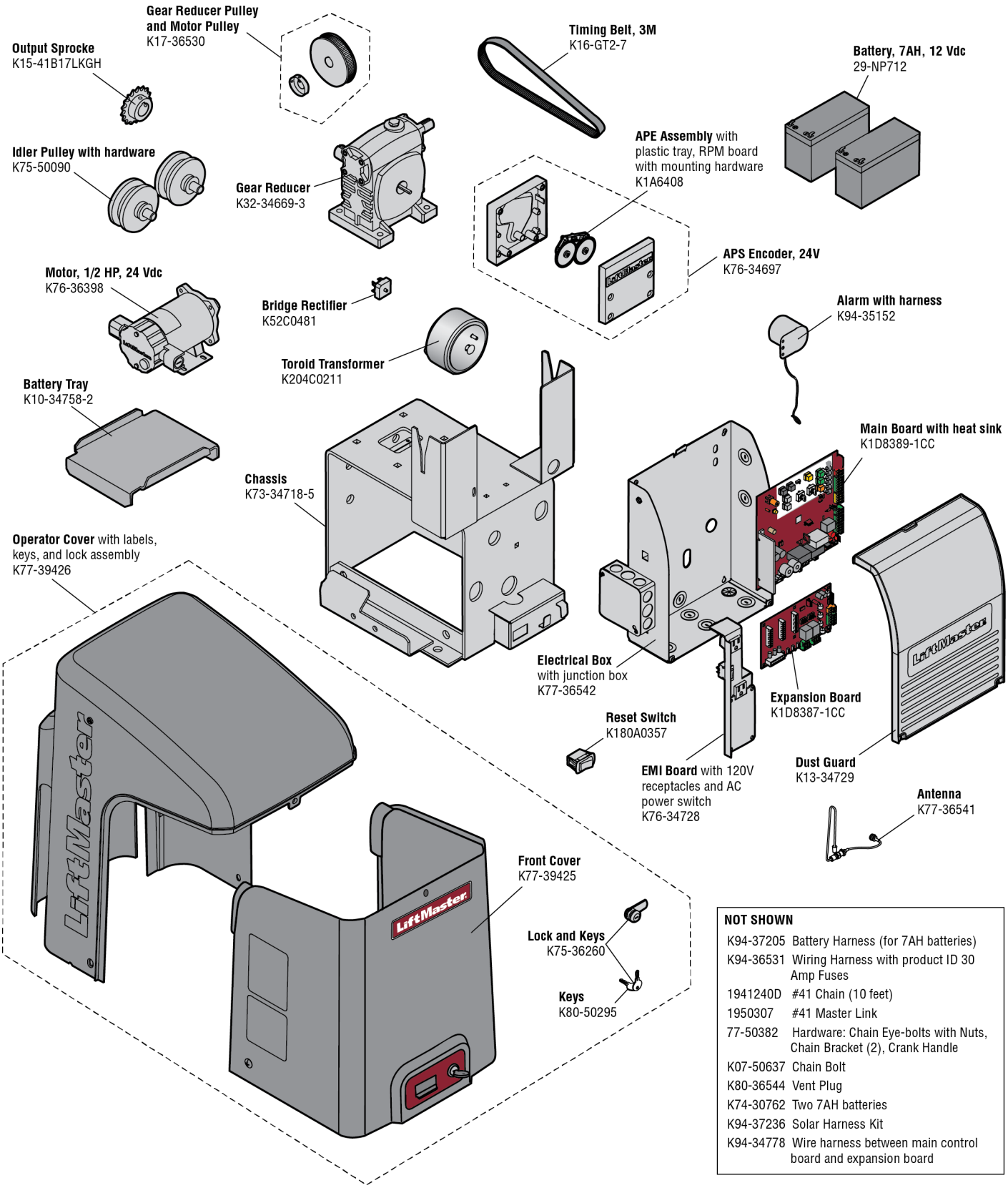
- DISCONNECT power (AC or solar and battery) BEFORE installing or servicing operator.

For continued protection against fire:

- Replace ONLY with fuse of same type and rating.



# REPAIR PARTS

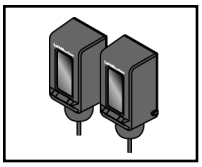



**NOT SHOWN**

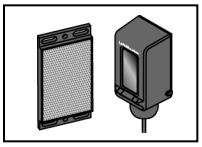
| | |
|---|---|
| K94-37205 | Battery Harness (for 7AH batteries) |
| K94-36531 | Wiring Harness with product ID 30 Amp Fuses |
| 1941240D | #41 Chain (10 feet) |
| 1950307 | #41 Master Link |
| 77-50382 | Hardware: Chain Eye-bolts with Nuts, Chain Bracket (2), Crank Handle |
| K07-50637 | Chain Bolt |
| K80-36544 | Vent Plug |
| K74-30762 | Two 7AH batteries |
| K94-37236 | Solar Harness Kit |
| K94-34778 | Wire harness between main control board and expansion board |

# ACCESSORIES

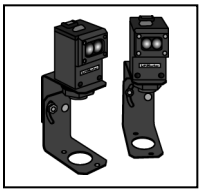
## Entrapment Protection



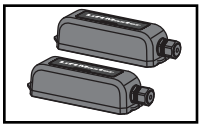
**LiftMaster monitored through beam photoelectric sensor**
Model LMTBUL



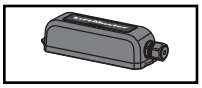
**LiftMaster monitored retro-reflective photoelectric sensor**
Model LMRRUL



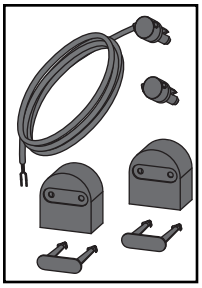
**LiftMaster Monitered Commercial Protector System®**
Models CPS-UN4 and CPSUN4G



**LiftMaster monitored wireless edge kit (transmitter and receiver)**
Model LMWEKITU



**LiftMaster monitored wireless edge transmitter**
Model LMWETXU

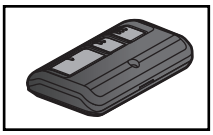


**Large profile monitored edge (82 ft. roll)**
Model L50
**Large profile ends kit (10 pair)**
Model L50E
**Small profile monitored edge (82 ft. roll)**
Model S50
**Small profile ends kit (10 pair)**
Model S50E

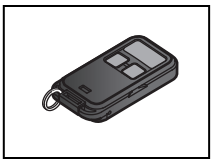
**Plastic channel**
8 ft. (2.4 m) for both small and large profile edges (pack of 10).
Model L50CHP
**Aluminum channel**
10 ft. (3.1 m) for both small and large edge profiles (pack of 8).
Model L50CHAL
**LiftMaster large profile monitored edges (4ft.,5ft., 6ft.)**
Model L504AL, L505AL, L506AL
**Wraparound round monitored edge (4 ft., 5 ft., 6 ft.)**
Models WR4, WR5, WR6
**Wraparound square monitored edge (4 ft.,5 ft., 6 ft.)**
Models WS4, WS5, WS6
**Edge cutting tool**
Model ETOOL

## Remote Controls

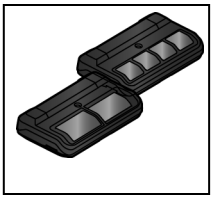
*LiftMaster offers a variety of LiftMaster remote controls to satisfy your application needs. Single-button to 4-button, visor or key chain. The following remote controls are compatible with operators manufactured by LiftMaster after 1993. Contact your authorized LiftMaster dealer for additional details and options.*



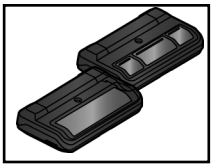
**3-button remote control**
The 3-button remote control can be programmed to control the operator. Includes visor clip.
Model 893MAX



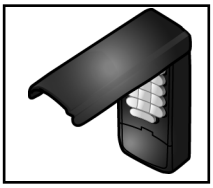
**3-button mini-remote control**
The 3-button remote control can be programmed to control the operator. Includes key ring and fastening strip.
Model 890MAX



**Security+ 2.0® learning remote controls**
One button can control a gate operator and the other (s) can control garage door(s). It can also be programmed to Security+® or Security+ 2.0® code format.
Models 892LT and 894LT



**Universal single and 3-button remote controls**
Ideal for applications requiring a large number of remote controls.
Models 811LM and 813LM



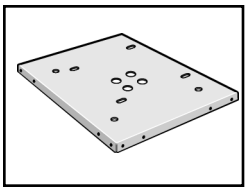
**Keyless entry**
Enables homeowner to operate gate operator from outside by entering a 4-digit code on a specially designed keypad.
Model 877MAX

**Wireless commercial keypad**
Durable wireless keypad with blue LED backlight metal keypad, zinc-alloy metal front cover and 5 year 9V lithium battery. Security+ 2.0® compatible.
Model KPW250

**Commercial access control receiver**
Access control receiver for up to 1,000 devices (any combination of remote controls and wireless keyless entries).
Model STAR1000

# ACCESSORIES

## Miscellaneous



**Post-mounting plate**

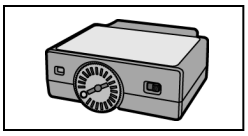
For post-mounting models CSL24UL, CSW24UL CSW200UL and SL3000UL commercial gate operators. Posts not included.

Model MPEL

**Remote antenna extension kit**

The remote antenna extension kit allows the antenna to be remotely installed.

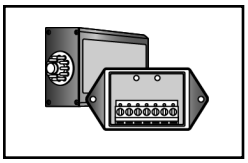
Model 86LM



**Plug-in loop detector**

Low power. Conveniently plugs into existing control board.

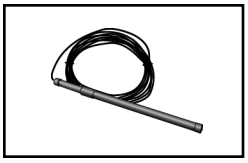
Model LOOPDETLM



**Loop Detector**

Low power loop detectors mounted and wired separately inside control box. LiftMaster low power accessory.

Model LD7LP



**Vehicle sensing probe**

The vehicle sensing probe is buried in the ground and can detect a car as it approaches and will then open the gate.

Model CP3

**Solar panel kit**

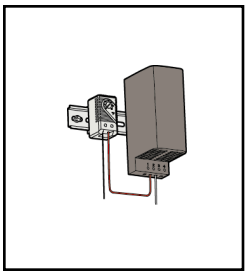
This kit is to replace or add a solar panel to the operator application. 60W maximum for 24 Vdc operators and 30W maximum for 12 Vdc operators. Requires a 33AH battery harness.

Models SP10W12V (10 Watt, 12V) and SP20W12V (20 Watt, 12V)

**Magnetic gate lock**

Outdoor magnetic lock, transformer, junction box, mounting plate and hardware. Not for use with Solar Applications. Must be powered separately.

Model MG1300



**Heater**

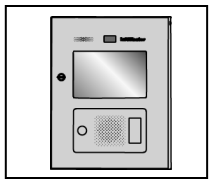
The heater keeps the gearbox and batteries at a suitable temperature when the outside temperature is below -4°F (-20°C). The thermostat MUST be set between 45°F and 60°F (7°C and 15.5°C) to ensure proper gate operation. The heater can be powered by 110 to 250 Vac.

Model HTR

**LiftMaster® internet gateway**

Internet enabled accessory which connects to the computer and allows you to monitor and control gate operators and lighting accessories enabled by MyQ® technology.

Model 828LM

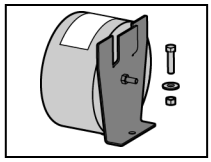


**LiftMaster Cloud™ connected access protocol - high capacity**

Model CAPXL


**Warning sign**

Model 40-39235



**Transformer kit**

Changes input voltage (208/240/480/575 Vac) to an output voltage of 120 Vac. Rated 208/240/480/575 Vac, 4.8/4.2/2.1/1.7 A, 60 Hz, 1 PH

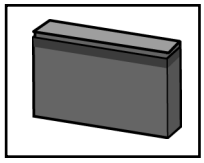
Model 3PHCONV

**Solenoid lock harness kit**

Model K77-37972

## Batteries

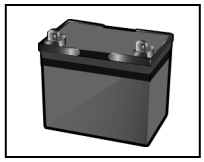
Gate access system batteries replace or upgrade the gate operator batteries. Two identical 12 Vdc batteries are required for each gate operator. Do not mix 7AH and 33AH batteries within a gate operator.



**7AH batteries**

Standard 7 AMP-Hour Battery, 12 Vdc, to replace original batteries provided with operator. Reuse existing harnesses.

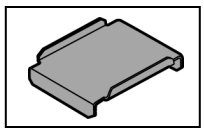
Models 29-NP712 (1) and K74-30762 (2)



**33AH batteries**

Upgrade 33 AMP-Hour Battery, 12 Vdc. Ideal for solar applications and extended battery backup. Two required.

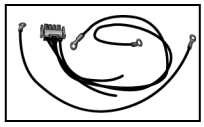
Model A12330SGLPK



**Battery tray**

Two required for 33AH applications.

Model K10-34758-2



**Universal solar wire harness kit**

For 7AH and 33AH applications.

Model K94-37236

# WARRANTY

## LiftMaster 7 year residential / 5 year commercial Limited Warranty

LiftMaster ("Seller") warrants to the first purchaser of this product, for the structure in which this product is originally installed, that it is free from defect in materials and/or workmanship for a period of 7 year residential / 5 year commercial from the date of purchase [and that the CSL24UL is free from defect in materials and/or workmanship for a period of 7 year residential / 5 year commercial from the date of purchase]. The proper operation of this product is dependent on your compliance with the instructions regarding installation, operation, maintenance and testing. Failure to comply strictly with those instructions will void this limited warranty in its entirety.

If, during the limited warranty period, this product appears to contain a defect covered by this limited warranty, call **1-800-528-2806**, toll free, before dismantling this product. Then send this product, pre-paid and insured, to our service center for warranty repair. You will be advised of shipping instructions when you call. Please include a brief description of the problem and a dated proof-of-purchase receipt with any product returned for warranty repair. Products returned to Seller for warranty repair, which upon receipt by Seller are confirmed to be defective and covered by this limited warranty, will be repaired or replaced (at Seller's sole option) at no cost to you and returned pre-paid. Defective parts will be repaired or replaced with new or factory-rebuilt parts at Seller's sole option.

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# NOTES

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