

INSTRUCTION MANUAL

MODEL "CX" SIDE DELIVERY MIXER-GRINDER
MODEL "C" REAR DELIVERY MIXER-GRINDER

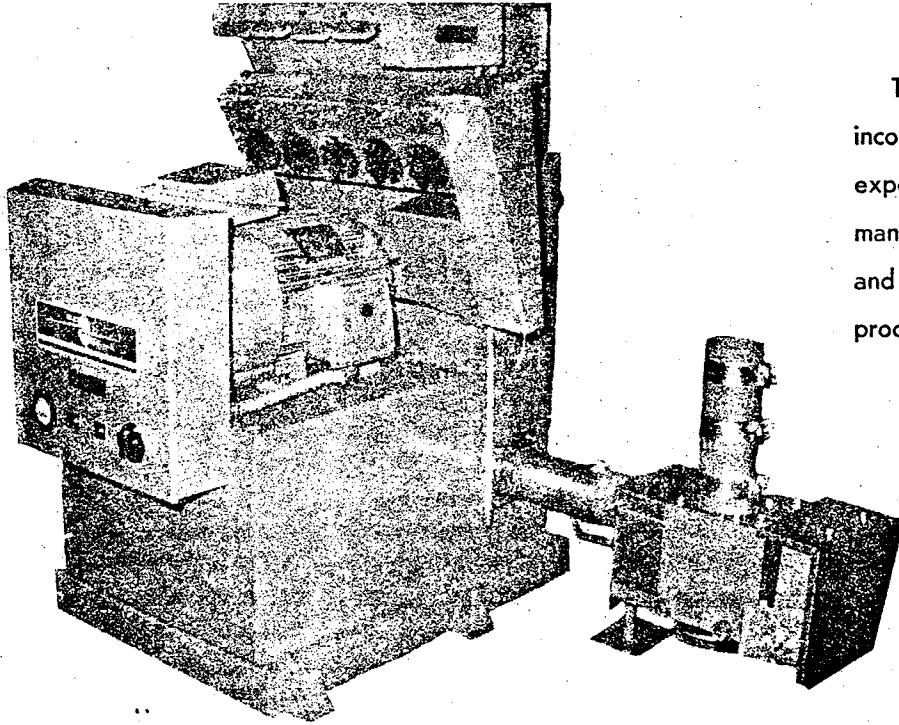


MIX-MILL[®], INC.
BLUFFTON, INDIANA

A 6584 AUGUST 1, 1970 ISSUE



The New Model "CX" Mix-Mill

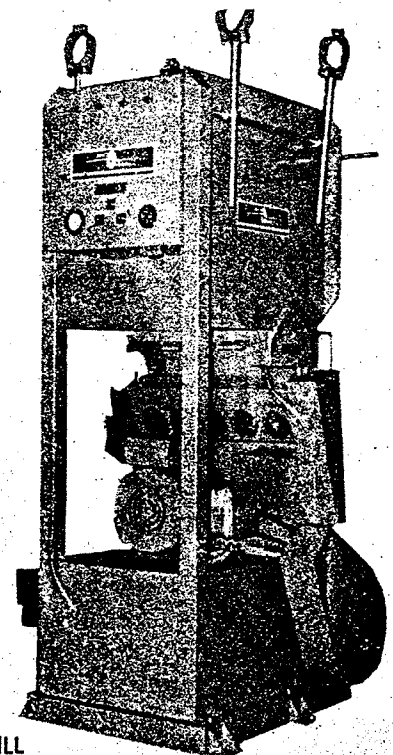


MODEL "CX" GRAVITY MILL

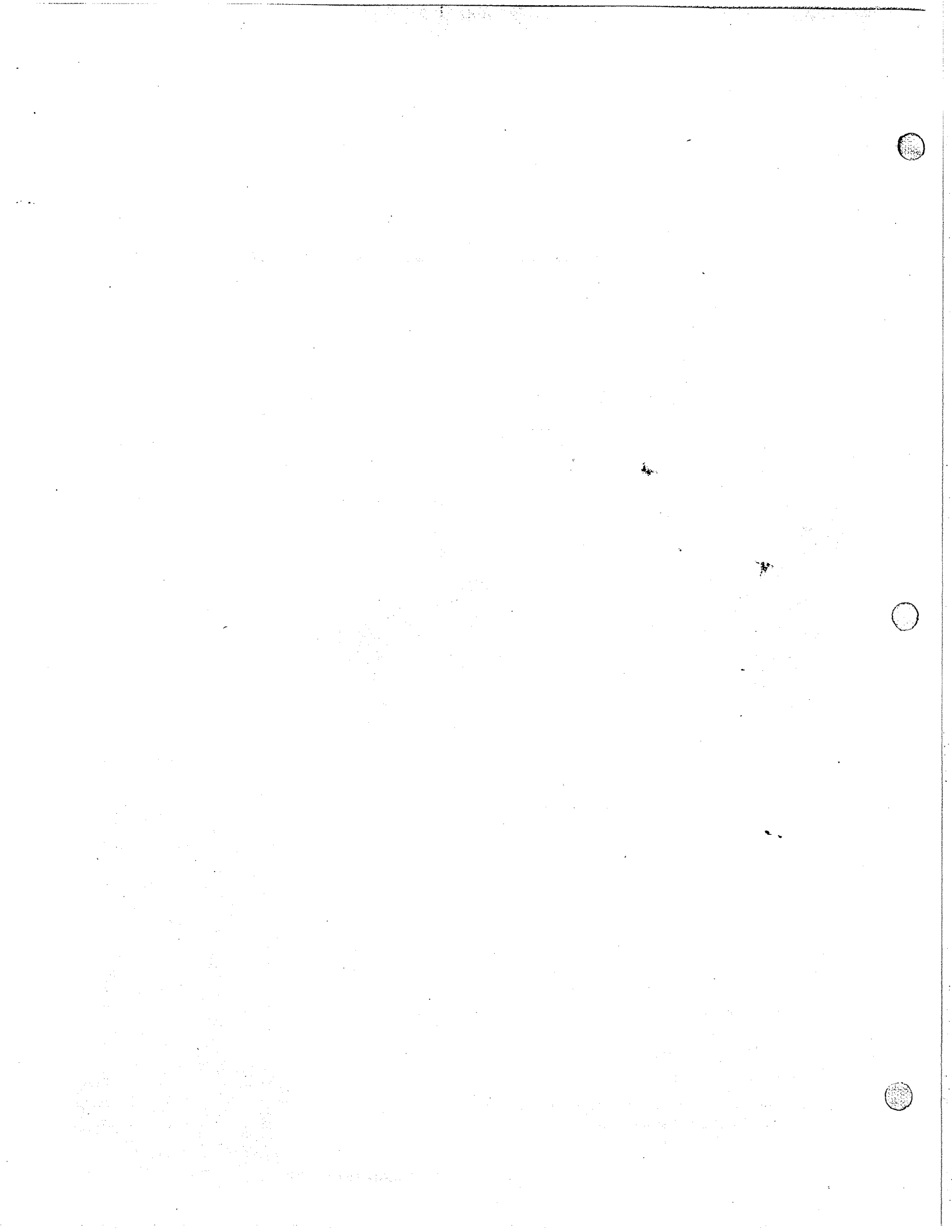
The new model "C" Mix-Mill series incorporates all the knowledge and experience gained from 13 years of manufacture and design as the originator and oldest producer of farm feed processing systems.

Model "CX" Ground Level Mill

1. Patented control hopper to control movement of feed ingredients from ground level storage to the mill without constructing overhead storage.
2. Incorporates all the features of the gravity mill.
3. Guaranteed for one year except expendable parts such as screens, hammers, hammer bolts and belts.



MODEL "CX" GROUND LEVEL MILL





MIX-MILL® INC.
BLUFFTON, INDIANA, U.S.A.

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Date : 2-2-67
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Welcome to the fast growing family of owners of MIX-MILL equipment!

This booklet contains complete operating instructions and service information on MIX-MILL® mixer-grinders.

Call your dealer or distributor for parts and service. If for some reason local service is not available call or write:

MIX-MILL, INC.
1248 South Main Street
Bluffton, Indiana 46714

Phone: Area 219 824-3400

CAUTION

Check shipments to see that the number of pieces on the freight bill are received. Do not accept shipments that are short unless shortages are noted on freight bill and signed by the driver.

MIX-MILL, INC. has made every effort to provide safe equipment, however, the following precautions should be carefully observed:

1. Disconnect main service switch before removing any housing covers or electrical boxes or switches.
2. Ground the mill frame to a ground rod driven six (6) feet into moist soil.
3. Ground any augers to feeders where livestock might contact either augers or feeders.

IMPORTANT

In order to validate warranty, be certain that white card attached to the mill is completely filled out and sent in immediately after installation.

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F. WIRING DIAGRAMS

1. PANEL WIRING DIAGRAMS

Type	Phase	Horsepower	Version	Page No.
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Ground Level	Single	3, 5, & 7½	U.S.A.	Sect. 25 - Page 132
Gravity	Three	3 - 10	U.S.A.	Sect. 25 - Page 134
Ground Level	Three	3 - 10	U.S.A.	Sect. 25 - Page 136
Gravity	Single	3, 5, & 7½	Canadian	Sect. 25 - Page 138
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2. EXTERNAL WIRING DIAGRAMS

Type	Phase	Horsepower	Version	Page No.
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Gravity	Three	All	Both	Sect. 25 - Page 154
Ground Level	Three	All	Both	Sect. 25 - Page 156

INSTALLATION INSTRUCTIONS

I. INSTALLATION OF HORIZONTAL AUGER TO MILL

A. SIDE DELIVERY MILLS (Fig. 1)

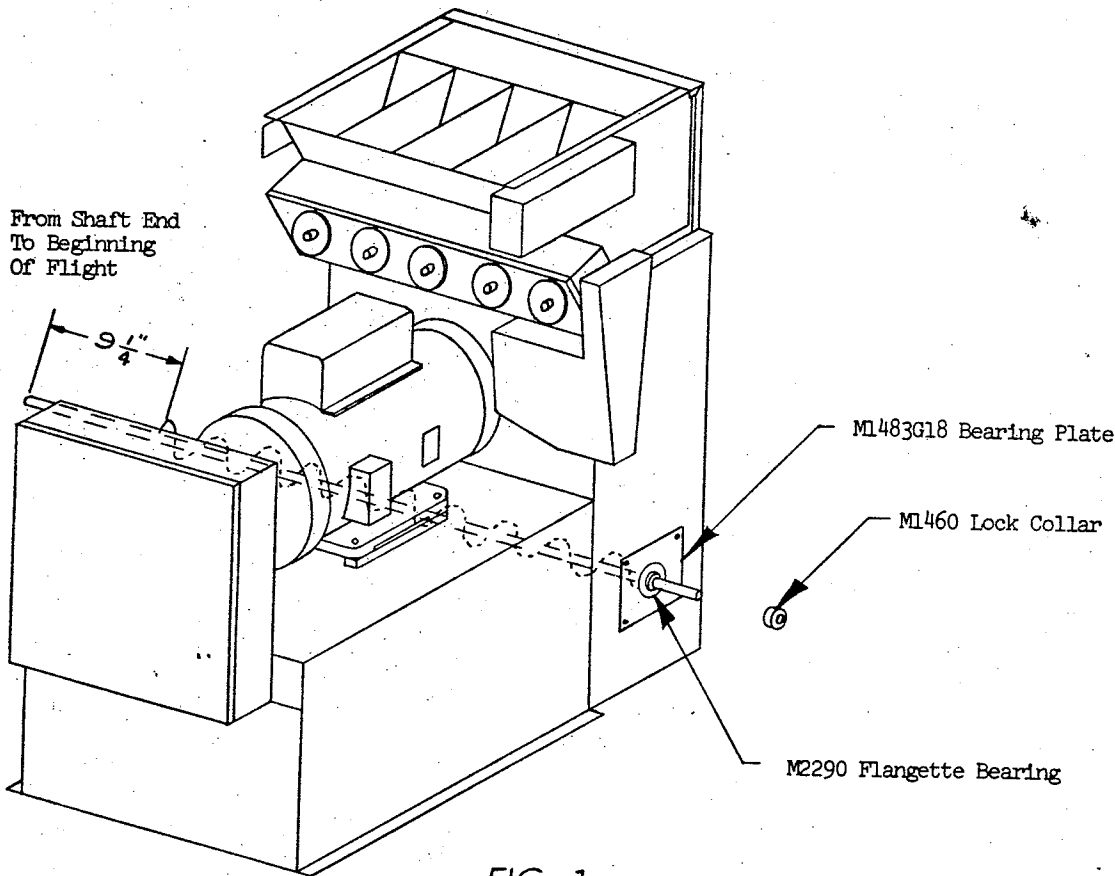
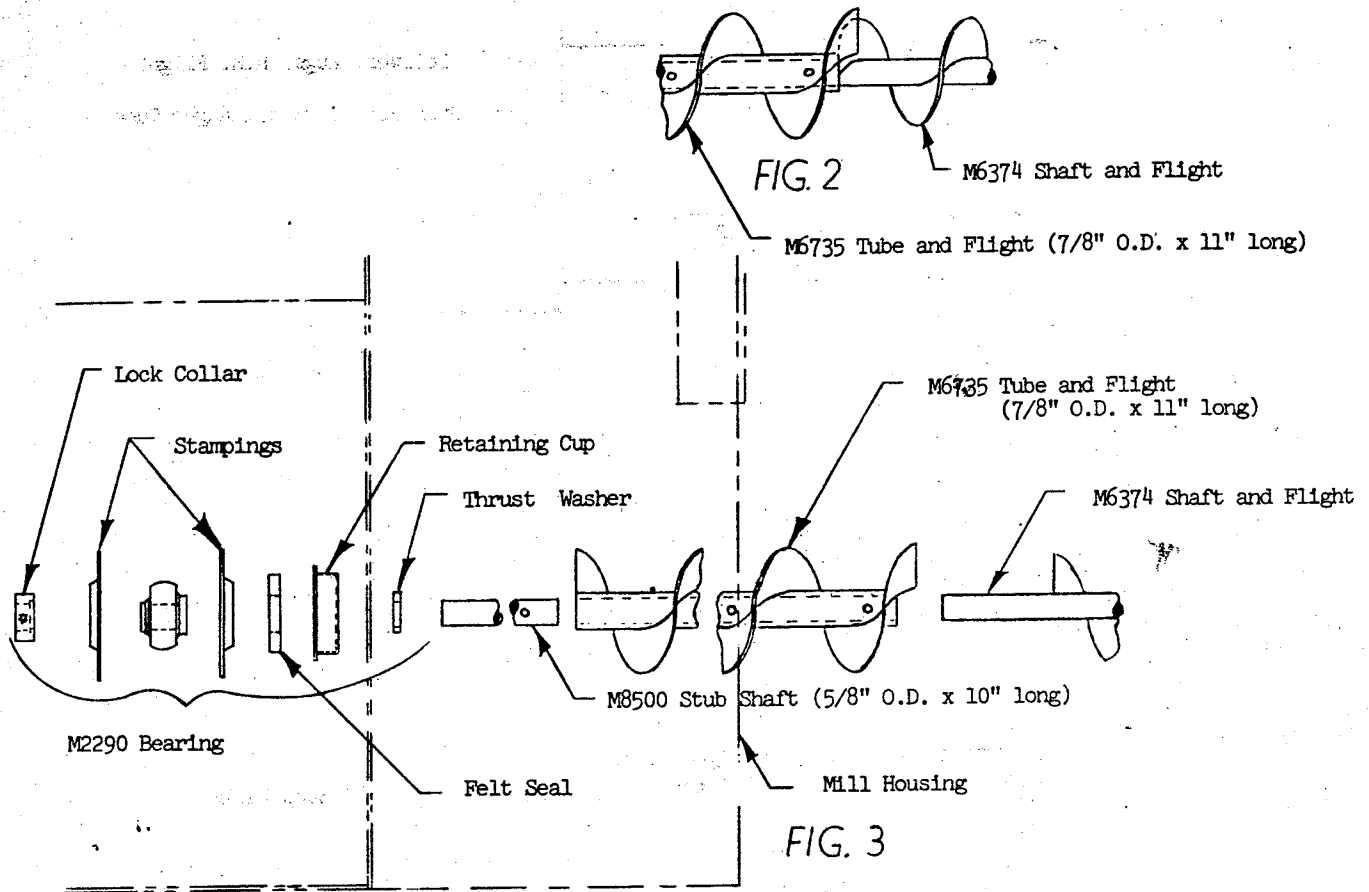


FIG. 1

- (1) Determine on which side of mill auger corner is to be installed. If opposite that shown on above sketch, move M1483G18 Bearing Plate to opposite side.
- (2) Loosen the screws holding the M2290 Flangette Bearing to the Bearing Plate.
- (3) Assemble bronze thrust washer (5/8" I.D. x 1" O.D. x 1/8" thick) over short extension end of left hand shaft and flight assembly.
- (4) Insert shaft and flight assembly through bearing so thrust washer is between bearing and end of flighting.
- (5) Assemble tube and plate, flange end toward mill, over shaft and flight and bolt to mill housing.
- (6) Slip the M1460 Lock Collar over the auger shaft and tighten.

B. REAR DELIVERY MILLS (Fig. 2 & 3)



- (1) Remove shipping plate from back of mill over M8500 Stub Shaft.
- (2) Assemble M2290 Bearing and M8500 Stub Shaft as shown in Fig. 3, so that from the thrust washer to the end of the stub shaft is 8".
- (3) Slip M6735 Tube and Flight over the M8500 Stub Shaft until holes in each line up (tube and flight should be against thrust-washer). Bolt together with 1/4" bolt, nut and lock washer supplied.
- (4) Slide M6374 Shaft and Flight Assembly into the tube and flight, lapping the flights as shown in Fig. 2.
- (5) Using the hole in tube and flight as guide, drill a 17/64" diameter hole through the shaft and other side of tube. Bolt together with 1/4" bolt, nut, and lockwasher supplied.
- (6) Assemble tube and plate over shaft and flight and bolt to back of mill with hardware furnished.

2. INSTALLATION OF AUGER CORNER AND VERTICAL AUGER TO MILL

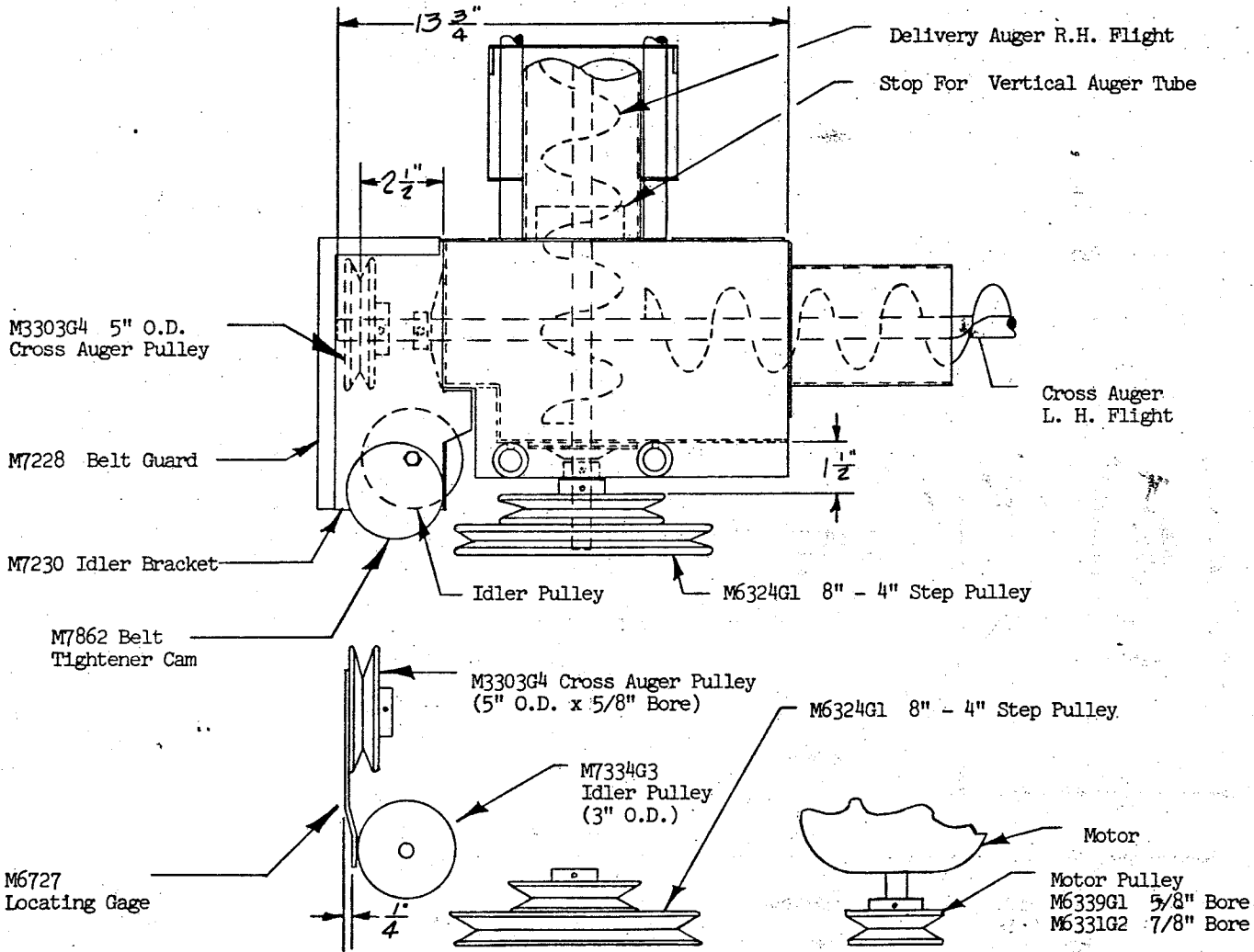


FIG. 5

- (1) Loosen screws holding bearing to horizontal portion of auger corner. Assemble auger corner with short split tube over tube and plate previously assembled to mill housing. Auger shaft should extend through bearing approximately 2-3/4". Assemble lock collar to bearing and retighten screws holding bearing in place.
- (2) Assemble support stand assembly and clamp.

- (3) Loosen screws holding bearing to bottom of auger corner. Assemble vertical auger with bronze thrust washer (5/8" I.D. x 1" O.D. x 1/8" thick) between lower end of flight and bearing. Vertical auger tube should rest on stop in lower end of split tube and plate. Retighten screws holding bearing in place. Assemble lock collar to bearing and tighten.
- (4) After vertical auger is in desired position, tighten all clamps to both vertical and horizontal auger.
- (5) Assemble the 5" pulley on horizontal auger and 4" x 8" step pulley on vertical.
- (6) Assemble the cog belt over the auger pulleys and idler pulleys. To avoid undue belt wear, adjust pulley on vertical auger up or down so that belt from idlers will enter this pulley in a horizontal line. Belt should not ride "heavy" on either top or bottom of pulley groove.

Caution: Bolts holding hinged idler brackets to auger corner must be loose enough to allow idlers to find their proper alignment with belt.

- (7) Adjust idler pulleys approximately even each side to arrive at proper belt tension. With approximately a 3 pound pressure applied midway between idler pulley and vertical auger pulley, belt should deflect no more than 1/16".
- (8) Using gage furnished, readjust horizontal auger pulley and idler pulleys if necessary to fit this gage. If pulleys are not properly aligned, the belt may turn over in pulley groove causing excessive belt wear and reducing capacity of auger corner.
- (9) Assemble the 41" belt over motor pulley and 8" portion of step pulley. Adjust motor on motor mounting rods to align pulleys.
- (10) Because all new belts will stretch when first put in service, the tension on the auger corner belt must be checked periodically after approximately 15 minutes, 1 hour, and five hours of running time.

Note: If the cog belt furnished should fail for any reason, a Number 2370 belt available from most service stations can be used as a temporary substitute until proper belt can be obtained.

3. INSTALLATION OF INGREDIENT SPOUTS

A. Gravity Mixer-Grinders

- (1) The most frequently used tubing is 4" round 26 gauge pipe available from MIX-MILL in 10 foot lengths. Light gauge adjustable and rigid elbows are handy in making the connections. The 4" downspout from the overhead bins should enter as nearly straight down into the proportioner hopper as possible, and should be directly over the exposed metering screw. Downspout should enter hopper about 1/2" and should not interfere with the operation of the switch paddle.

B. Ground Level Mixer-Grinders

- (1) Generally, the position of the grain tube relative to the bypass partition should be straight down into the hopper and about 2 inches from side of pipe to partition for free flowing materials such as corn, oats, and soybean meal. If the material does not flow freely, the grain tube should be moved closer to the partition. Drop pipe should enter compartment about 1/2 inch.
- (2) The adjustable slide at the lower end of the bypass partition can be adjusted up and down. The lowest position should be used for free flowing materials and the highest position for difficult flowing materials, such as bran and dried beet pulp. A good place to start is with the adjustable slide at the midpoint of the range.
- (3) The precision snap action switches inside the control box should be adjusted so that the switch snaps with a very slight movement of the actuating paddle, long before it swings back and touches the hopper side wall. The adjustment can be made by either turning the switch actuator lever on the pivot rod, or by bending it slightly.

4. WIRING

NOTE: For detailed wiring instructions, refer to appropriate internal and external wiring diagram in wiring section. Be sure electrical service is adequate to provide full voltage to motors at full load. No motor will operate properly at low voltage.

All electrical equipment must be grounded, not only to the neutral of the power supply, but also to a substantial ground right at the mill installation or in the livestock house. Refer to the wiring diagram and local electrical code.

A water pipe ground is best IF metallic water pipe goes all the way to and down into the well, but watch out for plastic pipe because the water in the pipe is not a good enough conductor and besides, the pipe might be empty when a ground is needed most.

If a driven ground is used, it should be driven into permanently moist undisturbed earth. A ground rod driven into fill might not be effective.

Make sure all motors, augers, hoppers, etc., are connected permanently and solidly to the ground. If it is not easy to connect to the existing ground, drive another ground rod in moist soil.

5. PREPARING THE PROPORTIONER FOR OPERATION

- (1.) Fill the gear box with the non-toxic oil provided. The four auger gear box requires one quart of oil and the six auger gear box requires one and one-half quarts of oil. Check the oil level by removing the pipe plug from the end of the box. The oil level should be up to the lower side of the hole. Use Texaco Regal AR&O oil. It is non-poisonous and is used to lubricate machinery for processing food for human consumption. This oil is available from MIX-MILL®, INC., or your local Texaco products distributor. Do not use motor oils as some are poisonous.
- (2.) Make certain there is no foreign material in the proportioner hopper, or in the overhead bins.
- (3.) With the proportioner empty and the control knobs set on zero start the mill. Run a minute or two, only the input shaft turns. Now turn the load knob, which is at the right hand end of the row of knobs as you face them, to a setting of 25. Run a minute or two, then set the knobs of the feed augers at 25. Operate about five minutes. You will notice that, changing an auger knob setting changes the number of revolutions the auger turns, and changing the load knob changes the number of revolutions of all of the augers in unison, or the total delivery, but does not change the proportion of any one ingredient to the other ingredients. Changing the load knob changes the total delivery but not the proportions.

B. OPERATING INSTRUCTIONS

Before attempting to operate the Mix-Mill mixer-grinder, the operator should become familiar with the functions of all control elements of this machine.

Each switch, dial or knob has a specific function which when properly operated will produce very satisfactory results.

1. CONTROL PANEL

A. Instruments

- (1.) **Timer** - A spring wound mechanical timer is provided on each control panel. The standard timer has 0 to 2 hour adjustable timing range (0 to 5 hour range is also available). The timer also has a "hold" position that keeps the mill running until manually turned from the "hold" position. The "hold" position must be used when the operation of the mixer-grinder is to be automatically controlled by other switches. If it is desired to operate the mill for a specific length of time, the timer should be set to this preselected period. The mill will then operate until time has elapsed. Operation will not be resumed until the timer is again reset manually.
- (2.) **Ammeter** - The load on the mixer-grinder drive motor is indicated by an ammeter on the panel. The load control dial on the right hand end (facing the dials) of the proportioner controls the load on the motor, which the ammeter indicates. When setting the load, adjust the right hand (load dial) until the following full load current is indicated.

	Full Load Amperes			
HP	3	5	7½	10
Single Phase	17	28	37	--
Three Phase	7.5	13	18.5	25

B. Selector Switches

- (1.) **Gravity Type Mixer-Grinder** - There are two selector switches on the panel, the left hand switch for mill drive motor and the right hand switch for the auxiliary relay which controls ground feed augers driven by a separate motor. Each switch has three positions; automatic, off, and manual. The "automatic" position routes the relay coil current through the timer, proportioner hopper flow switch, proportioner belt guard safety switch and bin level switch, if used. The "off" position interrupts the current to the relay coils. The "manual" position bypasses all control circuit switches. The mill will not operate automatically when switches are in the manual position.
- (2.) **Ground Level Type Mixer-Grinder** - The ground level panel has a third selector switch mounted above and between the other two switches. This third switch controls the filling augers. The other two have the same function as noted above for the gravity type mixer-grinder. In addition, there are four switches across the top of the panel, one for each of the filling augers, with these switches in the on position, the auger motors will operate automatically.

C. Manual Operation

With the mill selector switch in the manual position all safety switches are bypassed. The mill must be started by hand and stopped by hand. As long as there is a power supply available and the mill motor overload is not tripped the mill will operate. For this reason the manual position should be used only when trouble shooting.

D. Automatic Operation

With the mill selector switch in the "Automatic" position, the mill is set to be operated under the control of the timer, which when set will start the mill, allow it to operate a predetermined length of time and then will stop it. The timer, proportioner hopper flow switch, proportioner drive wire switch and bin level switch (if used) are wired in series with the relay coil. Should any of the control switches open, the mill motor and the auxiliary system (controlled from the second panel relay) will stop. On the 3, 5, and 7½ HP single phase mills, the tripping of the motor overload will cause the entire system to shut down.

E. ACCESSORY SWITCHES

- (1.) A Bin Level Switch can be wired in series with the control switches and used to start the mill to refill a bin and then stop the mill. In this case the selector switches are set on "automatic" and the timer knob placed in the "hold" position.
- (2.) The mill can be wired through a Time Clock so that the mill will start at a predetermined time, run for a predetermined period and stop. The time clock switch must function only as a switch and must not supply current to the mill control circuit. It may be necessary to rewire the time clock switch to insure that it does not supply current to the mill control circuit.

2. PROPORTIONER HOPPER

A. Switch Paddles

A weighted switch paddle is provided for each individual ingredient hopper. The paddle is inserted into the filled hopper by sliding the paddle blade down the inside of the sloping hopper on the proportioner side. An alternate method is hold the paddle in contact with inside face of the empty hopper and then fill the hopper. As long as there is grain in the hopper, the paddle in hopper will be held in this position. If the supply of grain is exhausted and the hopper is emptied the paddle blade swings up and the weighted end swings down and trips the rod causing the mill to stop. A paddle is needed for each hopper being used and the others should be removed.

B. Ingredient Flow Switch

The trip rod on the hopper activates an overcenter spring loaded finger that trips a snap action switch.

C. Proportioner Hopper Cover

The side opposite the proportioner is provided with a rubber gasketed cover held on by quick acting toggle clamps. This provides an inspection cover and a convenient way to catch samples from the proportioner to see that the knobs are correctly set. Removing the cover gives access to all augers and makes it possible to catch samples from all augers at the same time.

D. Belt Guard Safety Switch

The proportioner is driven by a shear pin. Should a piece of cob enter the metering troughs and jam an auger, the shear pin will bend, thus stopping the proportioner until the obstruction is removed. When the shear pin bends, a disk is released which trips a sensing switch which in turn shuts down the mill.

3. PROPORTIONER HOPPER COVER AND HOUSING COVER

A. Magnetic Separator

All mills are provided with magnets that remove tramp iron from the grain being delivered by the proportioner to the grinding chamber. These magnets function whether the material is bypassed or not.

Important: The magnets should be checked every day if possible since metal caught by them will eventually work itself off if not removed.

B. Bypass Valves

The built-in bypass valves on the four compartment mill give the operator the option of bypassing two ingredients around the grinding chamber. Either the material from the left hand (No. 1) auger, the material from the right hand (No. 4) auger, or both can be bypassed. On the six compartment mill, either two or four ingredients can be bypassed. The material from the two left hand (No. 1 & 2) augers, the material from the two right hand (No. 3 & 4), or all four can be bypassed.

4. GROUND FEED AUGER SYSTEM

The ground feed auger system is driven by a motor mounted on the auger corner. The horizontal auger is built with left hand flighting, and conveys the ground feed from the mill housing into the belt driven corner. The elevating auger from the auger corner is either a 3½" extension auger or a 3½" general purpose auger, as the case may require, (either must be keyed to pulley). These augers are built with right hand flighting and are keywayed; they are not, however, included as part of the mixer-grinder.

The belt driven auger corner can be operated at any angle, from horizontal on the left to horizontal on the right.

5. GROUND LEVEL CONTROL HOPPER (GROUND LEVEL MILLS ONLY)

The function of the ground level control hopper is to start and stop the motors of the filling augers, thus insuring a supply of grain over the mill, at all times. This is accomplished by having the auger drop pipe discharge into the large compartment which is filled first, and then overflowing the partition into the bypass compartment and causing the switch paddle to swing back and trip the switch stopping the auger motor. The material feeds out of the bottom of the large compartment, which empties first, and then out of the bypass compartment. When the level of grain drops down sufficiently the switch paddle swings forward and starts the auger motor and the cycle repeats itself. This method originated and patented by MIX-MILL, INC. provided a time delay so that the filling auger does not start and stop continuously.

The four switches across the top of the ground level panel are used only to select which filling augers will be in use, as their operation is automatic otherwise.

Shut off plates B-6211 are provided with the ground level hopper to insert under each compartment to keep the grain in the compartments when the gear box is removed.

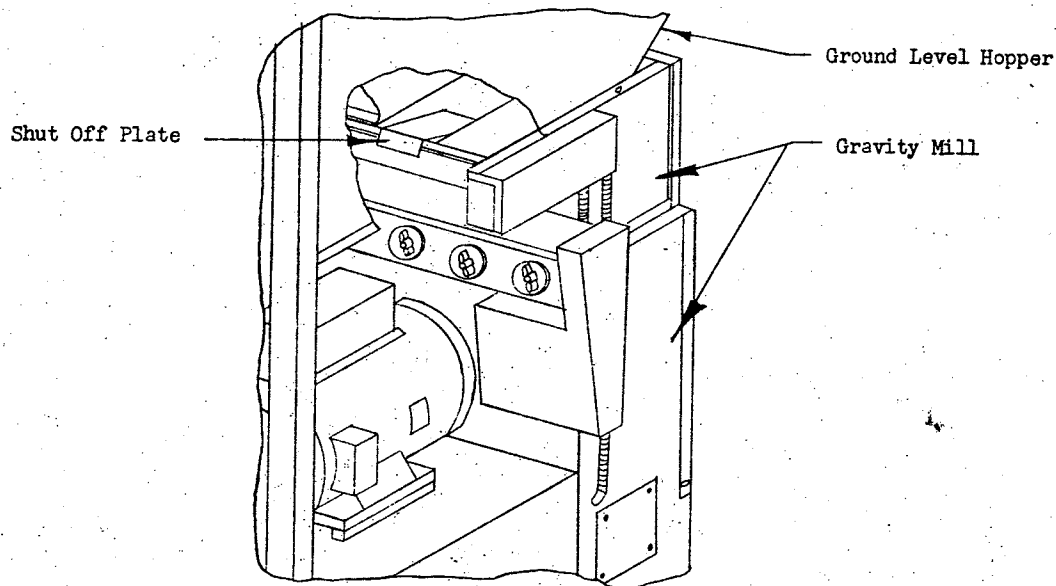


FIG. 6

6. SETTING THE DIALS

The dials are identified by number from left to right facing the dials. The dial on the left hand side being No. 1 and the dial on the right hand side being No. 5, which is the load dial. In the case of a six compartment mill the load dial will be No. 7.

- (1.) The feed formula usually is in pounds per ton. Change the formula into pounds per ton if it is expressed some other way.
- (2.) Since the mixer-grinder works on volume, change the formula to bushels per ton. Use a set of scales to get actual weight of each ingredient. Some feed ingredients, particularly mash type concentrates, will settle to a substantial degree. On the other hand, as materials of this type are delivered by the proportioner, they are not settled at all but are very fluffy.
- (3.) In order to avoid this situation it is only necessary to "fluff up" any material before it is weighed, that is, to make the quantity of ingredient weigh as little as possible. Under no conditions should the ingredients be vibrated or settled as this is not the condition in which they are discharged from the proportioner.
- (4.) The bushels per ton of each ingredient is the dial setting for the knob feeding that ingredient. If a 1/4 delivery auger is used, the dial setting will be four times greater, and if a 1/2 delivery auger is used, the dial setting will be two times greater.

EXAMPLE

(a) The feed formula is:

Concentrate	300 lbs.
Oats	600 lbs.
Shelled Corn	1100 lbs.

(b) For this example, say the concentrate has been put on the scales and has been found to weigh 41 pounds per bushel when it is fluffed up. The feed formula calls for 300 pounds per ton. Dividing 300 pounds by 41 pounds results in 7.3 bushels per ton being required.

In the same way it is found that 18.8 bushels of oats and 19.6 bushels of shelled corn are required for each ton of finished feed.

The formula for each ton of finished feed is:

Concentrate	7.3 bushels
Oats	18.8 bushels
Shelled Corn	19.6 bushels

(c) The dials are then set at:

Concentrate	7
Oats	19
Shelled Corn	20

(d) The above settings are entirely correct, however, if somewhat greater accuracy is desired, particularly on concentrate, divide all the settings by the concentrate setting and then multiply all the settings by a number which makes the highest setting (usually corn) less than but as near to 25 as possible. Taking the above settings as an example:

Concentrate	$7.3 \div 7.3 = 1.00$	$1.00 \times 9 = 9.0$	the setting would be 9
Oats	$18.8 \div 7.3 = 2.58$	$2.58 \times 9 = 23.2$	the setting would be 23
Shelled Corn	$19.6 \div 7.3 = 2.68$	$2.68 \times 9 = 24.2$	the setting would be 24

(e) After setting the dials, it is ESSENTIAL that the settings be checked, to make sure that the weights of the ingredients are correct.

7. CHECKING THE DIAL SETTINGS

The new sampling chute design makes possible the simultaneous sampling of all ingredients. When using the simultaneous method of sampling, care must be exercised if accuracy within one percent is desired.

EXAMPLE: To obtain an accuracy of one percent the amount of least ingredient caught must be at least 100 ounces if the scale used reads to one ounce.

This may make the amount of major ingredient too bulky to catch. When this condition exists it is best to sample each auger individually using the timed method.

To attach the sampling chute to a four auger mill, first remove the cover on back of proportioner hopper. Release the two latches which hold the mill back, and open the mill back slightly. Position the sampling chute so the channel on the underside hooks over the top edge of the mill back. Close the mill back and refasten latches. This holds the sampling chute securely in place.

To attach sampling chute to a six auger mill, proceed in the above manner except after removing the cover on back of proportioner hopper, also remove the two aluminum deflectors located in the lower corners of the proportioner hopper.

CAUTION: To avoid intermixing of ingredients between augers when there is no partition, be sure sampling chute is against the faces of the auger troughs.

A. SIMULTANEOUS METHOD

- (1) Run the mill until all augers are full. Remove proportioner hopper cover. Remove aluminum deflectors at each side of proportioner hopper on 6 auger mills. Place sampling chute into position.
- (2) Place a container to catch ingredient under each chute trough. Be sure container is large enough to catch a sample of adequate size to assure accuracy.
- (3) Start mill (using the trip rod above the control knobs is a convenient method). Let mill run until an adequate amount of the least ingredient is caught to enable accurate weight.
- (4) Shut off mill and let run down.
- (5) Get the net weight of each ingredient (gross weight less container weight).
- (6) Add together the net weight of all ingredients getting total net weight.
- (7) Divide 2000 by total net weight of all ingredients delivered.
- (8) Multiply the net weight of each separate ingredient by the number determined in Step 7. This is the amount per ton of the ingredient delivered.

Example: Suppose you caught

10 lb. of concentrate
20 lb. of oats
37 lb. of shelled corn



Add 10 plus 20 plus 37 = 67 lbs.

2000 divided by 67 = 30 approximately

Now multiply weight of each sample caught by 30 to find equivalent pounds per ton.

10 x 30 = 300 pounds per ton

20 x 30 = 600 pounds per ton

37 x 30 = 1110 pounds per ton

This is approximately the original formula, therefore, it is not necessary to reset the dials.

If this result did not agree with the original feed formula, it would mean that the ingredients were not weighed correctly or a miscalculation has been made. In either case the dials should be changed to get the desired amount of each ingredient.

B. TIMED METHOD

- (1) Set the load dial (on the far right) on 10.
- (2) Set one ingredient dial on the setting for your formula; all other ingredient dials on zero.
- (3) Remove the proportioner hopper cover and assemble the sampling chute to direct the ingredient into a separate container.
- (4) Start the mill and with it running catch in a second container the amount of ingredient discharged in exactly two minutes.
- (5) Weigh and deduct container weight.
- (6) Repeat the above operation for each ingredient.
- (7) Find total net weight of all ingredients delivered by adding net weights. Divide 2,000 by total net weight of all ingredients delivered.
- (8) Multiply the amount of each separate ingredient by the number determined in Step 7. This is the amount per ton of the ingredient being delivered.

Reset dials to obtain a more accurate amount of ingredient desired, if necessary.

Example: The feed formula is:

Concentrate	300 lbs.
Oats	600 lbs.
Shelled Corn	1100 lbs.

The dial settings are:

Concentrate	9
Oats	23
Shelled Corn	24

The load dial is on 10, the concentrate dial on 9, oats on 23 and shelled corn on 24.

Assume that 10.0 lbs. of concentrate was caught, 20 lbs. of oats, and 37 lbs. of corn.

To find net weight of all ingredients, add 10 lbs. plus 20 lbs. plus 37 pounds which equals 67 pounds. To find the amount of each ingredient in a ton of feed, divide 2000 by 67 = 30, approximately. Now multiply the weight of each sample caught, by 30, to find the equivalent pounds per ton.

Then the amount of each ingredient per ton being delivered is:

Concentrate	10 x 30 = 300
Oats	20 x 30 = 600
Shelled Corn	37 x 30 = 1110

This is approximately the original formula, therefore, it is not necessary to reset the dials.

If this result does not agree with the original feed formula, it means that the ingredients were not weighed correctly or a miscalculation has been made. In either case the dials should be changed to get the desired amount of each ingredient.

8. METERING MEDICATION

There are two basic ways of metering antibiotics and micro-nutrients through the mill.

- (1.) Premix method or "Bulking up" method.
- (2.) Direct metering method, with a medicator.

The standard proportioner will meter quantities as small as 60 pounds per ton. A proportioner with a premix section will provide delivery of 15 pounds per ton on the left hand auger, or No. 1 auger. The Medicator will provide delivery of material with approximate ranges of 0-5, 0-10, and 0-20 pounds per ton.

A. PREMIX Method

This method consists of "bulking up" the material to about 100 pounds per ton. The premix is then fed through one of the compartments of the proportioner.

The bulking up for medium to small quantities of ration can be done by a hand powered plaster mixer, or concrete mixer or a tumbling barrel. For larger quantities an M603 Premixer is justified. Do not use corn, oats or other granular grains for the premix as the antibiotic is likely to settle out after mixing.

When a premix is to be used, proceed as follows:

- (1.) Do not change the ingredient dial settings.
- (2.) Add all the ingredient dial settings. Do not include the load dial on the right or any empty proportioner compartments.
- (3.) Divide 2000 by the sum (total) of the ingredient dial settings. This is the average pounds per ton of finished feed fed by a single dial.
- (4.) Thoroughly mix the amount of antibiotic wanted per ton with two times the number of pounds of finished feed per dial point found in Item 3.
- (5.) Set the premix dial on 2 (on standard proportioners). With premix section, set dial on 8. With 1/2 delivery gears, set dial on 4.

Example: Suppose the 1/2 lb. per ton of an antibiotic is to be fed into the ration previously used as an example.

	<u>The Ration</u>	<u>The Dial Setting</u>
Concentrate	300 lbs.	7
Oats	600 lbs.	19
Shelled Corn	1100 lbs.	20

- (a) The dial settings for the ingredients will not be changed.
- (b) The sum of the dial settings is $7 + 19 + 20 = 46$.



- (c) The average pounds per ton fed by a dial setting of one is $2000 \div 46 = 43.5$ lbs.
- (d) One-half pound of antibiotic is thoroughly mixed with $43.5 \times 2 = 87$ pounds.
- (e) The premix dial will be set on 2.

The complete dial setting will be:

Premix	2*	*With premix section the setting
Concentrate	7	would be 8
Oats	19	
Corn	20	

If one pound per ton of antibiotic is desired, one pound would be mixed with 87 lbs. of complete feed and the premix dial setting would be 2. If 1/4 lb. of antibiotic (per ton) is needed, the premix would consist of 87 lbs. of complete feed and 1/4 lb. of antibiotic with the dial setting remaining 2. Any other quantity of antibiotic can be fed in the same manner by premixing it with the proper quantity of complete feed (87 pounds in this example).

B. Direct Metering Method

This involves the use of a medicator with the proportioner. To set the correct rate of medication proceed as follows:

- (1.) Determine the pounds per hour of feed being ground by catching a sample of the complete feed over a timed period.
- (2.) Determine the pounds per hour of medication required to give the pounds per ton of medication recommended.
- (3.) Select a feed auger of the range that will give the pounds per hour of medication required. Three ranges are provided, 0-5, 0-10, and 0-20 pounds per hour.
- (4.) Set the knob on the medicator auger and catch a sample over a timed period. If the amount delivered is not correct, change the setting and repeat until the correct amount is being delivered. (Time will be saved by calibrating the medicator with the material being used, and making a graph, plotting knob setting on the horizontal axis and pounds per hour on the vertical axis. Using settings of 1, 5, 10, 15, 20 and 24 will provide enough points to draw a curve on the graph, then using the graph the pounds per hour desired can be found on the dial setting selected).

Example: Suppose 5 pounds of medication is wanted per ton of feed.

- (a) Catch the output of complete feed in a bucket or bag over a timed period.

Container and feed	62 lb.
Container	-2
	<hr/> 60 lb.

Time to collect sample = 2 minutes

$$\frac{60}{2} = 30 \text{ pounds per minute}$$

$$30 \times 60 = 1800 \text{ pounds per hour}$$

- (b) Determine the pounds per hour of medication to put 5 pounds of medication in a ton of feed

$$\frac{1800}{2000} \times 5 = \frac{9}{10} \times 5 = 4.5 \text{ pounds per hour of medication}$$

- (c) Using the 0-10 pound per hour range auger in the insert, set the dial at about 12 and check the amount delivered. This can be done by either of two methods.

Method A - Catch the delivery for exactly 6 minutes. The weight of material caught multiplied by 10 is the amount per hour delivered. A postal scales or kitchen scales are suitable for weighing.



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Method B - Using a scale calibrated in ounces, catch the delivery for exactly $3\text{-}\frac{3}{4}$ minutes, the number of ounces caught in this time is the same as the pounds per hour. For example, if 4 ounces are caught in $3\text{-}\frac{3}{4}$ minutes, the medicator is delivering at a rate of 4 pounds per hour.

- (d) If the delivery of medication is greater than or less than the 4.5 pounds per hour required, readjust the dial setting and recheck the delivery.

C. ADJUSTMENT AND SERVICE INSTRUCTIONS

1. HOUSING

Both the mill back and the mill housing have replaceable wear plate assemblies that make possible replacement of the screen rings, entry throat, and wear surfaces, insuring that the basic mill housing is never subject to wear.

2. SCREENS

Screens can be reversed in the mill housing for extended life.

3. HUBS AND HAMMERS

The hammers, hammer bolts and hub washers are replaceable. The hammers can be reversed to double the life and they can also be moved in sets of three from the point of grain entry to the back of the housing for additional life. Care must be exercised to keep hammers in their original sets of three when changing their location to prevent unbalance.

The hammer bolts can be turned over in the square holes to present new unworn surfaces to the hammers, giving double the bolt life, and maintaining the hammer tip clearance.

Hub washers should be replaced if the bolt holes are worn or if the washer is loose on the hub.

Vibration is hard on the motor bearings and can cause premature failure. Vibration can be caused by a broken hammer, resulting in an out of balance condition. If this should happen and replacement hammers are not on hand, remove the broken hammer and also the other two hammers in the same set of three and operate short three hammers until replacements can be obtained.

Vibration can be caused by beater washers that have the center holes worn where they contact the beater hub. If a washer is loose on the hub replace it.

Vibration can be caused by uneven wear of the hammer on the hammer bolts. In spite of carefully heat treating control of the hammers and bolt the wear is not uniform, the bolt that wears fastest permits the hammers to move out farther from the center of rotation, causing unbalance. The bolts can be turned over, or can be replaced.

Another source of vibration and noise is by having the hammers strike the screen. This can be corrected by shimming the motor and using a hammer extended out, as a gauge to see that there is a uniform clearance at the tip of the hammer all around the screen. Check at the back of the housing and at the cover side of the housing, with the screen securely in place in the screen ring.

When removing hub it is important to clean the threads that the hub puller screws into. The easiest way to do this is to use a 1/2" x 20 thread per inch tap. Lubricate the threads in the hub before using the hub puller.

Do not pound on the hub in removing or replacing it, as the damage will be done to the motor ball bearings. A blow will cause the hard bearing balls to make an indentation in the bearing race and failure will result, in time, due to "brinnelling".

When to change hammers (and screens) can be determined only by an examination of the texture of the feed produced. The feed texture becomes more coarse as the hammers wear, and capacity decreases somewhat. Full length, sharp hammers produce the best feed.

4. ADJUSTMENT INSTRUCTIONS - PROPORTIONER HOPPER SAFETY SWITCH

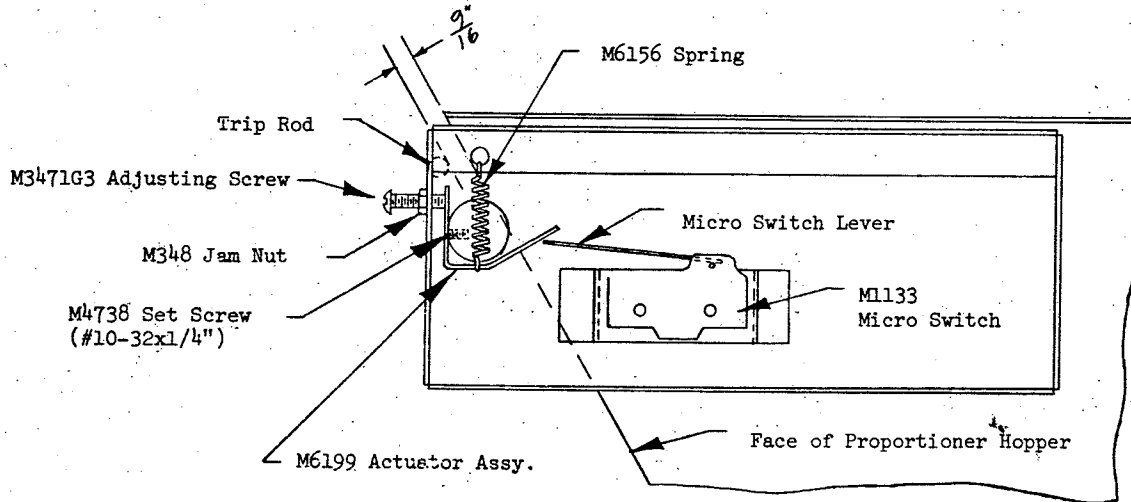


FIG. 7

- (1) Back out M3471G3 Adjusting Screw in end of switch box to clear actuator and remove M6156 Spring.
- (2) Position Actuator set collar on end of trip rod by inserting allen wrench through hole in end of switch box into M4738 set screw in actuator.
- (3) Position trip rod 9/16" from face of proportioner hopper as shown using a spacer (9/16" dia. rod is good). Tighten actuator set screw securing actuator to trip rod.
- (4) Assemble M6156 spring from hole in switch box above centerline of trip rod to hole in actuator at notch in actuator.
- (5) Screw M3471G3 adjusting screw against actuator to hold the trip rod in the 9/16" position as in Step 3. Lock in place with M348 Jam Nut on adjusting screw.
- (6) If necessary for proper tripping, minor adjustment may be made with adjusting screw. Care must be exercised to make sure the weighted paddle will always actuate the trip rod and not bind or hang up on the rod and that the actuator will have enough travel to trip the micro switch.

5. ADJUSTMENT INSTRUCTIONS - BELT GUARD SAFETY SWITCH

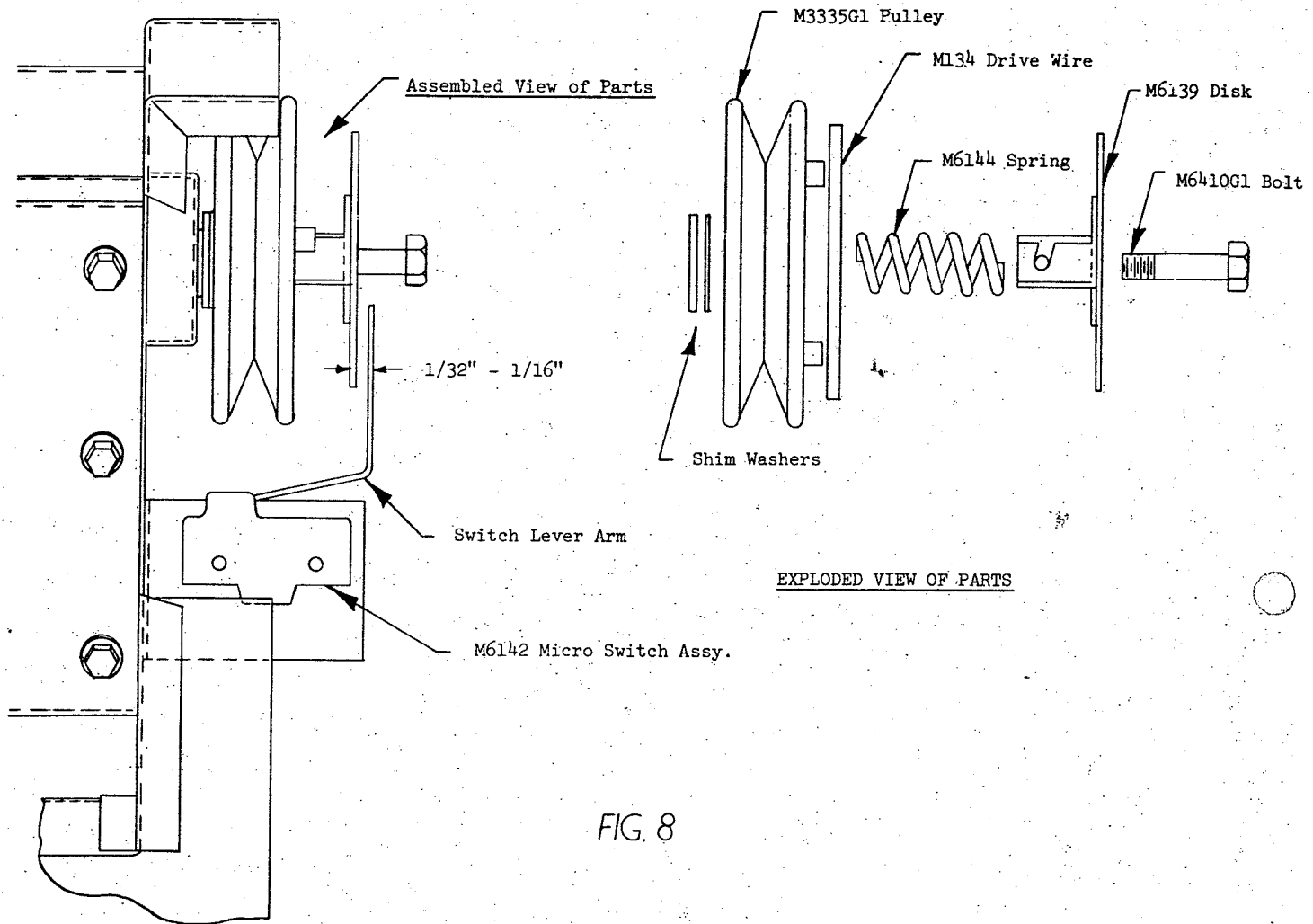


FIG. 8

- (1) Parts should be assembled as shown above, using the M6410G1 1/4" Bolt to hold the M134 Drive Wire in place. Use shim washers to position M3335G1 Pulley Hub within 1/32" of drive wire.
- (2) Push the M6139 Disk in and turn until the notches in the disk engage the drive wire (be sure both sides of disk are hooked to drive wire). Lever arm of M133 switch must be outside disk with 1/32" - 1/16" clearance as noted above (arm must not rub disk). Bend switch lever arm if necessary to position properly. Check clearance with mill running to be certain that slight amount of wobble disk may have is not enough to rub or trip switch lever.
- (3) Use only drive wires supplied by MIX-MILL, INC., which are made of soft annealed wire, and are available free for the asking. Using hardened pins or finishing nails will not protect the gear box and could result in damage. If a drive wire bends look for the cause of bending, which might be foreign material in one of the augers, a loose bushing in the drive pulley, feed backed up in cover and obstructing augers, or possibly something wrong inside the gear box.

6. ADJUSTMENT INSTRUCTIONS - GROUND LEVEL HOPPER (Ground Level Mills Only)

- (1.) Generally, the position of the grain tube relative to the by-pass partition should be straight down into the hopper and about two inches from side of tube to the partition for free flowing materials such as corn, oats, and soybean meal. If the material does not flow freely, the discharge pipe should be moved closer to the partition. Drop pipe should enter compartment about 1/2 inch.
- (2.) The adjustable slide at the lower end of the by-pass partition can be adjusted up and down. The lowest position should be used for free flowing materials and the highest position for difficult flowing materials such as bran and dried beet pulp. A good place to start is with the adjustable slide at the midpoint of the range.
- (3.) The precision snap action switches inside the control box should be adjusted so that the switch snaps with a very slight movement of the actuating paddle, long before it swings back and touches the hopper side wall. The adjustment can be made by either turning the switch actuator lever on the pivot rod or by bending it slightly.

7. REPLACEMENT AND ADJUSTMENT INSTRUCTIONS - AUGER CORNER BELT

- (1.) Assemble the cog belt over the auger pulleys and idler pulleys. To avoid undue belt wear, adjust pulley on vertical auger up or down so that belts from idlers will enter this pulley in a horizontal line. They should not ride "heavy" on either top or bottom of pulley groove.

Caution - Bolts holding hinged idler brackets to auger corner must be loose enough to allow idlers to find their proper alignment with belt.

- (2.) Adjust idler pulleys approximately even each side to arrive at proper belt tension. With approximately a three pound pressure applied midway between idler pulley and vertical auger pulley, belt should deflect no more than 1/16".
- (3.) Using gauge furnished, readjust horizontal auger pulley and idler pulleys if necessary to fit this gauge. If pulleys are not properly aligned, the belt may turn over in pulley groove causing excessive belt wear and reduce capacity of auger corner.
- (4.) Because all new belts will stretch when first put in service, the tension on the auger corner belt must be checked periodically after approximately 15 minutes, one hour and five hours of running time.

Note - If the cog belt furnished should fail for any reason, a Number 2370 Belt available from most service stations can be used as a temporary substitute until proper belt can be obtained.

8. REPLACEMENT AND ADJUSTMENT OF PROPORTIONER BELT

- (1.) Open main power switch.
- (2.) Open cover over belt guard.
- (3.) Release adjustable idler pulley on side of belt guard and slip belt off proportioner pulley.
- (4.) Open back of mill and remove screen, beater assembly and pulley from mill motor shaft. Remove worn belt through hole in housing.
- (5.) Slip new belt around motor shaft and through hole in housing around motor shaft. Replace pulley, beater assembly and screen, close mill back.
- (6.) Rethread proportioner belt over idlers and proportioner pulley.
- (7.) Adjust the moveable idler in belt guard to take up the slack in the belt and enough additional tension to insure its driving the proportioner without slipping or without the belt flapping. Pinch the two vertical strands of belt together lightly with your thumb and forefinger half way between the proportioner pulley and the adjustable idler just under the switch bracket. The distance between the strands should be 1 to 1-1/4 inches when properly adjusted.



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9. PROPORTIONER REPLACEMENT

Unless auger shaft & ratchet, auger bearings, auger shaft seal, or proportioner itself are to be replaced, it is not necessary to remove proportioner from the mill.

- (1.) Open main power switch.
- (2.) Drain oil, using pipe plug on bottom.
- (3.) On gravity mills, close valves from overhead bins. On ground level mills, insert one shut off plate between ground level hopper and proportioner hopper in each compartment. This prevents grain from flowing out when proportioner is removed.
- (4.) Open cover over proportioner pulley.
- (5.) Release adjustable idler pulley on side of belt guard and slip belt off proportioner pulley.
- (6.) Remove nuts from 4 bolts holding proportioner to hopper.
- (7.) Proportioner can now be removed from hopper without further disassembly.

Note - On certain horsepower mills, it may also be necessary to remove capacitor cover from mill motor.

- (8.) To replace, reverse above procedure.

Note - To assure good proportioner performance, the oil should be changed every 4 months. With auger knobs set on 0 and the load knob on 25, run mill for 5 minutes, then drain gear box immediately. Clean oil (Texaco Regal A) should be used to refill the proportioner.

10. SERVICING THE PROPORTIONER

Unless auger shaft and ratchet, auger bearings or auger shaft seal need replacing it is not necessary to remove proportioner from the mill.

- (1.) Drain oil, using pipe plug on bottom before removing cover.
- (2.) Record all control knob settings to avoid necessity of recalibrating after servicing.
- (3.) Set all knobs on 25.
- (4.) Remove all cover bolts (do not loosen or remove control knobs as they are part of cover assembly and come off with cover).
- (5.) Remove cover and replace defective parts, including gaskets and rubber "O" rings if damaged or deformed.

Caution - Pawl Springs look alike except the pawls on auger shafts are colored blue, the springs on worm wheel are bright.

NOTE - Proportioner oil should be drained and replaced every four months.



A. To replace auger shaft and ratchet:

- (1.) Remove auger from shaft on back of proportioner.
- (2.) Remove set collar and thrust washer.
- (3.) Wipe shaft clean of dirt and grit to avoid pulling into bearing when shaft is removed.
- (4.) Carefully remove shaft and ratchet out the front of proportioner twisting slightly as it is removed.
- (5.) With pawl carrier pushed tight against nylon bearing shoulder, check to be sure end of nylon bearing extends slightly through the pawl carrier tube. If it does not extend through replace the nylon bearing.
- (6.) Make sure the 2 rubber "O" rings are in the 2 grooves on the shaft and are not damaged or distorted.

Oil the rubber "O" rings then insert the auger shaft and ratchet carefully through the nylon bearing (1/8" thick thrust washer must be between ratchet wheel and end of pawl carrier) twisting slightly as it is inserted.
- (7.) Replace thrust washer and set collar on auger shaft at back of proportioner allowing only enough end play in auger shaft and ratchet to let it turn without binding as this positions ratchet relative to pawls.

B. To replace nylon auger shaft bearing:

- (1.) Remove auger shaft and ratchet as in paragraph A.
- (2.) Remove pawl carrier.
- (3.) Remove 4 screws holding seal and bearing in place (see Page A20.222 back view of proportioner).
- (4.) Replace bearing, gaskets and seal in sequence shown on Page A20.222 back view of proportioner).
- (5.) When replacing bearing, new gaskets and seal should also be replaced.
- (6.) Replace parts as outlined in paragraph A.

C. To replace moveable cam on cover:

- (1.) With cover removed, loosen set screw through side of control knob.
- (2.) Remove knob (being careful not to lose the steel index ball between knob and cover).
- (3.) Remove moveable cam and rubber "O" ring from recess in fixed cam tube at front of cover.
- (4.) Replace rubber "O" ring with a new one, oil "O" ring and insert new moveable cam carefully through the fixed cam tube and "O" ring twisting slightly as cam tube is inserted to avoid damage to "O" ring.
- (5.) Align moveable cam with fixed cam very carefully as misalignment will cause an improper knob setting. With cams properly aligned, replace indexing ball and knob with knob at a setting of 25, press fixed cam tube and knob together firmly compressing spring behind the steel ball and tighten set screw in the side of knob to secure in place.

Recheck with knob at setting of 25 to be sure the two cams are exactly lined up.

D. To replace worm wheel:

- (1.) Remove gasketed bin bolt on back of proportioner holding worm wheel shaft in place.
- (2.) Lift out worm wheel assembly and shaft.
- (3.) Replace worn or damaged parts.
- (4.) When reassembling worm wheel and shaft assembly be sure the 1/8" thick thrust washer is between back of proportioner housing and worm wheel assembly. Replace gasketed bin bolt (if gasket on bin bolt is deformed or damaged, replace with a new one).

E. To replace worm:

- (1.) Open belt guard cover and release adjustable idler pulley. Slip belt from proportioner pulley.
- (2.) Remove switch actuator disc, drive wire and pulley.
- (3.) Loosen set screws holding bearing hub to shaft (see item 26 on page A20.220) one at each bearing.
- (4.) Remove bearing at pulley end of proportioner.
- (5.) Shaft with worm can now be removed through bearing hole.
- (6.) Remove rubber "O" ring from groove in shaft close to worm. Drive spring pin (item 38 on page A20.220) through worm hub (save this pin as it can be reused). Replace worm making sure hub end of worm is toward snap ring on shaft, align hole in worm hub with hole in shaft and drive in spring pin to secure. (Be careful not to bend shaft).
- (7.) Replace rubber "O" ring in shaft groove with a new one as it is very difficult to remove this ring without damage.
- (8.) Replace shaft and worm making sure snap ring on shaft is against bearing hub at left when facing front of proportioner.
- (9.) Replace bearing assembly and tighten set screws in each bearing hub. Replace spacer washers between bearing and pulley hub, pulley, drive wire, switch disc assembly and belt. Readjust idler pulley.

F. To replace end bearing:

- (1.) If bearing next to pulley is to be replaced, remove pulley as described in E1 and E2.
- (2.) Loosen set screw in bearing hub. Remove bearing retainer cup.
- (3.) Slide bearing and hub off end of shaft.
- (4.) Replace complete bearing assembly including hub, gasket and "O" ring in groove in shaft if deformed or damaged. Tighten set screw in bearing hub.
- (5.) Replace pulley, drive wire, switch disc parts and belt. Readjust idler pulley.
- (6.) Bearing on opposite end replaces in the same manner.

Note: On proportioners with a plug on top at each end, the bearing can be replaced without removing the proportioner cover because the set screws in the bearing hub can be reached through the pipe plug holes.

Procedure otherwise will be the same as outlined above.

G. To replace Proportioner Cover Assembly:

- (1.) Set all control knobs at 25.
- (2.) Replace gasket, preferably with a new one, placing a bead of No. 2 Permatex (non-hardening) around flange under gasket.

- (3.) Position cover so ends of auger shafts enter bearings in cam hubs.
- (4.) With pressure on cover rotate the pulley counter clockwise when facing pulley. This causes pawls to ride up over cams letting cover down against the gasket.
- (5.) Replace all cover bolts making sure rubber gaskets under the bolt head are not deformed or damaged.

Tighten evenly starting at the center and working toward each end.

Tighten only enough to prevent leakage.
- (6.) Replace drain plug in bottom. Make sure it is tight.
- (7.) Remove gasket head bin bolt from oil level hole on end of proportioner. Refill with the recommended oil to the oil level hole. Replace gasket head bin bolt and breather plug.
- (8.) Reset control knobs to their original settings recorded at the beginning.

11. ELECTRIC MOTORS AND ELECTRICAL SYSTEMS

A. FUSES BLOW IMMEDIATELY BEFORE THE MOTORS COME UP TO SPEED

- (1.) THE FUSES MAY BE TOO SMALL.

It is sometimes necessary to increase the size of the switch in order to use a fuse large enough to hold the starting load. This is particularly true when the mill, with a number of auger motors, are automatically started all at the same time.

- (2.) THE FUSES ARE NOT LAG-TYPE, SUCH AS FUSETRONS.

- (3.) A FAULT (GROUND OR SHORT CIRCUIT) IS SOMEWHERE IN THE WIRING OR IN A MOTOR OR SOME OTHER DEVICE.

Remove all fuses except the one which is blowing. If it still blows when the switch is closed, the fault is a ground; that is, a hot wire is touching a grounded steel part such as the mill or motor frame, conduit, switch box, etc. If the fuse blows only when more than one fuse is present, the fault is a short circuit; that is, one hot wire is touching another hot wire or a motor is burned out. Grounds are most often, but not always, in the wiring; shorts most often in the motor.

Disconnect the equipment one piece at a time, closing the fused switch each time. When the fuse does not blow, the fault has, of course, been located.

If the fault has been located in a motor, inspect the connections in the motor terminal box and at the capacitors for wires touching the frame or each other. In mill motors, inspect the motor leads where they go through the mill base.

Smell the motor. A burned out motor has a definite burned smell. If it smells burned out there is no trouble in leads, change the motor.

If the trouble has been located in the wiring, progressively disconnect parts of the wiring system closing the switch each time, so that the fault can be located in the smallest area possible, then carefully inspect the wiring in the switch and junction boxes, particularly where the wires enter the conduit. These faults are hard to find; there will be no burned smell and only a tiny mark.

B. FUSES BLOW AFTER A PERIOD OF OPERATION

- (1.) THE FUSE IS TOO SMALL FOR THE TOTAL LOAD.

The fuse should be approximately 25% greater than the normal maximum operating load. Do not increase the fuse size without regard to the size of the wire being protected.

- (2.) THERE IS A POOR CONNECTION IN THE FUSE BOX.

Poor connections will get hot, will raise the temperature of the fuse and will cause it to blow well below its rating. The poor connection can be a loose terminal screw, low pressure between the switch blades and clips, plug fuse not screwed in tight, low pressure between cartridge fuse and clips or dirty contact surface.



Switch and cartridge fuse clips lose their spring tension after they once have been hot and auxiliary clamps must be used or the switch replaced.

(3.) TEMPORARY GROUND OR SHORT

It is possible but not very likely, for a temporary fault to come and go. This happens so infrequently that it probably can be ignored.

C. OVERLOAD TRIPS BEFORE THE MILL GETS UP TO SPEED

This is caused by too much grain being on the screen when the mill starts. Before restarting the mill, pull the main line switch, remove the mill back and remove the grain from the screen.

D. OVERLOAD TRIPS AFTER A PERIOD OF OPERATION

Motor is overloaded.

Load Meter is incorrect.

Fan or fan blades are missing.

Air ducts between inner and outer shell are plugged.

Bearings are worn out and rotor is dragging on the stator - makes a loud noise.

Defective (shorted) motor. A motor with a small short circuit in the winding could trip the overload without blowing the fuse. However, a small short circuit will result in a burned out motor after operating for a few hours.

A burned out motor will have a distinct burnt smell, it will growl when energized, will not start at all, or if it does, will not come up to speed. Such a motor must be replaced.

A burned out motor is always shorted and sometimes it is also grounded.

E. MOTOR CONNECTIONS

Mill motors are for operation on 230 volts only, are not reversible, do not have a terminal box and only two leads come out.

Auger motors have terminal boxes with 8 leads which can be connected for 230 or 115 volts and either direction of rotation. The diagram of connections is pasted on the cover of the terminal box. Follow the diagram exactly. Do not make connections by trial and error. The motor will appear to operate normally when the overload or one half of the motor winding is not in the circuit. Always operate motors on 230 volt whenever possible, they have one-fourth the line drop of motors operating from a 115 volt line.

All motors are shipped connected for 230 volts and CCW rotation (counter clockwise when viewed from the end opposite the shaft). Motors which must frequently operate in either direction can be equipped with a reversing switch.

If a motor connected for 230 volts is connected to a 115 volt line, the motor will have only 25% output.

If connected for 115 volts and connected to a 230 volt line, the overload will usually burn out.

F. THE MOTOR WILL NOT START

Turn the rotor by hand to make sure it is free.

(1.) IF THE MOTOR DOES NOT HUM:

There is no power to the motor. Check for voltage at the motor leads with a test light or voltmeter.

The overload protector is tripped.

Motor leads are loose at the panel terminal board.

Motor connections are not made correctly.

Defective (open circuit) motor. Check from one lead L1 to the other L2 with an ohmmeter. A high reading (more than 100) indicates a defective motor.

(2.) IF THE MOTOR HUMS BUT DOES NOT START

If there is a loud growl, the motor winding is short circuited and is, or soon will be burned out. The motor must be replaced.

If there is a normal sounding hum it probably means the start circuit is open. The open circuit could be caused by an open motor winding, broken lead wire in the motor, a defective capacitor, but it is most likely to be an open starting switch on the motor.

The starting switch may not be making contact (open) because the contacts are dirty or burned, but the most likely cause is that the centrifugal mechanism is stuck in the open position. A sharp rap to the motor with a mallet will sometimes return the mechanism to the start position. If the mechanism continues to stick, the motor would have to be changed.

When a motor fails to start because the start winding is open, the overload will trip. This is normal.

G. NOISY BEARINGS

There is no need to replace a motor because of noisy bearings until there is noticeable end play in the shaft.

Ball bearings eventually wear out, but their life is seriously reduced by operating the motor overloaded or in a hot area, (high temperature operation causes the grease to leak out of the bearings) or hammering on the motor shaft.

When bearings are to be replaced it is recommended that the motor be returned to Bluffton so that the bearings can be replaced by the motor manufacturer.

H. LOW OUTPUT FROM THE MILL

The complaint is "The mill formerly operated with a load dial setting of 20 but now it cannot be set higher than 15. What is the matter with the motor?"

There is nothing wrong with the motor. There is almost nothing that can happen to a motor which will cause it to lose power. Dozens of motors have been returned for this reason and in every case, the motor has been found to be in perfect condition. The reduced output could be caused by:

Worn screen or hammers

Low voltage

Motor leads connected for 230 volts but connected to a 115 volt line

Change in feed formula (less concentrate)

Incorrect load meter

Most likely it is a change in the condition of the grain which may change the capacity by 20%.

J. LINE VOLTAGE

Motors are built to operate at 10% over or under the nameplate voltage rating. If the voltage is off more than 10%, (usually under) performance suffers.

This is of first importance. No motor will give good service unless it is supplied with good voltage.

The voltage available during starting is also important and special attention should be given to this condition because the heavy starting current (amps) inrush pulls the voltage down far more than when the motor is running.



MIX-MILL® INC.
BLUFFTON, INDIANA, U.S.A.

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This is especially important for mill motors. Every new mill (and those which sometimes trip their overload during starting) should have the voltage measured during starting. With the mill stopped, place two or three handfuls of grain on the screen. Set the dials normally, start the mill and read the voltage as soon as the voltmeter stops swinging and before the motor comes up to full speed. There should be at least 198 volts right at the mill.

K. BURNED LEAD INSULATION

Occasionally a panel will have two or three inches of insulation burned off. This is almost always the result of heat caused by a poor connection at a terminal screw.

The worst insulation burning will be close to the screw and will get progressively less farther away. The other end of the wire may not be damaged.

Installing a new wire fixes things for awhile, but the terminal screw will be dirty (copper oxide formed by the heat) and it starts heating as it did before and eventually a new wire will fail just like the old one.

If possible, install a new screw and clean all parts of the connection clear down to the metal. If the terminal is plated steel, the plating will be gone and nothing will do much good except to install new plated parts.

12. ELECTRICAL SERVICE HINTS

If mill will not start, check the following:

- (1.) Overload on mill motor may be tripped.
- (2.) Check proportioner hopper flow switch.
- (3.) Check belt guard safety switch and shear pin.
- (4.) Check bin level and any additional accessory switch.

13. MOTOR LUBRICATION

Motor ball bearings are very sensitive to dirt or over-lubrication, and type of grease. Dirty grease or too much grease is as bad as no grease.

Note - On motors furnished with compression grease cups use only clean - Texaco Regal Starfac #2,
Texaco Regal AFB #2 or
Shell Cyrena #3

Screw grease fitting down one turn every six months.

On motors furnished without grease fittings the manufacturer recommends not greasing.

D. WARRANTY AND SERVICE INSTRUCTIONS

1. MIXER GRINDER

A new Mixer Grinder, having been purchased from one of its authorized representatives, MIX-MILL, INC. warrants for a period of one year from the date the MIX-MILL is put into operation, all such parts and workmanship thereof; except such products not manufactured by MIX-MILL, INC., that are used to make MIX-MILL, which, under normal use and service, shall appear to MIX-MILL, INC., to have been defective.

The warranty is limited to shipment to the purchaser without charge, except for transportation costs of the part, or parts, returned for inspection, and parts intended to replace those acknowledged by MIX-MILL, INC., to be defective.

This warranty will not apply, and shall be void, under the following conditions:

1. If any part of the MIX-MILL has been altered, outside of its own factory or authorization.
2. If attachments or devices unsuitable to the machine have been in use.
3. If the machine is used, handled, or serviced contrary to the MIX-MILL Instruction Book.
4. Any representation or warranty other than that herein expressed, is not the responsibility of MIX-MILL, INC.

MIX-MILL, INC., reserves the right to make changes in design or improvements in this machine without the obligation upon it to install the same upon any MIX-MILL theretofore manufactured.

2. WARRANTY AND SERVICE PROCEDURE FOR ELECTRIC MOTORS

A. WARRANTY

Each motor supplied by MIX-MILL, INC. is guaranteed free from electrical and mechanical defects. The motor may be repaired or replaced at the option of the company without cost to the purchaser other than transportation charges involved if proven defective within one (1) year after installation, but not more than twenty-four (24) months from the date of manufacture. MIX-MILL, INC. will not be responsible for any repairs except on motors returned to MIX-MILL, INC. at Bluffton, Indiana.

Freight (most economical method of transportation) to Bluffton will be paid by MIX-MILL, INC. Motors may be returned collect. Freight on returned or repaired motors will be paid by purchaser.

B. VOID OF WARRANTY

Motors which clearly have been rough handled; submerged in water or disassembled will not be within warranty regardless of the length of time they have been in service. Returned motors should be carefully boxed to avoid damage in transit. Shipping damage does not come within warranty (claim is filed with shipping company).

C. OUT OF WARRANTY MOTORS

Motors which fail after warranty has elapsed but are less than 5 years old may be returned to MIX-MILL, INC. for repair or exchanged for new or rebuilt motor. Credit for used motor will be issued after inspection by motor manufacturer determines whether minor or major repair is required to rebuild motor. Motors which cannot be repaired economically are scrapped.

D. REBUILT MOTORS

Warranty on rebuilt motors is the same as that for new motors. Rebuilt motors will be equal to new motors except there may be marks on the shaft extension denoting previous use.



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E. OBSOLETE AND 5 YEAR OLD MOTORS

No credit will be issued for obsolete motors or motors more than 5 years old. Such motors may be returned for repair, in which case the same motor will be returned to the sender after repairs are made.

3. PROPORTIONER EXCHANGE PROGRAM

A. WARRANTY

The warranty for new or rebuilt proportioners is the same as for the mixer grinder. Freight either way is not allowed on any proportioner regardless of warranty status.

B. EXCHANGE

A fixed credit will be issued for the return of any used proportioner regardless of repair status toward the purchase of any new or rebuilt proportioner.



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E. REPLACEMENT PARTS

1. REPLACEMENT PART ORDERING INSTRUCTIONS

To insure receipt of correct items when ordering replacement parts, the following procedure should be followed:

- (1.) Furnish the serial number and model number of mill from mill nameplate. This identifies your mill as a certain design with various type accessories. This information is needed regardless of type or parts being ordered.
- (2.) If a replacement motor or motor part is desired, specify complete data from motor nameplate.
- (3.) If a replacement proportioner, or proportioner part is desired, specify model number of proportioner. To identify the proportioner model number, examine the top right corner of proportioner and furnish MIX-MILL, INC. with the three characters stamped on this corner.





MIX-MILL[®] INC.
BLUFFTON, INDIANA, U.S.A.

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MAY 15, 1969
REPLACES: NEW

REPLACEMENT PARTS
MODEL "C" AND "CX" MIXER GRINDER

The below diagrams and referenced pages represent replacement part information for all model C and CX mixer grinders. To use, first identify model suffix number of mill for which parts are desired. Model suffix numbers can be found on mill name plate as shown in following example.

CX31R4B4 Last numeral of model number is model suffix.

If mill model number is unknown, the following features distinguish design variations of "C" and "CX" mixer grinders.

Model suffix "1" mills have:

- a) magnets mounted on mill back rather than proportioner hopper cover.
- b) hinged instead of fixed switch on auger corner.

Model suffix "2" mills have:

- a) magnets mounted on mill back.
- b) fixed switch on auger corner.

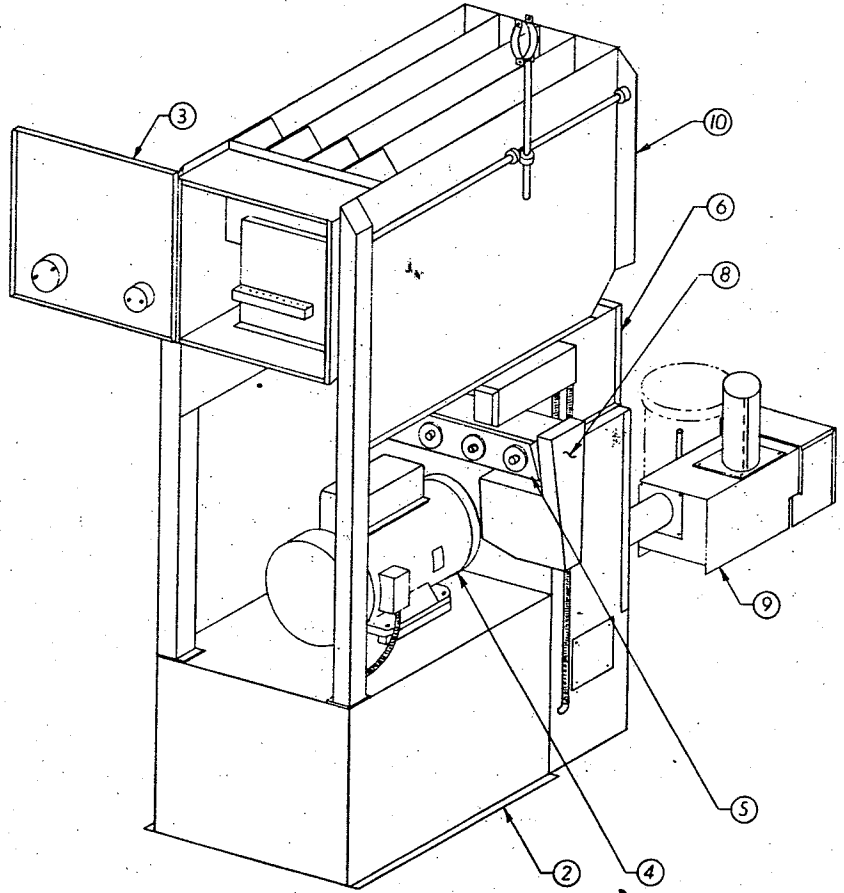
Model suffix "3" mills have:

- a) magnets mounted on proportioner hopper cover rather than mill back.
- b) discharge auger driven by mill motor.

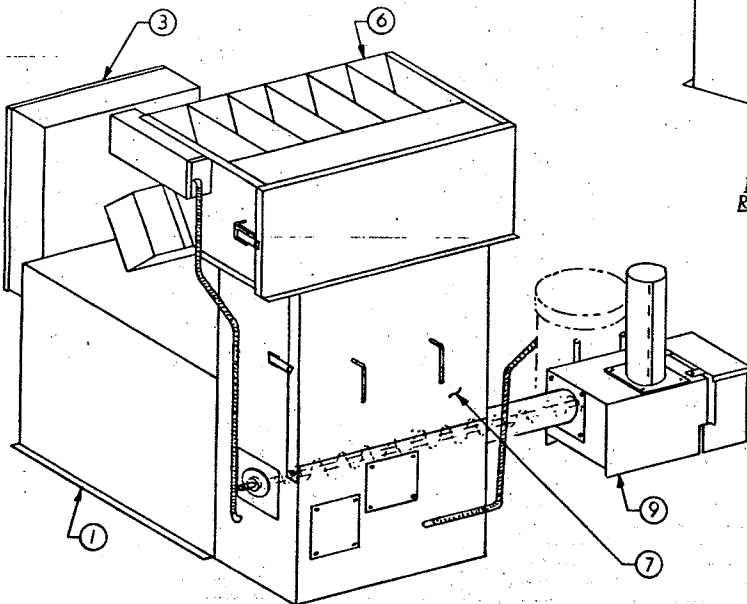
Model suffix "4" mills have:

- a) magnets mounted on proportioner hopper cover.
- b) discharge auger driven by separate motor on auger corner.

After identification of model suffix, select that portion of the mill for which parts are desired in the item number list and use the corresponding referral page.



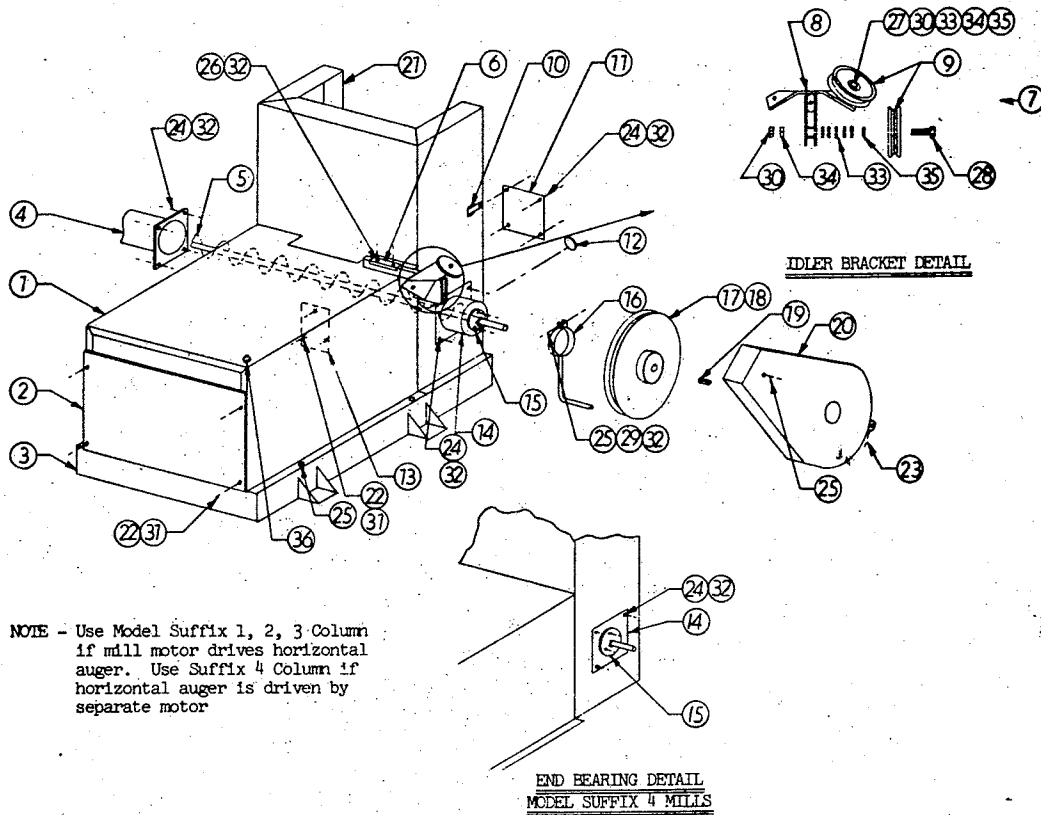
REFERENCE VIEW OF 4 COMP
REAR DELIVERY MIXER-GRINDER



REFERENCE VIEW OF 6 COMP
SIDE DELIVERY MIXER-GRINDER

ITEM NO.	FOR REPLACEMENT PARTS ON	REF. Page
1	Side Unloading Housing, Auger, and Drive	Page 52
2	Rear Unloading Housing, Auger, and Drive	Page 54
3	Control Panel	Page 56-58
4	Motor and Grinding Chamber	Page 60
5	Proportioner	Page 65-67
6	Proportioner Hopper	Page 70-72
7	Mill Back	Page 75
8	Belt Guard	Page 77
9	Auger Corner	Page 80-82
10	Ground Level Hopper	Page 85

REPLACEMENT PARTS
SIDE DELIVERY HOUSING
AND UNLOADING SYSTEM

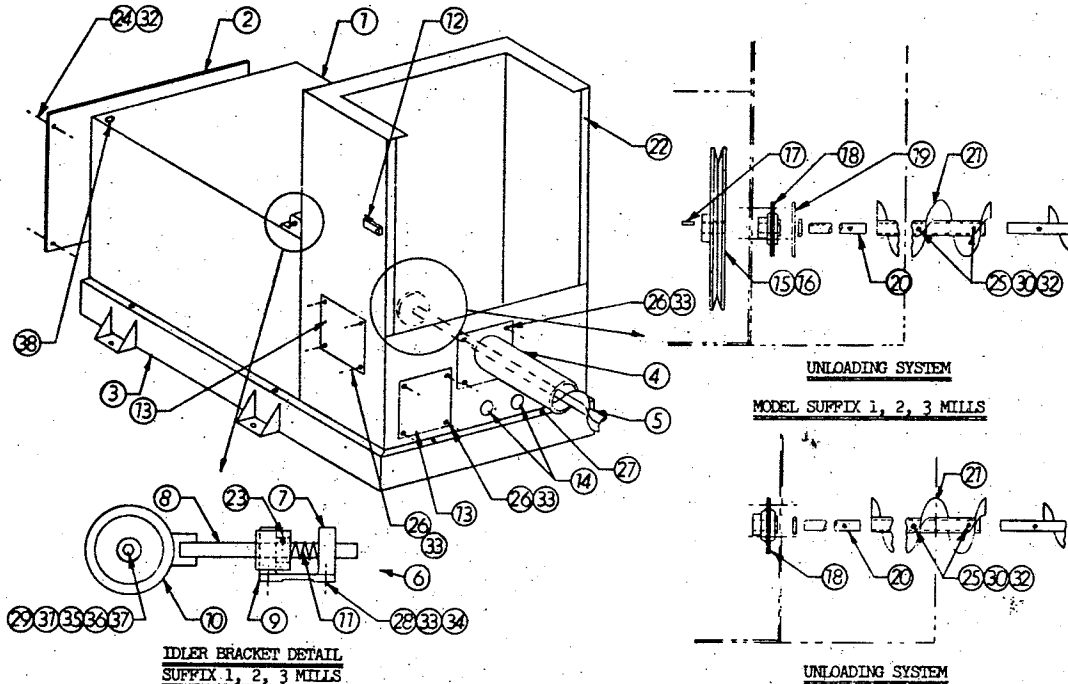


NOTE - Use Model Suffix 1, 2, 3 Column if mill motor drives horizontal auger. Use Suffix 4 Column if horizontal auger is driven by separate motor

END BEARING DETAIL
MODEL SUFFIX 4 MILLS

Item No.	DESCRIPTION	QUANTITY & PART NUMBER	
		Model Suffix 1, 2, 3	Model Suffix 4
1	Welded Housing	(1) M7142	(1) M7142
2	End Plate - Gravity	(1) M7239G1	(1) M7239G1
	End Plate - Ground Level	(1) M6078	(1) M6078
3	Raising Channel	(1) M6922G1	Not Used
4	Tube & Plate (Specify Tube Length)	(1) M1593G1	(1) M1593G1
5	Shaft & Flight (Specify Tube Length)	(1) M6952G1	(1) M8499G1
6	Spacer - Idler Bracket	(1) M7152	Not Used
7	Idler Bracket Assy. - Complete	(1) M7333G1	Not Used
8	Idler Bracket Assy. - Welded	(1) M7100	Not Used
9	Idler Pulley	(2) M3334G2	Not Used
10	Latch	(2) M6277	(2) M6277
11	Cover Plate - Housing	(2) M1483G1	(2) M1483G1
12	Snap-In Blank	(3) M1061	(3) M1061
13	Cover Plate - Special	(1) M1483G20	(1) M1483G20
14	Bearing Support	(1) M7146	(1) M1483G18
15	Bearing	(1) M2290	(1) M2290
16	Belt Guard Support	(1) M7154	Not Used
17	Pulley	(1) M3303G7	Not Used
18	Belt	(1) M3339G9	Not Used
19	Key	(1) M3222G1	Not Used
20	Belt Guard Assy.	(1) M7150	Not Used
21	Adhesive Tape (As Required)	M4265	M4265
22	Screw - Hex. Hd. (1/4-20x1/2" S.T.)	(7) M327	(7) M327
23	Set Screw (5/16-18x3/8")	(1) M474	Not Used
24	Screw - Hex. Hd. (5/16-18x1/2" S.T.)	(16) M328	(16) M328
25	Screw - Hex. Hd. (5/16-18x1")	(8) M407	Not Used
26	Screw - Hex. Hd. (5/16-18x1-3/4" S.T.)	(2) M6764G2	Not Used
27	Bolt - Hex. Hd. (3/8-16x1-1/2")	(1) M335G3	Not Used
28	Bolt - Hex. Hd. (3/8-16x2-1/4")	(1) M335G5	Not Used
29	Nut - Hex. (5/16-18)	(1) M479	Not Used
30	Nut - Hex. (3/8-16)	(2) M357	Not Used
31	Washer - Lock (1/4")	(7) M344	(7) M344
32	Washer - Lock (5/16")	(19) M345	(16) M345
33	Washer - Flat (3/8")	(10) M341	Not Used
34	Washer - Lock (3/8")	(2) M346	Not Used
35	Washer - Special	(2) M4568	Not Used
36	Snap-In Blank (Gravity) Grommet (Ground Level)	(1) M1061 (1) M6292G2	(1) M1061 (1) M6292G2

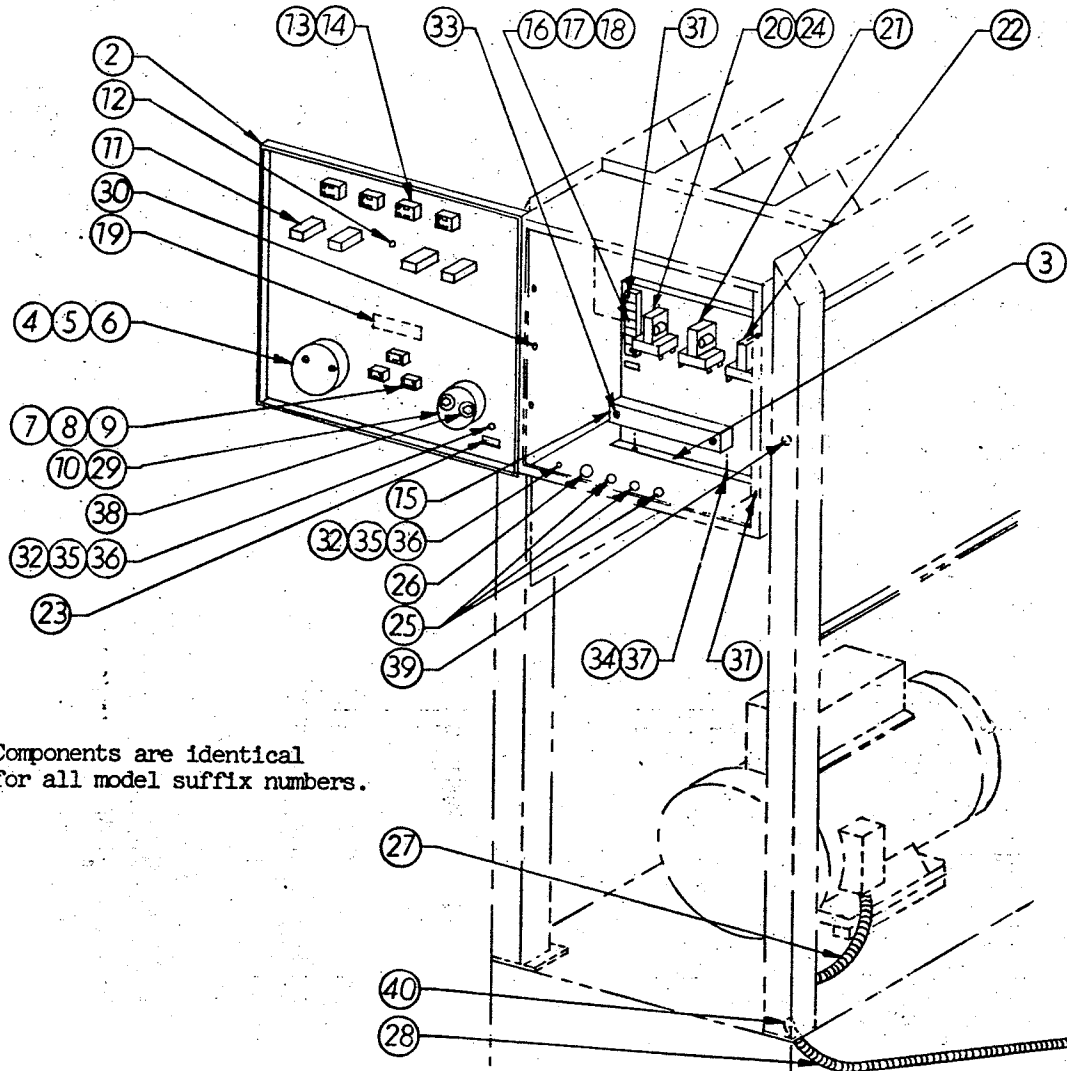
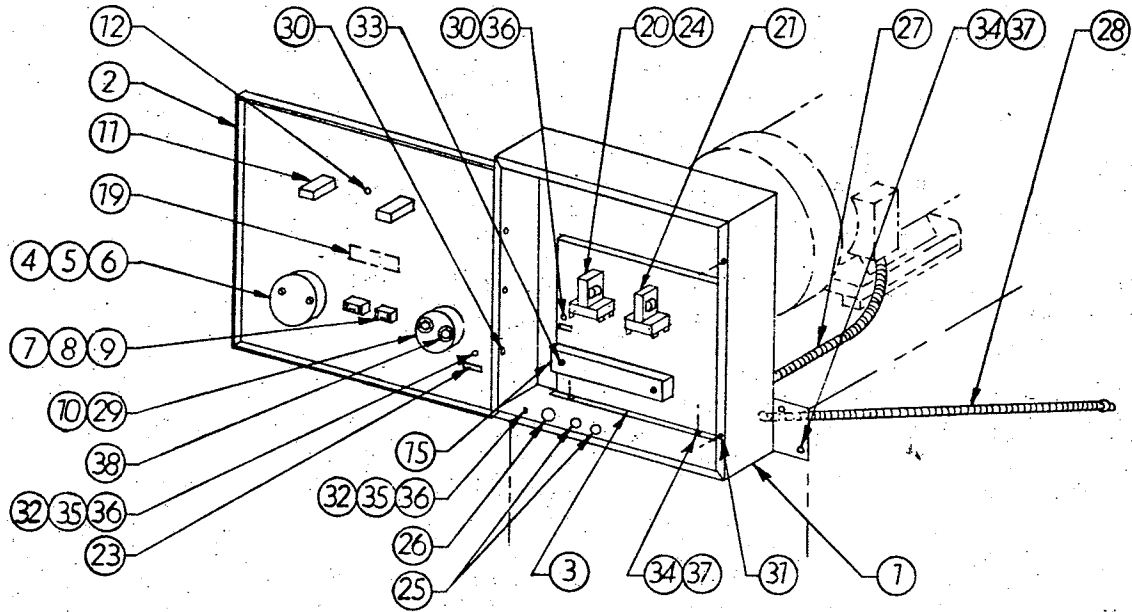
REPLACEMENT PARTS
REAR DELIVERY HOUSING
AND UNLOADING SYSTEM



NOTE: Use Model Suffix 1 Column if mill is 6 compartment offset style. Use Suffix 2 & 3 Column if mill motor drives horizontal auger. Use Suffix 4 Column if horizontal auger is driven by separate motor.

Item No.	DESCRIPTION	QUANTITY & PART NUMBER		
		Model Suffix 1	Model Suffix 2 & 3	Model Suffix 4
1	Welded Housing (4 comp.)	(1) M6072G1	(1) M6072G1	(1) M6072G1
	Welded Housing (6 comp.)	Ref. to Factory	(1) M6072G1	(1) M6072G1
2	End Plate - Gravity	(1) M7239	(1) M7239	(1) M7239
3	End Plate - Ground Level	(1) M6078	(1) M6078	(1) M6078
4	Raising Channel	(1) M6922G1	(1) M6922G1	Not Used
4	Tube & Plate (Specify Tube Length)	(1) M1593G7	(1) M1593G7	(1) M1593G7
5	Shaft & Flight (Specify Tube Length)	(1) M6374G1	(1) M6374G1	(1) M6374G1
6	Idler Arm Assy.	(1) M6302G1	(1) M6302G1	Not Used
7	Idler Bracket	(1) M6146	(1) M6146	Not Used
8	Arm Assy.	(1) M6149	(1) M6149	Not Used
9	Collar Assy.	(1) M6148	(1) M6148	Not Used
10	Idler Pulley	(1) M3334G1	(1) M3334G1	Not Used
11	Spring - Idler Arm	(1) M6228	(1) M6228	Not Used
12	Latch	(2) M6277	(2) M6277	(2) M6277
13	Cover Plate	(3) M1483G1	(3) M1483G1	(3) M1483G1
14	Snap-In Blank	(3) M1061	(3) M1061	(3) M1061
15	Pulley	(1) M3303G7	(1) M3303G7	Not Used
16	Belt	(1) M3339G2	(1) M3339G2	Not Used
17	Key	(1) M3222G1	(1) M3222G1	Not Used
18	Bearing	(1) M2290	(1) M2290	(1) M2290
19	Retainer Washer	(1) M6154	(1) M6154	Not Used
20	Stub Shaft	(1) M6309	(1) M6309	(1) M6500
21	Tube & Flight	(1) M6735G1	(1) M6735G1	(1) M6735G1
22	Adhesive Tape (As required)	M4265	M4265	M4265
23	Set Screw (1/4-20x1/4")	(1) M336	(1) M336	Not Used
24	Screw - Hex. Hd. (1/4-20x1/2" S.T.)	(6) M327	(4) M327	(4) M327
25	Screw - Hex. Hd. (1/4-20x1-1/4")	(2) M4063	(2) M4063	(2) M4063
26	Screw - Hex. Hd. (5/16-18x1/2" S.T.)	(16) M328	(16) M328	(16) M328
27	Bolt - Hex. Hd. (5/16-18x1")	(6) M407	(6) M407	Not Used
28	Screw - Hex. Hd. (5/16-18x1" S.T.)	(2) M6764G1	(2) M6764G1	Not Used
29	Bolt - Hex. Hd. (3/8-16x1-1/4")	(1) M1359	(1) M1359	Not Used
30	Nut - Hex (1/4-20)	(2) M367	(2) M367	(2) M367
31	Nut - Hex (3/8-16)	(1) M357	(1) M357	Not Used
32	Washer - Lock (1/4")	(8) M344	(6) M344	(6) M344
33	Washer - Lock (5/16")	(18) M345	(18) M345	(16) M345
34	Washer - Flat (5/16")	(2) M340	(2) M340	Not Used
35	Washer - Lock (3/8")	(1) M346	(1) M346	Not Used
36	Washer - Flat (3/8")	(4) M341	(4) M341	Not Used
37	Washer - Special	(1) M4568	(1) M4568	Not Used
38	Snap-In Blank (Gravity)	(1) M1061	(1) M1061	(1) M1061
38	Grommet (Ground Level)	(1) M6292G2	(1) M6292G2	(1) M6292G2
39	Fairprene Curtain	M6848	—	—
40	Curtain Mtg. Strip	(1) M6849	—	—

REPLACEMENT PARTS
CONTROL PANEL



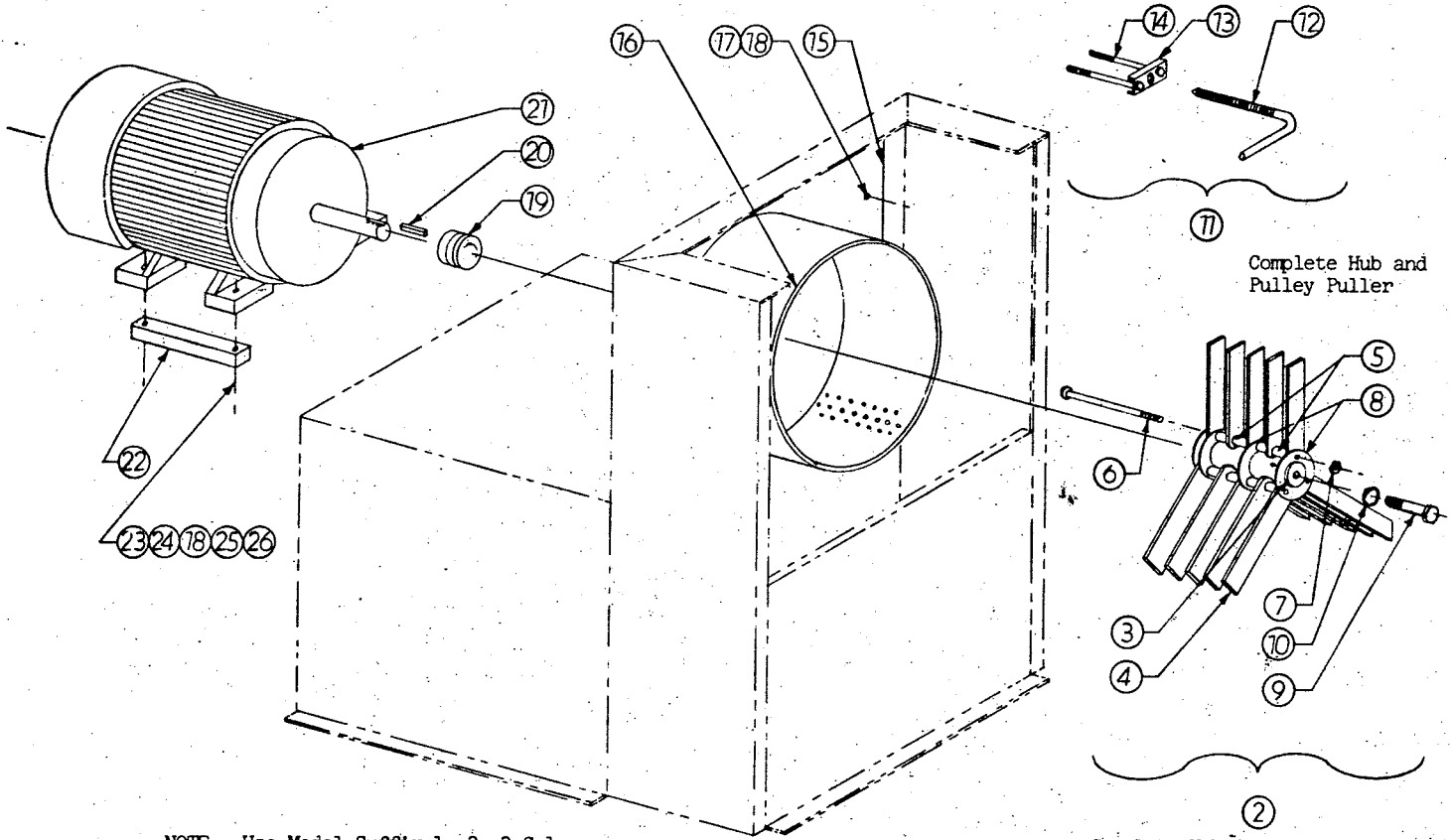
NOTE—Components are identical
for all model suffix numbers.

REPLACEMENT PARTS
CONTROL PANEL



Item No.	Description	GRAVITY						GROUND LEVEL					
		3 HP-1Ø	5 HP-1Ø	7½ HP-1Ø	3-10 HP-3Ø	3 HP-1Ø	5 HP-1Ø	7½ HP-1Ø	3-10 HP-3Ø	3 HP-1Ø	5 HP-1Ø	7½ HP-1Ø	3-10 HP-3Ø
1	Housing Assy.	(1) M6121	(1) M6121	(1) M6121	(1) M6121	(1) M6121	(1) M6121	(1) M6121	(1) M6121	(1) M6121	(1) M6121	(1) M6121	(1) M6121
2	Hinged Panel - U.S.	(1) M6288G1	(1) M6288G1	(1) M6288G1	(1) M6288G1	(1) M6288G1	(1) M6288G1	(1) M6288G1	(1) M6288G1	(1) M6288G1	(1) M6288G1	(1) M6288G1	(1) M6288G1
3	Hinged Panel - C.S.A.	(1) M6288G3	(1) M6288G3	(1) M6288G3	(1) M6288G3	(1) M6288G3	(1) M6288G3	(1) M6288G3	(1) M6288G3	(1) M6288G3	(1) M6288G3	(1) M6288G3	(1) M6288G3
4	Auxiliary Panel	(1) M6266	(1) M6266	(1) M6266	(1) M6266	(1) M6266	(1) M6266	(1) M6266	(1) M6266	(1) M6266	(1) M6266	(1) M6266	(1) M6266
5	Timer (2 Hour)	(1) M67G1	(1) M67G1	(1) M67G1	(1) M67G1	(1) M67G1	(1) M67G1	(1) M67G1	(1) M67G1	(1) M67G1	(1) M67G1	(1) M67G1	(1) M67G1
6	Timer (5 Hour)	(1) M66	(1) M66	(1) M66	(1) M66	(1) M66	(1) M66	(1) M66	(1) M66	(1) M66	(1) M66	(1) M66	(1) M66
7	Timer Knob	(1) M65	(1) M65	(1) M65	(1) M65	(1) M65	(1) M65	(1) M65	(1) M65	(1) M65	(1) M65	(1) M65	(1) M65
8	Timer Dial (2 Hour)	(1) M230	(1) M230	(1) M230	(1) M230	(1) M230	(1) M230	(1) M230	(1) M230	(1) M230	(1) M230	(1) M230	(1) M230
9	Timer Dial (5 Hour)	(2) M1241	(2) M1241	(2) M1241	(2) M1241	(2) M1241	(2) M1241	(2) M1241	(2) M1241	(2) M1241	(2) M1241	(2) M1241	(2) M1241
10	Switch - SPDT	(1) M1290	(1) M1290	(1) M1290	(1) M1290	(1) M1290	(1) M1290	(1) M1290	(1) M1290	(1) M1290	(1) M1290	(1) M1290	(1) M1290
11	Switch Plate - Mill	(1) M1291	(1) M1291	(1) M1291	(1) M1291	(1) M1291	(1) M1291	(1) M1291	(1) M1291	(1) M1291	(1) M1291	(1) M1291	(1) M1291
12	Switch Plate - Auger	(1) M3917	(1) M3917	(1) M3917	(1) M3917	(1) M3917	(1) M3917	(1) M3917	(1) M3917	(1) M3917	(1) M3917	(1) M3917	(1) M3917
13	Ammeter	(2) M4505	(2) M4505	(2) M4505	(2) M4505	(2) M4505	(2) M4505	(2) M4505	(2) M4505	(2) M4505	(2) M4505	(2) M4505	(2) M4505
14	Circuit Breaker (CSA Only)	(1) M6267	(1) M6267	(1) M6267	(1) M6267	(1) M6267	(1) M6267	(1) M6267	(1) M6267	(1) M6267	(1) M6267	(1) M6267	(1) M6267
15	Snap In Bumper (CSA Only)	-	-	-	-	-	-	-	-	-	-	-	-
16	Switch - DPST	-	-	-	-	-	-	-	-	-	-	-	-
17	Switch Plate (On-Off)	(1) M6382	(1) M6382	(1) M6382	(1) M6382	(1) M6382	(1) M6382	(1) M6382	(1) M6382	(1) M6382	(1) M6382	(1) M6382	(1) M6382
18	Terminal Board	-	-	-	-	-	-	-	-	-	-	-	-
19	Terminal Strip	-	-	-	-	-	-	-	-	-	-	-	-
20	Fiber Marker	-	-	-	-	-	-	-	-	-	-	-	-
21	Identification Tape	-	-	-	-	-	-	-	-	-	-	-	-
22	Warning Label	(1) M4732	(1) M4732	(1) M4732	(1) M4732	(1) M4732	(1) M4732	(1) M4732	(1) M4732	(1) M4732	(1) M4732	(1) M4732	(1) M4732
23	Relay	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297
24	Relay	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297	(1) M6297
25	Tape - Ground	(2) M277	(2) M277	(2) M277	(2) M277	(2) M277	(2) M277	(2) M277	(2) M277	(2) M277	(2) M277	(2) M277	(2) M277
26	Wire Nut	(2) M1065	(2) M1065	(2) M1065	(2) M1065	(2) M1065	(2) M1065	(2) M1065	(2) M1065	(2) M1065	(2) M1065	(2) M1065	(2) M1065
27	Snap-In Blank	(2) M1061	(2) M1061	(2) M1061	(2) M1061	(2) M1061	(2) M1061	(2) M1061	(2) M1061	(2) M1061	(2) M1061	(2) M1061	(2) M1061
28	Straight Connector	(1) M4835	(1) M4835	(1) M4835	(1) M4835	(1) M4835	(1) M4835	(1) M4835	(1) M4835	(1) M4835	(1) M4835	(1) M4835	(1) M4835
29	Wire Harness - Mill Motor	(1) M6445G1	(1) M6445G1	(1) M6445G1	(1) M6445G1	(1) M6445G1	(1) M6445G1	(1) M6445G1	(1) M6445G1	(1) M6445G1	(1) M6445G1	(1) M6445G1	(1) M6445G1
30	Wire Harness - Aux. Motor	(1) M7507G1	(1) M7507G1	(1) M7507G1	(1) M7507G1	(1) M7507G1	(1) M7507G1	(1) M7507G1	(1) M7507G1	(1) M7507G1	(1) M7507G1	(1) M7507G1	(1) M7507G1
31	Screw - Rd. Hd. (#8-32x1/4")	(3) M321	(3) M321	(3) M321	(3) M321	(3) M321	(3) M321	(3) M321	(3) M321	(3) M321	(3) M321	(3) M321	(3) M321
32	Screw - Hex. Hd. (#8-32x1/4")	(8) M3471G1	(8) M3471G1	(8) M3471G1	(8) M3471G1	(8) M3471G1	(8) M3471G1	(8) M3471G1	(8) M3471G1	(8) M3471G1	(8) M3471G1	(8) M3471G1	(8) M3471G1
33	Screw - Hex. Hd. (#8-32x1/2")	(2) M3471G2	(2) M3471G2	(2) M3471G2	(2) M3471G2	(2) M3471G2	(2) M3471G2	(2) M3471G2	(2) M3471G2	(2) M3471G2	(2) M3471G2	(2) M3471G2	(2) M3471G2
34	Screw - Hex. Hd. (#8-32x3/4")	(2) M3471G3	(2) M3471G3	(2) M3471G3	(2) M3471G3	(2) M3471G3	(2) M3471G3	(2) M3471G3	(2) M3471G3	(2) M3471G3	(2) M3471G3	(2) M3471G3	(2) M3471G3
35	Screw - Rd. Hd. (#8-32x1-1/8")	(2) M6383G1	(2) M6383G1	(2) M6383G1	(2) M6383G1	(2) M6383G1	(2) M6383G1	(2) M6383G1	(2) M6383G1	(2) M6383G1	(2) M6383G1	(2) M6383G1	(2) M6383G1
36	Screw - Hex. Hd. (1/4-20x1/2")	(6) M327	(6) M327	(6) M327	(6) M327	(6) M327	(6) M327	(6) M327	(6) M327	(6) M327	(6) M327	(6) M327	(6) M327
37	Nut - Hex. (#8-32)	(3) M348	(3) M348	(3) M348	(3) M348	(3) M348	(3) M348	(3) M348	(3) M348	(3) M348	(3) M348	(3) M348	(3) M348
38	Washer - Flat (#8)	(5) M4104	(5) M4104	(5) M4104	(5) M4104	(5) M4104	(5) M4104	(5) M4104	(5) M4104	(5) M4104	(5) M4104	(5) M4104	(5) M4104
39	Washer - Lock (1/4")	(6) M344	(6) M344	(6) M344	(6) M344	(6) M344	(6) M344	(6) M344	(6) M344	(6) M344	(6) M344	(6) M344	(6) M344
40	Washer - Insulation	(2) M4253	(2) M4253	(2) M4253	(2) M4253	(2) M4253	(2) M4253	(2) M4253	(2) M4253	(2) M4253	(2) M4253	(2) M4253	(2) M4253
41	Grommet	-	-	-	-	-	-	-	-	-	-	-	-
42	Grommet	-	-	-	-	-	-	-	-	-	-	-	-

REPLACEMENT PARTS
MOTOR AND GRINDING CHAMBER



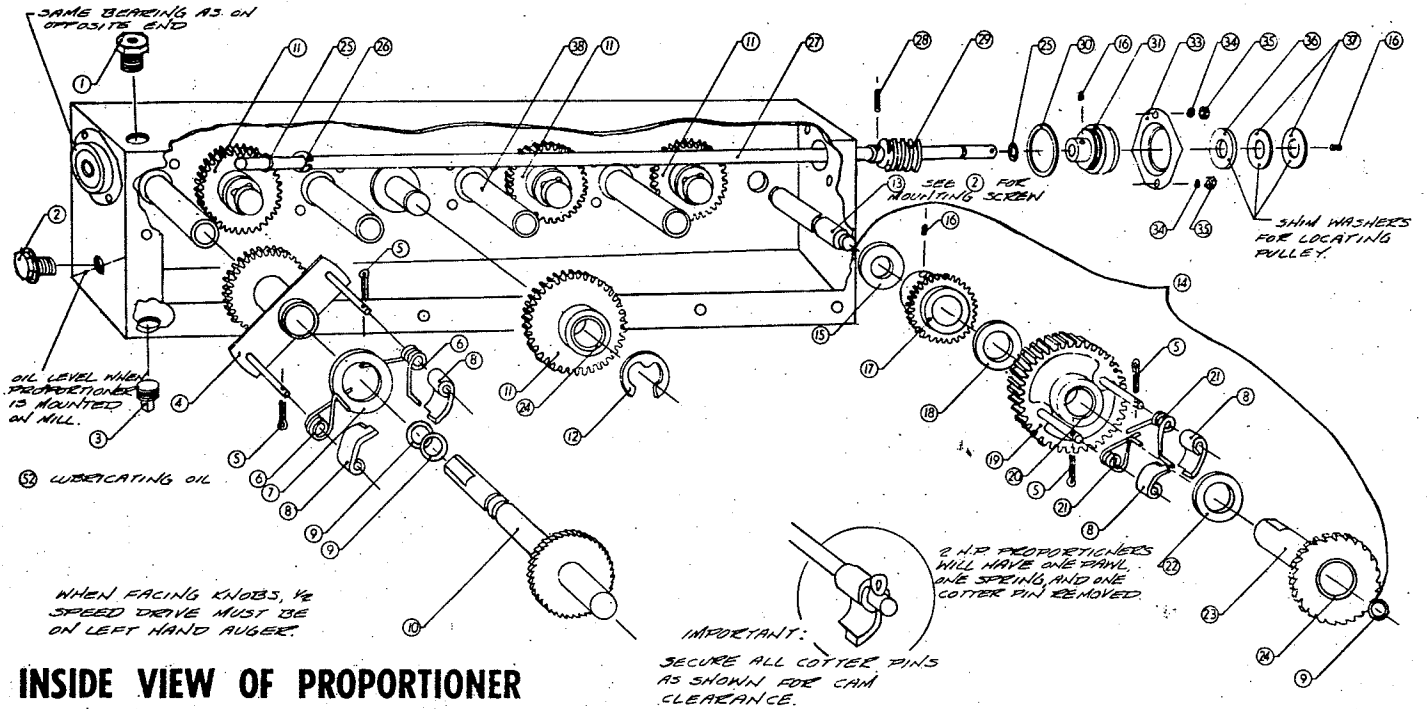
NOTE - Use Model Suffix 1, 2, 3 Column
If Mill Motor Pulley Has Two Belt
Grooves. Use Suffix 4 Column If
Pulley Has Single Belt Groove

Complete Hub Assy. Less Hammers

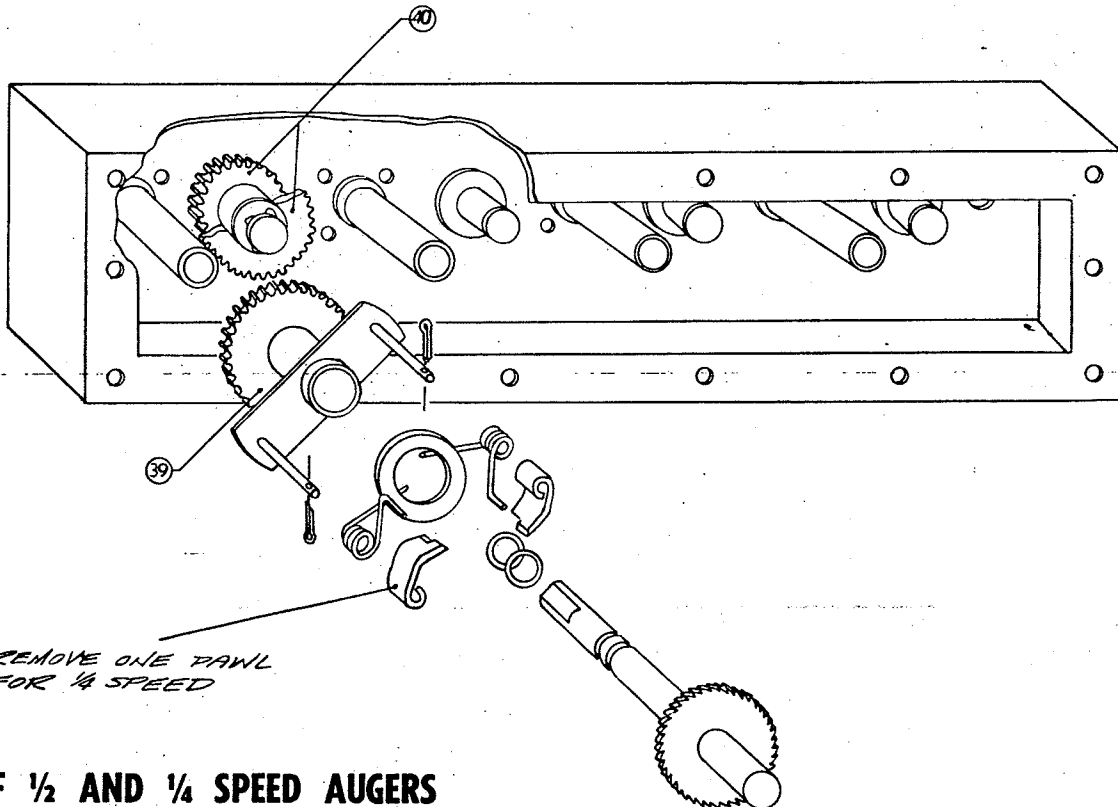
Complete Hub Assy. With Hammers

Item No.	Description	QUANTITY & PART NUMBER	
		Model Suffix 1, 2, & 3	Model Suffix 4
1	Beater Hub Assy. - complete	M97G2	M97G2
2	Hub Assy. - Less Hammers	M85G3	M85G3
3	Welded Hub Assy.	(1) M5544	(1) M5544
4	Hammers (set of 15)	M77	M77
5	Spacer	(12) M81	(12) M81
6	Bolt	(3) M4768	(3) M4768
7	Nut - Lock (3/8-24)	(3) M4567	(3) M4567
8	Beater Hub Washer	(3) M83G2	(3) M83G2
9	Bolt - Hex. Hd. (3/8-16x3")	(1) M5838G1	(1) M5838G1
10	Washer - Lock (3/8")	(1) M346	(1) M346
11	Hub & Pulley Puller - Complete	M98	M98
12	Hub Puller	(1) M6889	(1) M6889
13	Bar - Pulley Puller	(1) M6888	(1) M6888
14	Bolt - Hex. Hd. (1/4-20x4-1/2")	(2) M7330G1	(2) M7330G1
15	Wear Plate - Housing	(1) M6103	(1) M6103
16	Screen (Specify Hole Size)	(1) M567	(1) M567
17	Screw - Hex. Hd. S.T. (5/16-18x3/4")	(4) M475	(4) M475
18	Washer - Lock (5/16")	(8) M345	(8) M345
19	Pulley - Mill Motor	(1) M3333G1	(1) M6340G1
20	Key (1/4x1/4x2-5/8")	(1) M3222G6	(1) M3222G6
21	Motor	REFER TO SECTION 33	
22	Spacer (3 HP Mills Only)	(2) M6155	(2) M6155
23	Bolt - Hex. Hd. (5/16-18x2")	(4) M477	(4) M477
24	Washer - Flat (5/16")	(4) M340	(4) M340
25	Shim Washer (As Required)	M6300G1	M6300G1
26	Shim Washer (As Required)	M6300G2	M6300G2

SERVICE INSTRUCTIONS AND PARTS FOR MIX-MILL OIL LUBRICATED PROPORTIONER



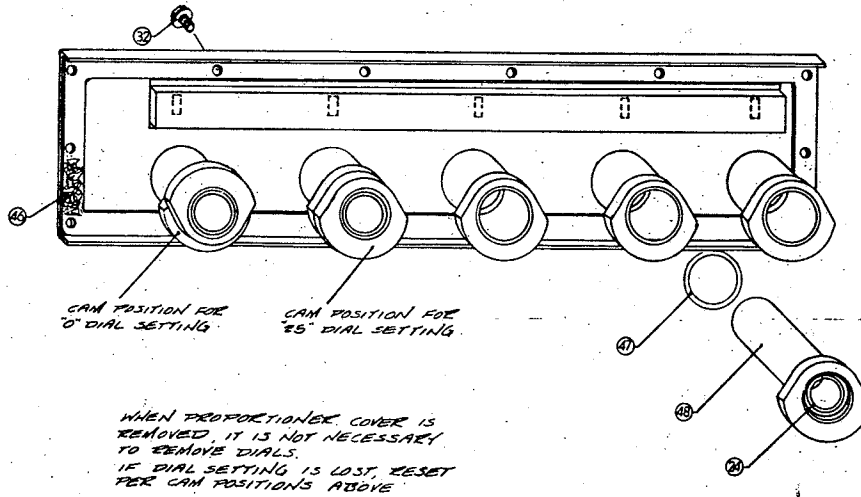
INSIDE VIEW OF PROPORTIONER



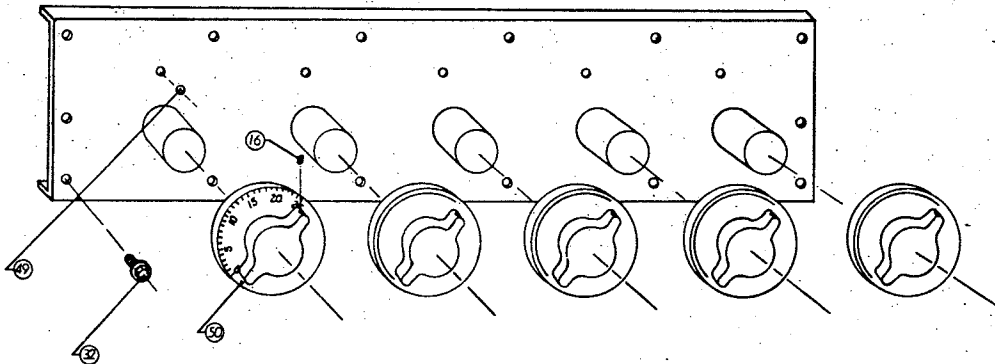
VIEW OF $\frac{1}{2}$ AND $\frac{1}{4}$ SPEED AUGERS

Use only oil recommended by Mix-Mill Inc. because it is safe for livestock. The additives in most lubricating oils are harmful. To substitute oil is dangerous because an oil leak could develop which would contaminate the ground feed. See reverse of this page for lubricating instructions.

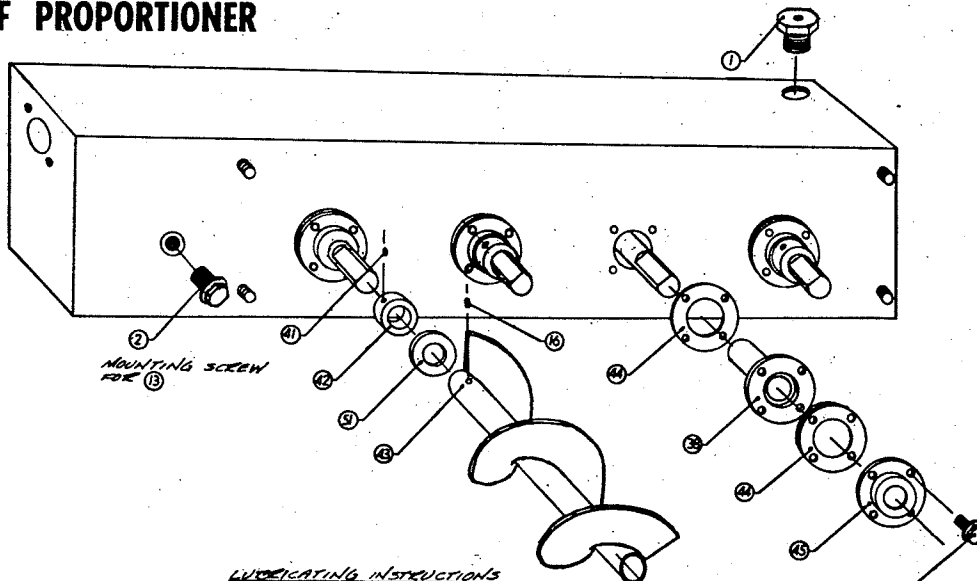
INSIDE VIEW OF PROPORTIONER COVER



FRONT VIEW OF PROPORTIONER COVER



BACK VIEW OF PROPORTIONER



LUBRICATING INSTRUCTIONS

1. DRAIN PROPORTIONER OIL EVERY 4 MONTHS. REFILL WITH OIL RECOMMENDED BY MIX-MILL® INC., UNTIL OIL LEVEL IS EVEN WITH OIL LEVEL HOLE.
2. THE RECOMMENDED OIL IS GOOD FOR -25° F. IF TEMPERATURES GO LOWER, KEEP AREA AROUND PROPORTIONER HEATED TO ABOVE -25° F OR COMMUNICATE WITH FACTORY.

NOTE - PLAIN MINERAL OIL (FROM ANY DRUG STORE) MAY BE SUBSTITUTED IN AN EMERGENCY. REPLACE WITH RECOMMENDED OIL AS SOON AS POSSIBLE. DO NOT USE CASTOR OIL.



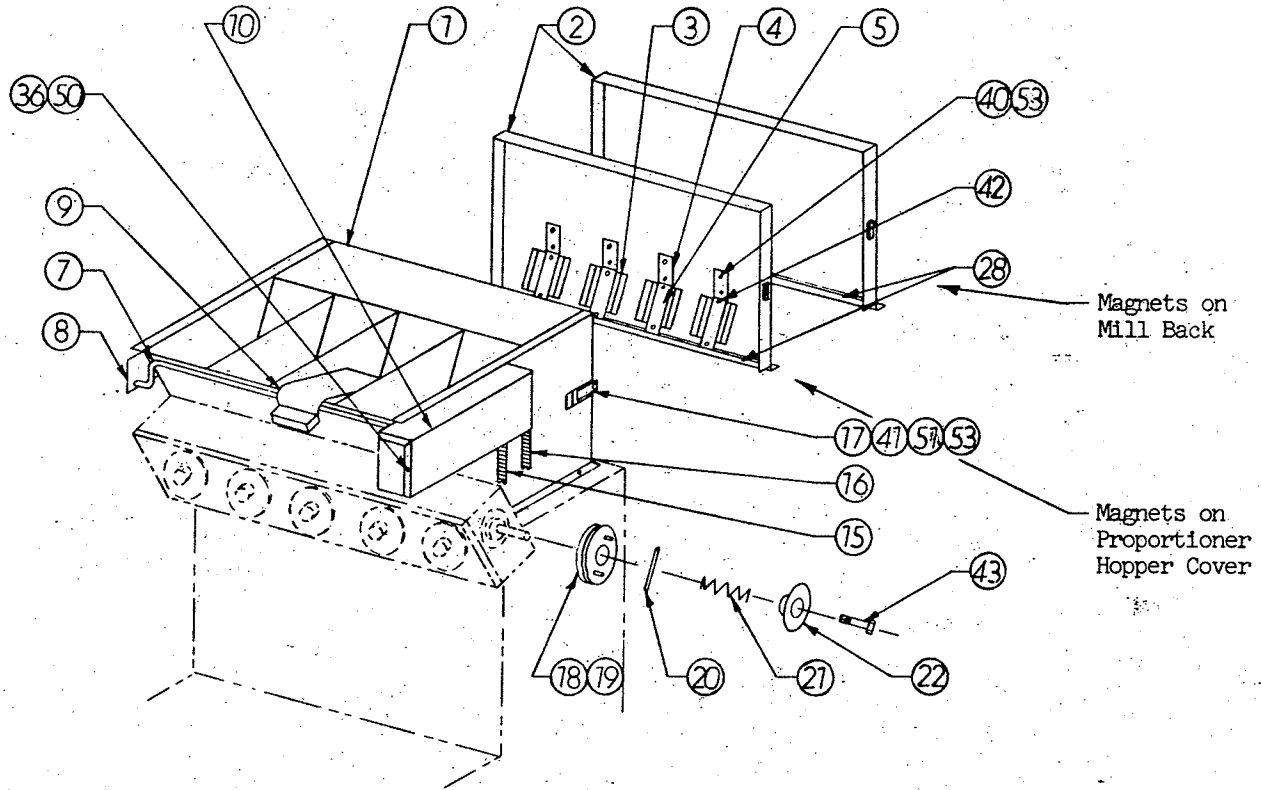
MIX-MILL® INC.
BLUFFTON, INDIANA, U.S.A.

SECTION 25-PAGE 67
MAY 15, 1969
REPLACES: NEW

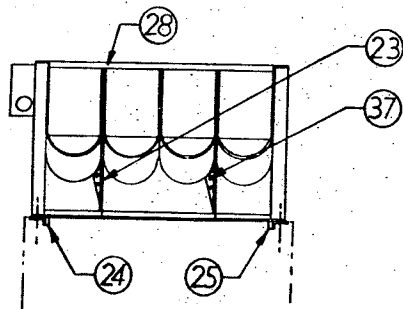
REPLACEMENT PARTS
OIL FILLED PROPORTIONER

Ref. No.	Description	QUANTITY & PART NO.	
		4 Auger	6 Auger
1	Breather Plug (1/4-18 NPTF)	(1) M3720	(1) M3720
2	Bin Bolt Assy. (5/16-18x3/4")	(2) M1833	(2) M1833
3	Pipe Plug (1/4" NPT)	(2) M3451	(2) M3451
4	Carrier Assy. - Pawl	(4) M3755	(6) M3755
5	Cotter Pin	(10) M313	(14) M313
6	Spring - Drive Pawl (auger shaft)	(8) M4922	(12) M4922
7	Thrust Washer (5/8"x1"x1/8")	(4) M49G1	(6) M49G1
8	Drive Pawl	(10) M120	(14) M120
9	O Ring	(9) M3771	(13) M3771
10	Auger Shaft & Ratchet Assy.	(4) M3769	(6) M3769
11	Idler Gear Assy. (includes bushings)	(4) M1017	(6) M1017
12	Retaining Ring	(4) M253	(6) M253
13	Shaft - Worm Wheel	(1) M3669	(1) M3669
14	Worm Wheel - Sub Assy. (3-10 HP)	(1) M1113G3	(1) M1113G3
	Worm Wheel - Sub Assy. (2 HP)	(1) M1113G4	(1) M1113G4
15	Thrust Washer (5/8"x1-1/4"x1/8")	(1) M1124	(1) M1124
16	Set Screw (1/4-20x1/4")	(12) M336	(16) M336
17	Gear Assy. - Welded (main drive)	(1) M1047G1	(1) M1047G1
18	Thrust Washer (1"x1-1/2"x1/8")	(1) M133	(1) M133
19	Worm Wheel Assy. (includes bushing)	(1) M5677	(1) M5677
20	Bushing (1"x1-1/8"x1")	(1) M47	(1) M47
21	Spring - Drive Pawl	(2) M28	(2) M28
22	Thrust Washer (1"x1-1/2"x1/16")	(1) M3422	(1) M3422
23	Ratchet & Tube Assy. (includes bushing)	(1) M5741	(1) M5741
24	Bushing (.631"x3/4"x3/4")	(11) M259	(15) M259
25	O Ring	(2) M3757	(2) M3757
26	Retaining Ring	(1) M1028	(1) M1028
27	Shaft - Worm	(1) M3777	(1) M5996
28	Spring Pin	(1) M314	(1) M314
29	Worm (double thread)	(1) M4914	(1) M4914
30	Gasket - Bearing (worm shaft)	(2) M5795	(2) M5795
31	Bearing Assy. (worm shaft)	(2) M5797	(2) M5797
32	Screw - Hex. Hd. S.T. (1/4-20x1/2" swage form)	(30) M5711	(42) M5711
33	Retainer - Ball Bearing	(2) M3648	(2) M3648
34	Washer - Lock (1/4")	(4) M344	(4) M344
35	Nut - Hex. (1/4-20)	(4) M367	(4) M367
36	Washer - Flat (1/2")	(1) M356G2	(1) M356G2
37	Washer - Flat (1/2")	(2) M356G3	(2) M356G3
38	Bearing - Auger Shaft	(4) M3681	(6) M3681
39	Drive Assy. - 4th Auger	(1) M3452	(1) M3452
40	Idler Assy. - 2 speed gear box (includes bushing)	(1) M2291	(1) M2291
41	Set Screw (#10-32x1/4")	(4) M4738	(6) M4738
42	Set Collar (5/8"x1"x5/16")	(4) M5631	(6) M5631
43	Auger & Tube Assy.	(4) M5633	(6) M5633
44	Gasket - Bearing (auger shaft)	(12) M3758	(18) M3758
45	Bearing Cap Assy.	(4) M4924	(6) M4924
46	Gasket - Gear Box Cover	(1) M4920	(1) M6631
47	O Ring	(5) M3735	(7) M3735
48	Cam & Sleeve Assy. (includes bushing)	(5) M3683	(7) M3683
49	Ball - Steel	(5) M138G3	(7) M138G3
50	Knob	(5) M1	(7) M1
51	Washer - Rulon	(4) M8326G1	(6) M8326G1
52	Oil - Texaco Regal "A" (1 qt.)	(1) M5630	(2) M5630

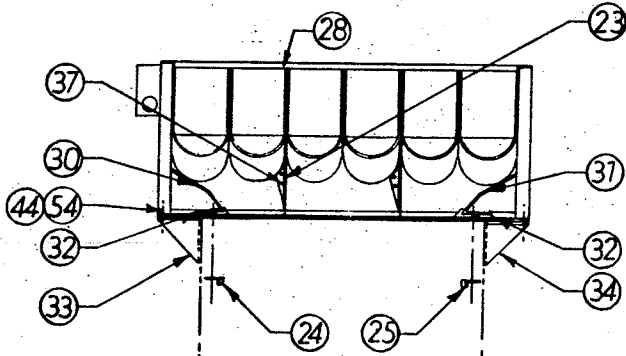
REPLACEMENT PARTS
PROPORTIONER HOPPER ASSY.



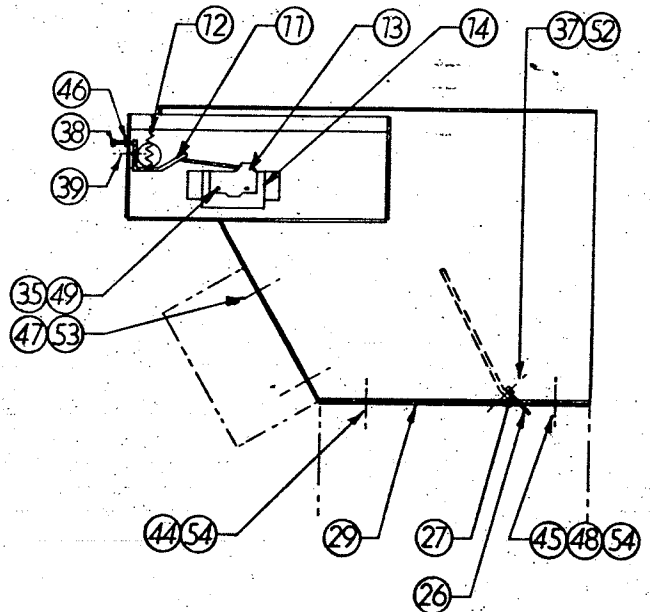
REFERENCE VIEW - 4 OR 6 COMPARTMENT



BACK VIEW-4 COMPARTMENT



BACK VIEW-6 COMPARTMENT



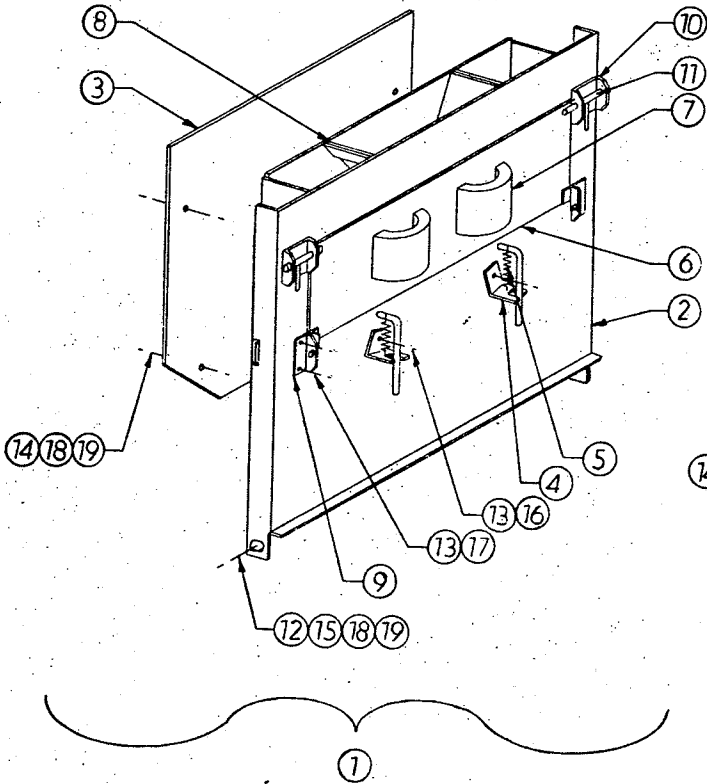
END VIEW-4 OR 6 COMPARTMENT

REPLACEMENT PARTS
PROPORTIONER HOPPER ASSY.

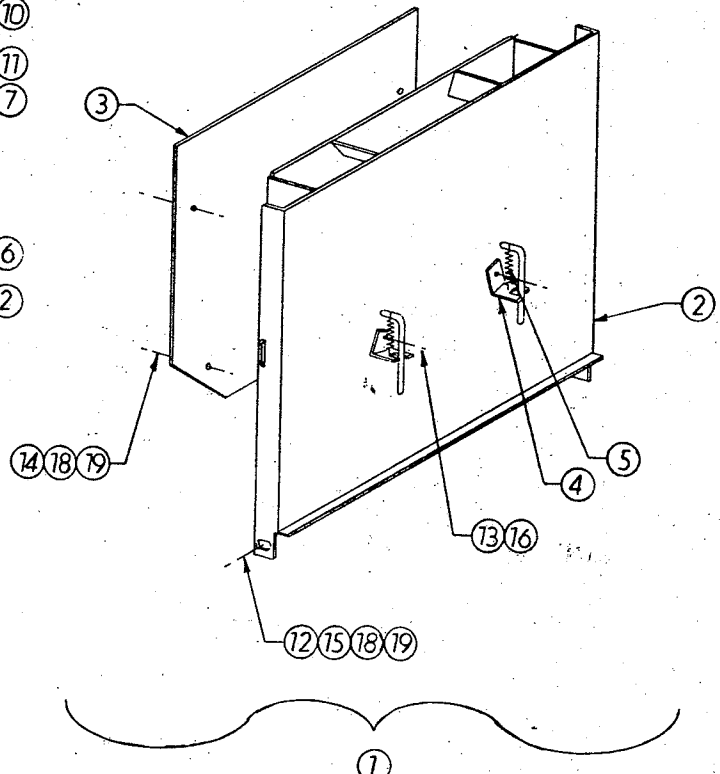
- 4 COMPARTMENT MILL - Use Model Suffix 1 & 2 Column when magnets are mounted on mill back. Use Model Suffix 3 & 4 Column if magnets are on proportioner hopper cover.
- 6 COMPARTMENT MILL - Use Model Suffix 1 Column for offset 6 compartment mill. Use Model Suffix 2 Column for symmetrical 6 compartment mill with magnets on mill back. Use Model Suffix 3 & 4 Columns for symmetrical 6 compartment mill with magnets on proportioner hopper cover.

Item No.	Description	4 COMPARTMENT		6 COMPARTMENT		
		QUANTITY & PART NUMBER		QUANTITY & PART NUMBER		
		Model Suffix 1 & 2	Model Suffix 3 & 4	Model Suffix 1	Model Suffix 2	Model Suffix 3 & 4
1	Proportioner Body Assy.	(1) M6086G1	(1) M6086G1	Contact Factory	(1) M7211G1	(1) M7211G1
2	Cover - Prop. Hopper	(1) M6107	(1) M7833	Contact Factory	(1) M7205	(1) M7835
3	Magnet	-	(4) M1112	-	-	(4) M1112
4	Magnet Mounting Strap	-	(4) M7827	-	-	(4) M7827
5	Magnet Clamp Strap	-	(4) M7828	-	-	(4) M7828
6	Sampling Chute Assy.	(1) M7896	(1) M7896	Contact Factory	(1) M7897	(1) M7897
7	Trip Rod Assy.	(1) M8569G1	(1) M8569G1	(1) M8569G2	(1) M8569G2	(1) M8569G2
8	Snap-In Bearing	(2) M5701	(2) M5701	(2) M5701	(2) M5701	(2) M5701
9	Switch Paddle Assy.	(4) M236G1	(4) M236G1	(6) M236G1	(6) M236G1	(6) M236G1
10	Cover - Switch Box	(1) M6159	(1) M6159	(1) M6159	(1) M6159	(1) M6159
11	Actuator Assy.	(1) M8571	(1) M8571	(1) M8571	(1) M8571	(1) M8571
12	Spring - Actuator	(1) M6156	(1) M6156	(1) M6156	(1) M6156	(1) M6156
13	Micro Switch	(1) M1133	(1) M1133	(1) M1133	(1) M1133	(1) M1133
14	Insulation - Micro Switch	(1) M4246	(1) M4246	(1) M4246	(1) M4246	(1) M4246
15	Wire Harness - Belt Guard	(1) M6316G1	(1) M6316G1	(1) M6316G1	(1) M6316G1	(1) M6316G1
16	Wire Harness - Grain Flow	(1) M6316G2	(1) M6316G2	(1) M6316G2	(1) M6316G2	(1) M6316G2
17	Cover Latch	(2) M6683	(2) M6277	(2) M6683	(2) M6277	(2) M6277
18	Proportioner Pulley	(1) M3335G1	(1) M3335G1	(1) M3335G1	(1) M3335G1	(1) M3335G1
19	Proportioner Belt	(1) M3336G7	(1) M3336G7	(1) M3336G7	(1) M3336G4	(1) M3336G4
20	Clutch - Safety Wire	(1) M134	(1) M134	(1) M134	(1) M134	(1) M134
21	Spring - Proportioner	(1) M6144	(1) M6144	(1) M6144	(1) M6144	(1) M6144
22	Disk Assy.	(1) M6139	(1) M6139	(1) M6139	(1) M6139	(1) M6139
23	Divider Assy.	-	(2) M7842	-	-	(2) M7842
24	Seal Retainer	-	(1) M7201G1	-	(1) M7201G1	(1) M7201G1
25	Seal Retainer	-	(1) M7201G2	-	(1) M7201G2	(1) M7201G2
26	Neoprene Seal	-	(1) M8439	-	(1) M8439	(1) M8439
27	Retaining Strap	-	(1) M8440	-	(1) M8440	(1) M8440
28	Adhesive Tape	M4265	M4265	M4265	M4265	M4265
29	Adapter Plate	-	-	-	(1) M7197	(1) M7197
30	Grain Deflector	-	-	-	-	(1) M7830G1
31	Grain Deflector	-	-	(1) M6838	-	(1) M7830G2
32	Deflector Retainer	-	-	-	-	(2) M7860
33	Brace - Adapter Plate	-	-	-	-	(1) M8542G1
34	Brace - Adapter Plate	-	-	-	-	(1) M8542G2
35	Screw - Hex. Hd. S.T. (#6-32x1")	(2) M373G2	(2) M373G2	(2) M373G2	(2) M373G2	(2) M373G2
36	Screw - Hex. Hd. S.T. (#8-32x1/4")	(2) M3471G1	(2) M3471G1	(2) M3471G1	(2) M3471G1	(2) M3471G1
37	Screw - Hex. Hd. S.T. (#8-32x1/2")	-	(8) M3471G2	-	(4) M3471G2	(8) M3471G2
38	Screw - Hex. Hd. S.T. (#8-32x3/4")	(1) M3471G3	(1) M3471G3	(1) M3471G3	(1) M3471G3	(1) M3471G3
39	Set Screw (#10-24x1/4")	(1) M4738	(1) M4738	(1) M4738	(1) M4738	(1) M4738
40	Screw - Hex. Hd. (1/4-20x3/8")	-	(8) M2410	-	-	(8) M2410
41	Screw - Hex. Hd. S.T. (1/4-20x1/2")	(4) M327	-	(4) M327	-	-
42	Screw - Hex. Hd. (1/4-20x1")	-	(8) M1643G2	-	-	(8) M1643G2
43	Bolt - Hex. Hd. (1/4-20x1-1/4")	(1) M6410	(1) M6410	(1) M6410	(1) M6410	(1) M6410
44	Screw - Hex. Hd. S.T. (5/16-18x1/2")	(4) M328	(2) M328	(4) M328	(2) M328	(6) M328
45	Screw - Hex. Hd. S.T. (5/16-18x3/4")	-	(2) M475	-	(2) M475	(2) M475
46	Nut - Hex. (#8-32)	(1) M348	(1) M348	(1) M348	(1) M348	(1) M348
47	Nut - Hex. (1/4-20)	(4) M367	(4) M367	(4) M367	(4) M367	(4) M367
48	Nut - Hex. (5/16-18)	-	(2) M479	-	(2) M479	(2) M479
49	Washer - Flat (#6)	(2) M4284	(2) M4284	(2) M4284	(2) M4284	(2) M4284
50	Washer - Flat (#8)	(2) M4104	(2) M4104	(2) M4104	(2) M4104	(2) M4104
51	Washer - Flat (1/4")	(4) M339	-	(4) M339	-	-
52	Washer - Lock (#8)	-	(4) M1524	-	(4) M1524	(4) M1524
53	Washer - Lock (1/4")	(8) M344	(12) M344	(8) M344	(4) M344	(12) M344
54	Washer - Lock (5/16")	(4) M345	(6) M345	(4) M345	(6) M345	(10) M345

REPLACEMENT PARTS
MILL BACK ASSY.



Complete Mill Back Assy.



Complete Mill Back Assy.

NOTE - Use left hand view and model suffix 1 & 2 Column if magnets are mounted on mill back, use right hand view and model suffix 3 & 4 Column if magnets are on proportioner hopper cover.

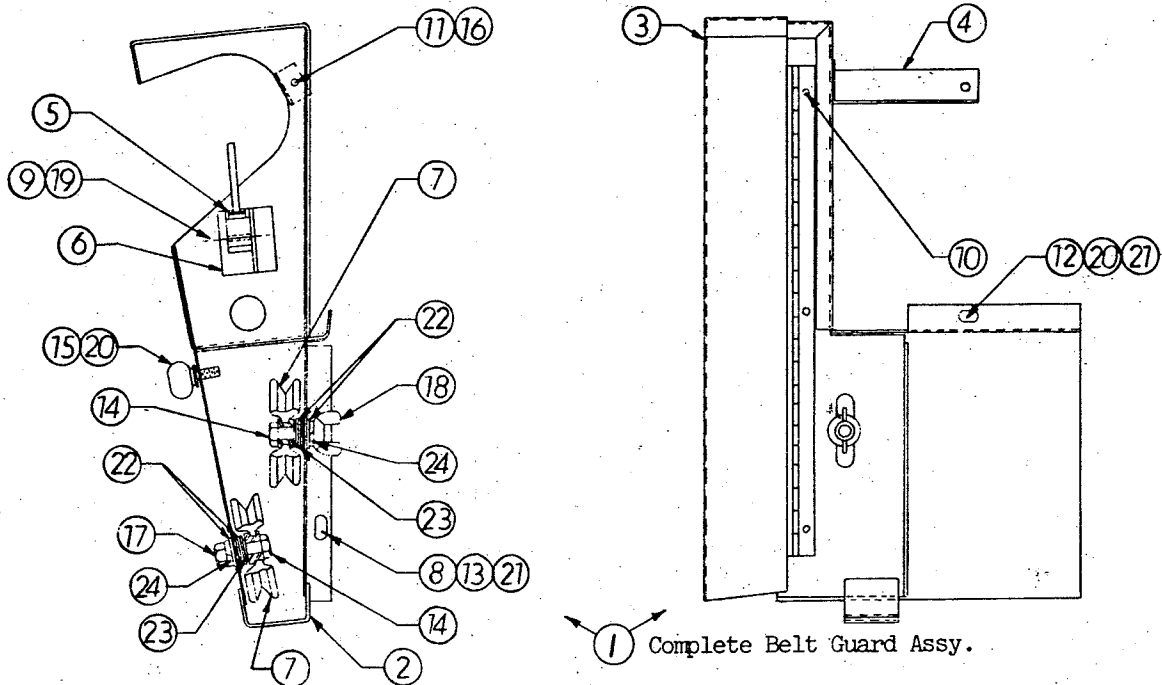
Item No.	Description	QUANTITY AND PART NUMBER	
		Model Suffix 1 & 2	Model Suffix 3 & 4
1	Mill Back Assy. - Complete	M6303G1	M7903G1
2	Back Assy. - welded	(1) M6093	(1) M7904
3	Wear Plate - Back	(1) M6102	(1) M6102
4	Bracket - Valve Handle Toggle	(2) M6294	(2) M6294
5	Spring - Valve Handle Toggle	(2) M6293	(2) M6293
6	Magnet Door Assy.	(1) M6104	-
7	Magnet	(2) M1112	-
8	Deflector - Aluminum	(1) M6101	-
9	Bracket Assy. - Hinge Pin	(2) M6440	-
10	Retainer - Cross Bolt	(2) M6289	-
11	Cross Bolt Assy.	(2) M6290	-
12	Split Tube	(2) M6230	(2) M6230
13	Screw - Hex. Hd. S.T. (1/4-20x1/2")	(6) M327	(2) M327
14	Screw - Hex. Hd. S.T. (5/16-18x1/2")	(4) M328	(4) M328
15	Bolt - Hex. Hd. (5/16-18x1")	(2) M407	(2) M407
16	Washer - Flat (1/4")	(4) M339	(4) M339
17	Washer - Lock (1/4")	(4) M344	-
18	Washer - Flat (5/16")	(6) M340	(6) M340
19	Washer - Lock (5/16")	(6) M345	(6) M345



MIX-MILL® INC.
BLUFETON, INDIANA, U.S.A.

SECTION 25 - PAGE 77
MAY 15, 1969
REPLACES: NEW

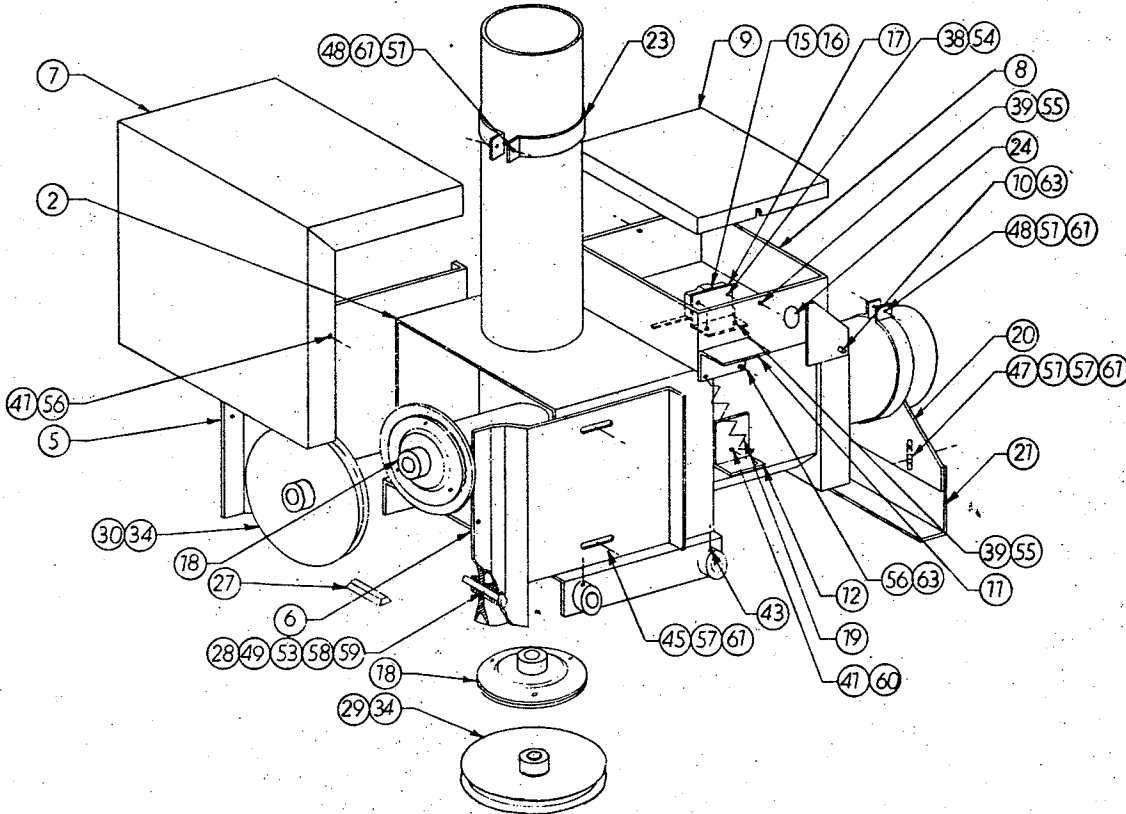
REPLACEMENT PARTS
BELT GUARD ASSY.



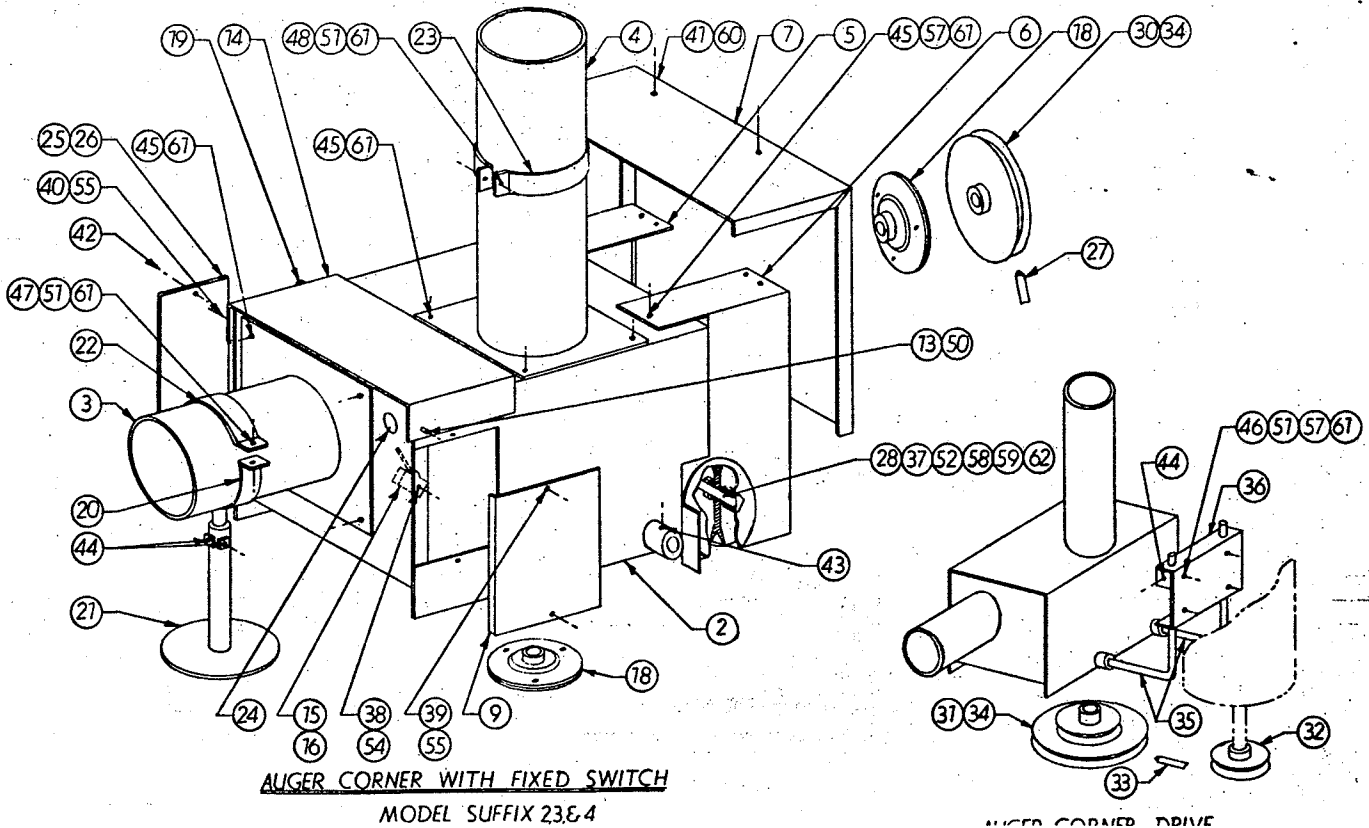
Note - Components are identical for all model suffix numbers.

Item No.	Description	Qty. Used	Part Number
1	Belt Guard & Idler Pulley Assy. (4 comp. & offset 6 comp.)		M6307G1
	Belt Guard & Idler Pulley Assy. (symmetrical 6 comp.)		M6307G2
2	Welded Assy. (4 comp. & offset 6 comp.)	(1)	M6125
	Welded Assy. (symmetrical 6 comp.)	(1)	M7212
3	Cover Assy.	(1)	M6305
4	Strap - Belt Guard Anchor	(1)	M5636
5	Micro Switch Assy.	(1)	M6142
6	Liner - Armitex	(1)	M6143
7	Idler Pulley	(2)	M3334G2
8	Cable Clamp	(1)	M267
9	Screw - Hex.Hd. S.T. (#6-32x1")	(2)	M373G2
10	Screw - Hex.Hd. S.T. (#8-32x1/4")	(3)	M3471G1
11	Screw - Rd. Hd. (#10-24x3/8")	(1)	M330G1
12	Screw - Hex. Hd. S.T. (1/4-20x1/2")	(1)	M327
13	Screw - Hex. Hd. S.T. (1/4-20x3/4")	(1)	M427
14	Screw - Hex. Hd. (3/8-16x1-1/4")	(2)	M335G3
15	Thumb Screw (1/4-20)	(1)	M317
16	Nut - Huglock (#10-24)	(1)	M351
17	Nut - Hex. (3/8-16)	(1)	M357
18	Nut - Wing (3/8-16)	(1)	M320
19	Washer - Flat (#6)	(2)	M4284
20	Washer - Flat (1/4")	(2)	M339
21	Washer - Lock (1/4")	(2)	M344
22	Washer - Flat (3/8")	(10)	M341
23	Washer - Flat (3/8") (Special)	(2)	M4568
24	Washer - Lock (3/8")	(2)	M346

REPLACEMENT PARTS
AUGER CORNER



AUGER CORNER WITH HINGED SWITCH
MODEL SUFFIX I



AUGER CORNER WITH FIXED SWITCH
MODEL SUFFIX 23&4

AUGER CORNER DRIVE



MIX-MILL® INC.
BLUFFTON, INDIANA, U.S.A.

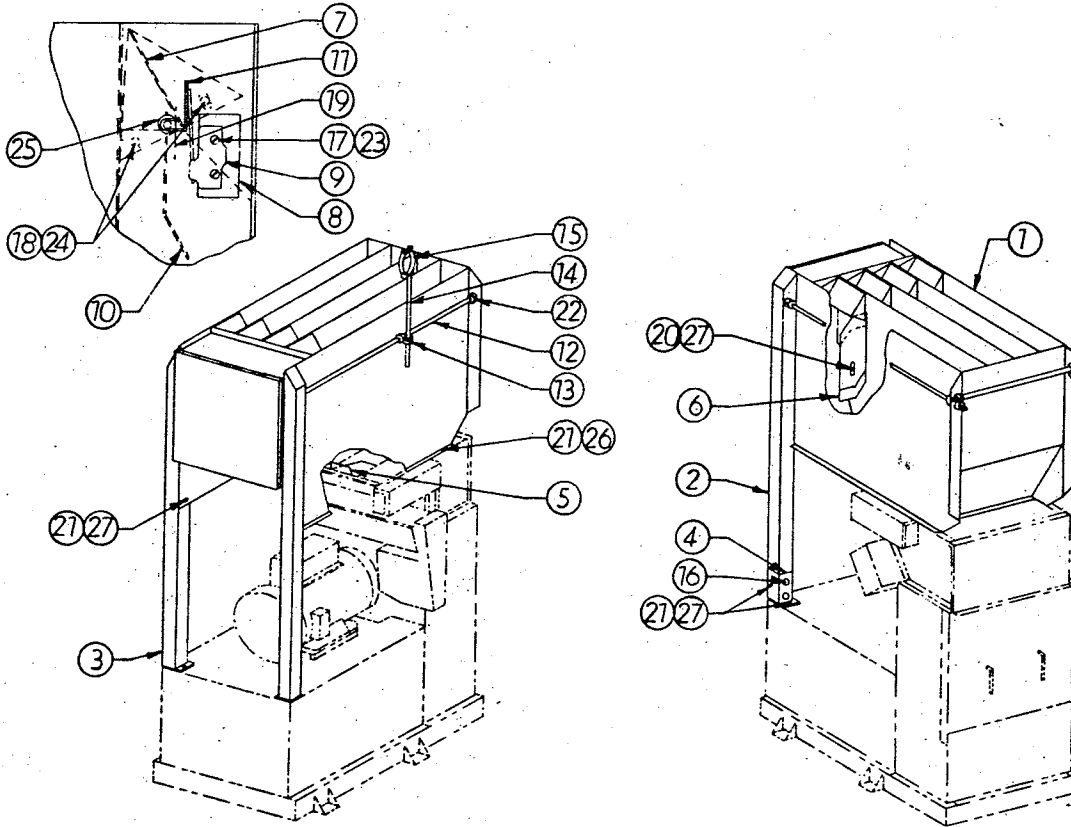
Section 25 - Page 82
March 1, 1973
Replaces: May 15, 1969

REPLACEMENT PARTS
AUGER CORNER

Item No.	Description	QUANTITY AND PART NUMBER		
		Model Suffix 1	Model Suffix 2 & 3	Model Suffix 4
1	Auger Corner - complete	-	-	M6287G6
2	Auger Corner - Welded	(1) M6286G1	(1) M7219	(1) M9414G1
3	Tube & Plate Assy.	Not Used	(1) M3037	(1) M3037
4	Tube & Plate Assy.	Not Used	(1) M7232	(1) M7232
5	Idler Bracket	(1) M6311	(1) M7227G1	(1) M7227G1
6	Idler Bracket	(1) M6312	(1) M7227G2	(1) M7227G2
7	Belt Guard	(1) M6310	(1) M7228	(1) M7228
8	Junction Box Assy.	(1) M6716	Not Used	Not Used
9	Cover - Switch Box	(1) M6711	(1) M7225	Not Used
10	Pivot Rod	(1) M6708	Not Used	Not Used
11	Switch Latch & Spacer Assy.	(1) M6721	Not Used	Not Used
12	Clip	(1) M6812	Not Used	Not Used
13	Actuator Rod	Not Used	(1) M7224	Not Used
14	Relief Cover	Not Used	(1) M7226	Not Used
15	Micro Switch	(1) M1133	(1) M1133	Not Used
16	Insulation - Switch	(1) M4246	(1) M4246	Not Used
17	Switch Bracket	(1) M6704	Not Used	Not Used
18	Bearing Assy.	(2) M2290	(2) M2290	(2) M2290
19	Spring	(1) M6717	(1) M7233	Not Used
20	Support Clamp Assy.	(1) M6380	(1) M7438	(1) M7438
21	Base - Support	(1) M6924	(1) M7441	(1) M7441
22	Half Clamp	Not Used	(1) M2159	(1) M2159
23	Clamp Ring	(3) M3229G2	(3) M3229G2	(3) M3229G2
24	Snap-In Blank	(1) M1061	(1) M1061	Not Used
25	Clean Out Door	Not Used	Not Used	(1) M9713
26	Gasket - Clean Out Door	Not Used	Not Used	(1) M9714
27	Cog Belt	(1) M3344G2	(1) M3344G2	(1) M3344G2
28	Idler Pulley	(2) M3334G3	(2) M3334G3	(2) M3334G3
29	Sheave - 4" O.D.	(1) M3303G3	Not Used	Not Used
30	Sheave - 5" O.D.	(1) M3303G4	(1) M3303G4	(1) M3303G4
31	Sheave - 4" x 8" Step	(1) M6324G1	(1) M6324G1	(1) M6324G1
32	Sheave - Variable Pitch	(1) M6339G1	(1) M6339G1	(1) M6339G1
33	Belt	(1) M3337G9	(1) M3337G9	(1) M3337G9
34	Key	(2) M3222G1	(2) M3222G1	(2) M3222G1
35	Motor Mounting Rod	(2) M458	(2) M458	(2) M458
36	Motor Mounting Plate	(1) M455	(1) M455	(1) M455
37	Belt Tightener	Not Used	(2) M7862	(2) M7862
38	Screw - Hex. Hd. S.T. (#6-32x1")	(2) M373G2	(2) M373G2	Not Used
39	Screw - Hex. Hd. S.T. (#8-32x1/4")	(4) M3471G1	(2) M3471G1	Not Used
40	Screw - Hex. Hd. S.T. (#8-32x3/4")	Not Used	(1) M3471G3	Not Used
41	Screw - Hex. Hd. S.T. (1/4-20x1/2")	(3) M327	(2) M327	(2) M327
42	Bolt - Wing (1/4-20 x1/2")	Not Used	Not Used	(2) M9740
43	Set Screw (5/16-18x3/8")	(2) M474	(2) M474	(2) M474
44	Screw - Hex. Hd. S.T. (5/16-18x1/2")	Not Used	(2) M328	(2) M328
45	Screw - Hex. Hd. S.T. (5/16-18x3/4")	(4) M475	(12) M475	(12) M475
46	Bolt - Carriage (5/16-18x3/4")	(4) M5538G1	(4) M5538G1	(4) M5538G1
47	Bolt - Hex. Hd. (5/16-18x1")	(2) M407	(2) M407	(2) M407
48	Bolt - Hex. Hd. (5/16-18x1-3/4")	(4) M2723	(3) M2723	(3) M2723
49	Bolt - Hex. Hd. (3/8-16x1-1/2")	(2) M335G3	Not Used	Not Used
50	Nut - Hex. (#10-24)	Not Used	(2) M4211	Not Used
51	Nut - Hex. (5/16-18)	(10) M479	(9) M479	(9) M479
52	Nut - Hex. (3/8-16)	Not Used	(2) M357	(2) M357
53	Nut - Jam (3/8-16)	(2) M4209	Not Used	Not Used
54	Washer - Flat (#6)	(2) M4284	(2) M4284	Not Used
55	Washer - Flat (#8)	(4) M4104	(7) M4104	Not Used
56	Washer - Flat (1/4")	(5) M339	Not Used	Not Used
57	Washer - Flat (5/16")	(10) M340	(8) M340	(8) M340
58	Washer - Flat (3/8")	(10) M341	(10) M341	(10) M341
59	Washer - Special (3/8")	(2) M4568	(4) M4568	(4) M4568
60	Washer - Lock (1/4")	(1) M344	(2) M344	(2) M344
61	Washer - Lock (5/16")	(14) M345	(21) M345	(21) M345
62	Washer - Lock (3/8")	Not Used	(2) M346	(2) M346
63	Cotter Pin (3/32" x 1/2")	(3) M313	Not Used	Not Used
64	Gage - Pulley Locating	(1) M6727	(1) M6727	(1) M6727

REPLACEMENT PARTS
GROUND LEVEL HOPPER

SWITCH MOUNTING DETAIL



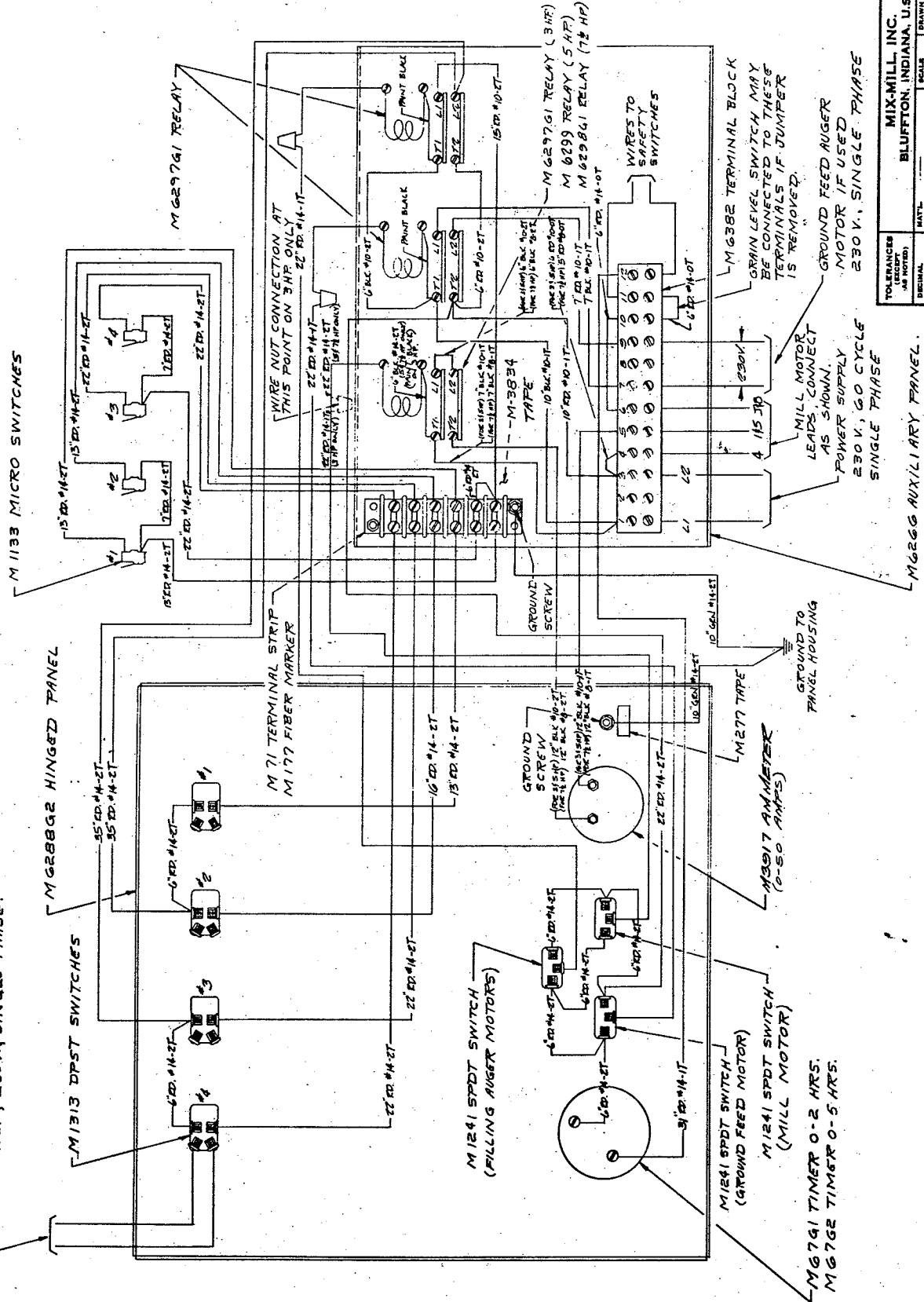
NOTE - Components are identical for all Model Suffix Numbers.

Item No.	Description	Qty. Used	Part Number
1	Control Hopper	(1)	M6110G1
2	Leg Assy. - Right Hand	(1)	M6120G1
3	Leg Assy. - Left Hand	(1)	M6120G2
4	Cover - Panel Support	(1)	M6134
5	Plate - Shut Off	(4)	M6211
6	Adjustable Deflector	(4)	M6118
7	Baffle - Control Hopper	(4)	M6119
8	Insulation - Switch	(4)	M4246
9	Micro Switch	(4)	M1133
10	Paddle Assy.	(4)	M4242
11	Actuator - Switch	(4)	M4245
12	Support Rod - Horizontal	(3)	M2985G2
13	Clamp Assy.	(6)	M1239G1
14	Support Rod - Vertical	(4)	M1141G1
15	Clamp Assy.	(4)	M448G1
16	Snap-In Blank	(1)	M1061
17	Screw - Hex. Hd. (#6-32x1" S.T.)	(8)	M373G2
18	Screw - Hex. Hd. (#8-32x1/2" S.T.)	(8)	M3471G2
19	Screw - Hex. Hd. (#8-32x3/4" S.T.)	(4)	M3471G3
20	Screw - Hex. Hd. (1/4-20x1/2")	(4)	M317
21	Screw - Hex. Hd. (1/4-20x1/2" S.T.)	(14)	M327
22	Set Screw (5/16-18x3/8")	(4)	M474
23	Washer - Flat (#6)	(8)	M4284
24	Washer - Flat (#8)	(8)	M4104
25	Washer - Flat (3/16")	(4)	M338
26	Washer - Flat (1/4")	(4)	M339
27	Washer - Lock (1/4")	(14)	M344

PANEL WIRING DIAGRAM
 GROUND LEVEL MIXER-GRINDER
 3, 5 AND 7 1/2 HP. SINGLE PHASE
 USA VERSION

SECTION 25-PAGE 132
 DATE: MAY 15, 1969
 REPLACES: A 30.562
 ENG DWG: C6425

DATE	REVISION	BY	CHK
11/23/68	1	REVISED (ADDED CODE)	JK
1/2/69	2	REVISED FOR 7 1/2 HP	JK
1/2/69	3	REVISED & UPDATED	JK
1/2/69	4	MIL-299, MIL-20, 201Z	JK
1/17/69	5	REPLACES A 30.562	JK



TOLERANCES UNLESS NOTED	MATERIAL	FINISH	SCALE	DRAWN BY
DECIMAL				K. BEER
FRACTIONAL				W. BEER
ANGULAR				W. BEER

TITLE: PANEL WIRING DIAGRAM
 35174 HP 10 GROUND LEVEL MIXER GRINDER
 DATE: 6/25/69
 DRAWING NUMBER: C6425

VIEW OF COMPONENT SIDES OF PANELS

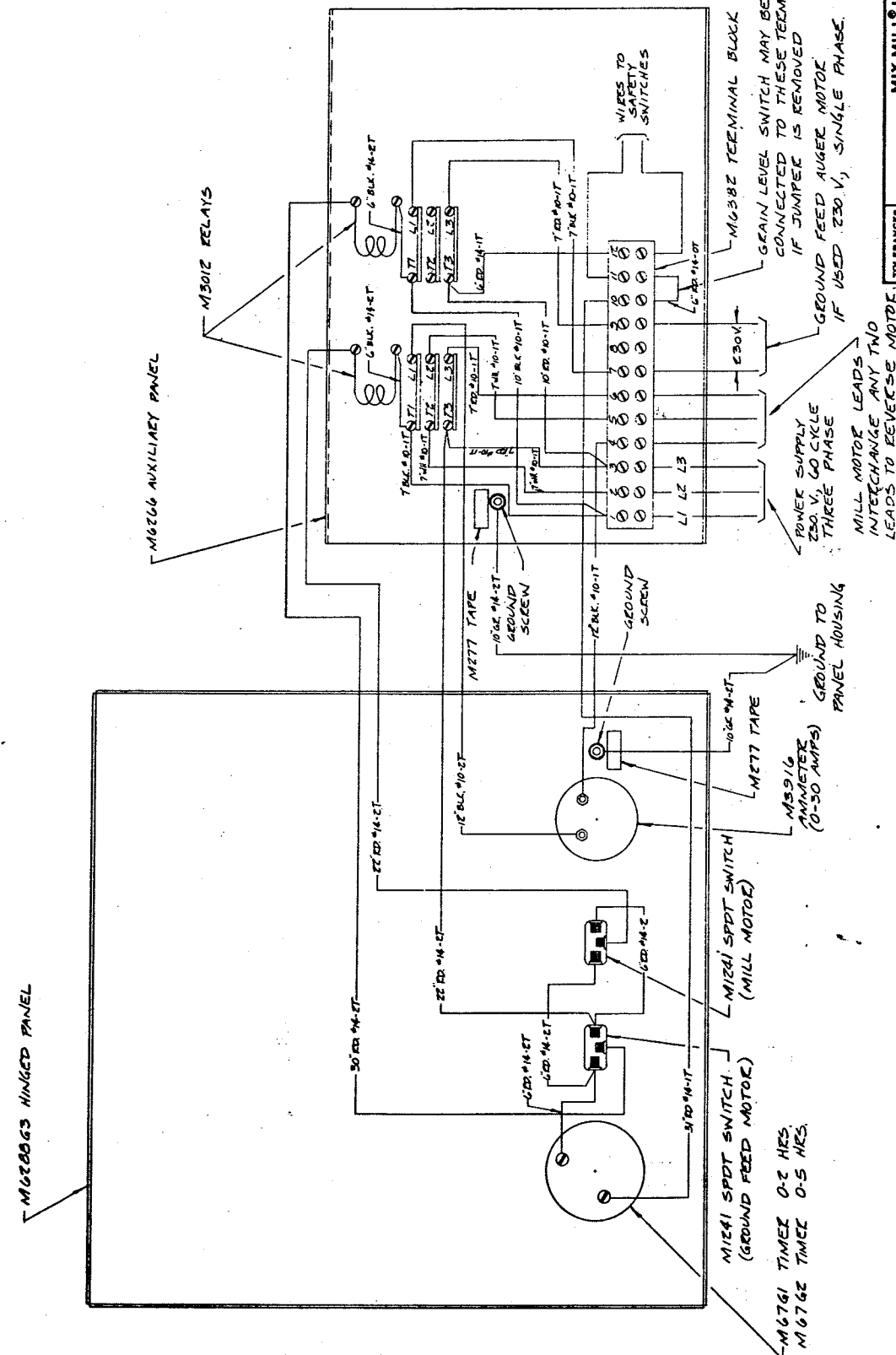
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 COPY TO: MOUNTING

PRINTED IN USA

PANEL WIRING DIAGRAM
GRAVITY TYPE MIXER-GRINDER
3-10 HP. THREE PHASE
USA VERSION

SECTION 2S PAGE 134
DATE: MAY 15, 1969
REPLACES: A 30.564
ENG. DWG. C-6424

DATE	BY	REVISION RECORD	CHK	CRK
12-24-68	1	REVISED / UPDATED		



TOLERANCES UNLESS NOTED		MIX-MILL® INC.	
DECIMAL	FRACTIONAL	BLUFFTON, INDIANA U.S.A.	
1	1/16	DATE	11-1-65
2	1/32	SCALE	AS SHOWN
3	1/64	TITLE	PANEL WIRING DIAGRAM
4	3/128	3-10 HP. 3-0 GRAVITY MIXER-GRINDER	
5	1/256	DATE	11-1-65
6	1/512	DRAWING NUMBER	C-6424

VIEW OF COMPONENT SIDES OF PANELS

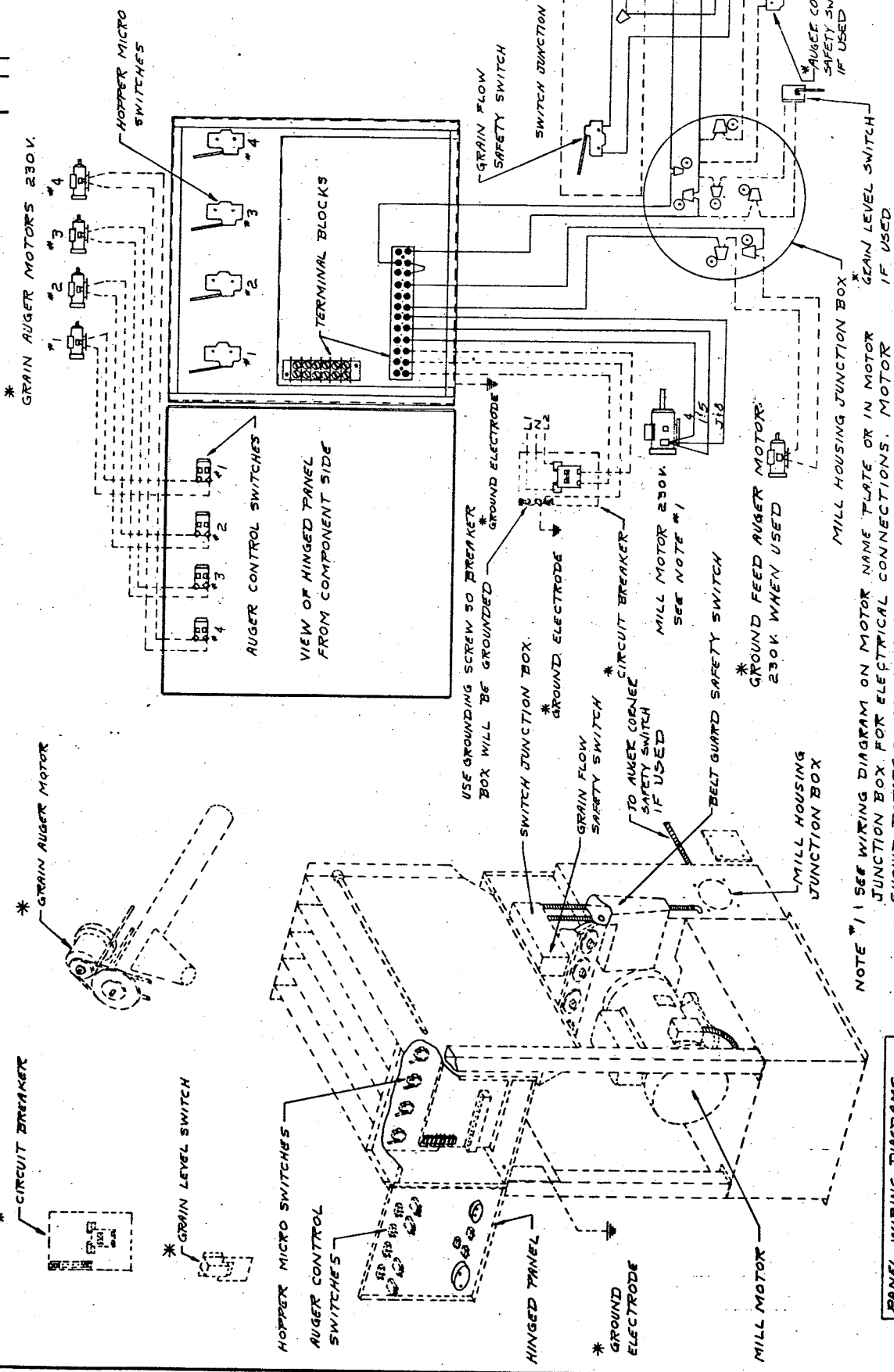
COMP. TO FACTORY - ENG. FILE

EXTERNAL WIRING DIAGRAM GROUND LEVEL MIXER-GRINDER SINGLE PHASE

SECTION 25-PAGE 152
DATE: MAY 15 1969
REPLACES: A30.584
ENG DWG: C 6430

DATE	BY	REVISION RECORD

TOLERANCES (EXCEPT AS NOTED)	MIX-MILL, INC. BLUFFTON, INDIANA, U.S.A.
SIGNAL	SCALE 1/4" = 1'
FRACTIONAL	TITLE EXTERNAL WIRING DIAGRAM (GROUND LEVEL MIXER GRINDER)
ANGULAR	DATE 7-2-65
	PROJECT NUMBER C-6430



NOTE #1 | SEE WIRING DIAGRAM ON MOTOR NAME PLATE OR IN MOTOR JUNCTION BOX FOR ELECTRICAL CONNECTIONS. MOTOR SHOULD ROTATE CLOCKWISE FACING END OPPOSITE SHAFT.

NOTE #2 | WIRES SHOWN DOTTED ARE SUPPLIED AND INSTALLED BY CUSTOMER.

○ | ALL CONNECTIONS IDENTIFIED BY ○ ARE MADE IN MILL HOUSING JUNCTION BOX.

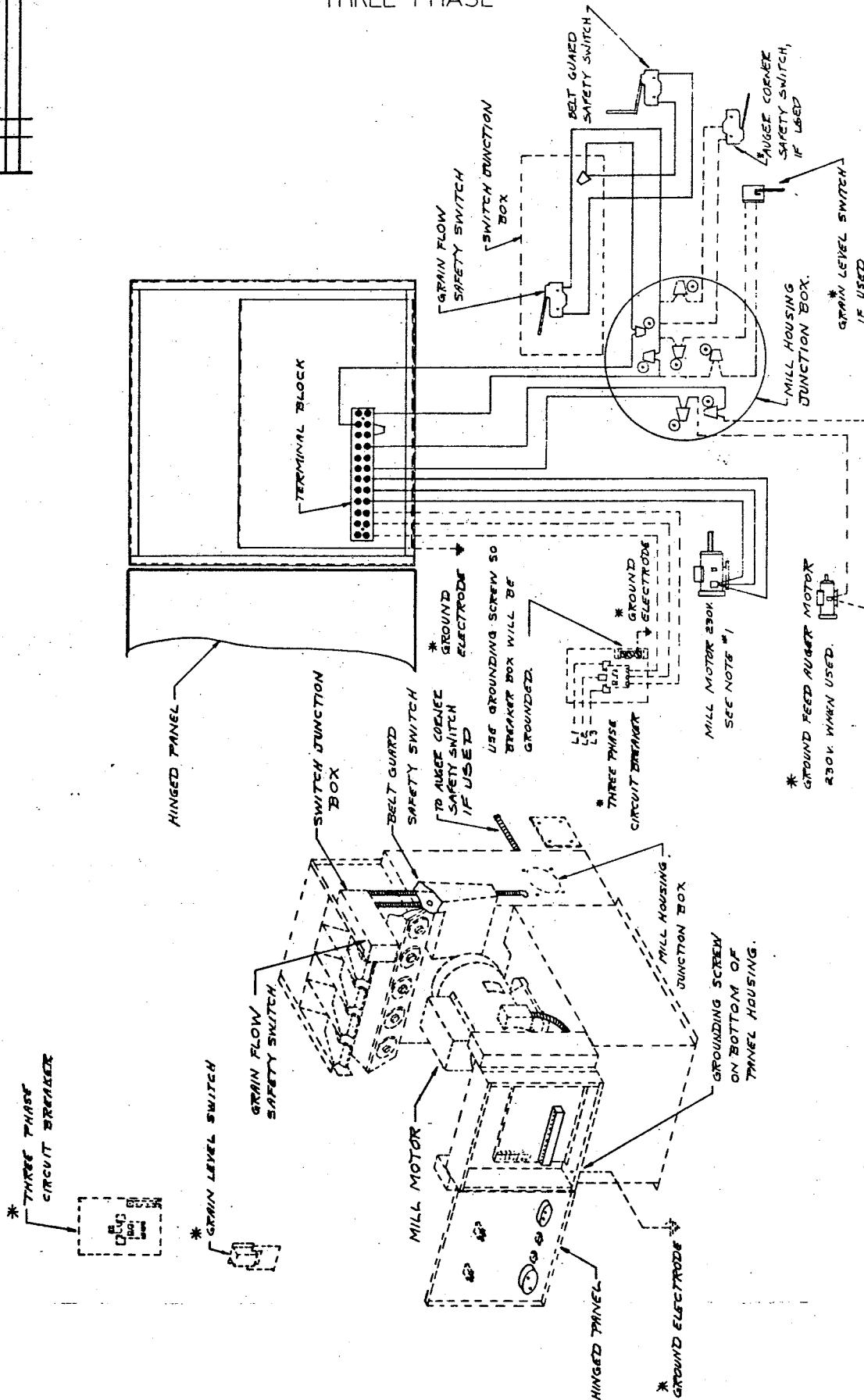
PANEL WIRING DIAGRAMS
MILL HP RATING STANDARD C.S.A.
3.5/7 1/2 (1P)
CODES CODES

PRINTED IN U.S.A.

1-2-3-4

EXTERNAL WIRING DIAGRAM GRAVITY TYPE MIXER-GRINDER THREE PHASE

SECTION 25 - PAGE 154
DATE: MAY 15, 1969
REPLACES: A30.590
ENG DWG: C6429



NOTE #1: SEE WIRING DIAGRAM ON MOTOR NAME PLATE OR IN MOTOR JUNCTION BOX FOR ELECTRICAL CONNECTIONS. MOTOR SHOULD ROTATE CLOCKWISE FACING END OPPOSITE SHAFT INTERCHANGE ANY 2 OF 3 LEADS TO REVERSE MILL MOTOR.

NOTE #2: WIRES SHOWN DOTTED ARE SUPPLIED AND INSTALLED BY CUSTOMER.

* NOT SUPPLIED WITH BASE MODEL, WIRING BY CUSTOMER.

⊙ ALL CONNECTIONS IDENTIFIED BY ⊙ ARE MADE IN MILL HOUSING JUNCTION BOX.

MIX-MILL, INC.	
BLUFFTON, INDIANA, U.S.A.	
SCALE	3:1
DATE	7-2-65
TITLE	EXTERNAL WIRING DIAGRAM GRAVITY TYPE MIXER GRINDER
DESIGNED BY	
CHECKED BY	
APPROVED BY	

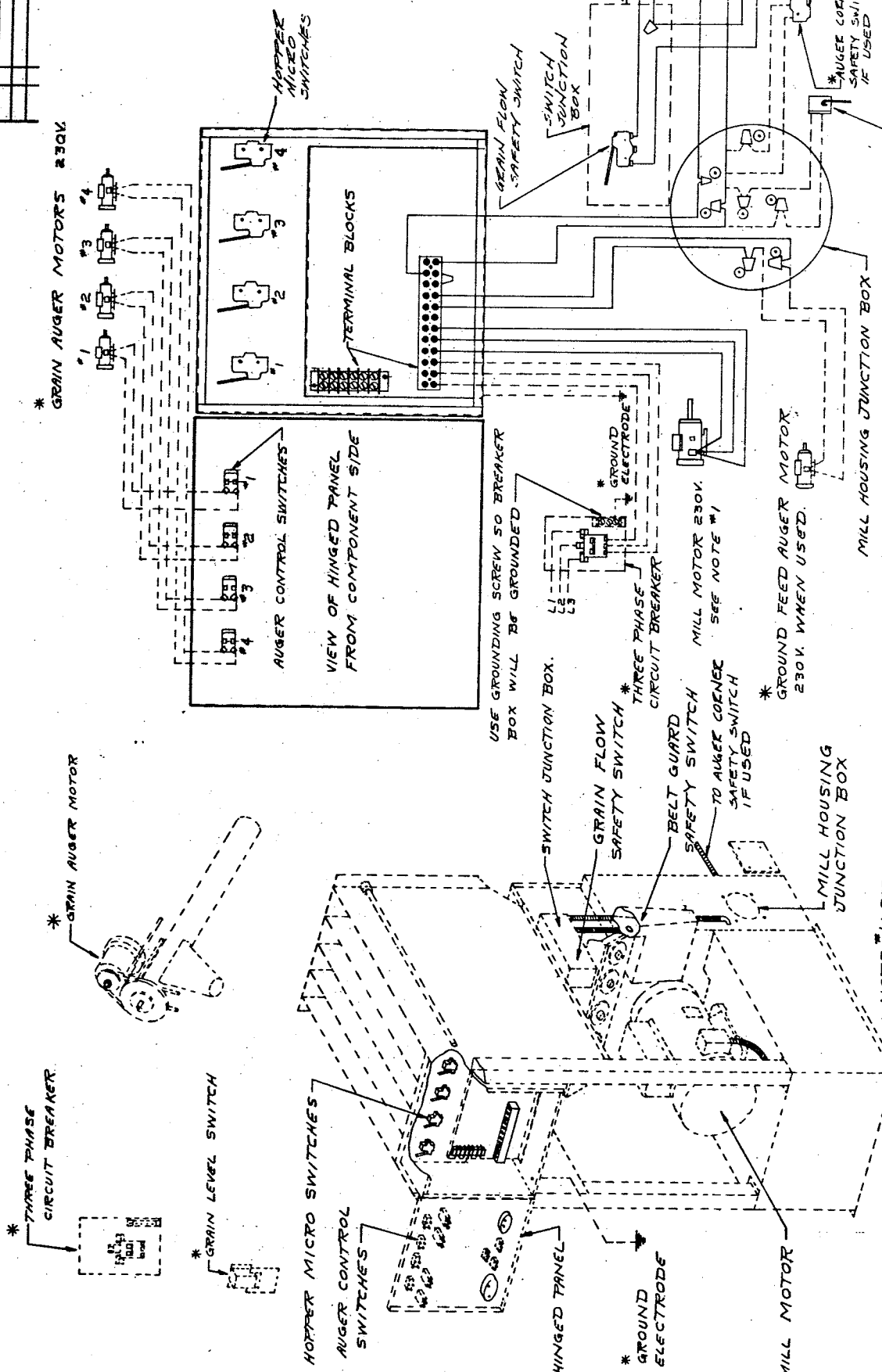
MADE IN U.S.A.

C-6429

EXTERNAL WIRING DIAGRAM GROUND LEVEL MIXER-GRINDER THREE PHASE

SECTION 25-PAGE 156
DATE: MAY 15 1969
REPLACES: A30 S92
FNG DWG: C6431

REV	DATE	BY	DESCRIPTION



NOTE #1: SEE WIRING DIAGRAM ON MOTOR NAME PLATE OR IN MOTOR JUNCTION BOX FOR ELECTRICAL CONNECTIONS. MOTOR SHOULD ROTATE CLOCKWISE FACING END OPPOSITE SHAFT. INTERCHANGE ANY 2 OF 3 LEADS TO REVERSE MILL MOTORS.

NOTE #2: WIRES SHOWN DOTTED ARE SUPPLIED AND INSTALLED BY CUSTOMER.

* : NOT SUPPLIED WITH BASE MODEL, WIRING BY CUSTOMER.

⊙ : ALL CONNECTIONS IDENTIFIED BY ⊙ ARE MADE IN MILL HOUSING JUNCTION BOX.

TOLERANCES UNLESS NOTED	MIX-MILL, INC. BLUFFTON, INDIANA, U.S.A.		
DRAWING	SCALE	DATE	DESIGNED BY
FRACTIONAL	1/32"	10-11	W. S. SLARK
DECIMAL			
ANNUAL			

PANEL WIRING DIAGRAMS
MILL HP RATING STANDARD C.S.A.
3.5, 17 1/2 (3P)
C6427
C6712

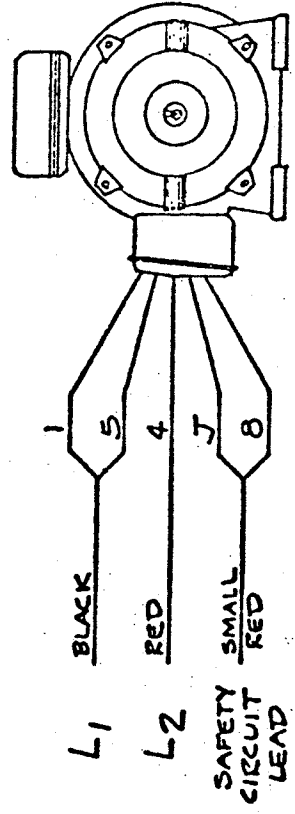
PRINTED IN U.S.A.

1-2-5-4

C-6431

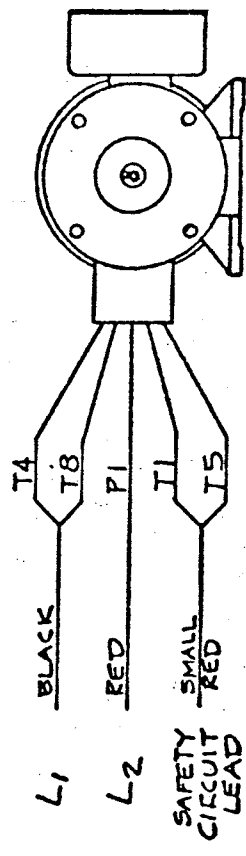
1 Ø MILL MOTOR LEAD CORRELATION

BALDOR ELECTRIC AND
FRANKLIN ELECTRIC MOTORS



230 VOLT - 1 Ø

DOERR ELECTRIC MOTORS



230 VOLT - 1 Ø

4-22-71

FILE 12345

A-10539

