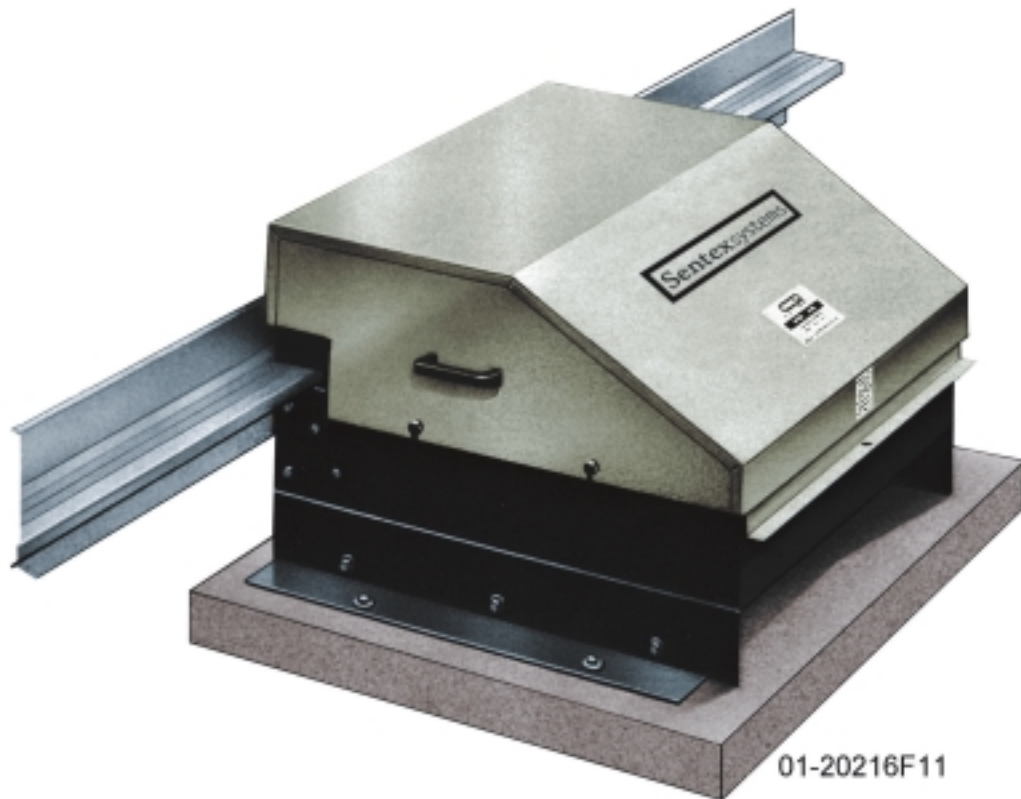


Installation Instructions



Commercial Vehicular Slide Gate Operator

**Hydraulic Models: HS670-100-B2
HS670-200-B2**

IMPORTANT!

Installers: Leave this manual with the end user after completing the installation.

Limited One-Year Warranty

LiftMaster gate operators are warranted against deficiencies in material and workmanship for a period of one (1) year from date of purchase, providing recommended installation and maintenance procedures are followed. This warranty is in lieu of all other warranties expressed or implied (some states do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you) and shall be considered void if damage was caused by fire, flood or lightening. The manufacturer will not be responsible for any labor charges incurred in the removal or replacement of deficient parts.

In case of failure due to deficiencies in material or workmanship during the warranty period, the complete gate operator will be repaired or replaced items in warranty. For information on how to obtain replacement parts or a replacement operator under terms of this warranty, contact LiftMaster.

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General Information

Inspection

Inspect the operator carefully for any possible shipping damage. Using the packing list supplied with the unit as a guide, check for any shortage of parts.



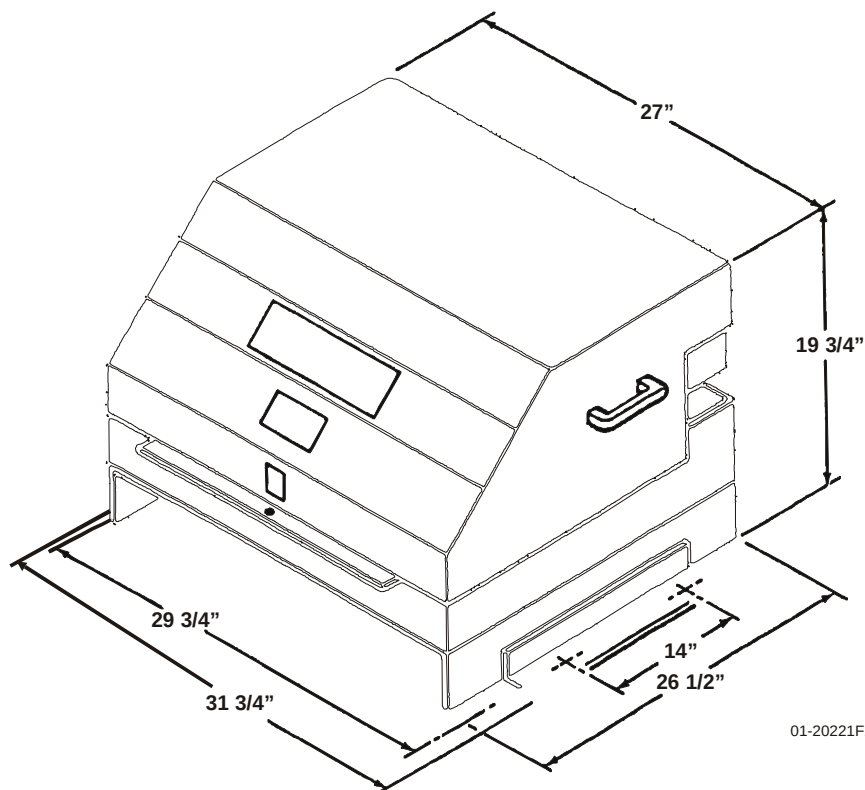
IMPORTANT NOTE

Do not run operator without vent cap installed. For more detailed information about electrical, hydraulic and mechanical systems, see the troubleshooting guide supplied with the unit.

Specifications

	MODEL HS670-100	MODEL HS670-200
H.P.	1	2
GATE SPEED	15 TO 18"/SEC.	15 TO 18"/SEC.
MAX. GATE SIZE	DESIGNED FOR MOST LENGTHS AND WEIGHTS OF SLIDE GATES	
FREQUENCY OF USE	DESIGNED FOR VERY HIGH RATES	
PRIMARY VOLTAGES	120-230-460	120-230-460
SECONDARY VOLTAGE	24 VAC.	24 VAC.

Table 1

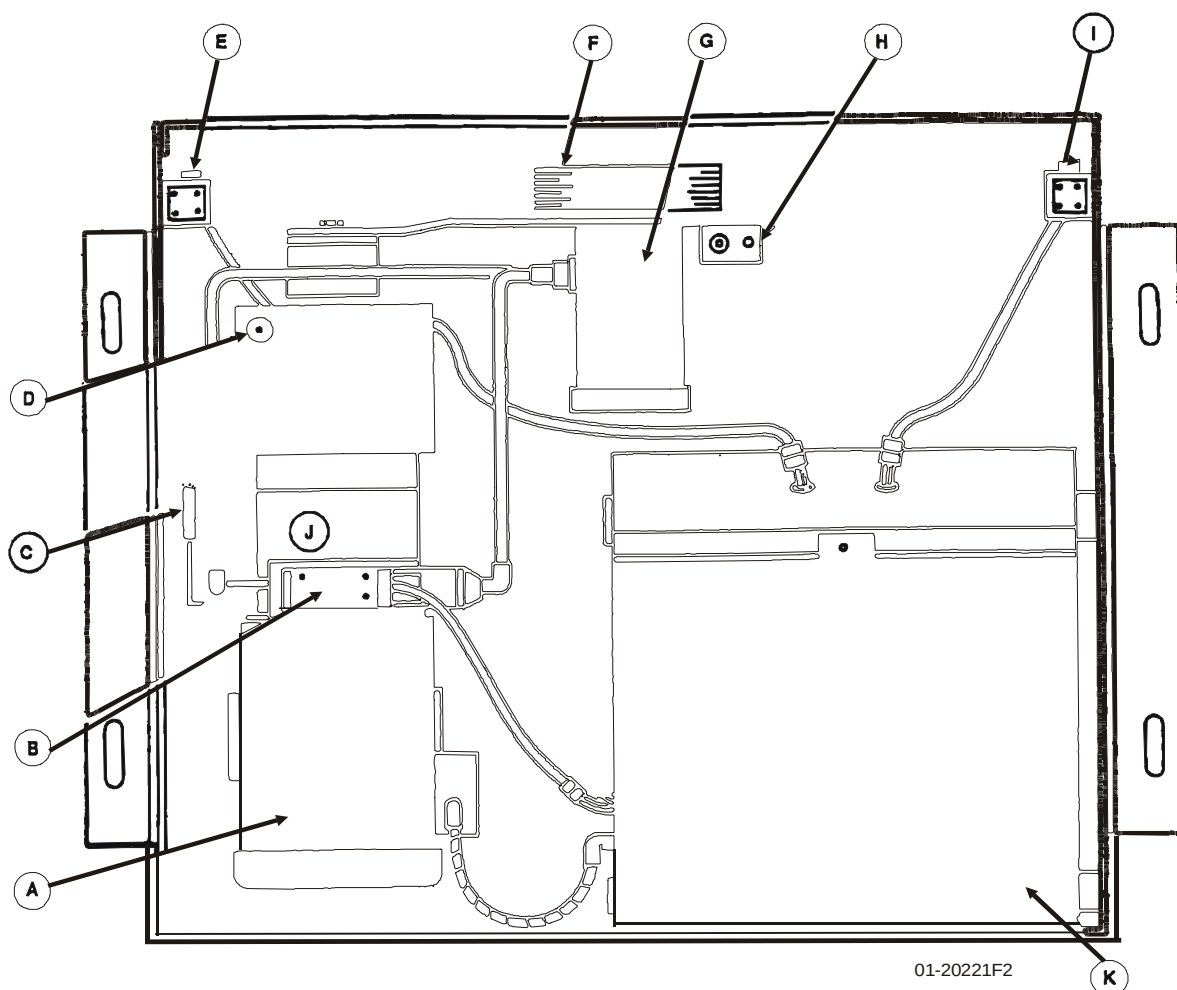


01-20221F1

Figure 1

Operator Information

- A. A.C. MOTOR-HS670-100 = 1 H.P./3450 R.P.M. HS690-200 = 2 H.P./3450 R.P.M. Both have continuous duty rating. And built-in manual reset overload.
- B. DIRECTIONAL VALVE – 2 position, 4 way 24 vac.
- C. BYPASS VALVE – For manual operation.
- D. VENT CAP – When removed, add fluid here.
- E. LIMIT SWITCH – is open switch for R.H. and close switch for L.H.
- F. DRIVE WHEELS – HS670-100 = 1 ½" x 6". HS670-200 = 2" x 6".
- G. HYDRAULIC MOTOR – Roller Vane Type. Displacement = 12 in./3.
- H. SUSPENSION SYSTEM – See instructions.
- I. LIMIT SWITCH – is close switch for R.H. and open switch for L.H.
- J. RELIEF VALVE – Built into pump.
- K. CONTROL PANEL



01-20221F2

Figure 2

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



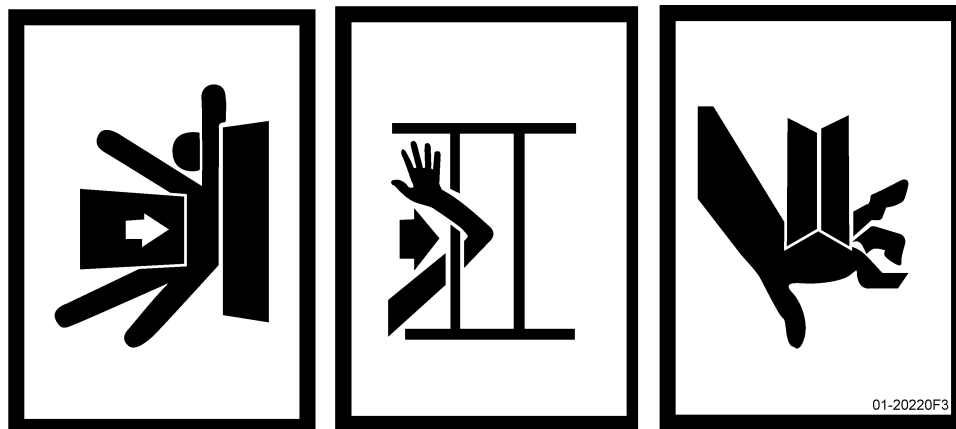
- 1 Confirm gate operator model is specified by Installation and Maintenance Manual for application type, gate size and frequency or use.
- 2 Confirm ALL appropriate safety features, such as gate edges, photo-electric sensors, vertical posts and enclosed tracks, are specified.
- 3 Confirm gate system 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 Type” Gates



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 or 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.

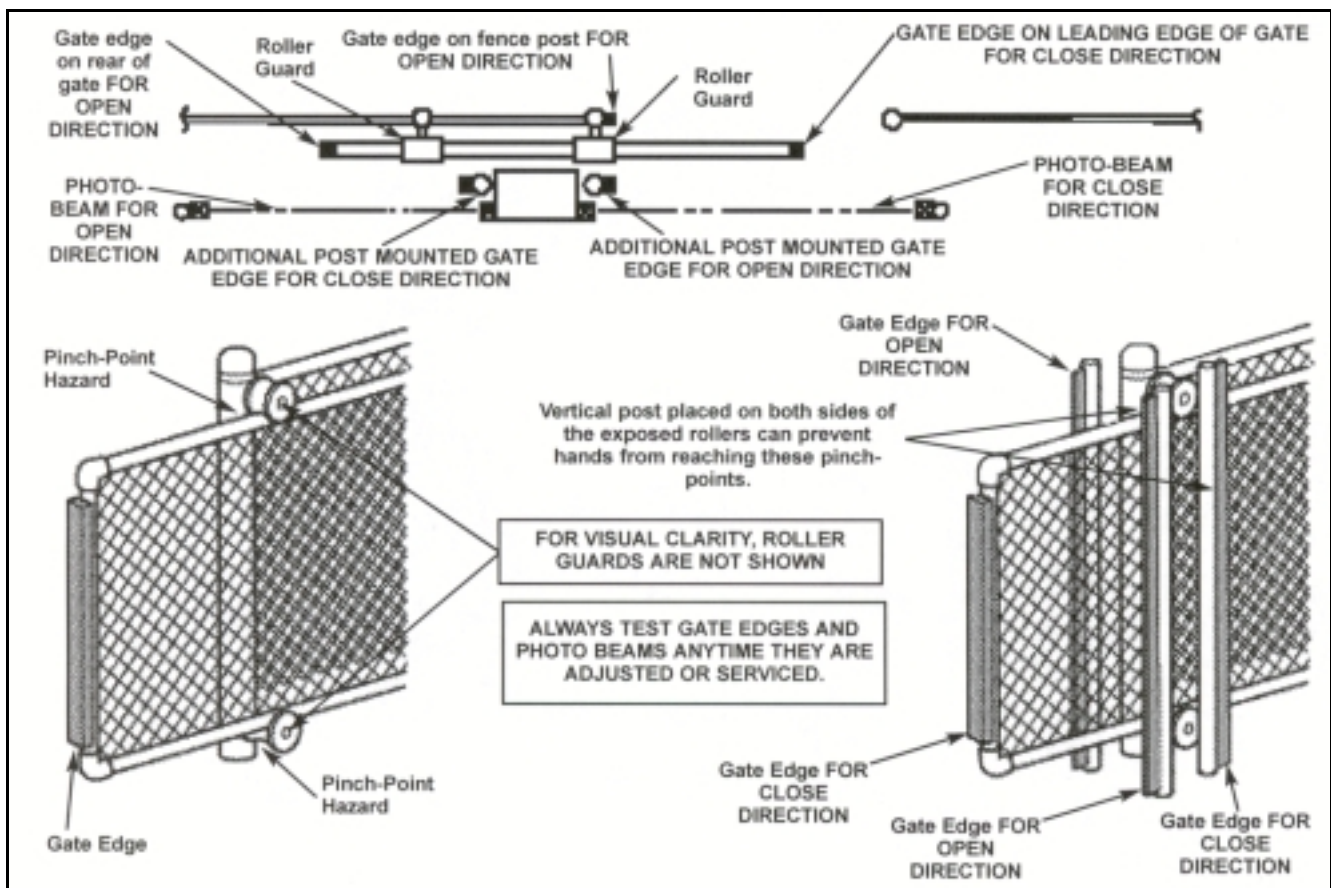
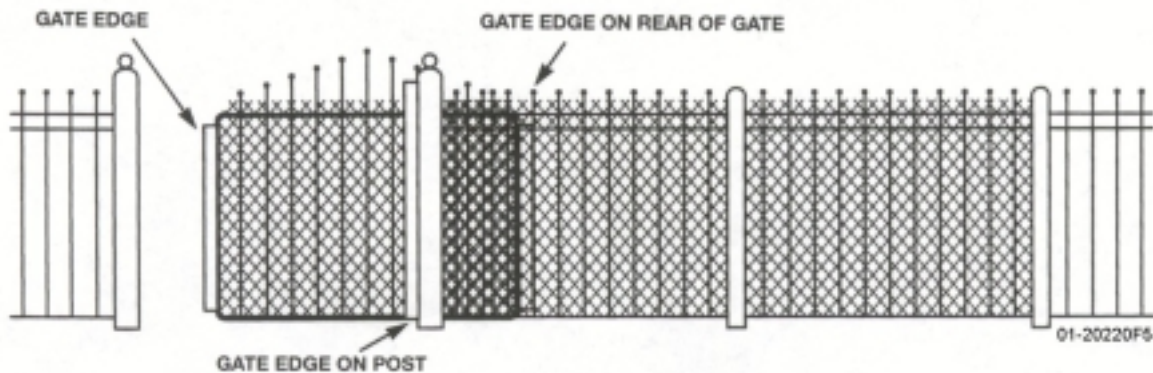


Figure 3

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 arms 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 screen mesh on the gate to prevent access through openings anywhere the gate may travel.

**Figure 4**

Pre-Installed Check-List

- 1 Check the gate. It must operate freely. If necessary, lubricate or adjust gate to operator installation. The gate should be level and plumb.
- 2 Overhead, tracked, or roller tracked gates may require back frame to be constructed to allow for drive rail attachment.
- 3 If wiring has already been installed, check that it meets the following wiring specifications.

Wiring Specifications

- 1 Knowing operator voltage and phase, select selection that corresponds.
- 2 The distance shown on the chart is the length of the wire measured in feet from the operator to the power source. (do not exceed maximum distance.)
- 3 If your power distance is greater than the figures shown, it is recommended that the power utility company be notified for a service feeder. Where feasible, a higher voltage or three-phase operator should be used.
- 4 When wire larger than 12 gauge is used, a separate junction box will be needed for operator power connection. (not supplied.)
- 5 Select control wire gauge from chart. If greater distance or lighter gauge wire is required, consult manufacture.
- 6 Wire run calculations are based on the national electrical code, article 430, allowing 5% voltage drop.
- 7 Supply voltage must be within 10% of the operator rating under load conditions.
- 8 Connect power accordance with local codes.
- 9 Wire table is based on stranded copper wire. Wire insulation must be suitable to application.

POWER WIRING

THREE PHASE

MAX. DIST. (FT.)

VOLT.
H.P.
SINGLE UNIT
DUAL
UNIT
WIRE
GAUGE

230
1HP
343
171
12

SINGLE PHASE MAX. DIST. (FT.)

VOLT
H.P.
SINGLE
UNIT
DUAL UNIT
WIRE
GAUGE

115
HP
56
28
12

	89
	44
546	10
273	
10	143
	71
868	8
434	
8	227
	113
1381	6
690	
6	230
	1HP
460	226
1HP	113
1593	12
796	
12	359
	113
2533	10
1266	
10	572
	179
4029	8
2014	
8	909
	286
6407	6
3203	
6	115
	2HP
230	29
2HP	14
181	12
90	
12	46
	23
289	10
144	
10	74
	37
459	8
229	
8	118
	59
731	6

365	230
6	2HP
460	110
2HP	55
796	12
398	
12	
	175
	87
1266	10
633	
10	
	280
	140
2014	8
1007	
8	
	445
	222
3203	6
1601	
6	

Table 3
Table 2
CONTROL WIRING

VOLTAGE	MAX DIST. (FT.)	WIRE GAUGE
24 vac	102	14
	163	12

Table 4

For longer control wiring distances, LiftMaster “Long distance Interface” (LDI) should be used.

Installation

Installation Notes

- Installation shown is for a right-handed unit (on right side of gate opening when inside looking out). Left-handed is opposite. For L.H. conversion, see page 24.
- If there is existing concrete at area of unit mounting, use dimensioning procedure described in step 1. Conduit locations may require modifications to suit your application.

Step 1: Concrete Pad

See Figure 5.

- 1 Layout concrete pad as detailed.
- 2 Locate conduit, as required, prior to pouring concrete.
- 3 Pour concrete, insuring that pad is level and above the ground line. Pad must be a minimum of 24 inches in depth or below the frost line, whichever is greater.
- 4 Allow concrete to set at least 2 days before installing unit.
- 5 Locate four (4) ½" threaded anchors (not supplied) or other means of fastening as shown. Anchors must be positioned accurately and be secure in the concrete.



NOTES

- Always use separate conduits for power wiring and control wiring.
- You may want to install extra conduit for future wiring considerations.
- For detailed information on the emergency disconnect system, see instructions supplied with it.
- This is only a suggested layout, other pad layouts are possible.

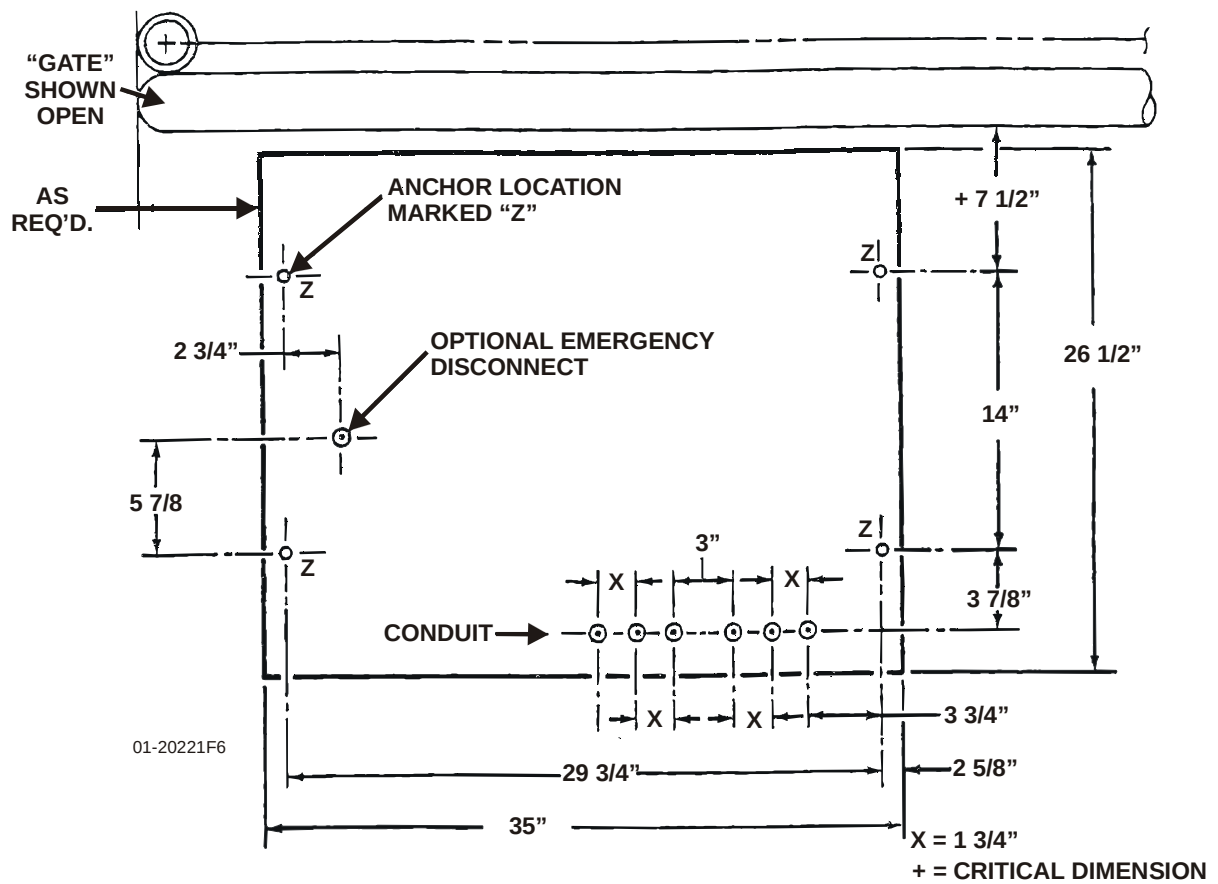


Figure 5

Step 2: Drive Rail

IMPORTANT NOTES

It is very important that the drive rail be:

- Level and parallel to the gate and operator.
 - As close as possible to the 11 1/2" dimension.
 - Very securely mounted to the gate and back frame.
- 1 If using your own drive rail, see detail of LiftMaster drive rail for proper dimensions.
 - 2 The length of the drive rail should be the gate opening width plus 2-3 feet.
 - 3 It is suggested that the drive rail be made out of or coated with a material that will inhibit rust.
 - 4 If you are using the LiftMaster anti-skid tape or another means of anti-skid, install it to the rail now.

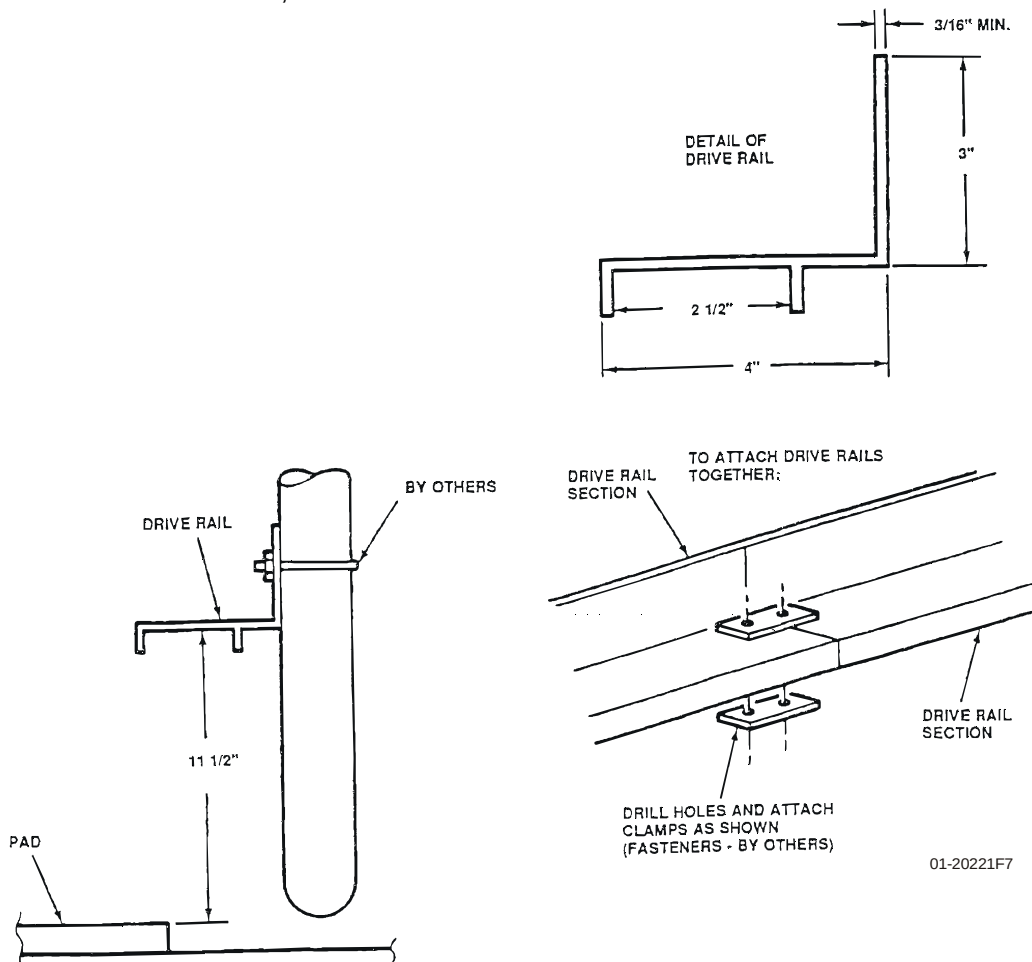


Figure 6

Step 3: Mounting

- 1 Remove the cover from the operator.
- 2 Carefully secure the operator to the concrete pad with the drive wheel facing the gate.



IMPORTANT NOTE

Operator must be level and parallel with the gate and drive rail. By loosening the bolts securing the mounting legs to the unit, the operator can be slightly adjusted up or down. Retighten bolts.



Make sure that the drive rail and wheels are aligned properly. See detail below. Also see page 15.

Step 4: Vent Cap

Remove the threaded plug from the pump tank and install the vent cap in its place. Do not throw plug away. Leave it with unit.



IMPORTANT NOTE

Never run the operator without the vent cap in place.

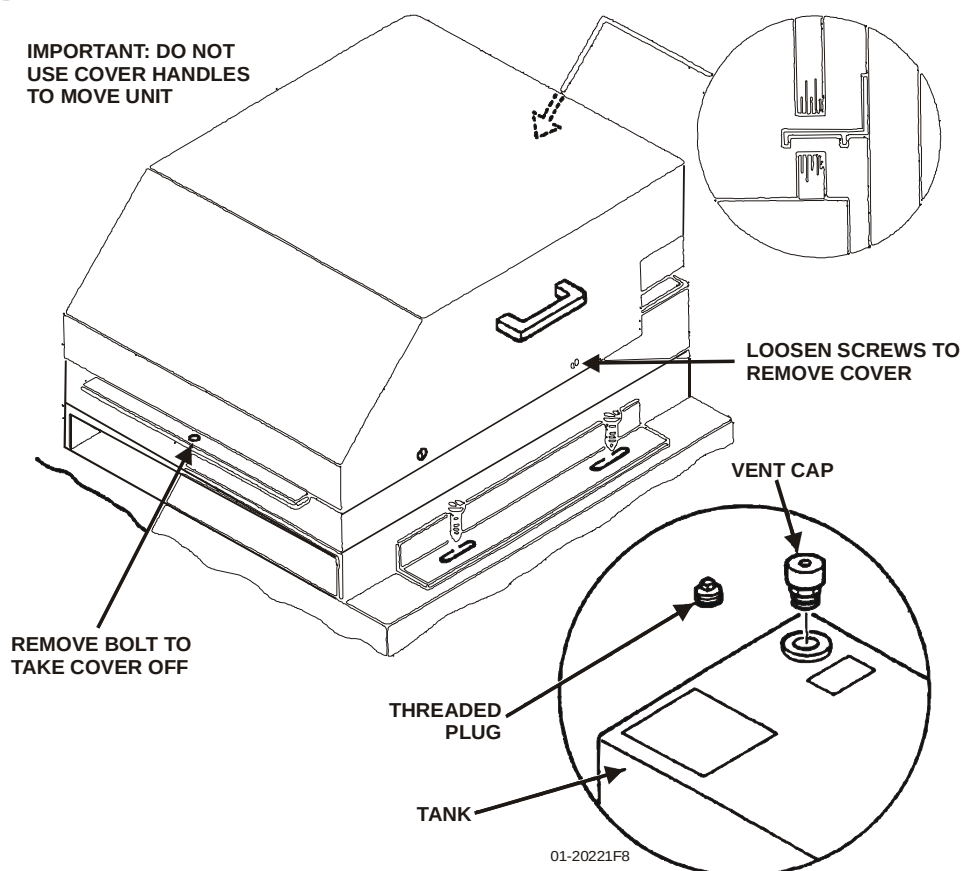


Figure 7

Step 5: Limit Shoes

See Figure 8.

- 1 Manually open the gate to the full position.
- 2 Locate the open limit switch lever and mark its position.
- 3 Manually close the gate to the full close position.
- 4 Locate the close limit switch lever and mark its position on the drive rail.
- 5 Manually open the gate about halfway. Per drawings below, measure and drill holes. Mount both limit shoes to underside of drive rail.

**IMPORTANT NOTES**

The limit shoes are slotted, so minor adjustments may be made later for the fine tuning of the full open and close position. Also, note that the limit switches themselves may be slightly adjusted up or down.

It is highly suggested that gate stops be installed to the gate at the full open and closed positions.

Due to the fact that this unit has no brake, there will be some gate coasting and, depending on gate weight, it could be considerable, so it might drift past the limits.

If coasting is a problem and a precise stop is needed, part number 410.1726 (supplied) should be installed. See directions.

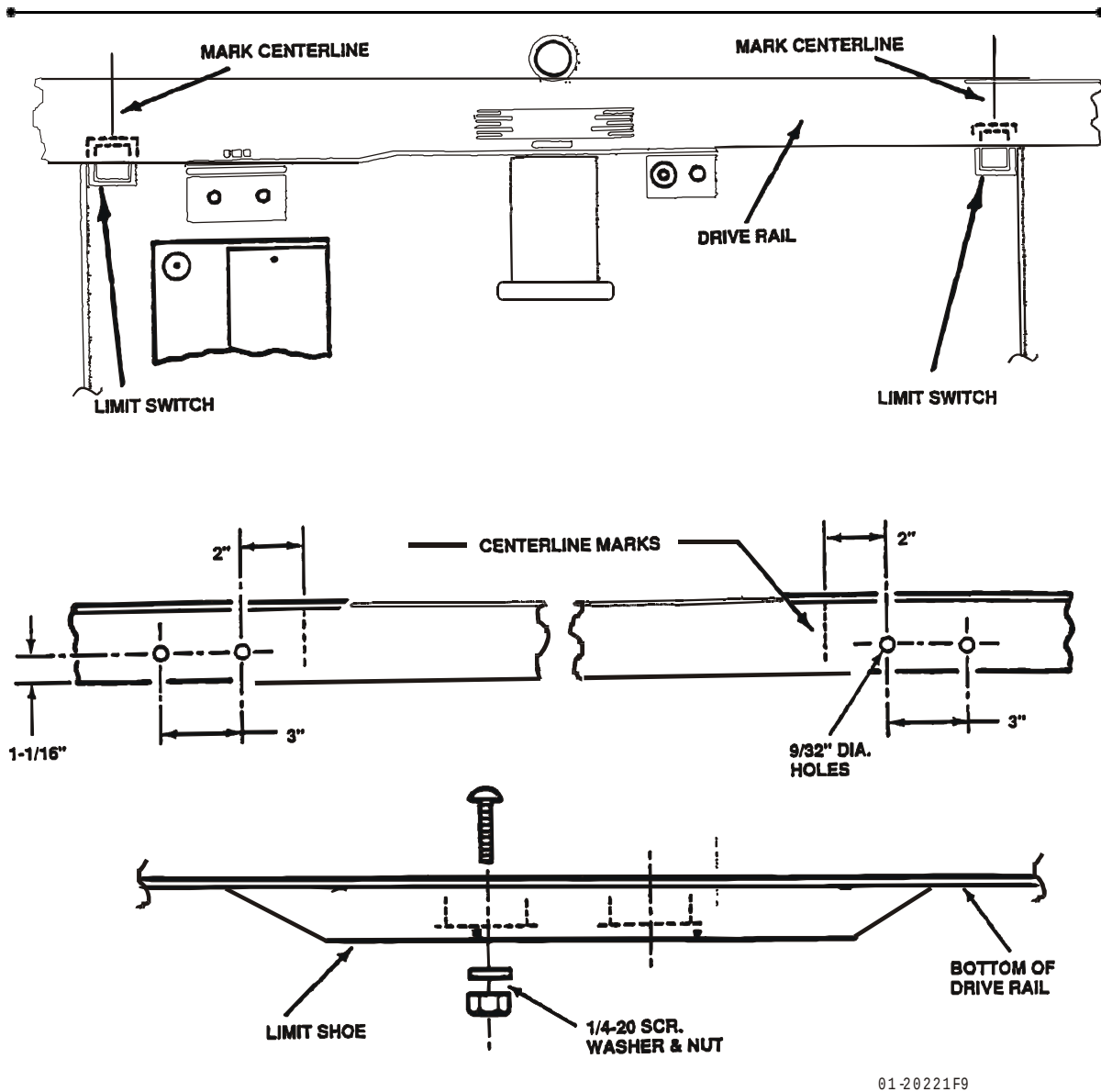


Figure 8

Step 6: Suspension System

See Figure 10.

The suspension system is semi-factory set; simply loosen the suspension separate or bolt completely. This will allow both wheels to pinch the drive rail.



NOTE

It is suggested that the separator bolt be removed and left with unit. If it is not removed, make sure that it can not interfere with suspension system.

If more or less pressure is required, adjust both upper and lower suspension spring lock nuts as desired.

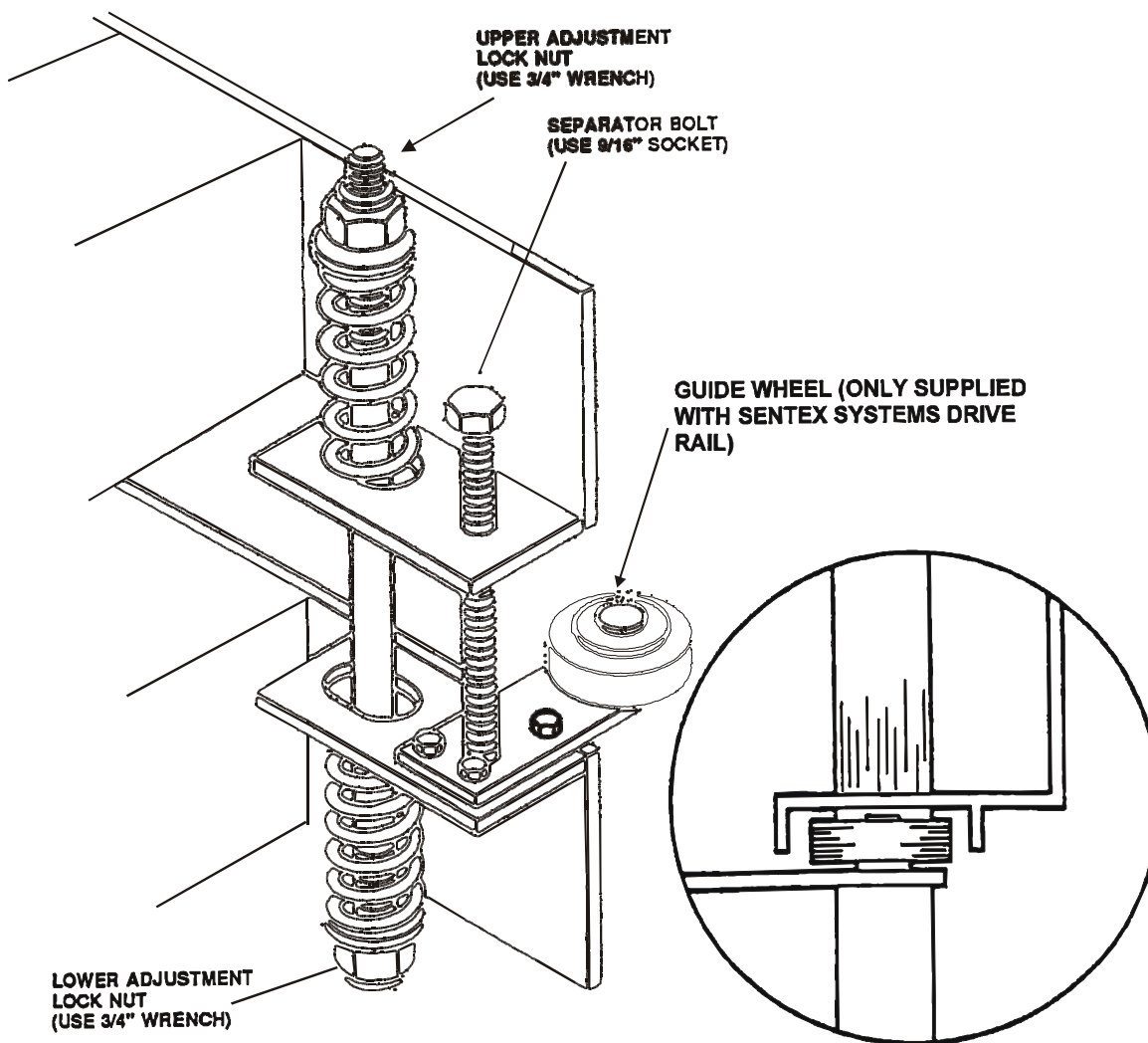


IMPORTANT NOTES

Both springs should apply about the same amount of pressure.

If using the LiftMaster drive rail, make sure that the drive rail guide wheel is positioned properly. See Figure 9.

It is very important that the suspension system is adjusted properly. This system puts pressure on the drive wheels so they can pinch together on the drive rail. This system also allows the drive wheels to “float” so they can follow any slight misalignment of the drive rail. If the springs are overtightened, it will reduce their life span. But on the other hand, if they are under-tightened, the drive wheels may slip on the drive rail.



01-20221F10

Figure 9

Step 7: Manual Operation

The pump is equipped with a manual bypass valve. By positioning the valve handle down (manual operation), the gate can be back-driven open or closed.

A back-up to this is the suspension separator bolt. By tightening this bolt, the drive wheels will be pushed off the drive rail.

**NOTE**

When manually opening or closing the gate, it is not at the beginning, easy to get the gate started. Since fluid has accumulated in the drive motors, it will take a good size push to get the gate started.

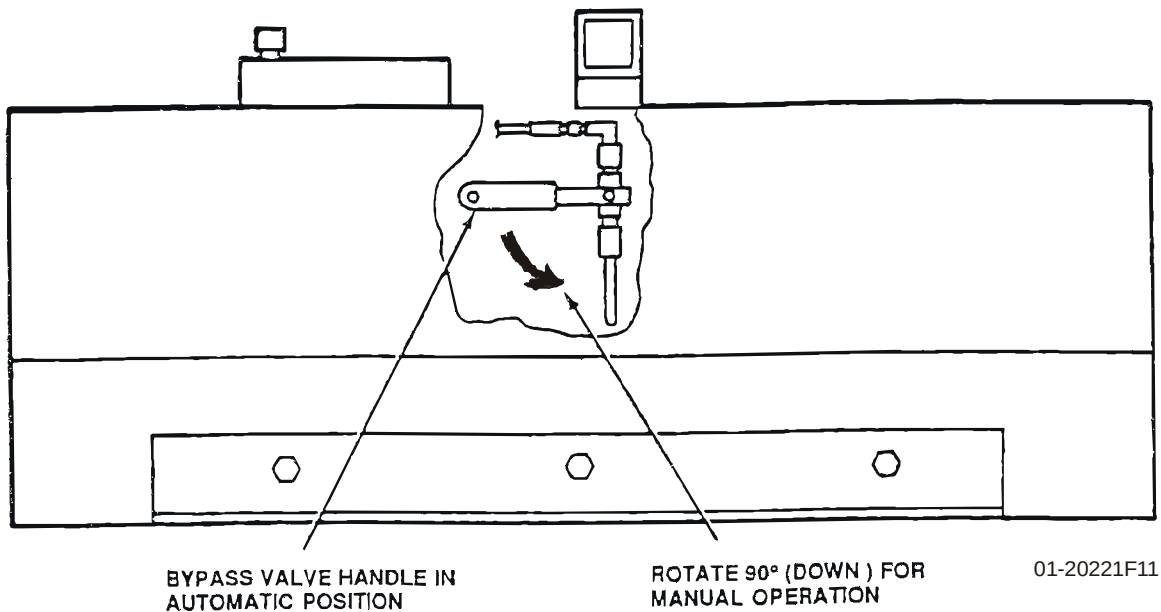


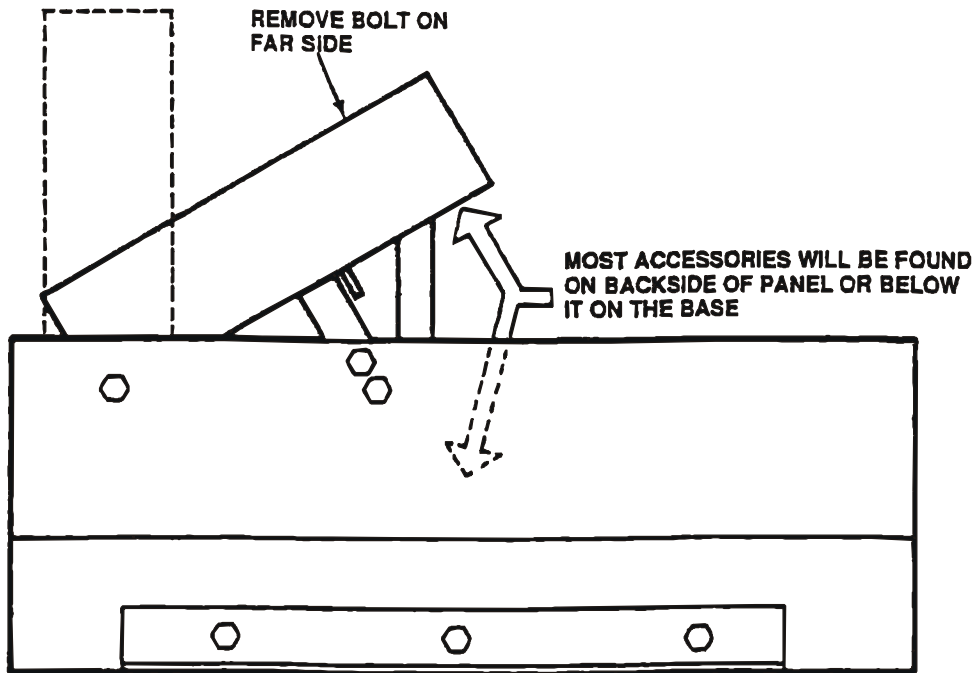
Figure 10

Step 8: Factory Installed Accessories

Most factory-installed accessories are located on or under the control panel and are already wired into it.

**NOTE**

By removing one bolt, the entire control panel can be pivoted out of the way.



01-20221F12

Figure 11

Step 9: Electrical Wiring



Make sure power is disconnected at main power supply and at power disconnect switch on the unit before proceeding.

- 1 Secure all electrical power connections to the power wiring terminal strip. Single phase to L1, L2 and GROUND. Three phase to L1, L2, L3 and GROUND.
- 2 Connect all controls to the control wiring terminal strip. Reference the electrical diagram supplied with the unit.



IMPORTANT NOTE

On three-phase units, when unit is first run, if you can hear the pump running but the gate does not move:

- 1 Make sure the manual bypass valve is in the automatic operation position. See page 21.
- 2 If the bypass valve is OK, disconnect the main power supply and reverse any two wire connections at the power terminal strip.

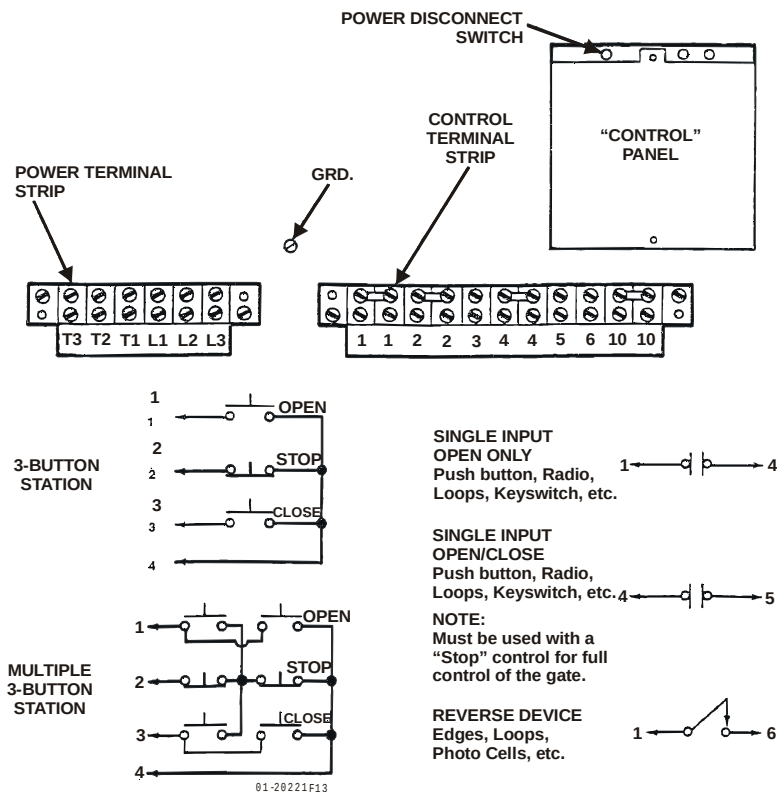


Figure 12

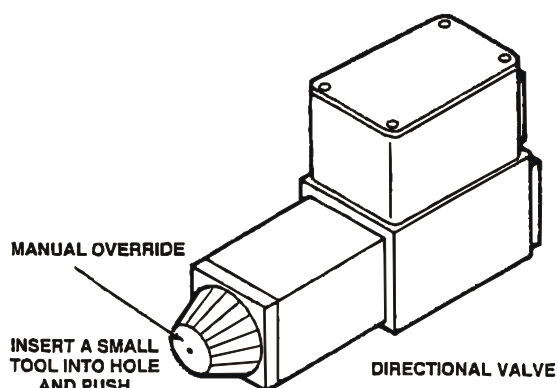
Step 10: Reversing Device

Due to the amount of force this opener can generate, please install a sensing edge on the gate. It is imperative and beneficial to the customer, LiftMaster, and yourself that the installation is as safe as possible.

Left Hand/Right Hand Conversion

When switching the unit from right hand to left hand or vice-versa:

- 1 Put the by-pass valve handle in the manual position (down).
- 2 Push in the directional valve manual override 5 times.
- 3 Remove and reverse the two (2) hoses, shown below.
- 4 Return the by-pass valve to the automatic position (up).
- 5 The limit switch connectors, at the top of the control panel must be reversed.



IMPORTANT:

The limit switch connector housings are color-coded.

FOR RIGHT HAND - Black to black and red to red.

FOR LEFT HAND - Black to red and red to black.

NOTE:

For some applications, the limit switches must physically be reversed and the connectors will not be reversed.

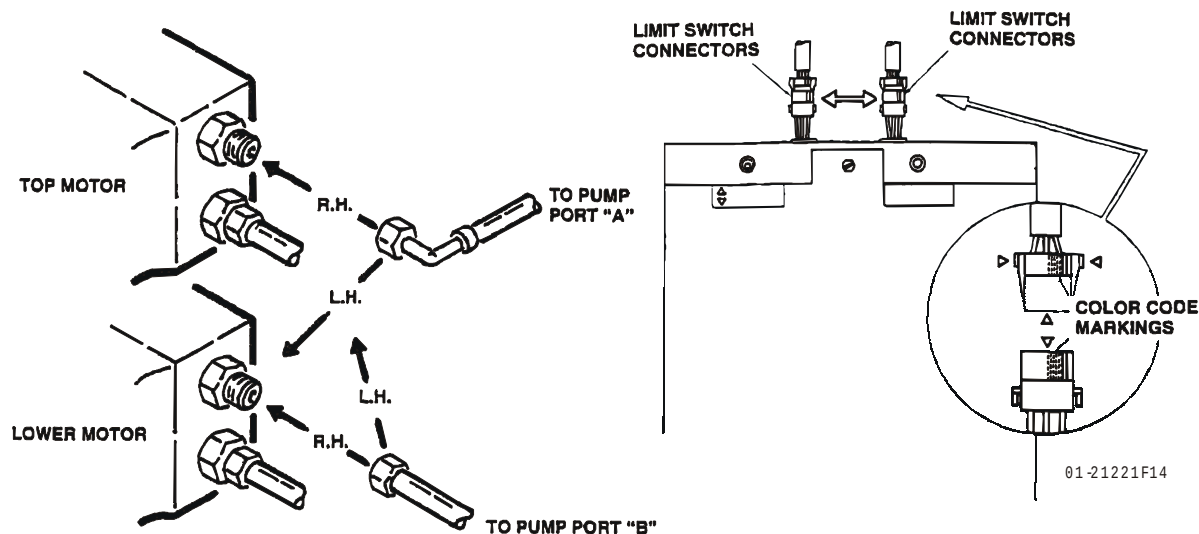


Figure 13

Operator Check-Out

OPERATED CHECK-OUT WITH ALL CONTROLS CONNECTED

- 1 Switch the power disconnect switch to “on”.
- 2 Press the “open” button, allow unit to run about 10 seconds, then press the “stop” button.



NOTE

When unit is first started, gate may not move immediately. This is caused by the fluid being circulated through the system.

- 3 Press the “close” button. Allow unit to run until the open limit switch shuts the system down.
- 4 Press the “open” button. Allow unit to run until the open limit switch shuts the system down.
- 5 Press the “close” button and test all safety features that have been installed.
- 6 Check out all optional controls that have been installed.
- 7 Test the 90-second run feature. Do this by positioning the manual bypass valve handle to the manual position. Activate the unit. The unit will run but the gate should not move. After approximately 90 seconds, the unit should automatically shut off.
- 8 Check out manual operation of the gate.
- 9 Return the bypass valve handle to the automatic operation position.



NOTE

For troubleshooting, see guide supplied. It is recommended that the M.R.D be adjusted to 2 times run time of gate. Example: if gate takes 15 seconds to open, then set M.R.D. to 30 seconds.

And Finally...

- Install gate caution signs on both the inside and outside of the gate.
- Re-install the control panel cover and the operator cover.
- If the operator got greasy or dirty, please clean it.
- Clean-up the area around the operator and gate.
- Look around for any of your tools that may be left.
- Please, leave the customer both this manual and the troubleshooting guide.
- Let the customer know that you're done and possibly review with them the system that is installed. Go over how it works, accessories and their locations, maintenance requirements, etc.

Required Maintenance Services

	Check at least once every 6 months	
Gate	Inspect for wear or damage	✓
Frame/Bolts	Check & tighten	✓
Electrical	Inspect all wire connections	✓
Safety Systems	Check & test	*
Fluid Level	Keep at least $\frac{3}{4}$ full +	✓
Fittings	Check for leaks	✓
Drive Rail	Check for damage	✓
Drive Wheels	Check for wear	✓
Manual Operation	Check & test	✓

Table 5

*Check at least once per month.

- Use only "ATF" automatic transmission fluid.



CAUTION

When servicing, always disconnect operator from power.

- For complete maintenance information, see the maintenance manual.



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FOR TECHNICAL SUPPORT

Call our toll free numbers:

(800) 323-2276

(800) 998-9197

Installation and service information is
available six days a week.

TO ORDER REPAIR PARTS

Call our toll free numbers:

(800) 528-2806

(800) 998-9197

Prepare to provide the following
information when ordering repair parts:

- **Part Number**
 - **Part Name**
 - **Model Number**
-
-