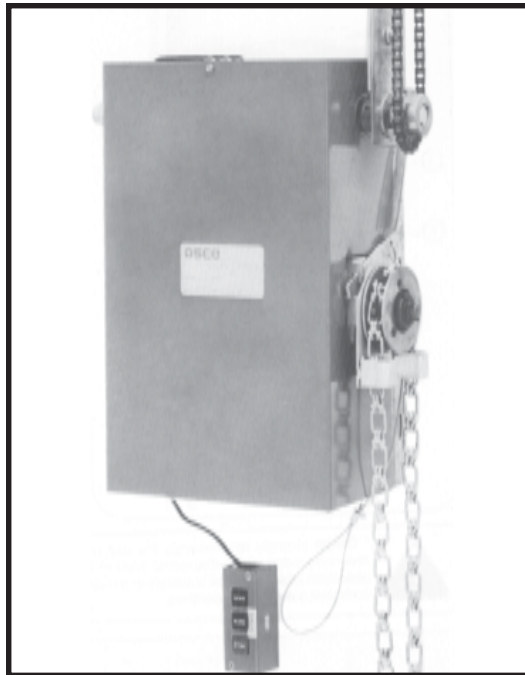


Model JMB

Commercial and Industrial Jackshaft Door Operator Safety, Installation, and Service Manual



Shown with optional chain hoist. Chain guard removed for clarity.

OSCO requires 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

Features

Read all of the following before beginning to install the Model JMB 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.

Mechanical

- 1/2 HP instant-reverse motor with capacitor, automatic reset thermal overload
- Fully covered power unit
- Dependable roller chain drive
- Efficient V-belt reduction
- Emergency disconnect for manual operation
- Magnetic disc brake standard
- Available with emergency chain hoist
- Door speed 0.8–0.9 feet per second
- Right-hand or left-hand mounting

Electrical

- Easily adjustable rotary limit switches
- Heavy-duty 3-button control station
- Heavy-duty contactor starter
- Adjustable cutoff switch
- 24V control circuit
- Adapted for pull cord, radio control, or photoelectric control
- Adaptable for reversing door edge
- Available with adjustable plug-in timer to close
- UL listed on standard models

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.

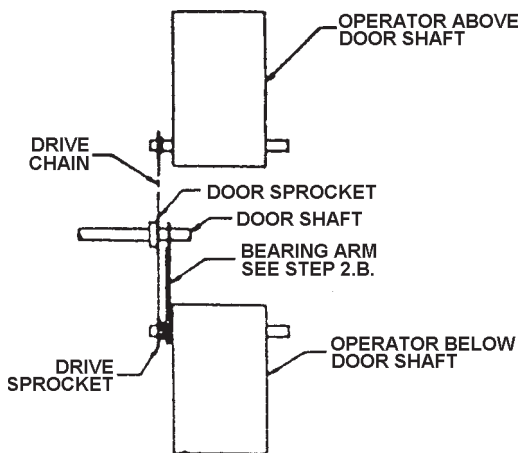
Installation Instructions

Step 1: Mounting Angle Assembly

Attach the mounting angles to the power unit, being sure bolts are positioned at the bottoms of the slotted holes in the power unit. Drive chain tension can be final adjusted approximately 1/2 inch.

Step 2: Operator Installation

- A. Locate the large sprocket on the door shaft at the side of door where the operator is to be mounted. The sprocket should be located close to the door shaft bearing. Do not pin at this time.
- B. Locate the operator on the wall by use of the bearing arm, found assembled to the operator output shaft. To do this, swing the bearing arm above the operator and slide the bearing onto the door shaft (see the diagram below). With the operator in this position, attach the unit to the wall. The operator may be mounted above or below the shaft, depending on specifications (see diagram). It can also be hung from the ceiling or on a shelf, if conditions require such mounting.



- C. Raise the door half open and attach the chain around the door sprocket and drive sprocket using the master link provided. Chain should be cut for minimum slack.
- D. Adjust chain tension by loosening the bolts in the bearing arm and the bolts holding the power unit to the mounting angles. Slide the power unit in the slotted holes for proper chain tension. Retighten all bolts securely.

With the sprockets in proper alignment, pin or key the large sprocket to the door shaft. (The door should be half open.)

Step 4: Electrical Connection

A complete electrical circuit print can be found inside the operator cover. 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.

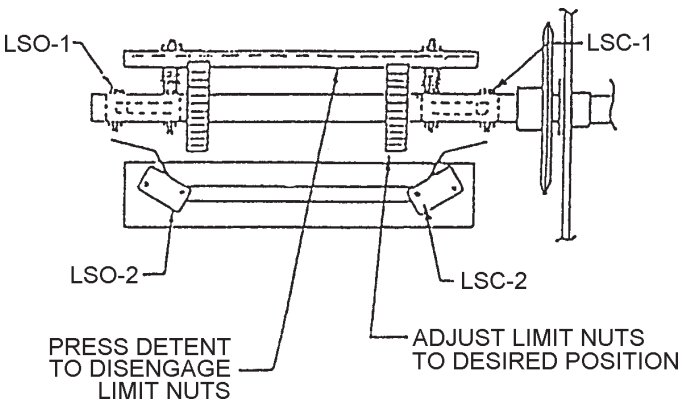
<u>Desired Function</u>	<u>Connecting Terminals</u>
OPENING DEVICE	#1 & #4
STOP	#2 & #4
CLOSE	#3 & #4
OPEN & CLOSE	#4 & #5
SAFETY TO REVERSE	#1 & #6
24VAC POWER	#2 & #10

TURN OFF POWER TO THE OPERATOR BEFORE MAKING ADJUSTMENTS!

Limit Switch Adjustment

Limit switches are wired for mounting the operator below the shaft on either side of the door with the motor down. If the operator is to be mounted above the shaft with the motor up, reverse the limit switch connections at the switches.

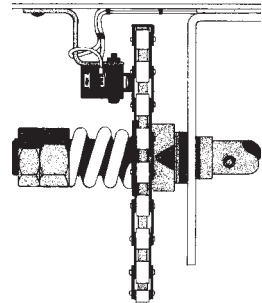
- A. Secure all electrical power connections L1 and L2 on single-phase or L1, L2, and L3 on three-phase. Turn the power on.
- B. With the door half open, touch the OPEN button. If the door closes, depress the STOP button immediately. On single-phase operators, reverse motor leads T1 and T2 at the capacitor. On three-phase operators, reverse any 2 of the 3 power connections (L1 and L2).
- C. Depress the CLOSE button. If the door closes, the operator (and door) should stop when the close limit nut engages close limit switch. If it does not, press the STOP button and reverse the limit switch wires.
- D. Adjust limit nuts by releasing the spring-loaded detent plate and turning the nuts in the direction desired (see the diagram below). One complete turn will allow the door to move 4–6 inches. Be sure the spring-loaded detent plate is properly locked into both limit nuts when adjustment is complete.



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.

Clutch and Cutoff Switch Adjustment

The clutch is set light at the factory and must be properly adjusted in the field according to the size and weight of the door. Adjust the clutch spring tension so the operator will drive the door closed without activating the cutoff switch prematurely. It is best to start with a light adjustment and tighten one-half turn at a time. Be careful not to throw cables on the unit.

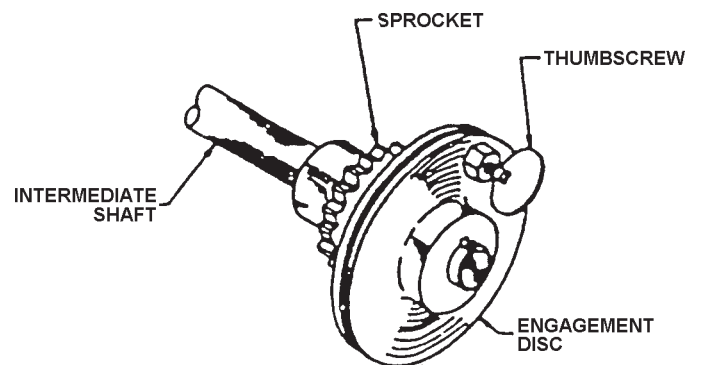


Because the cutoff device works in both directions, it is best to do a preliminary test in the open direction. If the unit is not sensitive enough, bend the cutoff switch bracket toward the sprocket.

Manual Disconnect

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

- A. To disconnect the operator, open the cover and turn the thumbscrew out of the engagement disc (see the diagram below).
- B. To re-engage, line up the hole and tighten the thumbscrew.



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. The fuse or overload in the main box is blown. Replace the fuse or reset the overload.
- C. Check for a defective transformer.
- D. 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 coil of the contactor.
- C. Check for a defective open coil of the contactor.

Door will not close from CLOSE but will open:

Same as preceding, but in reverse.

Door runs in wrong direction:

On single-phase, reverse the motor leads. On three-phase, reverse two incoming leads.

Door not closing properly:

- A. Be sure the detent plate is properly engaging the travelling limit nuts.
- B. Be sure the drive chain to the door is tight, not jumping.

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.

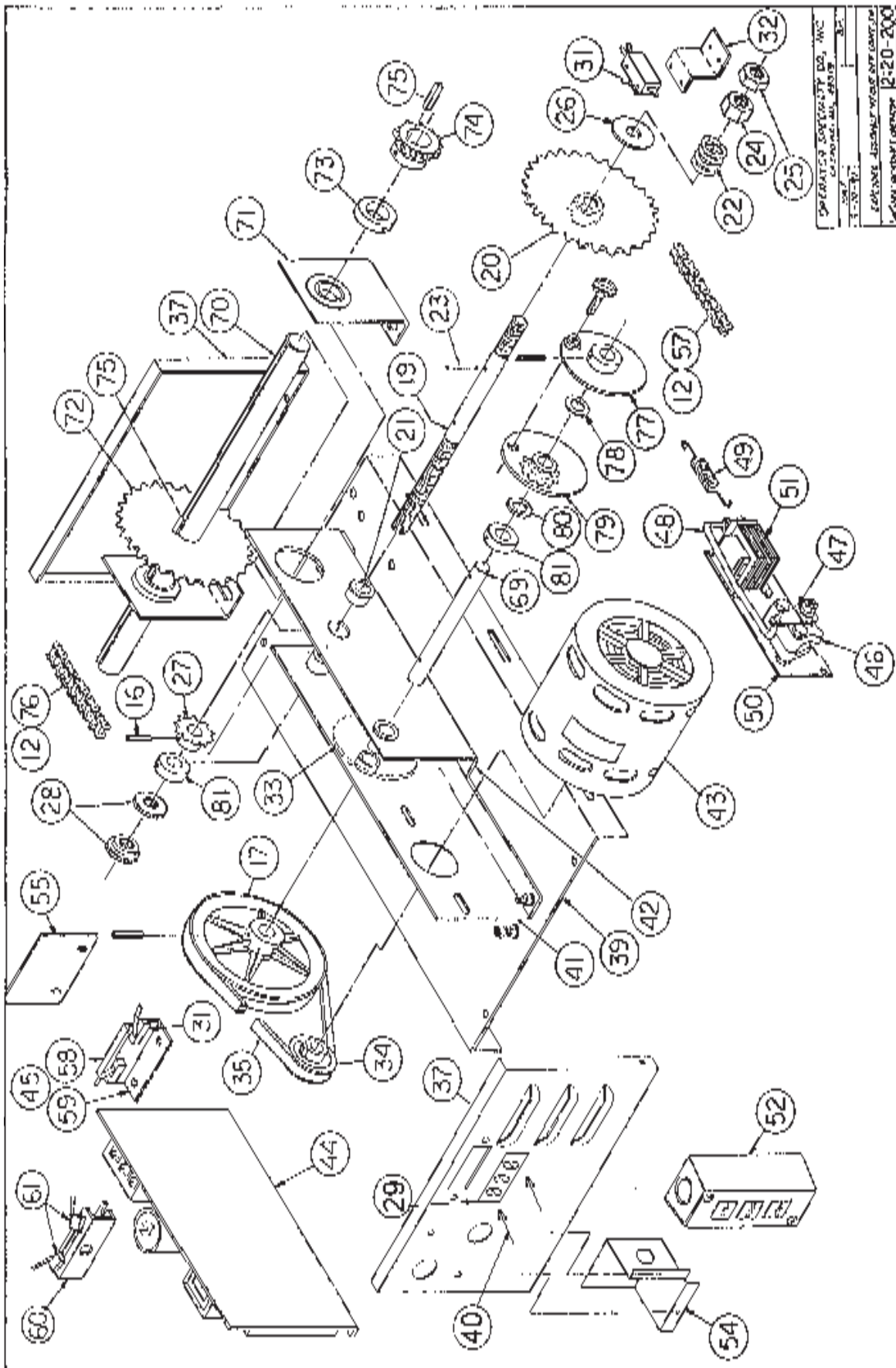
Operator stops when you release button (makes rocking noise):

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

Ordering Replacement Parts

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

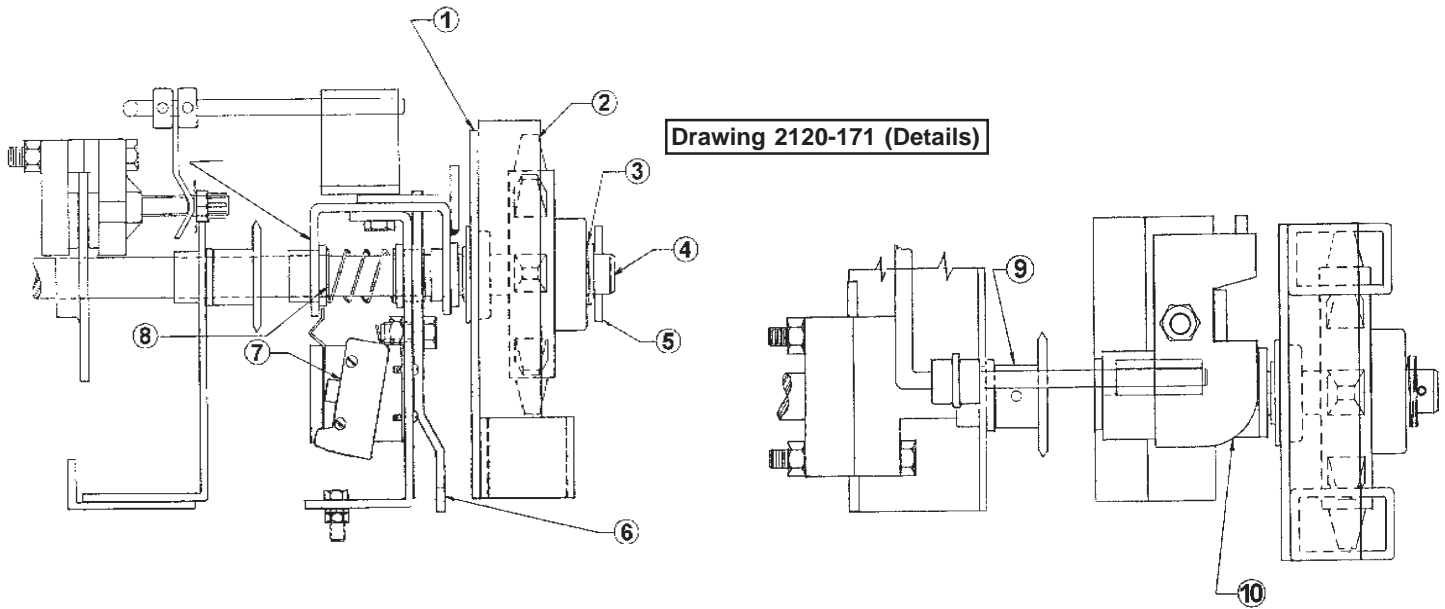
1. Supply the serial number of your operator.
2. Specify the quantity of pieces needed.
3. Order by part number and name of part.
4. State whether to ship by freight, truck, parcel post, UPS, or air express.
5. State whether transportation charges are to be prepaid or collect.
6. Specify name and address 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 JMB
Mechanical Parts List • OSCO Drawing #2120-200

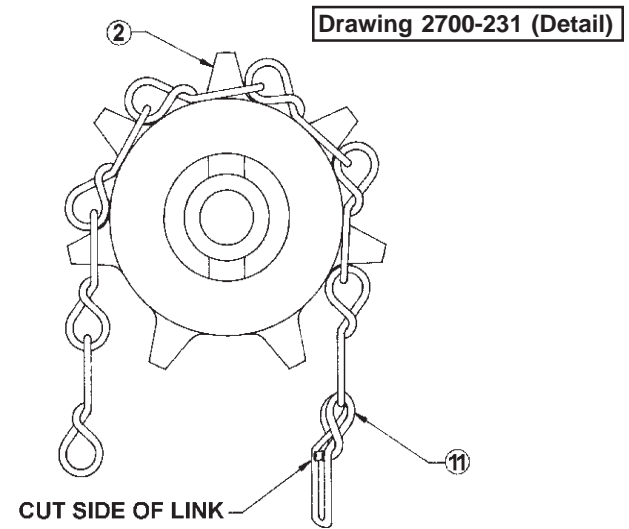
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
39	2100-744	Main Frame		2110-355	Intermediate Assembly (JMB only)
41	2100-1630	Bearing Bracket	69	2100-667	Intermediate Shaft
42	2100-117	Bearing Bracket		2200-195	Flange Bearing, 5/8"
	2100-954	Operator Cover (JMB only)	77	2110-166	Disconnect Hub
37	2100-608	Louvered End		2400-305	Thumbscrew, 3/8"-16 x 3/4"
29	2500-442	Radio Terminal Strip	78	2400-188	Thrust Washer, 1/16"
40	2400-472	Pop Rivet	79	2110-239	Sprocket, 48-B-10, with Plate
54	2100-105	Junction Box	80	2400-187	Thrust Washer, 1/8"
55	2100-763	Baffle Panel	81	2200-233	Set Collar, 5/8"
17	2200-074	Pulley, 6" diameter			
33	2100-546	Brake Disc			Brake Assemblies
34	2200-132	Motor Pulley, 2" diameter		2510-068	115V (JMB, JMB-FD)
35	2200-151	V-Belt, 25"		2510-069	230V (JMB, JMB-FD)
52	2500-033	Standard 3-Button Station		2510-133	115V (JMB-CH only)
76	2200-554	#48 Chain, 14 Links		2510-199	230V (JMB-CH only)
57	2200-039	#48 Chain, 21 Links		2510-316	460V (JMB, JMB-FD)
12	2200-010	#48 Master Link		2510-315	460V (JMB-CH)
	2200-051	Sprocket, 41-B-36	46	2220-004	Brake and Puck Assembly
	2200-150	#41 Roller Chain, per foot	47	2100-614	Lever
	2200-027	#41 Master Link	48	2100-548	Rod (JMB, JMB-FD)
	2100-767	Mounting Angle (2 required)	48	2100-949	Rod (JMB-CH)
	2120-154	Spreader Assembly	49	2200-243	Spring
	2110-294	Output Shaft Assembly	50	2100-541	Mounting Plate
70	2100-102	Shaft, 1"	51	2500-178	Solenoid, 115VAC
71	2100-759	Shaft Bracket with Bearing	51	2500-177	Solenoid, 230VAC
72	2200-845	Sprocket, 48-B-20, 1" bore		2500-1351	Solenoid, 460VAC
73	2200-015	Set Collar, 1" x 9/16" LTB		2400-150	Set Collar, 1/4"
74	2200-105	Sprocket, 41-B-16, 1" bore			Motors
75	2400-004	Key, 1/4" x 1/4" x 1"	43	2500-416	1/2 HP, 115V, 1 Phase
	2110-635	Clutch and Cutoff Switch Assembly		2500-417	1/2 HP, 208/230V, 1 Phase
27	2200-218	Sprocket, 48-B-10, 5/8" bore		2500-682	1/2 HP, 208/230/460V, 3 Phase
28	2200-030	Limit Nut			
	2400-188	Thrust Washer, 1/16"			Control Panels
	2400-187	Thrust Washer, 1/8"	44	2520-207	115V, 1 Phase
16	2400-026	Spring Pin, 3/16" x 1"			(WD #2600-222)
21	2200-195	Flange Bearing, 5/8"		2500-212	Transformer, 115/24V, 40VA
	2110-372	Clutch Assembly		2500-2084	Contactora, 24VAC, 4-Pole
19	2100-668	Shaft		2500-086	Terminal Strip, 9-141
20	2110-181	Sprocket, 48-B-30, 5/8" bore		2500-113	Capacitor, 64-67 MFD, 330V
22	2200-367	Clutch Spring		2100-113	Capacitor Clamp
23	2400-237	Shear Pin, 3/16" x 1 1/4"		2500-541	Relay, 3PDT, 24VAC, enclosed
24	2400-061	Hex Nut, 5/8"-18			
25	2400-062	Jam Nut, 5/8"-18	44	2520-208	208/230V, 1 Phase
26	2400-066	Flat Washer, 5/8"			(WD #2600-154)
	2510-181	Cutoff Switch Assembly		2500-791	Transformer, 208/230/24V, 40VA
31	2500-030	Cutoff Switch		2500-552	Capacitor, 20 MFD, 370V
32	2100-781	Switch Bracket		2100-772	Capacitor Clamp
45	2110-278	Limit Switch Assembly			
58	2100-769	Detent Plate	44	2520-209	208/230V, 3 Phase
59	2100-771	Limit Switch Bracket			(WD #2600-155)
31	2500-030	Limit Switch, SPDT		2500-791	Transformer, 208/230/24V, 40VA
	2110-360	Auxiliary Limit Switch Assembly			(Note: This panel has no capacitor)
60	2100-339	Limit Switch Bracket	44	2520-210	460V, 3 Phase
61	2500-440	Limit Switch, SPDT			(WD #2600-155)
				2500-214	Transformer, 460/24V, 40VA
					(Note: This panel has no capacitor)

Parts for Optional Chain Hoist (JMB-CH)



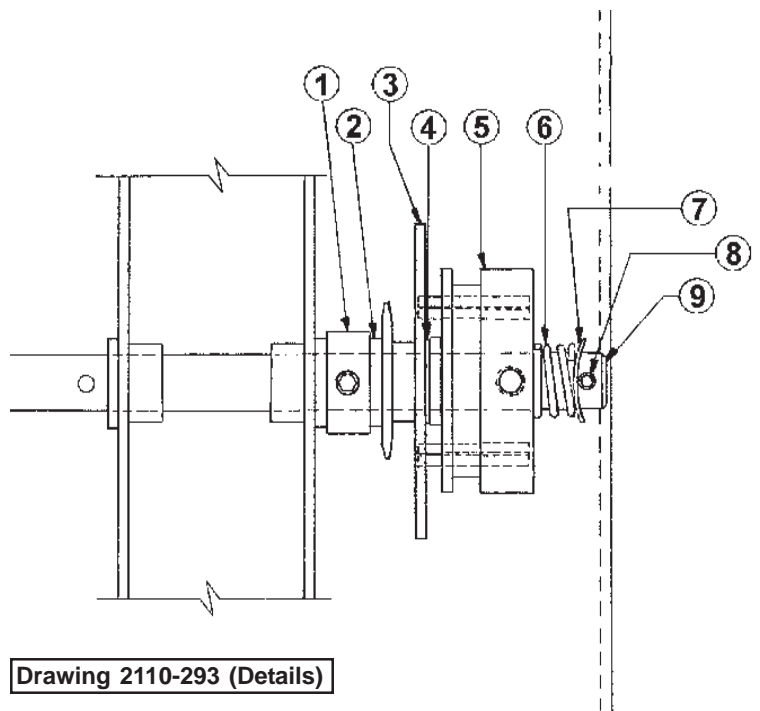
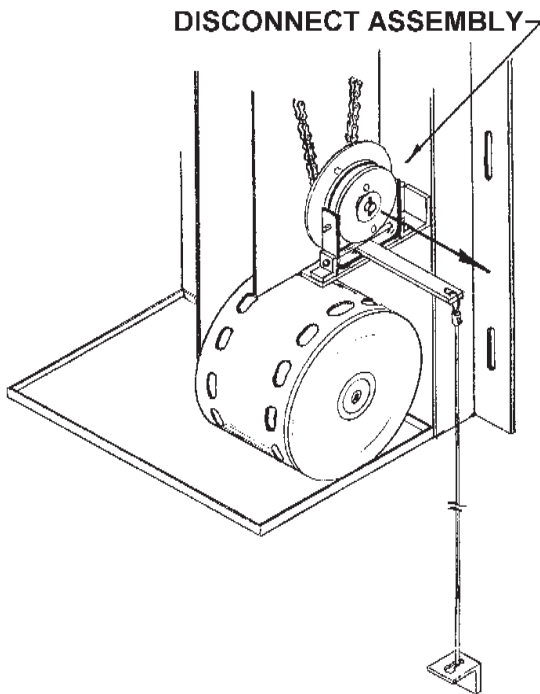
**Model JMB-CH
Parts List #159 (JMB Chain Hoist Parts)
OSCO Drawings #2120-171 and #2700-231**

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
1	2110-306	Chain Guide Assembly
2	2110-142	Chain Wheel Assembly
3	2200-403	Hand Wheel Spring
4	2100-944	Intermediate Shaft
5	2400-235	Spring Pin, 3/16" x 1 3/4"
6	2100-957	Actuator Arm
7	2500-030	Limit Switch
8	2200-360	Actuator Spring
9	2110-251	Actuation Slide Assembly
9	2200-218	Sprocket, 48-B-10, 5/8" bore
10	2110-152	Cam Plate Assembly
10	2110-439	Chain Hoist Intermediate Bracket
11	2200-191	Hand Chain, per foot
11	2200-270	Cable, per foot
11	2400-146	Cable Clamp, 1/8"
11	2100-866	Cable Retainer Bracket
11	2100-1066	Operator Cover (JMB-CH)



TO HELP PREVENT CHAIN SLIPPAGE, PLACE HAND CHAIN ON THE HAND WHEEL WITH THE CUT SIDE OF THE LINK TOWARD THE WHEEL.

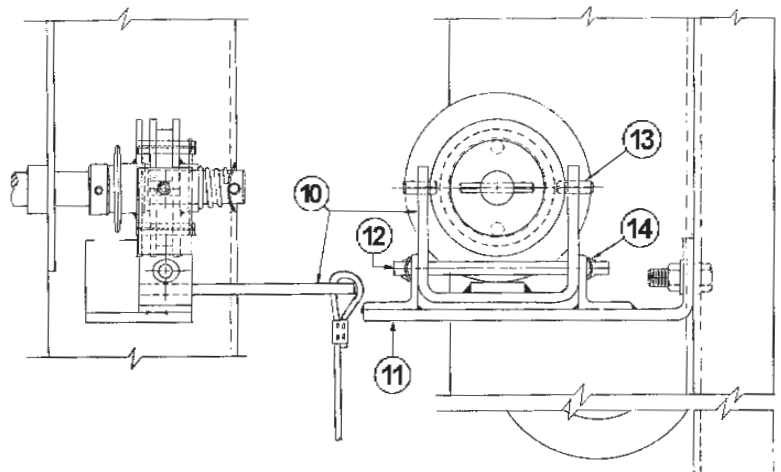
Parts for Optional Floor Disconnect (JMB-FD)



Drawing 2110-293 (Details)

**Model JMB-FD
Parts List #160 (JMB Floor Disconnect Parts)
OSCO Drawing #2110-293**

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
	2110-293	Intermediate Shaft Assembly
1	2200-233	Set Collar
2	2400-187	Thrust Washer, 1/8"
3	2110-180	Disconnect Disc
4	2400-215	E-Ring
5	2110-095	Shifter Block
6	2200-293	Disconnect Spring
7	2400-213	Spring Washer, 5/8"
8	2400-088	Spring Pin, 3/16" x 1"
9	2100-666	Intermediate Shaft
10	2110-182	Yoke and Lever Assembly
11	2110-133	Fulcrum Assembly
12	2100-549	Disconnect Pivot Pin
13	2400-232	Spring Pin, 1/4" x 5/8"
14	2400-169	Push-On Nut
	2200-270	Cable, per foot
	2400-146	Cable Clamp
	2100-866	Cable Retainer Bracket
	2100-953	Operator Cover (JMB-FD)



Wiring Specifications

1. From the top chart below, find the section corresponding to the voltage and phase of your operator.
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	Volts & HP	Max Distance (ft)	Wire Gauge
Single Phase	115V	281	12	208V	1213	12
		448	10	230V	1928	10
		713	8		3066	8
	1/2HP	1133	6	1/2HP	4875	6
		1802	4		7753	4
Three Phase	208V	620	12	460V	2705	12
	230V	985	10		4305	10
		1565	8		6850	8
	1/2HP	2485	6	1/2HP	10895	6

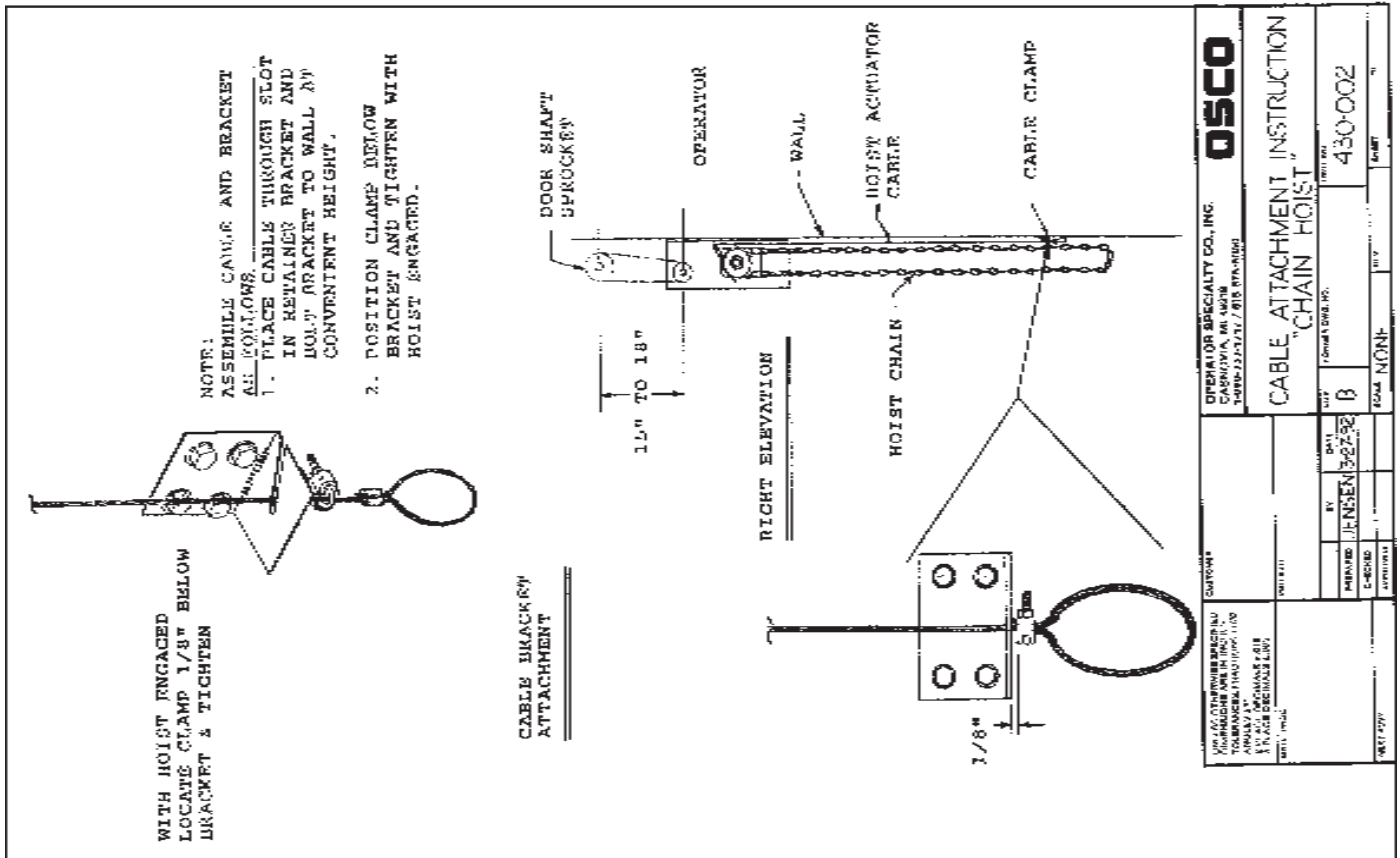
Control Wiring		
Volts	Max Distance (ft)	Wire Gauge
24V	250	14
	350	12
For distances of more than 350 feet, a long-distance interface is required.		

Instructions for Optional Jackshaft Chain Hoist

The jackshaft operator's optional chain hoist is for use in case of power failure or malfunction of the automatic operator. When not in use, the chain and engagement cable should be held in the retainer bracket up against the wall and to the side of the doorway.

To use the optional chain hoist:

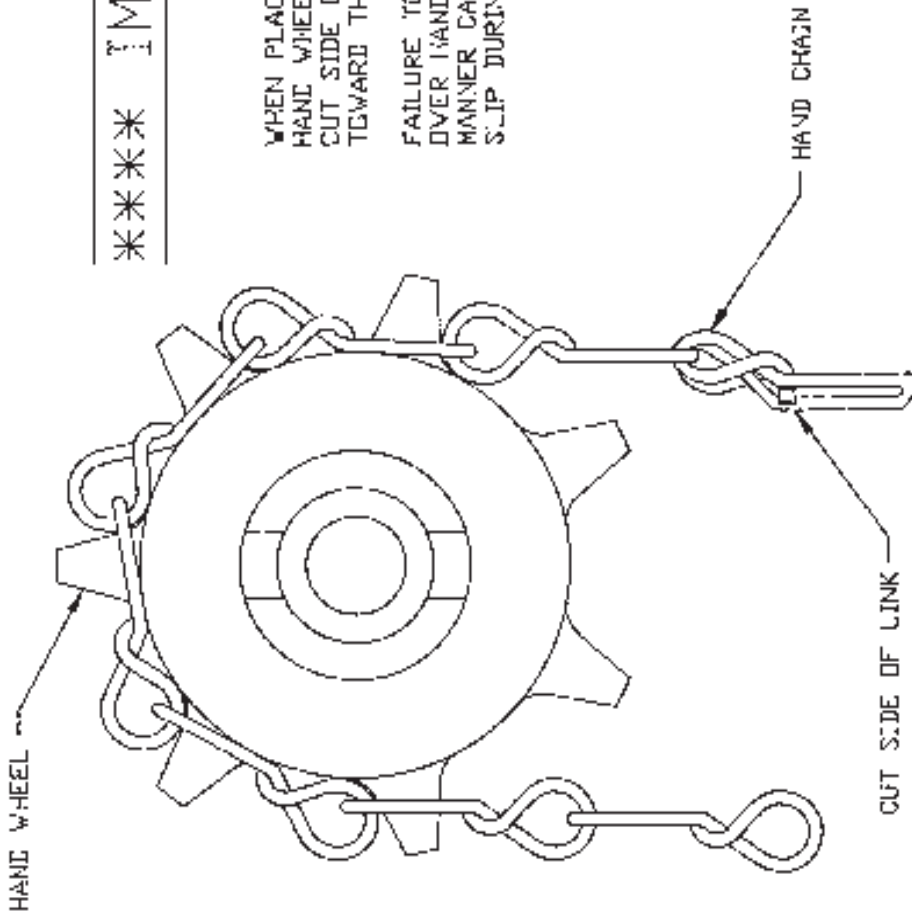
1. Be sure the door and track are in good working order and not jammed.
2. Remove the chain and engagement cable from the retainer wall bracket.
3. Pull downward on the engagement cable to engage the chain hoist. This also disengages control power from the door operator.
4. Place the engaged cable back in the wall retainer bracket. The pre-installed clamp on the cable should be slid under the bracket shelf to hold the chain hoist engaged.
5. Pull on the chain with a steady medium speed to raise the door. To avoid over-running the limit switches, be sure not to raise the door beyond the point at which it would normally stop if automatically powered.
6. To re-engage the operator, pull the disconnect cable down and out of the retaining wall bracket.



*** IMPORTANT ***

WHEN PLACING HAND CHAIN ON HAND WHEEL, BE SURE THAT THE CUT SIDE OF THE LINKS FALL TOWARD THE HAND WHEEL.

FAILURE TO PLACE HAND CHAIN OVER HAND WHEEL IN THIS MANNER CAN CAUSE CHAIN TO SLIP DURING USE.



OPERATOR SPECIALTY CO., INC
 GASNOVIA, MI 49316
 1-800-333-1717 / 616-675-5350

INSTALLATION INSTRUCTIONS OF
 HAND CHAIN ONTE HAND WHEEL

CUSTOMER

UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES
 TOLERANCES: FRACTIONS ± 1/32
 ANGLES ± 1°
 2 PLACE DECIMALS ± .015
 3 PLACE DECIMALS ± .005

PROJECT

DATE, PRD.

SIZE	FORMER S.C. NO.	SYT. NO.
A		2700-231
SCALE	REV.	SHEET
		OF

BY	DATE
R.S.	9-23-94
CHECKED	
APPROVED	

NEXT ASSY.