



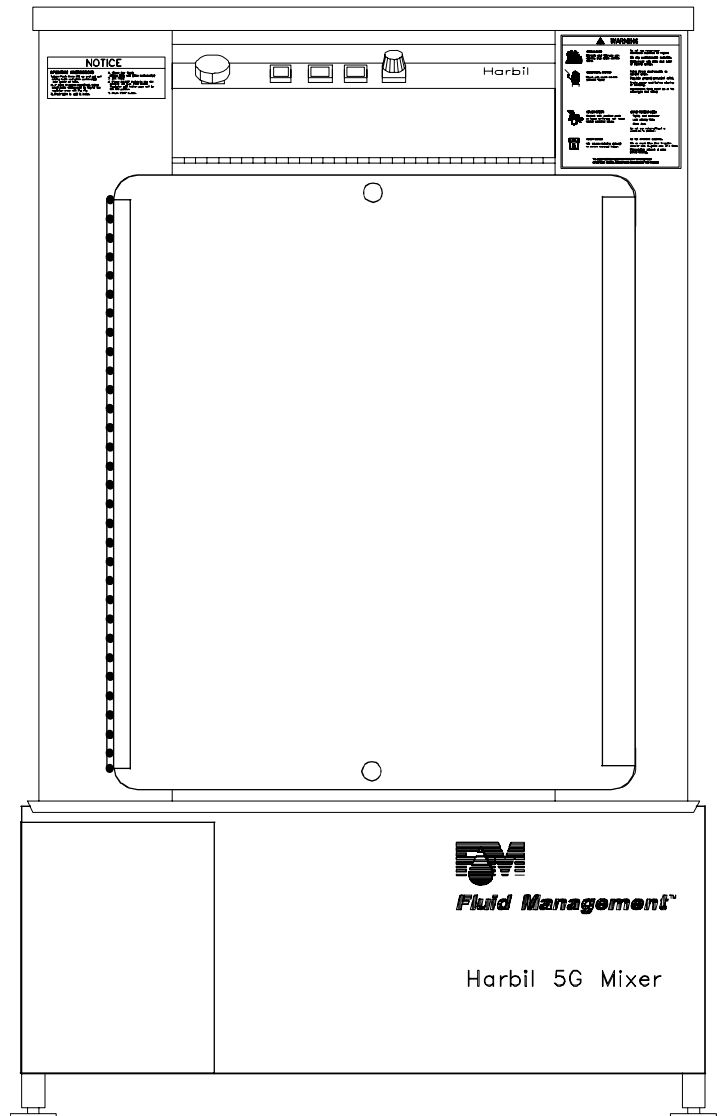
Fluid Management®

HARBIL

5G High Speed Paint Mixer

with Enhanced Clamping Circuitry

Instruction Manual



Part No: 24018
Rev. E

04.15.09



Fluid Management

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AccuTINTER

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Fluid Management Customer Service 1.800.462.2466

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**SAFETY
INFORMATION**

MIXER WARNING LABELS

You should become familiar with important warning labels which are affixed to the mixer, as well as the symbols which appear throughout this manual. These warnings have been included to help you safely perform your job.

Please read all warning labels that are on the mixer. Keep them clean so they are easy to read. If the warning labels become damaged or unreadable, new labels can be purchased from Fluid Management. See the parts list in the back of the manual for ordering information.

SAFETY NOTICE INFORMATION

The two main safety notices used in this manual are **Warning** and **Caution**. Notices in this manual will look like the example below.

Warning Notice

WARNING



ELECTRICAL HAZARD

Do not operate the mixer with the door open.
Disconnect power before servicing.

A **Warning** notice tells you about a hazard that could cause serious injury to you or extensive damage to the mixer. This information is placed at the beginning of the manual to emphasize the importance of safety to your well being.

When you see a **Warning** notice in this manual, read it carefully. Before continuing with the operation of the mixer, take all necessary precautions to avoid potential injury.

Caution Notice

CAUTION



ELECTRICAL HAZARD

All electrical components must be kept dry.
Never place containers of liquid on or near the control box.

A **Caution** notice tells you about a danger that could cause injury to you or minor damage to the mixer. When you see a **Caution** notice in this manual, read it carefully and be sure you understand it before continuing.

SAFETY INFORMATION

Information Notice

Note: If the cabinet vibrates, loosen the locking nuts on the right front leveling foot and slightly adjust the length.

An **Information** notice gives details that will assist you in efficiently using the mixer. When you see an **Information** notice in this manual, know that it is there to save you time and energy.

Compliance Information

See the affixed labeling on the machine for safety and regulatory compliance information. ETL Listed, conforms to UL STD 1450. Certified to CAN/CSA STD C22.2 No.68 (120 V model only).

INTRODUCTION

The Harbil 5G High Speed Paint Mixer is a versatile, automatic mixer designed with concern for safety, reliability and ease of use. Its features include:

- Heavy-duty, high-capacity components and a durable finish for long wear.
- Vibration-free mixing for blending and conditioning paint.
- Versatile mixing times from 30 seconds to 3 minutes
- Handles for pint, quart, gallon, and 5-gallon containers.

Important safety features are:

- Automatic shut off if the door is opened during the shaking operation.
- Fully visible red STOP switch for emergency shut off.

PRODUCT DESCRIPTION

SPECIFICATIONS

Height	45.5" (115.6 cm)
Width	28" (71.0 cm)
Depth	28" (71.0 cm)
Weight	470 lb (213 kg)

CONTAINER CAPACITY

Maximum height	17.5" (44.5 cm.)
Minimum height	0.5" (1.3 cm)
Diameter	13.5" (34.3 cm)

TYPICAL ELECTRICAL SUPPLY

See name plate for specific information.

120 V \pm 10%, 60 Hz, 11.8 A
220 V \pm 10%, 50 Hz, 6.0 A

SPARE PARTS ORDER

Fluid Management Parts Order Form

Photocopy and use this form to
Mail or fax orders to:

Fluid Management A unit of IDEX / Phone: 1(800) 462-2466
1023 Wheeling Road | Fax: 1(847) 537-5530
Wheeling, IL 60090

Sold To:

Ship To:

Purchase Order Number _____

Ship Via: _____ Collect Prepaid

Taxable Tax Exempt (Fax copy of exemption certificate.)

QUANTITY	PART NUMBER	DESCRIPTION	UNIT PRICE
	S		
	S		
	S		
	S		
	S		
	S		
	S		
	S		
	S		
	S		
	S		
	S		
	S		
	S		
	S		

Comments: _____

Signature _____

Date: _____

UNPACKING DIRECTIONS

UNPACKING DIRECTIONS

INSPECT THE CRATE FOR DAMAGE

IMPORTANT



If any damage is found, notify the carrier at once and arrange for inspection in order to claim recovery. Claims for damage must be made by the consignee (You). The carrier assumes full responsibility upon acceptance of shipment and will not entertain any claims by the consignor (Fluid Management).

UNPACKING AND SETUP

Refer to the Unpacking and Setup Instructions affixed to the shipping carton in a mailing pouch.

ELECTRICAL CONNECTIONS

Caution



The unit must be plugged into a dedicated electrical line with no other equipment using the same circuit. DO NOT use an adapter or extension cord with this product.

WARNING



Improper use of the grounding plug can result in a risk of electric shock.

GROUNDING

This product must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electrical shock by providing an escape for the electric current. This product is equipped with a cord that has a grounding wire and an appropriate grounding plug. The plug must be inserted into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING



Check with a qualified electrician or service person if grounding instructions are not completely understood or if in doubt as to whether product is properly grounded.

DANGER

Improper installation of the grounding plug can result in a risk of electric shock. If repair or replacement of the cord or plug is necessary, do not connect the grounding wire to either flat blade terminal. The insulation wire with green or green and yellow stripes on the outer surface is the grounding wire. Check with a qualified electrician if the grounding instructions are not completely understood, or if in doubt about whether the product is properly grounded. DO NOT modify the plug provided. If it will not fit into the outlet, have the proper outlet installed by a qualified electrician.

ALIGNING AND LEVELING MIXER

ALIGNING THE STRUTS

1. Make sure that the power is removed from the mixer.
2. Remove the top cover of the unit. Save the screws.
3. Check the inner frame and struts by grasping the frame at the top. Vigorously rock the frame back and forth to see that all struts move freely on their supports. No kinking in the springs should occur at the bottom of the struts. The shake frame will return to the center position and appear level when it comes to rest.
4. If one or more of the struts is not seated properly, it (they) can be realigned as follows:
 - Remove the upper rear cabinet (sheet metal covering). See Figure 5, “Removing the Mixer Coverings” on page 24.
 - Raise the inner frame closest to the unseated strut. The frame should be high enough for the strut pin to clear the strut body.
 - Carefully lower the frame while guiding the pin into the strut body. Take care not to raise the frame so high that the other struts become unseated.
 - Repeat this procedure for each misaligned strut.
5. Move the mixer to its permanent, leveled area. Leave ample room around the paint mixer to facilitate maintenance and safe operation.

LEVELING

Although the mixer is leveled by the manufacturer, variations in floor surfaces may necessitate further adjustment.

WARNING Improper leveling may cause severe damage to the paint mixer when in mixing operation.



1. Level the mixer by adjusting the 4 feet as necessary.
2. Lock the feet into place by tightening the lock nut to the frame insert.

REMOVE SHIPPING INSERTS

After you have plugged the mixer into a dedicated power line and leveled it, inspect to be sure that you have removed the shipping materials inside the mixer.

1. Make sure the front door of the paint mixer is closed. **A safety switch prevents the operation of the paint mixer while the door is open.**
2. Apply power to the paint mixer by placing the POWER switch in the ON position.
3. Turn the button labeled EMERGENCY STOP clockwise until the button pops out to the ON position. If the button does not turn, then it is already in the ON position. **To stop or turn off the paint mixer, push the button to the OFF position.**
4. Push the UP button. Wait several seconds until the top plate raises high enough for you to remove the shipping inserts.
5. Open the front door of the paint mixer. Remove the shipping inserts and the wooden disc insert. If there is not enough room to remove the inserts, then push the UP button again.
6. Be sure that you **save the plywood and the foam rubber discs**. These will be used with 5-gallon pails.
7. Before performing an operational test, read the following information **Getting To Know Your Mixer**.

GETTING TO KNOW YOUR PAINT MIXER

GETTING TO KNOW YOUR PAINT MIXER

GENERAL LOCATIONS

- *CONTROL PANEL* – All controls are in one location.
- *DOOR SAFETY SWITCH* – The Door must be closed continuously to operate the paint mixer.
- *WARNING STICKERS* – Please read these important messages for YOUR safety.
- *ADJUSTABLE FEET* – The leveling feet adjust in order to level the mixer.

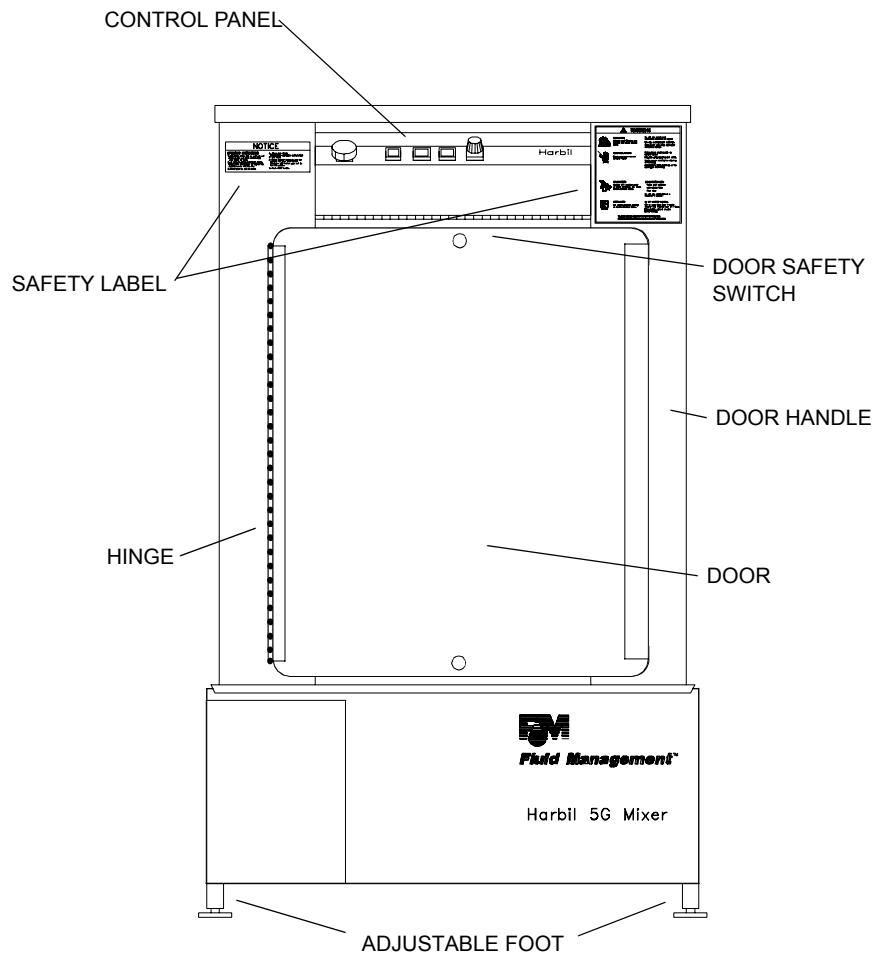


Figure 1. General Locations

CONTROL PANEL

- *EMERGENCY STOP* button for quickly stopping the mixer.
- *POWER* rocker switch for applying power to the machine.
- *UP* button for raising the top pressure plate.
- *START* button for activating the mixer.
- *TIMER* for setting the desired mix time from 30 seconds to 3 minutes.

Note: The *POWER* switch must be in the ON position and the *EMERGENCY STOP* must be turned clockwise until it pops up for the machine to function.

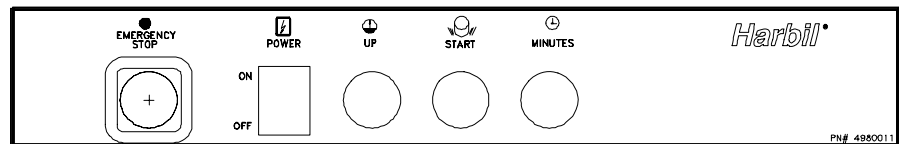


Figure 2. Control Panel

REVERSIBLE DOOR

The door on the mixer can be easily reversed using a slotted screwdriver. Instructions for reversing the door are found in the maintenance section of this documentation.

IMPORTANT INFORMATION

IMPORTANT INFORMATION

Before operating the mixer, carefully read the following important information.

WARNINGS

- Verify that your paint mixer is properly levelled. Improper leveling may cause severe damage to the machine during the mixing operation.
- Always shut off the master POWER switch and unplug the mixer from the AC power outlet before servicing the paint mixer.
- THIS MACHINE IS NOT EXPLOSION-PROOF AND MUST NOT BE USED IN A FLAMMABLE ATMOSPHERE.

CAUTIONS

- Do not run the paint mixer without a container in place.
- Do not mix more than one full case (four 1-gallon cans) of paint at one time. The maximum weight limit is 80 pounds for paint and 60 pounds for stucco mixture. See BASIC OPERATION, Figure 3, “Gallon Can Placement” on page 13.
- On 5-gallon metal containers use the flake-board disc for recessed bottoms that do not have a center support. Use the discs for recessed tops. See BASIC OPERATION, Figure 4, “5-Gallon Container Cut-Away View” on page 14.
- On 5-gallon plastic containers, use the foam discs for the recessed tops around the bung hole. **Do not use the flake board disc on plastic containers.**

**BASIC
OPERATION**

Open the door. If you need to raise the top plate to accommodate the container to be mixed, turn on the POWER switch and push the UP button. Wait a few seconds until the UP light goes out. This will raise the top plate about two inches. Repeat if necessary.

Note: To quickly stop the machine, push the EMERGENCY STOP button. If you open the door during the operation, the paint mixer will stop.



1. After opening the front door, place the container(s) near the center of the table. The diagram below illustrates the proper gallon can placement.

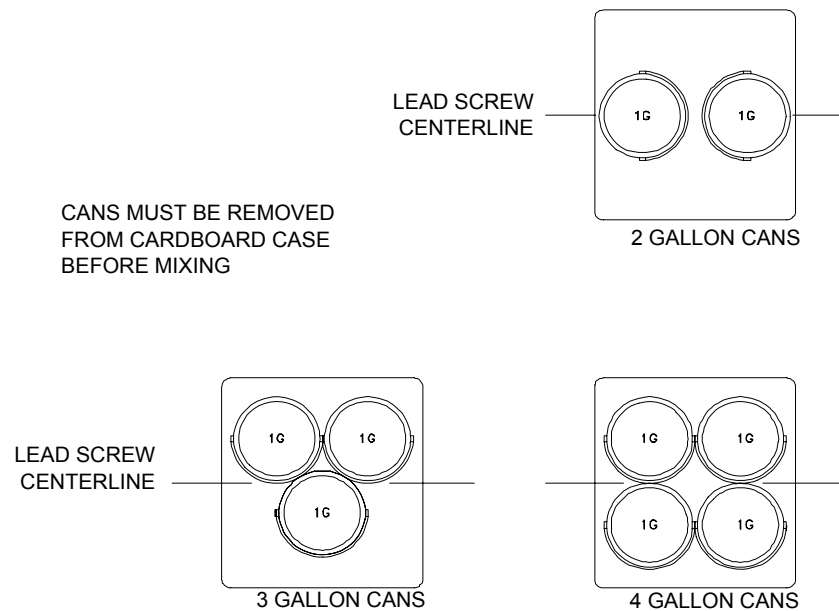


Figure 3. Gallon Can Placement

BASIC OPERATION

2. When using 5-gallon plastic or metal containers with recessed lids, place the foam disc on top of the container even with the rim.

Note: Both thick and thin discs come with the mixers. Foam discs eliminate flexing of the container. On metal containers with recessed bottoms and no center support, place the flake board disc underneath the container.

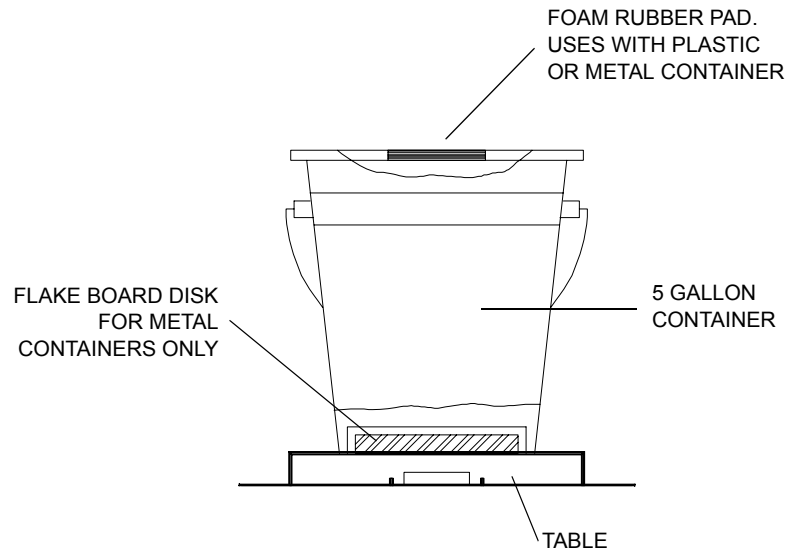


Figure 4. 5-Gallon Container Cut-Away View

3. Close the door firmly. **The paint mixer will not operate with the door open.**
4. Set the timer on the control panel to the desired shaking time.
5. Apply power to the mixer by pressing the POWER rocker switch to the ON position and turning the EMERGENCY STOP button clockwise until it pops out to the ON position. If the button does not turn, then it is already in the ON position. **To stop the paint mixer, depress the EMERGENCY STOP button.**

6. Push the START button. The paint mixer will go through the following sequence:
 - The paint mixer will automatically move the top plate down and hold the container in place.
 - The paint mixer will shake the container for the set amount of time.
 - The paint mixer will raise the top plate about 2 inches. Allow a few seconds for the top plate to raise.
7. Remove the paint container when the mixer is completely stopped.

OPERATIONAL TEST

OPERATIONAL TEST

1. Plug in the mixer.
2. Using two one-gallon containers followed by a five-gallon container, perform these steps:
 - With the one-gallon containers in position on the table, set the TIMER to its minimum value.
 - Twist the EMERGENCY STOP to release it.
 - Depress the POWER switch.
 - With one hand on the EMERGENCY STOP, depress the START switch. The unit should cycle automatically—clamping down and starting the shake cycle with a smooth, vibration-free movement.
3. If vibrations are noticed, immediately press down the EMERGENCY STOP switch.
 - *Mild vibrations* may occur because the unit is not properly leveled. Try slipping a piece of paper under each of the four (4) adjustable feet. If the paper easily slides under a foot (feet), then the mixer is not solidly contacting the floor. Level as necessary.
 - *Severe or persistent vibrations* may be caused by a variety of problems. Check to make sure that the struts are moving freely. If they are, then contact a qualified service technician or Customer Service at Fluid Management for assistance before continuing to operate the mixer.
4. Repeat the above steps using a 5-gallon container.
5. When the unit is operating smoothly, replace and secure the top cover and upper rear cabinet with the screws.
6. Your high speed paint mixer is now ready for operation. Please read the next two sections to familiarize yourself with the machine and how to operate it safely.

**MAINTENANCE
PROCEDURES**

To ensure safe, dependable operation of the paint mixer, follow the maintenance schedule detailed below.

WEEKLY
Lubricate the following items with SAE 20 oil:
<ul style="list-style-type: none">• Top pressure plate nut (accessed through the right and left side doors)• Threaded lead screw (accessed through the front door)

EVERY 3 MONTHS
Lubricate the Super-Struts with SAE 20 oil:
<ul style="list-style-type: none">• Apply oil to the Super-Strut pins so that the oil will flow down the bushing.• Lubricate the struts on the <u>both sides</u> of the mixer.

EVERY 6 MONTHS
Grease flange bearings.

MAINTENANCE PROCEDURES

Use the table below to record your maintenance on the Super-Struts every three months.

LUBRICATION RECORD	
DATE	<input checked="checked" type="checkbox"/>

TROUBLESHOOTING

Using the chart below, locate the problem in the first column, then select the probable cause to check and action to take from the next two columns. The problems are arranged from the simplest to the most complex.

Where appropriate, refer to the Servicing and Repair section to correct the problem.

PROBLEM	CHECK	ACTION
The paint mixer does not start.	<ul style="list-style-type: none"> ✓ if mixer attached to receptacle. ✓ receptacle for voltage. ✓ if the front door is not closed. ✓ if the POWER switch is in the ON position and operating properly. The EMERGENCY STOP button should not be depressed. ✓ 6.3 amp fuse. ✓ 5 amp Slow-Blow fuse. ✓ PCB connector. <p>May be problem with printed circuit board.</p>	<ul style="list-style-type: none"> • Connect to power source. • Contact electrician. • Close the front door. • Turn on POWER switch. Put the EMERGENCY STOP button in the ON position. • Replace fuse. • Replace fuse. • Reestablish PCB connector. • Call Customer Service. • Replace printed circuit board.

TROUBLESHOOTING

PROBLEM	CHECK	ACTION
<p>The top plate does not move in a downward direction.</p>	<ul style="list-style-type: none"> ✓ for loose/broken wire in the DC motor cable. ✓ START switch mechanism on the control panel for a loose connection. ✓ DC motor. May be problem with printed circuit board. 	<ul style="list-style-type: none"> • Reconnect loose wire or replace broken wire. • Reconnect loose wire or replace broken wire. • Tighten connections at the START switch. • Replace START switch mechanism. • Using volt meter, measure voltage at DC motor or call Customer Service. • Replace DC motor. • Call Customer Service. • Replace printed circuit board.
<p>The top plate does not move in an upward direction.</p>	<ul style="list-style-type: none"> ✓ for voltage at the DC motor. ✓ for broken wire in the DC motor cabling. ✓ for problem with the DC motor. ✓ for problem with the UP switch mechanism on the control panel. <p>May be problem with printed circuit board.</p>	<ul style="list-style-type: none"> • Use voltage meter or contact Customer Service for assistance. • Replace broken DC motor cabling. • Contact Customer Service. • Replace DC motor. • See wiring schematic and test with volt meter. • Replace the UP switch mechanism. • Call Customer Service. • Replace printed circuit board.
<p>Paint mixer runs before the top plate clamps on the container.</p>	<ul style="list-style-type: none"> ✓ binding of the top plate. <p>May be problem with printed circuit board.</p>	<ul style="list-style-type: none"> • Clean and oil lead screws. • Call Customer Service. • Replace printed circuit board.

PROBLEM	CHECK	ACTION
Paint mixer will not shut off.	<ul style="list-style-type: none"> ✓ timer control on the front control panel. ✓ if relay is stuck in the closed position. ✓ for bad timer. <p>May be problem with printed circuit board.</p>	<ul style="list-style-type: none"> • Replace if necessary. • Replace relay. • Replace timer. • Call Customer Service. • Replace printed circuit board.
The shake motor has voltage and hums, but it will not run.	<ul style="list-style-type: none"> ✓ for low line voltage. ✓ V-belt tension. ✓ motor capacitor. ✓ shake motor. 	<ul style="list-style-type: none"> • Confirm that the mixer is on a dedicated line. • Correct tension. • Replace motor capacitor. • Replace shake motor.
An excessive amount of vibration occurs.	<ul style="list-style-type: none"> ✓ if mixer is out of balance. ✓ if adjustable leg is broken or damaged. ✓ for broken strut. 	<ul style="list-style-type: none"> • Level by adjusting the legs. • Replace adjustable leg. • Replace broken strut.
START light is on and nothing happens.	<ul style="list-style-type: none"> ✓ if the DC motor coupling set screw is loose. ✓ for broken wire in the DC motor cabling. ✓ for problem with the DC motor. ✓ for problem with printed circuit board. 	<ul style="list-style-type: none"> • Tighten the DC motor coupling set screw. • Replace DC motor cable. • Replace DC motor. • Call Customer Service. Replace printed circuit board.

TROUBLESHOOTING

PROBLEM	CHECK	ACTION
START light is on and the top plate clamps on the container, but mixer will not run.	<ul style="list-style-type: none"> ✓ to make sure that the mixer is on a dedicated line. ✓ if front door closed. ✓ if the problem is a loose motor coupling set screw. ✓ the reset button. ✓ for loose or broken wire in the shake motor cabling. ✓ shake motor. 	<ul style="list-style-type: none"> • Connect to dedicated line. • Close the door. • Tighten DC motor coupling set screw. • Press blue reset button located on overload relay. • Tighten or replace wire. • Replace shake motor cabling if necessary. • Replace wire. • Contact Customer Service for assistance. • Replace the shake motor.
The mixer starts slowly and then increases to normal speed in a few seconds.	<ul style="list-style-type: none"> ✓ shake motor V-belt tension. 	<ul style="list-style-type: none"> • Adjust the shake motor V-belt tension.
The DC motor runs, but the top plate does not move.	<ul style="list-style-type: none"> ✓ for a loose set screw in one of the DC motor couplings. ✓ key and set screw on timing gears. 	<ul style="list-style-type: none"> • Tighten set screw(s). • Tighten key and set screw.
The mixer stops before completing shake cycle.	<ul style="list-style-type: none"> ✓ for broken or loose wire in the DC motor cabling. 	<ul style="list-style-type: none"> • Replace DC motor cable.
The mixer speeds up and slows down. The START light is blinking.	<ul style="list-style-type: none"> ✓ if the front door is making contact with the safety switch in the control box. ✓ for a broken wire in DC motor cabling. 	<ul style="list-style-type: none"> • Adjust safety switch. • Replace DC motor cable.
The mixer crushes or throws cans.	Clamping force may be out of adjustment.	<ul style="list-style-type: none"> • Adjust clamping force as required.

SERVICING AND REPAIR

GENERAL INFORMATION

If you do not feel confident about disassembling the paint mixer or replacing a part, DO NOT ATTEMPT THE PROCEDURE. Should problems or questions arise, contact Customer Service at Fluid Management.

Carefully read all of the instructions before you begin. For component identification and location, refer to the Parts Section of this manual.

SAFETY PROCEDURE

WARNING



ELECTRICAL HAZARD

Always shut off the POWER switch and unplug the mixer before servicing.

CAUTION



Wear your safety glasses to prevent possible injury.

OPENING MIXER

REMOVE THE EXTERIOR PANELS

1. Using a medium-size screwdriver or 1/4" nut driver, remove the sheet metal screws securing the top cover. Lift it off the mixer.

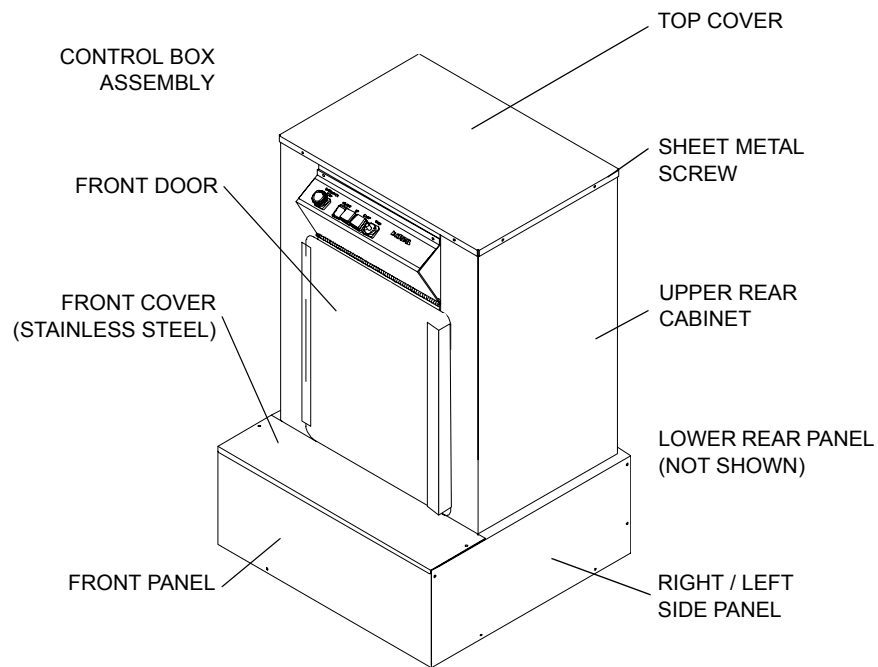


Figure 5. Removing the Mixer Coverings

2. In the same manner, take off the upper rear cabinet (3-sided piece) covering the sides and back, and set to the side of the work area.
3. If your machine has a 4-sided skirt, remove it now.
4. At the back of the mixer, squeeze the power supply strain relief with a pair of pliers, and pull it off the cord. Move the back panel away from the machine (the cord will still be attached).
5. Remove the right and left side panels, and the lower front panel.
6. To prevent damage, remove the mixer door by lifting the door off its pins.
7. Cut the upper wire tie wrap securing the 3 cables to the outer frame at the left side of the machine.
8. Remove the remaining front sheet metal covering. Carefully prop the front piece (two front columns with control box assembly) to the side of the machine, being careful to not damage the cords.

REMOVING SHAKE FRAME

Some service procedures involve removing the shake frame. Read all of the following instructions. If you have any doubt about performing these procedures, please contact Customer Service at Fluid Management. For component identification and location, refer to the Parts Section of this manual.

1. Remove the sheet metal covering (see OPENING MIXER).
2. To facilitate the reassembly process, mark or prepare a drawing of the 2 wires running from the left side of the terminal block to the control box.
3. Using a small blade screwdriver, disconnect the 2 wires.
4. Pull the cable containing the 2 wires through 2 tie wraps, or snip and remove the tie wraps with side cutters.

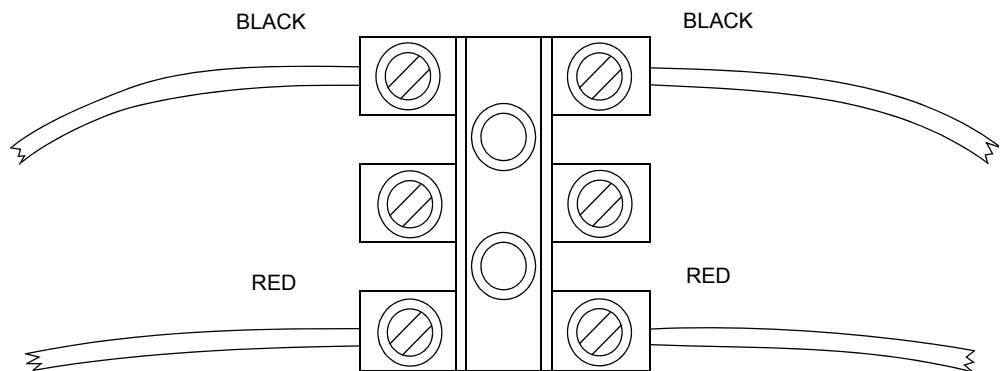


Figure 6. Disconnecting the 4 Wires at the Terminal Block

REMOVING SHAKE FRAME

5. Follow the cable to the strain relief, located on the inside of the hole where the cable goes through the shake frame. Unscrew the strain relief and pull the cable through the hole into the enclosure.

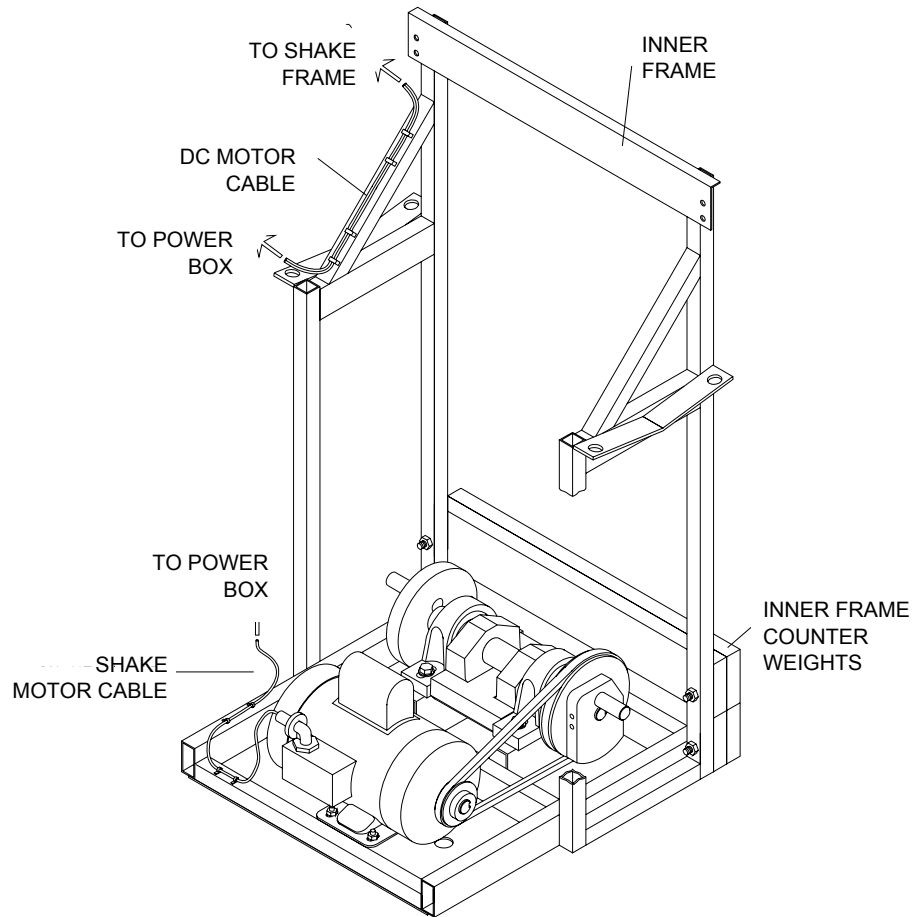


Figure 7. Removing the Shake Frame

REMOVE THE COUNTERWEIGHTS

CAUTION The inner frames weigh 21 pounds each!



1. Remove the 2 lower inner frame counterweights to access the nuts on the flange bearings and the rear screws and nuts on the pillow block bearings.
Note: DO NOT REMOVE the 2 upper inner frame counterweights.
Use two 1/2" wrenches, or a ratchet and a 1/2" wrench to remove the 2 lower nuts and screws holding the lower weights to the inner frame to allow access to the crankshaft.
2. With two 1/2" wrenches or a ratchet and a 1/2" wrench, loosen BUT DO NOT REMOVE the 4 screws securing the flange bearings to the shake frame. Remove the 4 nuts.

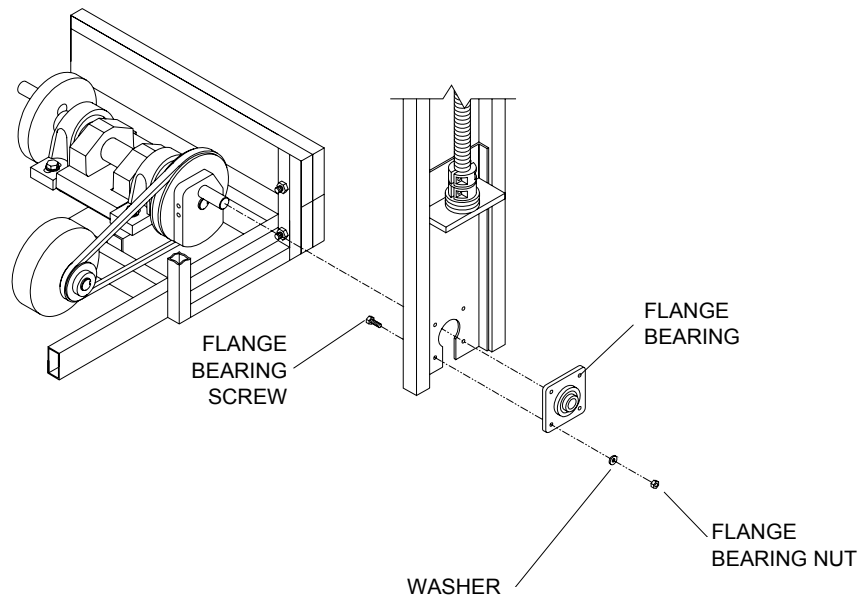


Figure 8. Flange Bearings

REMOVING SHAKE FRAME

3. With a 1/8" hex wrench, loosen the 2 set screws holding the crankshaft to the flange bearings. Remove the flange bearings. If necessary, use a wheel puller to pry the flange bearing from the crankshaft.

CAUTION



Be careful when removing the shake frame. It may swivel or fall forward while working on the next step.

CAUTION



Be careful when lifting. The shake frame weighs over 200 pounds.

4. Position one person at the back of the mixer to hold the shake frame. Using a 1/2" socket or open-end wrench, remove the 2 nuts and screws holding the swivel rods to the inner frame.

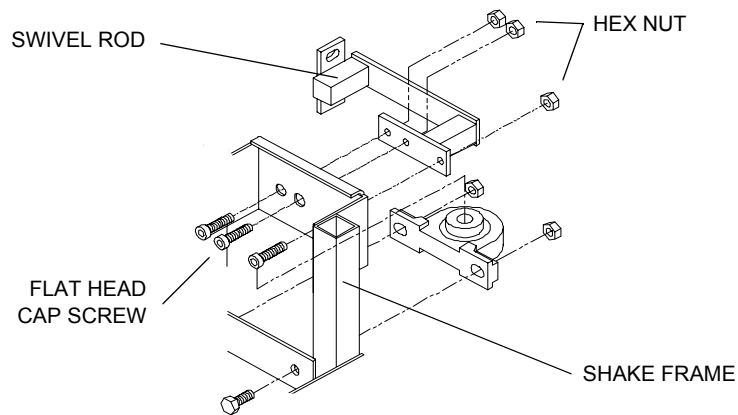


Figure 9. Nuts and Screws Holding Swivel Rods

5. Repeat steps 2 – 4 on the other side.
6. With the assistance of another person, lift up and pull out the complete shake frame.

TESTING SHAKE MOTOR

Read all of the following instructions. If you have any doubt about performing these procedures, please contact Fluid Management.

For component location and identification, refer to the Parts Section of this manual.

WARNING ELECTRICAL HAZARD



To carry out this test you will need 120 volts which could cause electrical shock.

1. Place an empty pail on the table and close the door firmly. Turn on the paint mixer and push the START button. Give the paint mixer enough time to lower the top plate onto the pail.
2. Turn off the paint mixer and unplug the electrical cord.
3. Remove the lower front and right side panels.
4. Remove the motor cover.
5. Take a 3-conductor jumper cable, which has a plug at one end and stripped wires on the other end, and connect the wires to the shake motor.
6. Plug the jumper cord into a wall outlet (120 volts or appropriate voltage).
 - If the shake motor starts to run, then the cable or the relay is bad.
 - If the shake motor does not run, it has to be replaced.
7. Unplug and remove the jumper cord from the shake motor.
8. Reassemble the mixer by returning the motor cover and lower panel to their correct positions.

CHANGING SHAKE MOTOR

CHANGING SHAKE MOTOR

Read all of the following instructions. If you have any doubt about performing these procedures, please contact Customer Service at Fluid Management.

Turn to the Parts Section of this manual for component identification and location.

1. Unplug the electrical cord.
2. Remove lower front and right/left side panels.
3. Make a drawing of the wire to the terminal connections, then disconnect the wires from the shake motor.
4. Remove the 4 hold-down screws on the motor.
5. Remove the V-belt from the pulley on the motor.
6. Remove and replace the motor.
7. Remove the pulley from the old motor by loosening the set screw.
8. Reposition the wires on the new shake motor by following the drawing made in Step 3.
9. Reinstall the pulley on the new motor.
10. Put the V-belt on the balance groove pulley, then on the motor pulley.
11. Align the motor pulley with the groove pulley on the crankshaft.
12. Install and tighten down the 4 motor hold-down screws while keeping tension on the belt.
13. **Be sure to adjust the shake motor for proper tension on the V-belt. The deflection should be approximately 3/16" at 5 pounds of pressure.**
14. Reassemble the paint mixer by reversing these instructions.
15. With a paint container in position, perform a test run of the mixer to be sure that it is operating correctly.

CHANGING THE V-BELT

Read all of the following instructions. If you have any doubt about performing these procedures, please contact Customer Service at Fluid Management.

Refer to the Parts Section for component identification and location.

1. Unplug the electrical cord.
2. Remove all the sheet metal covering (see OPENING MIXER).
3. Loosen the screws and nuts on the flange bearings.
4. Slide the shake frame away from the right side of the crankshaft.
5. Remove the flange bearing on the right side of the machine.
6. Loosen the shake motor mounting screws and slide the motor toward the crankshaft, thereby loosening the V-belt. Remove the V-belt.
7. Put the new V-belt on the balance groove pulley, then on the motor pulley.
8. Install and tighten down the 4 motor hold-down screws while keeping tension on the belt.
9. Be sure to adjust the shake motor for proper tension on the V-belt. The deflection should be approximately 3/16" at 5 pounds of pressure.
10. Reassemble the paint mixer by reversing these instructions.

REMOVING CIRCUIT BOARD

REMOVING CIRCUIT BOARD

Read all of the following instructions. If you have any doubt about performing these procedures, please contact Customer Service at Fluid Management.

Turn to the Parts Section for component identification and location.

WARNING ELECTRICAL HAZARD:



The mixer must be unplugged before attempting this procedure. There is a chance of electrical shock.

1. Unplug the electrical cord.
2. Remove the sheet metal screws on the control panel and slowly swing it down.
3. Remove the top cover.
4. Remove the push-on type connector at the bottom of the printed circuit board. Pull the connector with alternating left and right force away from the circuit board. It is not necessary to loosen the screws on the connector.
5. Remove the 4 screws and hold nuts that attach the circuit board to the control panel.
6. Install the new board with the push-on connector.
7. Reinstall the control panel and the top cover.
8. Connect the electrical cord.

INSTALLING RUBBER PADS

Read all of the following instructions. If you have any doubt about performing these procedures, please contact Customer Service at Fluid Management.

For component identification and location, consult the Parts Section of this manual.

A special rubber pad is fastened to the top plate to hold cans in place during operation. When attaching the rubber pad to the upper plate, use P/N 4000327, **Loctite Super Bonder #416 Instant Adhesive**. Follow the instructions on the adhesive for the drying time. Use protective gloves when applying the adhesive.

1. Apply a non-flammable solvent to remove the old adhesive.
2. Apply the permanent adhesive to the pad. Follow the glue pattern shown in the diagram.

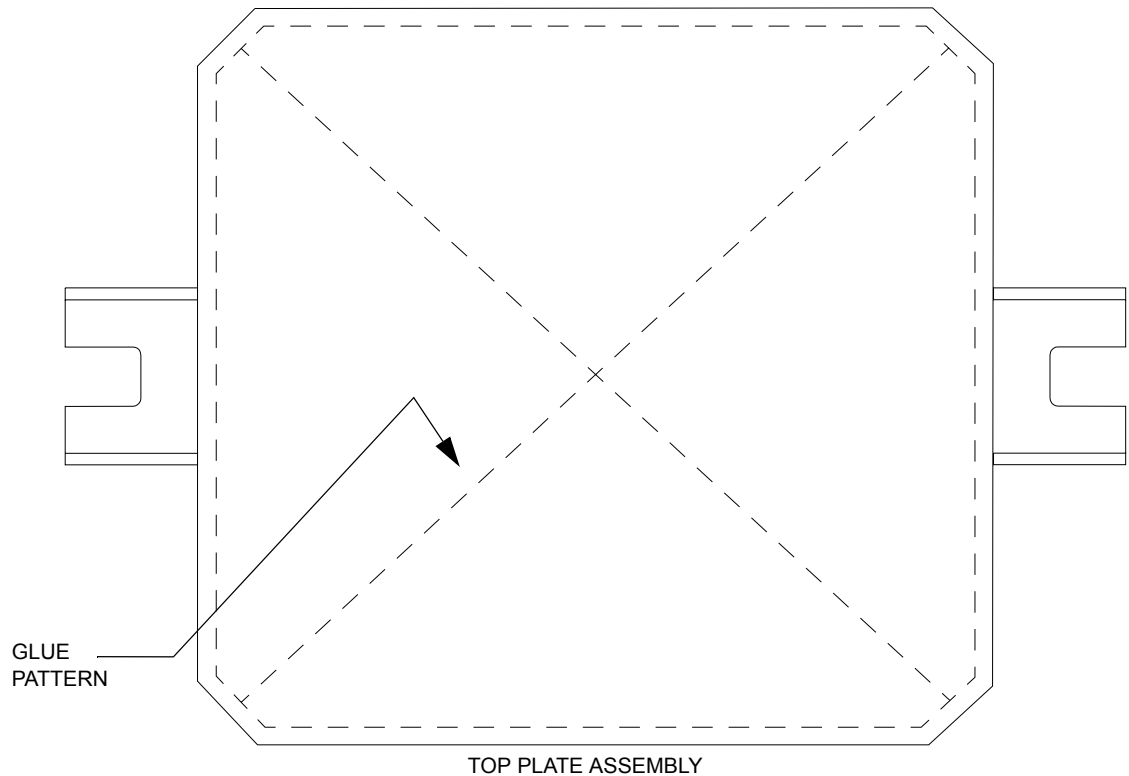


Figure 10. Glue Pattern

INSTALLING RUBBER PADS

3. Making sure the pad is positioned properly, attach the pad to the plate and hold in position for about 2 minutes.
4. Remove the backing from the tape on the replacement lower table and press into position.
5. After attaching the pads, place four 1-gallon cans on the table.
6. Turn on the mixer. Allow the top plate to lower onto the cans and Turn off the mixer *before it goes into the shaking cycle*.

This step is only to press the pads in place during drying of the glue.

DO NOT ALLOW THE MIXER TO SHAKE THE CANS OF PAINT.

7. Unplug the electrical cord as a safety precaution.
8. Allow the adhesive to dry overnight.
9. After the adhesive has dried, open the mixer, remove the cans and test as appropriate.

At this point, the mixer should be ready for normal operation.

REPLACING / ADJUSTING DC MOTOR

The DC motor needs adjusting if it is making excessive noise while the top plate is moving. Adjustments are also required when reinstalling or replacing the motor.

Read all of the following instructions. If you have any doubt about performing these procedures, please contact Customer Service at Fluid Management.

Refer to the Parts Section for component identification and location.

DC Clamping Motor Replacement/Adjustment

1. **Make sure that the power is off.**
2. Remove the top cover.
3. If you only need to readjust the DC motor, execute the following steps:
 - Loosen the 4 mounting screws that connect the DC motor to the frame.
 - Assure that the DC motor is properly aligned and fully tighten the 4 mounting screw.

If you need to replace the motor, go to the next step.

4. Disconnect the red and black motor leads from the terminal block.
5. Remove the 4 screws that connect the DC motor to the shake frame.
6. Loosen the Allen set screw and remove the coupling half from the old motor and save for later use.
7. Place the coupling half onto the new motor and tighten the set screw.
8. Place the new DC motor in the shake frame while easing the coupling over the lead screw. **DO NOT STRESS THE COUPLING.**
9. Insert and tighten the 4 mounting screws.
10. Mount the DC motor coupling onto the lead screw by tightening the set screw.
11. Connect the red and black motor leads to the terminal block.
12. Replace the top cover.
13. Connect power to the mixer.
14. Execute the operational test.

ADJUSTING CLAMPING FORCE

The clamping force needs adjusting if cans are being crushed or thrown from the shake frame. Adjustments may also be required after changing the control board or other components in the shake mechanism. The clamping force is specified in the instructions (P/N 24040) that come with the replacement board. The adjustment kit (P/N 24041) also comes with the same instructions.

Read all of the following instructions. If you have any doubt about performing these procedures, please contact Customer Service at Fluid Management.

Refer to the Parts Section for component identification and location.

CLAMPING FORCE ADJUSTMENT

The optimum clamping force is specified in the instructions (P/N 24040) shipped with the board. This process should be used to adjust the clamping force to a range within that target. The range is expressed in terms of an "upper limit" and a "lower" limit. Both the positioning spacer (P/N 24069) and the gauge (P/N 24124) are required in executing this process.

1. Unplug the power cord from the electrical outlet.
2. Remove the 2 screws at the top of the control box and open, exposing the control circuit board.

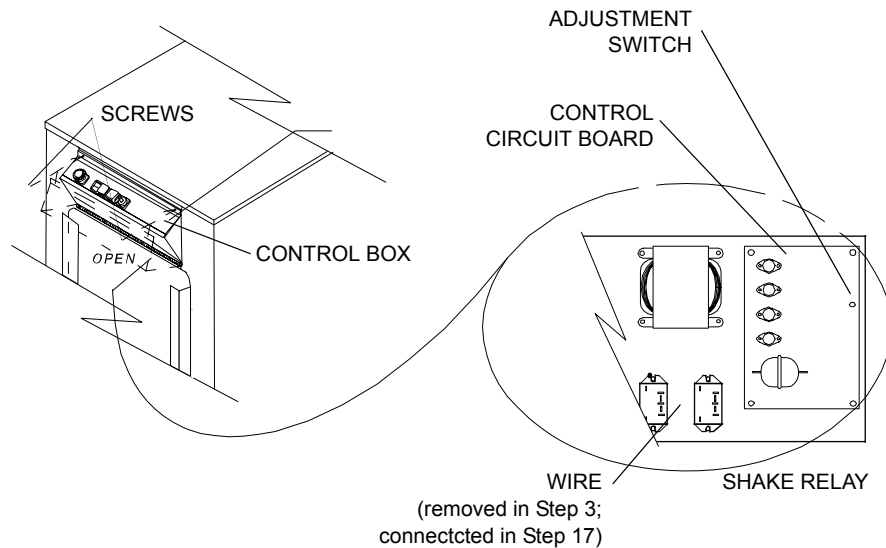


Figure 11. Control Board Location

3. Remove the wire from the upper left terminal of the shake relay.
4. On the control board, set the adjustment switch to position number 2.
5. Plug the power cord back into the electrical outlet.
6. Assure that the E-Stop button is released and press the power "ON" switch.
7. Press the "UP" button on the control box.
8. Open the door and place the positioning spacer (P/N 24096) and gauge (P/N 24124) on the bottom plate against the back lip as shown.

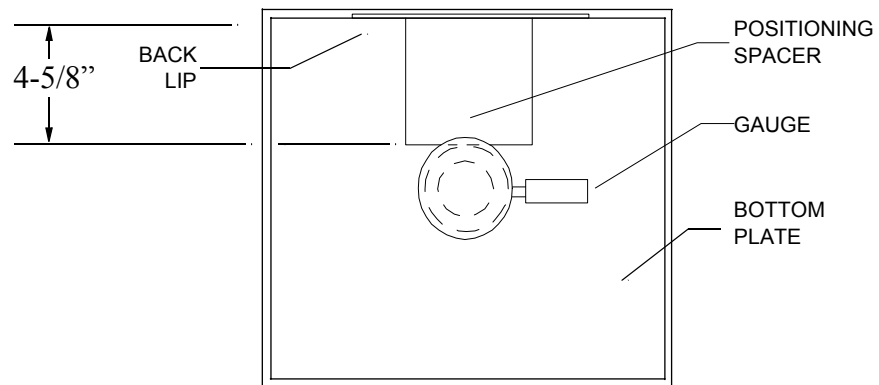


Figure 13 Gauge Position

Note: Position is critical. Use the positioning spacer. Be sure the gauge is centered and 4-5/8" from the back lip.

9. Press the START button. The top plate will clamp the gauge without going into the shaking cycle.
WARNING If wire was not removed in step #3, the mixer will shake, possibly causing damage or injury.
10. After clamping, read and record the force on the gauge.
11. Place the power switch in the "OFF" position, wait about 5 seconds and return it to the "ON" position.
12. Press the "UP" button.

ADJUSTING CLAMPING FORCE

13. If the force is at the "lower limit" or less, change the adjustment switch to the next lowest number and go to step #9.

Note: If the force is at the "upper limit" or greater, change the adjustment switch to the next highest number and go to step #9. If the force falls within the target, go to the next step.

14. Press the power "OFF" switch.

15. Remove the gauge and spacer.

16. Unplug the power cord from the electrical outlet.

17. Place the wire back on the upper left terminal on the shake relay.

18. Close the control box and insert the screws.

19. Plug the power cord into the electrical outlet.

At this point, the mixer is ready for normal operation.

REVERSING DOOR

The front door can be reversed to accommodate any space plan. Some layouts lend themselves to a front door that opens with the handle on the left. Others require that the door open in the reverse of this. The mixer is shipped with the door handle on the right side.

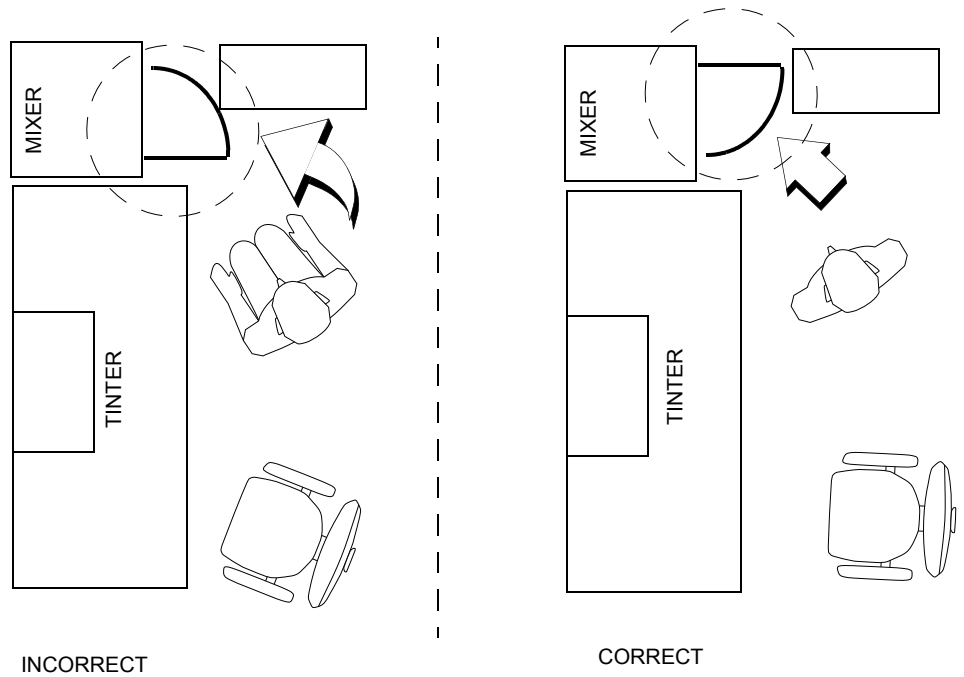


Figure 14. Floor Plans

The following steps represent the process by which the front door is reversed:

1. Unplug the power cord from the electrical outlet.
2. Open the door.
3. Using two 3/8" wrenches, relocate the stud at the top of the door to the hole at the bottom of the door.

Note: If the stud is not relocated properly, the mixer will not operate.

REVERSING DOOR

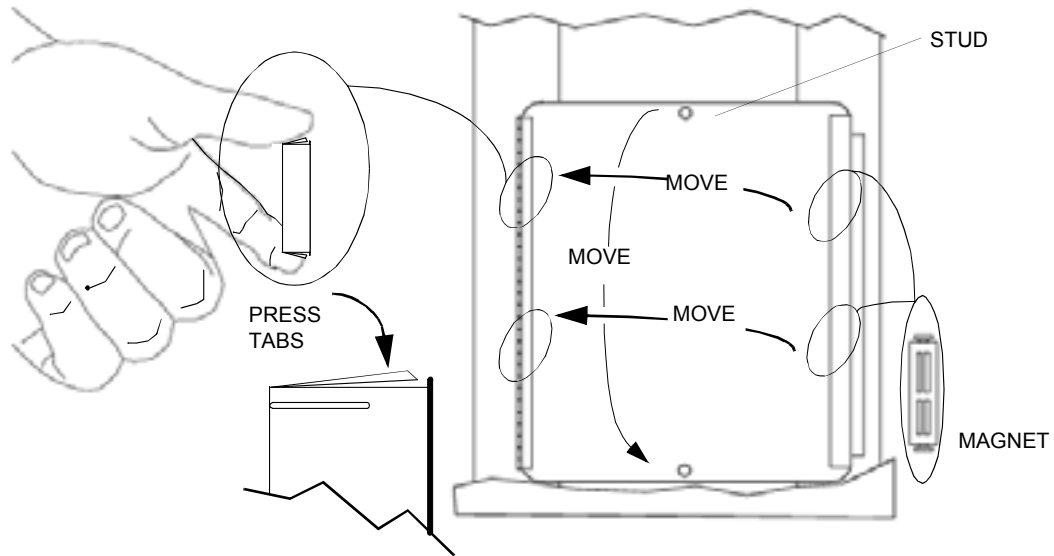


Figure 15. Reversing Door

4. Using a slotted screw driver, remove the 4 screws that mount the door to the mixer. Save for later use.
5. Reach behind the door post and remove the 2 magnets by pressing the tabs.
6. Insert these magnets in the slots on the opposite door post.
7. Position the door with the stud at the top and mount on the door post using the screws that were removed earlier.
8. Close the door.
9. It may be necessary to adjust the safety switch at the top of the door near the stud. You should hear a clicking sound as the door is opened and closed. Side-to-side adjustments are done with a slotted screw driver.

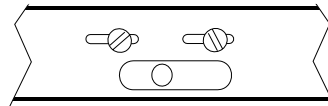


Figure 16. Safety Switch Adjustment

REPLACING SUPER- STRUTS

Read all the directions carefully. If you do not feel comfortable disassembling the mixer or replacing a part, do not attempt the procedure. Refer to the Parts Section for component identification and location.

REMOVING THE EXTERNAL PANELS

1. Unplug the electrical cord.
2. Remove the top cover and lift it off the mixer.
3. Remove the upper rear cabinet (3-sided piece), front cover, and right and left side panels (see Figure 5, “Removing the Mixer Coverings” on page 24).
4. Set the covers to the side of the work area.

REMOVING THE STRUTS

1. Locate the 4 Super-Struts to be replaced. **You will be replacing the struts on one side at a time.**

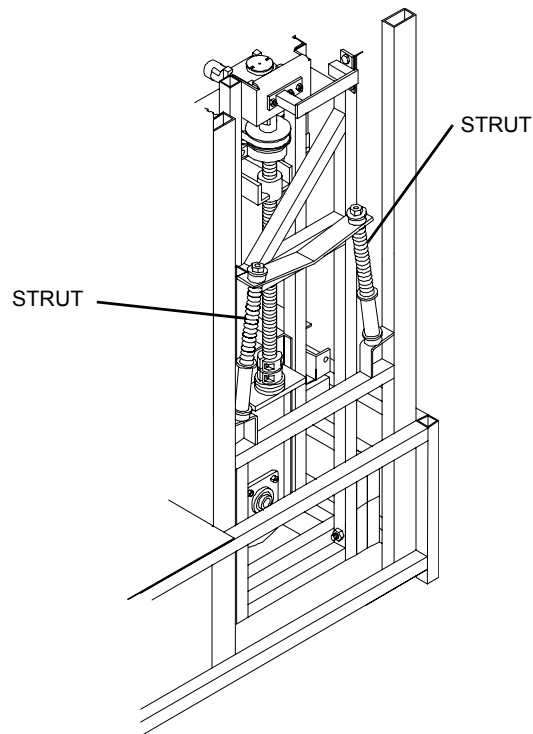


Figure 17. Locating the Struts

REPLACING SUPER-STRUTS

2. Locate the hole in the strut pin. Insert the end of the 1/8" hex key into the hole to prevent the pin from rotating while loosening the bolt. If no hole is observed, grasp the pin with vice grips and loosen the nut.

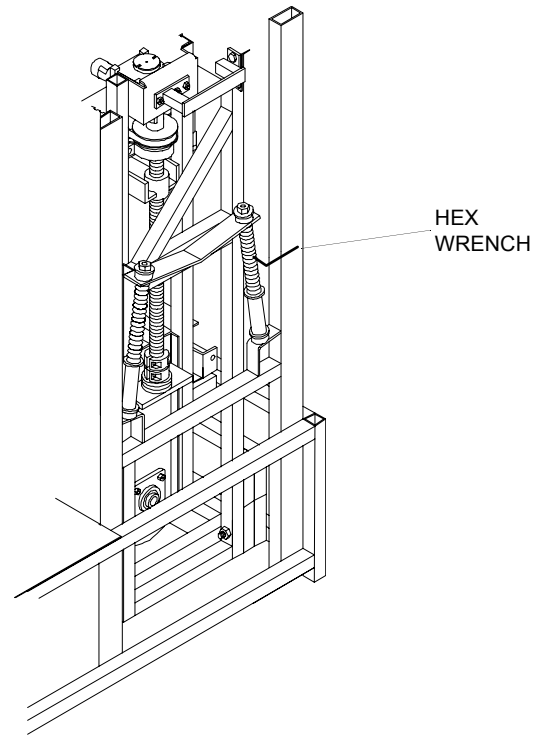


Figure 18. Keeping the Strut Pin from Rotating

3. Beginning on the right side, use a box end or adjustable wrench to remove the top nuts, washers, and rubber grommets on both struts. Remove the hex wrench from the hole in the strut pin.

- Using the 2" x 4' wooden board for leverage, lift the shake frame in the center until the 2 strut pins are raised high enough to clear the strut bodies.

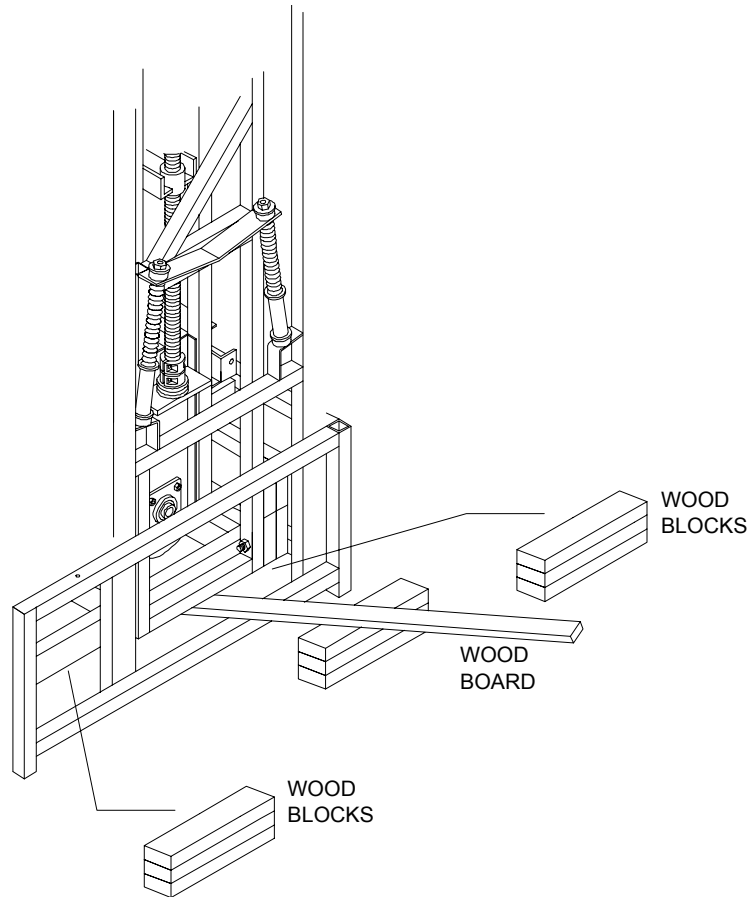


Figure 19. Lifting the Inner Frame

- Have a second person place three 2" x 4" blocks under the front and rear inner frame for support as shown below.
- Remove both strut pins, bodies, and springs from the frame.

REPLACING SUPER-STRUTS

INSTALLING THE SUPER-STRUTS

Refer to the Super-Strut assembly drawing for parts locations.

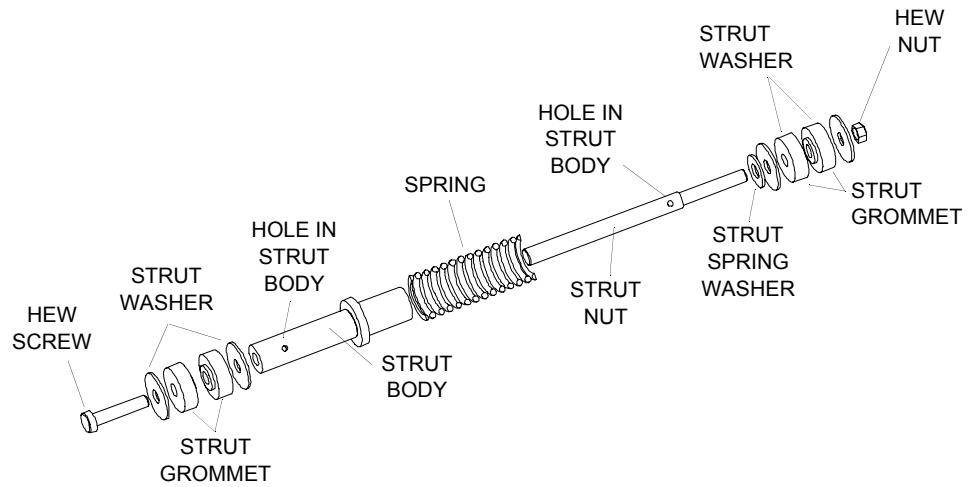


Figure 20. Super-Strut Assembly

1. Beginning with the REAR strut install the new strut body, washers, rubber grommets, and bottom screw on the outer frame.
Note: When installing the rubber grommets, the two shouldered ends must face each other with the mounting bracket between them as shown in Figure 21, “Replacing the Front Strut” on page 45.
2. Hand tighten until snug.

3. Repeat Step 1 for the FRONT strut. Install the new strut pins, washers, rubber grommets, and top nuts on the inner frame as shown in the figure below. Hand tighten until snug.

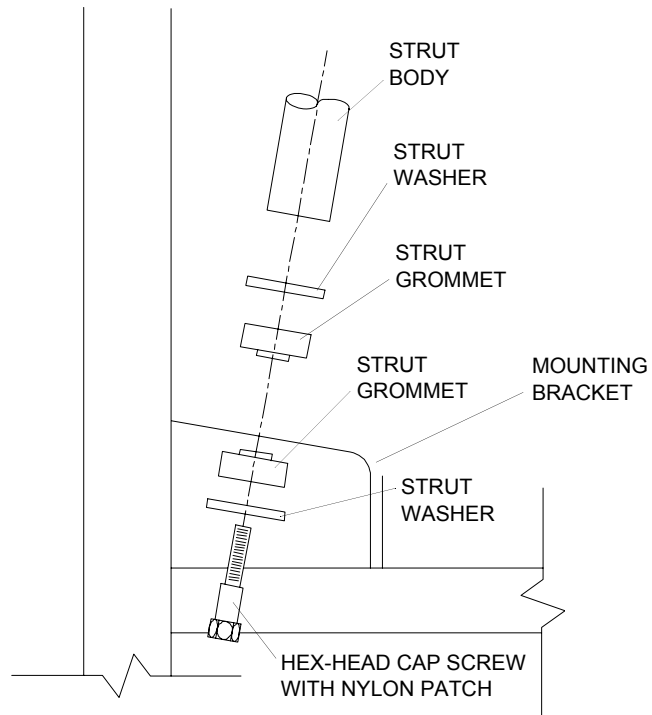


Figure 21. Replacing the Front Strut

4. Using the 2" x 4' board, lift the inner frame and install both springs on the strut bodies, then remove the blocks from under the inner frame.

REPLACING SUPER-STRUTS

5. Lift the inner frame again with the 2" x 4' board as a lever. This will allow you to align and insert the strut pins into the strut bodies.

Note: Use care when installing the pins in order to prevent damage to the inner bushing.

6. Make sure that the springs are centered. Push with your thumb to click them into place.

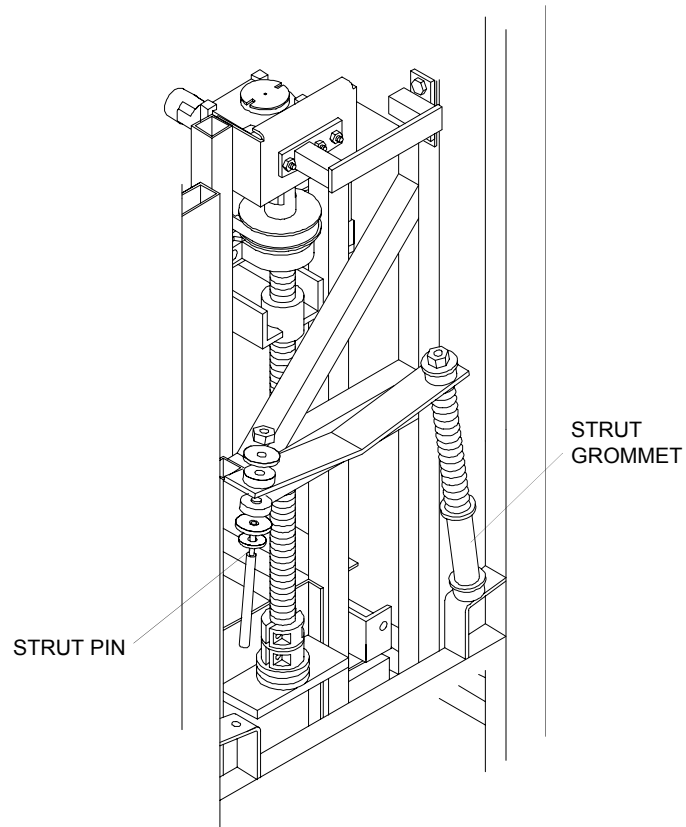


Figure 22. Replacing the Strut Shafts

7. Beginning with the FRONT strut, tighten the top nut until the bottom rubber grommet is compressed 1/2".
8. Tighten the BOTTOM screw until the top rubber grommet is also compressed to 1/2".
9. Moving to the REAR strut, tighten the TOP nut until the bottom rubber grommet is compressed 1/2".
10. Insert the 1/8" hex wrench into the strut pin and tighten the BOTTOM screw until the top rubber grommet is compressed to 1/2". Remove the hex wrench from the strut pin.
11. To change the struts on the other side of the mixer, repeat these steps beginning with Step 1 under "REMOVING THE STRUTS" on page 41.

REPLACING CRANKSHAFT

REPLACING CRANKSHAFT

Please read all the directions before attempting this procedure. If you do not feel comfortable about disassembling the mixer or replacing a part, please do not attempt it. Should questions arise, contact Customer Service at Fluid Management.

Turn to the Parts Section for component identification and location.

ACCESS THE CRANKSHAFT

1. Unplug the electrical cord.
2. Remove the sheet metal covering. Refer to “REMOVE THE EXTERIOR PANELS” on page 24.
3. Remove the shake frame and counterweights. Refer “REMOVING SHAKE FRAME” on page 25.

REMOVE THE CRANKSHAFT

1. Using two 1/2" wrenches, loosen the 4 nuts and screws holding the motor to the inner frame.

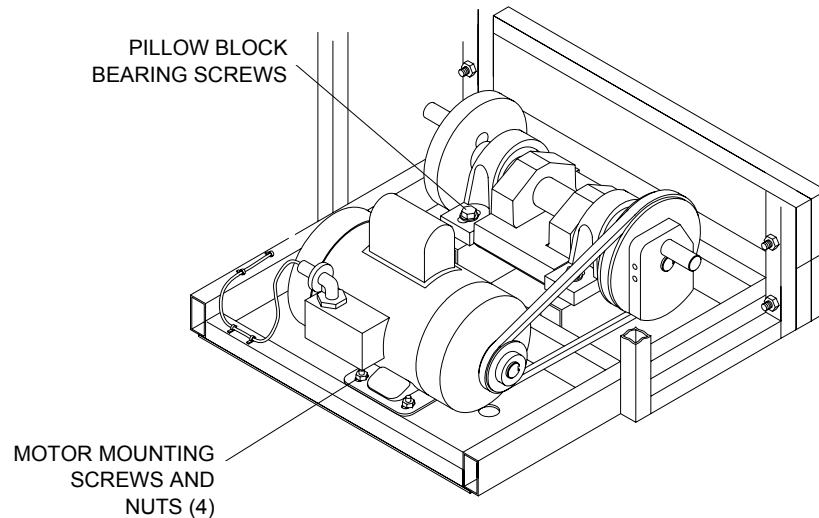


Figure 23. Removing the Crankshaft

2. Remove the old V-belt.
3. Remove and discard the 4 pillow-block screws holding the crankshaft.
4. Remove and discard the old crankshaft assembly.

INSTALL THE NEW CRANKSHAFT

1. **The mounting surfaces must be flat before installing the new assembly.**
2. Set the new crankshaft assembly onto the pillow-block mounting pads. Facing the back of the machine, look at the V-groove balance-plate pulley. It should be on your left. Adjust, if necessary.
3. Install the new crankshaft assembly with new washers, nuts and 7/16-14" hex screws. Drop these into position, but do not tighten at this time.
4. Align the pillow blocks over the crankshaft mount. **It may be necessary to remove the motor in order to align, then tighten, the screws on the crankshaft.** If so, follow these steps:
 - Lift the front of the machine with the 2" x 4' wooden board and place the blocks under the board.
 - Remove the 4 hold-down screws on the motor.
 - Move the motor out of the way.
5. Align the crankshaft assembly assuring that it is parallel to the rear surface of the inner frame. Measure the distance between the inner frame weights and the rear edge of the crankshaft. The measurement on each side of the crankshaft should be the same.
6. First tighten the front nuts and screws; then tighten the others.
7. Remove the old motor pulley with a hex wrench and a wheel puller.
8. Install the new pulley using the old square key. Do not tighten the pulley set screw at this time.
9. Reinstall the motor, if it was moved.

REPLACING CRANKSHAFT

10. Inspect the V-belt and replace if necessary. Check the alignment of the belt and the pulleys. Now tighten the pulley set screw on the motor pulley.

IMPORTANT Adjust the belt tension to approximately 3/16" deflection at 5 pounds of pressure before tightening the motor screws.

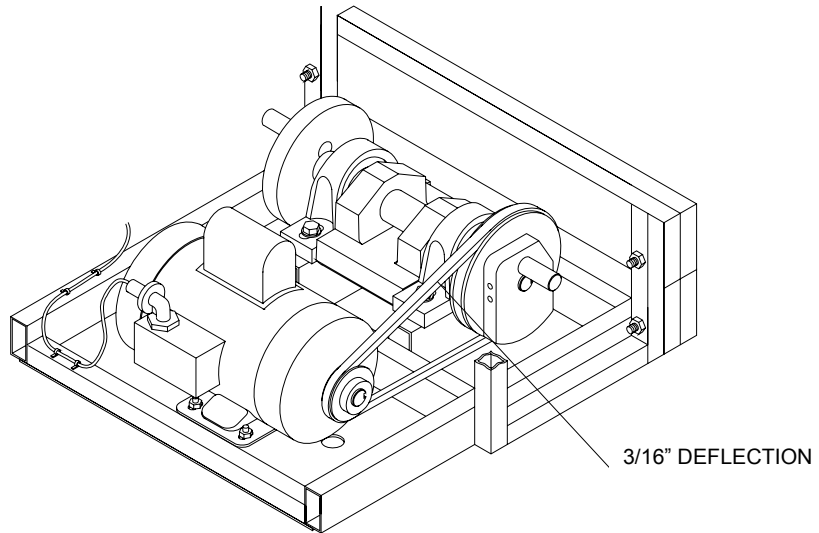


Figure 24. Measuring 3/16" Deflection

11. Tighten the 4 mounting screws on the motor while applying tension to the V-belt.

REASSEMBLING MIXER

Two people are required to lift the shake frame into the mixer.

1. With one person on each side of the shake frame, lift the shake frame into the mixer and rest it on the crankshaft.
Note: The 4 screw holes in the swivel rods must be properly aligned with the holes in the inner frame. The second person supports the top of the shake frame so it will not fall forward.
2. Place the washers on the screws and insert them into the swivel rods. Guide the screws into the holes in the inner frame.
Note: The screws are inserted from the inside of the swivel rods.
3. Place the nuts on the screws, but do not tighten them all the way. Repeat steps #2 and #3 on the other side of the mixer.
4. Before mounting the flange bearings, lubricate them with lithium-based grease.
 - Rotate the collar of the flange bearing so that the 2 set screws are facing up, then place the flange bearing on the end of the crankshaft.
 - Tighten the set screws holding the crankshaft to the flange bearing.
 - Use the 2" x 4' board to lift the shake frame in order to tighten the 4 nuts securing the flange bearing to the shake frame.
 - Insert the screws from the inside of the shake frame, then place the washers and nuts on the outside of the flange bearing and hand tighten.
5. Standing in front of the mixer, verify that the shake frame is centered inside the inner frame. There must be equal clearance between the shake frame and the inner frame on both sides of the mixer. Adjust if necessary.
6. Tighten the 4 nuts and screws holding the swivel rods to the inner frame. Insert the wrench on the inner side of the shake frame and tighten one screw on the right and left sides. Again verify that the shake frame is properly centered before tightening the other 3 nuts all the way on each side of the mixer.
7. Reinstall the inner frame weights.
8. Thread the grey control box cable through the hole in the shake frame and through the tie wraps. If the tie wraps were removed, install new ones.
9. Tighten the strain relief.

REASSEMBLING MIXER

10. Using your wiring diagram, connect the 4 wires leading from the grey cable to the shake frame terminal block.
11. Reposition the sheet metal covering and secure with the sheet metal screws. If using a ratchet, do not apply too much pressure to the self-drilling sheet metal screws.
12. Place the door in its proper position.
13. Secure the top cover.

TEST PROCEDURE

1. Push the shake frame vertically and horizontally back and forth to verify freedom of motion.
2. Plug in the mixer.
3. Place a gallon can of paint in the mixer.
4. Turn on the mixer to verify that it is working properly. Make any necessary adjustments.
5. Dispose of remaining used parts.

**PARTS
SECTION**

This section is designed to assist you in:

- Performing service functions
- Identifying parts.

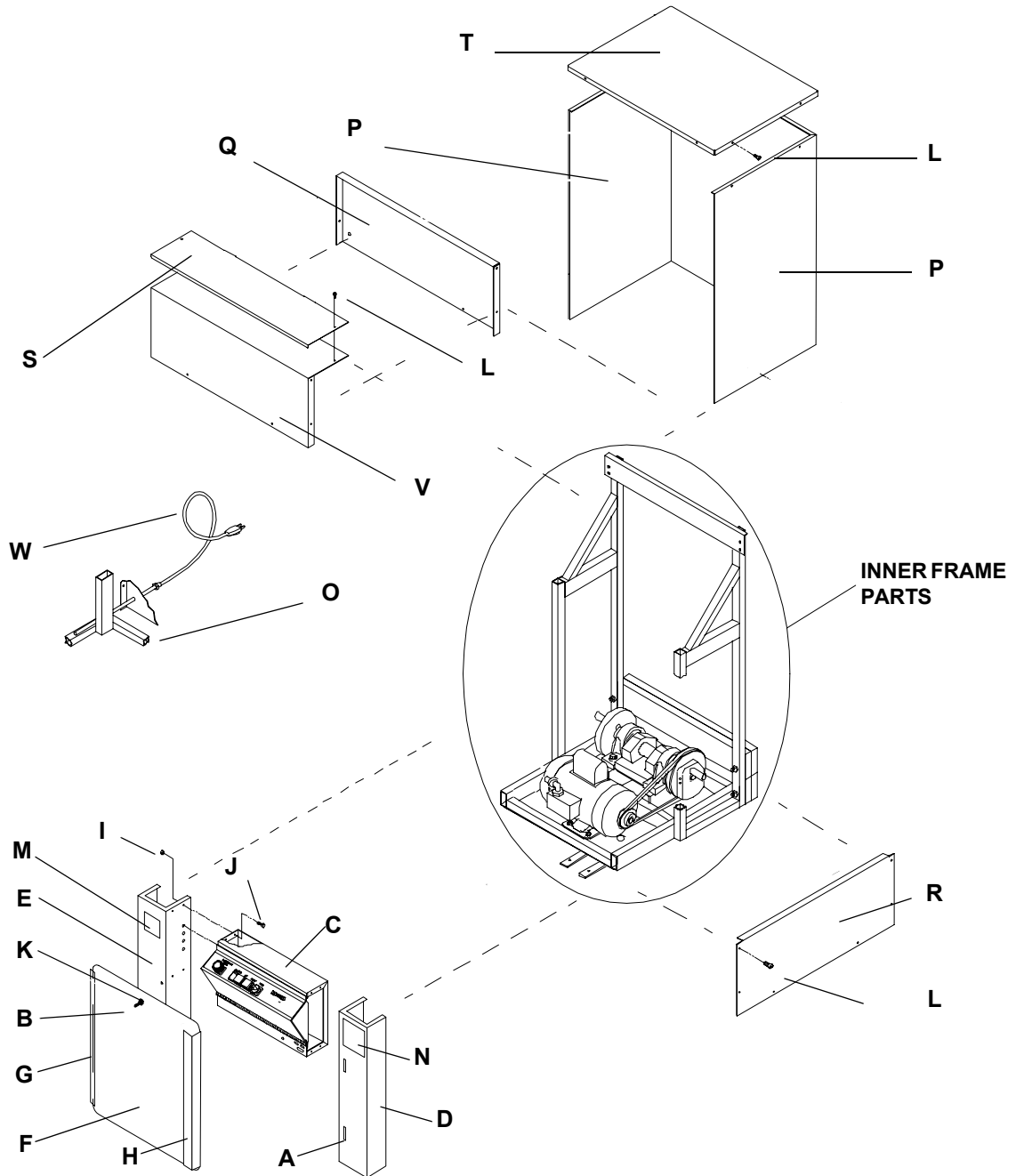
ALL REPAIRS MUST BE PERFORMED BY FMDIRECT OR AUTHORIZED FLUID MANAGEMENT SERVICE TECHNICIAN.

IMPORTANT

Part numbers change from time to time; therefore, call Fluid Management Customer Service at 1-800-462-2466 to verify part numbers before placing an order. This is particularly important for machines built prior to 6/95. Some parts are shipped with installation instructions when appropriate.

PARTS: SHEET METAL AND OUTER FRAME

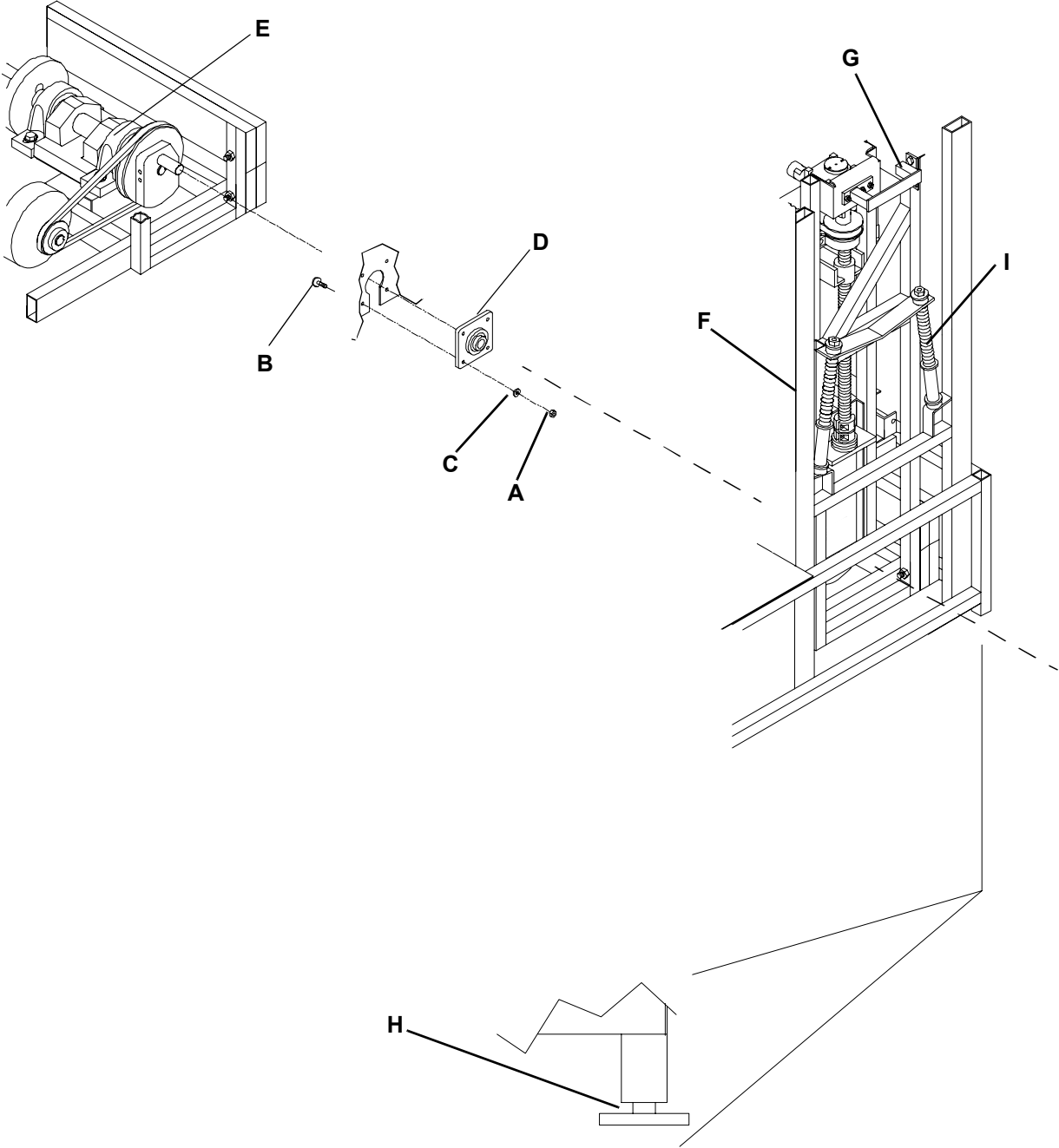
PARTS: SHEET METAL AND OUTER FRAME



PARTS: SHEET METAL AND OUTER FRAME

	PART NO	DESCRIPTION	NO REQ
A	17221	FRONT DOOR MAGNET, 5G	2
B	17475	STUD	1
C	23949	CONTROL BOX ASSEMBLY, 5G COMPLETE	1
D	24024	RIGHT COLUMN, 5G	1
E	24026	LEFT COLUMN, 5G	1
F	24029	DOOR, 5G	1
G	24030	HINGE	1
H	24031	HANDLE	1
I	4000027	NUT, HEX (NO. 10-32 W/ NYLON PATCH, PACKAGE OF 12) P/N 4000419	8
J	4000047	SCREW, SOCKET HEAD CAP (NO. 10-32 X 1/2")	8
K	4000199	NUT, 10-24	1
L	4000214	SCREW, SELF DRILLING HEX SHEET METAL (NO. 8 X 1/2")	53
M	4980007	DECAL, NOTICE - "OPERATING INSTRUCTIONS"	1
N	4980010	DECAL, WARNING - "WARNING AND CAUTION"	1
O	5101000	OUTER FRAME (ONLY), 5G	1
P	5105104	CABINET (UPPER REAR), 5G	1
Q	5105105	LOWER REAR PANEL, 5G	1
R	5105106	SIDE PANEL (RIGHT AND LEFT), 5G	2
S	5105134	FRONT COVER (STAINLESS STEEL), 5G	1
T	5105135	TOP COVER, 5G	1
	30910	TOP COVER, 5G (CUSTOMER SPECIFIC)	1
U	5105105	FRONT PANEL, (REAR) 5G	1
V	5105139	FRONT PANEL, (LOWER) 5G	1
W	5108334	INCOMING CORD, 16 FEET	1
	24032	DOOR ASSEMBLY, COMPLETE	1
	5308214	DOOR SAFETY LIMIT SWITCH (NOT SHOWN)	1
	4700510	5G INSTRUCTION MANUAL (NOT SHOWN)	1

PARTS: SHEET METAL AND OUTER FRAME

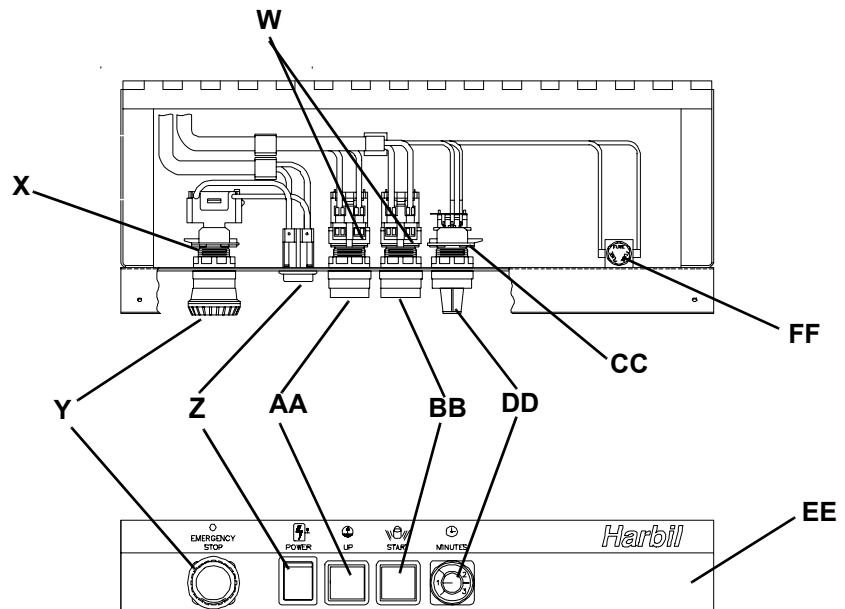
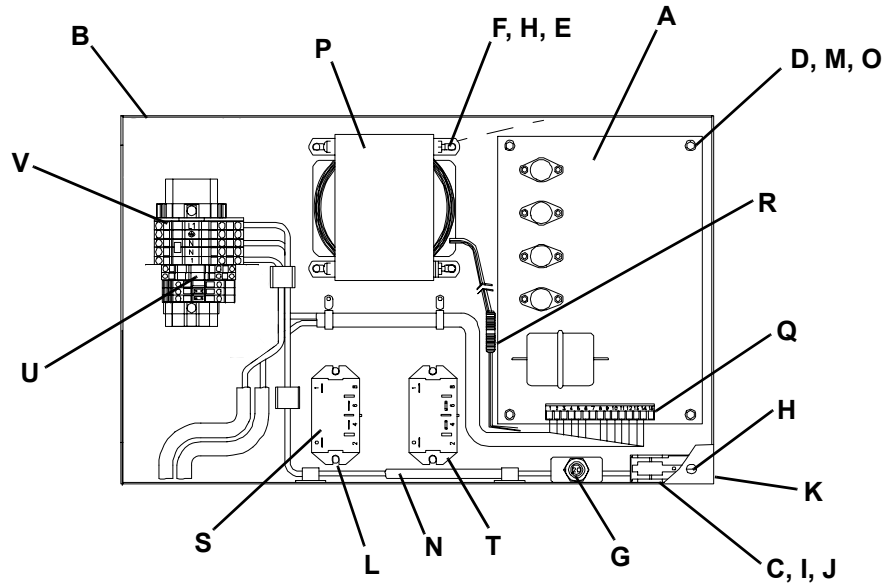


PARTS: SHEET METAL AND OUTER FRAME

	PART NO	DESCRIPTION	NO REQ
A	4000126	NUT, HEX (5/16-18, W/ NYLON PATCH, PACKAGE OF 12) P/N 4000441)	20
B	4000127	SCREW, HEX HEAD CAP (5/16-18 X 1-1/4"PACKAGE OF 12) P/N 4000442)	8
C	4000182	PLAIN WASHER, 11/32" ID X 5/8" OD	16
D	5106023	FLANGE BEARING ASSEMBLY, COMPLETE, 5G	2
E	5106300	CRANKSHAFT ASSEMBLY, COMPLETE, 5G (INCLUDES CRANKSHAFT, COUNTERWEIGHTS, BALANCE PLATE, COUNTERWEIGHT BALANCE PULLEY AND PILLOW BLOCK BEARINGS)	1
F	5102110	INNER FRAME (ONLY), 5G	1
	5103182	SHAKE FRAME, 5G COMPLETE	1
G	5107009	SWIVEL ROD ASSEMBLY	2
H	5109006	LEVELING FOOT ASSEMBLY, 5G	4
I	5109220	SUPER-STRUT SHOCK ASSEMBLY	4

PARTS: CONTROL BOX ASSEMBLY

**PARTS:
CONTROL BOX
ASSEMBLY**

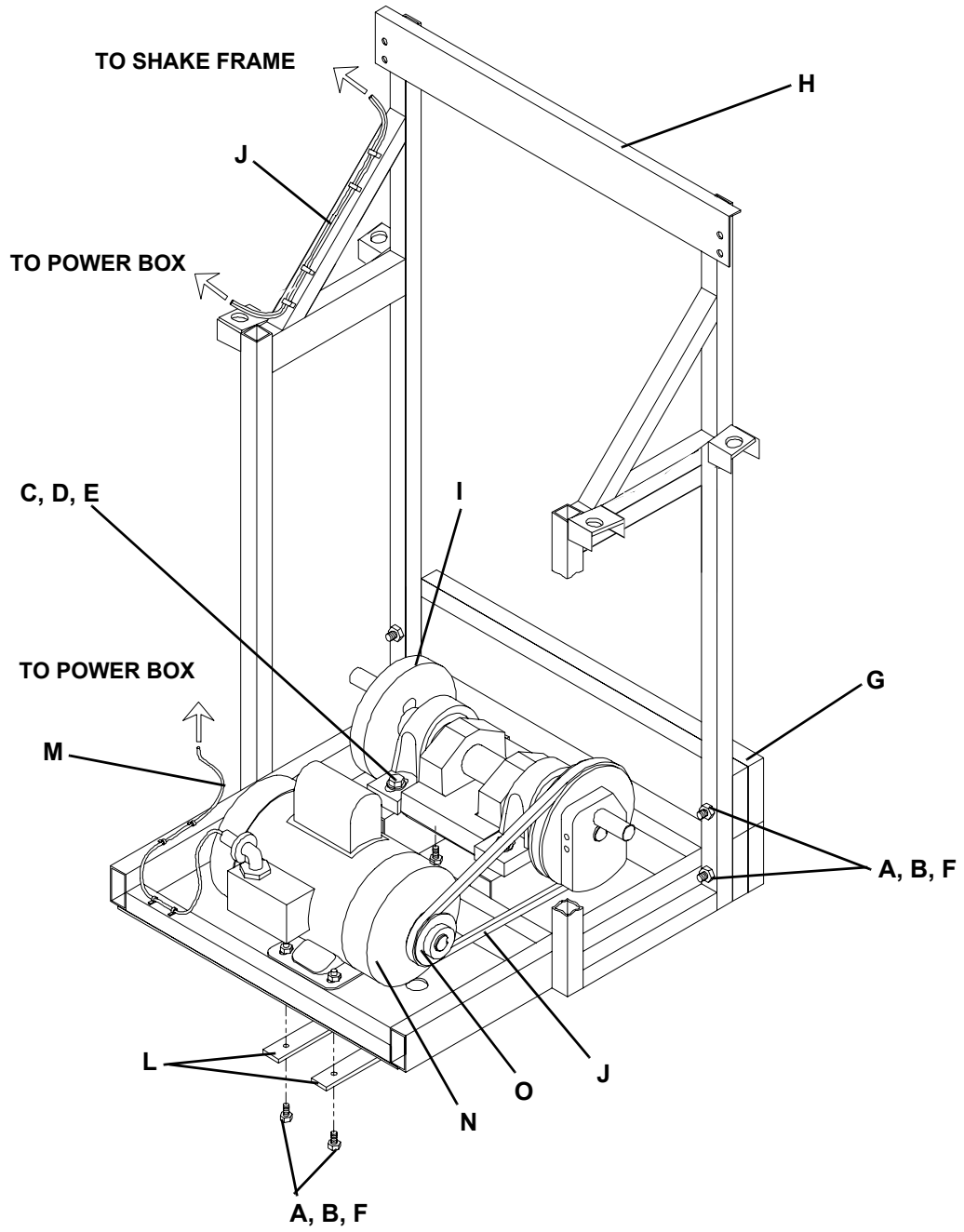


PARTS: CONTROL BOX ASSEMBLY

	PART NO	DESCRIPTION	NO REQ
A	23435	PRINTED CIRCUIT BOARD (USA), 5G. ADJUSTABLE WITH KIT, P/N 24041	1
B	23949	CONTROL BOX ASSEMBLY COMPLETE	1
C	4000012	SCREW, PAN HEAD CAP (NO. 6-32 X 5/16", SLOT, PACKAGE OF 12 P/N 400416)	2
D	4000013	NUT, HEX (NO. 6-32, KEP, PACKAGE OF 12 P/N 4000417)	4
E	4000027	NUT, HEX (NO. 10-32, WITH NYLON PATCH, PACKAGE OF 12 P/N 4000419)	4
F	4000047	SCREW, SOCKET HEAD CAP (NO. 10-32 X 1/2", SLOT)	9
G	4000049	CIRCUIT BREAKER (20 AMP)	1
H	4000067	LOCK WASHER, NO. 10, EXTERNAL TOOTH	4
I	4000094	NUT, HEX (NO. 6-32, WITH NYLON PATCH, PACKAGE OF 12 P/N 4000437)	2
J	4000110	FLAT WASHER, NO. 6 X 3/8" OD	2
K	4000111	NUT, SPEED (NO. 8)	2
L	4000143	SCREW, SOCKET HEAD CAP (NO. 10-32 X 3/4")	3
M	4000251	SCREW, PAN HEAD CAP (NO. 6-32 X 1", SLOT)	4
N	5108174	CONTROL BOX WIRING HARNESS, 5G (INCLUDES CONTROL BOX, WIRING HARNESS)	1
O	5108199	PCB SPACER	4
P	5108210	TRANSFORMER, 5G, 120V/50-60 HZ	1
Q	5108249	CONTROL BOARD CONNECTOR	1
R	5108256	FUSE, 6.25 AMPS, SLOW BLOW	1
S	5608204	POWER RELAY	1
T	5608205	SHAKE MOTOR RELAY	1
U	5608216	TERMINAL BLOCK DISCONNECT	1
V	5608220	TERMINAL BLOCK ASSEMBLY	
W	5108219	BULB HOLDER AND SWITCH MECHANISM	
X	5108212	EMERGENCY STOP SWITCH OPERATOR	
Y	26052	EMERGENCY STOP SWITCH	
Z	23769	POWER SWITCH	
AA	28233	UP BUTTON	
BB	5108330	START BUTTON	
CC	5108214	POTENTIOMETER HOLDER	
DD	5108213	1 MEG OHM POTENTIOMETER	
EE	24314	DECAL	
FF	1007234	FUSE, 5 AMP, FAST BLOW	

PARTS: INNER FRAME

**PARTS: INNER
FRAME**

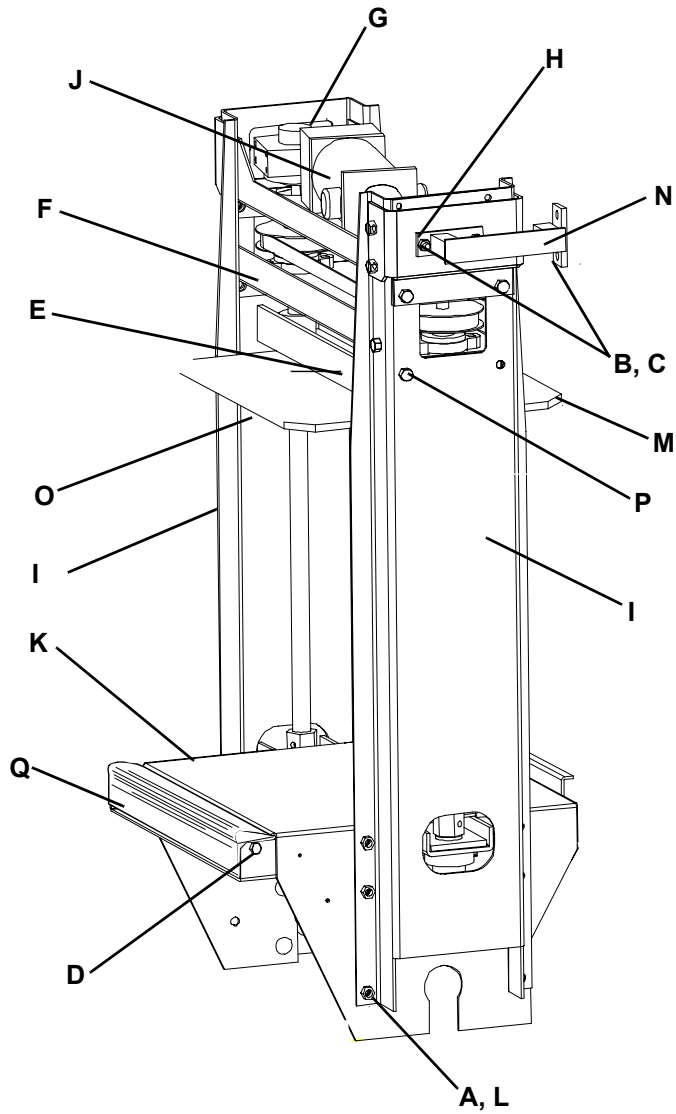


PARTS: INNER FRAME

	PART NO	DESCRIPTION	NO REQ
A	4000126	NUT, HEX (5/16-18, W/ NYLON PATCH, PACKAGE OF 12, P/N 4000441)	8
	4000127	SCREW, HEX HEAD CAP (5/16-18 X 1-1/4",PACKAGE 12, P/N 4000442) (NOT SHOWN)	4
B	4000179	PLAIN WASHER, 5/16" ID X 5/8" OD	8
C	4000207	SCREW, HEX HEAD CAP (1/2-13 X 1-3/4")	4
D	4000208	NUT, HEX (1/2-13, WITH NYLON PATCH)	4
E	4000212	PLAIN WASHER, 17/32" ID X 1-1/8" OD	4
F	4000215	SCREW, HEX HEAD CAP (5/16-18 X 3-1/2")	4
G	5102015	INNER FRAME COUNTERWEIGHT (1" X 3-1/2" X 2-11/16" LONG)	4
H	5102110	INNER FRAME (ONLY), 5G	1
I	5106300	CRANKSHAFT ASSEMBLY, COMPLETE, 5G (INCLUDES CRANKSHAFT, COUNTERWEIGHTS, BALANCE PLATE, COUNTERWEIGHT BALANCE PULLEY AND PILLOW BLOCK BEARINGS - 5G)	1
J	5108332	DC MOTOR CABLE (4 CONDUCTOR, 48-1/2" LONG)	1
K	5108405	SHAKE MOTOR VBELT, 5G (4L330)	1
L	5108406	SHAKE MOTOR SUPPORT BRACKET, 5G	2
M	5108415	SHAKE MOTOR CABLE (3 CONDUCTOR, 66" LONG)	1
N	5108416	SHAKE MOTOR ASSEMBLY, 5G (3/4 HP - 1725 RPM) INCLUDES SHAKE MOTOR PULLEY AND SHAKE MOTORCABLE	1
O	5108504	SHAKE MOTOR PULLEY, 5G (2.6" OD)	1

PARTS: SHAKE FRAME

**PARTS: SHAKE
FRAME**



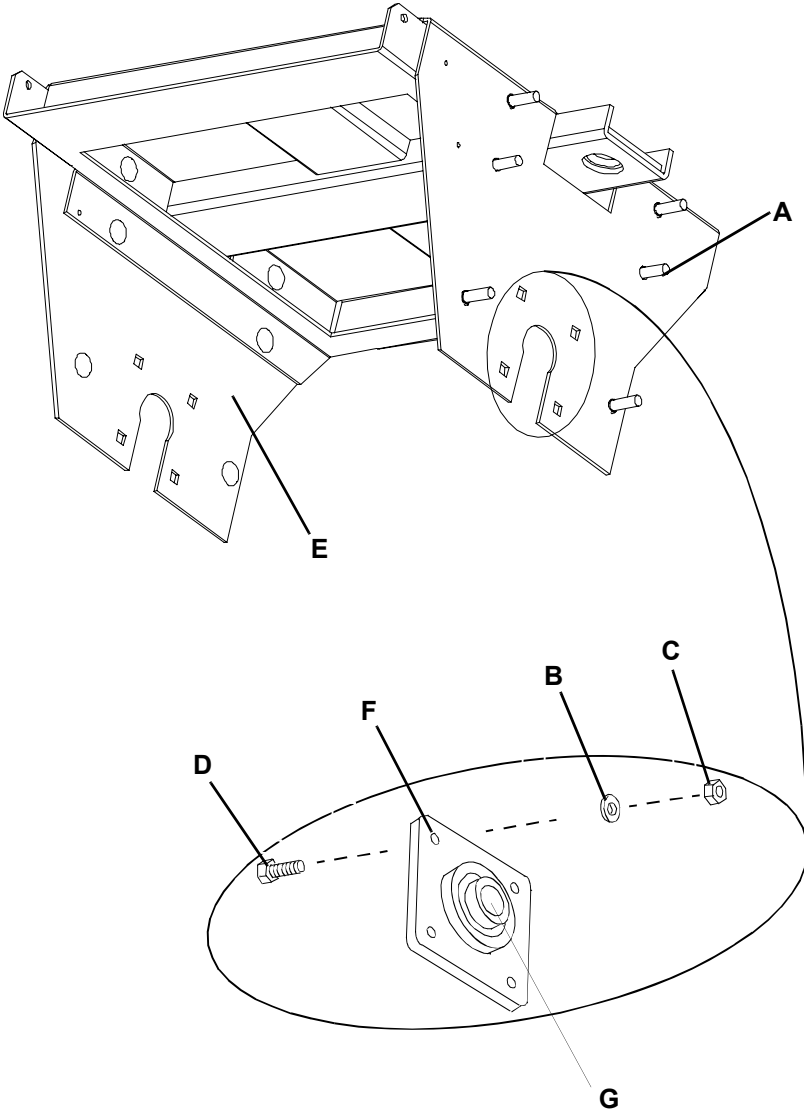
PARTS: SHAKE FRAME

	PART NO	DESCRIPTION	NO REQ
A	4000077	NUT, HEX (3/8-16, WITH NYLON PATCH (TABLE MOUNTING SCREWS)	12
B	4000087	SCREW, PAN HEAD (3/8-16, WITH NYLON PATCH (4 - DC MOTOR MOUNTING SCREWS AND 4 - SWIVEL ROD MOUNTING, PACKAGE OF 12, P/N 4000435)	4
C	4000096	NUT, HEX (1/4-20, WITH NYLON PATCH, 4-LEAD SCREW BEARING, 4 SWIVEL ROD, & 4 -TOP PLATE MOUNTING SCREWS, PACKAGE OF 12, P/N 4000438)	8
	4000170	SCREW, 5/16-18 X 3/4", NYLOC (NOT SHOWN)	18
D	4000175	SCREW, 1/4-20 X 1/2", FLAT HEAD	2
E	5103113	TOP PLATE CHANNEL	1
F	5103114	LEAD SCREW BEARING MOUNTING PLATE	
G	5103116	TOP BOX (12/31/96 OR LATER)	1
H	5103123	SWIVEL ROD BRACKET	2
I	5103141	SHAKE FRAME SIDE (LEFT & RIGHT)	1(2)
J	5103142	DC MOTOR/GEARBOX ASSEMBLY (1/17/97 OR LATER)	1
	5103147	SHAKE FRAME SIDE, RIGHT (NOT SHOWN)	1
K	23783	SHAKE FRAME TABLE PLATE	
L	5103158	PLAIN WASHER, 13/32" ID X 3/4" OD (TABLE MOUNTING SCREWS)	12
M	5103175	TABLE PLATE	1
N	5107009	SWIVEL ROD ASSEMBLY, 5G	2
O	5107123	TOP PLATE RUBBER PAD, 5G (REQUIRES ADHESIVE, P/N 4000327)	1
P	4000370	SCREW	
Q	23896	BRACKET	
	4000327	LOCTITE SUPER BONDER NO. 416 INSTANT ADHESIVE (1-OZ BOTTLE FOR RUBBER PAD, NOT SHOWN)	1

PARTS: SHAKE FRAME

	PART NO	DESCRIPTION	NO REQ
A	4000002	LOCK WASHER, 1/4", SPLIT (4 DC MOTOR MOUNTING SCREWS AND 4 TOP PLATE ASSEMBLY MOUNTING SCREWS)	8
B	4000087	SCREW, PAN HEAD (3/8-16, WITH NYLON PATCH (4 DC MOTOR MOUNTING SCREWS AND 4-SWIVEL ROD MOUNTING) AVAILABLE ONLY IN PACKAGE OF 12, P/N 4000435	8
C	4000096	NUT, HEX 1/4-20, WITH NYLON PATCH, (4-LEAD SCREW BEARING, 4 SWIVEL ROD, & 4 -TOP PLATE MOUNTING SCREWS) AVAILABLE ONLY IN PACKAGE OF 12, P/N 4000438	12
D	4000128	PLAIN WASHER, 1/4" (2-DC MOTOR COUPLING HALF & 4-LEAD SCREW BEARING MOUNTING SCREWS)	6
E	4000145	SCREW, SOCKET HEAD CAP, NO. 10-32 X 1-1/2" (DC MOTOR COUPLING HALF)	2
F	4000204	SCREW, SET, NO. 10-32 X 1/2", CUP POINT SOCKET (TIMING BELT PULLEY SET SCREW)	2
G	4000370	SCREW, HEX HEAD CAP, 5/16-18 X 3/4", WITH NYLON PATCH (SHAKE FRAME ASSEMBLY SCREWS)	20
H	5103104	THRUST BEARING	2
I	5103106	FLANGED BUSHING	2
J	5103109	TIMING GEAR	2
K	5103111	LEAD SCREW PILLOW BLOCK BEARING	2
L	5103125	WASHER, LOWER LEAD SCREW	2
M	5103131	SCREW, CARRIAGE (1/4-20 X 1")	4
N	23364	DC MOTOR ASSEMBLY	1
O	5103145	LEAD SCREW TOP PLATE NUT	2
P	5101003	COUPLING SPIDER	1
Q	5103160	LEAD SCREW ASSEMBLY (12/31/96)	2
R	5107004	COUPLING, GEAR BOX	1
S	5107005	COUPLING, LEAD SCREW	2
T	5107014	KEY, TIMING GEAR (LEFT TIMING GEAR - 1/8" X 1/8" X 3/4" LONG)	1
U	5107015	KEY, TIMING GEAR (RIGHT TIMING GEAR - 1/8" X 1/8" X 1-1/4" LONG)	1
V	5107016	TIMING GEAR BELT, 5G	1
W	F0131A06B10	SET SCREW, M6 X 1 X 10	1
	5107001	COMPLETE COUPLER ASSEMBLY	

PARTS: SHAKE FRAME

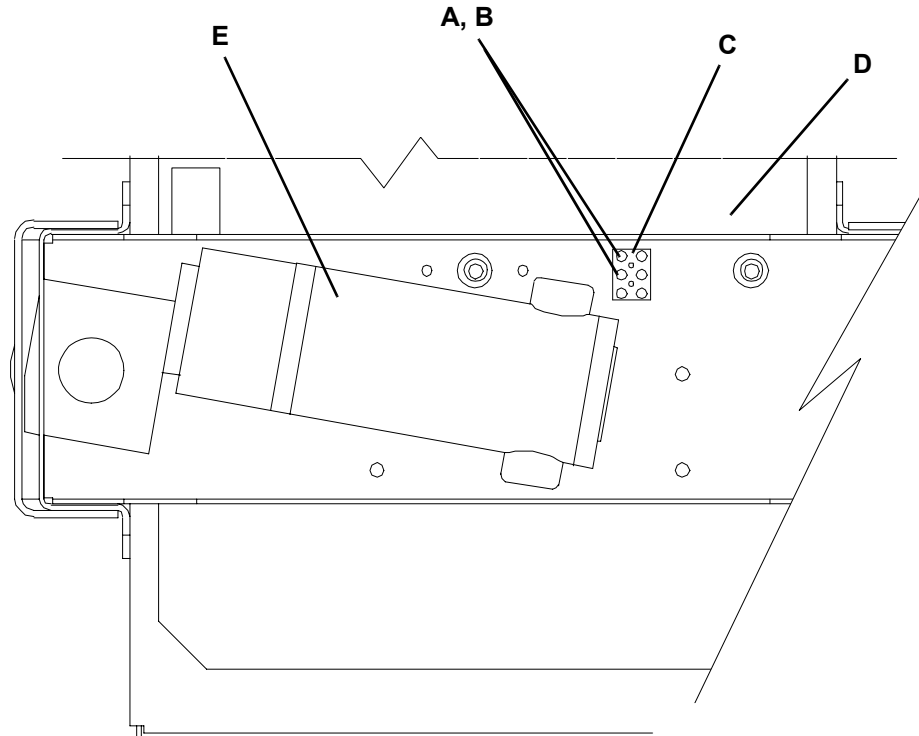


PARTS: SHAKE FRAME

	PART NO	DESCRIPTION	NO REQ
	23784	BOTTOM PAD ASSEMBLY, COMPLETE, 5G	1
A	4000126	NUT, HEX (5/16-18, WITH NYLON PATCH) SHAKE FRAME ASSEMBLY SCREWS, PACKAGE OF12, P/N S4000441)	8
B	4000182	PLAIN WASHER (11/32" ID X 5/8" OD)	8
C	5103126	SCREW, ROUND HEAD RIBBED NECK, 3/8-16 X 7/8" (TABLE MOUNTING SCREWS)	12
D	5103161	SCREW, CARRIAGE (5/16-18 X 1)	8
E	5103156	TABLE ASSEMBLY, COMPLETE, 5G (INCLUDES STAINLESS STEEL TABLE COVER)	1
F	5106023	FLANGE BEARING ASSEMBLY (INCLUDES PLATE, BEARING AND MOUNTING HARDWARE)	2
G	5106017	BEARING	

PARTS: CLAMPING MOTOR ASSEMBLY

**PARTS:
CLAMPING
MOTOR
ASSEMBLY**

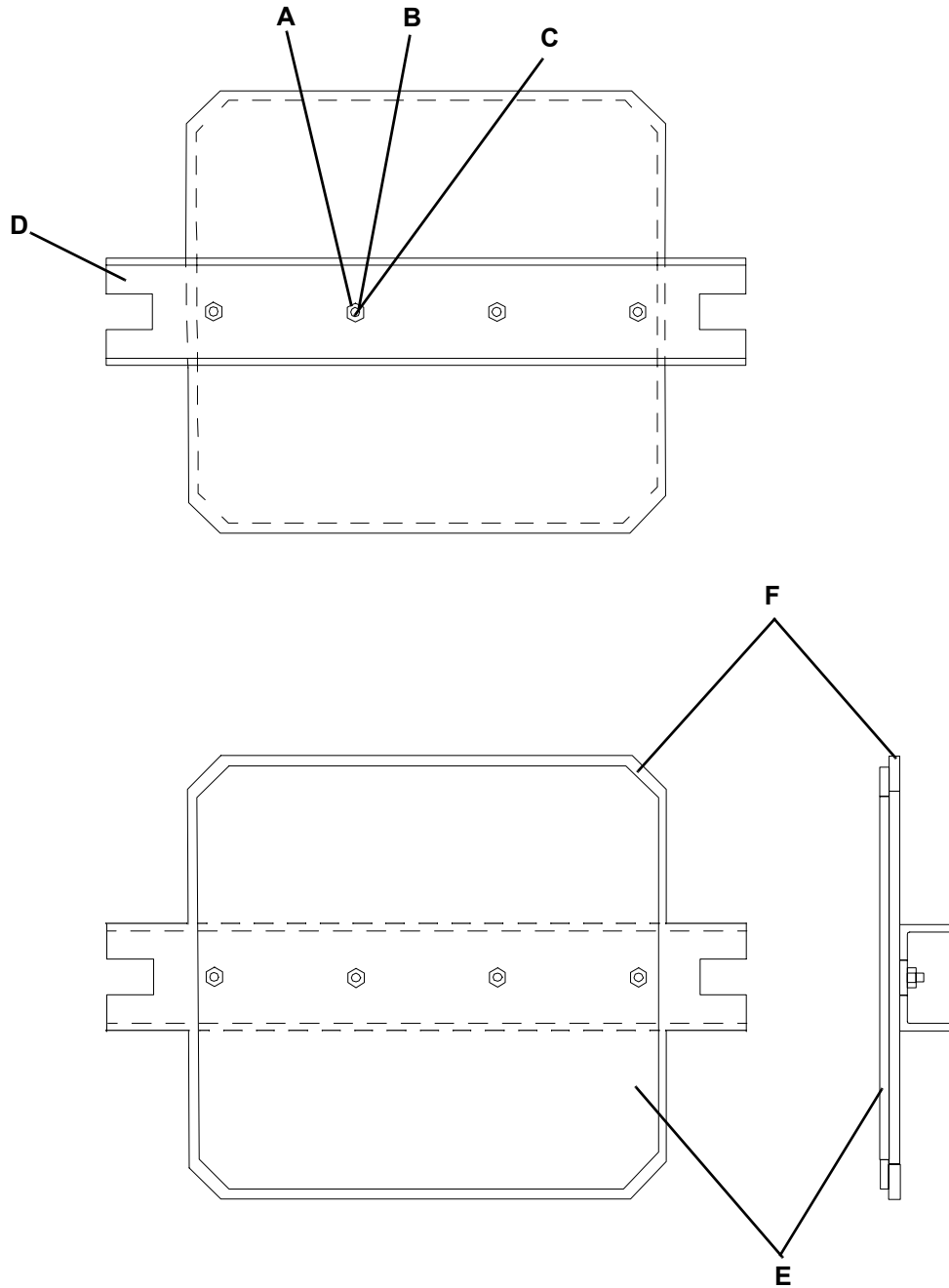


PARTS: CLAMPING MOTOR ASSEMBLY

	PART NO	DESCRIPTION	NO REQ
A	4000117	SCREW, 4-40 X 3/4"	2
B	4000118	NUT, 4-40 X 3/4", NYLOC	2
	4000096	NUT, HEX (1/4-20, WITH NYLON PATCH PACKAGE OF 12, P/N 4000438)	8
C	5108311	3-POSITION TERMINAL BLOCK	1
D	5103116	TOP BOX	
E	5103142	DC CLAMPING MOTOR	1

PARTS: TOP PLATE ASSEMBLY

**PARTS: TOP
PLATE
ASSEMBLY**

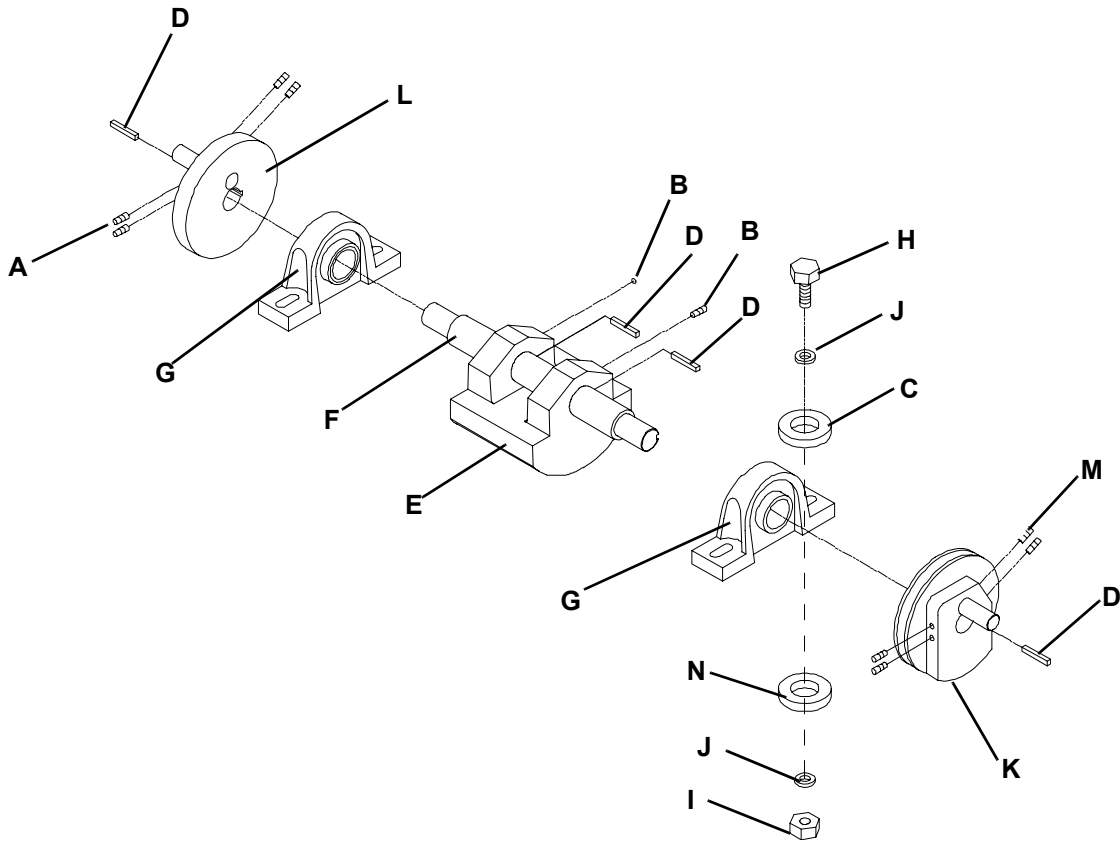


PARTS: TOP PLATE ASSEMBLY

	PART NO.	DESCRIPTION	NO. REQ
A	4000002	LOCK WASHER, 1/4", SPLIT	4
B	4000096	NUT, HEX (1/4-20, WITH NYLON PATCH, PACKAGE OF 12, P/N 4000438)	4
C	4000203	SCREW, FLAT HEAD CAP (1/4-20 X 1", SOCKET)	4
D	5103113	TOP PLATE CHANNEL, 5G	1
E	5107123	TOP PLATE RUBBER PAD, 5G	1
F	5103175	TOP PLATE ASSEMBLY, COMPLETE, 5G (INCLUDES TOP PLATE AND RUBBER PAD)	1
	4000327	LOCTITE SUPER BONDER NO. 416 INSTANT ADHESIVE (1 OZ. FOR RUBBER PAD - NOT SHOWN)	1

PARTS: CRANKSHAFT ASSEMBLY

**PARTS:
CRANKSHAFT
ASSEMBLY**



PARTS: CRANKSHAFT ASSEMBLY

	PART NO	DESCRIPTION	NO REQ
A	4000209	SCREW, SET (1/4 - 20 X 3/4", SOCKET)	8
B	4000210	SCREW, SET (5/16 - 18 X 3/4", SOCKET)	2
C	4000212	PLAIN WASHER, 17/32" ID X 1-1/8" OD	8
D	5106014	KEY, BALANCE PLATE PULLEY AND CENTRIFUGAL COUNTERWEIGHT (1/4" X 1/4" X 1-1/4" LONG)	4
E	5106101	CENTRIFUGAL COUNTERWEIGHT, 5G	1
F	5106105	CRANKSHAFT (ONLY), 5G	1
G	5106107	CRANKSHAFT PILLOW BLOCK BEARING, 5G	2
H	5106108	SCREW, HEX HEAD CAP (7/16 - 14 X 2", SOCKET)	4
I	5106109	LOCKNUT (7/16 - 14, WITH NYLON PATCH)	4
J	5106110	WASHER, 15/16" OD X 15/32" ID	8
K	5106121	BALANCE GROOVE PULLEY COUNTERWEIGHT, 5G	1
L	5106122	BALANCE PLATE COUNTERWEIGHT, 5G	1
M	4000209	SET SCREWS	
N	4000212	WASHER	
	5106300	CRANKSHAFT ASSEMBLY COMPLETE (INCLUDES CRANKSHAFT, COUNTERWEIGHT BALANCE PLATE, COUNTERWEIGHT BALANCE PULLEY AND PILLOW BLOCK BEARINGS)	1
	5108405	V-BELT, 5G, 4L330 (NOT SHOWN)	1

FLUID MANAGEMENT PAINT EQUIPMENT LIMITED WARRANTY

FLUID MANAGEMENT PAINT EQUIPMENT LIMITED WARRANTY

WARRANTY COVERAGE

Fluid Management, Inc. ("Fluid Management") warrants all Fluid Management Accutinters, Manual Paint Dispensers, and Paint Mixers and Shakers ("Paint Equipment") to be free of defects in material and workmanship during normal operation, use and service for a period of two years from the date of shipment by Fluid Management.

The first year of the warranty period covers parts and labor. If any Paint Equipment fails during normal operation, use and service during the first year of the warranty period due to a defect in material or workmanship, Fluid Management will repair the defective Paint Equipment and replace any defective parts at no charge to the Customer. The warranty repairs and defective parts replacement will be carried out by Fluid Management or one of its Authorized Service Representatives. .

The second year of the warranty period covers parts only. If any Paint Equipment fails during normal operation, use and service during the first year of the warranty period due to a defect in material or workmanship, Fluid Management will provide Customer with a replacement for any defective parts at no charge to the Customer. Customer will be responsible for all labor.

The above warranty and obligations are subject to the WARRANTY CONDITIONS, EXCLUSIONS AND LIMITATIONS and the WARRANTY DISCLAIMERS AND LIABILITY LIMITATIONS set forth below.

WARRANTY CLAIMS

Warranty claims must be asserted during the warranty period. While Paint Equipment is under warranty, no repair or part replacement should be undertaken without first contacting Fluid Management at 800-462-2466. To expedite the process, the model and serial numbers of the Paint Equipment should be available at the time of the call.

WARRANTY CONDITIONS, EXCLUSIONS AND LIMITATIONS

Fluid Management shall have no liability or obligation under its warranty in connection with any warranty claim asserted or any failure or malfunction occurring after the expiration of the warranty period.

As a condition to any warranty repair or part replacement, Fluid Management shall have the right to first inspect, test and evaluate the Paint Equipment and parts that are claimed to be defective.

Return of Paint Equipment and parts to Fluid Management requires a Return Goods Authorization (RGA) from Fluid Management, and the RGA number must be included with any returned Paint Equipment or part.

FLUID MANAGEMENT PAINT EQUIPMENT LIMITED WARRANTY

Customer shall be required to provide Fluid Management and its Authorized Service Representatives with all information that any of them may request concerning the maintenance, operation, use, service, failure or malfunction of Paint Equipment and parts that are claimed to be defective.

Fluid Management may use reconditioned parts for warranty repairs and parts replacement.

Warranty repairs and part replacement do not extend the warranty period for Paint Equipment and repaired Paint Equipment and replacement parts are warranted only for the remainder of the original warranty period.

Any repair or replacement requested as a warranty repair or replacement that is not covered by Fluid Management's warranty will be billed to Customer as non-warranty repair or replacement on a time and materials basis.

Fluid Management's warranty transfers to the new owner with transfer of ownership Paint Equipment. It is the responsibility of new owner to notify Fluid Management at 1-800-462-2466 of the transfer of ownership of Paint Equipment. Transfer of ownership does not extend the warranty period.

Fluid Management's warranty does not cover, extend or apply to, or include:

- "Computer or computer-related equipment such as laptops, monitors and printers and other third-party equipment supplied with Paint Equipment (In the case of computer and computer-related equipment such as laptops, monitors or printer, and other third-party equipment, any warranty is limited to a pass through to Customer of any warranty received from the equipment manufacture, and is subject to whatever terms, conditions and limitations are imposed by the equipment manufacturer)
- "Third-party software (In the case of third-party software, any warranty is limited to a pass through to Customer of any warranty received from the software provider and is subject to whatever terms, conditions and limitations are imposed by the software provider)
- "Normal wear and tear
- "Any Paint Equipment or part that fails or malfunctions due to any computer or computer-related equipment, other peripheral equipment, third-party software or software or equipment provided by Customer or a third party
- "Any Paint Equipment or part failure or malfunction that Fluid Management or one of its Authorized Service Representatives determines to have been caused by or attributable to damage

FLUID MANAGEMENT PAINT EQUIPMENT LIMITED WARRANTY

during or after shipment, colorant in the wrong canister, colorant related issues (e.g. beads in colorant, etc.), overfilling of canisters, improper operation or misuse, lack of daily maintenance, power surge, power outage, fire, flood, water leakage, accident, acts of god, casualty, or other similar causes

- "Any Paint Equipment or part that Fluid Management or one of its Authorized Service Representatives determines was tampered with, disassembled, repaired, modified or altered by anyone other than Fluid Management or one of its Authorized Service Representatives without the prior written authorization of Fluid Management, used to mix or dispense material that the Paint Equipment was not designed to mix or dispense or otherwise used for a purpose or under conditions that differ from those for which the Paint Equipment was designed, or subjected to abnormal use or service, or has had its serial number removed or altered.
- "Field repair, removal, reinstallation or other similar tasks not performed by Fluid Management or one of its Authorized Service Representatives
- "Cabinets and structural frames
- "Mistints or misfills

WARRANTY DISCLAIMERS AND LIABILITY LIMITATIONS

THE ABOVE WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY MADE BY FLUID MANAGEMENT WITH RESPECT TO EQUIPMENT, COMPONENTS OR PARTS AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF WHICH OTHER WARRANTIES ARE EXPRESSLY EXCLUDED.

THE OBLIGATIONS, RIGHTS AND REMEDIES SET FORTH ABOVE ARE THE SOLE AND EXCLUSIVE OBLIGATIONS OF AND SOLE AND EXCLUSIVE RIGHTS AND REMEDIES AGAINST FLUID MANAGEMENT WITH RESPECT TO ANY ALLEGED DEFECT OR DEFICIENCY IN ANY EQUIPMENT, COMPONENTS OR PARTS.

UNDER NO CIRCUMSTANCES SHALL FLUID MANAGEMENT OR ANY OF ITS AUTHORIZED SERVICE REPRESENTATIVES HAVE (I) ANY LIABILITY FOR ANY CLAIM, LOSS, DAMAGE, INJURY, LIABILITY, OBLIGATION, COST OR EXPENSE THAT DIRECTLY OR INDIRECTLY RELATES TO OR ARISES OUT OF THE PERFORMANCE OF ANY SERVICES OR THE USE, FAILURE OR MALFUNCTION OF ANY EQUIPMENT, COMPONENT OR PART OR (II) ANY LIABILITY FOR

FLUID MANAGEMENT PAINT EQUIPMENT LIMITED WARRANTY

INDIRECT, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOSS OF SALES, LOSS OF PROFITS, LOSS OF MATERIAL BEING DISPENSED, DOWN TIME, LOSS OF PRODUCTION, LOSS OF CONTRACTS, OR DAMAGE TO REPUTATION OR GOOD WILL, WHETHER OR NOT FLUID MANAGEMENT OR ANY OF ITS AUTHORIZED SERVICE REPRESENTATIVES WAS AWARE OF OR ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

IN ANY EVENT, FLUID MANAGEMENT'S TOTAL LIABILITY IN CONNECTION WITH ANY INDIVIDUAL ITEM OF EQUIPMENT SHALL LIMITED TO THE NET PRICE PAID TO FLUID MANAGEMENT FOR SUCH ITEM OF EQUIPMENT.

(Dec 2008)

Part No. 24018

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