

CONTROLHOIST™
OPTIMA

INSTALLATION INSTRUCTIONS
ControlHoist Optima (CHOH)

Industrial Duty
GEARHEAD DRIVE

Jackshaft with Chain Hoist
Special Application Jackshaft

-NOT FOR RESIDENTIAL USE-

-FOR INDOOR USE ONLY-

IMPORTANT

PLEASE READ THESE INSTRUCTIONS BEFORE STARTING INSTALLATION. IT IS IMPORTANT THAT THIS OPERATOR BE INSTALLED CORRECTLY IN ORDER TO ACHIEVE SAFE AND PROPER OPERATION.

RAYNOR GARAGE DOORS DIXON, ILLINOIS 61021

LIMITED WARRANTY

Raynor warrants the electrical operator and component parts for two (2) years against defects in material and workmanship.

Under the terms of this limited warranty, for any operator components that are found to be defective upon inspection by authorized Raynor personnel, Raynor will, at its option, repair or replace the defective door components. Labor charges for installations or repairs shall be the responsibility of the consumer and must be performed by an authorized Raynor Dealer. **This warranty applies only to doors that are professionally installed by an authorized Raynor Dealer.**

This warranty extends only to the original purchaser. This warranty is not transferable.

This warranty does not apply to any damage or deterioration caused by abuse or failure to provide reasonable and necessary maintenance.

Raynor shall not be liable for any consequential or incidental damages.

ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY, ARE HEREBY EXPRESSLY EXCLUDED.

Some states do not allow the exclusion or limitation of consequential or incidental damages, so the above limitation or exclusion may not apply to you.

Claims for defects in material and workmanship covered by this warranty shall be made in writing with proof of purchase to the dealer from whom the product was purchased or call Raynor at 1-800-4-RAYNOR within the warranty period. Raynor may choose to have the product returned for inspection.

This warranty gives you specific legal rights. You may also have other rights, which may vary from state to state.

SPECIFICATIONS

The Raynor ControlHoist-Optima Jackshaft type electric operator is designed for use on commercial and industrial size sectional overhead doors and roll-up doors only.

HEADROOM REQUIREMENT

Side mount below door shaft, no additional headroom required. Operator mounted above door shaft, requires 32 inches above hardware headroom. See Fig I page 4.

SIDE ROOM REQUIREMENT

Requires 20 inches of side clearance out from jamb. See Fig. I, Page 4.

DOOR TYPE

For use on lift clearance and vertical lift sectional overhead doors requiring over 30 inches of headroom, and roll-up doors.

REDUCTION

Worm gear running in oil bath. 40 to 1 ratio. Output speed is approximately 43 RPM. Secondary reduction is chain and sprocket.

DOOR TRAVEL

Operator to move door 6 to 12 inches per second. Depending on door size, sprocket reduction and track type.

FREQUENCY OF OPERATION

Will handle up to 30 cycles per hour or 300 cycles per day.

MOTOR

Continuous duty rated, 1725 RPM.

CONTROL

24 volts secondary control circuit as standard.

ADJUSTABLE FRICTION CLUTCH

Provided to protect door and operator if door movement is obstructed and prevent serious injuries.

OVERLOAD PROTECTION

Manual reset type for over current protection.

LIMIT SWITCHES

Chain drive, screw type.

SAFETY RULES AND PRECAUTIONS FOR INSTALLATION AND OPERATION



WARNING- Failure to follow these precautions may result in severe personal injury.

- 1.) Door must be properly balanced and free working before installing operator. Improperly balanced door can be hazardous and cause severe injury. Repairs to cables, spring assemblies and other hardware must be made by qualified door installer or service man. Operator damage may result if installed on an improperly working door. Safety features of operator will not function properly if door is out of balance.
- 2.) Do not connect to electric power until installation is completed.
- 3.) Remove or make inoperative any locking device unless operator is equipped with door lock interlock feature.
- 4.) Remove all ropes, step plates and lift handles connected to the door before operating the garage door opener.
- 5.) Installation and wiring must conform to local building and electrical codes.
- 6.) Do not operate the transmitter or wall push-button unless the garage door is in sight.
- 7.) Do not allow children to play with or in the area of the door and controls.
- 8.) Do not place hands in area of pulleys, V-belt, sprockets, chain or rotating shafts.
- 9.) Install warning placard on wall next to push-button.
- 10.) Attach instruction booklet to wall near push-button.
- 11.) Do not attempt to make electrical repairs without shutting off power to the unit.
- 12.) Traffic patterns (vehicular and personnel) should be evaluated and proper safety equipment or push-button wiring installed to prevent damage or injuries.
- 13.) If momentary contact, or an automatic closure device such as radio control, treadle switch, loop detector or timer is used the door must be equipped with a reversing device such as photo eyes or a reversing edge.
- 14.) Clutch should be adjusted according to procedure outlined on page 6 and checked periodically.
- 15.) Garage doors should *NEVER* be used as pedestrian doors.

PRELIMINARY INSPECTION

Before proceeding with the installation of your Raynor Jackshaft Operator, it is advisable that you check the following items:

PACKING

Check shipping container for damage. Notify the delivering carrier immediately.

Check the nameplate located on the powerhead to verify that the correct operator was shipped to you. Also check the power source available and compare it with the electrical data on the nameplate.

VISUAL INSPECTION

Visually inspect all parts of the operator for shipping damage.

INSTALLATION INSTRUCTIONS

Many of the problems related to electric operators are due to improper installation. The following installation procedures are recommended to minimize these problems.

UNPACKING

This unit is shipped in one carton containing the operator itself, one drive and one driven sprocket, one length of chain, one control station, and one package of small hardware. Unpack carton being certain that all loose parts are removed before discarding packing material.

MOUNTING POSITION

⚠ WARNING

This operator has been ordered for a specific mounting position. Because of differences in motor rotation, do not install operator in any position other than that for which it was ordered without first contacting the factory. (See Fig. 1 below)

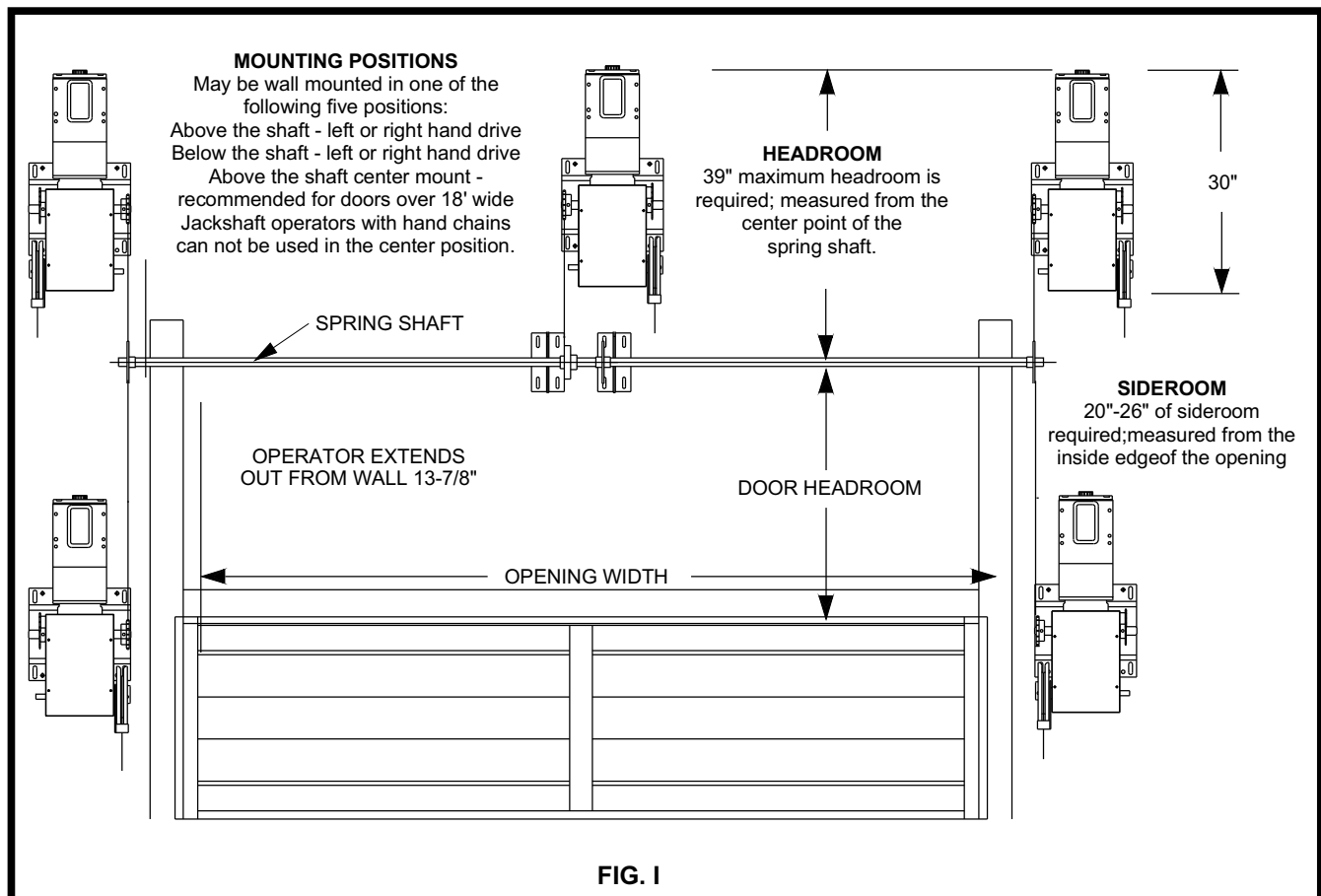
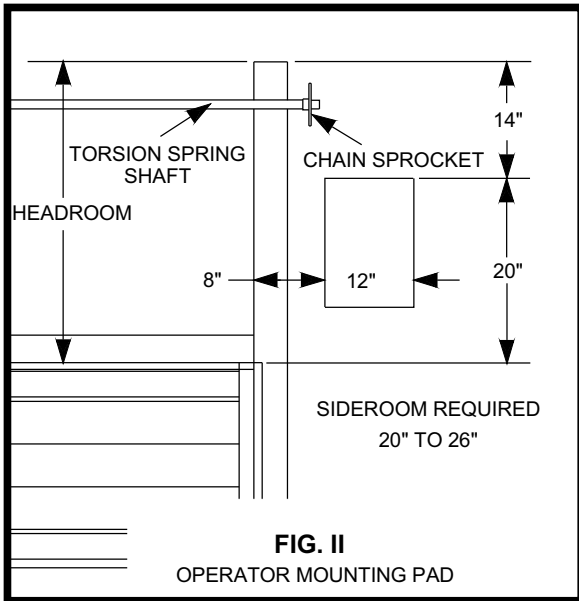


FIG. 1

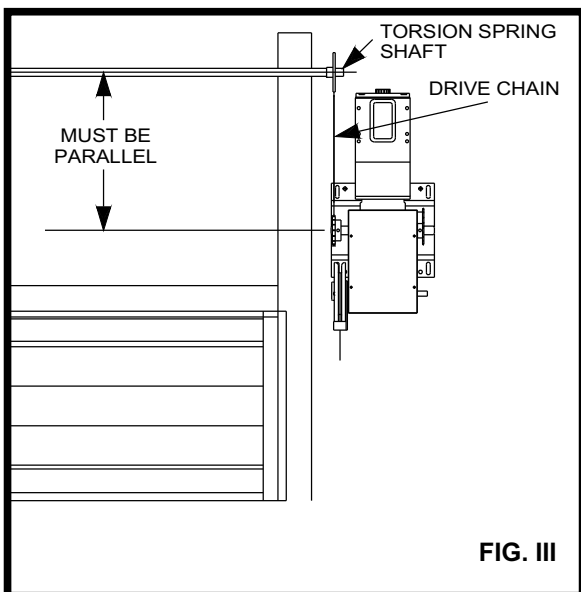
INSTALL MOUNTING PAD

Begin installation by locating operator mounting pad in position shown (See Fig. II). Use steel plate or heavy wood securely fastened to wall or framework.



HANGING OPERATOR

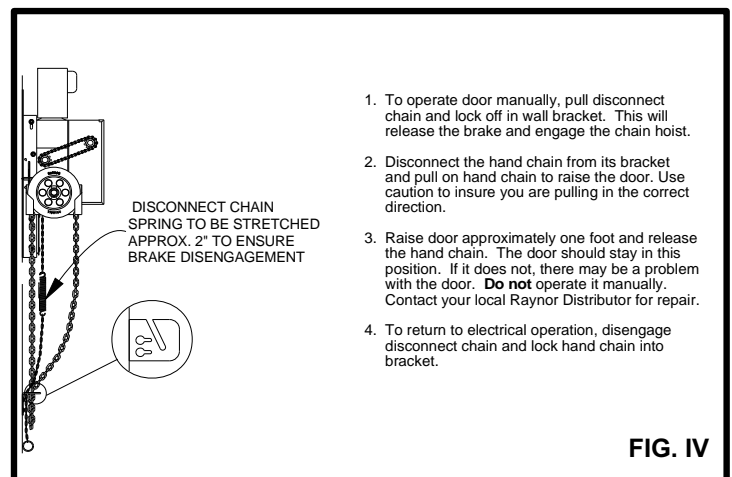
During installation, keep in mind that it is best to have both the driving sprocket on the operator, and the driven sprocket on the door shaft, as close as possible to the bearings that hold the shafts in place. Assemble large, driven sprocket to door shaft as shown in Fig. III using the key provided in hardware package and tighten set screw. If door shafting is tubing, it should be plugged with 3/4" dia. solid bar for best results.



Place small drive sprocket on proper side of operator shaft as shown in Fig. I. Drill holes in mounting pad to fit location of vertical slots in base angles of operator. It may be easier to make a template out of cardboard for drilling rather than transferring dimensions. Lift operator into place, raising it so that the mounting bolts are against the bottom of the slots in the base plate to allow for maximum chain adjustment. Snug bolts enough to hold operator in place. Place chain over door sprocket and operator sprocket. The large driven sprocket will need to be aligned with the small driven sprocket. Loosen set screws and move large sprocket along door shaft to align vertically with small sprocket on operator drive shaft (See Fig. III) If chain is too long, remove required number of links and reassemble. Loosen mounting bolts and lower the operator to take up slack in chain. Be sure operator drive shaft is level and tighten mounting bolts. To prevent operator from moving out of position, install two anchor bolts in holes of base plate. At this point, check all bolts and set screws for tightness.

INSTALL DISCONNECT BRACKET

The operators are furnished with floor operated disconnect mechanisms to allow manual operation of door in an emergency. A wall mounted bracket is supplied with each operator to lock the disconnect chain in position while manually raising or lowering door. A length of chain with an extension spring is provided for use on standard side mounted units (position 1 and 5). Mount the bracket directly below the operator and thread the chain through slot in bracket. If the operator is mounted in any position other than 1 or 5 it may not be possible to use the chain provided. In such a case, use aircraft cable and pulleys to result in a smooth working disconnect. Best results are obtained when the cable travels a minimum distance in straight lines.



CONNECT TO POWER SUPPLY

Warning: Before beginning any electrical hook-up, consult local wiring codes. This operator must be properly grounded. Refer to wiring diagram found on inside of control box cover for power line, push-button, and safety edge connections.

Three Phase Power: On units requiring three phase power, it is possible to run operator in wrong direction. To be certain motor is rotating in proper direction, manually raise door to mid-position, by pulling disconnect chain down and locking it off in wall bracket as described above. With door in mid-position, release disconnect mechanisms. Press open button on control station and depress arm on limit switch in the direction which the nuts are traveling. This should stop the travel of the door. If the door does not stop, press the stop button IMMEDIATELY and reverse any two of the three incoming power leads.

LIMIT ADJUSTMENT and TESTING of OPERATOR

WARNING: To avoid serious injury or death always disconnect electrical power before adjusting limit switches

Operator has been supplied from the factory with constant pressure to close, it is advisable that you test the operator and set limit switches in this mode.

Once correct rotation has been established, manually lower door to fully closed position. Set "close" limit nut at desired position by depressing limit nut keeper and turning limit nut toward "close" switch (see Fig. VI) until limit switch is activated (clicks). Raise door electrically to full open position and set "open" limit switch in manner described above. After setting nuts in desired position, make certain that limit nut keeper engages grooves on limit nuts.

When making fine adjustments, turn nut not more than 1/4 turn at a time. To stop door earlier, move nut closer to limit switch. To stop door later, back nut away from limit switch.

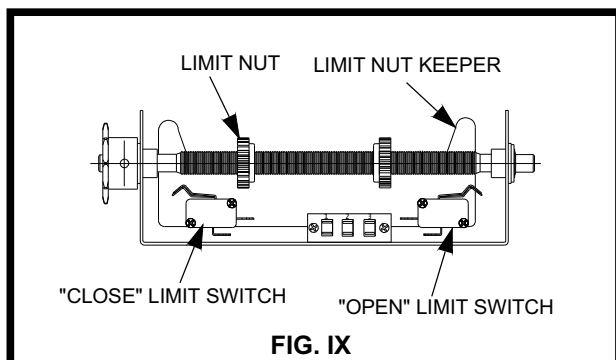


FIG. IX

CLUTCH ADJUSTMENT

DANGER: to avoid serious injury or death always disconnect electrical power before adjusting clutch.

WARNING: Do not over tension clutch. The clutch must slip to prevent door damage or injury if the door hits an obstruction while moving.

The clutch is set loose at the factory and must be adjusted in field for proper sensitivity.

To adjust clutch sensitivity, back out setscrew and run nut up finger tight, then tighten nut approximately 1/8 turn and tighten setscrew. Continue this process until door travels smoothly in both directions. Do not over tighten setscrew nor completely flatten bellville springs. (See Figure V.)

Caution: If clutch does not slip, cables will unwind from drum and cause door to drop when obstruction is removed. After the final adjustment, tighten set screw. Do not over tighten set screw nor completely flatten bellville springs.

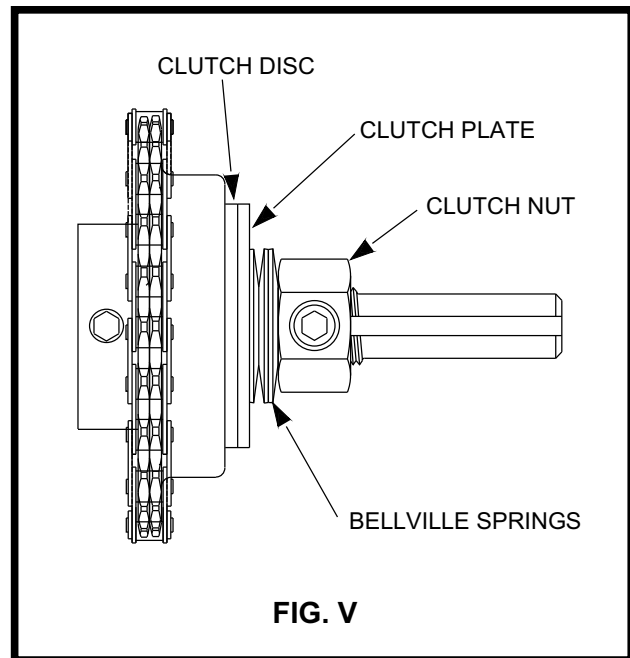


FIG. V

Setting Control Wiring Types

Your operator has been supplied from the factory as RC2 (C2) wiring constant pressure to close with provision for a reversing device. If other wiring types are required it is necessary to adjust the on board dip switches.

RC2 (C2) Wiring (factory default)

Momentary Contact Open/Stop – Constant pressure on close button. Provision for a reversing device.

Switch setting:

Switch 1	Switch 2	Switch 3	Switch 4
OFF	OFF	OFF	OFF

SR2 (B2) Wiring

Momentary Contact Open/Close/Stop – Requires only momentary contact on all functions. Includes provisions for adding a reversing device. Optional pull cord, radio control or single button device will open or close the door. The open override feature will allow the pull cord, radio control, or reversing device to reverse a closing door to the open position.

Switch setting:

Switch 1	Switch 2	Switch 3	Switch 4
ON	OFF	OFF	OFF

D1 Wiring

Momentary contact on stop button - constant pressure on open and close with provisions to add a sensing device to stop the door when activated.

Switch setting:

Switch 1	Switch 2	Switch 3	Switch 4
OFF	ON	OFF	OFF

RE (E2) Wiring

Momentary Contact on Open Button – constant pressure on close button. Early release of close button before door is fully closed will cause the door to reverse. Not available with radio, single button, or pull cord.

Switch setting:

Switch 1	Switch 2	Switch 3	Switch 4
ON	ON	OFF	OFF

SR4 (TS) Wiring

Momentary Contact Open/Close/Stop – Requires only momentary contact for all functions. Includes provisions for adding a reversing device. Door will auto close from mid-stop or open limit after pre-set time has elapsed. Pressing stop button will deactivate the timer. Open button will reactivate the close timer if stop button has been pressed or will reset the timer when the door is on the open limit. Single button or reverse device will reset the timer if the door is fully open.

Switch setting:

Switch 1	Switch 2	Switch 3	Switch 4
OFF	OFF	ON	OFF

(T) Wiring

Functions same as SR4 wiring with the exception if the door is closing and a reversing device is activated the door will open and stay open until the reversing device or open button is activated.

Switch setting:

Switch 1	Switch 2	Switch 3	Switch 4
ON	OFF	ON	OFF

SETUP MODES

After selecting the wiring type required for your application several of these can be modified via the setup mode. To enter setup mode the operator must be on the close limit and the onboard dip switches are temporarily set according to each setup mode. The on board open and stop buttons are used to modify the characteristics. Once set the changes are stored in memory.

The values are set to factory defaults and should be satisfactory for most applications. All setup mode values can be reset to factory defaults as follows:

- Remove 24 volt AC power from the control board.
- Press and hold the onboard stop button
- Reapply 24 volt AC power while holding the onboard stop button

After making setup adjustments the dip switches must be returned to there original setting.

DELAY ON REVERSE SETUP

To help prevent stress on the door and operator this feature allows for a delay on reversing of the door when closing. The factory default is 0.75 seconds with a min. time of 0.4 seconds and a maximum of 2 seconds.

To change factory default first move the door to the close position and set the dip switches as follows:

Switch 1 Switch 2 Switch 3 Switch 4
ON ON ON ON

Press stop to reset the time to 0.4 seconds. Press stop button and this will add 200 ms to the time each time it is pressed to a max setting of 2 seconds. After setting the delay time required change the switch setting to its previous setting will save the new time.

MID-STOP LIMIT DELAY SETUP

This allows a door to stop at a mid stop/intermediate position instead of the full open position. The door can then be moved to the full open position by pressing the Open button. A single button when the door is at the intermediate position will cause the door to close. To set this feature move operator so it is on the close limit then set the dip switches as follows:

Switch 1 Switch 2 Switch 3 Switch 4
ON OFF ON ON

Pressing open will start the door open, when the door reaches the desired open position press the stop button. Changing the dip switch setting to the previous settings will save this setting. If you need to reset the setting: move operator to close limit and set the dip switches for intermediate

setting and press the stop button, this will remove the intermediate setting and allow you to reset it.

The intermediate setting is based on time that the door moves the minimum setting is 6 seconds.

The auto close feature if enabled will close the door from the intermediate position.

TIMER TO CLOSE SETUP

If operator is set for SR4 or T this allows you to adjust the amount of time the door stays open until it automatically closes either from the midstop or the full open position. The default time is 30 seconds but can be adjusted from a minimum of 5 seconds to a maximum of 5 minutes.

To change factory default first move the door to the close position and set the dip switches as follows:

Switch 1 Switch 2 Switch 3 Switch 4
OFF OFF ON ON

Press stop which will clear the exiting time, pressing the open button will add 5 seconds to the timer continuing to press the open button will add 5 seconds to the timer until the desired time is set. After setting the desired time return the dip switches to there previous setting.

MAXIMUM RUN TIME SETUP

To help prevent damage to the operator it is supplied with a maximum run timer factory set at 30 seconds with a maximum time of 60 seconds.

To change factory default, first move the door to the close position and set the dip switches as follows:

Switch 1 Switch 2 Switch 3 Switch 4
OFF ON OFF ON

Press open button and the door will begin opening. When the door reaches the full open position the time will be recorded. For this new setting an additional 0.75 seconds is added to this time to prevent nuisance problems. By pressing the stop button before the door gets fully open will reset the time to 30 seconds (factory default). After completing this procedure return the dip switches to there previous setting.

PERIODIC INSPECTION AND MAINTENANCE

Your Raynor electric door operator was designed to give dependable service with a minimum of maintenance. After proper installation and adjustment, by a qualified installer, little is required in the way of maintenance except for periodic inspection and lubrication as follows:

LUBRICATION

The gearbox is supplied from the factory with oil for a temperature range of -20° to 90°F. For special conditions or if oil needs to be added, follow the recommendations below:

AMBIENT TEMPERATURE	MOBIL OIL	HUMBLE	IMPERIAL OIL AND GREASE
-20° to 10°F	Vactra Oil No. 2	Spartan EP-2	Molub-Alloy 804
10° to 40°F	Vactra Oil No. 4	Spartan EP-2	Molub-Alloy 80
40° to 75°F	Mobilgear 632	Spartan EP-4	Molub-Alloy 90
75° to 105°F	*600 W Super Cylinder Oil	Spartan EP-6	Molub-Alloy 140

Note: Some gear lubricants contain corrosive extreme pressure additives. Do not use lubricants that are compounded with sulphur and/or chlorine. These may be corrosive to bronze worm gears.

LUBRICATION

All Raynor operators are supplied with continuous rated motors and under normal conditions require no oiling.

Lubricate rails with paraffin or graphite. Do not use oil or grease on trolley drive chain or rails as it could drip onto door.

INSPECTION AND ADJUSTMENTS



WARNING: Repairs and adjustments to the door or operator should only be made by a qualified door installer.

1. Inspect and tighten (if necessary) all bolts and nuts.
2. Adjust chain tension on trolley carriage (see Fig. III). This chain could stretch slightly during first year of operation.
3. Adjust safety clutch as shown in Fig. X. If necessary. Adjustment may be required after a short break-in period.
4. If necessary, adjust limit nuts as described in Fig. IX.

6. Check manual operator of Door. Refer to installation instructions 800, page 5972558-1 for guidelines.

7. Test all reversing devices once a month for proper operation.

8. Test all options that may have been supplied with the operator to insure they are working properly



Caution: Do not reset overload until problem is identified. Damage to door and operator or personal injury could result if cause of tripping is not corrected.

9. **Manual Reset Overload:** The overload is properly sized, at the factory, for normal door operation. If overload trips, manually check mechanical operation of door and operator to be certain both work freely.

Single Phase: When overload trips, it cuts power to the entire unit. To reset, press reset button on pulley side of control box.

Three Phase: When overload trips, it cuts power to the 24 volt control circuit only. To reset, remove control box cover and press red reset button.

COMMERCIAL OPERATOR TROUBLESHOOTING LIST

SYMPTOM	PROBABLE CAUSE	PROBABLE SOLUTION
1. Nothing Working.	1. No power to operator.	<ol style="list-style-type: none"> 1. Connect operator to power source. 2. Check voltage at L1 & L2 for single phase and L1, L2 & L3 for three phase. 3. Check for blown fuse or tripped circuit breaker.
	2. Overload protector tripped in operator.	<ol style="list-style-type: none"> 1. Reset and check for cause. Externally located on single phase and internally located on three phase.
2. Operator only works with constant pressure on the close button	1. Unit comes from the factory as this.	<ol style="list-style-type: none"> 1. Refer to page 7 to change wiring type.
8. Radio control doesn't work.	1. Weak battery.	<ol style="list-style-type: none"> 1. Replace battery.
	2. Incorrect hook-up.	<ol style="list-style-type: none"> 1. Refer to accessory wiring diagram in back of installation instructions.
	3. Bad open limit switch. Momentary jumper terminals 7 & 9 on TB-2.	<ol style="list-style-type: none"> 1. Replace limit switch.
9. Motor will not run but relay operates.	1. Door binding.	<ol style="list-style-type: none"> 1. Adjust door to proper working condition.
	2. Bad motor.	<ol style="list-style-type: none"> 1. Replace motor.
	3. Bad wiring connections.	<ol style="list-style-type: none"> 1. Refer to wiring diagram for proper connections.
10. Operator does not shut off at fully open or closed position.	1. Limit nuts not properly adjusted.	<ol style="list-style-type: none"> 1. See limit switch adjustment in installation instructions.
	2. Limit drive chain broken or inoperative.	<ol style="list-style-type: none"> 1. Replace chain, check drive mechanism.
	3. Limit switch damaged.	<ol style="list-style-type: none"> 1. Check limit switch operation and replace if necessary.
11. Door closes when open button is pressed and door opens when close button is pressed, limit switches do not function.	1. Three phase power supply is connected out of phase.	<ol style="list-style-type: none"> 1. Interchange any two incoming power supply leads.
	2. Operator mounted wrong side of door shaft.	<ol style="list-style-type: none"> 1. Contact factory.
12. Door fully closed and reversing edge can be activated.	1. Incorrect reversing edge connections.	<ol style="list-style-type: none"> 1. Refer to wiring diagram for proper connections.

LABEL PLACEMENT FOR JACKSHAFT OPERATORS

