

Installation and Maintenance Instructions



Model SL570
Heavy Duty Slide Gate Operator

Model SL540
Medium Duty Slide Gate Operator

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General Information

Supplied Parts and Dimensional Outline

SUPPLIED PARTS

Inspect the operator for possible shipping damage and shortage of parts. Some ordered accessories may be packed separately.



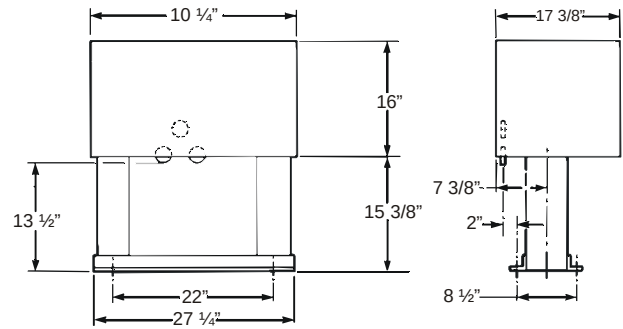
Part Description	Qty.
7/16 Flat Washer	2
7/16 Spring Lock Washer	4
7/16 Hex Nut	4
Gate Bracket	2
Gate Caution Plate (✓)	2
25/16 Hex Nut	8
5/16 Spring Lock Washer	8
3/8 Spring Lock Washer	8
3/8 Hex Nut	8
7/16 Set Screw	4
Roller Chain	1
Master Link	2
Stop Button 02-401-sp	1

Table 1



✓ Install **Gate Caution Plates** on both sides of the gate where they can be easily seen.

DIMENSIONAL OUTLINE



01-G0685F1

Figure 1

Cycle Rate

Frequency of Use – Cycles Per Hour (cycle equals 1 full open and 1 full close)						
Gate opening in feet	Cycles per hour					
	30	22	18	15	12	11
12	☐					
16	☐					
20	☐					
24	☐					
30	☐					
40		☐				
50			☐			
60				☐		

Table 2



NOTE: These figures are maximum and should not be exceeded. When at all possible, try to keep the cycles per hours at 75% of these figures.

Model Classifications

RESIDENTIAL VEHICULAR GATE OPERATOR – CLASS 1

A vehicular gate operator or system intended for use in a home of one to four single family dwelling or a garage or parking area.

COMMERCIAL/GENERAL ACCESS VEHICULAR GATE OPERATOR – CLASS 2

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

INDUSTRIAL/LIMITED ACCESS VEHICULAR GATE OPERATOR – CLASS 3

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

RESTRICTED ACCESS VEHICULAR GATE OPERATOR – CLASS 4

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

MODEL	CLASS 1	CLASS 2	CLASS 3	CLASS 4
SL540	☐	☐	☐	☐
SL570	☐	☐	☐	☐

Table 3

TYPES OF SLIDE GATES

These gate operators are intended to be used with slide gates of the following type: Track mounted, overhead, cantilever, and track guided v-track.

Specifications

Model	H.P.	Gate Speed	Max. Gate Weight	Max. Cant'l. Width	Max. O/H Width	Max. V-Track Width
SL540	.33	12"/sec.	550 lbs.	16 ft.	24 ft.	20 ft.
SL540	.50	12"/sec.	900 lbs.	20 ft.	36 ft.	26 ft.
SL540	.75	12"/sec.	1000 lbs.	25 ft.	40 ft.	30 ft.
SL570	.50	12"/sec.	1200 lbs.	25 ft.	40 ft.	30 ft.
SL570	.75	12"/sec.	1500 lbs.	30 ft.	45 ft.	45 ft.
SL570	1.00	12"/sec.	1800 lbs.	32 ft.	50 ft.	48 ft.

Table 4

Safety Information

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.

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.

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:

- Gate Edges
- Enclosed Track
- Vertical Posts
- Guards for exposed rollers
- Photo-electric Sensors
- Instructional and Precautionary Signage
- Screen Mesh

Important instructions follow. These instructions are intended to highlight certain safety related issues. These instructions are not intended to be comprehensive. Because each application is unique, it is the responsibility of the purchaser, designer, installer and end user to ensure that the total gate system is safe for its intended use.



Safety Instructions

Select instructions are highlighted with this precautionary symbol (see left margin). Failure to follow these selected instructions can result in serious injury or death.

STEP 1: BEFORE INSTALLATION



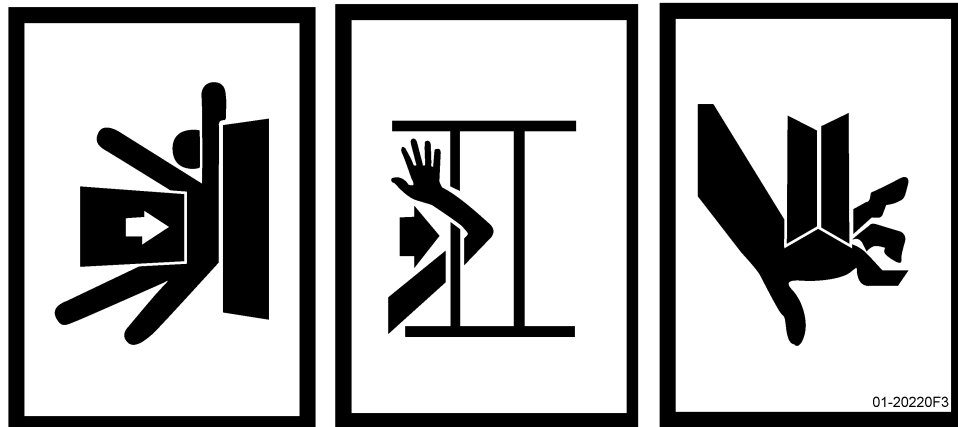
- 1 Confirm gate operator model is specified by Installation and Maintenance Manual for application type, gate size and frequency or use.
- 2 Confirm ALL appropriate safety features, such as gate edges, photo-electric sensors, vertical posts and enclosed tracks, are specified.
- 3 Confirm gate system design reduces pinch points and protects against entrapment.
- 4 Confirm gate system design has pedestrian access separate from vehicular entrance.
- 5 Confirm gate system design reduces traffic backup.
- 6 Confirm warning signage is included in design.
- 7 Confirm gate moves freely before installation of operator
- 8 Repair or service worn or damaged gate hardware before installation of operator.
- 9 To avoid installation hazards, review the gate system operation and installation procedures, such as manual disconnect mechanism procedure.
- 10 Confirm control design prohibits unauthorized use.

STEP 2: DURING INSTALLATION

-  1 Disconnect power at service panel before making any electrical connection.
-  2 Avoid pinch points, be aware of all moving parts.
-  3 Adjust clutch or load sensing device to minimum force setting.
-  4 Do not over-tighten clutch or adjust force setting above minimum.
-  5 Install controls where user cannot touch gate while operating controls.
- 6 Install controls where user has full view of gate operation.
- 7 Install two or more warning signs on the gate to alert persons in the area of automatic gate operation. Warning signs must be conspicuous.
- 8 Install operator inside fence line. DO NOT install operator on public side of fence line.
- 9 Secure gate operator cover.

STEP 3: AFTER INSTALLATION

-  1 Test all safety features.
- 2 Train end user about basic functions and safety features of gate system.
- 3 Leave Installation and Maintenance Manual and Safety Instructions with end user.





Safety Precautions for Open-Roller Gates and Ornamental “Grill



OPEN-ROLLER GATES

Injuries occur when people get their or feet caught between the top or bottom of the gate and the gate roller. This potential pinch-point should be guarded against at all times. Enclosed style gate tracks are available for refitting of these rollers from many fence suppliers. Also, roller guards are available for installing over the rollers.

One more contact sensors shall be located at the leading edge, trailing edge, and post-mounted both inside and outside of a vehicular horizontal slide gate.

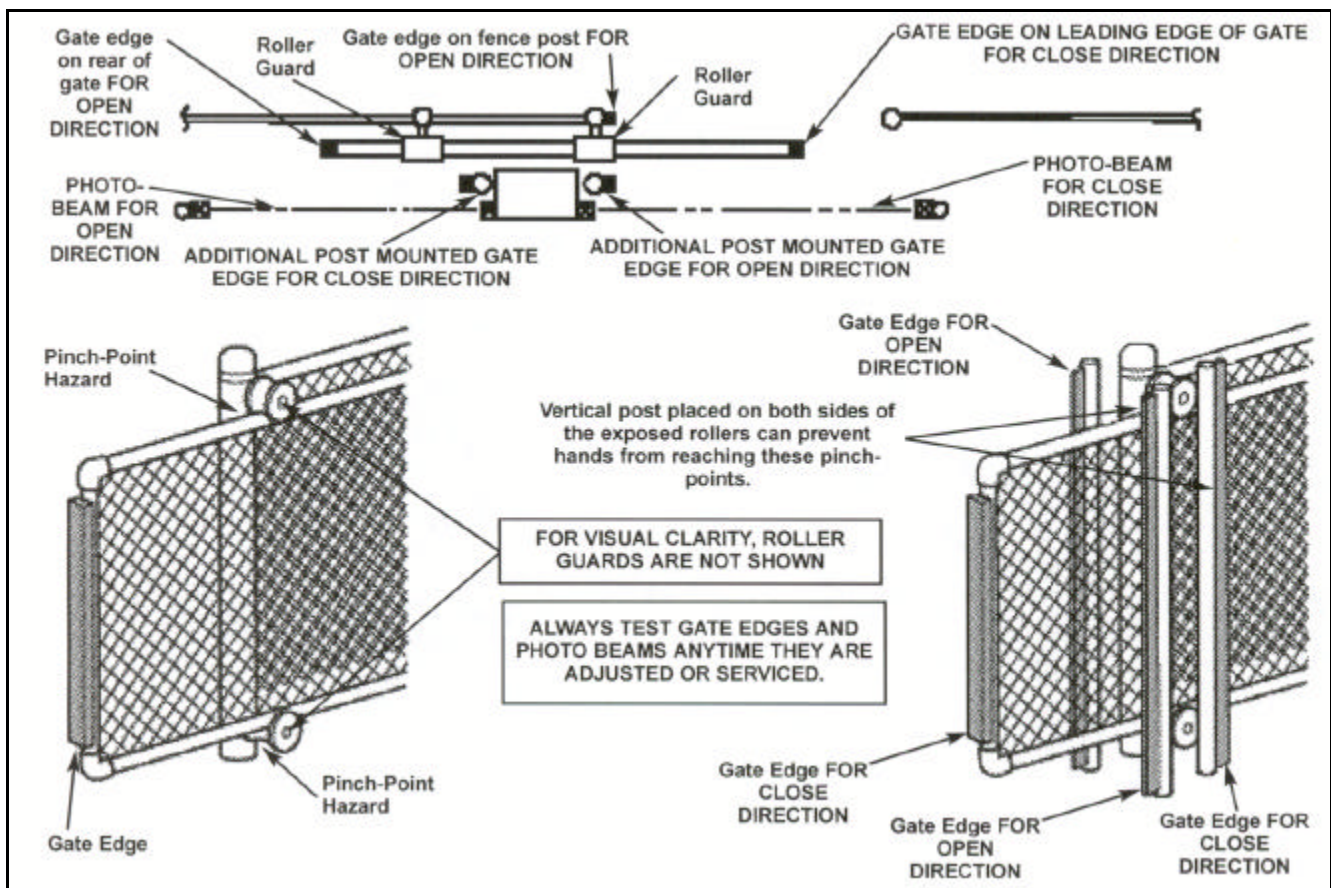


Figure 2

ORNAMENTAL "GRILL TYPE" GATES

Injuries occur when people put their hands and arms through openings in the grill and the gate is operated. They cannot retract their arm and it gets caught between the moving gate grill and the stationary fence post or fence. This potential hazard can be averted by placing a 4' screen mesh on the gate to prevent access through openings anywhere the gate may travel. See *Safety Brochure* for details.

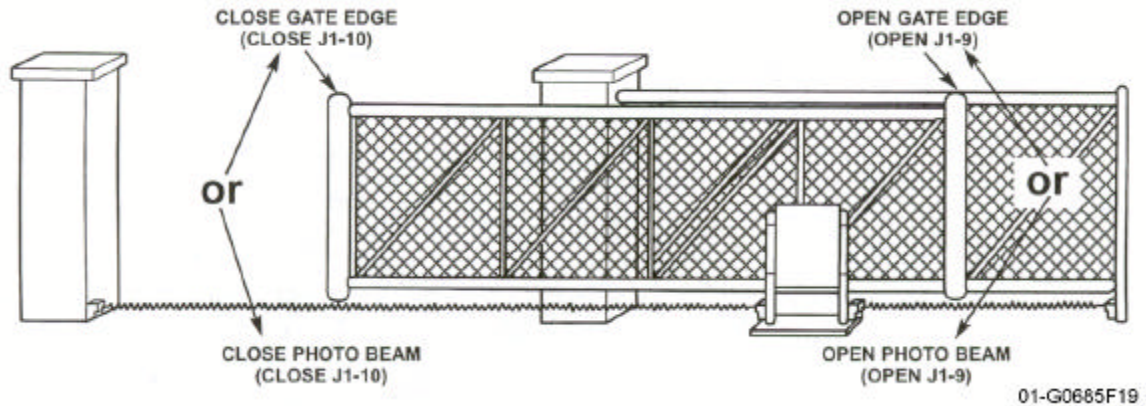


Figure 3

Pre-Installation Check-List

- Φ Check the gate. It **must** operate smoothly and freely. If necessary, lubricate, adjust, or repair the gate prior to operate installation. The gate **must** be level and plumb.
- Φ Some gates may only be as wide as the gate opening. They may require a back frame to be constructed to allow for chain attachments.
- Φ Double check the size and weight of the gate to make sure that this operator is proper for this application.
- Φ If wiring has already been installed, check to make sure it meets the following specification and requirements.

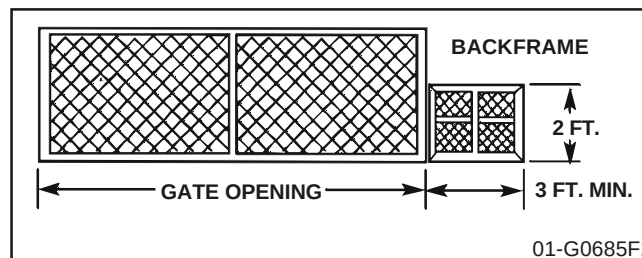


Figure 4

Wiring Specifications

Refer to Table 5.

- A. The distances shown in Table 5 are measured in feet from the operator the power source.
- B. These calculations are based on the National Electrical Code and allows for a 5% voltage drop.
- C. Supply voltage must be within 10% of the operator's rating under load conditions.
- D. There calculations are based on stranded copper wire.
- E. It is highly recommended that only 90% of the distances shown be used; this will allow for a 10% safety factor.
- F. For dual units, the distance shown should be cut in half.
- G. Permanent wiring is to be employed as required by local codes.
- H. All local codes must be strictly adhered to. It is very important that operator is properly grounded.
- I. Do not run control wires in the same conduit with power wires.
- J. Do not run multi conductor or parallel conductor cable for controls.
- K. All power wiring should be dedicated and protected.

WIRE GAUGE	HP	Single Phase		3 Phase		
		115 VAC	230 VAC	230 VAC	460 VAC	575 VAC
6	1/3	684	3,077	4,737	14,211	35,527
	1/2	473	2,051	2,842	14,211	17,764
	3/4	324	1,231	2,030	7,105	11,842
	1	237	947	1,421	5,684	8,882
	1-1/2	158	648	947	4,060	5,921
	2	--	437	711	2,842	4,441
8	1/3	432	1,942	2,990	8,969	22,422
	1/2	299	1,295	1,794	8,969	11,211
	3/4	204	777	1,281	4,484	7,474
	1	149	597	897	3,587	5,605
	1-1/2	100	409	589	2,562	3,737
	2	--	299	448	1,794	2,803
10	1/3	271	1,218	1,876	5,627	14,068
	1/2	187	812	1,125	5,627	7,034
	3/4	128	487	804	2,814	4,689
	1	94	375	563	2,251	3,517
	1-1/2	62	256	375	1,608	2,345
	2	--	187	281	1,125	1,758
12	1/3	170	763	1,175	3,524	8,810
	1/2	117	509	705	3,524	4,405
	3/4	80	305	503	1,762	2,937
	1	59	235	352	1,410	2,203
	1-1/2	39	161	235	1,007	1,468
	2	--	117	175	705	1,101

Table 5



NOTE: Calculated using NEC guidelines. Local codes and conditions must be reviewed for suitability of wire installation. Master/Slave units must be installed on separate circuits.

Control Wiring		
Volt	Max. Dist. (Ft.)	Wire Gage
24	1000	18

Table 6

Features

Operator Features

SOLENOID ACTIVATED, CALIPER DISC BRAKE

The brake minimizes over travel caused by gate coasting. An added feature of the brake is to assist in preventing backdriving of the gate. The brake is spring applied whenever the motor is not running. Anytime the motor is running, the electric solenoid physically releases the brake.

Important: periodically check and adjust the brake mechanism. See page 29.

MOTORS

The SL540 & SL570 utilize a 56 frame, base mounted, dual voltage, TEFC (totally enclosed fan cooled) motor. The single phase motors also incorporate a start switch. The family incorporates motor H.P. from 1/3 to 1 and single phase voltages 115 and 230. The 3-phase voltages are 230, 460 and 575.

PRESSURE TYPE SLIPPING CLUTCH

The operator clutch mechanism works similar to that of a clutch in a car. It allows the operator to gradually start the gate moving, rather than trying to instantaneously start moving the gate. This clutch mechanism **must** be adjusted properly. When it left the factory, it was purposely loosened so that it will not operate the gate. You **must** tighten the clutch spring lock nut so it is tight enough to operate the gate, yet loose enough so that if the gate meets an obstruction, the clutch will slip easily. This clutch system will require periodic maintenance. See page 29.

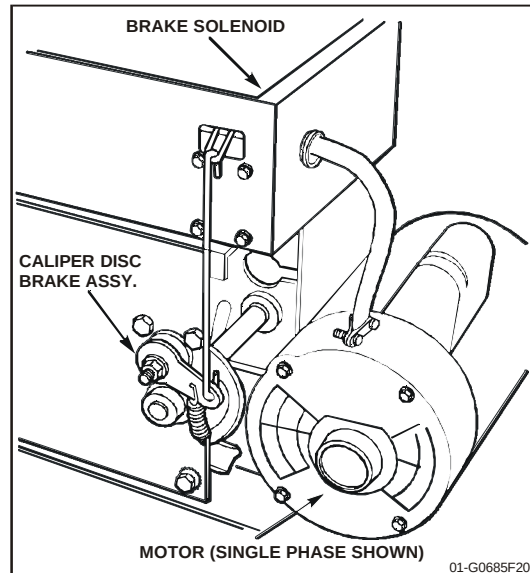


Figure 5

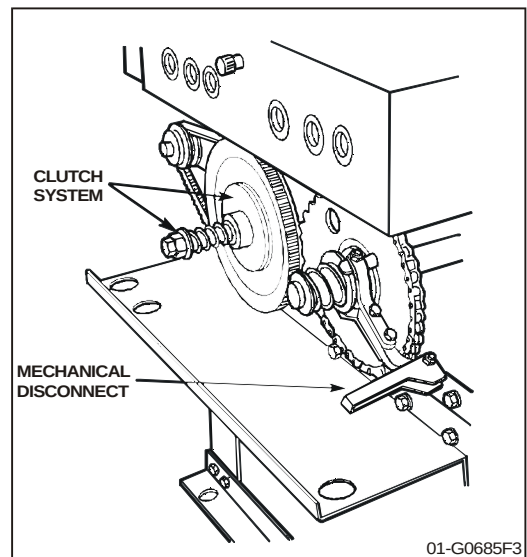


Figure 6



WARNING

This friction clutch system is not an automatic reversing device. It only serves to minimize damage to the gate operator and gate, and also to hopefully minimize vehicle damage. If you need an external automatic obstruction sensing device, items such as gate edges and photo beams are available to help protect pedestrians.

MECHANICAL DISCONNECT

Refer to Figure 6. The operator can be disconnected from the gate, so the gate can be manually opened or closed. The manual disconnect lever is located on the side of the operator. Simply pull the lever outwards away from the frame and the operator is now disconnected. To re-engage the operator to the gate, push the lever back towards the frame. The operator, when electrically operated will automatically re-engage with the gate.

System Features

ACTIVITY LED

- Steady indication when gate is at either open or close limit.
- 1 flash per second when gate is off a limit in normal operation
- 2 flashes per second when entrapment level one has occurred.

AUDIBLE WARNING DEVICE

If the operator should have a second inherent obstruction in sequence with the first; i.e. back to back, the sounder will activate for 5 minutes then shut off. Also the sounder can be programmed to come on 2 seconds prior to gate movement and stay on during gate movement.

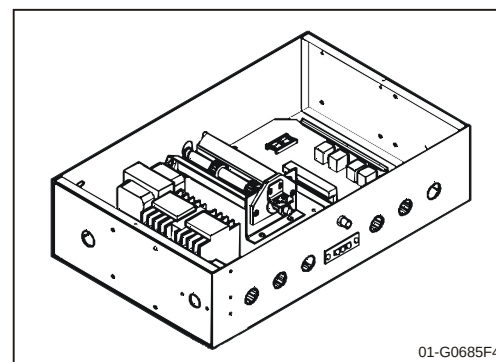


Figure 7

THREE BUTTON CONTROL (SEQUENCE OF OPERATION)

Open, stop, close, close id programmable. Stop will override all other functions. If closing, open will cause the operator to stop and reverse to full open. Will close from open limit or midstop only. If SW1 pin 1 is on three button station will only close the operator from the open limit or from mid-stop. If SW1 pin 1 is off, the input will work as a single button (open, close, stop).

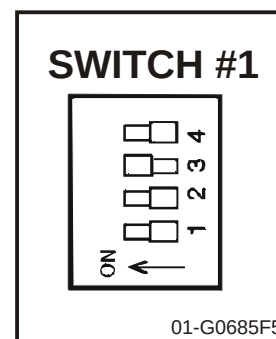


Figure 8

SINGLE BUTTON CONTROL (SEQUENCE OF OPERATION)

Open to open limit, close open. If power has been interrupted, will always open with first activation.

CLOSE SINGLE BUTTON SELECT

The single button (programmable) control can be programmed to either function as a single button control or to function as a close button only.

DIGITAL MICROPROCESSOR

This is the main circuit board for the operator. It contains all the logic and intelligence for the system. All the system programming is done on this circuit board. All solid state, with an emergency back-up system that works even if the processor is missing.

INHERENT OBSTRUCTION PROTECTION

The limit shaft is equipped with an R.P.M. sensor. When the gate meets an obstruction, the loss of r.p.m.'s. will cause the gate to reverse. A second obstruction will cause the gate to stop. A renewed wired input will restart the gate.

EXTERNAL OBSTRUCTION CIRCUIT

This circuit can be used with either a gate edge or a photo beam system. When either of the two devices mentioned are activated, the operator will react in a similar manner to the inherent obstruction described above.



NOTE: If external entrapment protection is required by the class of operator, both an open and closed protection device must be used.

SPECIAL NOTE ABOUT OBSTRUCTION SENSING FROM EITHER INTERNAL OR EXTERNAL SYSTEMS

The operator will stop if it senses two sequential obstructions. It will not activate from any automatic system, including the built in time delay to close. Either a manual device such as a pushbutton within site of the gate and operator, or the stop button supplied with the operator must be activated to resume the operator back to its normal operation.

OPEN ONLY CIRCUIT

Separate open circuits for line-of sight devices and out-of-sight devices such as open loops or radio controls.

LOOP CONTROL CIRCUITS

Vehicle control devices such as opening or security loop detectors are connected to this circuit

TIME DELAY TO REVERSE CIRCUIT

Allows the gate to come to a complete stop before reversing direction. Approximately ½ second between stop and reverse.



NOTE: This feature is defeated when either the inherent or external obstruction circuits are activated.

Installation

Please note that there are two basic types of power unit mounting, concrete pad or post mounting. Choose the proper mounting for your application. The installation illustrations shown are for right hand units; for left hand units, everything will be just the opposite.

If there is existing concrete at the area of power unit mounting, use the dimensioning procedure called out in pad mounting instructions. It is suggested that $\frac{1}{2}$ " threaded anchors (not supplied) be used to secure the unit. If needed, shim the unit to **ensure that it is level and parallel with the gate.**

Step 1: Set Up Post or Pad Mounting

STEP 1A: CONCRETE PAD

- 1 Layout concrete pad as detailed.
- 2 Locate electrical conduit, as required, prior to pouring concrete.
- 3 Pour concrete, insuring that pad is level and above the ground line.
- 4 Locate four (4) $\frac{1}{2}$ " threaded anchors, not supplied, as detailed. **Important:** Anchors must be positioned accurately and securely in concrete.
- 5 Allow concrete to set for at least two days before installing power unit.

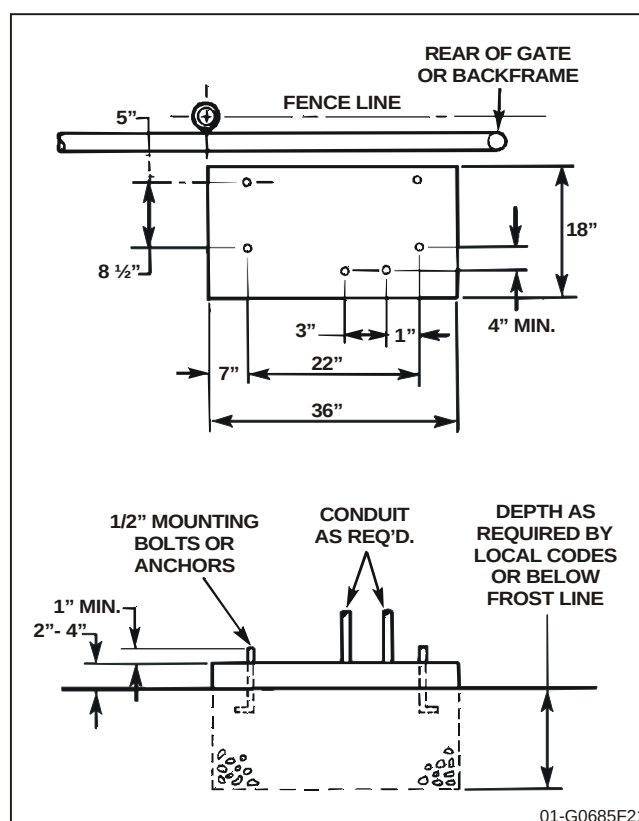
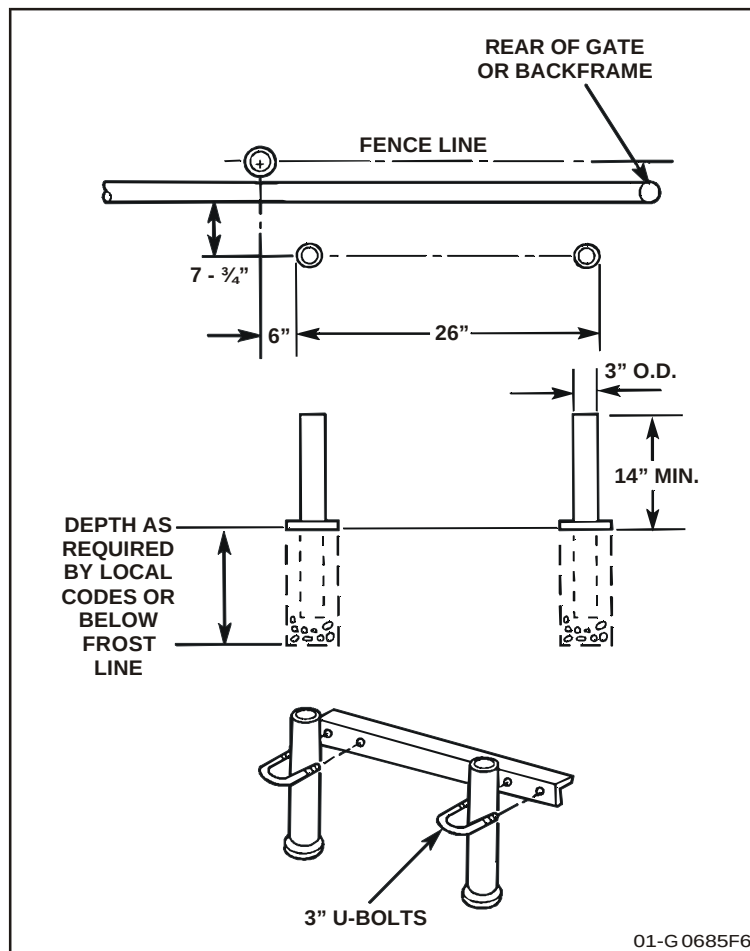


Figure 9

STEP 1B: POST MOUNTING

- 1 Locate and secure two posts, 3" O.D.
- 2 Remove the mounting angles from base of power unit. Unit the angles to maintain the proper distance between posts. Secure the angles to the posts using U-bolts.
- 3 Check that:
 - ✓ Each post is the same distance from the gate.
 - ✓ That the distance between the posts is 26".
 - ✓ The post height is at least 14" from the ground.
 - ✓ Tops of posts are level with each other.
- 4 Locate conduit, as required.
- 5 Allow concrete to set at least two days before installing power unit.

**Figure 10**

Step 2: Mounting the Operator

STEP 2A: MOUNTING TO PAD

Carefully secure the power unit to the concrete pad with the drive and idler sprockets facing the gate. It is **very important** that the unit is level and parallel to the gate.

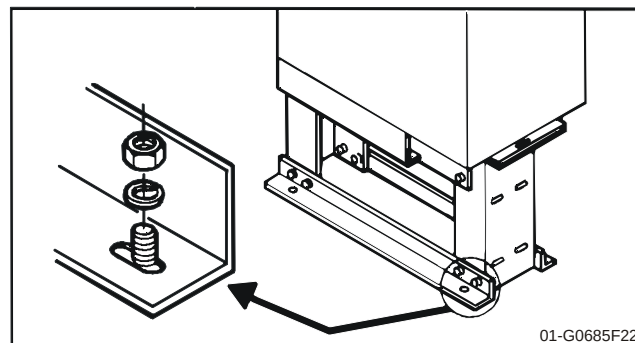


Figure 11

STEP 2B: MOUNTING TO POST

Remove the angle braces and carefully secure the power unit to the posts with drive and idler sprockets facing the gate. It is **very important** that the power unit is level and parallel to the gate.

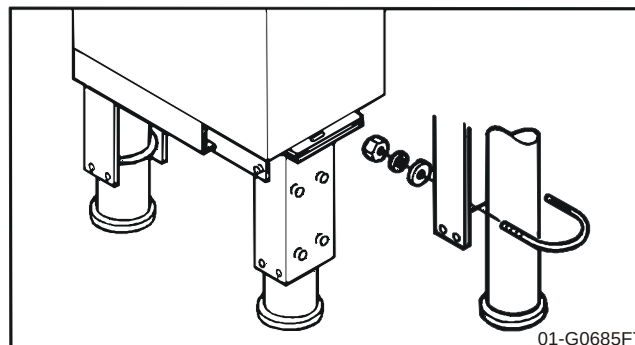


Figure 12

Step 3: Gate Brackets



Secure gate bracket to the vertical front and rear posts of the gate.

NOTE: If a back frame was added, then secure rear gate bracket to the back frame.

Important: The large slotted holes in gate brackets must be level and in line with the bottom of the idler sprockets and each other. Slide the gate to the full open and full closed positions to check alignments.

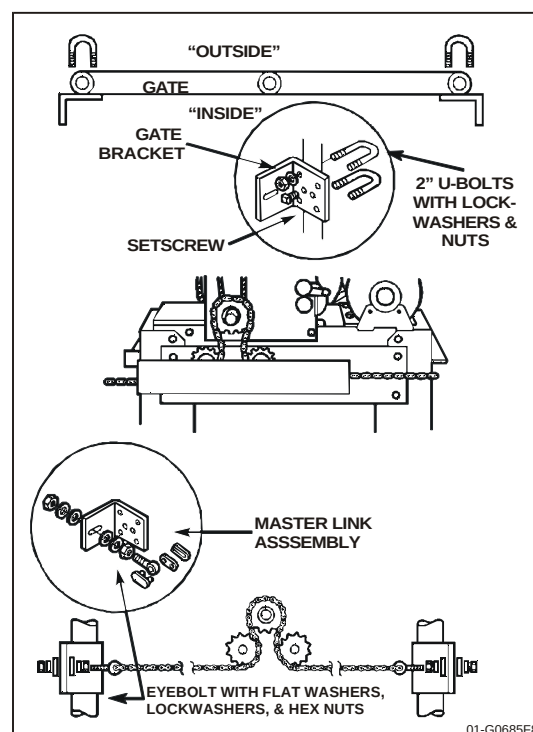


Figure 13

Step 4: Drive Chain

Important: Operator must be disengaged. Refer to **Mechanical Disconnect** on page 13. Also, refer to Figure 13 as you perform the steps below.

- 1 Connect both threaded eye bolts to each of drive chain. Then attach one eye bolt to the rear gate bracket.
- 2 Thread chain around drive and idler sprockets and pull towards the front gate bracket.
- 3 If required, cut chain to proper length, then attach the front eye bolt to the front gate bracket.
- 4 Carefully check the alignment of gate brackets to the idler sprockets in both the vertical and horizontal directions.
- 5 Adjust the nuts on eye bolts to remove excessive chain slack. **Important:** The suggested amount of chain slack is no more than 1" of chain slack for every 10 ft. to total chain length. **Do not over tighten chain.**



NOTE: It is suggested that after the drive chain is properly installed and adjusted, the gate brackets be welded to the gate.

SUGGESTION

It is recommended that for gates over 20 feet in length, some type of chain support be added to the gate to prevent excessive chain sag. Please note that chain supports must be located a minimum of $\frac{3}{4}$ " below the idler sprocket shield and must not exceed $\frac{3}{4}$ " beyond the centerline of the chain.

NOTE ABOUT SOME TYPES OF CANTILEVER GATES

With some cantilever gates over 20 feet long, you may need to add a brace along the length of the gate to prevent the gate from bowing with chain is tightened. This may also be required on some styles of gates that are constructed out of aluminum. Note that if positioned properly, this brace can also be used as a chain support.

BEFORE PROCEEDING PLEASE READ THIS

Electrical Disconnect Switch

Throughout the course of installation you will be required to disconnect electrical power.

This can be done by locating the electrical power disconnect switch on the control panel and placing it in the desired position, as shown on the label near it.

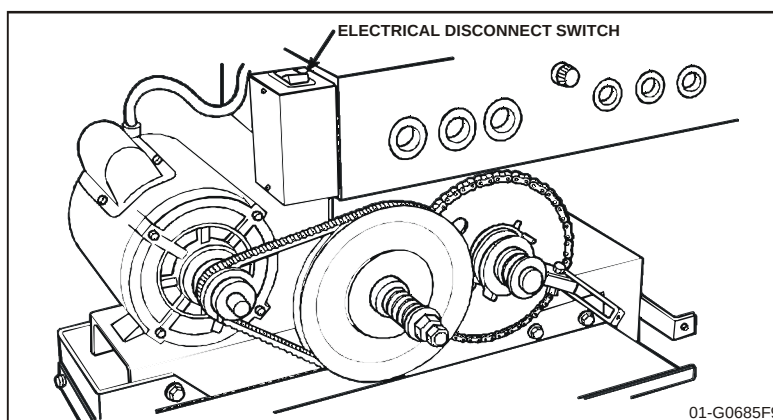


Figure 14

Step 5: Electrical Power Connections



CAUTION

Make sure power is disconnected at the main power source and at the operator's electrical disconnect switch before proceeding.

Secure all electrical power connections inside the power wiring compartment located on the outside end of control panel. Use the electrical wiring supplied with this unit.

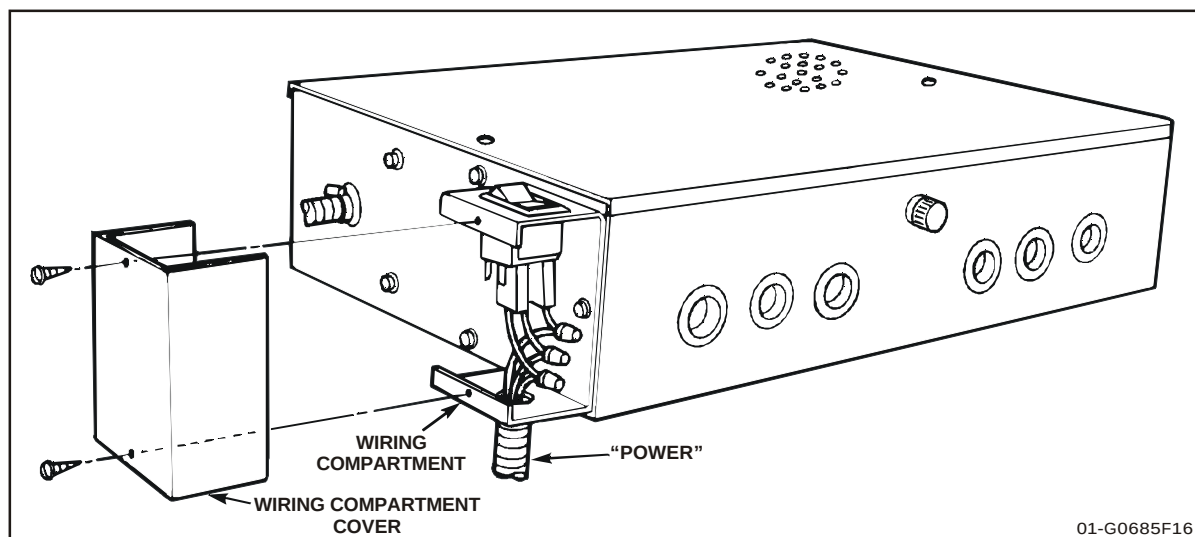
- All single phase operators will have – L1 (neutral), L2 (hot) and ground.
- All three phase operators will have – L1, L2, L3 and ground.

It is very important that operator is properly grounded.



NOTE: Permanent wiring is to be employed as required by local codes.

Important: On the phase operators the power connections must be properly phased. If they are phased wrong the gate operator will run backwards. To correct this situation, disconnect power at main power source and at the operator's electrical disconnect switch. Then, reverse any two of the three power leads.



01-G0685F16

Figure 15

Step 6: Limit Switch Adjustments

- 1 By using the mechanical disconnect, manually open the gate to its full open position.
- 2 Remove control panel cover and locate the rotary limit switch assembly. Disengage the detent plate from the limit nuts, as shown.
- 3 Depending on “hand” of the operator, rotate the open limit nut until it makes contact with the open limit switch lever and trips the open limit switch activation button.
- 4 Adjust the other limit nut so that it is near the open limit nut but not touching.
- 5 Manually close the gate to its full closed position.
- 6 Disengage the detent plate and rotate the close limit nut until it makes contact with the close limit switch lever and trips the close switch.
- 7 Re-engage the detent plate into both limit nuts and also re-engage the mechanical disconnect.

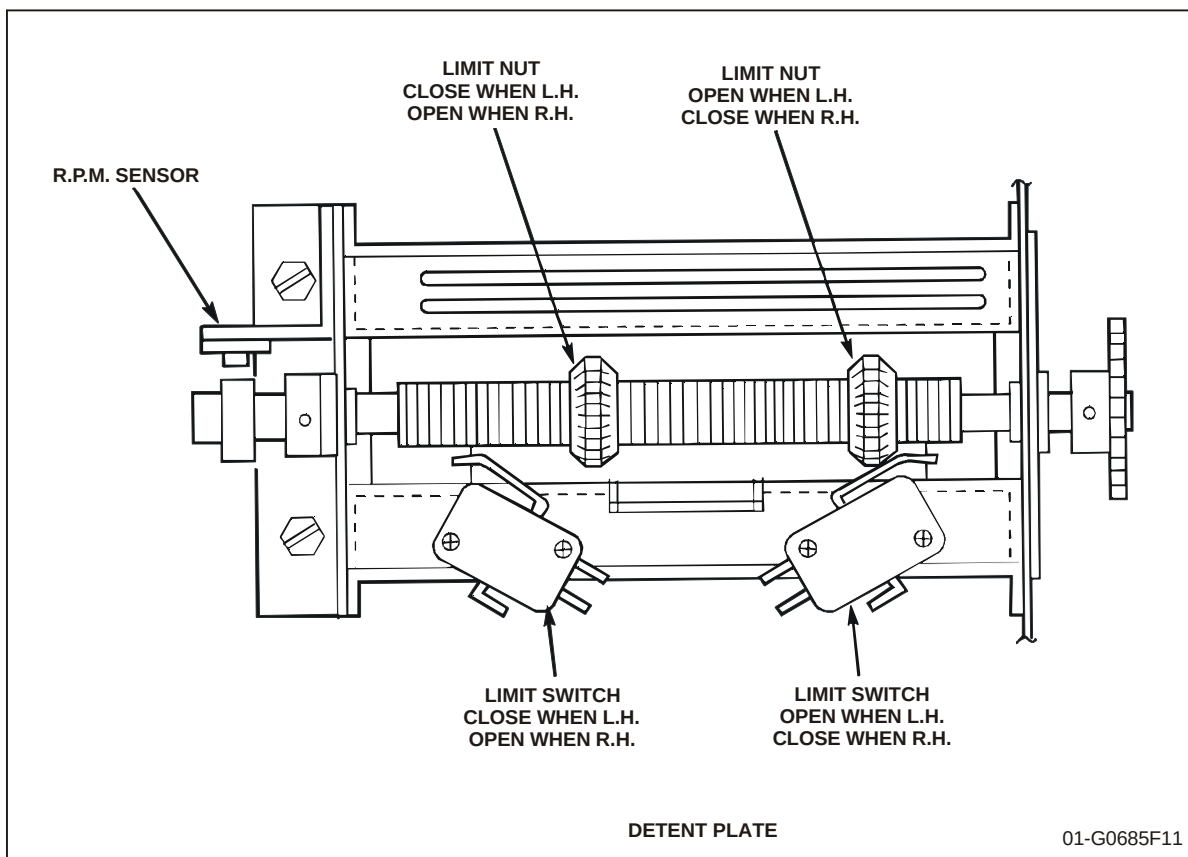


Figure 16

**DO NOT RUN OPERATOR UNTIL INSTRUCTED!
OPERATOR MUST BE PROGRAMMED BEFORE OPERATION**

Programming

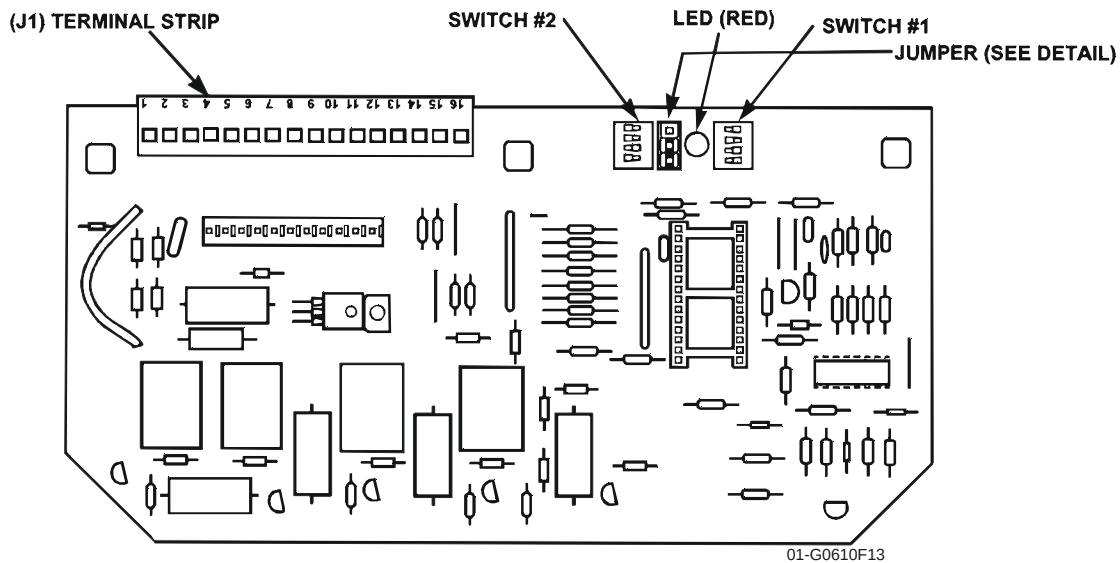


Figure 17

Switch #1: Operator Programming

POLE #1: SINGLE/CLOSE BUTTON

ON = Close button only

OFF = Open/Close button

POLE #2: RIGHT HAND / LEFT HAND

ON = Left Hand (gate will open to the left)

OFF = Right Hand (gate will open to the right—inside of fence looking out)

POLE #3: WARNING DEVICE

ON = Warning device will turn on 3 seconds before gate starts to move in either direction.

OFF = Warning device disabled.

POLE #4: MASTER/SLAVE – SINGLE UNIT

ON = Master or Single Unit

OFF = Slave Unit

RED LED INFORMATION

RED LED INFORMATION

- Continuous ON = Unit is on a limit.
- Blinking 1 flash per second = Normal operation (gate travel or midstop).
- Blinking 2 flashes per second = Entrapment level 1 (operator reverse to limit).to limit).

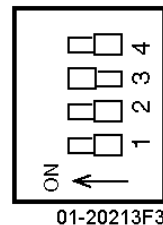


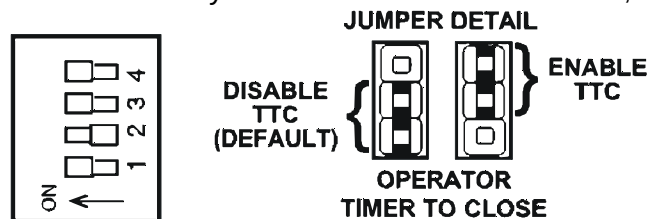
Figure 18

POLE #1	POLE #2	POLE #3	POLE #4	TOTAL TIME WARNING DEVICE DISABLED	TOTAL TIME WARNING DEVICE ENABLED
ON	ON	ON	ON	DISABLED	DISABLED
OFF	ON	ON	ON	1 SEC.	4 SEC.
ON	OFF	ON	ON	13 SEC.	16 SEC.
OFF	OFF	ON	ON	26 SEC.	2 SEC.
ON	ON	OFF	ON	40 SEC.	43 SEC.
OFF	ON	OFF	ON	52 SEC.	55 SEC.
ON	OFF	OFF	ON	65 SEC.	68 SEC.
OFF	OFF	OFF	ON	78 SEC.	81 SEC.
ON	ON	ON	OFF	104 SEC.	107 SEC.
OFF	ON	ON	OFF	117 SEC.	120 SEC.
ON	OFF	ON	OFF	129 SEC.	132 SEC.
OFF	OFF	ON	OFF	141 SEC.	144 SEC.
ON	ON	OFF	OFF	155 SEC.	158 SEC.
OFF	ON	OFF	OFF	167 SEC.	170 SEC.
ON	OFF	OFF	OFF	180 SEC.	183 SEC.
OFF	OFF	OFF	OFF	194 SEC.	197 SEC.

Table 7

Switch #2: Timer to Close

Timer to close is locked out at the factory. To activate the timer to close, follow steps below:



01-G0610F14

Figure 19

- 1 Move safety jumper from bottom two pins to top two pins. Then set time per the chart
- 2 During normal operation, if the operator stops on a limit, or mid travel, the operator will time out per the chart below and automatically close.
- 3 To lock the timer to close program and disable, simply return the jumper to the bottom two pins, or turn on all pins of SW#2.



IMPORTANT NOTE: When using master/slave, only set the time for the master operator. The slave operator must be set to disabled position (all poles on).

Adjustments

Step 7: Clutch Adjustment

The clutch left the factory completely loosened. In this position, it will not allow the operator to move the gate, so it **must** be adjusted. Due to the internal speed sensor, you may get obstruction sensing reaction during the clutch adjustment procedure. You must adjust the clutch so that it produces just enough force to move the gate, but yet will easily slip when the gate meets with an obstruction. To adjust the clutch mechanism, either tighten or loosen the lock nut on the end of the intermediate shaft, as shown in Figure 20.

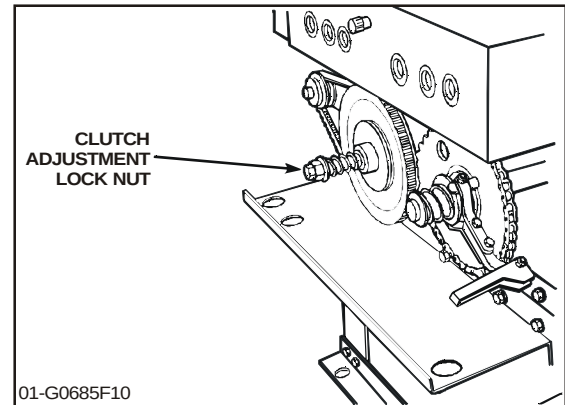


Figure 20



CAUTION

The friction clutch is not an automatic reversing device. It minimizes damage to the gate operator and gate. It can also limit major vehicle damage, if adjusted properly. This operator incorporates an internal obstruction sensor system, but it is highly recommended that external obstruction sensing devices such as gate edges or photo beams systems be incorporated into the gate system to aid in the protection of any possible pedestrian traffic. Periodic inspection of the clutch system and all internal and external sensor systems is required to ensure their proper operation.

Step 8: Brake Adjustment

To minimize limit overtravel, this operator incorporates a solenoid activated caliper type brake system. It has been factory set but will require periodical checks and possible adjustments. To adjust:

- 1 Tighten lock nut on brake lever until brake lever is horizontal.
- 2 Loosen lock nut until brake lever drops 1/8" to 3/8".
- 3 Operate gate briefly and check lever position. If the 1/8" to 3/8" dimension is not maintained in the power off position, tighten or loosen the lock nut as required.

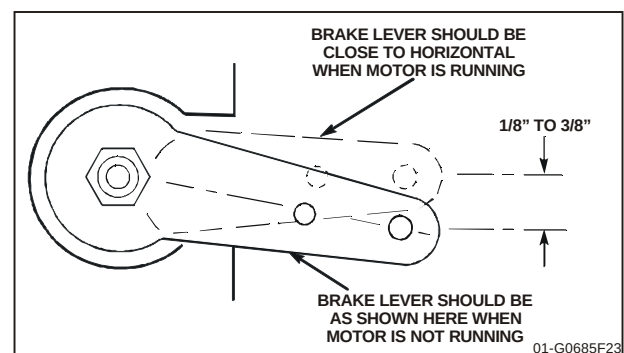


Figure 21



NOTE: Do not over tighten the brake. Operator should run freely with the brake lever in the horizontal position.

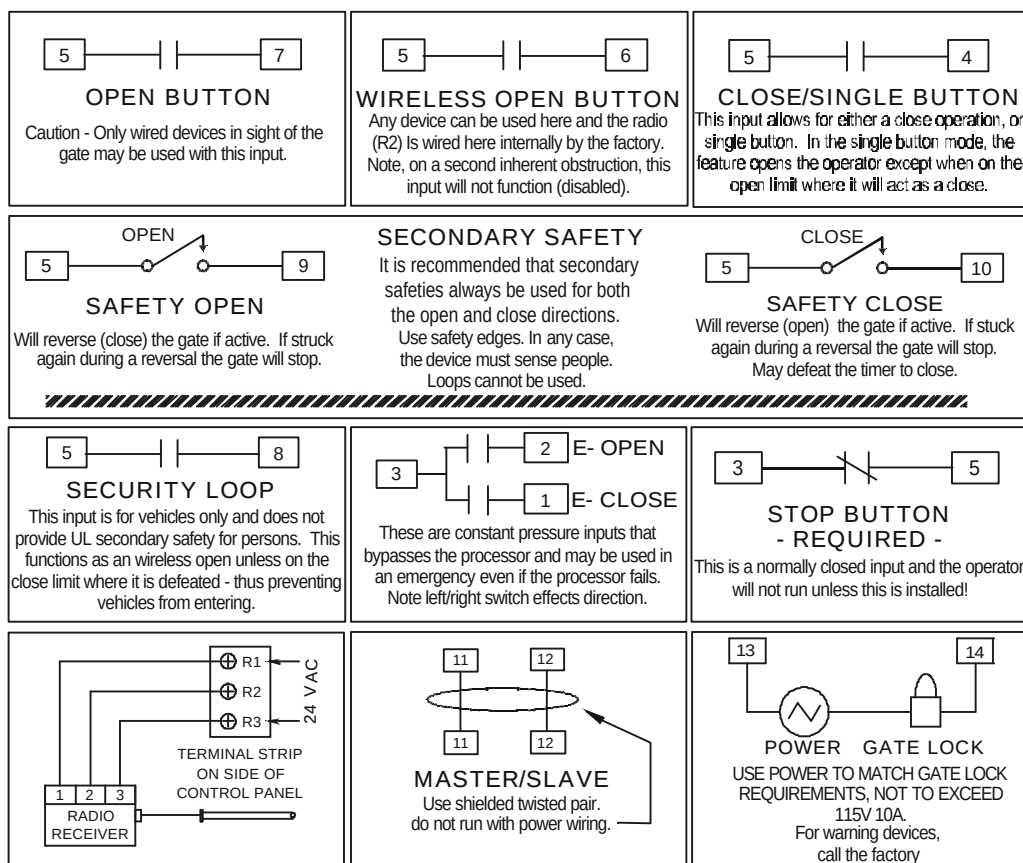
Controls and Accessory Install.

See wiring diagram for more information. See p. 10 for wiring distances and wire gauge information.

All inputs are normally open and momentary, except the stop (NC), and emergency close and emergency open (constant pressure). The following instructions are based upon UL 325, dated March of 1999 and include recommendations for significant increase in safety.

We strongly recommend that you follow the UL guidelines presented throughout the manual.

Installation device instructions – always follow the instructions provided by the manufacturer when installing and adjusting any control device. If these instructions are contrary to the advice given here, call for assistance.



01-G0610F16

Figure 22



NOTE: Numbers shown inside a box are on the J1 terminal strip on the circuit board. Connections shown here are field connections. The radio receiver may be ordered factory installed.

Troubleshooting

When troubleshooting, one of the first things to do is try to isolate the problem area. The four (4) main areas to check out are:

- Power
- Accessories
- Operator's Primary Voltage
- Operator's Low Voltage



1. Power

Always use extreme caution! Some possible symptoms of power problems include:

- The obvious one is – the operator will not run.
- The operator runs slow.
- Circuit breakers or fuses keep tripping.
- Motor overload keeps tripping.
- Operator starts but then stops..

1A.

Using a V.O.M. take a voltage reading at the control transformer's primary terminals. You should get a reading as follows:

Nominal Volt.	Min.	Max.
120v.	108	132
230v.	207	253

Table 8

If you get a reading that does not fall into the minimum/maximum area, then check out your main power supply. Also, make sure that the operator was ordered with the proper voltage and phase. Another item to check is the wire run from the power supply to the operator. Double check the gauge of the wire versus the distance.

1B.

If the voltage reading is O.K. from 1A, then take the same voltage reading with the operator running. If voltage drops below the minimum with this reading, then there could be an excessive current draw somewhere.

1C.

In some cases, power drops can occur at only specific times during the day or night. This can be caused by increased power demands in a general area at a specific time.

2. Accessories

Add-on accessories can create many of the problems that are credited to the operator. Many applications have more than one accessory item attached to the operator and some of these items even draw their power from the operator.

Some of the symptoms that can show up because of accessories:

- The operator won't close.
- The operator won't open.
- The operator will not run.
- The operator begins to run then stops or reverses.

2A.

Whenever the problem is thought to be an accessory and there are more than one connected to the operator, always disconnect one accessory at a time and then test the system. This will hopefully isolate which item is causing the problem.

2B.

If an accessory item is being used as an access control device (used to open or close), falls in the closed position or sends out a continuous signal. The operator will hold the gate in one position until the signal from the accessory is removed.

2C.

In some applications, the gate may begin to move then either stop or stop and reverse within a couple of seconds. This can be caused by an external obstruction device that has failed.

2D.

If there are many accessories attached to and powered by the operator, there may be too much current draw for the operator's control transformer. This operator can only supply approximately 2 amps @ 24 vac. Double check all accessories for their current requirements.



3. Primary Voltage Circuit

Use extreme caution when troubleshooting the primary voltage circuit! There are three (5) items in this circuit that could be causing trouble, and they are:

- Motor
- Transformer
- Brake solenoid
- Contactor
- Power disconnect switch

3A.

The first thing to check is the incoming power. Is it there at the incoming side of the power disconnect switch?

3B.

If there is power, then check for it at the transformer primary terminals. If there is voltage at the switch and none at the transformer, then you probably have a bad power disconnect and it should be replaced.

3C.

If 3A and 3B check out O.K., then manually disconnect the operator from the gate. **Very carefully**, using a screwdriver with an insulated handle, press down on the open side of the contactor. Then, do the same to the close side of the contactor. Then, do the same to the close side of the contactor. Did the operator run in both directions? If it did, the problem may be in the low voltage control circuit, if it did not, then the problem is either in the contactor or the motor.



NOTE: Some motors have the overload built into the motor itself, while other units have a separate overload in the controller.

3D.

If the contactor is suspected to be causing the problem, first carefully check all wiring connections at the contacts. **DISCONNECT POWER!** USING A V.O.M. take continuity readings across the contacts of the contactor. Place one probe on 1 and the other on 2. You should get NO continuity, now press down on the contactor, you should get a continuity reading. Repeat this on all the of the contactor's contact points.

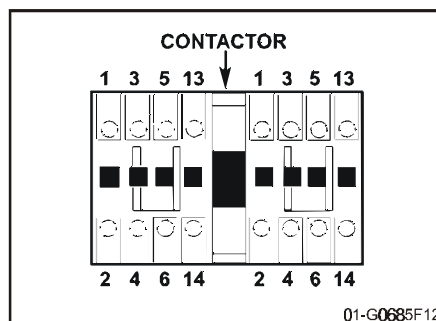


Figure 23

4. Low Voltage Circuit

4A.

The first thing to check is the **circuit breaker**.

4B.

The secondary voltage must be between 22 and 30 vac. This voltage can be checked at the circuit board at terminals J1-3 & J1-11.

4C.

The contactor coils receive 24 vac. to activate the motor in either the open or close direction. There are two contactor coils (one for open and one for close).

4D.

The limit switches are S.P.D.T. (single pole, double throw). These limit switches are what tells the operator to shut off at either the full open or full close position.

4E.

The R.P.M. Sensor is counting the r.p.m 's of the wheel that is attached to the shaft. There are no repairable parts for the sensor of wheel. The only thing that should be checked is the wire harness. Make sure that the wires are crimped and fully seated into the housing. Also make sure that the housing is fully seated into the circuit board.

4F.

The circuit board is the “brains” of the entire system. It is a non-repairable item. In many cases, un-awareness of the different programs and their functions can make it look like there is a problem when in actuality it is just a missed or wrong program setting. Make sure that all the connections wires on the “J1” terminal board are installed correctly. There **MUST** also be a stop button connected to J1-3 and J1-5.

General Reference Information

THE GATE

Double check the gate and its related hardware. Does the gate move freely? If it doesn't, this can affect the internal obstruction sensor.

WIRING DIAGRAM

Always reference the wiring diagram that was supplied with the operator. Note that some of the accessory items may have their own wiring diagram.

If you cannot correct the problem or if you feel you will require technical assistance, contact your local distributor or dealer. If you do not have a distributor or dealer, then contact us for technical assistance. Please when calling for assistance, make sure you have the gate operator model number, voltage, phase, horsepower and a list of all accessories that are attached to the operator.

Features and Program Troubleshooting Review

The **internal obstruction sensor (r.p.m. sensor)** will cause the operator to either stop or reverse if it senses a slow down in gate speed. A damaged or poorly working gate can trip the sensor and cause “phantom” reversing or stopping. Also if the operator's clutch is slipping too much, this can cause the same situation.

Required Maintenance – Normal Usage



		Check at least once every			
Month intervals		1	3	6	12
Internal speed sensor	Check for proper operation	✓			Complete Check Out
External safety systems	Check for proper operation	✓			
Gate caution signs	Make sure they are present	✓			
Clutch system ✓	Check & adjust if required		✓		
Brake system	Check & adjust if required			✓	
Manual disconnect	Check & operate			✓	
Drive chain (D) (E)	Check for excessive slack & lubricate			✓	
Sprockets & pulleys	Check for excessive slack & lubricate			✓	
Gate	Inspect for wear or damage			✓	
Accessories	Check all for proper operation			✓	
Electrical	Inspect all wire connections			✓	
Frame bolts	Check for tightness			✓	
Total unit	Inspect for wear or damage				

Table 9

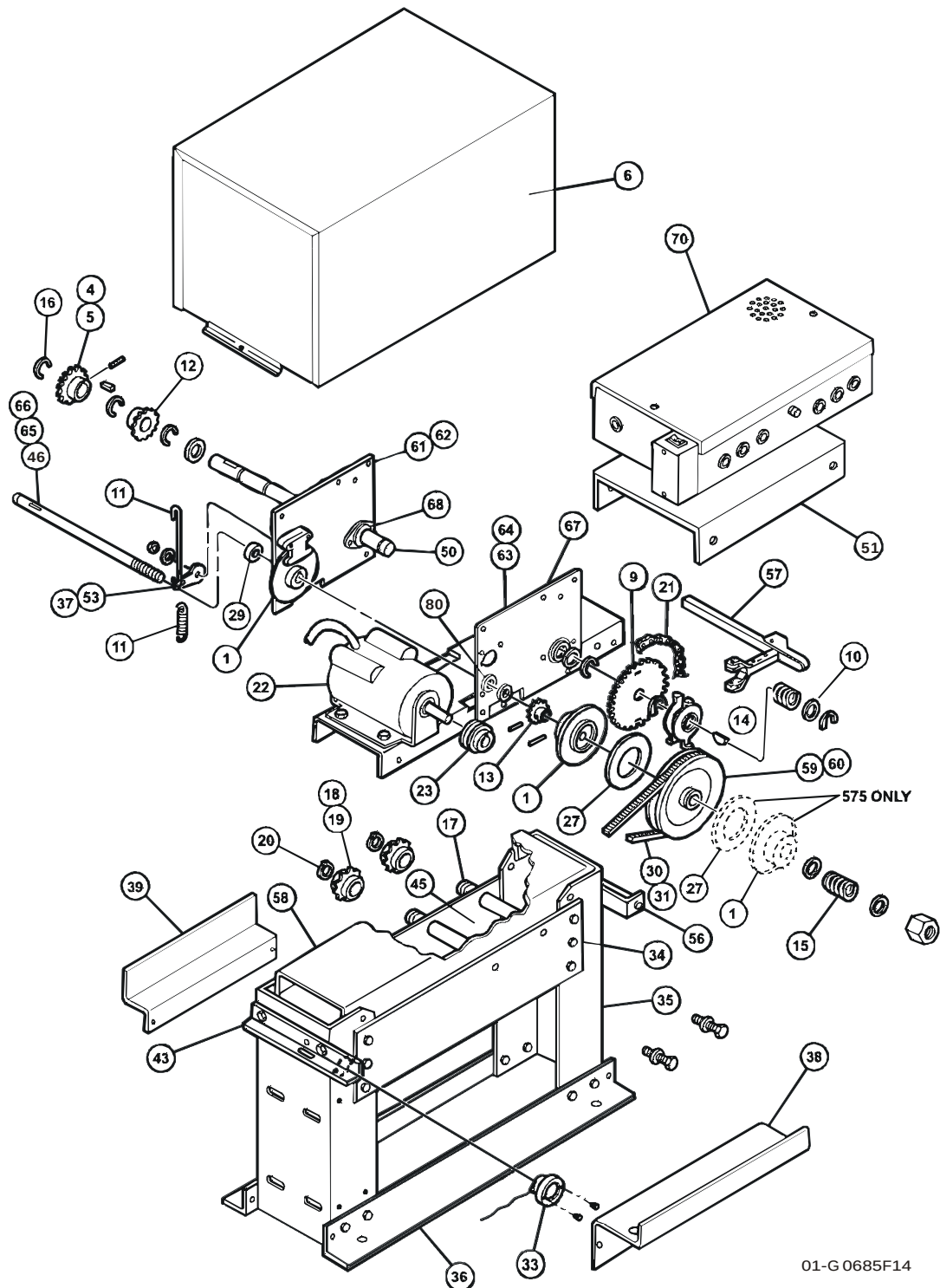
✓ **Important:** A clutch that is set too loose will give false, inherent entrapment and reverse or stop the gate.

NOTES:

- A. Caution:** When servicing, always disconnect operator from electrical power supply.
- B.** Severe or high cycle usage will require more frequent maintenance checks.
- C.** Inspection and service should always be performed anytime a malfunction is observed or suspected.
- D.** Limit switches may have to be reset after any major drive chain adjustments.
- E.** If lubrication chain, use only a proper chain lub spray or a lightweight motor oil. Never use grease or silicone spray.
- F.** When servicing, please do some “home cleaning” of the operator and the area around the operator. Pick up any debris in the area. Clean the operator if needed.
- G.** It is suggested that while you are at the site, you take some voltage readings of the operator. Using a VOM, double check the incoming voltage to the operator to make sure it is within ten percent of the operator’s rating.
- H.** While you are at the site, now would be a good time to let the owner or manager know about any new items available or any safety items that could and should be added to the site.

SL570/540 Parts List & Drawings

Exploded View



01-G 0685F14

Figure 24

Control Box Exploded View

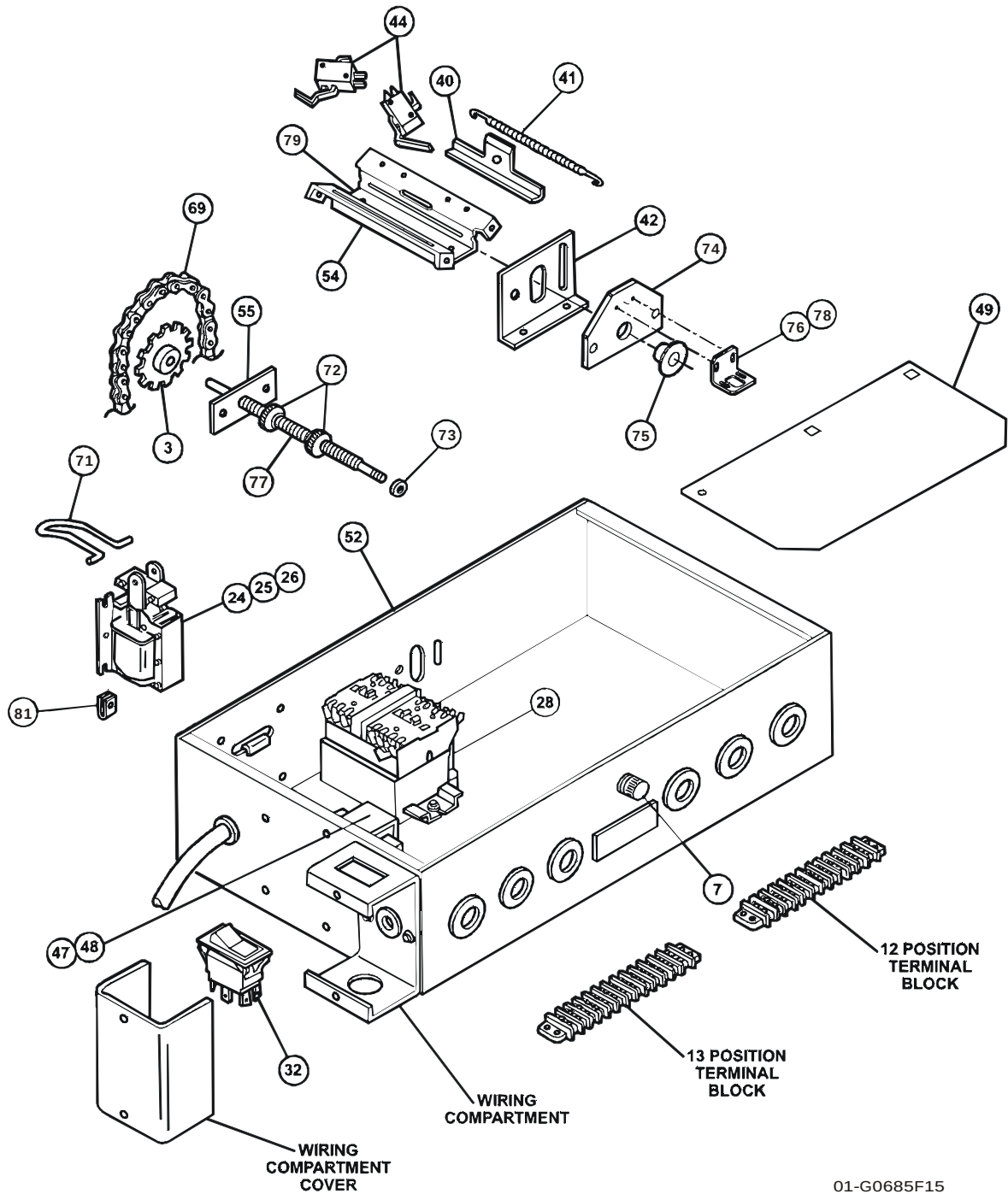


Figure 25

Parts List

Ref. #	Part #	Description	Ref. #	Part #	Description
1	MG24732	BRAKE/CLUTCH PLATE KIT	32	MG3101990	POWER SWITCH
3	MG24734	40B-11T TIMER SPROCKET	33	76-G0537	ALARM ASSY.
4	MG9200040	SL540 OUTPUT 41B-17T SPROCKET KIT	34	MG4100316-P	SIDE PLATE (PULLEY SIDE)
5	MG24736	SL570 OUTPUT 50B-15T SPROCKET KIT	35	10-G0571-P	END CHANNEL
6	MG24740-T	OUTER COVER ASSY. KIT	36	MG4100621-P	MOUNTING ANGLE
7A	25-2006	6A OVERLOAD FUSE, 1-PH	37	MG4100639	BRAKE LEVER
7B	25-2008	8A OVERLOAD FUSE, 1-PH	38	MG4100932-P	BELT SHIELD
7C	25-2010	10A OVERLOAD FUSE, 1-PH	39	MG4100933-P	CHAIN & SPROCKET SHIELD
7D	25-2015	15A OVERLOAD FUSE, 1-PH	40	MG4100966	LIMIT DETENT
7E	25-2020	20A OVERLOAD FUSE, 1-PH	41	MG4100967	LIMIT DENT SPRING
7F	25-4001	1A OVERLOAD FUSE, 3-PH	42	MG4100977	LIMIT SUPPORT BRACKET
7G	25-4001-5	1.5A OVERLOAD FUSE, 3-PH	43	MG4101051-P	COVER STOP
7H	25-4002-5	2.5A OVERLOAD FUSE, 3-PH	44	23-10041	LIMIT SWITCH
7I	25-4004	4A OVERLOAD FUSE, 3-PH	45	MG4101349-P	SIDE PLATE (DRIVE SIDE)
9	MG49157	41A-48T SPROCKET KIT	46	MG4101498	INTERMEDIATE SHAFT
10	MG49158	DISCONNECT SPRING KIT	47	21-3260	50VA TRANSFORMER
11	MG49159	BRAKE LINK KIT	48	21-10298	100VA TRANSFORMER
12	MG49161	48B-11T TIMER SPROCKET KIT	49	69-G2000	S3 PCB
13	MG49162	41B-9T SPROCKET KIT	50	MG4101507	OUTPUT SHAFT
14	MG49163	DISCONNECT PLATE KIT	51	10-G0546	CONTROL BOX MOUNTING PLATE
15	MG49164	CLUTCH SPRING KIT	52	MG4101513	SOLENOID LINK LINER
16	MG49165	OUTPUT SHAFT CLIP RING KIT	53	MG4200311	BRAKE PUCK AND LEVER ASSY.
17	MG49166	IDLER SHAFT KIT	54	MG4200349	LIMIT SWITCH BRACKET ASSY.
18	MG49167	SL540 41B-15T IDLER SPROCKET KIT	55	MG4200350	LIMIT PLATE AND BEARING ASSY.
19	MG49169	SL570 50B-12T IDLER SPROCKET KIT	56	MG4200400	COVER HINGE
20	MG49171	IDLER SHAFT CLIP RING KIT	57	MG4200789	DISCONNECT ARM ASSY.
21	MG49146	#41 ROLLER CHAIN KIT	58	MG4200843	FRAME AND NUTSERT ASSY.
22A	20-3050-5T	MOTOR - 1/2HP 575V 3PH	59	MG4200902	SL540 PULLEY ASSY.
22B	20-3075-5T	MOTOR - 3/4HP 575V 3PH	60	MG4201093	SL570 PULLEY ASSY.
22C	MG1010022	MOTOR - 1/2HP 115V 1PH	61	MG4200913	SL540 BEARING PLATE ASSY. (DRIVE SIDE)
22D	MG1010023	MOTOR - 3/4HP 115V 1PH	62	MG4200915	SL570 BEARING PLATE ASSY. (DRIVE SIDE)
22E	MG1010024	MOTOR - 1/2HP 208/230V 1PH	63	MG4200914	SL540 BEARING PLATE ASSY. (PULLEY SIDE)
22F	MG1010025	MOTOR - 3/4HP 208/230V 1PH	64	MG4200916	SL570 BEARING PLATE ASSY. (PULLEY SIDE)
22G	MG1010026	MOTOR - 1/3HP 115V 1PH	65	MG4200947	SL540 INTERMEDIATE SHAFT ASSY.
22H	MG1010027	MOTOR - 1/3HP 208/230V 1PH	66	MG4201129	SL570 INTERMEDIATE SHAFT ASSY.
22I	MG1010028	MOTOR - 1HP 208/230V 1PH	67	MG8230002	THRUST WASHER
22J	MG1010029	MOTOR - 1HP 115V 1PH	68	MG8260018	SL570 FLANGETTE BEARING NOTE: SL540 BEARINGS ARE BRONZE AND PRESSED IN TO THE SIDE PLATES. IT IS RECOMMENDED THAT THE ENTIRE SIDE PLATE ASSY. BE ORDERED.
22K	MG1030002	MOTOR - 1/2HP 208/230/460V 3PH	69	MG49177	LIMIT CHAIN KIT
22L	MG1030004	MOTOR - 3/4HP 208/230/460V 3PH	70	K-73SL540-3311	CONTROL BOX ASSY.
22M	MG1030007	MOTOR - 1HP 208/230/460V 3PH	71	MG4101510	BRAKE SOLENOID LINK
22N	MG1030013	MOTOR - 1HP 575V 3PH	72	13-10024	LIMIT NUTS
23	MG3100374	MOTOR PULLEY	73	29-18163	16 POLE MAGNET
24	22-120	120V BRAKE SOLENOID	74	10-G0470	LIMIT ASSY. END PLATE
25	22-240	240V BRAKE SOLENOID	75	12-G0506	FLANGE BEARING IN LIMIT ASSY.
26	22-575-1	575V BRAKE SOLENOID	76	74-G0487-M	HALL EFFECT SENSOR ASSY.
27	MG3100742	CLUTCH FACING	77	74-G0504	LIMIT SHAFT ASSY.
28	03-8024	24V CONTACTOR	78	10-G0483	HALL SENSOR MOUNTING BRACKET
29	MG3600942	5/8" SET COLLAR	79	MG49283	LIMIT SWITCH ASSY. KIT
30	MG3601049	SL570 COGGED V-BELT	80	MG8260014	5/8" BORE RADIAL BEARING
31	MG4101526	SL540 SOLID V-BELT	81	MG49284	U-NUT KIT

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Seller warrants that the goods are free from defect in materials and/or workmanship for a period of one year from the date of shipment from the F.O.B. point. Goods returned to Seller for warranty repair within the warranty period, 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 and returned prepaid. Defective parts will be repaired or replaced with new or factory-rebuilt parts at Seller's sole option. Authorization instructions for the return of any goods must be obtained by Buyer from Seller before returning the goods. The goods must be returned with complete identification, freight prepaid, and in accordance with Seller's instructions or they will not be accepted. In no event will Seller be responsible for goods returned without proper authorization or identification.

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Prepare to provide the following
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- ☐ **Part Number**
 - ☐ **Part Name**
 - ☐ **Model Number**
-
-