

# High Speed Cracker



Model Number: ME-JC-24 – Operation Manual Page 1 of 14



## THEORY OF OPERATION

The high speed cracker is used to crack the outer shell of a stone fruit nut. The crack is accomplished by stressing the nut between a stationary plate and an oscillating plate. All aspects of the cracking process can be controlled with machine adjustments relating to the size and shell characteristics of the nut being cracked.

## GENERAL OPERATING INSTRUCTIONS

Refer to Figure 1 below when reading these instructions.

Turn the machine on by pressing the start button on the frequency drive and set the frequency drive to operate the motor at a frequency of 35 Hz. A setting of 35 Hz is typically a good starting speed. Do not turn on the feed tray at this point.

Allow one nut to pass through the cracking plates and evaluate the crack. If the nut was not cracked or over-cracked, adjust the cracking plate spacing by turning the crack adjustment hand wheels. Turn the hand wheels clockwise to decrease the space between the plates and counterclockwise to increase the space between the plates.

Once the nut is only slightly cracked as it passes through the plates, take note of the crack adjustment scale on the side of the machine. The bottom of the adjusting block will align with a line on the crack adjustment scale. Each line on the crack adjustment scale corresponds with a number. The higher the number, the “harder” the nut is being cracked. Another way of referring to the number is to say that the higher the number, the closer the plates are in relation to each other.

Typically, the input end adjusting block is set to a number that is one or two units smaller than the discharge end adjusting block. For instance, if the input end adjusting block is in alignment with the #12 line, the discharge end adjusting block align with the #13 or #14 line. This causes the nuts to be fed into a progressively tighter pinch point as they are being cracked.

Pass a few more nuts one at a time through the cracking plates and evaluate the crack profile. A



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

WEBSITE  
[www.me-equip.com](http://www.me-equip.com)

# High Speed Cracker



Model Number: ME-JC-24 – Operation Manual Page 2 of 14

proper crack profile should still have the majority or all of the shell remaining on the nut. There should be cracks around the diameter and additional cracks in the shell that run lengthwise on the nut. If cracked nuts are missing 50-60% shell, cracker is set too aggressive and should be adjusted.

Once the cracker is adjusted to provide the proper crack, turn the feed tray on and adjust the feed speed for the feed tray controller to 15 and re-evaluate crack quality. Increase feed to 45 and re-evaluate crack quality. If crack quality diminishes rotate both plates equally by 1/8 of a turn clockwise or until the proper crack is achieved. Finally, adjust the feed speed to meet production requirements.

Take note that the feed speed is such that nuts are not “jumping” over the top cracking plate. If this occurs, you have exceeded the feed speed for that particular size nut. Reduce the feed speed until no nuts are passing over the top plate.

## Pre-Cracking Considerations :

It is critical that in-shell pecans are sized properly. Properly sized in-shell should be separated into sizes by diameter. Each change in diameter by 1/16th of an inch indicates a different size. This is a standard in the pecan industry. If the cracker is being used to crack walnuts, this 1/16th diameter rule will likely not hold true because of the amount of space between the kernel and the shell that is common in walnuts.

It is also critical that in-shell pecans are tempered before cracking. Tempering refers to the act of adding moisture to the kernel of the in-shell. Pecans should be cracked at a kernel moisture range of 6.5% to 11% with 8% kernel moisture being optimal. When processing walnuts, this is not a requirement. Walnuts may be cracked in the same manner as with other crackers that are commonly used in the industry.

When cracking pecans, it is necessary to allow the in-shell at least 15 minutes rest in a cooling bin after the hot water sanitizer. This allows the shell to dry out before cracking. If this 15 minute rest is not adhered to, moisture from the shell will deposit onto the cracking plates. This moisture will collect bits of shell and cause a layer of shell and oil to build up on the cracking plates which will greatly diminish the recovery of halves.



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

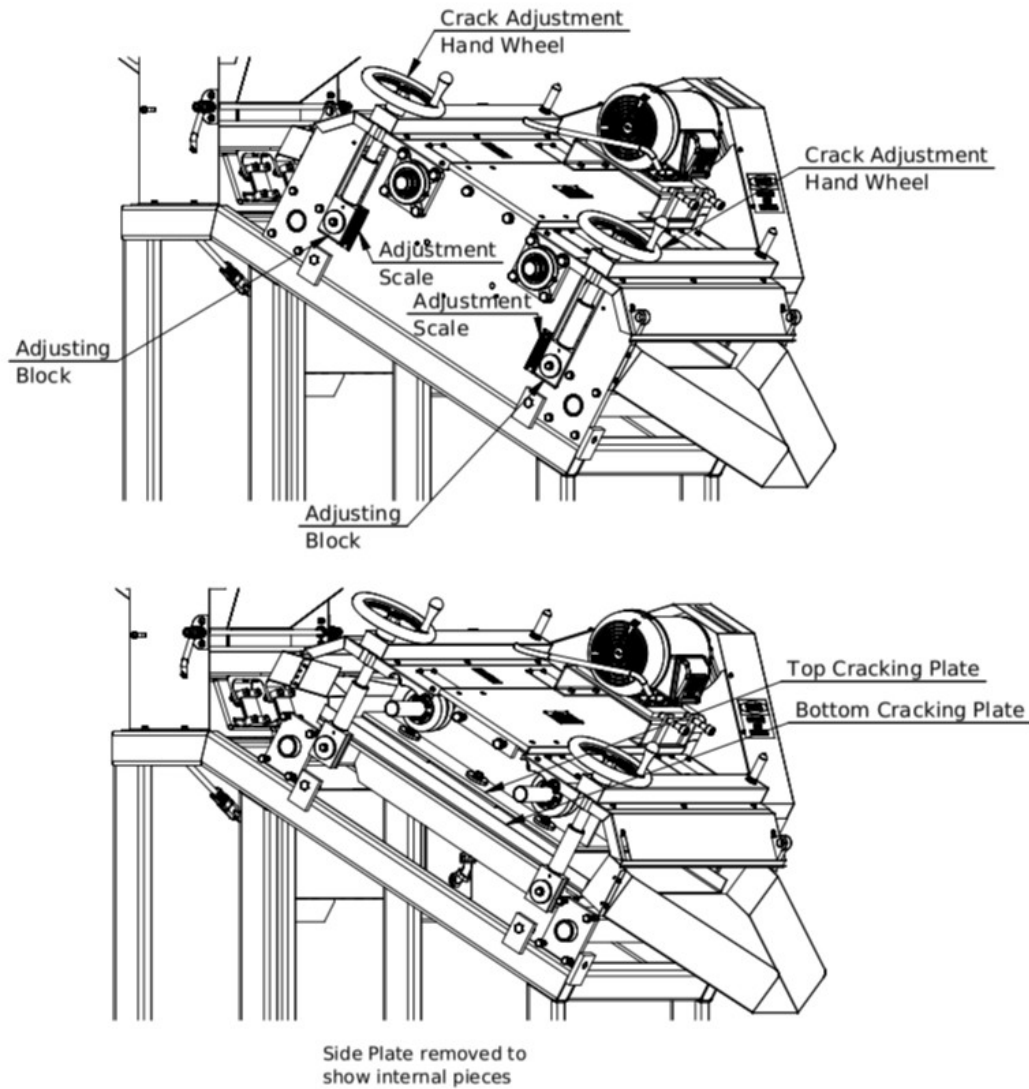
WEBSITE  
[www.me-equip.com](http://www.me-equip.com)

# High Speed Cracker



Model Number: ME-JC-24 – Operation Manual Page 3 of 14

**FIGURE 1**



## MACHINE MAINTENANCE

Before performing maintenance on the machine, ensure that power is disconnected and there is no danger of energizing the power circuit during the maintenance procedure.

The most important aspect of maintaining this machine is to check the eccentric timing both before



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

WEBSITE  
[www.me-equip.com](http://www.me-equip.com)

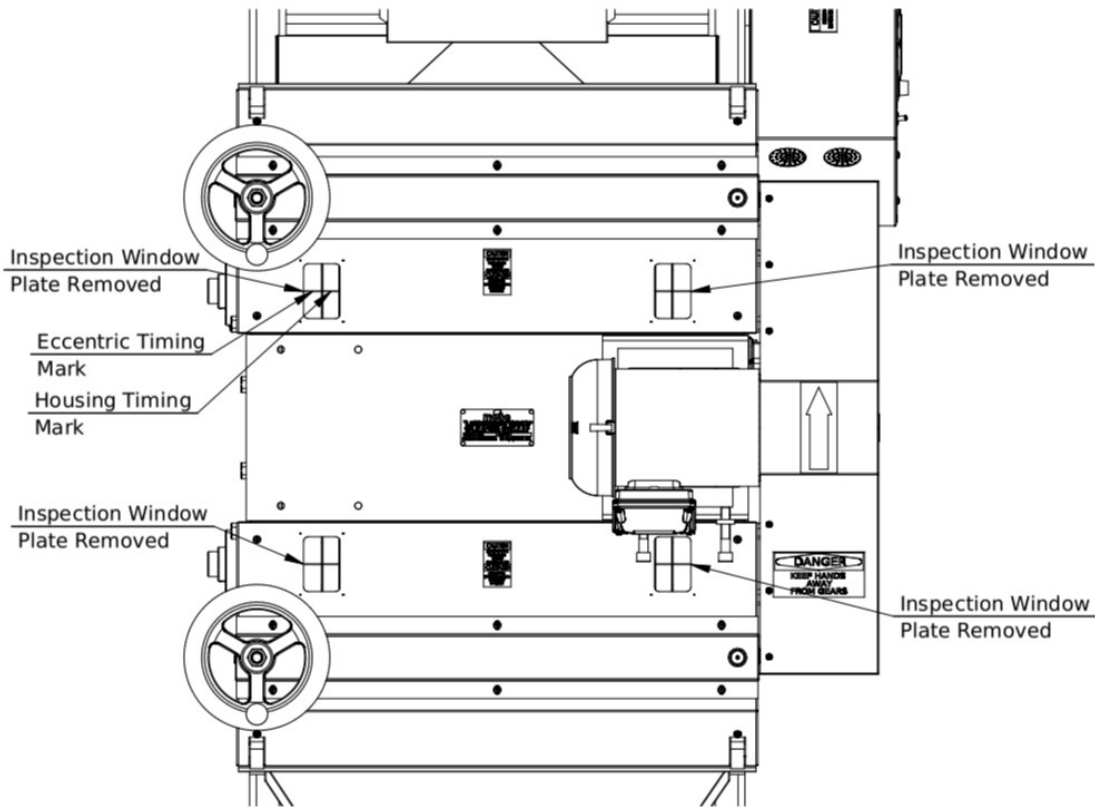
# High Speed Cracker



Model Number: ME-JC-24 – Operation Manual Page 4 of 14

and after every shift. If the eccentric timing is out, the machine must not be run until the timing misalignment is corrected. Refer to Figure 2 below while reading this section. Remove the four timing inspection windows and rotate the eccentric shafts until the timing marks on one of the eccentrics aligns with the timing mark on the adjacent eccentric bearing housing. At this time, all of the other three eccentric timing marks must be in alignment. Refer to Figure 2 for correct timing alignment. If any of the four timing marks are out of alignment, the misalignment must be corrected before operating the machine. If the misalignment is not corrected, the eccentric bearings will fail during operation.

## FIGURE 2



There are two scenarios that may occur in respect to timing misalignment.

Scenario 1: One of the eccentrics on the shaft is out of time while all other eccentrics are in time.

Scenario 2: Both of the eccentrics on the same shaft are out of time by an equal amount while both eccentrics on the other shaft are in time.

## CORRECTING SCENARIO 1 MISALIGNMENT



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

WEBSITE  
[www.me-equip.com](http://www.me-equip.com)

# High Speed Cracker



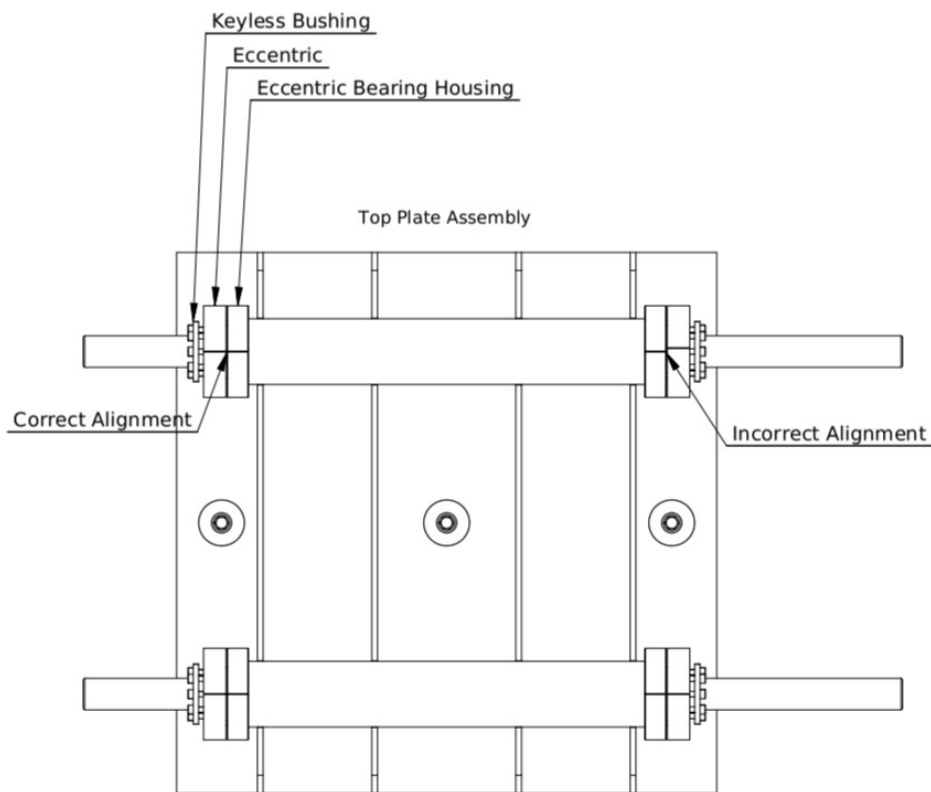
Model Number: ME-JC-24 – Operation Manual Page 5 of 14

This type of misalignment occurs when one of the keyless bushings slips on the top plate shaft. This will require almost a full disassembly of the machine to correct. Follow the instructions in the machine disassembly section to remove the top plate from the machine.

While the top plate is out of the machine, you should inspect all of the eccentric bearings and replace any that feel tight or rough when rotating them.

Refer to Figure 3 below while correcting this misalignment. There are two shafts on the top plate assembly. Each shaft has two eccentrics that must be aligned properly with their respective bearing housing timing mark. To acquire proper eccentric timing, loosen one of the keyless bushings on the shaft and realign the timing marks by twisting the eccentric. When both timing marks are properly aligned, hold both eccentrics in place and tighten the keyless bushing. Follow the instructions in the machine reassembly section to return the machine to proper working order.

**FIGURE 3**



## CORRECTING SCENARIO 2 MISALIGNMENT



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

WEBSITE  
[www.me-equip.com](http://www.me-equip.com)



# High Speed Cracker

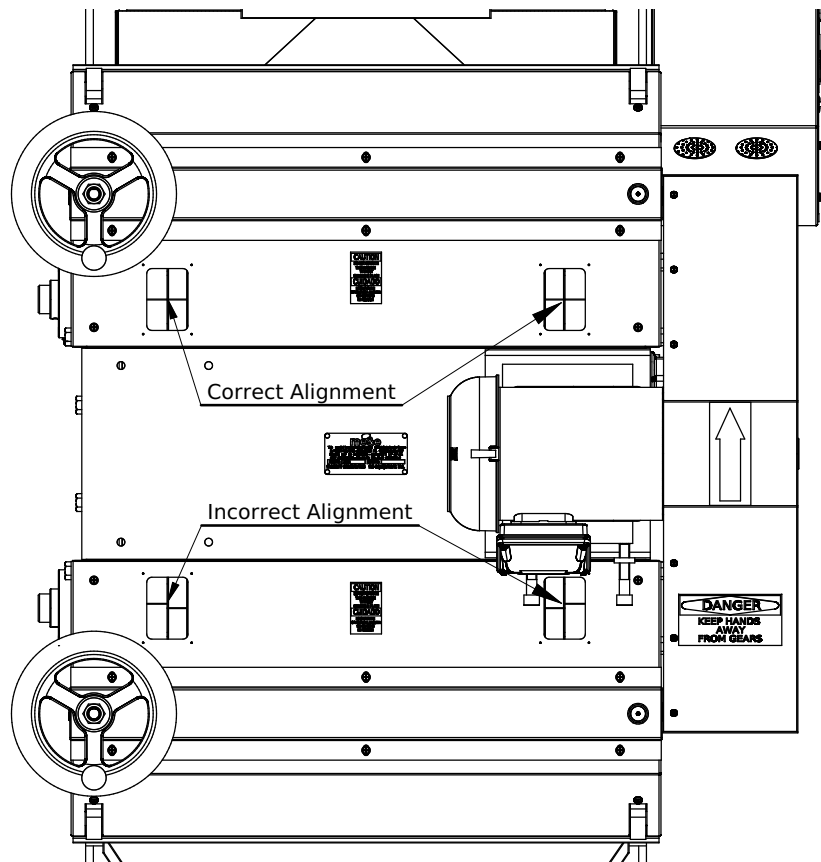


Model Number: ME-JC-24 – Operation Manual Page 6 of 14

This type of misalignment occurs when one of the timing pulleys jumps a tooth on the drive belt or when the keyless bushing that attaches the timing pulley to the shaft slips. It is fairly simple to correct this misalignment, however, it is possible that bearing damage has occurred. Take proper steps to inspect the eccentric bearings. If the bearings are damaged, the top plate assembly must be removed from the machine and the bearings replaced. Follow the instructions in the machine disassembly section to remove the top plate from the machine.

Refer to Figure 4 and Figure 5 below while correcting this misalignment. First, remove the belt guard from the machine to expose the drive and timing pulleys. Then, determine which shaft is out of time and loosen the keyless bushing that attaches the timing pulley to the shaft. While holding the shaft that is in time, rotate the shaft that is out of time until the eccentric timing marks align with the respective timing marks on the bearing housing. Tighten the keyless bushing and ensure that all timing marks are aligned properly with the bearing housing timing marks.

**FIGURE 4**



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

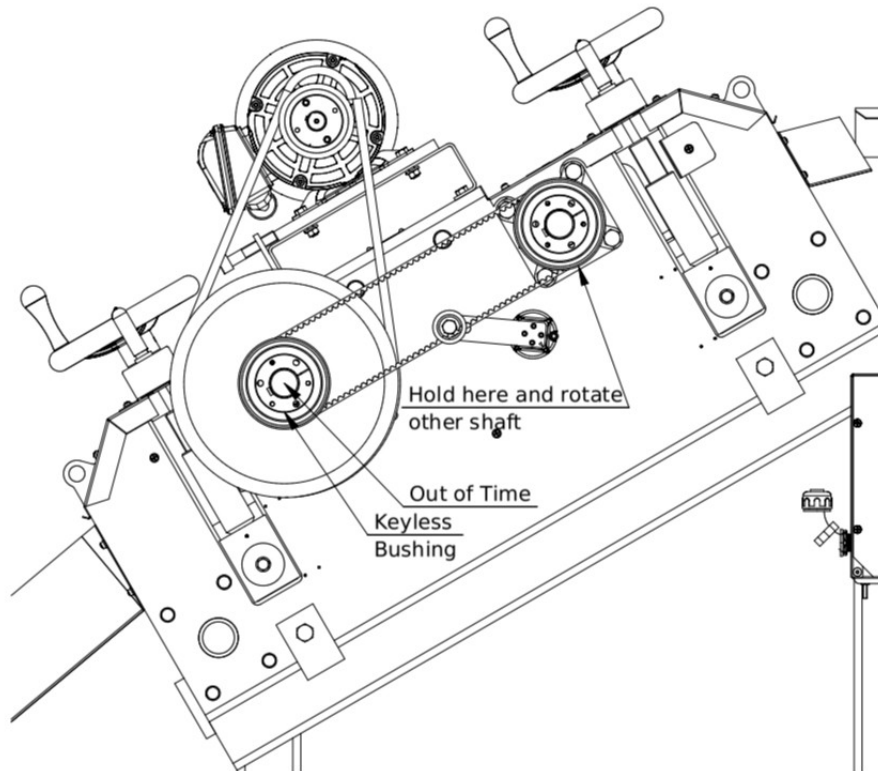
WEBSITE  
[www.me-equip.com](http://www.me-equip.com)

# High Speed Cracker



Model Number: ME-JC-24 – Operation Manual Page 7 of 14

**FIGURE 5**



## MACHINE DISASSEMBLY

Refer to Figures 6 and 7 below. The general steps for disassembly are as follows.

- Remove crack adjustment hand wheels.
- Remove the belt guard; input chute and discharge chute.
- Remove the covers for the timing belts that connect the crack adjustment assemblies.
- Remove the crack adjustment timing sprockets.
- Remove the top covers.
- Remove the drive belts and the timing belt that connect the top plate shafts.
- Disconnect the wiring from the drive motor.
- Remove the motor and top cross member assembly.
- Remove the four bolt flange bearings from the top plate shafts.
- Remove the top plate assembly.
- The bottom plate assembly can be removed if necessary by unbolting the crack adjustment assemblies and lifting the bottom plate out of the side plates.



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

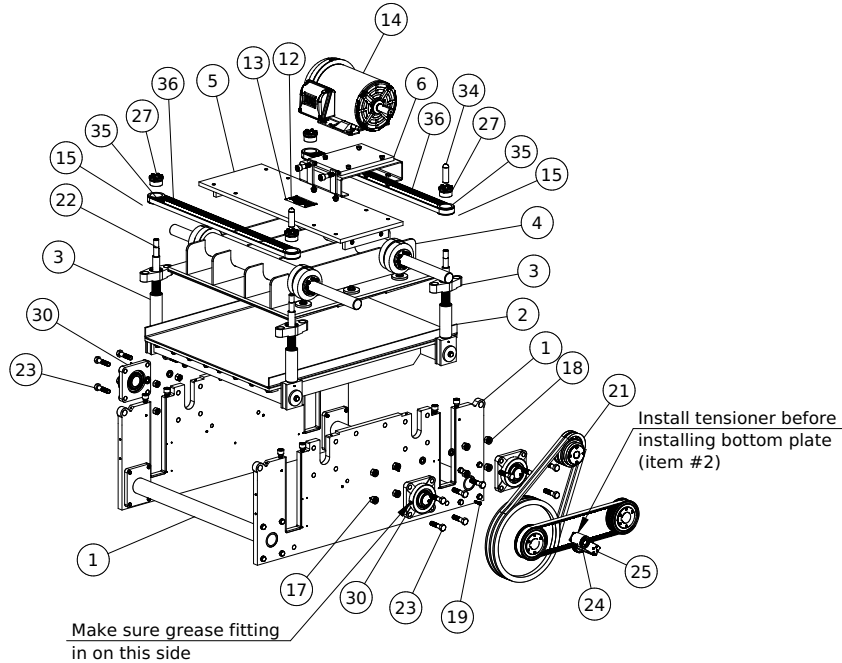
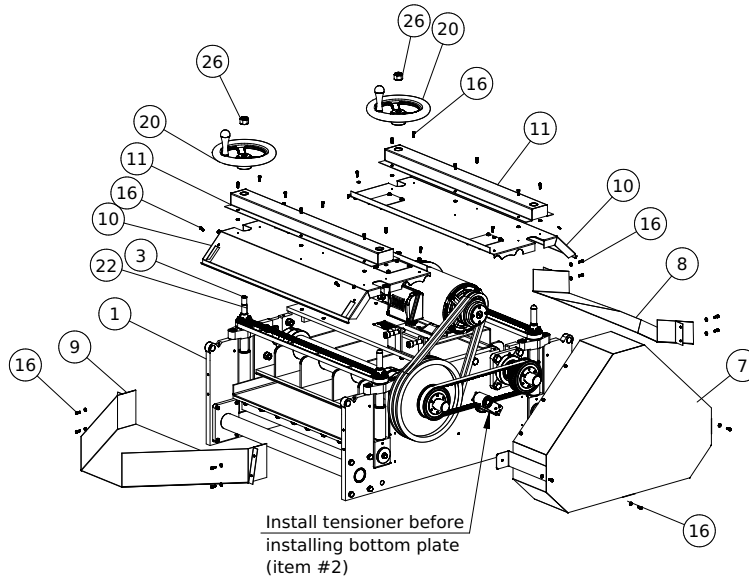
WEBSITE  
[www.me-equip.com](http://www.me-equip.com)

# High Speed Cracker



Model Number: ME-JC-24 – Operation Manual Page 8 of 14

## FIGURE 6



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

WEBSITE  
[www.me-equip.com](http://www.me-equip.com)



# High Speed Cracker



Model Number: ME-JC-24 – Operation Manual Page 9 of 14

## FIGURE 7

Bubble No.	Item Number	Quantity	Part Description
37	31603001030	31	Washer, Stn. Stl. #10 Flat
36	32200306001	2	Timing Belt - 300 TH X 5 mm Pitch X 15
35	21400102473	4	Belt Sprocket, 5mm X 15 mm Belt Width
34	31600111401	2	Round Cap, 5/8 OD X 2 L
30	31800102048	4	Bearing, Four Bolt Flange 1-3/8 Bore
29	32900511002	2	Scale Plate, 4 X 1 Silver JC Cracker
27	31400102006	4	Keyless Bushing, 0.8750 in ID X 1.5625
26	31603104027	2	Locknut, 5/8-11 Nylock Hex Nut
25	31401002035	1	Manual Tensioner RT 18, Single Adjust
24	31401002036	1	Lovejoy RPR 15/18, Plastic Tentioner
23	31600904002	20	Bolt, Zinc Pltd. Hex Head 1/2-13 x 2
22	21400402000	2	Key, 3/16 X 3/16 X 1
21	11400102113	1	Power Transmission Assy, JC-24 60Hz
20	30400107003	2	Hand Adjustment Wheel Cast
19	31600505000	1	Cap Screw, Black Oxided Socket Head
18	31603004006	20	Lock Washer, Zinc Pltd. 1/2
17	31603104004	16	Nut, Zinc Pltd. 1/2-13 Hex
16	31600301001	31	Machine Screw, Stn. Stl. 10-24 x 1/2
15	31600905000	8	Cap Screw, Black Oxided Socket Head
14	32100102022	1	Motor Rolled Steel , 1-1/2 Hp 3 PH Foot
13	31603401004	12	Drive Screw, Stn. Stl. #4 x 3/16 Round-
12	32900511001	1	Patent Plate, JC Cracker
11	11000101292	2	Adj. Belt Guard Assy, JC-24 Cracker
10	11000101293	2	Top Cover Assy, JC-24 Cracker
9	11300101080	1	Discharge Chute Assy, JC-24 Cracker
8	11300101081	1	Input Chute Assy, JC-24 Cracker
7	11000101291	1	Belt Guard Assy, JC-24 Cracker
6	10100102010	1	Motor Mount Assy, JC-24 Cracker
5	12400102104	1	Top X-Mbr. Assy, JC-24 Cracker
4	12400102105	1	Top Plate w/ Shaft Assy, JC-24 Cracker
3	11400102111	4	Crack Adj. Assy, JC-24 Cracker
2	12400102101	1	Bottom Plate w/ Shaft Assy, JC-24
1	12400102097	1	Cracker Frame Assy, JC-24 Cracker



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

WEBSITE  
[www.me-equip.com](http://www.me-equip.com)

# High Speed Cracker



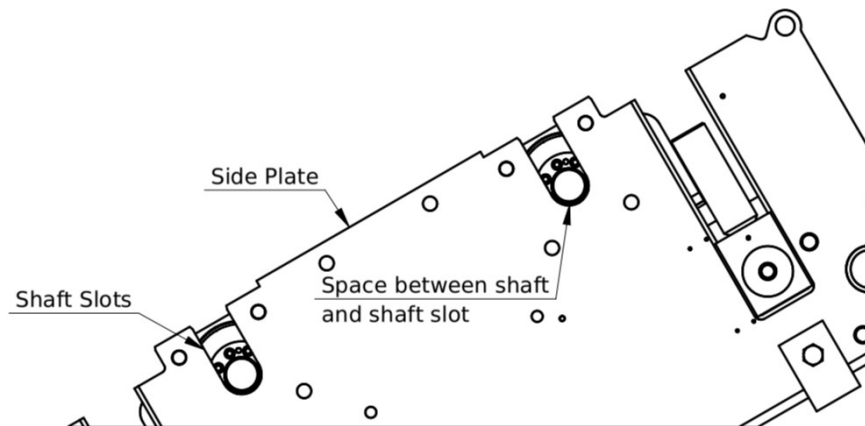
Model Number: ME-JC-24 – Operation Manual Page 10 of 14

## MACHINE REASSEMBLY

To reassemble the machine, reverse the steps in the machine disassembly section. During reassembly, take note of the following.

- When installing the top plate assembly, place spacers between the top and bottom plate assemblies so that the top plate shafts do not sit hard against the shaft slots in the side plates. See Figure 8
- Before bolting the four bolt flange bearings to the side plates, ensure that all eccentric timing marks are aligned with their respective eccentric bearing housing timing marks.
- Once the top plate assembly and the four bolt flange bearings are installed, and before installing the crack adjustment timing belts, adjust all four crack adjustment assemblies so that the top cracking plate assembly is perpendicular with the bottom plate assembly.

## FIGURE 8



## INSTALLATION

The cracker should be installed on a level concrete floor. If the floor is not level, place shims between the foot pads and the floor to achieve a level stance. The cracker should also be bolted securely to the concrete floor through the holes in the foot pads. The cracker requires either 240 VAC or 480 VAC 3 phase electricity. Other voltages may be available upon request. All electrical connections should be made by a qualified electrician. A wiring diagram of the cracker will be included inside of the control panel. Additional wiring diagrams may be supplied upon request.

## SAFETY GUIDELINES

All electrical connections should be made by a qualified electrician. Before servicing the machine, ensure that the main power is disconnected and locked out.

Never operate the machine with protection guards removed.



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

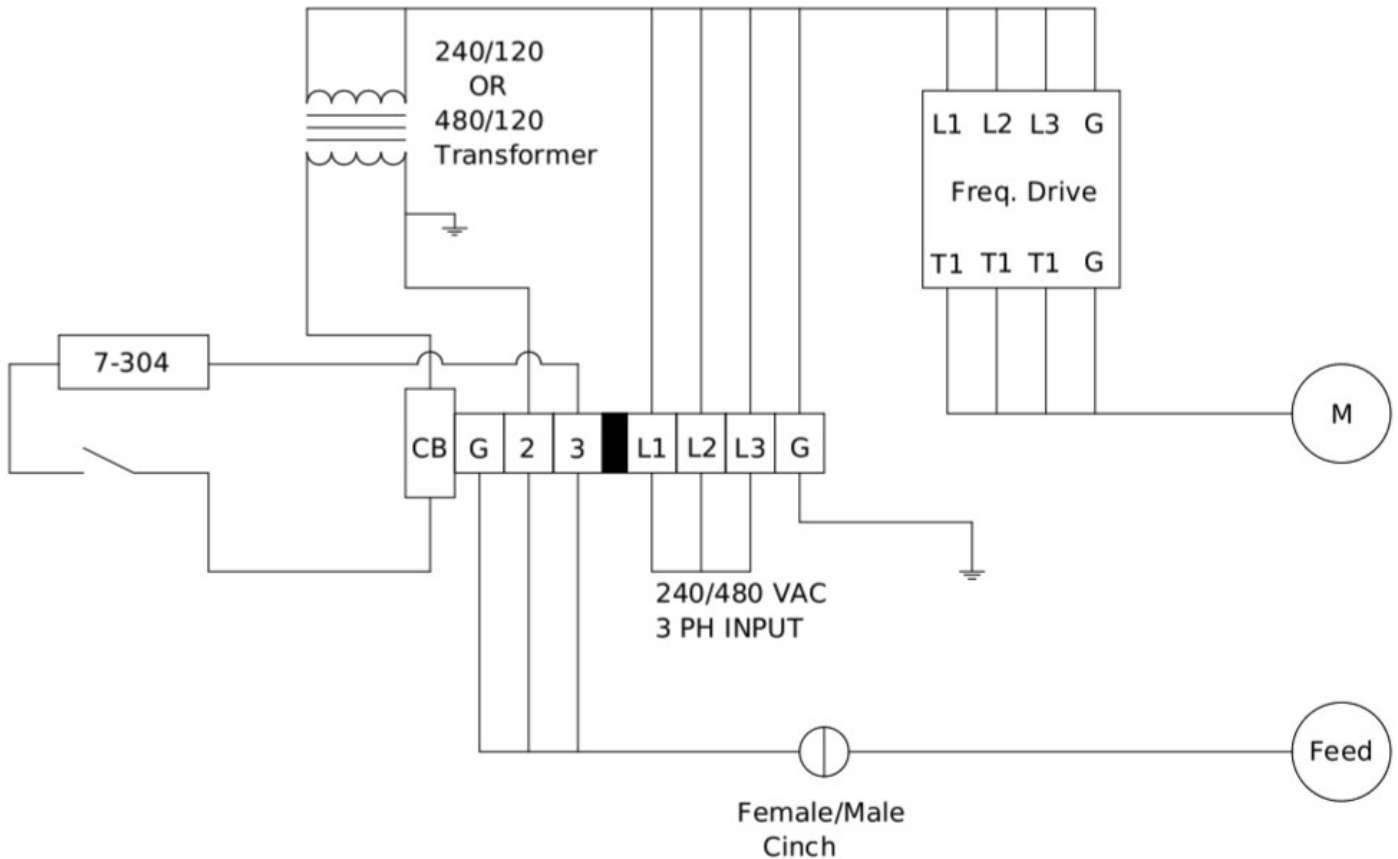
WEBSITE  
[www.me-equip.com](http://www.me-equip.com)

# High Speed Cracker



Model Number: ME-JC-24 – Operation Manual Page 11 of 14

## ELECTRICAL DIAGRAMS



Below are exploded views of the top plate assembly and bottom plate assembly. Use these exploded views when ordering replacement parts. In addition, it is common for owners to purchase an entire top plate assembly. Doing this allows for quickly returning to operation in the event of eccentric bearing failure. If there is a bearing failure in the top plate assembly, remove the damaged assembly, install the spare top plate assembly and return the cracker to operation. While the machine is running, repair the damaged top plate assembly and set it aside for use if there is another bearing failure.



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

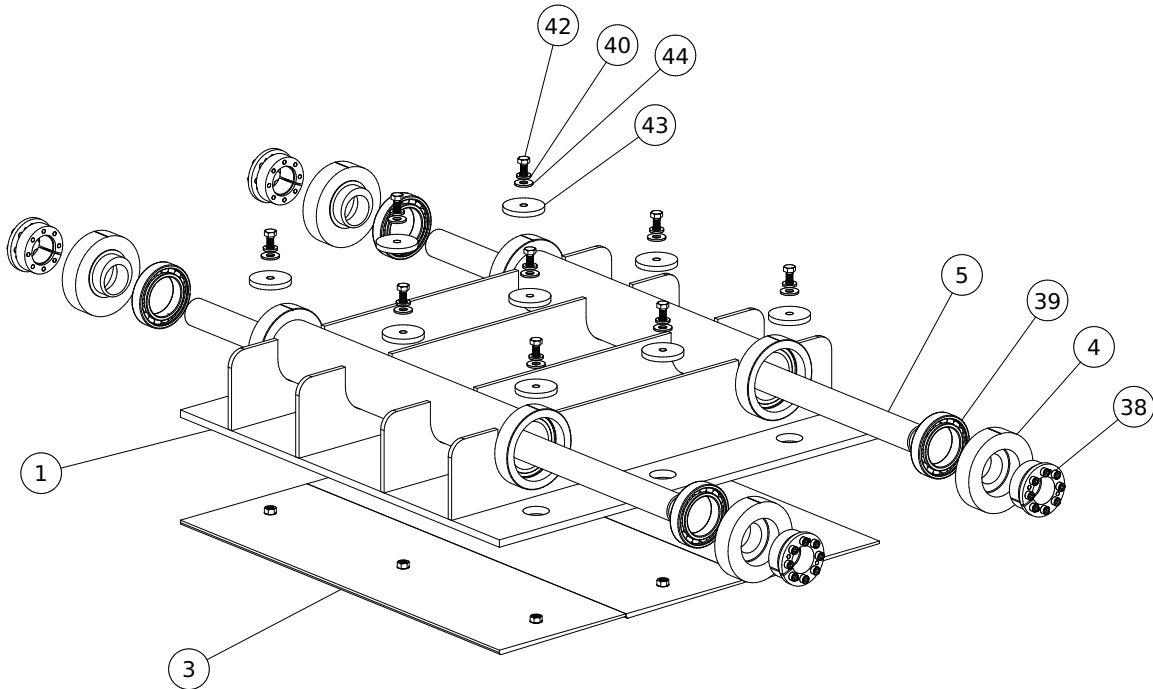
WEBSITE  
[www.me-equip.com](http://www.me-equip.com)

# High Speed Cracker



Model Number: ME-JC-24 – Operation Manual Page 12 of 14

**FIGURE 10**



Bubble No.	Item Number	Quantity	Part Description
44	31603004032	9	Washer, Zinc Pltd. 5/16 Flat
43	31603004034	9	Washer, Zinc. Pltd 5/16 2 OD Flat
42	31600604000	9	Bolt, Zinc Pltd. Hex Head 5/16-18 X 3/4
40	31603004005	9	Lock Washer, Zinc Pltd. 5/16
39	31800102130	4	Bearing, Radial/Deep Groove Ball Bore
38	31400102005	4	Keyless Bushings - 35 mm ID, 28.5 mm
5	21400102470	2	Top Plate Shaft , JC-24 Cracker
4	21400102471	4	Eccentric Bushing, 1/4 Throw X 1-1/2 ID
3	12400102103	3	Tapered Cracking Plate Assy, JC-24 Crac
1	12400102102	1	Top Plate Assy, JC-24 Cracker



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

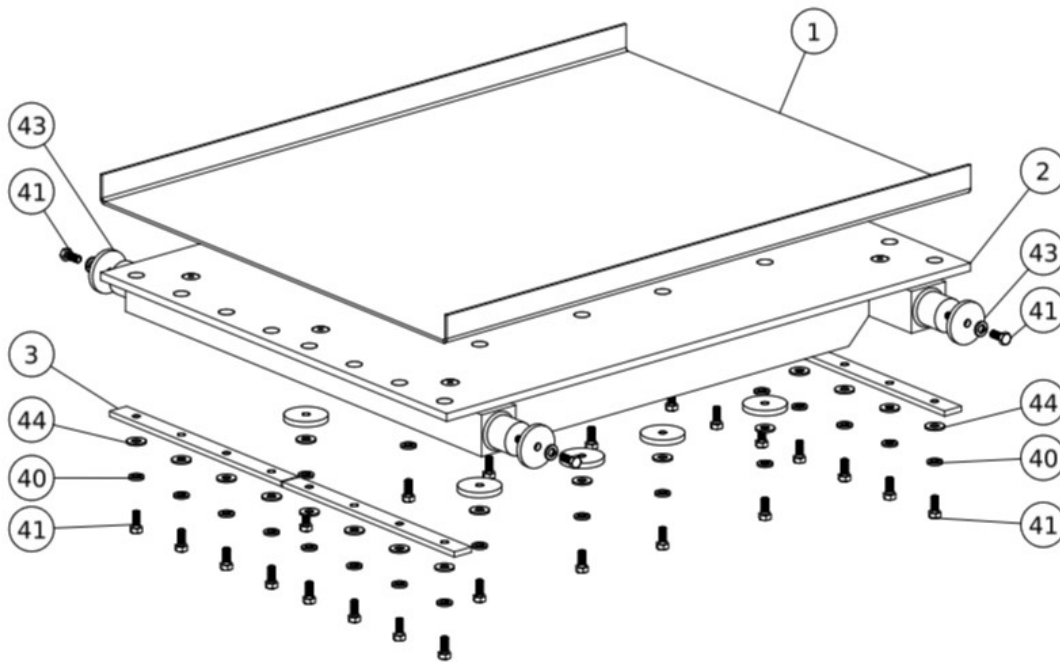
WEBSITE  
www.me-equip.com

# High Speed Cracker



Model Number: ME-JC-24 – Operation Manual Page 13 of 14

FIGURE 11



Suble No.	Item Number	Quantity	Part Description
44	31603004032	24	Washer, Zinc Pltd. 5/16 Flat
43	31603004034	12	Washer, Zinc. Pltd 5/16 2 OD Flat
41	31600604000	28	Bolt, Zinc Pltd. Hex Head 5/16-18 X 3/4
40	31603004005	28	Lock Washer, Zinc Pltd. 5/16
3	22400202108	4	Btm. Back-Up Plate, JC-24 Cracker
2	12400102100	1	Bottom Plate Assy, JC-24 Cracker
1	12400102099	1	Bottom Cracking Plate Assy, JC-24 Crack



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

WEBSITE  
www.me-equip.com



# High Speed Cracker



Model Number: ME-JC-24 – Operation Manual Page 14 of 14

## FREQUENTLY PURCHASED ITEMS

Part Number	Description	Quantity Per Cracker
32200106068	V-belt, 5L X 48	2
32200306000	Timing Belt , 135 TH X 8 mm Pitch X 20 mm W X 1080 mm L	1
31800102130	Bearing, Radial/Deep Groove Ball Bore, 50 mm ID, 80 mm OD, 16 mm W	4
31800102048	Bearing, Four Bolt Flange 1-3/8 Bore	4
21400102471	Eccentric Bushing, 1/4 Throw X 1-1/2 ID X 1-31/32 OD JC-24 Cracker	4
21400102470	Top Plate Shaft , JC-24 Cracker	2
32600101009	Frequency Drive, 2 Hp 3 PH in 230 VAC 3 PH out	1
32600101018	Frequency Drive, 3 Hp 3 PH 380/480 VAC	2
32600611026	Control Transformer 240X480 to 120X240VAC 750VA	1
32600611034	Control Transformer 240X480 to 25X120VAC 750VA	1



modern electronics & equipment, inc.

LOCATION  
Mansfield, Louisiana

CONTACT  
318-872-4764

WEBSITE  
[www.me-equip.com](http://www.me-equip.com)