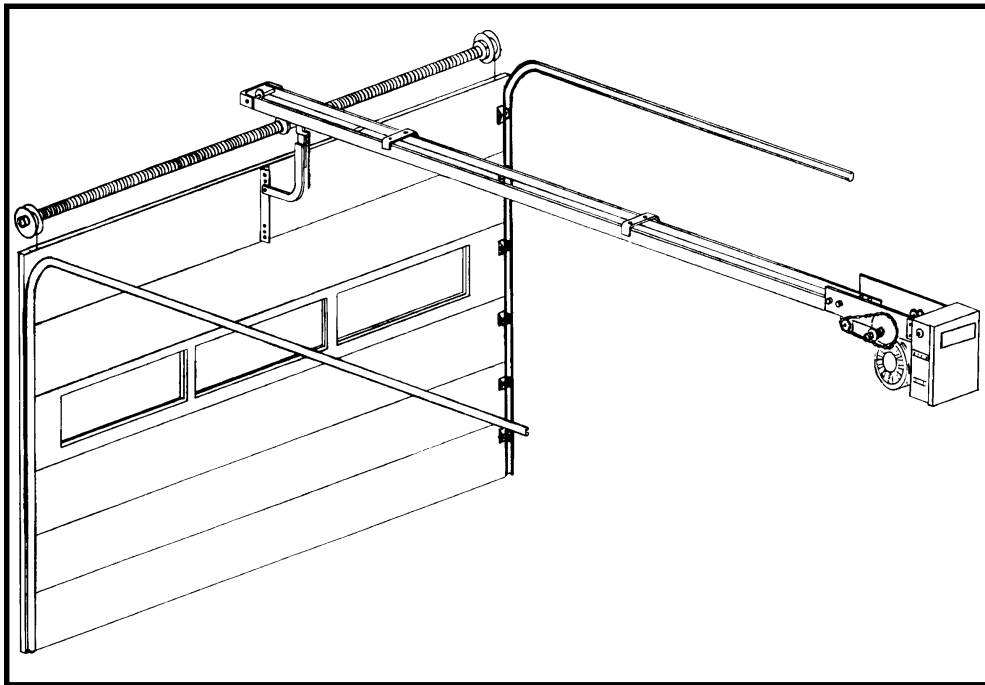


Model T

Medium-Duty Commercial Drawbar Door Operator Safety, Installation, and Service Manual



OSCO requires the use of an electric edge or photoelectric control for pedestrian protection on all automatic or remotely controlled door operators.

OSCO[®]

OPERATOR SPECIALTY CO., INC.
P.O. BOX 128, CASNOVIA, MI 49318

Safety Information and Warnings

Read all of the following before beginning to install the Model T operator:

1. Read the green "SAFETY INSTRUCTIONS" sheet provided with the operator information. It's extremely important that the safety warnings and precautions be understood and followed by the installing contractor. Leave all instructions with the end user.
2. Do not attempt to operate the machine unless it is completely installed as instructed.
3. The installation must be made in a neat and professional manner, observing all rules of good workmanship and personal safety.
4. All electrical connections to the power supply must be made by a qualified and licensed electrician. All local and national codes must be observed.
5. A power-disconnect switch should be located within sight of the operator so that primary power can be turned off when necessary.
6. Do not remove the operator cover unless you are qualified to service this equipment and the power is turned off. There are no user-serviceable parts inside.
7. Install enclosed warning signs so as to be visible to all persons passing near or through the door.
8. Operate the door only when it is in full view.
9. Do not permit children to play on or around the door.
10. Never reach through or around a door frame to operate the door controls.
11. Install all recommended safety equipment.

Features

Mechanical

- 1/2 HP instant-reverse motor with capacitor and automatic reset thermal overload
- Adjustable friction clutch
- Dependable roller chain drive
- Efficient V-belt reduction
- Emergency disconnect for manual operation
- Double-angle track—1 1/2" X 1 1/2" X 1/8"
- Door speed 0.8–0.9 feet per second
- 3" Headroom required above high rise of door
- Designed to operate doors up to 14" high

Electrical

- Easily adjustable rotary limit switches
- 24V control circuit
- External terminals for radio control, electric edge, photo-electric device, or pushbutton station
- 3-Button control — OPEN—CLOSE—STOP
- Adapted for pull cord, radio control, or single button control

CAUTION

OSCO STRONGLY RECOMMENDS USE OF AN ELECTRIC EDGE OR PHOTOELECTRIC CONTROL FOR PEDESTRIAN PROTECTION ON ALL AUTOMATIC OR REMOTELY CONTROLLED DOOR OPERATORS.

Children should never be allowed to play on, near, or around a motorized door. Any control devices should be placed so as to be inaccessible to small children.

The door should never be operated unless it is in visual sight of the user.

Warning signs must be installed on or near the door.

A pushbutton or keyswitch should not be installed within reach of the door or operator.

LIMITED ONE-YEAR WARRANTY

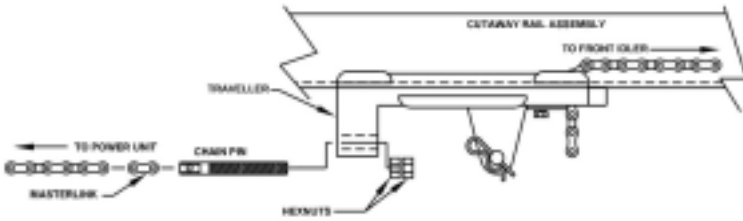
This electric operator is warranted for a period of one (1) full year from date of installation against defects in materials or workmanship. Any part, parts, or complete unit which fails because of such defects within this period shall, at the manufacturer's option, be repaired or replaced at no charge. The manufacturer will not be responsible for transportation and/or field service charges.

This warranty is in lieu of all other warranties, expressed or implied, and shall be considered void if visible evidence implies recommended installation procedures and maintenance instructions were not followed.

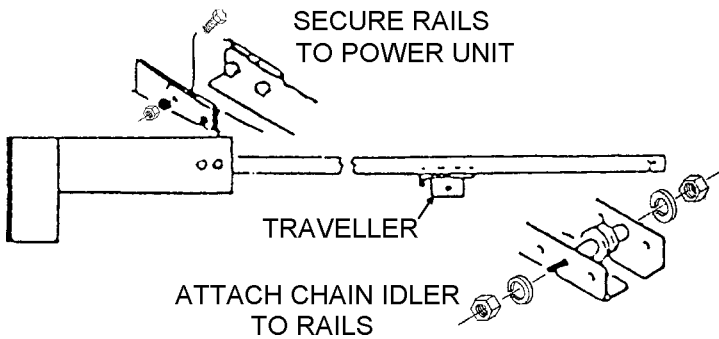
Installation Instructions

Step 1: Operator Assembly

Secure the rails to the power unit using the 5/16" bolts provided. Then slide the traveller onto the rails, making sure that the chain connection is away from the power unit and toward the front.



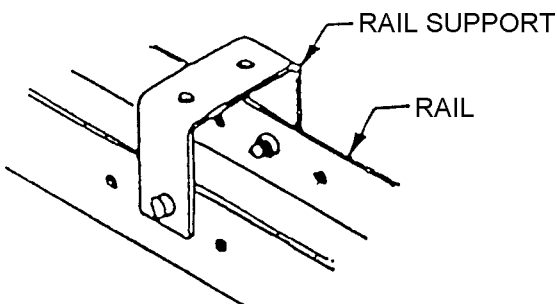
Attach the front idler assembly and shaft to the rails, using the appropriate holes (as shown) and tighten securely.



Unroll the chain in the direction of the chain idler, allowing the chain to loop around the pulley. Continue unrolling the chain and engage the sprocket at the power unit. Chain should be pulled tight before engaging the sprocket, but do not overtighten, as damage can result. Be sure the chain is strung through the hole from the top.

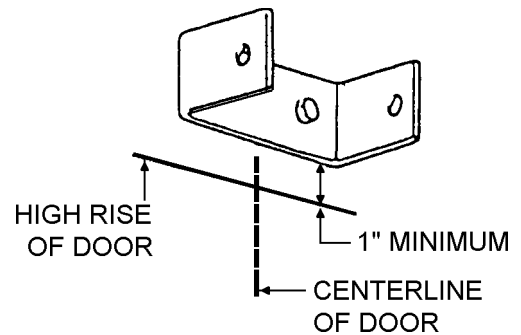
Locate the traveller near the center and attach the chain. Tighten the chain sufficiently to remove any slack but, once again, do not overtighten, as damage can result.

Using the 5/16" hardware provided, attach the center rail supports to the rails.



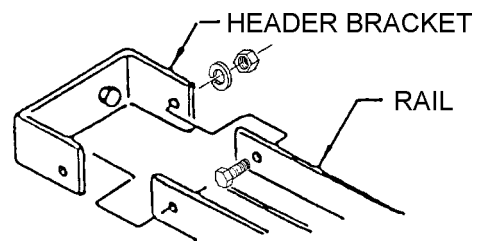
Step 2: Header Bracket Positioning

Locate the centerline of the door opening and draw a light pencil line on the door header and on the upper portion of the door. Then, by raising the door, determine the "high rise" of the door. This is the highest point to which the door will rise when the top section starts to go over the radius of the track. Using lag bolts provided, mount the front header bracket a minimum of one inch above the high rise on the centerline of the opening.

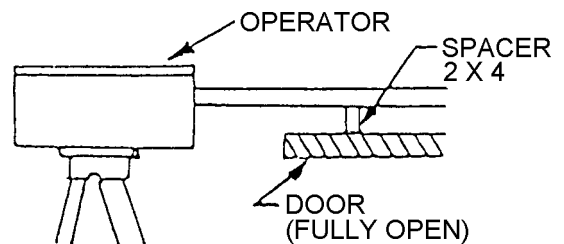


Step 3: Operator Installation

Using two 5/16" bolts, attach the operator to the header bracket.



Raise the power-unit end of the operator and open the door fully. Support the operator 3-4 inches above the door, using a ladder or other suitable substitute. Make sure the operator is in line with the door centerline.



(Installation Instructions Cont'd on Page 4)

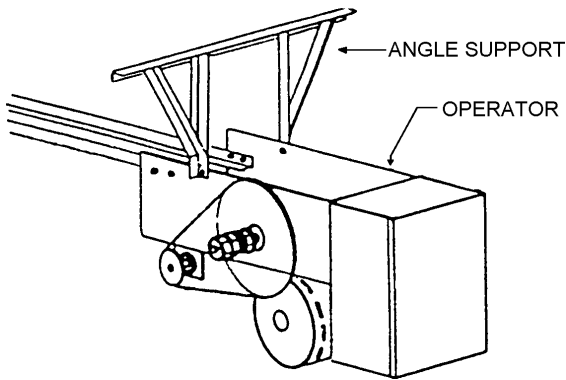
Installation Instructions (Cont'd)

Step 3: Operator Installation (Cont'd)

Secure the operator to the ceiling or overhead truss, ensuring stability and allowing the operator to rest above the path of the door track.

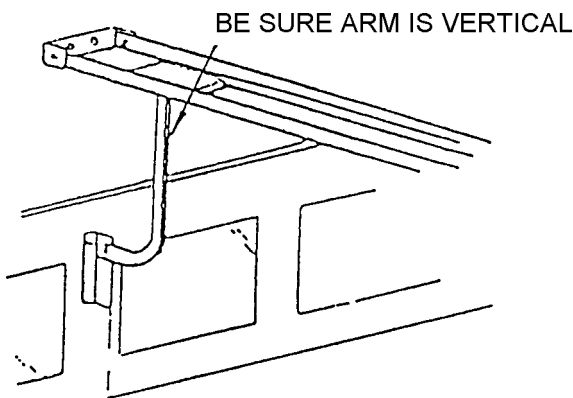
Important: During door travel, the operator must be a minimum of one inch above the door and be properly aligned.

Normally, angle iron of 1" X 1" X 1/8" size is ample for hanging the operator, provided sufficient rigidity can be obtained by diagonal bracing.



On doors over 10 feet high, it is necessary to support the center (approximately) of the rail with a hanger dropped from the ceiling. Holes are provided in the rail for this purpose.

Finally, manually close the door fully and secure the door bracket on the door centerline directly in line with the door rollers. For wood doors, use two carriage bolts. For metal or fiberglass doors, use two 5/16" bolts.



Step 4: Electrical Connection

A complete electrical circuit print is included with the operator information packet. The power supply must be of correct voltage and phase and should be brought into the operator with no smaller than No. 12 wire. For proper wire gauge, refer to "Wiring Specifications," on Page 10. Electrical power must be ample and not taken from an overloaded line, as faulty operation will result. Proper thermal protection is supplied with the operator. The motor contains a thermal overload protector to guard against overheating due to overload conditions.

IMPORTANT

- A. Power supply must be of correct voltage and phase.
- B. Always disconnect power from the operator before servicing.
- C. Keep clear of the door during operation.

IMPORTANT NOTICE

This operator is supplied with a 3-button control station (OPEN-CLOSE-STOP) accompanied by a precautionary sign:

WARNING
TO PREVENT ENTRAPMENT
DO NOT START DOOR
DOWNWARD UNLESS DOORWAY
IS CLEARED

It is vital that the 3-button station be mounted within sight but out of reach of the door and that the warning sign be mounted adjacent to the 3-button station.

The 3-button station must be connected so the STOP circuit between terminals #2 & #4 is not bypassed. Also, if additional 3-button stations are to be connected, the STOP buttons must be wired in series.

NOTE: A STOP button must be used when the installation has radio controls or a single button.

<u>Desired Function</u>	<u>Connecting Terminals</u>
OPENING DEVICE	#1 & #4
STOP	#2 & #4
CLOSE	#3 & #4
OPEN & CLOSE	#4 & #5
SAFETY TO REVERSE	#4 & #6
24VAC POWER	#2 & #10

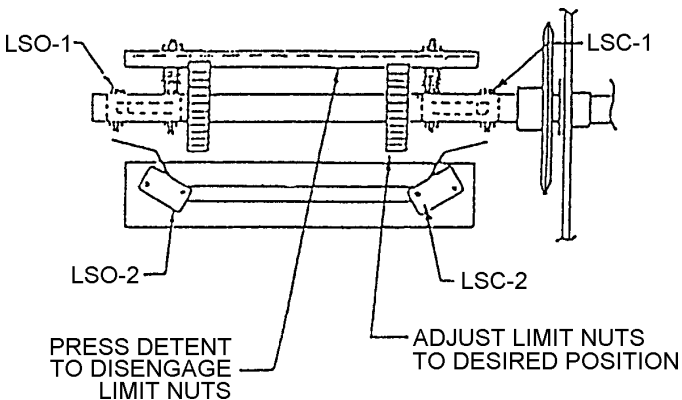
Limit Switch Adjustment

Limit switches are factory set for short travel. Travellers should be at least two feet from either end of the rails when the unit is assembled.

1. Disconnect the door from the traveller.
2. Turn the power on and push the OPEN or CLOSE button. The traveller should move approximately two feet.

TURN OFF POWER TO THE OPERATOR BEFORE MAKING ADJUSTMENTS!

3. Adjust the limit nuts (found in the electrical control panel) by releasing the spring-loaded detent plate and turning the nuts in the desired direction. One complete turn will allow the traveller (or door) to move approximately four inches.



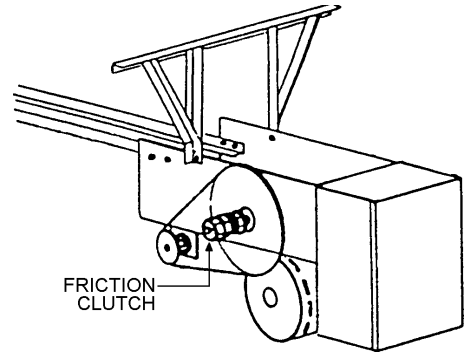
IMPORTANT: LSO-2 and LSC-2 must be actuated before LSO-1 and LSC-1. LSO-2 should be actuated three revolutions of limit shaft before LSO-1.

4. Be sure the detent plate is properly locked into both limit nuts when adjustment is complete.

NOTE: On 3-phase equipment, direction can be wrong. If the door closes when the OPEN button is pressed or vice versa, any two of three motor leads must be reversed. **DO NOT REVERSE THE PUSHBUTTON LEADS.**

Clutch and Cutoff Switch Adjustment

The clutch is set light at the factory and must be properly adjusted in the field for the size and weight of the door. Adjust the clutch spring tension so the operator will drive the door closed. It is best to start with a light adjustment and tighten one-half turn at a time.



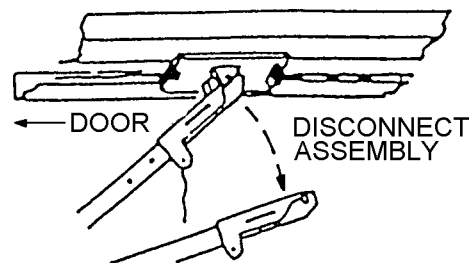
Lubrication

The operator bearings and motor are factory lubricated for life. It may be advisable to oil the roller chain to prevent excessive dryness or rusting under humid conditions.

Manual Disconnect

For your safety and protection, this operator is provided with a manual disconnect system. It is recommended that all persons be well informed of its purpose and operation.

To disconnect the operator, pull the disconnect cord as shown. To re-engage the operator, pull the disconnect cord down and manually connect the door arm to the traveller.



Troubleshooting

Door will not operate from OPEN or CLOSE pushbutton:

- A. The motor overload kicked out. Wait 15 minutes; the overload will automatically reset. Be sure the door is not binding.
- B. Check for a defective transformer.
- C. Check for a defective STOP button or loose connection in the stop circuit.

Door will not open from OPEN button but will close from CLOSE button:

- A. Make sure the open limit switch is not hung up.
- B. Check for loose wiring on the open limit switch or the open relay coil.
- C. Check for a defective open relay coil.

Door will not close from CLOSE but will open:

Same as preceding, but in reverse.

Door runs in wrong direction on 3 phase:

Reverse the two motor leads.

Door not closing properly:

Be sure the detent plate is properly engaging the travelling limit nuts.

Motor runs but door doesn't move:

- A. Tighten the clutch.
- B. Check the set screw in the motor pulley.
- C. Check the V belt.

Operator vibrates and bows:

If the door is 10 feet or higher, be sure center support is used.

Operator stops when you release button (makes rocking noise):

The clutch spring is too loose. Tighten the clutch nuts.

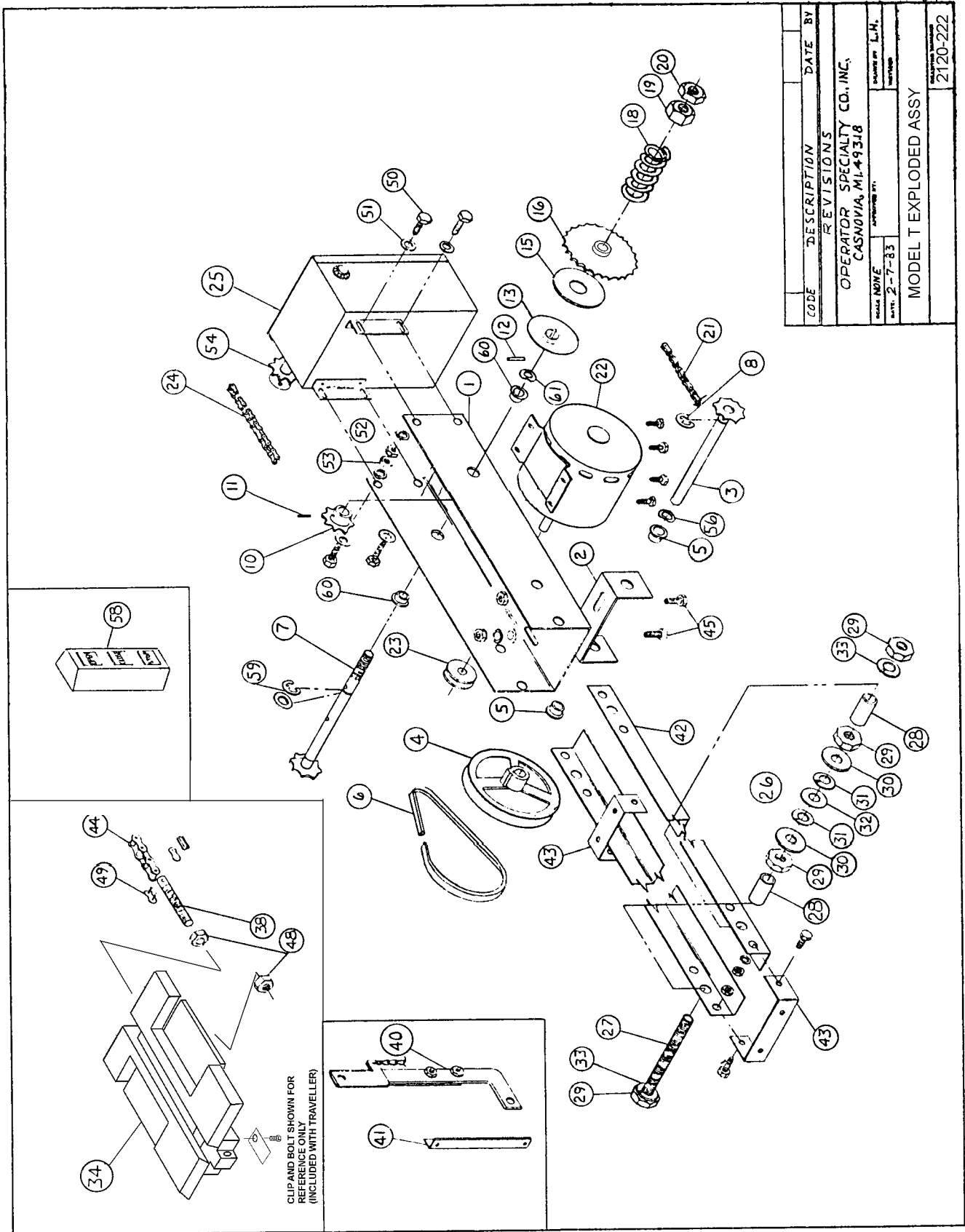
Operator requires constant pressure on OPEN or CLOSE button:

Check that the clutch sprocket is properly seated.

Ordering Replacement Parts

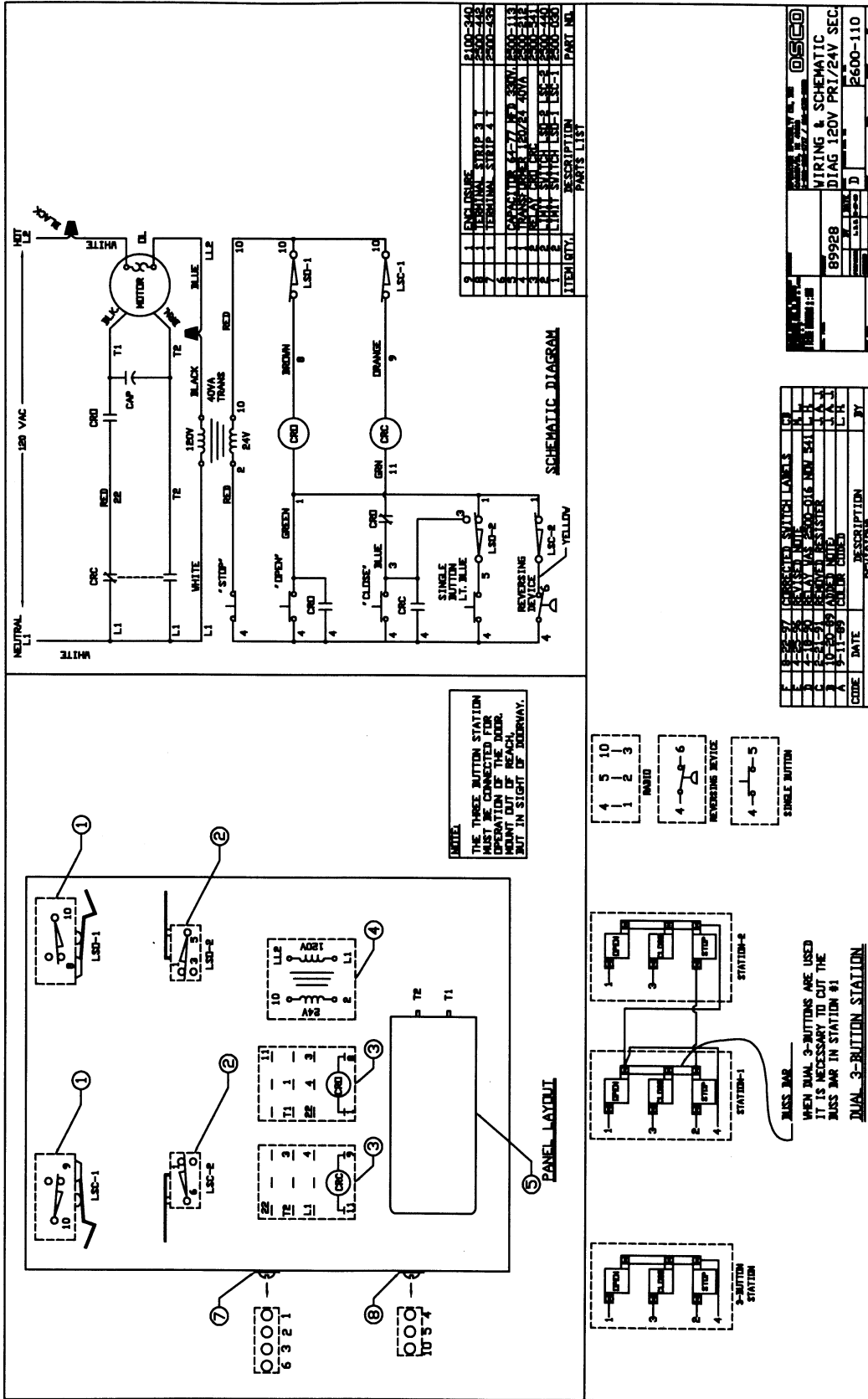
Use the numbers shown in the lists on the following pages to order all replacement parts.

1. Supply the serial number of your operator.
2. Specify the quantity of pieces needed.
3. Order by part number and name of part.
4. State whether to ship by freight, truck, parcel post, UPS, or air express.
5. State whether transportation charges are to be prepaid or collect.
6. Specify name and address of person or company to whom parts are to be shipped.
7. Specify name and address of person or company to whom the invoice is to be sent.



**Model T
Parts List #130
OSCO Drawing #2120-222**

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	
	2110-264	Intermediate Shaft Assembly	25	2520-135	Complete Controller Assembly (WD #2600-110)	
2	2100-607	Shaft Bracket		2120-061	Controller Enclosure with Cover	
3	2110-462	Intermediate Shaft with Sprocket		2100-687	Enclosure Cover only	
4	2200-286	Pulley, 6"		2100-057	Limit Switch Shaft	
5	2200-029	Flange Bearing, 1/2" (2)		2200-029	Flange Bearing, 1/2"	
8	2200-193	E-Ring, 1/2"		2100-056	Detent Plate	
56	2400-203	Wave Washer, 1/2"		2200-028	Detent Spring	
45	2400-048	HHCS, 5/16"-18 x 3/4"		2100-060	Limit Switch Spacer	
	2110-299	Clutch and Output Shaft Assembly		2200-030	Limit Nut	
7	2110-463	Clutch Shaft with Sprocket		2500-113	Capacitor	
10	2200-218	Drive Sprocket, 48 B 10, 5/8" Bore		2100-113	Capacitor Clamp	
11	2400-026	Spring Pin		2500-030	Limit Switch (LSO-1, LSC-1)	
12	2400-236	Solid Pin		2500-440	Limit Switch (LSO-2, LSC-2)	
13	2100-846	Clutch Hub		2500-541	Relay - CRC or CRO	
15	2100-564	Clutch Disc		2500-025	Transformer, 115/24V	
16	2220-006	Clutch Sprocket, 48 B 30, with Hub		2500-442	Terminal Strip 3	
18	2200-367	Clutch Spring		2500-439	Terminal Strip 4	
19	2400-061	Clutch Hex Nut				
20	2400-062	Clutch Jam Nut	58	2500-033	Standard 3-Button Station	
59	2400-215	E-Ring, 5/8" (2)				
60	2200-195	Flange Bearing, 5/8" (2)	40	2110-275	Complete Door Arm Assembly	
				2110-328	Upper Door Arm Assembly	
				2100-768	Lower L-Arm	
26	2110-266	Idler Assembly				
27	2400-144	Idler Shaft				
28	2100-904	Idler Spacer	41	2100-544	Door Bracket	
29	2400-090	Hex Nut, 1/2"-13				
30	2400-196	Fender Washer, 1/2" ID x 2" OD (2)	34	2200-887	Traveler	
32	2400-244	Flat Hardened Washer, 1/2"				
33	2400-054	Lock Washer, 1/2"		2110-533	Chain Tension Bolt with Hex Nuts	
				38	2400-168	Chain Tension Bolt, 5/16"
1	2100-764	Operator Base	48	2400-011	Hex Nut, 5/16"-18	
21	2200-039	#48 Clutch Chain, 21 Links				
24	2200-453	#48 Rotary Chain, 19 Links	44	2200-654	#48 Chain, per foot	
54	2200-008	Sprocket, 48 B 10, 1/2" Bore Tapped	49	2200-010	#48 Master Link	
6	2200-208	V-Belt, 26"				
23	2200-132	Motor Pulley, 2"		2400-001	S-Clip	
43	2100-801	Header/Rail Support Bracket				
					#48 Drive Chain Assembly	
22	2500-445	Motor, 1/2 HP, 115V, 1 Phase		2110-486	22' — for 8' Door	
				2110-456	26' — for 10' Door	
				2110-457	30' — for 12' Door	
				2110-458	34' — for 14' Door	
		Rail Pairs 1 1/2" x 1 1/2"				
42	2100-634	10' 8" Long — for 8' Door				
	2100-635	12' 8" Long — for 10' Door				
	2100-636	14' 8" Long — for 12' Door				
	2100-638	16' 8" Long — for 14' Door				



Wiring Specifications

1. Select your wire gauge from the top chart below.
2. The distance shown in the chart is measured in feet from the operator to the power source. **DO NOT EXCEED THE MAXIMUM DISTANCE.**
3. When large-gauge wire is used, a separate junction box (not supplied) may be needed for the operator power connection.
4. Select the gauge for control wiring from the bottom chart. For distances of more than 350 feet, a long-distance interface is required.
5. Wire run calculations are based on the National Electrical Code, Article 430, allowing 5 percent voltage drop.
6. Supply voltage must be within 10 percent of the operator rating under load conditions (not applicable for 208V).
7. Connect power in accordance with local codes.
8. The wire tables are based on standard copper wire. Wire insulation must be suitable to the application.

USE COPPER WIRE ONLY

Power Wiring		
Volts & HP	Max Distance (ft)	Wire Gauge
115V	281	12
	448	10
	713	8
1/2HP	1133	6
	1802	4

Control Wiring		
Volts	Max Distance (ft)	Wire Gauge
24V	250	14
	350	12
For distances of more than 350 feet, a long-distance interface is required.		