FARMATIC
FEED PROCESSING SYSTEMS

Mix-Mill
FEED PROCESSING SYSTEMS

SENTRY HAMMER MILL
MODELS 5000, 4000, 3000, 2000

SENTRY ROLLER MILL
MODELS 6500, 5500, 4500

INSTALLATION MANUAL

Contents

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FEED PROCESSING SYSTEMS

WARRANTY CERTIFICATE

Mix-Mill
FEED PROCESSING SYSTEMS

When purchased from an authorized representative, each new product of B.A.I.C. is warranted for a period of one year from the date of delivery to the Purchaser/User of 1500 hours of operation, whichever occurs first. This warranty shall apply to all parts and workmanship that shall appear to B.A.I.C. to have been defective in manufacture. B.A.I.C.'s sole and entire obligation under such warranty shall be satisfied by shipment to the Purchaser/User without charge (except for transportation costs which shall be paid by Purchaser/User) the parts or parts returned for inspection and parts or repair of the returned parts intended to replace those acknowledged by B.A.I.C. to be defective. This warranty shall not apply and shall be void under the following conditions:

1. THE PRODUCT IS TRANSPORTED FROM ORIGINAL INSTALLATION SITE.

2. THE PRODUCT IS INSTALLED OR ASSEMBLED BY OTHER THAN FACTORY-TRAINED, AUTHORIZED DISTRIBUTOR SERVICE PERSONNEL.

3. ANY PART OF THE PRODUCT HAS BEEN ALTERED, MODIFIED, OR CHANGED EXCEPT AT B.A.I.C.'S FACTORY OR AS AUTHORIZED BY B.A.I.C. IN WRITING.

4. ATTACHMENTS OR DEVICES UNSUITABLE TO THE PRODUCT HAVE BEEN USED ON OR IN CONJUNCTION WITH THE PRODUCT.

5. THE PRODUCT HAS NOT BEEN INSTALLED, USED, OPERATED, HANDLED, OR SERVICED IN ACCORDANCE WITH THE APPROPRIATE INSTRUCTION MANUAL.

B.A.I.C. reserves the right to make changes in design or improvements in it products without any obligation whatsoever to prior Purchaser/User of such products.

B.A.I.C. will pass on to a Purchaser/User only such warranty as it shall receive on products or components not of its manufacture from the manufacturer or supplier thereof.

This warranty is expressly in lieu of any other express or implied warranties, including any implied warranty of merchantability of fitness and of any other obligation on the part of B.A.I.C., and may not be altered, modified, or changed in any way except in writing by an officer of B.A.I.C.

B.A.I.C. shall not be liable for any loss or damage directly or indirectly arising from the use of its products or for any special or consequential damage of any nature.

The Warranty Registration Card must be filled in completely and signed by Purchaser/User and returned to B.A.I.C. to validate any warranty claim.

FARMATIC
FEED PROCESSING SYSTEMS

Mix-Mill
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Dear Mix-Mill and/or Farmatic Owner/Operator:

Thank you for purchasing a new Sentry Series mixer/grinder or roller mill. More than 35 years of experience in the manufacture of feed milling equipment and grain handling systems has made Farmatic/Mix-Mill the leader in the field of electric powered, on-the-farm feed conditioning systems.

Many of the features that have provided trouble free service for thousands of owners will still be found on your new Sentry mill. New design technology and new components have also been incorporated in your mill to further increase the reliability and the flexibility needed for today's farming needs.

Some of these features are increased horse power sizes, state of the art electronics, new type C frame motors, larger screen and grinding chamber size. A new beater hub design, with these other features, gives you more output per hour to get the job done faster and more efficient.

The new Magic Window control panel provides instant visual indication of how much of each ingredient is being metered into the grinding chamber. This gives you precise control and flexibility in making different rations and in accurately controlling the amount of feed ground.

After initial calibration procedures have been completed, you will be able to preset your controls, push a button and automatically make your daily feed requirements.

The following pages of this owner's manual will provide you with the correct operating information and answer many of your questions about your new Sentry mill. Please take a few minutes to read these instructions and keep them for future reference.

The parts breakdown will help you to obtain genuine factory parts when needed. Please contact your local authorized dealer any time you need parts or service. He can also provide you with other equipment and help you plan for future growth.

Sincerely,

Bluffton Agri/Industrial Corp.
Manufacturers of Farmatic/Mix-Mill Equipment

FARMATIC FEED PROCESSING SYSTEMS

Mix-Mill FEED PROCESSING SYSTEMS

BE A SAFE OPERATOR

AVOID ACCIDENTS

Most accidents, whether they occur in industry, on the farm, at home, or on the highway, are caused by the failure of some individual to follow simple and fundamental safety rules or precautions. For this reason, most accidents can be prevented by recognizing the real cause and doing something about it before the accident occurs.

Regardless of the care used in the design and construction of any type of equipment, there are many conditions that can not be completely safe guarded against without interfering with reasonable accessibility and efficient operation.

A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT.

THE COMPLETE OBSERVANCE OF ONE SIMPLE RULE WOULD PREVENT MANY THOUSAND SERIOUS INJURIES EACH YEAR. THAT RULE IS:

NEVER ATTEMPT TO CLEAN, OIL, OR ADJUST A MACHINE WHILE IT IS IN MOTION!

"NATIONAL SAFETY COUNCIL"

B.A.I.C. has made every effort to provide safe equipment, however, the following precautions should be carefully observed!

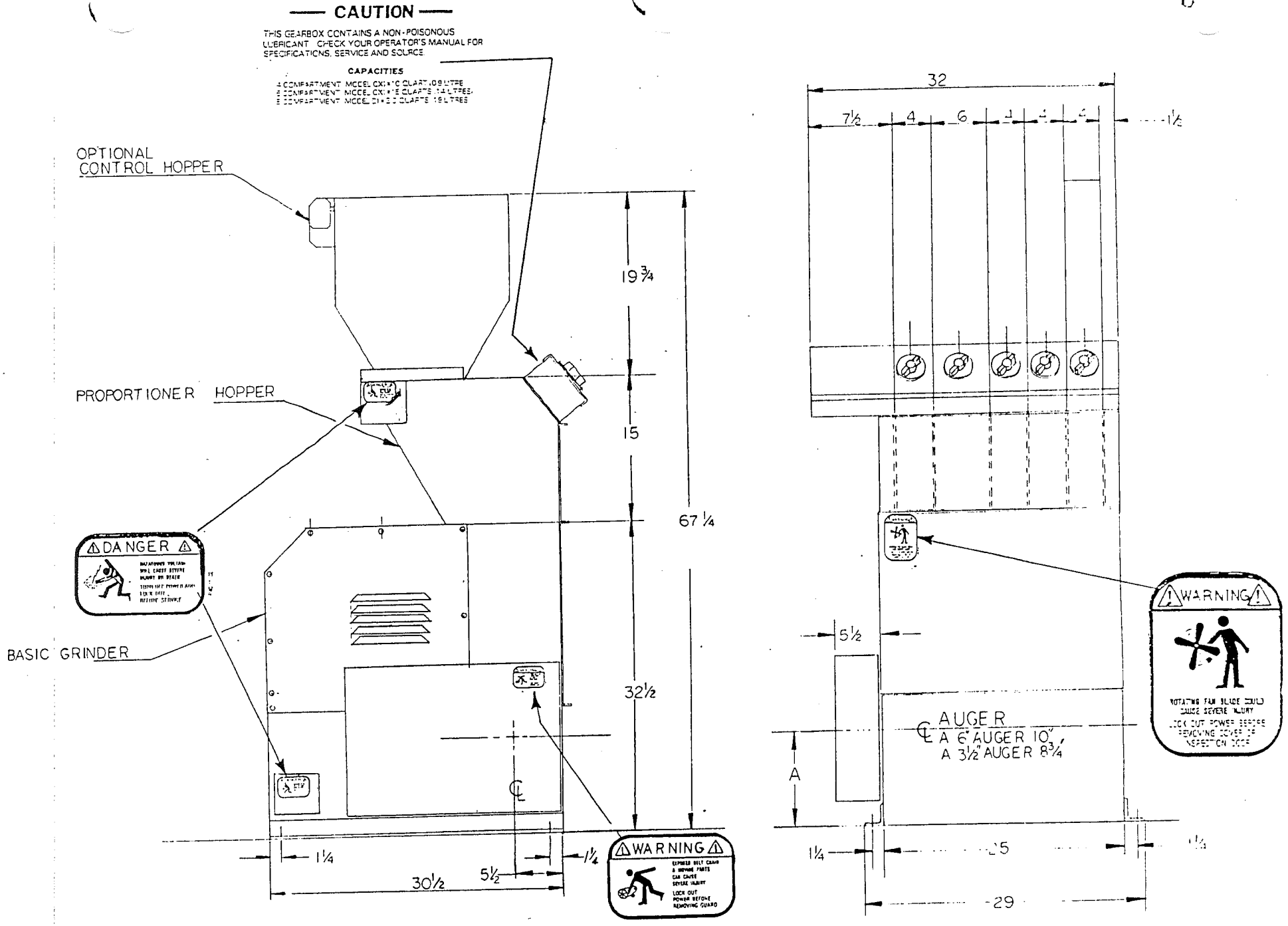
1. Disconnect main service switch before removing any housing covers or electrical boxes or switches.

2. Ground the mill frame to a ground rod driven eight (8) feet into moist soil.

3. Ground any augers to feeders where livestock might contact either augers or feeders.

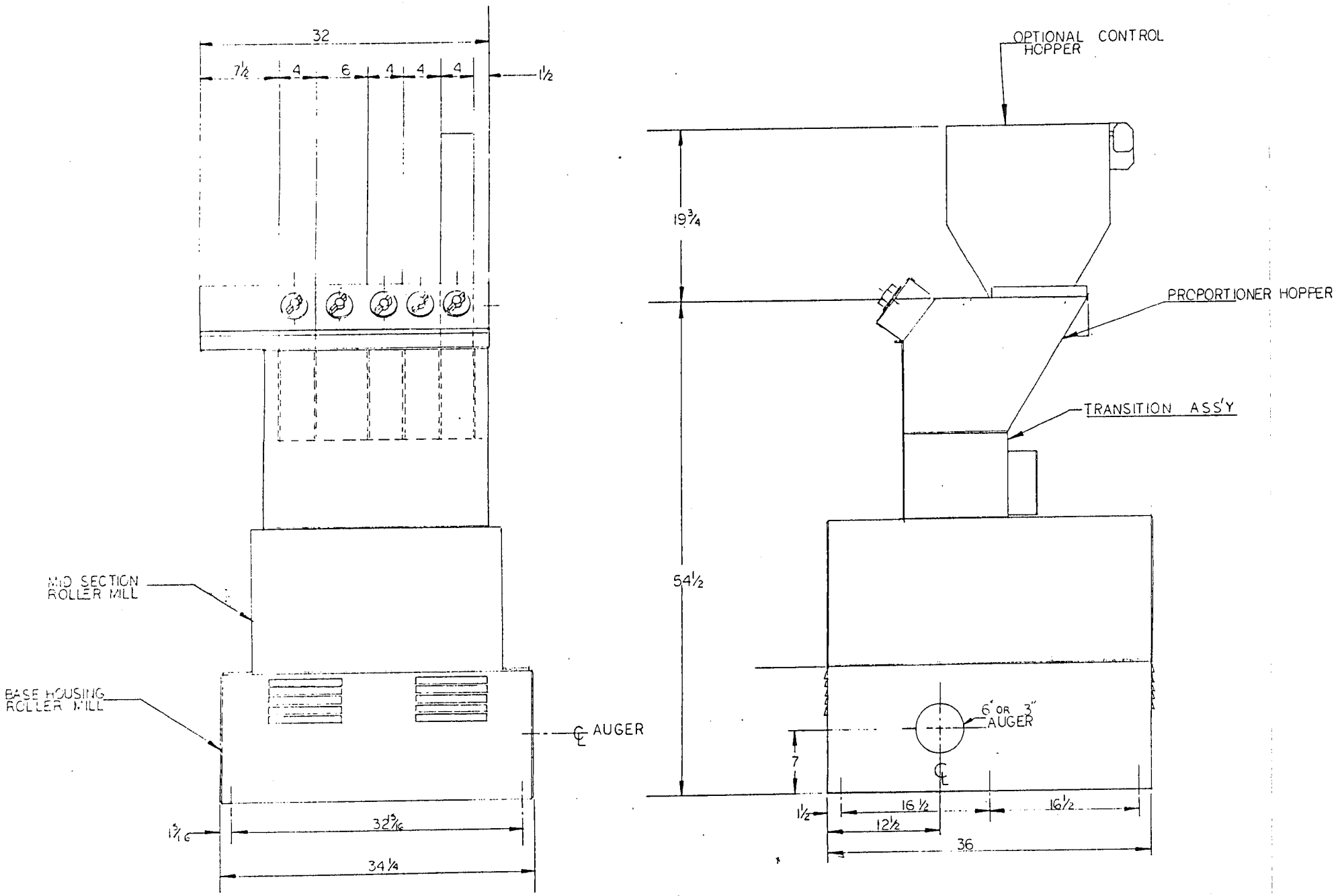
4. Keep all shields and covers in place.

5. See detail of warnings on next page and mill dimensions.



SENTRY SERIES HAMMER MILL

MAJOR DIMENSIONS



SENTRY SERIES ROLLER MILL
MAJOR DIMENSIONS

FARMATIC
FEED PROCESSING SYSTEMS

Mix-Mill
FEED PROCESSING SYSTEMS

SENTRY SERIES

MIXER/GRINDERS AND ROLLER MILLS

NEW INSTALLATION REQUIREMENTS

The mixer/grinder must be located in a weatherproof structure. A feed factory building has been designed for this purpose and is available in sizes ranging from 12 ton through 400 ton of overhead storage capacities. See your dealer for information regarding one of these all galvanized steel heavy duty structures. Your dealer has been factory trained to help you to determine the best installation of equipment to handle your present requirements and provide for future growth.

EXISTING INSTALLATIONS

Some existing farm structures are suitable for mill installation. See your authorized dealer and let him work with you to develop the most efficient, most economical system for your needs.

DISCHARGE AND FEED HANDLING SYSTEMS

Several systems are available for grain and feed handling.

A heavy guage-heavy duty 3 1/2" auger system with capacities up to 7500 lbs. per hour is available for both vertical and horizontal conveying of ingredients.

A 6" vertical high capacity auger system is available.

Standard Elevators in a 6" round tube type with capacities of 750 to 800 bushels per hour or square leg models with capacities from 1500 bu. per hour to 3000 bu. per hour are available.

MILL CAPACITIES

Several factors must be considered when figuring mill capacities; the type and amount of each ingredient, the amount of material ground and the amount that is bypassed, mill horsepower and screen size. An undersized discharge system can be a limiting factor on mill capacity. Hardness and variations in the hardness of different grains will have an effect on the mill capacity and in the amount of wear to replaceable parts such as screens, hub and hammers and mill wear plates.

CONTROL PANEL INSTALLATION:

1. Mount control panel in desired location.

2. Electrician must install a wire harness containing the appropriate wires as per wiring diagram on page 27 & 28.

3. Connect the color coded wires as indicated by the diagram on page 27 or 28.

4. 1/3 HP discharge auger motor is prewired to junction box. Connect to control panel as shown on page 27 or 28 by field installed wiring.

5. Mill motor - (230V - 1 Phase - 3 Wire) (230V - 3 Phase - 4 Wire) (575V - 3 Phase - 4 Wire) is prewired to the junction box on the mill. Connect to the control panel with field installed wiring to the terminal block that shows mill motor. The mill motor may be operated with either CW or CCW rotation. To change rotation, use the reversing switch supplied in the junction box on the mill.

6. **INCOMING POWER**

   A wire harness will have to be field supplied containing lines L1, L2, (L3 if 3 Phase) and a neutral, which needs to be connected from the circuit breaker box to the Sentry mill panel. These leads should be sized accordingly to the amps on the mill name plate and any other additional motors that are added. Connect lines L1, L2 and (L3) of the incoming power to L1, L2 and (L3) of the terminal block. A ground rod is a must! Drive a ground rod into permanently moist and undisturbed earth. Connect a wire, that is equivalent to the incoming wire size, from the rod to the panel and secure the wire to the ground connection in the lower right corner of the panel.

7. **INSTALLATION PROCEDURES:**

   WARNING! Failure to properly ground this machine could lead to serious injury to animals or persons operating the equipment. GROUNDING of all equipment is recommended. Grounding should be in accordance with the national electrical code and should be consistent with sound local practice.

   Before attempting repairs to any equipment, disconnect and "lock out" the incoming power to that equipment. An electrical shock can be obtained from an electric motor even though the incoming power is shut off. This could be caused by capacitor discharge in single phase, capacitor type motors.

8. COMPONENT FUNCTIONS

PROPORTIONER HOPPER

A. SWITCH PADDLES:

A weighted switch paddle is provided for each ingredient hopper. The paddle is inserted into the filled hopper by sliding the paddle blade down inside the sloping hopper on the proprtioner side. An alternate method is to hold the paddle in contact with the inside face of the empty hopper and then fill the hopper. As long as there is grain in the hopper, the paddle in the hopper will be held in this position. if the supply of grain is exhausted and the hopper is empty, the paddle blade will swing up, the weighted end will swing down, trip the rod, and cause the mill to stop. A paddle is needed for each hopper being used; switch paddles should be removed if hopper is empty. A full hopper with the gearbox knob set on zero will stop a lot of dust flowback.

B. INGREDIENT FLOW SWITCH:

The trip rod on the hopper engages an overcenter actuator finger that trips a micro switch.

C. MAGNETIC SEPARATOR:

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

Important: The magnets should be checked every day, if possible, as metal caught by them will eventually work itself off if not removed. If steel parts are forced off of the magnets by the constatnt flow of grain they will enter the grinding chamber and destroy a screen and a set of hammers. This type of damage is not covered by warranty.

PROPORTIONER GEAR BOX

A. STANDARD PROPORTIONER:

A new Sentry proportioner is a five auger model. Compartment numbers one, three, four and five are all of equal size with each ingredient feed auger being controlled by an adjustable knob. These knobs are numbered from one to twenty-five.

The number two auger is a double size compartment. This auger is also being controlled by an adjustable knob numbered one to twenty-five.

The fifth auger compartment is geared down internally to provide a one-fourth speed delivery for greater accuracy in adding small quantities per ton of a premix ingredient. Gearbox oil is a non-poisonous lbricant. Contact your local dealer for proper gearbox lubricant (Texaco preservative oil, low). Change oil every 500 hours or six months.

B. **PROPORTIONER DRIVE MOTOR:**

A variable speed DC motor is used to direct drive the proportioner gear train. This eliminates the need for a belt drive. The DC variable voltage is provided by an electronic control located on the main control panel for the mill. The input voltage into the control is 115V A.C. 60 HZ. The output is continuously variable from 0 to 90V-DC.

MILL DOOR

A. **BYPASS VALVES:**

The built-in bypass valves on the mill door 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. 5) auger, or both can be bypassed.

Note: Bypass only materials such as oyster shell or grit, materials that would cause excessive wear on hammers and screens.

Panel Components

Current Transformers

These devices measure the mill and proportioner currents and provide a useable signal to the electronic ammeter and shear pin sections of the electronic board.

Power Transformer

This transformer provides low voltage power to the electronic control board.

Electronic Circuit Boards

The Control Board makes all the timing, sequencing, measurement and safety decisions for the mill. It is connected by a 64 conductor ribbon cable to the faceplate display board and supplies 12 volt power to the optional counter board.

Contactors

Because all of the motor contactors are equipped with overload relays, all motors are installed without their manual reset overloads. When installing the optional vertical motor, be sure that its manual reset overload has been removed.

The overload current is set by the black dial on the overload relay's top face to match the full load current indicated on the motor's nameplate.

The overload relay has three operating modes which can be selected by gently turning the gray mode selector switch. The **AUTO** mode is for normal operation. The overload will trip when the motor current exceeds the dial setting amperage, and will reset automatically within two minutes. In the **MAN** mode, the overload will trip at the same amperage, but must be reset manually by pressing the blue reset button. In the **TEST** position, an overload can be simulated by pressing the reset button.

Fuses

Two 2 amp fast-acting fuses protect the control board power supply and the 110 volt control circuit.

The mill motor is independently fused.
In the single phase panel, the prop and base motors are protected by the same set of fuses, while the vertical motor is protected by its own set. This is to allow for the variations in vertical motor horsepower.

In the three phase panel, the base and vertical motors share the same fuses. The proportioner is fused separately since it remains a single phase motor wired to accept 110 volt.

All replacement fuses must be identical to the ones supplied with the mill.

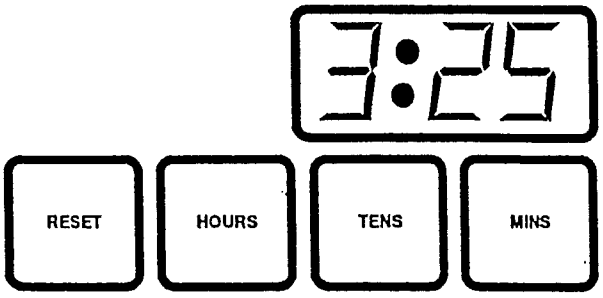
Control Features

IMPORTANT!

THE FACEPLATE TOUCH PADS ARE DESIGNED TO RESPOND TO LIGHT FINGERTIP PRESSURE ONLY. PRESSING THEM WITH SCREWDRIVERS AND OTHER HARD OBJECTS WILL DAMAGE THEM PERMANENTLY AND VOIDS THE WARRANTY!

Electronic Timer

The timer display should remain illuminated while the power to the mill is on. The battery backup system is used to save the amount of grinding time left in the event of a power failure. If the power is to be left off and battery backup is not desired, the 9 volt battery under the control board should be disconnected.

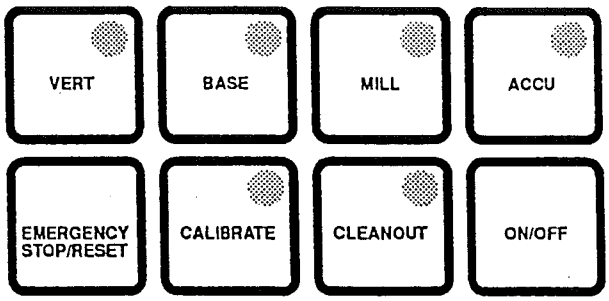


The HOURS, TENS and MINS buttons are used to set the desired running time of the mill. These buttons are pressed until the desired digit appears. Note that the TENS button counts from 0 to 5 and remains on 5 until the internal counter goes from 6 to 9. The grinding time can be changed while the mill is running, providing the timer does not hit 0:00 while being changed.

The RESET button returns the timer to "0:00" and will cause the mill to sequence down.

Main Mill Controls

The four lights above the control buttons indicate which motor contactors are being powered by the control board.



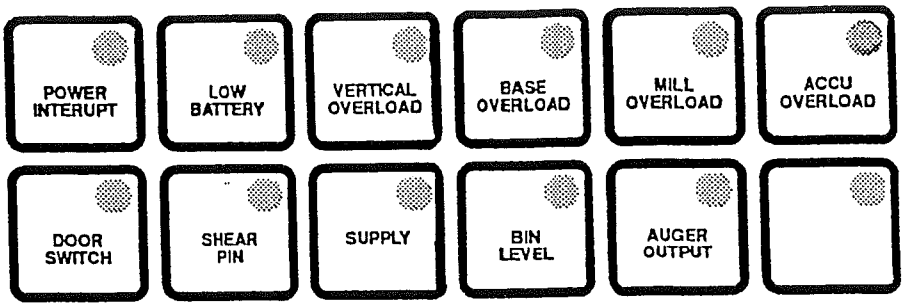
The **EMERGENCY STOP / RESET** button is used to clear any trouble indicator after the problem has been corrected. The emergency stop causes an immediate shutdown of the entire mill during any mode of operation. After this feature is used, the grinding chamber must be cleaned out before restarting the mill.

The **CALIBRATE** button runs the proportioner only, and is used during the calibration process. The red light in the corner of the button indicates when this mode is on. The button is of a push-on push-off type.

The **CLEANOUT** button is also a push-on push-off type, and has an indicator of its own. This control runs the base and vertical auger motors and is used to extend the cleanout sequence. This mode will operate even after the bin level switch has been tripped.

The **ON/OFF** button is used to sequence the mill up or down. The timer must be set to a value other than "0:00" before the mill will start. The mill will sequence up at an interval of 3 seconds between each motor and will sequence down at an 8 second interval.

Trouble and Status Indicators



The **POWER INTERRUPT** light indicates that the power to the mill has been off. If the mill was running when the interruption occurred, the grinding chamber must be cleaned out before the mill is restarted.

The **LOW BATTERY** light will increase in intensity or flicker as the battery voltage drops off. The replacement battery should be a 9 volt alkaline battery. The battery should be removed if no battery backup is desired.

The **OVERLOAD** lights indicate that an overload relay has been tripped. When tripping occurs, the mill will immediately shut down the overloaded motor and the motors "before" it, and will sequence down the remaining motors. For example, a mill motor overload will shut down the mill and proportioner motors and sequence down the base and vertical motors. It will therefore be necessary in most cases to clean out the grinding chamber before restarting the mill. Although the overload relays are self-resetting, the overload light must be RESET before restarting the mill. After any overload, inspection of the motor is necessary to remove the obstruction or to correct any electrical or ventilation problem.

The **DOOR SWITCH** light indicates, on hammer mills only, that the door to the grinding chamber has been opened. Opening the door while the mill is running will cause immediate shutdown. This important safety feature should never be bypassed.

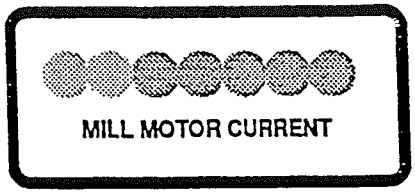
The **SHEAR PIN** light indicates that the electronic shear pin circuit has been tripped. Before resetting the indicator, the proportioner must be inspected to remove the obstruction from the proportioner augers and to make sure that the augers turn freely.

The **SUPPLY** light indicates that an ingredient has run out and that the trip rod has been tripped. The mill will sequence down, and the trip rod must be pulled back again before the supply light is reset.

The **BIN LEVEL** light indicates that the finished feed bin is full and causes the mill to sequence down. The calibrate and cleanout buttons are still operable before this indicator is reset.

The **AUGER OUTPUT** light is used with the appropriate switch to shut down the mill in case the vertical auger jams.
The blank indicator can be used in various situations to sequence down the mill. Its wiring appears on the wiring diagrams as **EXTRA SWITCH**.

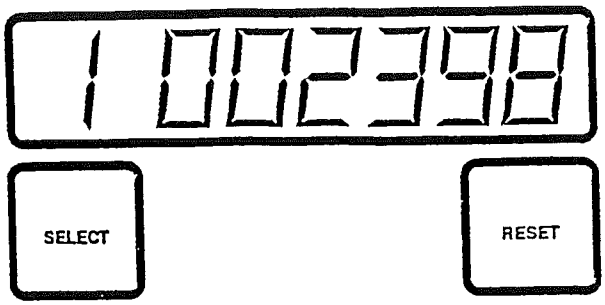
Electronic Ammeter



These seven lights indicate 80% to 110% of full load mill motor current in steps of 5%. The first five lights (80% to 100%) are green and represent the normal operating range of the mill. The 105% and 110% lights are red and indicate mill motor overloading. The operator should adjust the D.C. motor speed control to prevent the red lights from flashing on.

The speed control knob as seen from the outer panel side of the control box is an adjustable, electronic, A.C. to D.C. converter. This device provides a variable D.C. voltage to the proportioner direct drive motor. The knob is adjustable from 0 to 10 and controls the speed of the mix augers. As a higher number is selected the speed increases and the ingredients are augered into the grinding chamber at a faster rate. DO NOT advance the control too fast when approaching the higher number settings. Due to the reaction time of the proportioner, speed increase, and the time required for the increased amount of ingredients to get into the grinding chamber, an overload condition of the mill motor could develop.

Optional Counter



The counter system derives its power and battery back-up from the control board. Therefore, both the count and grinding time are saved during a power failure.

This system counts all five augers simultaneously, but only displays one at a time. The SELECT button is used to select which auger's count is to be displayed. The auger number is indicated by the single left-hand digit. The augers are numbered 1 to 5 from left to right, facing the mill.

The RESET button resets all counts to zero.

External Wiring

Safety Precautions

- Always disconnect the main power source before working on equipment.
- Always install proper guards and shields where required.
- Always have installations or major repairs done by qualified electricians or service personnel.
- Always ground mills and material handling equipment according to local electrical code.
- Keep all electrical panel boxes, switch boxes and motor terminal boxes closed.

Cautionary Notes

The electronic control and counter board are sensitive to static electricity. While handling the boards or the panel's control wiring:

- All power to the mill must be disconnected.
- Wear an anti-static wrist strap connected to the mill panel's ground bar strip.

If the removal of a circuit board becomes necessary:

- Handle all electronic boards by their edges only.
- Any electronic board must be kept in the anti-static envelope and cardboard box provided until it is installed.

Mill Motor and Power Terminal Strip

These heavy duty terminals are used to wire the mill motor and to accept the main power lines.

Auxiliary Motor Terminal Strip

Terminals on this strip are used to wire in the vertical auger motor, base and proportioner motors. Terminals 15 and 16 on this terminal strip are connected across a set of normally open auxiliary contacts from the vertical motor contactor. These are used to run other equipment, like the Farmatic Air Conveyor, in sequence with the mill.

When wiring up the vertical motor, be sure that the motor's full load amperage is within the range of the overload relay inside the panel. Since a motor mounted overload is not required, it should be disconnected from the motor. Leaving it in could interfere with the intended shut-down of the mill during an overload condition.

Ground Bar

This terminal receives a ground wire from the feed room's breaker box and is used to ground the control panel box, and all motor housings.

Control Wiring

The left-hand terminal strip (terminals 1 to 8) are used in the wiring of mill shut-off switches. Any unused shut-off feature should be bypassed by a jumper wire, since mill shut-off will occur when any of these circuits are open. While the door switch circuit carries 110 volts ac, the remaining shut-off circuits carry 12 volts dc. To avoid permanent damage to the electronic control board, the main power must be disconnected before changing any connections on this terminal strip.

Electrical Troubleshooting

Symptom	Probable Cause	Corrective Action
Motor will not start	Bad connection in display strap	See "Partial clock/counter display".
	Failed contactor	Check for contactors not engaging during cycle-up. Test and replace if necessary.
	Blown motor fuse	Check and replace fuses. Inspect motor for cause of overload.
	Loose connection	Tighten all motor wiring.
	Failed motor	Test and replace if necessary.
Frequent motor overload	Mechanical obstruction	Remove obstruction. Check bearings.
	Loose connection	Tighten all motor wiring.
	Failed contactor	Test and replace if necessary.
	Low overload	Check overload adjustment against motor's full load amperage.
Frequent SHEAR PIN tripping	Feed restriction	Check back of accuportioner for build-up of feed or foreign material.
	Internal accuportioner failure	Service accuportioner for seized or broken component.

Symptom	Probable Cause	Corrective Action
No clock/counter display	No power to mill	Turn all breakers on.
	No power to control board	Check and replace 2 amp fuses. Look for possible shorts in 110/120 volt control circuits.
Partial clock/counter display	Bad connection in display strap	Wiggle connectors gently. Display will flicker and become complete.
No response to ON/OFF, CALIBRATE or CLEANOUT	Trouble light on	Correct the cause of trouble. Reset light, try again.
	Timer reads "0:00"	Set timer to grinding time.
	Damaged faceplate	Inspect touch pads for scratches and dimples. Replace if necessary.
No response to clock/counter buttons	See "Partial clock/counter display" above.	
	See"Damaged faceplate" above.	
Overload light will not reset	Overload has not reset itself	Wait 2 minutes, try again.
	Failed overload	Test overload contacts. Replace if necessary.
Shutoff indicator light will not reset	Switch is still tripped	Reset switch, reset light.
	Faulty wiring	Check for open switch circuit.

Note: All connections should be checked one month after installation, six months after installation and once a year thereafter.

Calibration Instructions

A

Facing the accuportioner dials, write down the names of the ingredients in Compartments 1 through 5.

B

Write down the desired amount per tonne/ton of each ingredient to come from each compartment. If an ingredient is in more than one compartment, divide the total amount desired evenly between the compartments.

C

Write down the % protein of each ingredient in the appropriate space.

D

Write down the dial settings for the present formula or turn all the dials to 20 and write "20" in each space provided.

E

a) Hang an empty canister (one that you will fill with premix or concentrate) on the calibration scale and set the scale's adjustable needle to "0".
b) Attach the calibration chute to the mill and set all the canisters under it.
c) Start the proportioner using the CALIBRATE button. When one of the canisters is filled without spilling, stop the proportioner by pushing the mill's trip rod.

F

Weigh each canister on the scale and write down each net weight in the space provided. Add up all of the canister weights and write this figure in the total weight box at the right hand side of this line.

G

Divide each of the weights in step F by the total weight and write this "decimal number" under the associated test weight. The numbers to the right of the decimal point are the kilograms or lbs. of each ingredient per tonne/ton (example: 0.75 = 375 kg/tonne or lb./ton). If you wish to have your weights in pounds per imperial ton, simply multiply these numbers by 2.

H

For each compartment, multiply the protein figures of step C by the "decimal number" of step G. This gives the % protein contributed to the ration by each compartment. Add these figures up and write the total in the total protein box at the right hand side of this line.

I

To obtain primary dial settings for you desired ration, multiply step B by step D, then divide by step G and finally multiply by 1000. Do this calculation for each compartment and write these new settings in the spaces provided. If the settings are too high (if some are higher than 25) or too low for good accuracy, use the dial multiplier steps J and K. If the settings seem reasonable, go to the step F below and then with steps G and H if necessary.

J

Divide the number "23" by the highest dial setting step I. Write this number in the box provided at the right.

K

Multiply the dial multiplier number by each setting in step I and enter these calculated settings in the spaces provided. Remember to round off these figures to the nearest whole number. Use these settings to go through steps F, G and H once more. After that, slightly readjust you dials to "fine tune" the ration if necessary.

Note: It is a good idea to check your rations periodically. Go through steps F, G and H and calculate your rations on a regular basis.

Calibration Worksheet

Date: _____ **Name of ration:** _____ **Desired Protein:** _____ %

	Compartment Number	1	2	3	4	5	
A	Ingredient name						
B	Desired amount per compartment						Total = 1000 kg or 2000 lb.
C	% Protein of each ingredient						
D	Dial settings						Load dial settings
E	Run proportioner						Total weight
F	Weight of each ingredient (Kg or lbs.)						
G	Fraction of a ton(ne) (each ingredient weight / total weight)	.___	.___	.___	.___	.___	Total = 1 ton(ne)
H	Protein contribution (step C x step G)						Total protein = ___.__ %
I	Primary dial settings (B x D / G / 1000)	__.__	__.__	__.__	__.__	__.__	
	If primary dial settings are too high (greater than 25) or too low for accuracy, use the dial multiplier below to obtain more suitable settings.						
J	Dial multiplier	23 / [ ] (highest setting from step I) = [ ]					
K	Calculated dial settings (step I x dial multiplier)						
	Run proportioner						Total weight
F	Weight of each ingredient (Kg or lbs.)						
G	Fraction of a ton(ne) (each ingredient weight / total weight)	.___	.___	.___	.___	.___	Total = 1 ton(ne)
H	Protein contribution (step C x step G)						Total protein =
	If the weights per ton(ne) are hot close enough to the desired amounts in step B, readjust the appropriate dials.						
	Recalibration check date:						Total weight
F	Weight of each ingredient (Kg or lbs.)						
G	Fraction of a ton(ne) (each ingredient weight / total weight)	.___	.___	.___	.___	.___	Total = 1 ton(ne)
H	Protein contribution (step C x step G)						Total protein =
	Recalibration check date:						Total weight
F	Weight of each ingredient (Kg or lbs.)						
G	Fraction of a ton(ne) (each ingredient weight / total weight)	.___	.___	.___	.___	.___	Total = 1 ton(ne)
H	Protein contribution (step C x step G)						Total protein =

Magic Window (for Sentry 5000 and 6500)

How to use your Magic Window

1. Have your ingredients analyzed for protein, moisture, calcium and phosphorus content on an "as fed" basis. Enter the results into Magic Window's permanent memory. Book values or average values can be used, but an actual analysis will provide the highest accuracy.

2. Calibrate your mill the easy way. Let Magic Window guide you through a calibration in 3 simple steps. You won't even need a pencil; Magic Window does all the calculations for you. The entire calibration takes only a few minutes, so we recommend that you calibrate your mill every week.

3. Enter feed formulas into the Hagic Window. Tell Magic Window how many Kg/Tonne or Lbs/Ton you want from each compartment and Magic Window automatically tells you where to set the proportioner dials. It's that simple.

At any time, you can:

Check the protein, moisture, calcium and phosphorus content of the ration you are preparing.

Check the number of Kg/Tonne or Lbs/Ton of each ingredient going into the ration at any moment.

Check the number of tonnes or tons each ingredient used since the last time the inventory was "reset".

Features

1. The start screen

BAIC MAGIC WINDOW COPYRIGHT 1990

appears when you first power up the mill panel. From this screen, you may select any one of Magic Window's functions by pressing the appropriate key.

If at any time you get confused, make a mistake or simply want to get out of a function, press the START OVER key. This will send you back to the start screen without interfering with Magic Window's operation. You may then start over what you were doing or select another function.

2. To enter a number into the Magic Window:
   a) Use the 0 to 9 and Decimal keys to make the number appear on the screen.
   b) When the correct number appears on the screen, press the ENTER key.
   c) If you made a mistake while keying in the number, press the CORRECT LAST ENTRY key before pressing the ENTER key. The

CORRECTION =

   screen will appear. Re-enter the correct number onto this screen and press ENTER.

3. The Magic Window ends any statement or question with one of these three symbols:

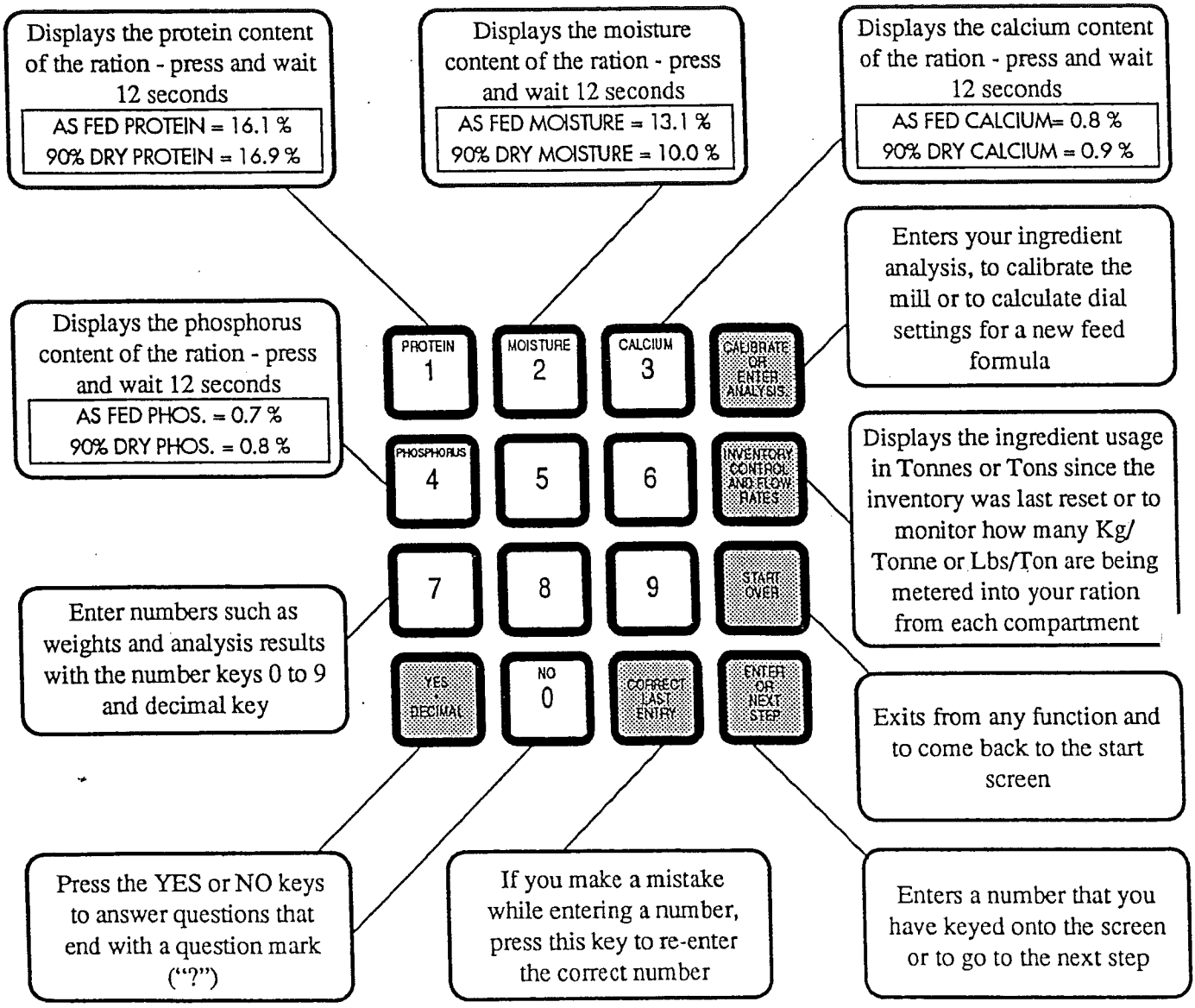
   ? a question mark means "answer YES or NO"

   = an equal sign means "enter a number"

   --> an arrow means "go to the NEXT STEP"

4. The Magic Window screen contains a light that gives it a green glow. This light will turn itself off after about 12 minutes if the mill is not grinding and if nokeys are touched. The screen will light up again when you touch any Magic Window key.

Keypad functions



Ingredient analysis

You purchased your Magic Window because you were concerned with the accuracy of your ration. You also know that farm grown grains and corn vary from province to province, county to county and even from farm to farm.

For the best accuracy, we recommend sending your ingredients away for analysis. Always remember to use proper sampling methods for all ingrdients and to keep half of each sample for future reference. Ask the lab to report the values on an "as fed" basis since this is the basis on which Magic Window operates.

If you do not wish to send your premix or supplement away for analysis, feed free to use the "tag" values provided by the manufacturer. If you wish to get started before your results are back, a listing of some common feed stuffs and their "book" or average values are provided in Appendix A.

Magic Window functions

In the following pages, each Magic Window function is illustrated by a "flowchart" with explanations on the right side of the page. The fastest way to familiarize yourself with the Magic Window is to physically perform all of the functions on your mill, using these flowcharts as guides. There are just two things to remember about the flowcharts:

1. Follow each flowchart from top to bottom.

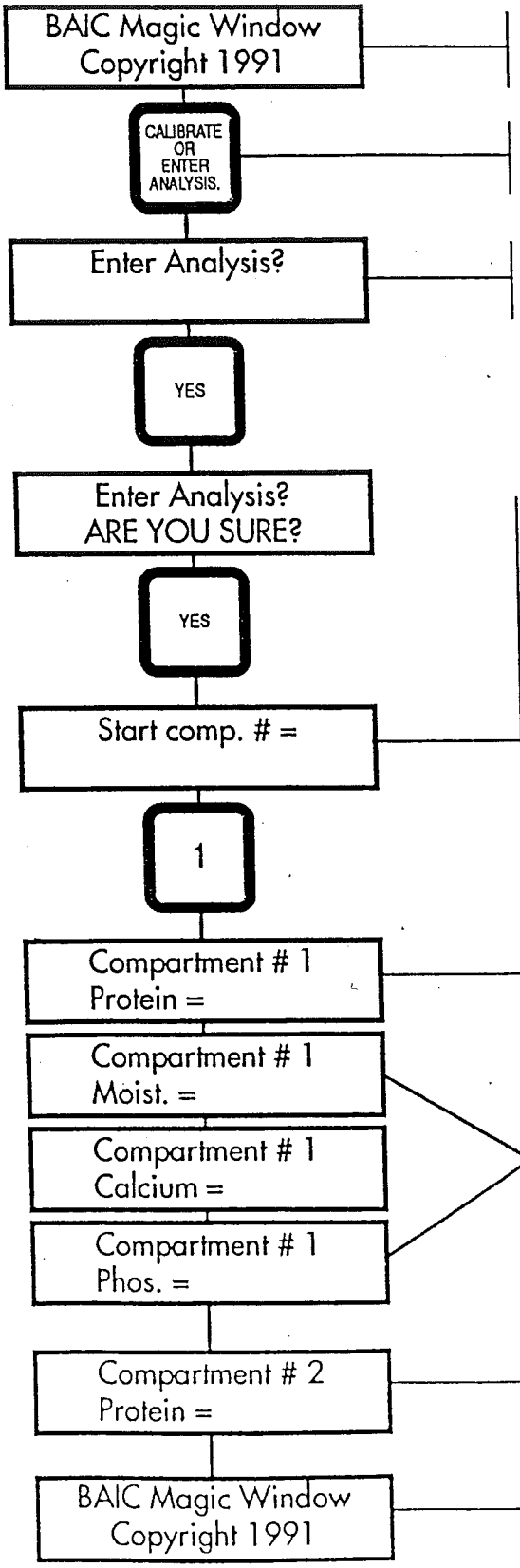
2. This shape 

represents a key.

This one 

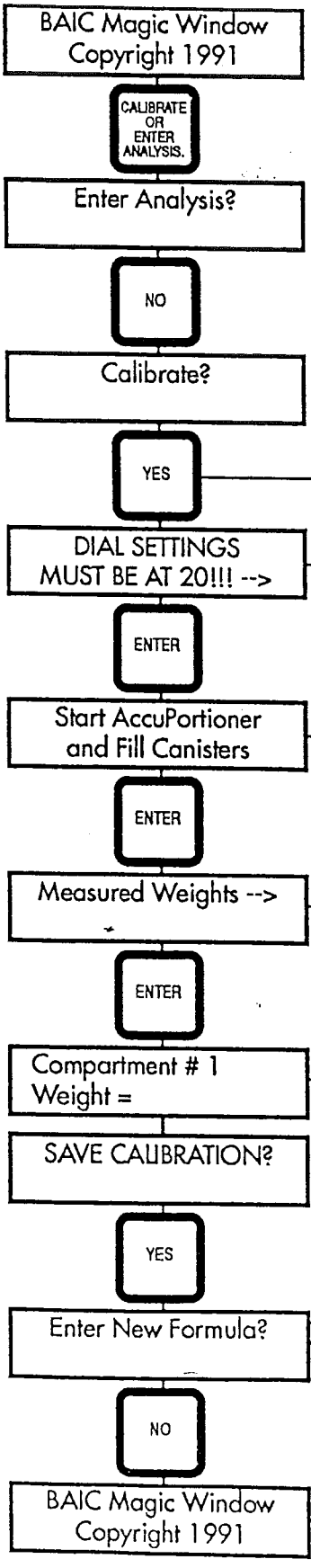
represents a screen message.

How to enter, change or check an analysis



- This is the start screen. It appears when you power up the mill panel.
- Press this key to start the ENTER ANALYSIS function.
- This screen will appear instantly. Answer the question by pressing the YES key.
- Enter the compartment number you would like to start with (1 to 5).
- To enter an analysis for the first time, start with compartment #1.
- To change some values to match a new analysis, select the compartment where you want to make the changes.
- You can review the analysis values without changing them by pressing the ENTER key.
- You can exit the ENTER ANALYSIS function at any time by pressing the START OVER key.
- Enter the protein on an "as fed" basis for the ingredient in compartment #1.
- When the correct number appears on the screen, press ENTER.
- Enter the moisture, calcium and phosphorus for the same ingredient, always on an "as fed" basis.
- The Magic Window will then ask you for the protein, moisture, calcium and phosphorus content of the ingredient in compartments #2, 3, 4, and 5.
- When the analysis for compartment #5 has been entered, you will be sent back to the start screen.

How to calibrate



Calibrate your mill regularly, once a week if possible.

Get ready!

1 Remove the mill's upper compartment back panel and attach the test chute.

2 Make sure that each proportioner auger trough is filled with ingredient so that it will start to flow down the chute as soon as you turn on the proportioner.

3 Hang the empty premix or supplement canister on the calibration scale and set the scale's "tare" needle to zero.

4 Place the 5 canisters under the test chute.

Note: If answered YES, you must do a complete calibration.

- Set all the proportioner's dials at 20.
- Press the ENTER key to continue.

- Start the proportioner by pressing the CALIBRATE button on the mill control panel.
- When one of the canisters is filled (without spilling over!), push the mill's trip rod to stop the proportioner.
- Press the ENTER key to continue.

- Get ready to weigh each canister and enter the weights.

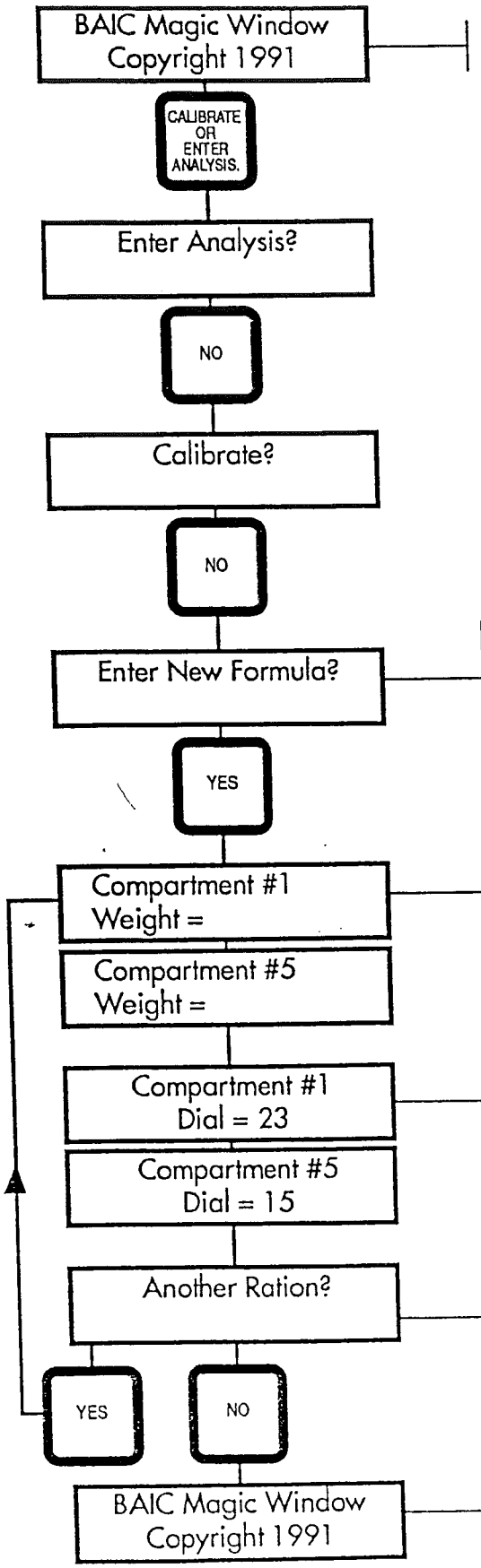
- Enter the weight of the compartment #1 canister.
- Press ENTER to proceed to the next compartment.

- When the weight for compartment #5 has been entered, the calibration is complete. Magic Window will ask you if you would like to calculate dial settings for a new ration.

- See next page, "How to calculate proportioner dial settings"

- You have left this function and have returned to the start screen.

How to calculate proportioner dial settings



- If you started from the start screen, do these steps to calculate dial settings for a formula.

- If you just finished the CALIBRATE routine, this is where you would start.

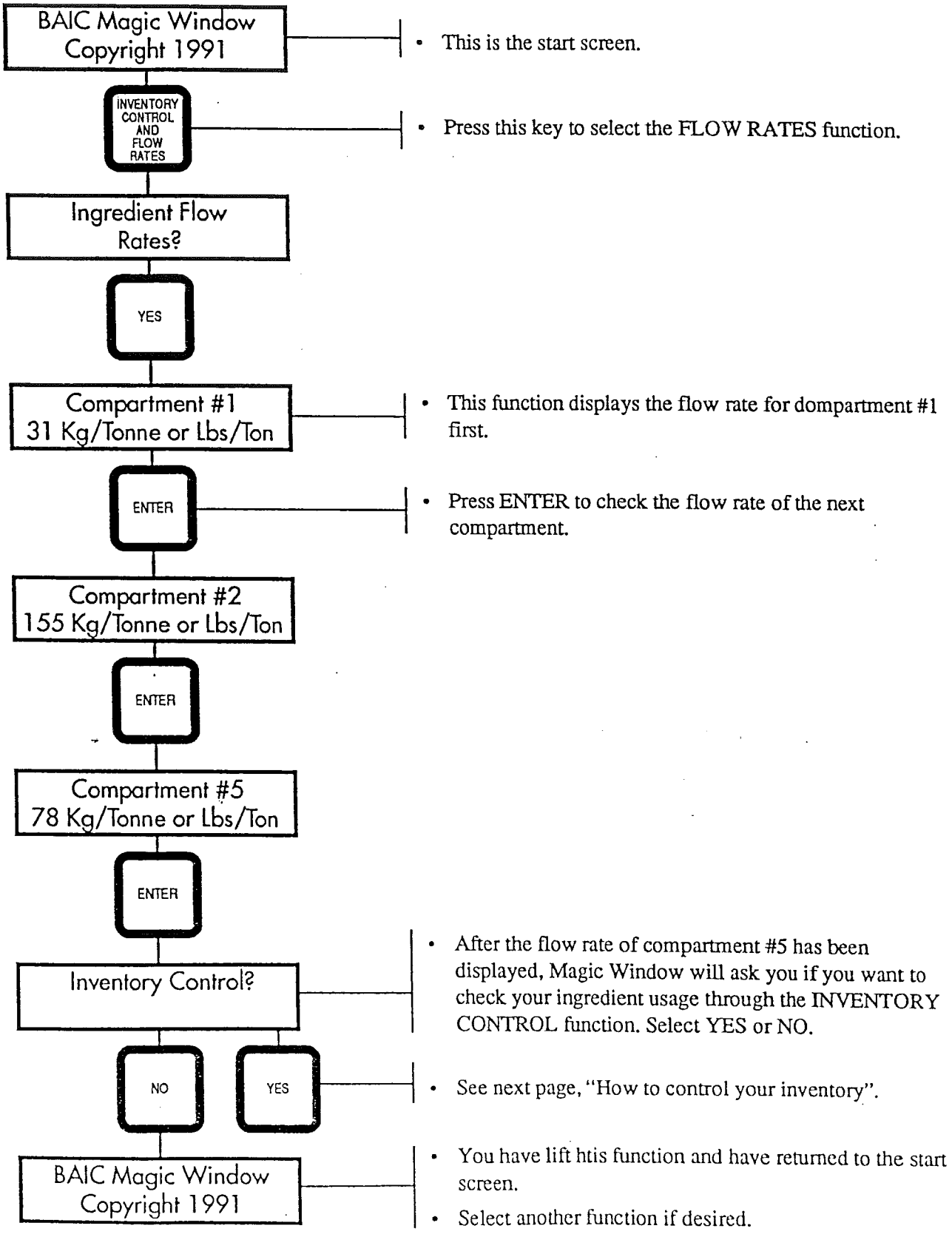
- Enter the weight per tonne or ton to come from each compartment.
- Enter "0" if none of the ingredient is required in the formula.
- When the weight from compartment #5 has been entered, the Magic Window will automatically calculate and display the required proportioner dial settings.

- Set each dial according to the screen.
- Press ENTER to display the next dial setting.
- Run the mill with these settings and have Magic Window check the flow rates and nutrient levels. "Fine tune" the dial settings if required.
- Write down your final dial settings on the FEED ROOM CHART.

- When all the settings have been displayed, Magic Window will ask you if you would like to calculate dial settings for another formula.

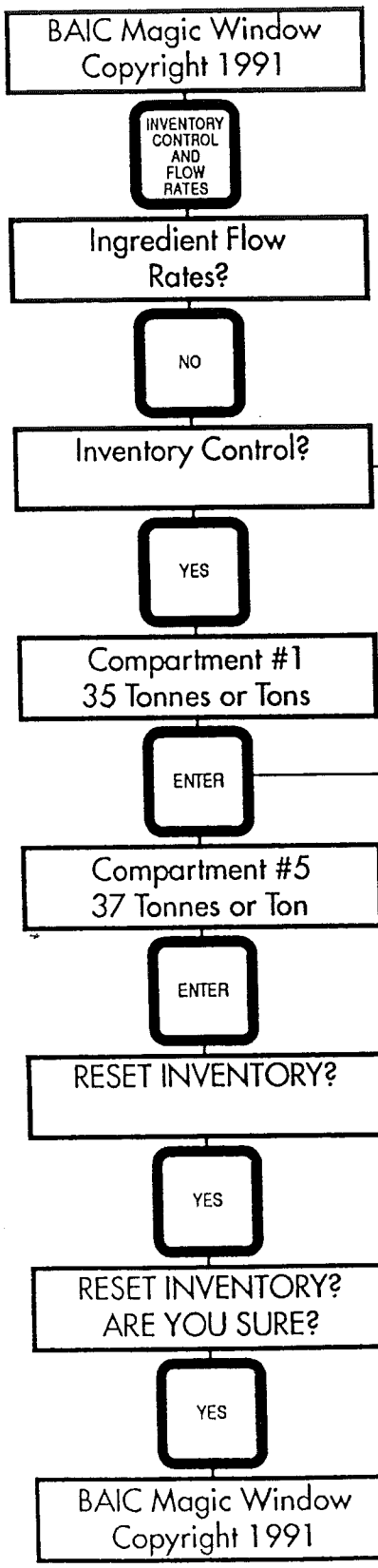
- You have left this function and have returned to the start screen.

How to check ingredient flow rates



- This is the start screen.
- Press this key to select the FLOW RATES function.
- This function displays the flow rate for dompartment #1 first.
- Press ENTER to check the flow rate of the next compartment.
- After the flow rate of compartment #5 has been displayed, Magic Window will ask you if you want to check your ingredient usage through the INVENTORY CONTROL function. Select YES or NO.
- See next page, "How to control your inventory".
- You have lift htis function and have returned to the start screen.
- Select another function if desired.

How to review inventory



Important!

Magic Window will keep up to 656 Tonnes or Tons in its memory for each ingredient. When an ingredient's usage goes over that amount, Magic Window starts counting from "0" again. If you forget to "reset" the inventory on a regular basis and you notice that your usage has jumped back to a very low number, simply add 656 Tonnes or Tons to that number to know your exact usage.

- If you just finished the FLOW RATES routine, this is where you would start.

- Press ENTER to check the inventory of the next compartment.

- After the inventory for compartment #5 has been displayed, press ENTER and Magic Window sill ask you if you would like to reset all the inventory figures to "0".• If you do, remember to write down the current inventory figures on the INVENTORY CONTROL sheet before pressing the YES key.

- The inventory figures for all compartments are reset to "0" and you are returned to the start screen.
- The next inventory recording period has now started.

Feed Room Card

RATION NAME:						COMPARTMENT				
						1	2	3	4	5
DATE	PROT.	MOIST.	CALC.	PHOS.	INGREDIENT					
					DIAL SETTING					
					FLOW RATE					
					DIAL SETTING					
					FLOW RATE					
					DIAL SETTING					
					FLOW RATE					
					DIAL SETTING					
					FLOW RATE					

RATION NAME:						COMPARTMENT				
						1	2	3	4	5
DATE	PROT.	MOIST.	CALC.	PHOS.	INGREDIENT					
					DIAL SETTING					
					FLOW RATE					
					DIAL SETTING					
					FLOW RATE					
					DIAL SETTING					
					FLOW RATE					
					DIAL SETTING					
					FLOW RATE					

RATION NAME:						COMPARTMENT				
						1	2	3	4	5
DATE	PROT.	MOIST.	CALC.	PHOS.	INGREDIENT					
					DIAL SETTING					
					FLOW RATE					
					DIAL SETTING					
					FLOW RATE					
					DIAL SETTING					
					FLOW RATE					
					DIAL SETTING					
					FLOW RATE					

Inventory Control

INVENTORY PERIOD	COMPART. NUMBER	INGREDIENT NAME	NUMBER OF TON(NE)S	X	PRICE($) PER TON(NE)	=	COST($)
FROM	1			X		=	
	2			X		=	
TO	3			X		=	
	4			X		=	
	5			X		=	

TOTAL: ______________ TON(NE)S TOTAL: $ ____________

FROM	1			X		=	
	2			X		=	
TO	3			X		=	
	4			X		=	
	5			X		=	

TOTAL: ______________ TON(NE)S TOTAL: $ ____________

FROM	1			X		=	
	2			X		=	
TO	3			X		=	
	4			X		=	
	5			X		=	

TOTAL: ______________ TON(NE)S TOTAL: $ ____________

FROM	1			X		=	
	2			X		=	
TO	3			X		=	
	4			X		=	
	5			X		=	

TOTAL: ______________ TON(NE)S TOTAL: $ ____________

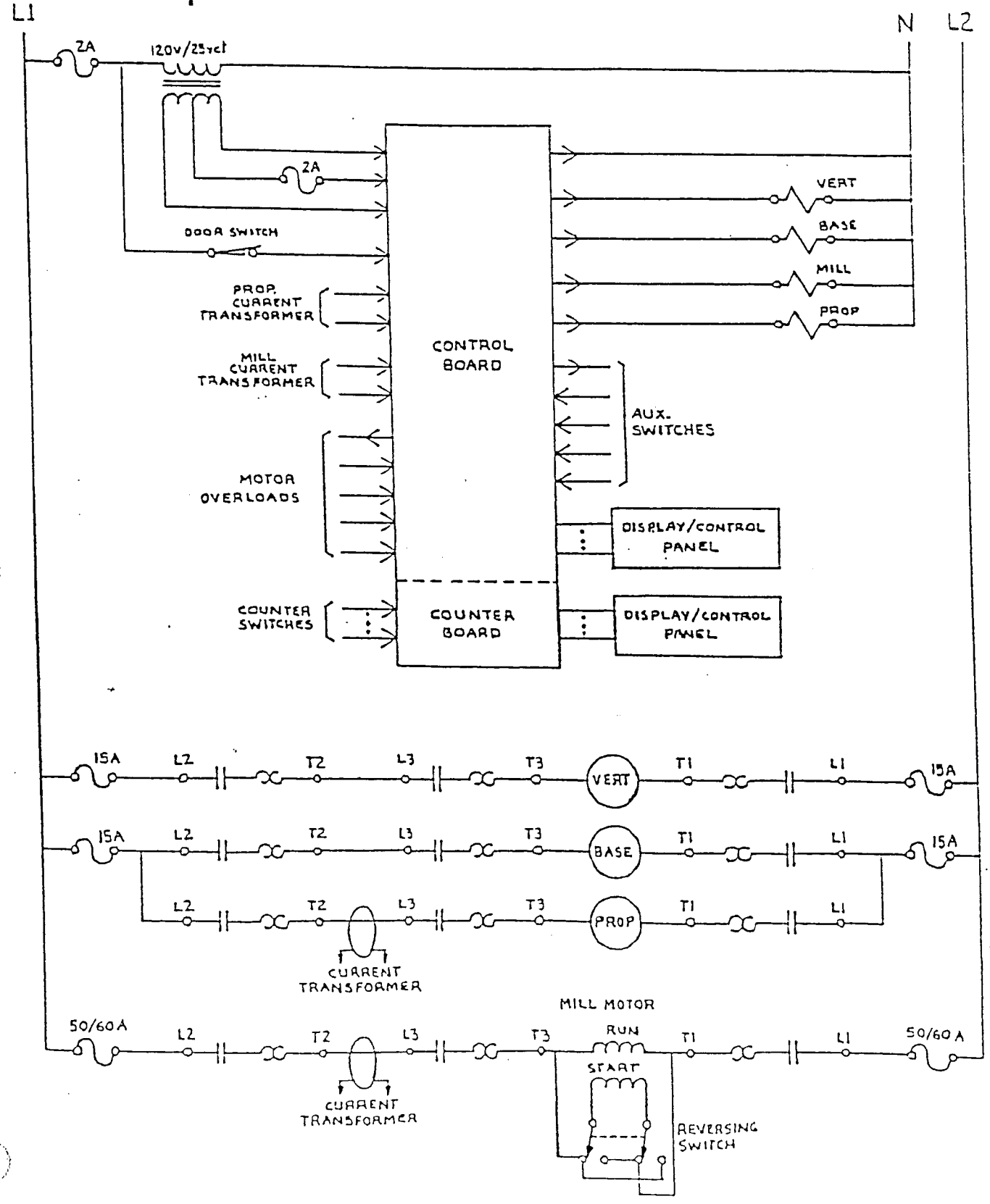
Average ampere rate setting on overload protection devices in control panels for Mix-Mill/Farmatic.

UNIT	HP	PH	RPM	115V	230V	380V	460V	575
Mill Motor AC	5	1	3600		24A			
	7.5	1	3600		33A			
	10	1	3600		40A			
	5	3	3600		12.4A	8.5A	7A	5.5A
	7.5	3	3600		20A	12A	10A	8A
	10	3	3600		26A	16A	13A	10.5A
	15	3	3600		37A	22A	18.5A	14.5A
	20	3	3600		51A	30.5A	25.5A	20.5A
Horiz & Vertical Auger Motor AC	1/4	1	1800	4.8A	2.4A			
	1/3	1	1800	5.8A	2.9A			
	1/2	1	1800	7.8A	3.9A			
	3/4	1	1800	10.8A	5.4A			
	1	1	1800	13.0A	6.5A			
	1	3	1800		3.4A	2.0A	1.7A	1.4A
	1-1/2	1	1800	19.2A	9.6A			
	1-1/2	3	1800		4.8A	2.9A	2.4A	1.9A
Proportioner Motor DC	1/4		1800	90 VDC Arm. 2.5A				

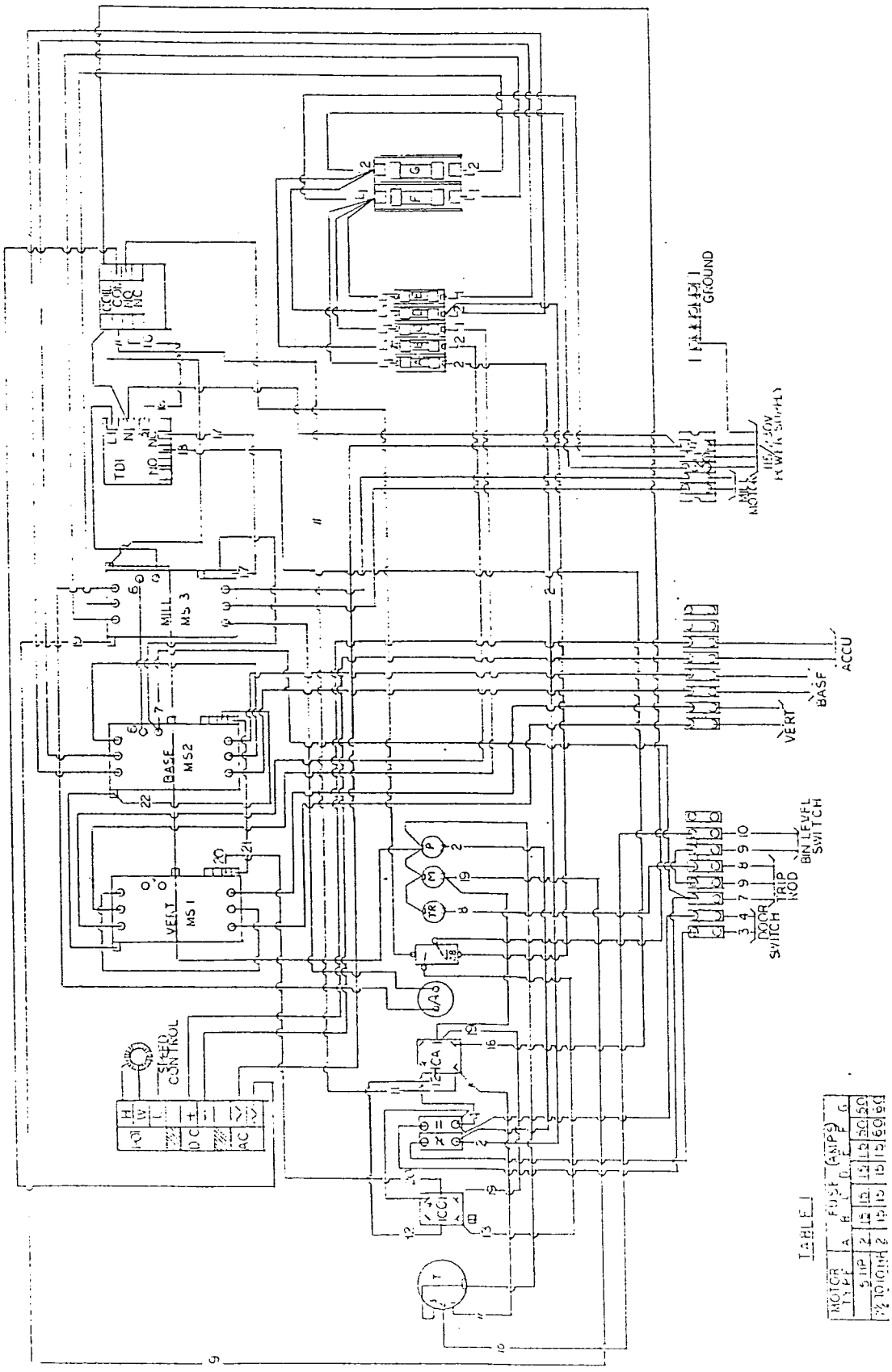
CAUTION: This average rating could be high or low for a specific motor and therefore for fully reliable motor protection, check with the full load current rating shown on the motor nameplate.

Electrical Diagrams

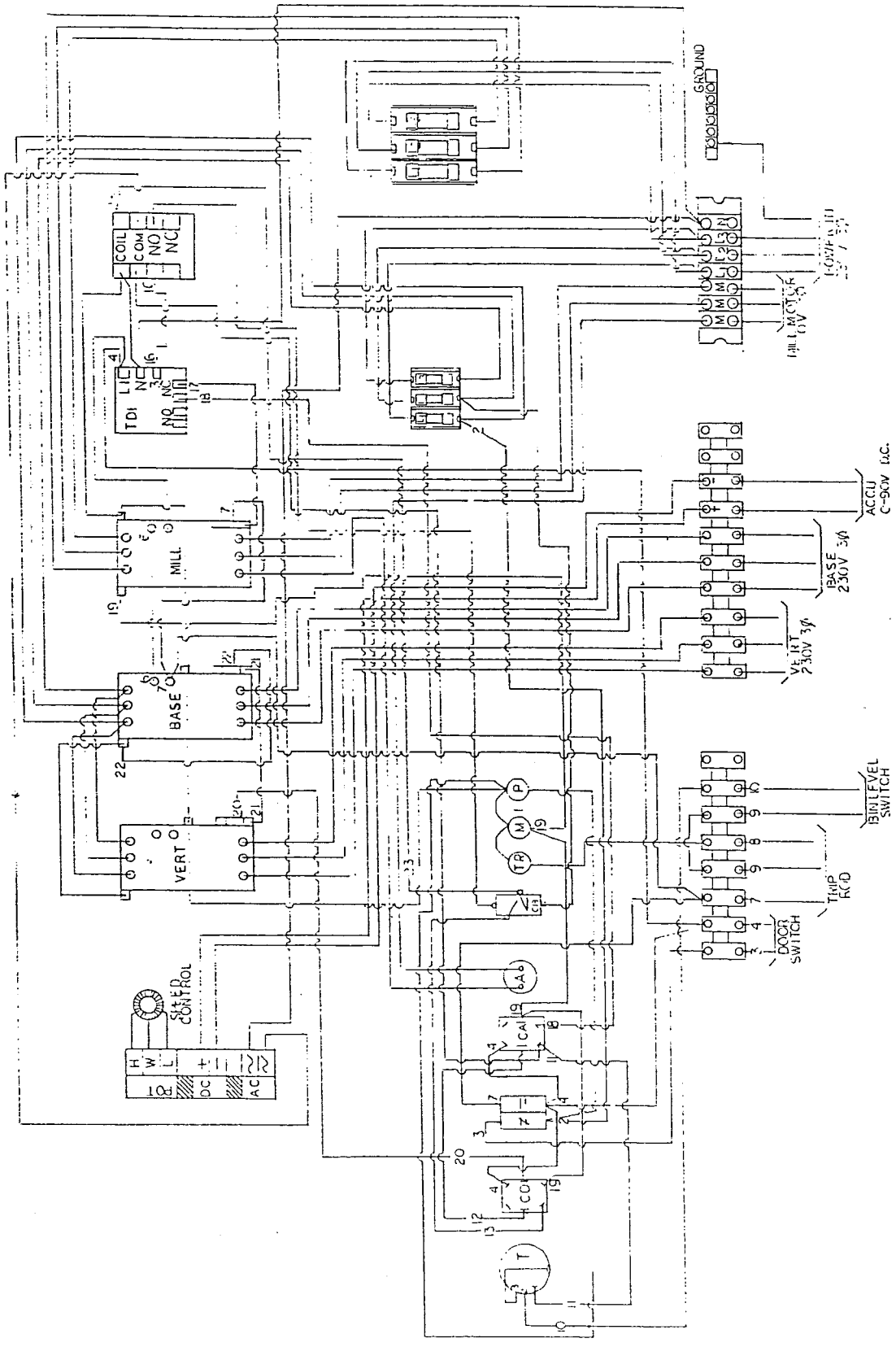
Circuit description



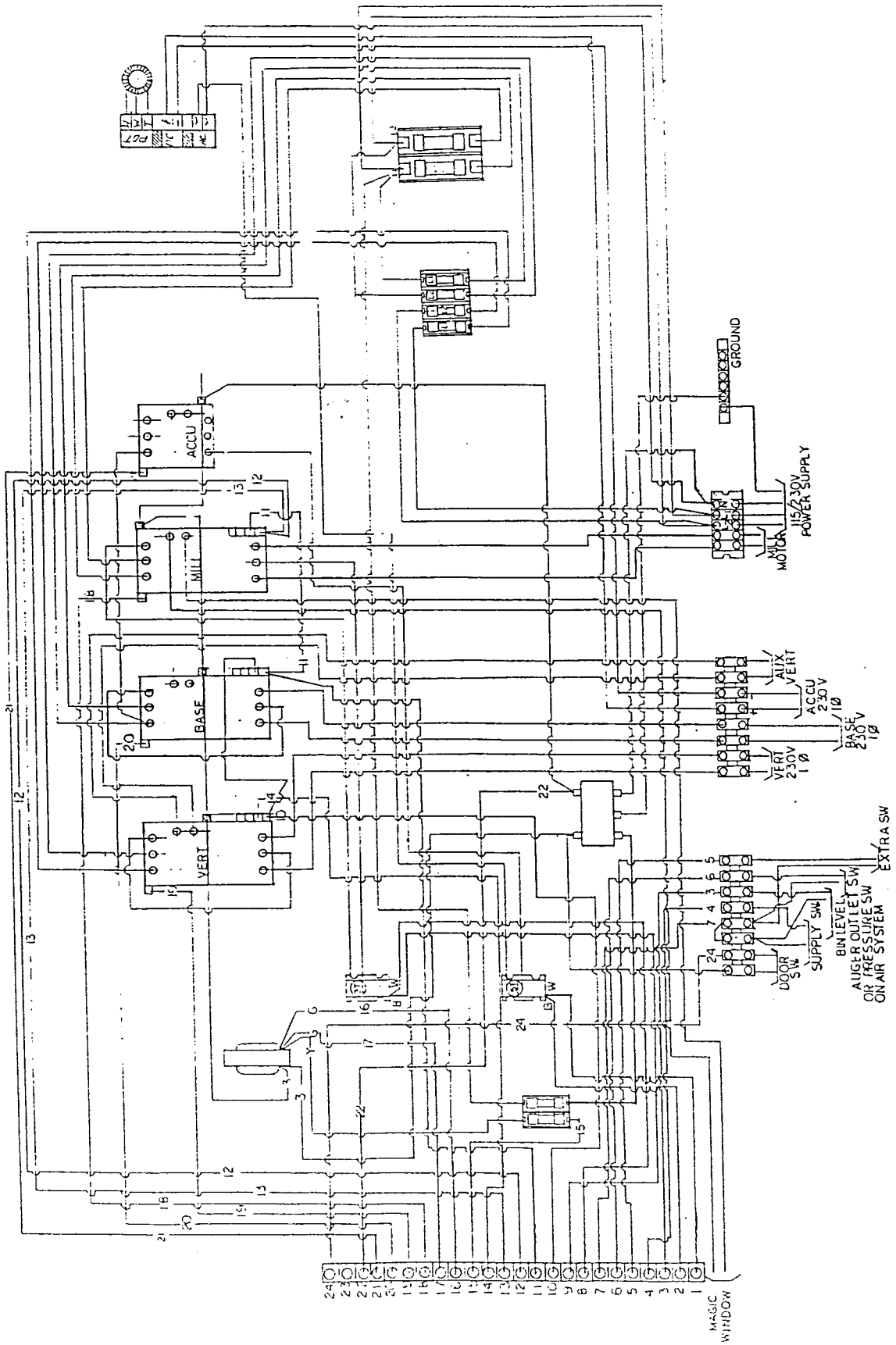
Panel wiring - Sentry 4500, 3000, 2000 - single phase



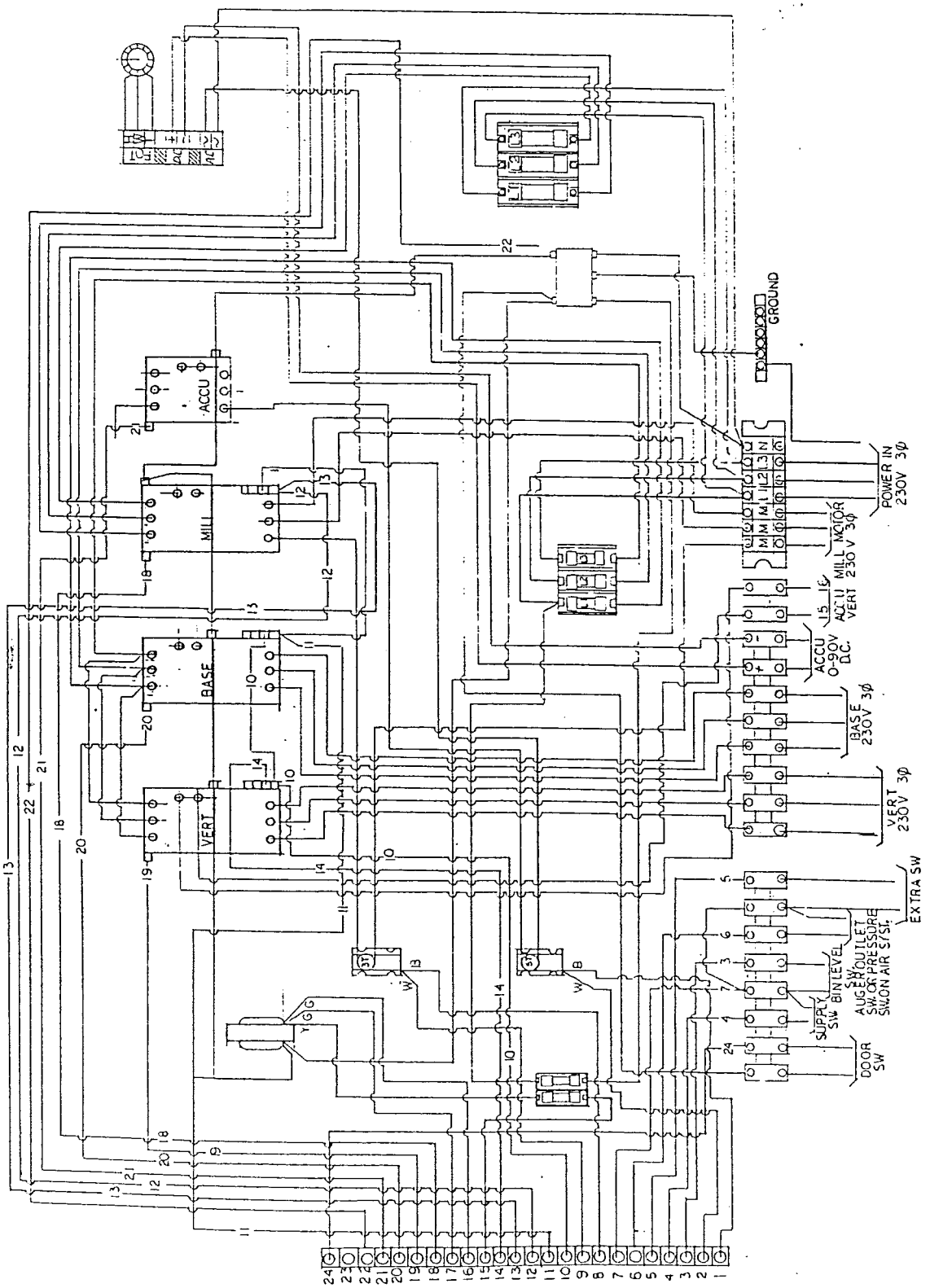
Panel wiring - Sentry 4500, 3000, 2000 - three phase



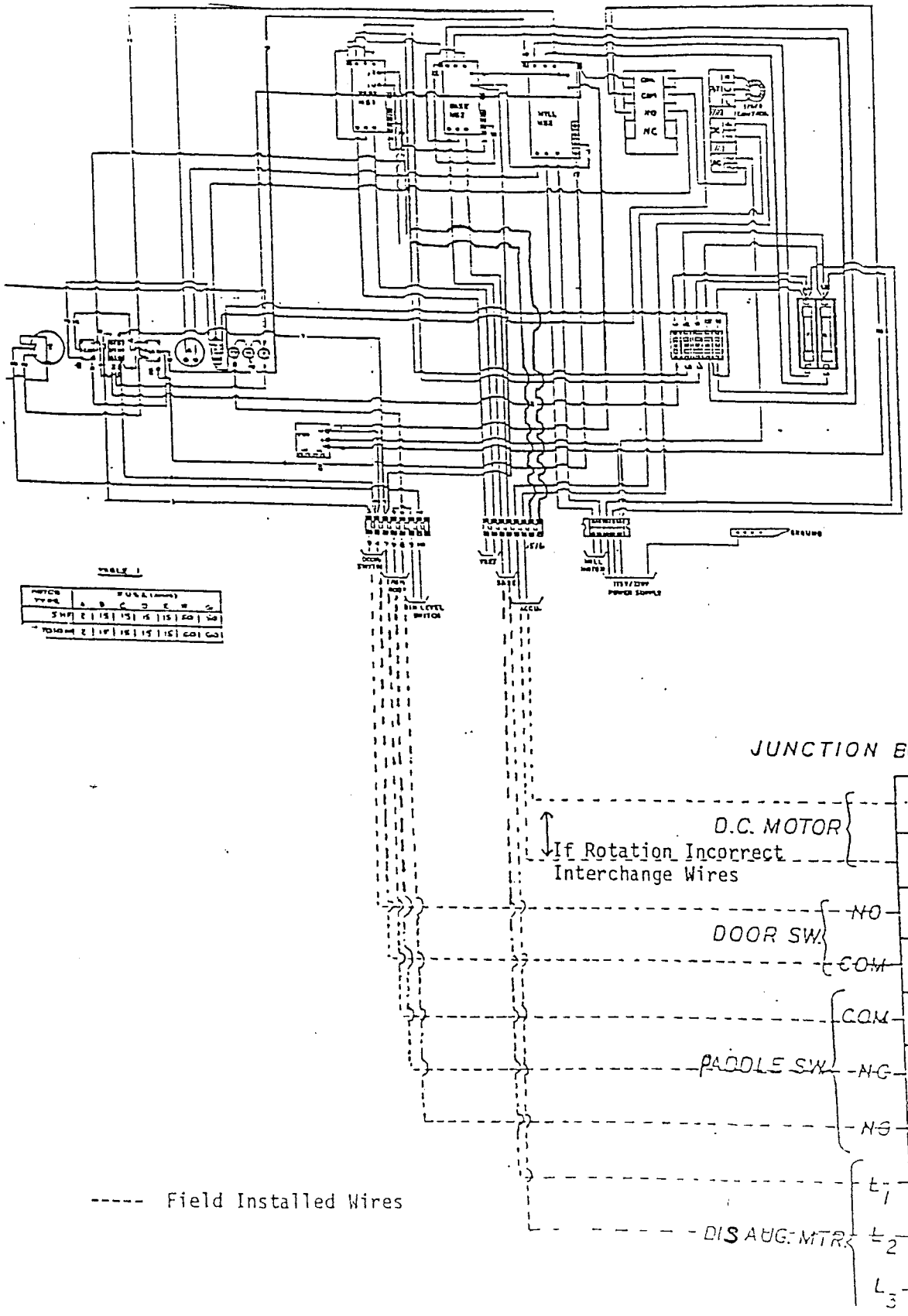
Panel wiring - Sentry 6500, 5500, 5000, 4000 - single phase



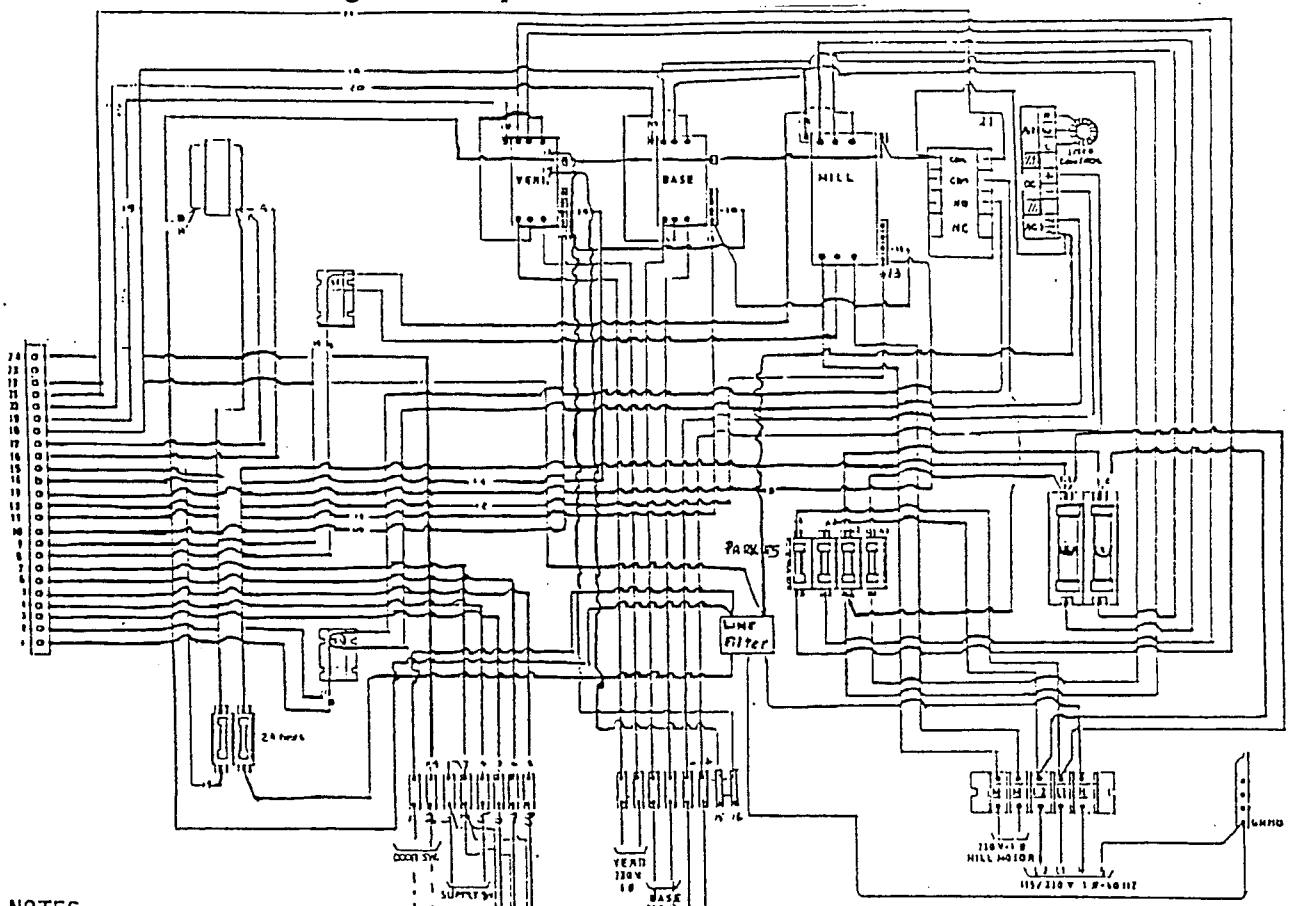
Panel wiring - Sentry 6500, 5500, 5000, 4000 - three phase



Interconnect wiring - Sentry 4500, 3000, 2000

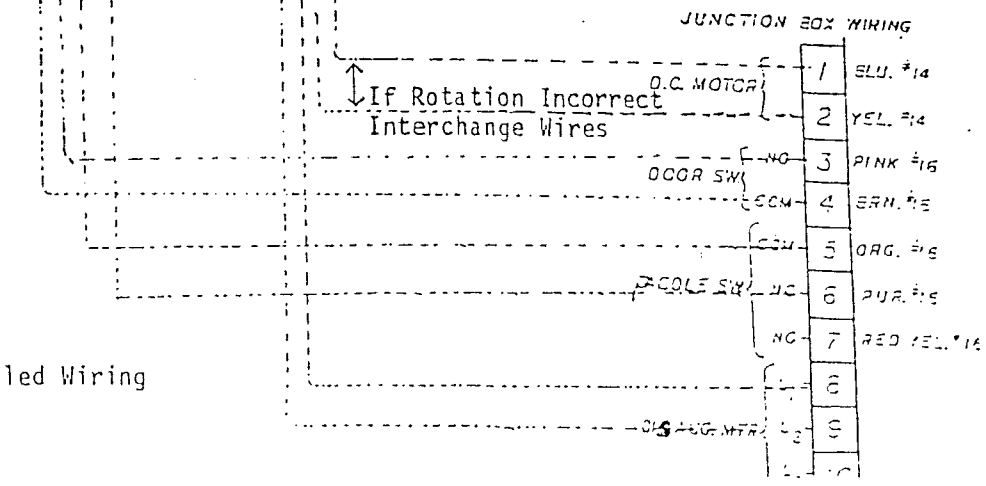


Interconnect wiring - Sentry 6500, 5500, 5000, 4000



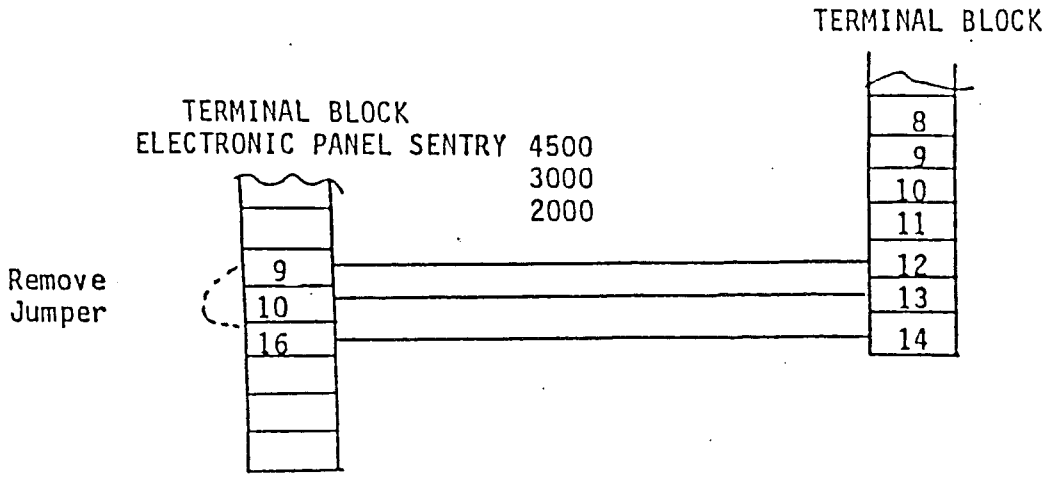
NOTES:

Fuse x: 50A for 5HP Motor
60A for 7½ 110 HP Motor



----- Field Installed Wiring

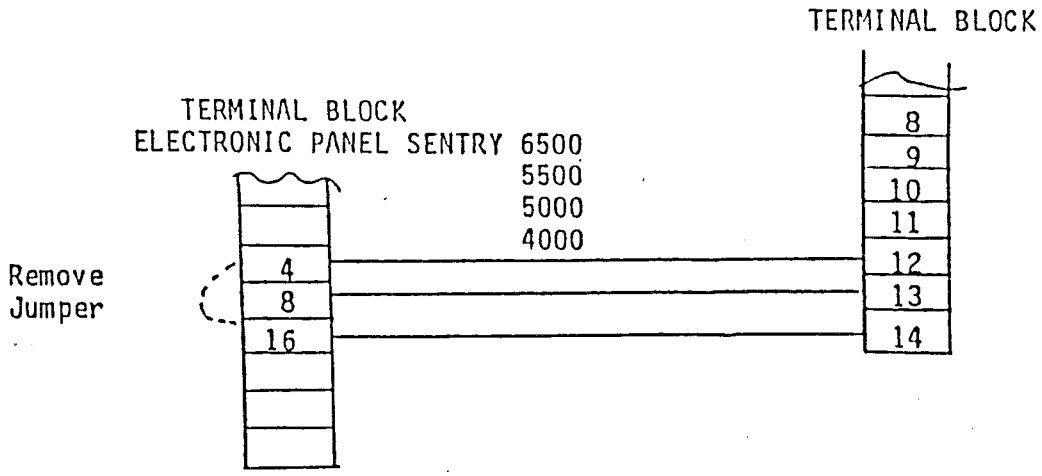
Pneumatic panel 2", 3 1/2", or rapid load to electric panel Sentry



Jumper must be installed between 15 amp fuses load side line 1 and terminal 15 in mill panel

NOTE: Be certain that L1 of mill and L1 of air conveyor are on the same line. Damage to panel components will result if voltage difference between L1 of mill and L1 of air conveyor is 230 volts.

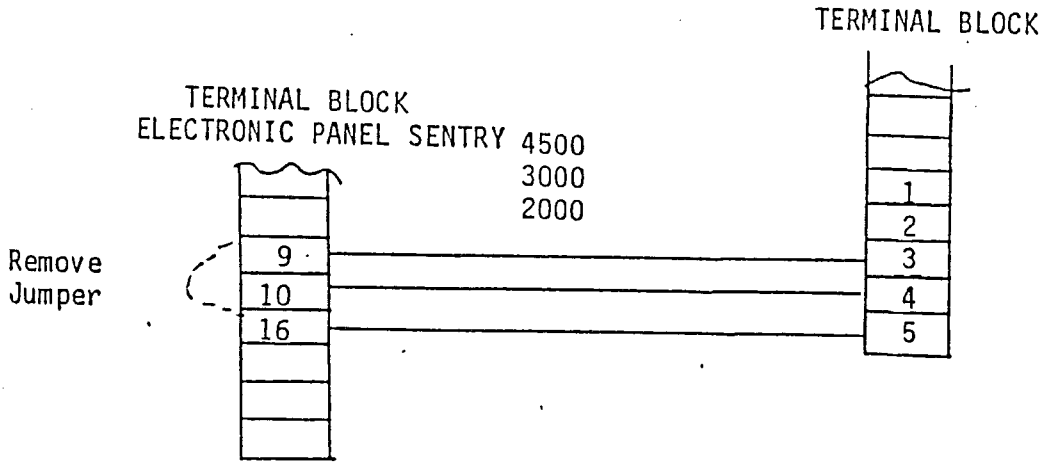
Pneumatic panel 2", 3 1/2", or rapid load to electronic panel Sentry



Jumper must be installed between 15 amp fuses load side line 1 and terminal 15 in mill panel

NOTE: Be certain that L1 of mill and L1 of air conveyor are on the same line. Damage to panel components will result if voltage difference between L1 of mill and L1 of air conveyor is 230 volts.

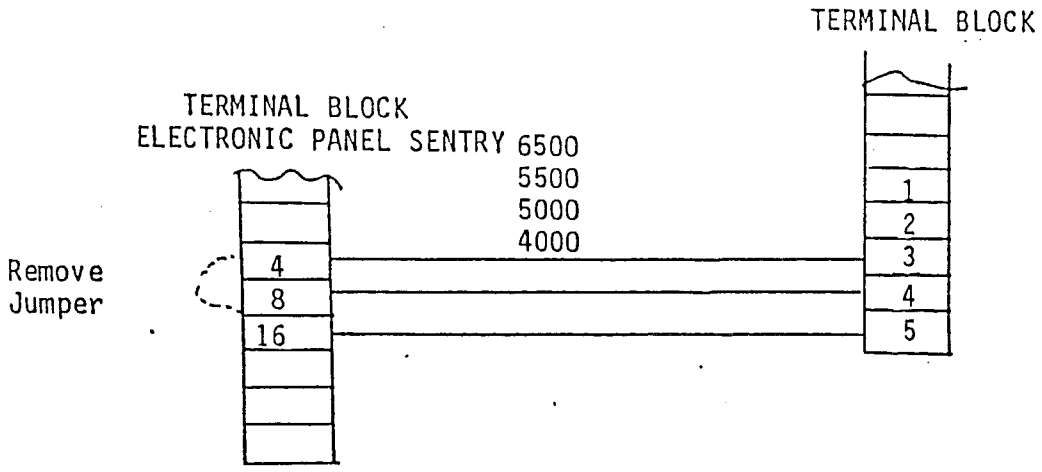
Cabinet style pneumatic panel 2" to electric panel Sentry



Jumper must be installed between 15 amp fuses load side line 1 and terminal 15 in mill panel

NOTE: Be certain that L1 of mill and L1 of air conveyor are on the same line. Damage to panel components will result if voltage difference between L1 of mill and L1 of air conveyor is 230 volts.

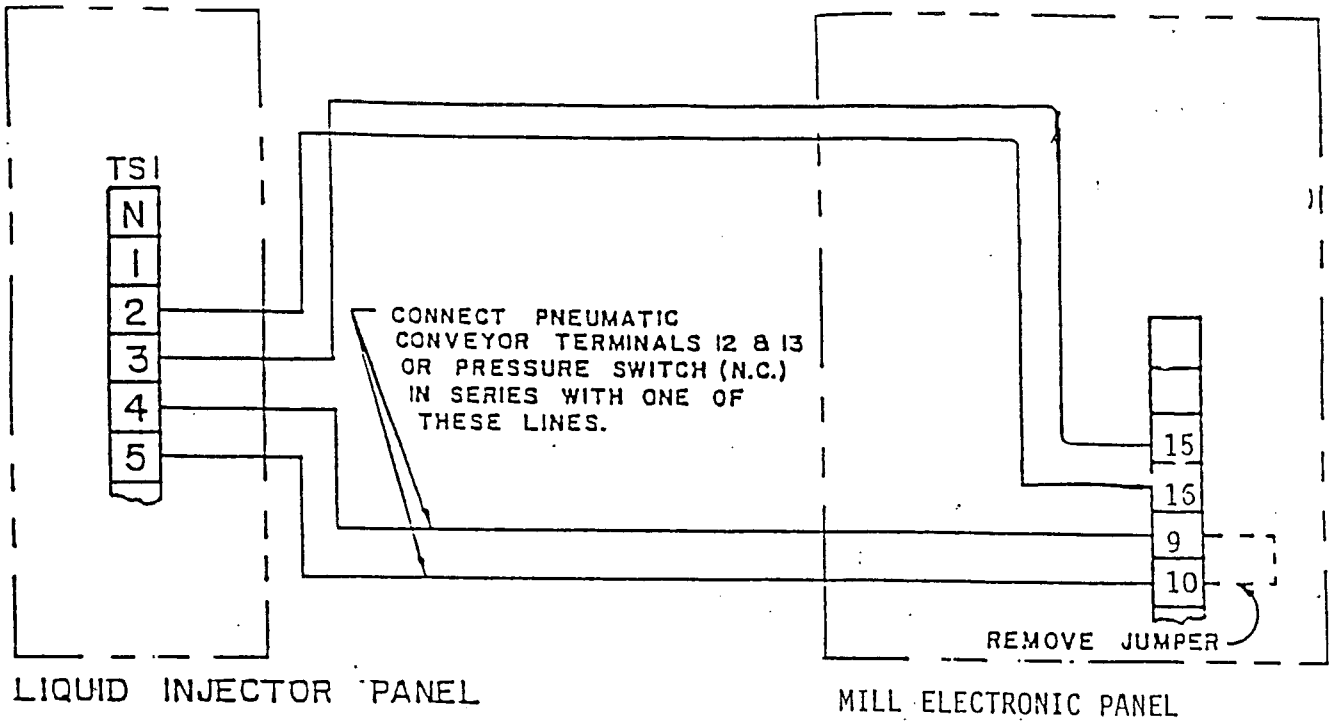
Cabinet style pneumatic panel 2" to electronic panel Sentry



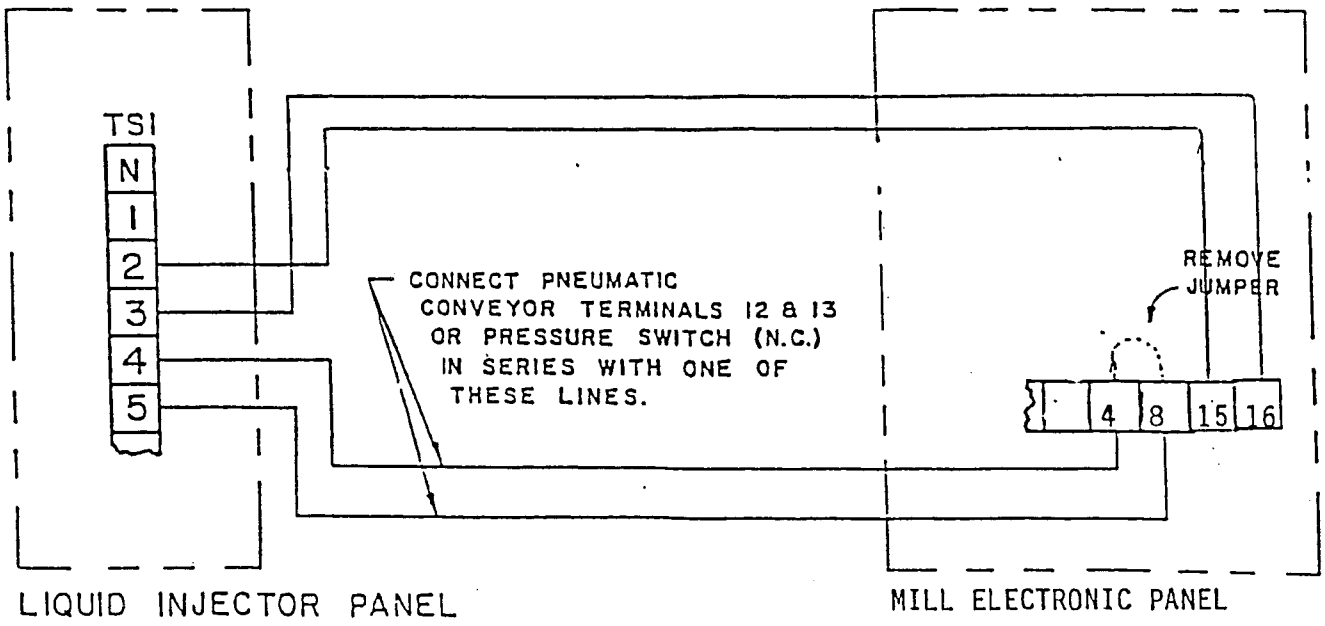
Jumper must be installed between 15 amp fuses load side line 1 and terminal 15 in mill panel

NOTE: Be certain that L1 of mill and L1 of air conveyor are on the same line. Damage to panel components will result if voltage difference between L1 of mill and L1 of air conveyor is 230 volts.

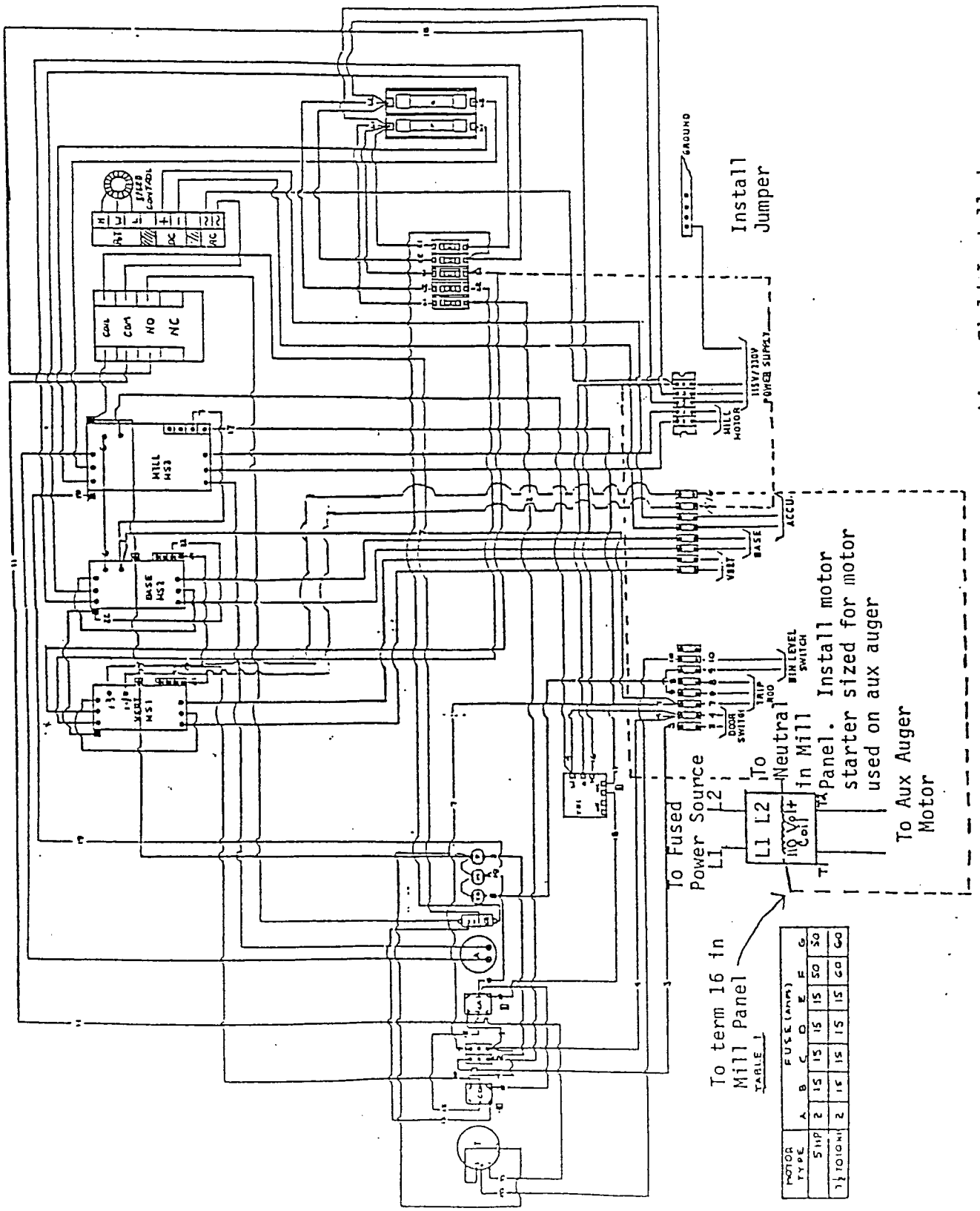
Injector to electric panel Sentry



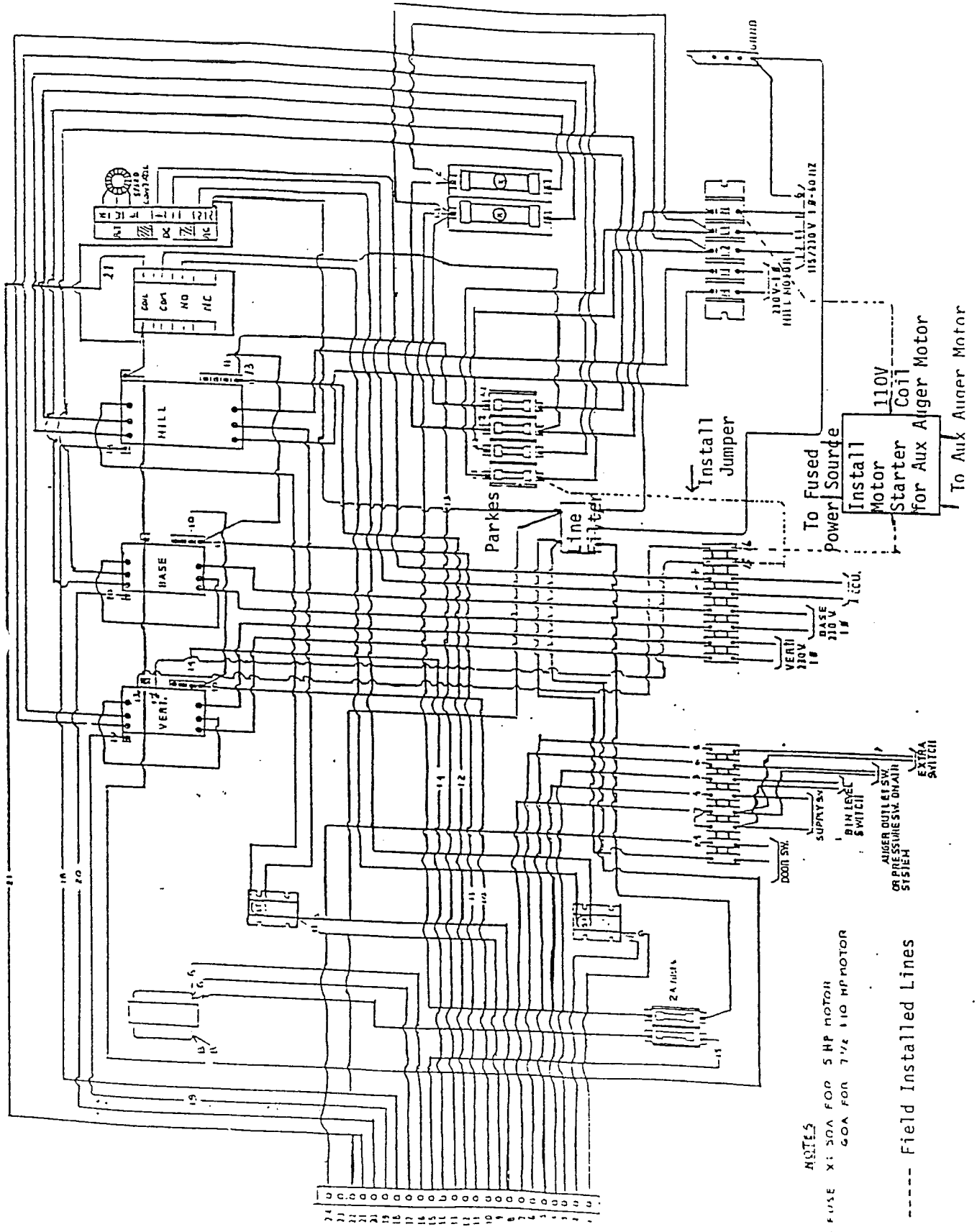
Injector to electronic panel Sentry

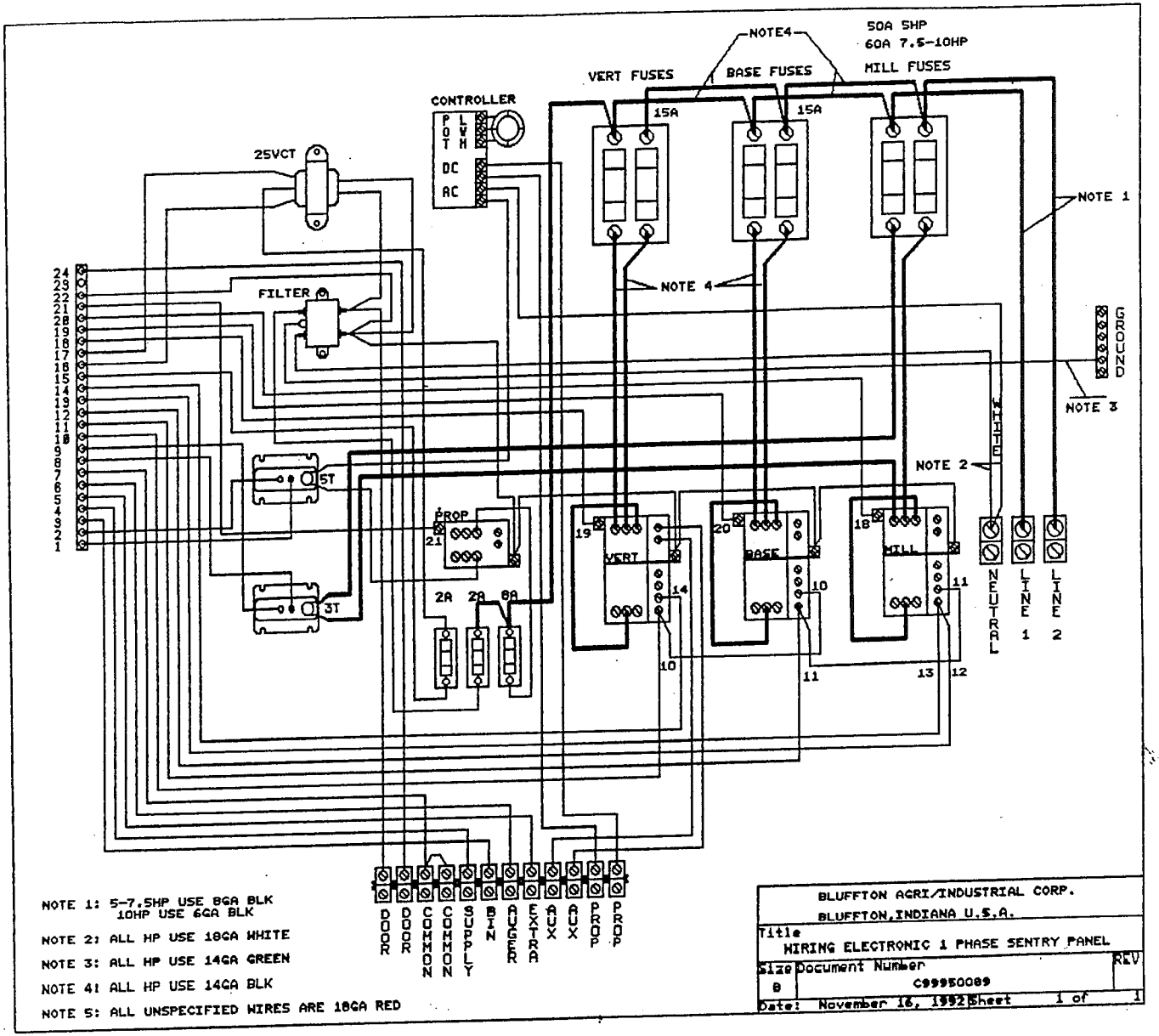


Auxillary augers to electric panel Sentry



Auxillary augers to electronic panel Sentry





NOTE 1: 5-7.5HP USE 8GA BLK
10HP USE 6GA BLK

NOTE 2: ALL HP USE 18GA WHITE

NOTE 3: ALL HP USE 14GA GREEN

NOTE 4: ALL HP USE 14GA BLK

NOTE 5: ALL UNSPECIFIED WIRES ARE 18GA RED

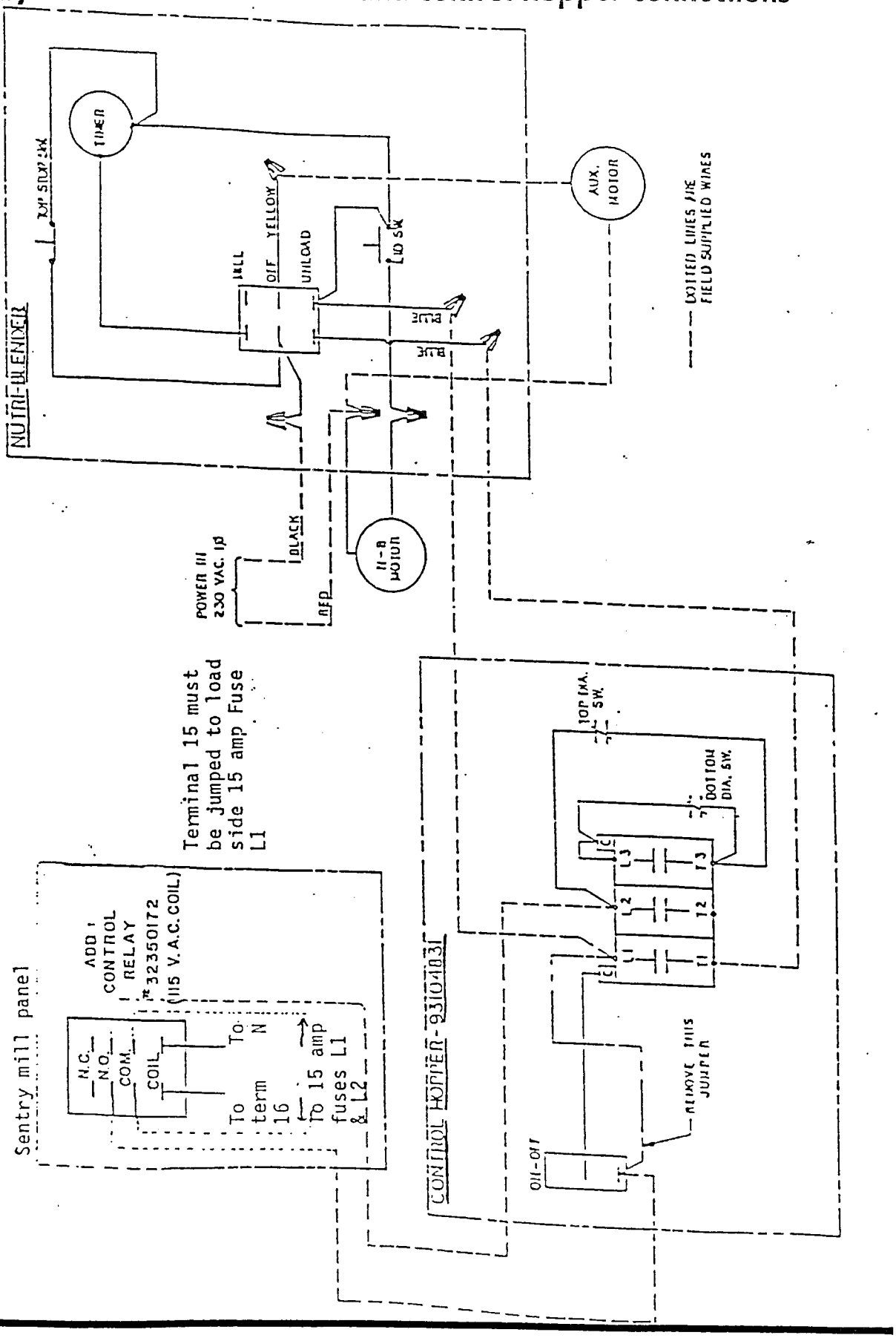
BLUFFTON AGRI/INDUSTRIAL CORP.
BLUFFTON,INDIANA U.S.A.

Title
WIRING ELECTRONIC 1 PHASE SENTRY PANEL

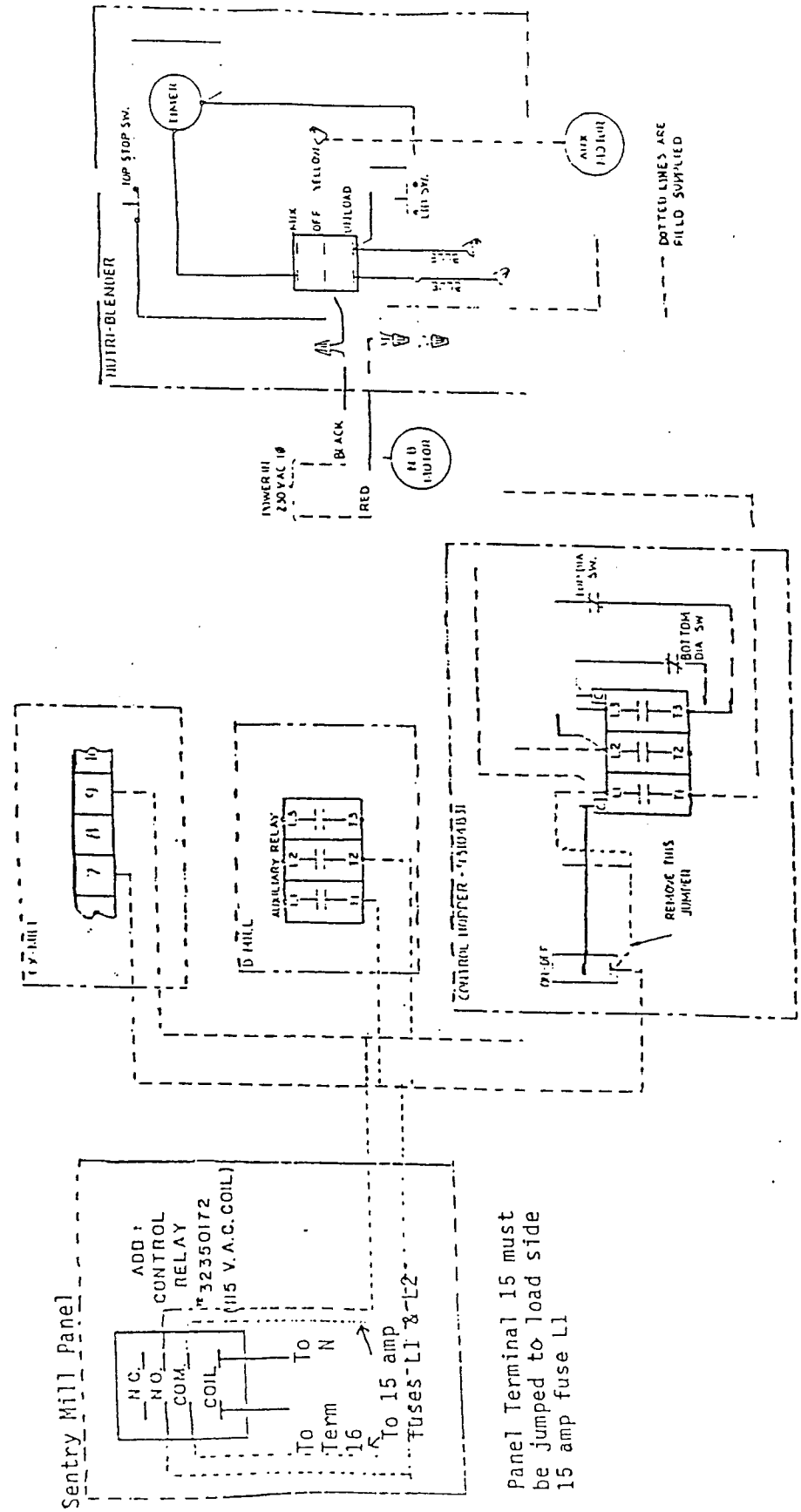
Size	Document Number	REV
B	C99950089	

Date: November 16, 1992 Sheet 1 of 1

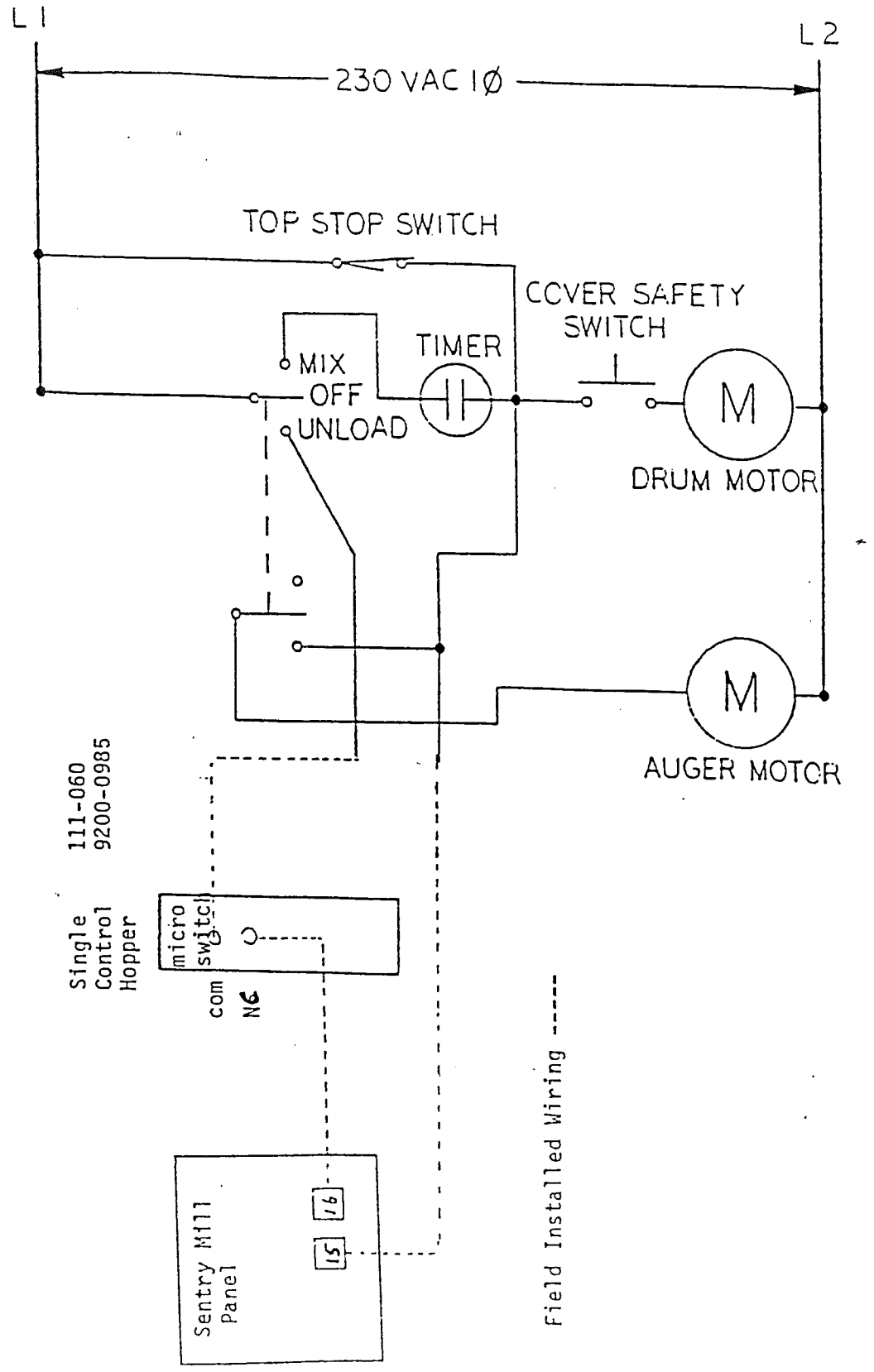
Sentry mill with nutri-blender and control hopper connections



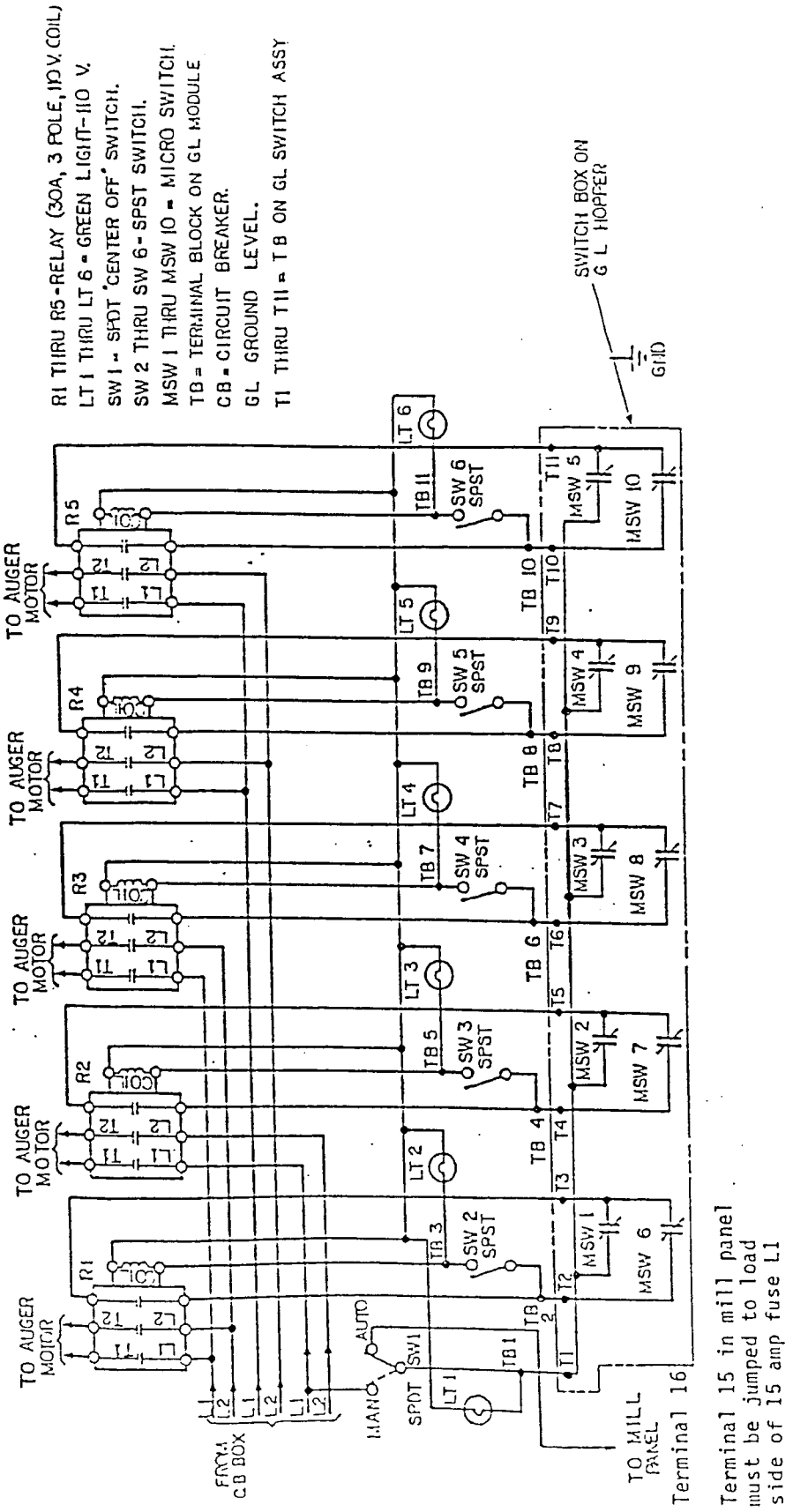
Nutri-blender for gravity mills and double diameter control hopper



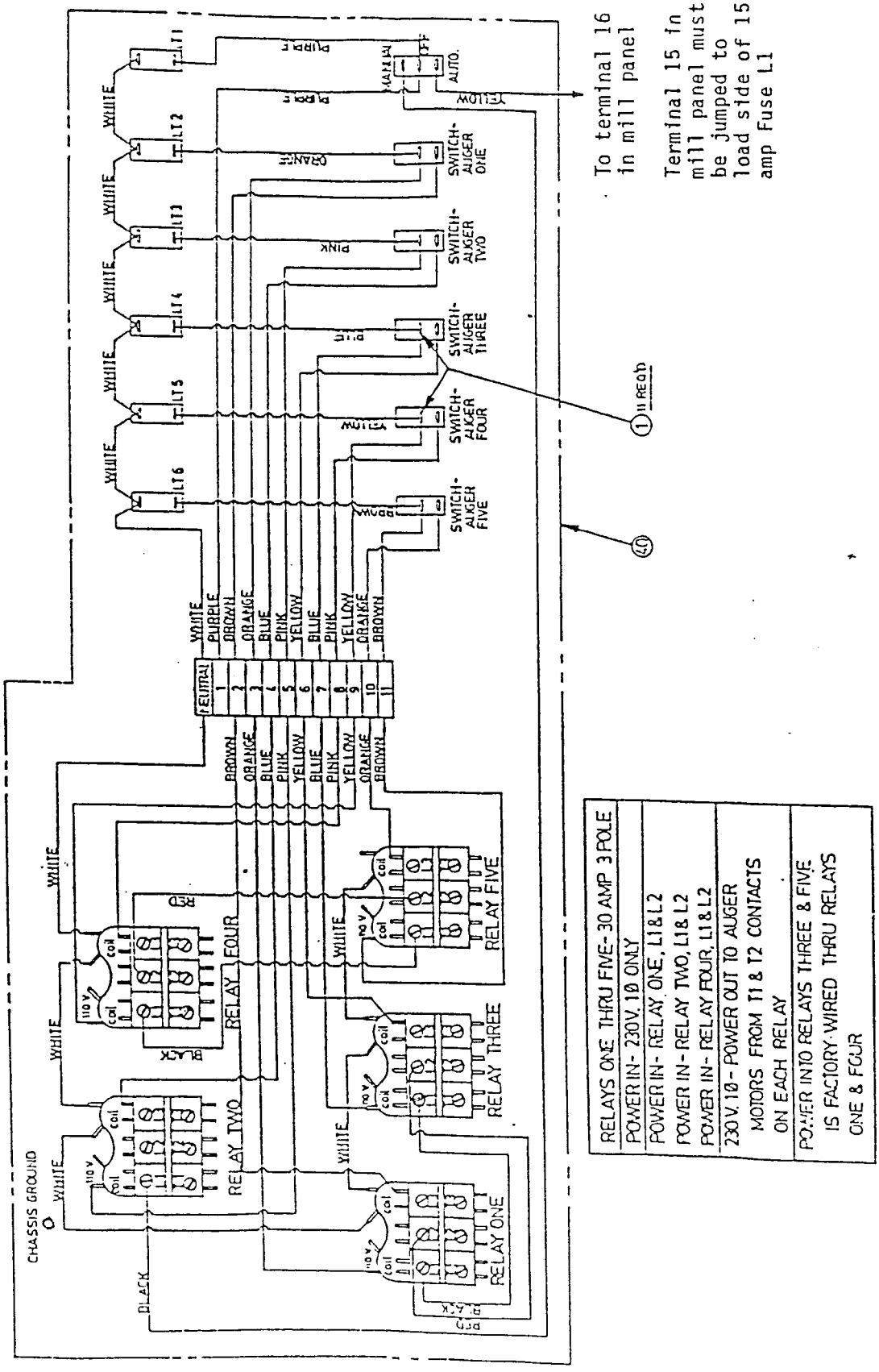
Nutri-blender for Sentry mill and single control hopper



Ground level control panel power schematic



Ground level control panel wiring diagram



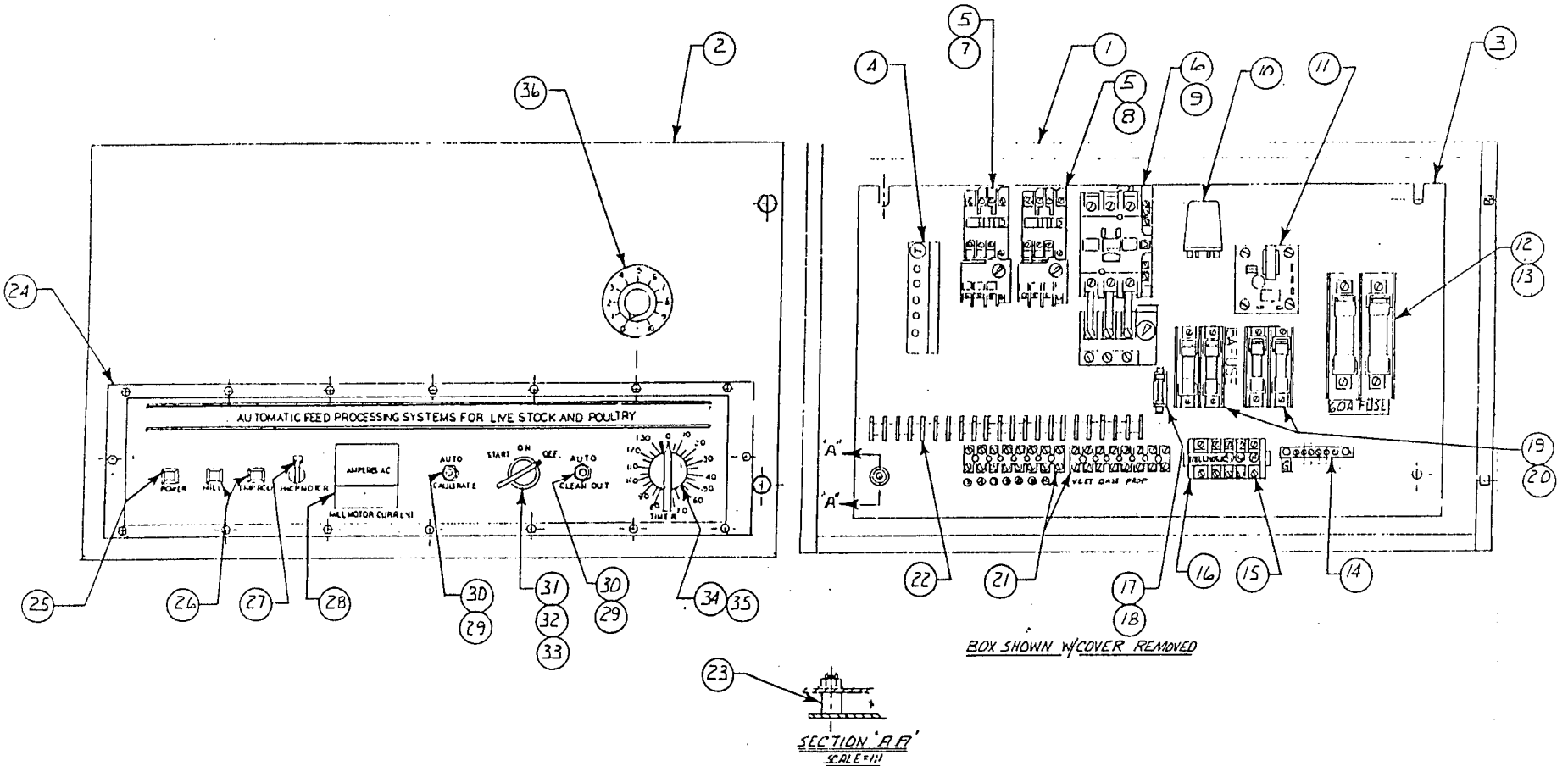
Parts Information

Electric Control Panel - 5 hp

Item no.	Part number	Quantity		Description
1	90001008	1		Assy Remote Panel Box
2	90000979	1		Cover Assy WMP
3	11218440	1		Mounting Plt. MMP/WMP
4	31012031	1		DC Controller
5	100718	2		Contactor CA3-9-10
6	100719	1		Contactor CA3-30-10
7	31016108	1	03	Overload 1-6-2.6 Amp
7	31016107	1	01	Overload 2.5-4 Amp
8	100936	1	03	Overload 1.0-1.6
8	31016108	1	01	Overload 3.8-6.0 Amp
9	100938	1	03	Overload C-73-17.5
9	100722	1	01	Overload 23.32 Amp
10	100699	1		Relay Strothers Dunn 120 Volt
11	91000327	1		Board, Time Delay Assy
12	100716	1	01	Fuse Block 250V 60 Amp
12	100632	1	03	Fuse Block 250V 60 Amp
13	100717	2	01	Fuse Time Delay 50 Amp "D" Type
13	100717	3	03	Fuse Time Delay 50 Amp "D" Type
14	100715	1		Ground Bar Strip, 6 Point
15	100710	5		Terminal Block #222
16	100711	2		Terminal Block End
17	100712	1	Pt of 12	Fuse Holder Small
18	100713	1		Fuse Glass 2 Amp
19	100714	4	01	Fuse 15 Amp
19	100714	6	03	Fuse 15 Amp
20	100767	2	01	Fuse Block 250 Volt 30 Amp
20	100767	3	03	Fuse Block 250 Volt 30 Amp
21	100709	2		Terminal Strip 16 Point 8 Circuit
22	100732	16"		Wire Guide Flex
23	80013501	4		Spacer
24	11219890	1		Face Plate MMP/WMP
25	302013	1		Light Red Square 125V
26	302012	2		Light Amber Square 125V
27	31001004	1		3 Amp 1 Pole Circuit Breaker
28	302015	1		Load Meter 0-50 Amp
29	31008007	2		Switch DPDT No Center Off
30	302026	2		Switch Boot
31	31008052	1		3 Pos Spring Return Left to Cntr Op
32	31008068	1		Block Contact No.
33	31008061	1		Block Contact Inc. w/ Base
34	302020	1		Timer 2 Hr 3W 120V
35	302020R	1		Knob 2 Hr. Timer
36	31012010	1		DC Speed Pot

Electric Control Panel - 5 hp

	1ϕ 220V - 3ϕ230								3ϕ 575V				
ITEM NO	5HP 1ϕ	7½HP 1ϕ	10HP ϕ	5HP 3ϕ	7½HP 3ϕ	10HP 3ϕ	15HP 3ϕ	20HP 3ϕ	5HP	7½HP	10HP	15HP	20HP
6	100719	100695	100696	100719	100719	100719	100696	100696	100719	100719	100719	100719	100719
7	31016107	31016107	31016107	100936	100936	100936	31016106	31016106	100935	100934	100934	100935	100935
8	31016108	31016108	31016108	31016106	31016106	31016106	31016107	31016107	100934	100935	100934	100935	100938
9	100722	100697	100697	100933	100933	100722	100697	31016142	31016108	31016109	100939	100938	100933



Electronic Control Panel

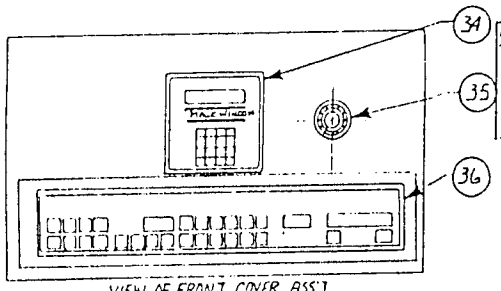
Item no.	Part number	Quantity		Description
1	90000981	1		Cover Assembly WMP w/Magic Window
2	90001008	1		Assembly Remote Panel Box
3	100707	1		Transformer Power .15-24V 1 Amp
4	100718	3		Contactor CA3-9-10
5	See Chart	1		Contactor
6	See Chart	1		Overload
7	See Chart	1		Overload
8	See Chart	1		Overload
9	31012031	1		DC Controller 120 Volt 125-Soc
10	100716	1		Fuse Block 250V 60Amp 2 Pt
11	See Note 1			Fuse, Time Delay 50 Amp "D" Type
12	100715	1		Ground Bar Strip 6 Point
13	100711	2		Terminal Block End
14	100710	5		Terminal Block #222
15	100766	1		Filter Line 3A
16	100767	2		Fuse Block 250V 30 Amp 2P See Note 3
17	100714	g		Fuse 15 Amp Time Delay See Note 3
18	100709	2		Terminal Strip 16 Point 8 Circuit
19	100708	2		Transformer Current
20	100806	1		Battery 9 Volt
21	100805-1	1		Battery Clip Holder Drilled
22	100712	1		Fuse Holder Small
23	100713	2		Fuse, Glass 2 Amp
24	11218450	1		Mounting Plate - Solid State Mill
25	100732	18"		Wire Guide Flex
26	100736	6		Standoff #8-32 Male
27	100737	10		Standoff #8-32 Male-Female
28	80013501	4		Spacer
29	91000315	1	See Note 2	Control Board
30	91000321	1		Accuration Board Assy
31	91000320	1		Counter Board Assy - Counter Panel Only Accuration Strap
32	91000325	1		Accuration Display Board
33	91000328	1		Counter Board Strap
34	92001389	1		Magic Window Keyboard Assy
35	31012010	1		DC Speed Pot
36	See Note 3	1		Face Plate Assy Electronic

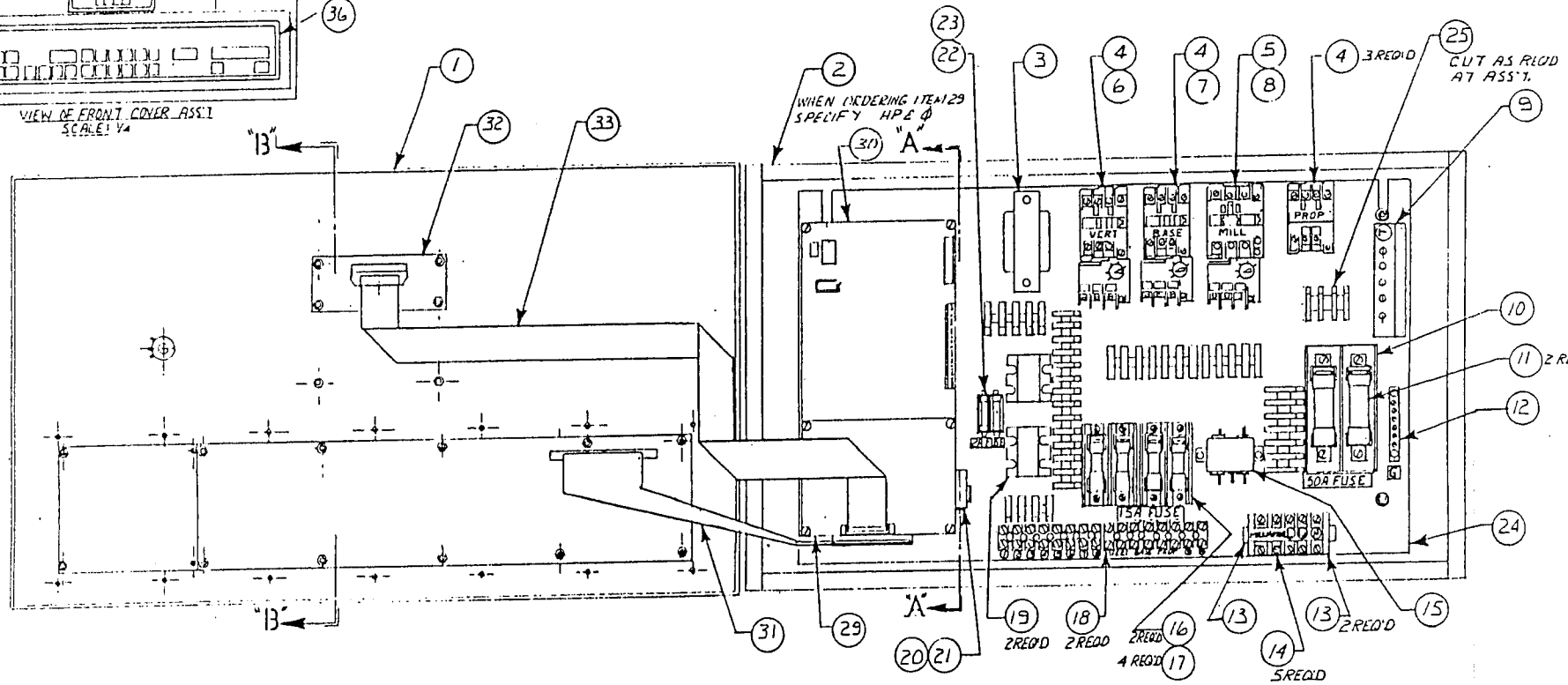
NOTE

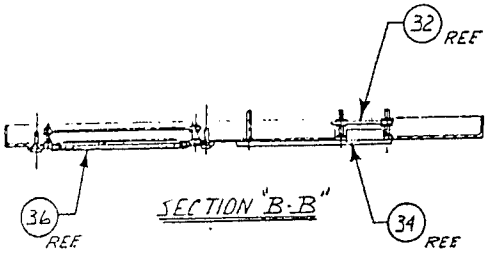
1. For 5 HP 50 Amp Fuse, Part No. 100717
   For 7 1/2 through 20 HP 60 Amp, Part No. 100698
2. When Ordering Item 29, specify HP and Phase.
3. Face Plate Assy 91000313 used with Magic Window Keyboard
   Assy Face Plate Assy 91000314 used with Counter Assy.

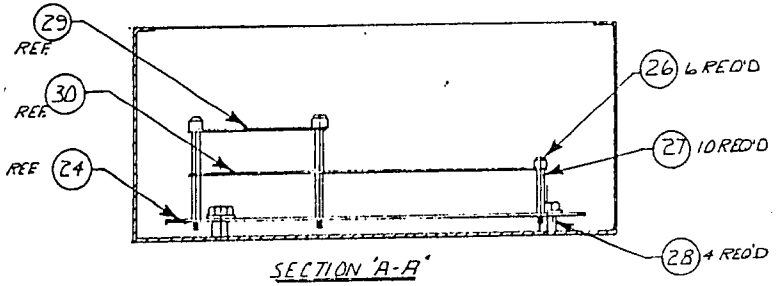
Electronic Control Panel

	1Φ-220V - 3Φ-230V								3Φ 575V				
ITEM NO	5HP 1Φ	5HP 3Φ	7½HP 1Φ	7½HP 3Φ	10HP 1Φ	10HP 3Φ	15HP 3Φ	20HP 3Φ	5HP	7½HP	10HP	15HP	20HP
5	100719	100719	100695	100719	100696	100719	100696	100696	100719	100719	100719	100719	100719
6	100936	100936	31016107	100936	31016107	100936	31016106	31016106	100935	100935	100934	100935	100935
7	31016108	31016106	31016108	31016106	31016108	31016106	31016107	31016107	100934	100935	100934	100935	100938
8	100722	100938	100697	100933	100697	100722	100697	31016142	31016108	31016109	100939	100938	100933





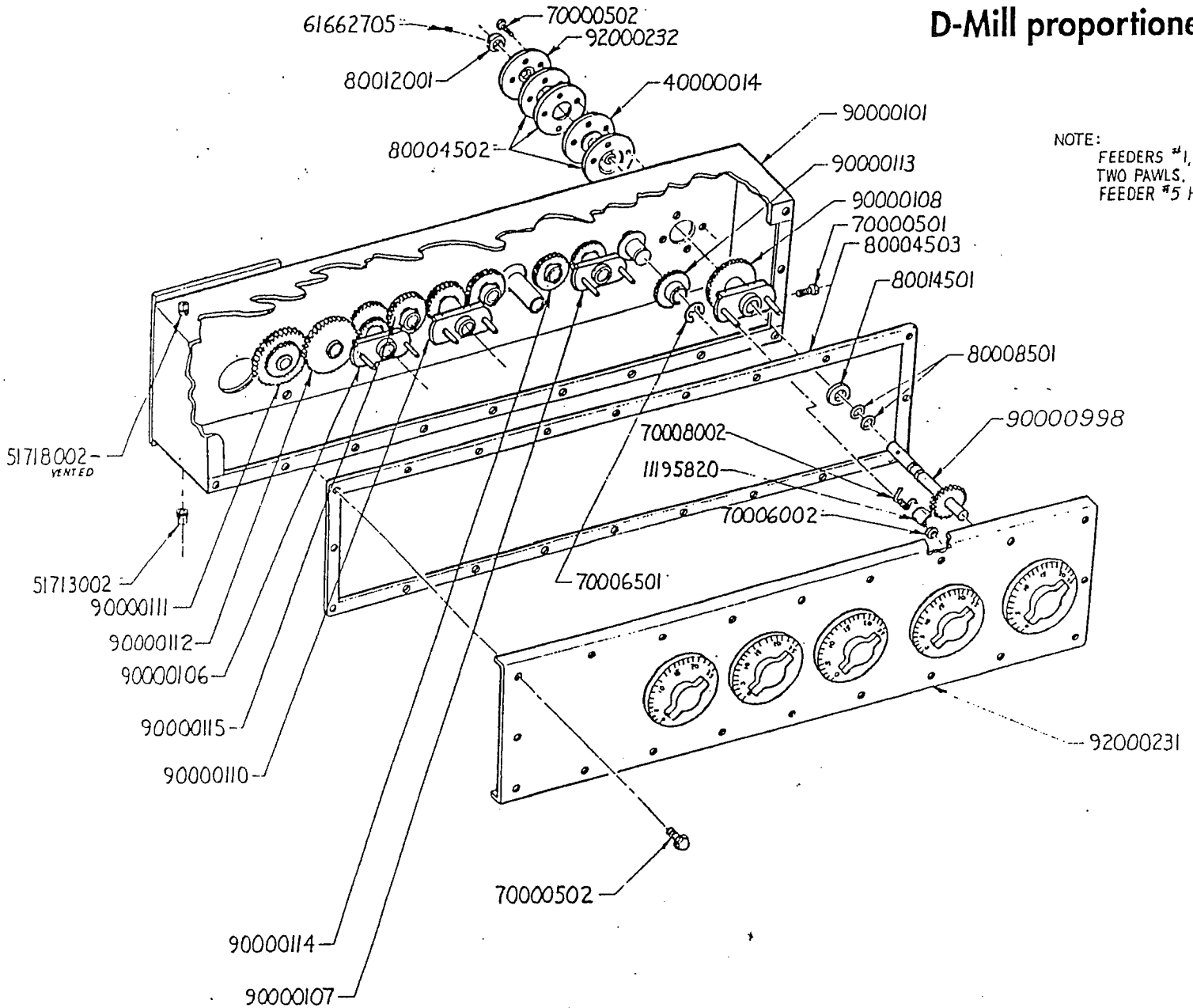




D-Mill proportioner assembly

Item no.	Part number	Quantity	Description
1	11195820	9	Drive Pawl
2	40000014	5	Bearing Auger Shaft
3	51713002	1	Pipe Plug 1/4" Plated
4	51718002	1	Pipe Plug 1/4" Plated, Vented
5	61662705	5	Set Screw #10 - 32 x 1/4"
6	70000501	1	Washer Head Bin Bolt
7	70000502	40	Washer Head Screw Assy (Swage) 1/4" - 20 x 1/2"
8	70006002	9	Push-On Fastener 1/4 "
9	70006501	6	Retaining Ring
10	70008002	9	Spring Drive Pawl
11	80004 502	15	Gasket
12	80004503	1	D Proportioner Gasket - Cover
13	80006521	1	Oil Level Decal
14	80006529	1	Label - Proportioner Oil
15	80008501	10	Roto Seal
16	80012001	5	Lock Collar
18	80014501	5	Thrust Washer
19	90000101	1	D Proportioner Welded Assembly
20	90000106	1	D Prop. Pawl Carrier Assembly 42/24 Teeth
21	90000107	2	D Prop. Pawl Carrier Assembly 24 Teeth
22	90000108	1	D Prop. Pawl Carrier Assembly 32 Teeth
23	90000110	1	D Prop. 6" Drive Gear Assembly
24	90000111	1	D Prop. - Reducer Gear Assembly 16/42 Teeth
25	90000112	1	D Prop Red. Gear Assembly 16/42 Teeth Offset
26	90000113	1	D Prop Reducer Gear Assembly 16/24 Teeth
27	90000114	1	D Prop. Idler Gear Assembly 24 Teeth
28	90000115	2	D Prop. Idler Gear Assembly 32 Teeth
29	90000998	5	D Prop. Shaft & Ratchet Assembly
30	92000231	1	D Prop. Cover Assembly
31	92000232	5	Bearing Cap Assembly

D-Mill proportioner assembly



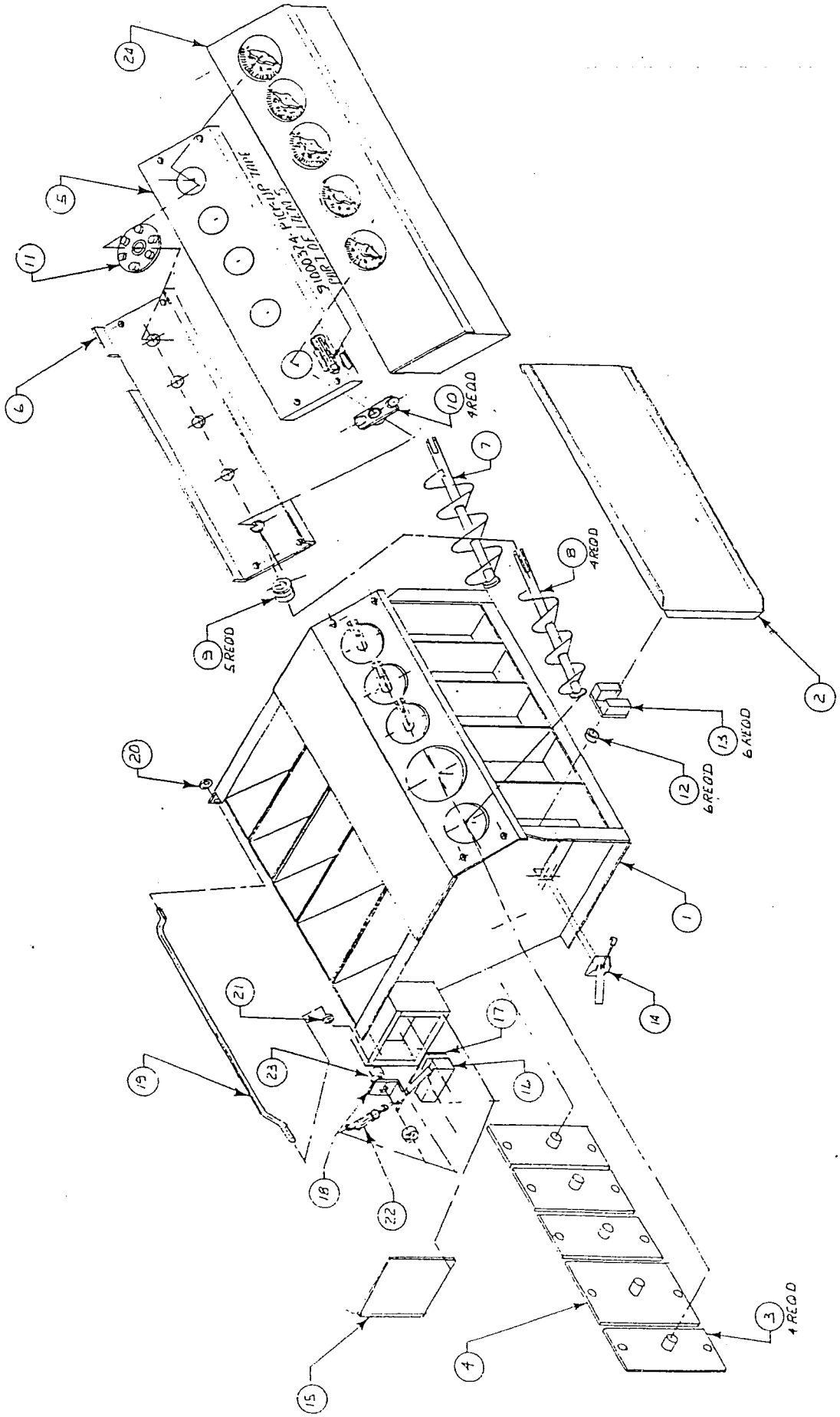
NOTE:
FEEDERS #1,2,3 & 4 HAVE TWO PAWLS.
FEEDER #5 HAS ONE PAWL.

D+ proportioner assembly

Item no.	Part number	Quantity	Description
1	90000999	1	D-Mill Proportioner Hopper
2	90001001	1	Proportioner Door Assembly D
3	90001003	4	Proportioner Hopper Rear Plate 4" Assembly
4	90001004	1	Proportioner Hopper Rear Plate 6" Assembly
5	92001364	1	Pick-up Board & Sandwich Plate Assembly
6	11217370	1	Counter Sandwich Plate Bottom
7	90000997	1	D Proportioner 6" Auger Assembly
8	90000996	3	D Proportioner 4" Auger Assembly
9	80011536	5	Seal-Forsheda, Type S, 25 MM
10	92001360	4	Magnet Assembly-Counter Sandwich
11	92001381	1	Magnet Assembly #5 Counter
12	80013501	6	D-Hub Spacer
13	80008001	6	Ceramic-Steel Mill Magnet
14	70004506	2	D-Mill Door Latch
15	11217560	1	Cover Jet Box
16	31008001	1	Micro Switch #BA-2RV-AZ
17	11195950	1	Insulation Switch
18	11217610	1	Trip Lever - Paddle Switch
19	11217620	1	Trip Rod - 5 Compartment
20	70006002	1	Retaining Ring 1/4
21	80005008	1	Grommet 15/32 Diameter Hole
22	70008003	1	Spring-Micro Switch
23	66743300	2	1/4-20 Hex Lock Nut
24	92001340	1	D Proportioner w/Motor Assembly

90001034 - 1/4 Auger

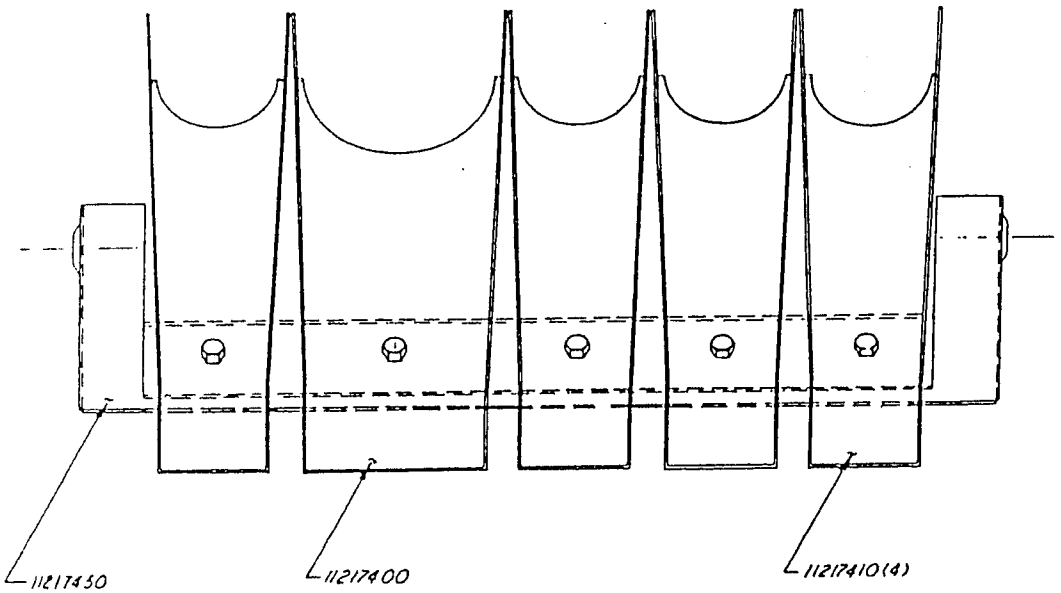
D+ proportioner assembly

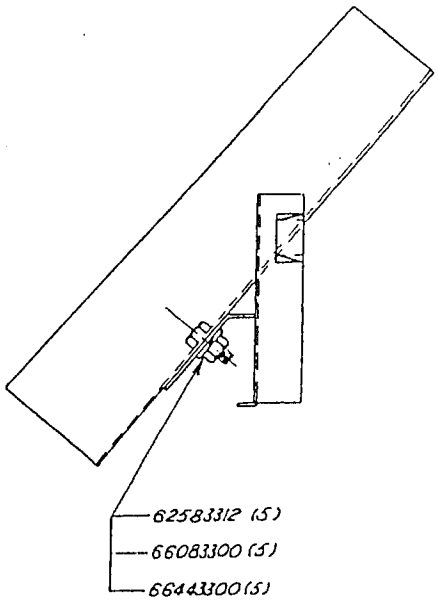


Sample door assembly

Item no.	Part number	Quantity	Description
1	11217400	1	Sample Chute 6"
2	11217410	4	Sample Chute 4"
3	11217450	1	Sample Door - D-Mill
4	62583312	5	1/4-20 x 1/2 Hex Hd Cap Screw
5	66083300	5	1/4-20 Hex Nut
6	66443300	5	1/4 Lock Washer
7	92001348	1	Total Assembly

Sample door assembly





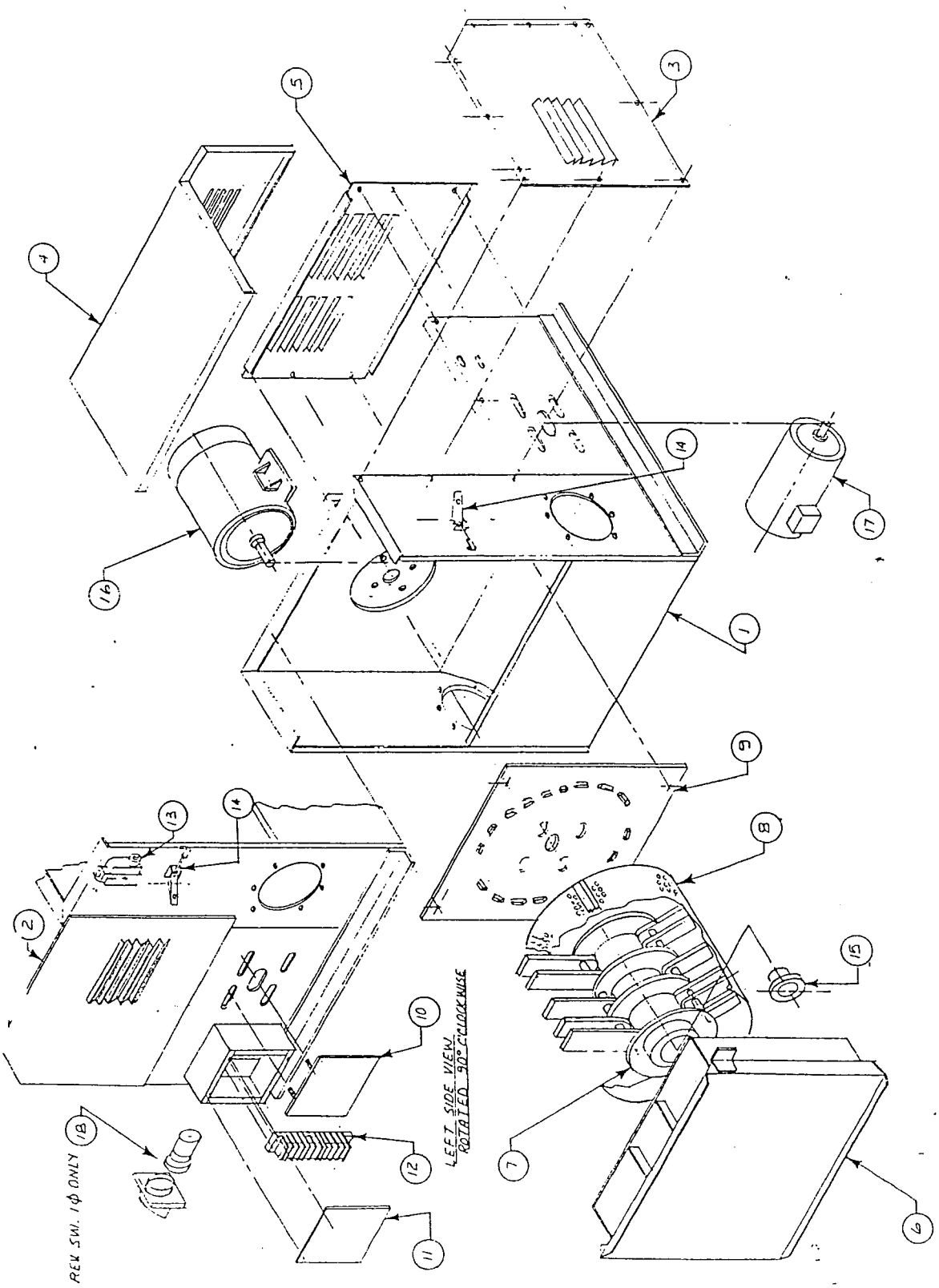
Basic grinder assembly

Item no.	Part number	Quantity	Description
1	90000994	1	Housing Weldment - D Mill
2	11217240	1	Enclosed Panel - Mill Motor Side LH
3	11217241	1	Enclosed Panel - Mill Motor Side RH
4	11217260	1	Enclosed Panel - Mill Motor Top
5	11217270	1	Enclosed Panel - Base Auger Motor
6	92001276	1	Door Assembly - D Mill
7	92000234	1	Beater hub w/Hammer~ - D
8	90000142	1	Screen Weld Assembly 3/16 D.
9	11195910	1	D Back Wear Plate
10	92001272	1	Cover, Auger Motor Mount
11	11217530	1	Cover - Junction Box
12	31009007	1	Terminal Block - 10 Term
13	31008025	1	Micro Switch - Door
14	70004506	2	D-Mill Door Latch
15	See Note	1	Q.D. Bushing (Mill Motor)
16		1	Motor Mill
17		1	Auger Motor
18		1	Reversing Switch Instal. 1 Phase Only.

Note: Q.D. Bushing

44010712	1 1/8 Bore 5 HP Motor
44010716	1 3/8 Bore 7.5 and 10 HP Motor
44010720	1 5/8 Bore 20 HP Motor

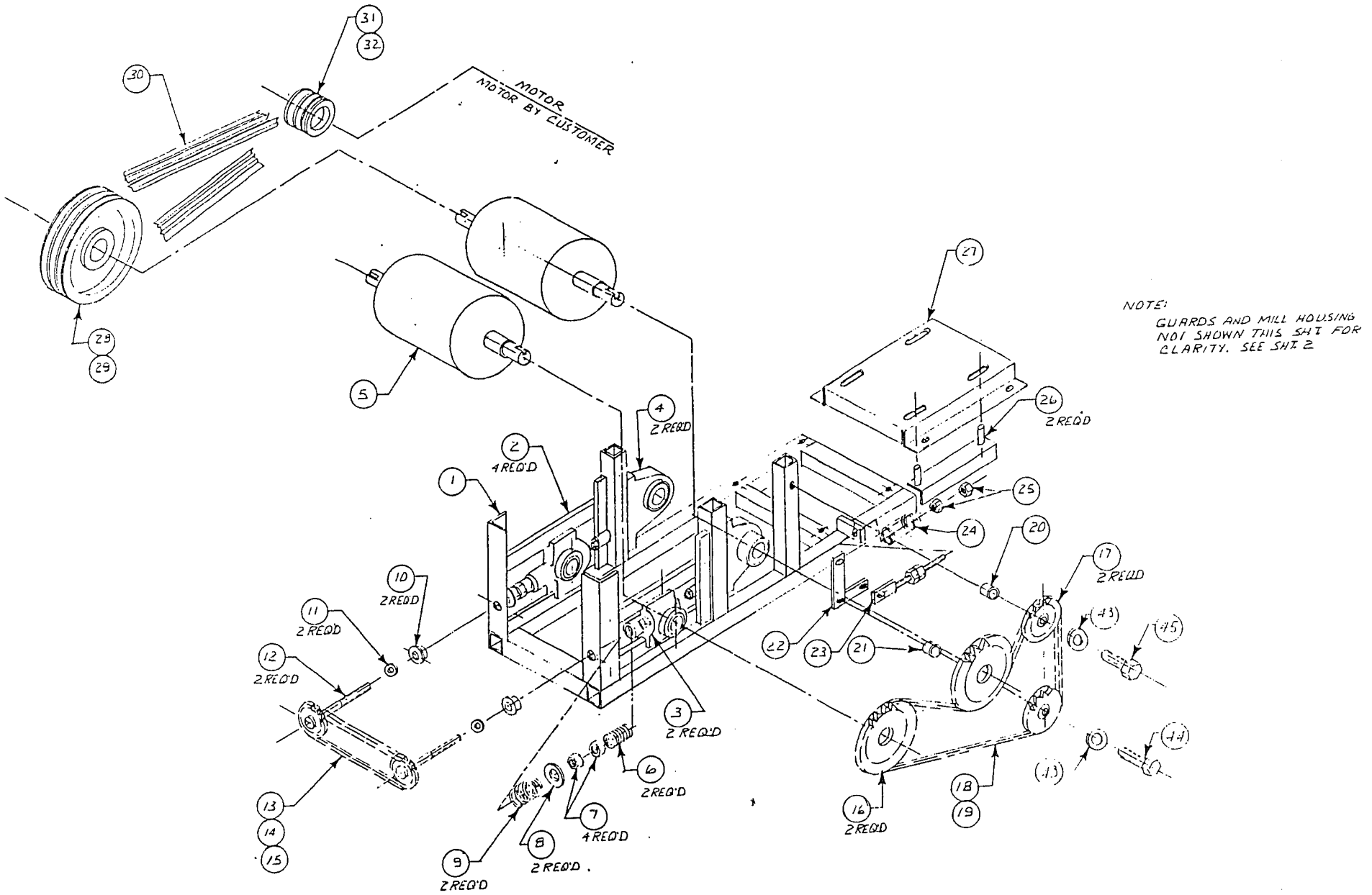
Basic grinder assembly



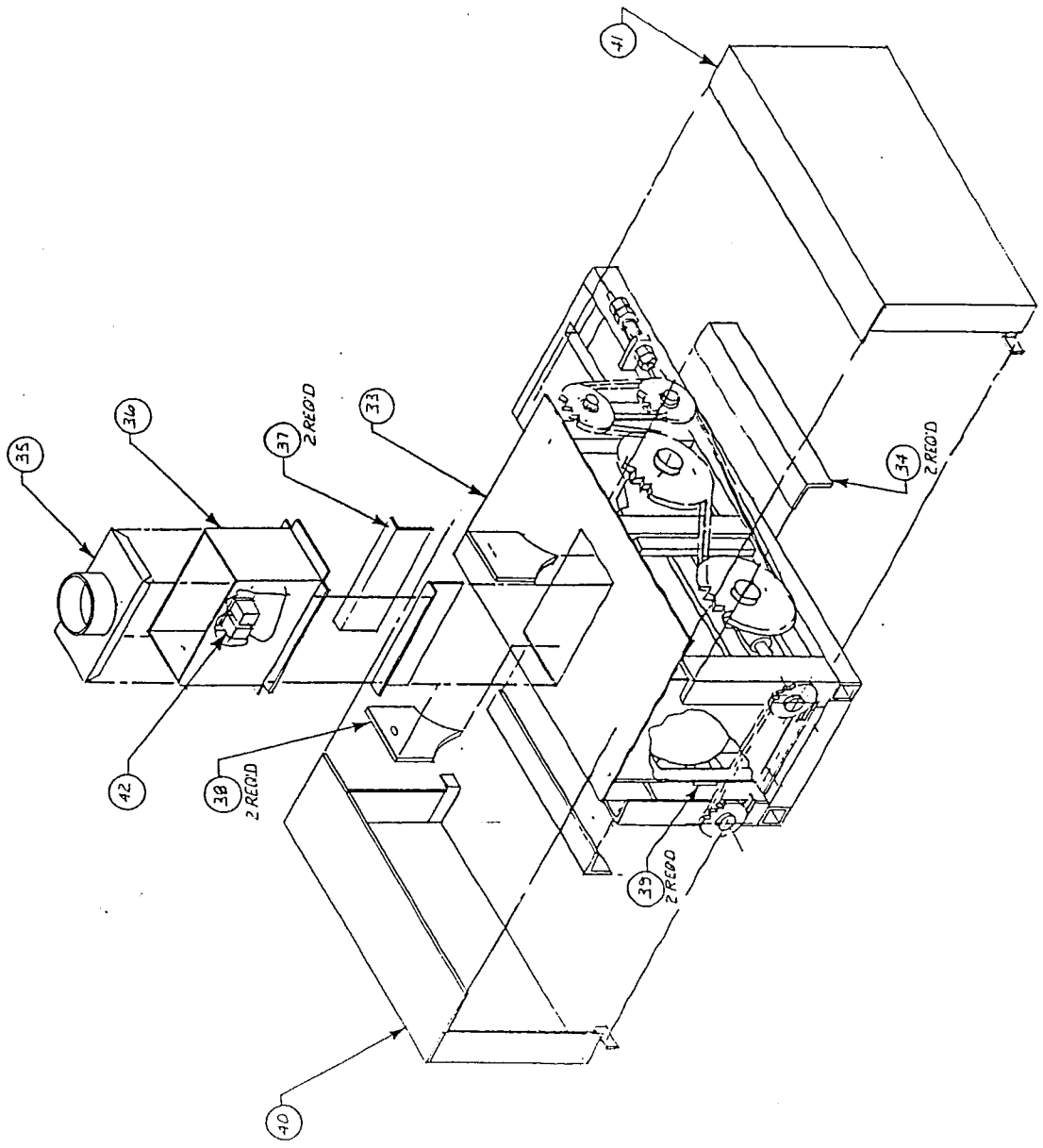
8x8 mill roll assembly

Item no.	Part number	Quantity	Description
1	90001079	1	Base Frame Weldment
2	11219640	4	Bar Take-Up Bearing Support
3	11218430	2	Take-Up Bearing Modifications
4	40000020	2	Bearing 1 7/16 Bore P.B.
5	11218010	2	Roll 8x8 Finished (Specify Corrugation)
6	11218280	2	Take-Up Bushing Threaded Insert
7	66105800	4	5/8-11 UNC Hex Jam Nut Plated
8	11220230	2	Adjusting Sprocket w/ Shr.
9	70008023	2	Die Spring 13/16 x 1 7/16
10	11218490	2	Sprocket & Adjuster Bushing
11	66405800	2	5/8 Diameter Flat Washer Plated
12	90001018	2	Adjusting Sprocket Assembly
13	F93000005	1	#41-Roller Chain Connecting Link
14	F93000008	1	#41-Roller Chain
15	F93041000	3 Ft.	#41 Roller Chain
16	46142517	2	Sprocket - 50 BS 25 1 7/16 Bore
17	92001347	2	Sprocket & Bearing Assembly
18	F93000007	1	#50 Roller Chain Connecting Link
19	F93049000	5 Ft.	#50 Roller Chain
20	11218290	1	Spacer-Upper Idler Sprocket
21	11218291	1	Spacer-Lower Idler Sprocket
22	90001026	1	Idler Arm Assembly
23	90001027	1	Tension Rod Assembly
24	70008022	1	Die Spring 3/8 x 3/4 x 2
25	66084400	4	3/8 Hex Nuts
26	90001006	2	Angle Assembly Motor Base
27	11218530	1	Motor Mounting Plate
28	43133212	1	Sheave 3/3V 10.6 SK
29	44010917	1	Bushing QD SK 1.4375
30	45406048	3	V-Belt 3V x 47.5
31	43133053	1	Sheave 3/3V 2.65 JA
32	44010112	1	Bushing QD JA 1.125
33	90001080	1	Roll Housing 8 x 8 Mill
34	11219790	2	Top Support
35	90001084	1	Hopper Lid 8 x 8 Mill
36	90001083	1	Hopper Weldment 8 x 8 Mill
37	11219760	2	Chute Front 8 x 8 Mill
38	11220180	2	Saddle 8 x 8 Mill
39	11219650	2	Dust Seal 8 x 8 Mill
40	90001082	1	Belt Guard 8 x 8 Mill
41	90001081	1	Chain guard 8 x 8 Mill
42	80008001	2	Ceramic Steel Mill Magnet
43	66405800	4	5/8 Diameter Flat Washer
44	62585830	1	5/8-11 UNC x 1 3/4 H.H.C.S.
45	62585837	1	5/8-11 UNC x 2 1/2 H.H.C.S.

8x8 mill roll assembly (part 1)



8x8 mill roll assembly (part 2)



Roller assembly

Item no.	Part number	Quantity	Description
1	90001012	1	Base/Frame Weldment-Ultra 3
2	11218720	1	10" Roll - Specify Corrugation
3	11218880	2	5" Roll - Specify Corrugation
4	40000091	2	Pillow Block Bearing 1.750"
5	46142518	1	Sprocket, 50BS25 1.500 Bore
6	62585228	4	1/2-13UNC x 1.5 Hex Hd Cap Screw
7	66405200	4	1/2 Diameter Flat Washer Plate
8	66445200	4	1/2 Dla. Lock Washer Plate
9	43133280	1	Sheave 3 Groove 3V14.0
10	44010918	1	Bushing, QD SK 1.500 KW
11	11218430	4	Take-up Bearing Modlfication
12	11218280	4	Take-up Bushing Threaded Insert
13	66105800	8	5/8-11 UNC Hex Jam Nut
14	66405800	4	5/8 Diameter Flat Washer Plate
15	70008023	4	Die Spring 13/16 x 1 7/16
16	11218490	4	Sprocket & Adjuster Bushing
17	90001018	4	Adjusting Sprocket Assembly
18	11218292	2	Adjusting Sprocket Spacer
19	46021504	2	Sprocket - 41A15
20	61285233	2	1/2-13UNC x 2.0 Socket Hd. Cap Screw
21	F93000005	2	#41 Roller Chain Connecting Link
22	F93000008	2	#41 Roller Chain Offset Conn. Link
23	F93041000	2	#41 Roller Chain 3'-0LD
24	11218320	6	Bar Take-up Bearing Support-Ultra 3
25	46141517	2	Sprocket - 20 BS15 1-1/16
26	92001347	2	Sprocket & Bearing Assembly
27	11218291	1	Lower Idler Sprocket Spacer
28	11218290	1	Upper Idler Sprocket Spacer
29	F93000007	1	#50 Roller Chain Connecting Link
30	F93049000	1	#50 Roller Chain (83 Pitches)
31	F93000006	1	#50 Roller Chain Offset Link
32	90001026	1	Idler Arm Assembly Ultra 3
33	90001027	1	Tension Rod Assembly
34	70008022	1	Die Spring 3/8 x 3/4 x 2
35	66084400		3/8-16 UNC Hex Nut
36	F70010512	2	1/2 x 1/2 Sch Hd Shd. Bolt 3/8-16
37	62585832	1	5/8-11 UNC x 2 1/2 H.H.C.S.
38	62585830	1	S/a-ll UNC x 1 3/4 H.H.C.S.
39	11218530	1	Motor Mounting Plate
40	90001006	2	Angle Assembly Motor Base
41	11218300	1	Top Support L.H.
42	11218301	1	Top Support R.H.
43	90001013	1	Roll Housing-Ultra 3
44	11218090	1	Chute Top Back Ultra 3
45	11218100	1	Chute Bottom Back Ultra 3
46	11218110	1	Chute, Front-Ultra 3

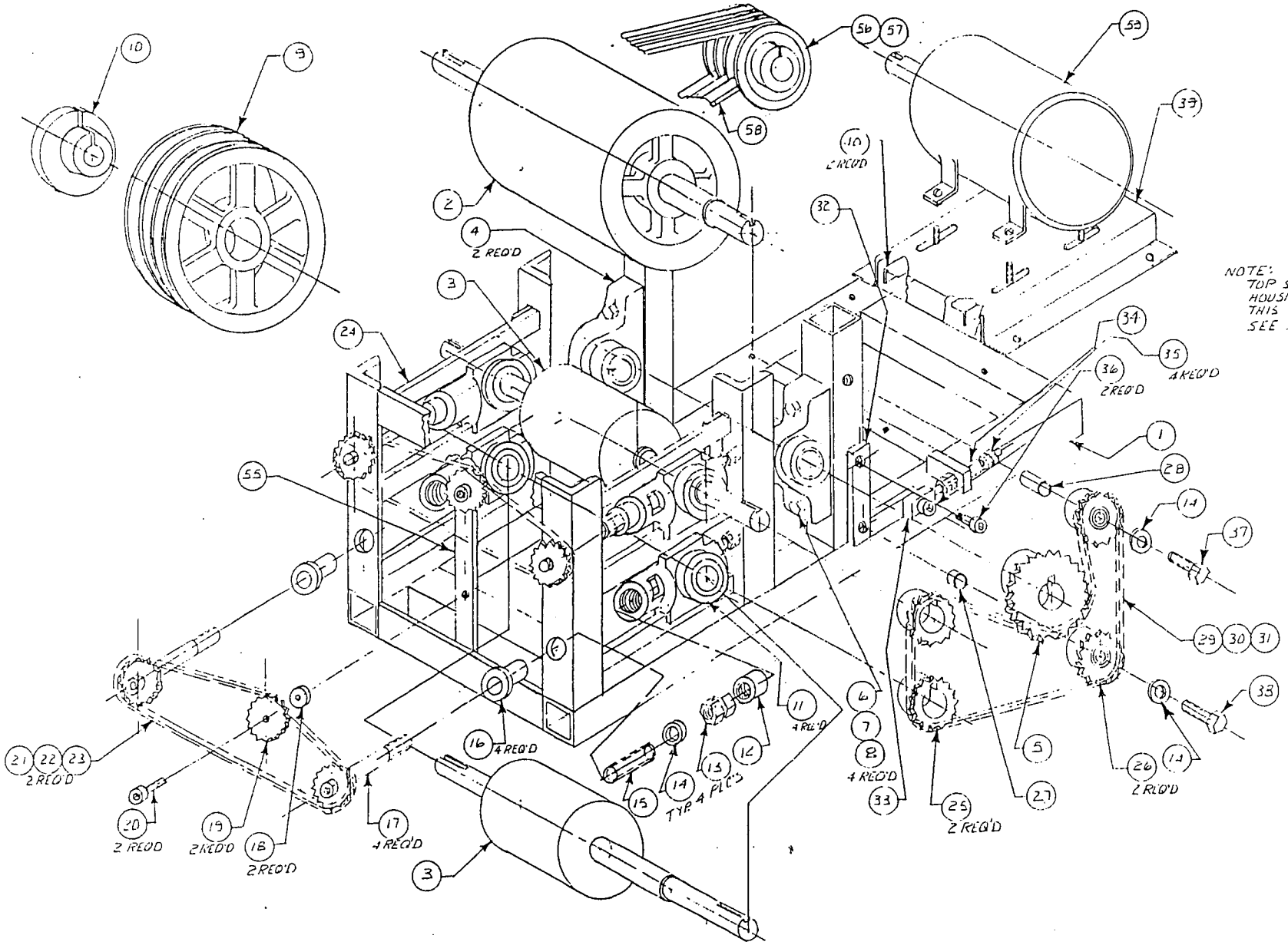
Roller assembly continued

Item no.	Part number	Quantity	Description
47	11218130	2	Saddle, Top Pan - Ultra 3
48	11218120	2	Saddle Bottom Back Ultra 3
49	11218190	1	Retainer Front Dust Seal-Ultra 3
50	11218191	1	Retainer Front Dust Seal-Ultra 3
51	11218180	2	Retainer Rear Dust Seal Ultra 3
52	11218210	2	Seal Dust - Ultra 3
53	11218211	4	Seal Dust - Ultra 3
54	11220120	2	Scraper Bar - Ultra 3
55	90001043	1	Roll Adjusting Sprocket Assebly
56	43133053	1	Q.D. Sheave 3VSect 3 Grv 2.65 OD (JA)
57	44010112	1	Q.D. Bushing JAS12E x 1.125 Bore
58	45406053	3	V-Belt 3V x 530
59	See Note	1	Motor

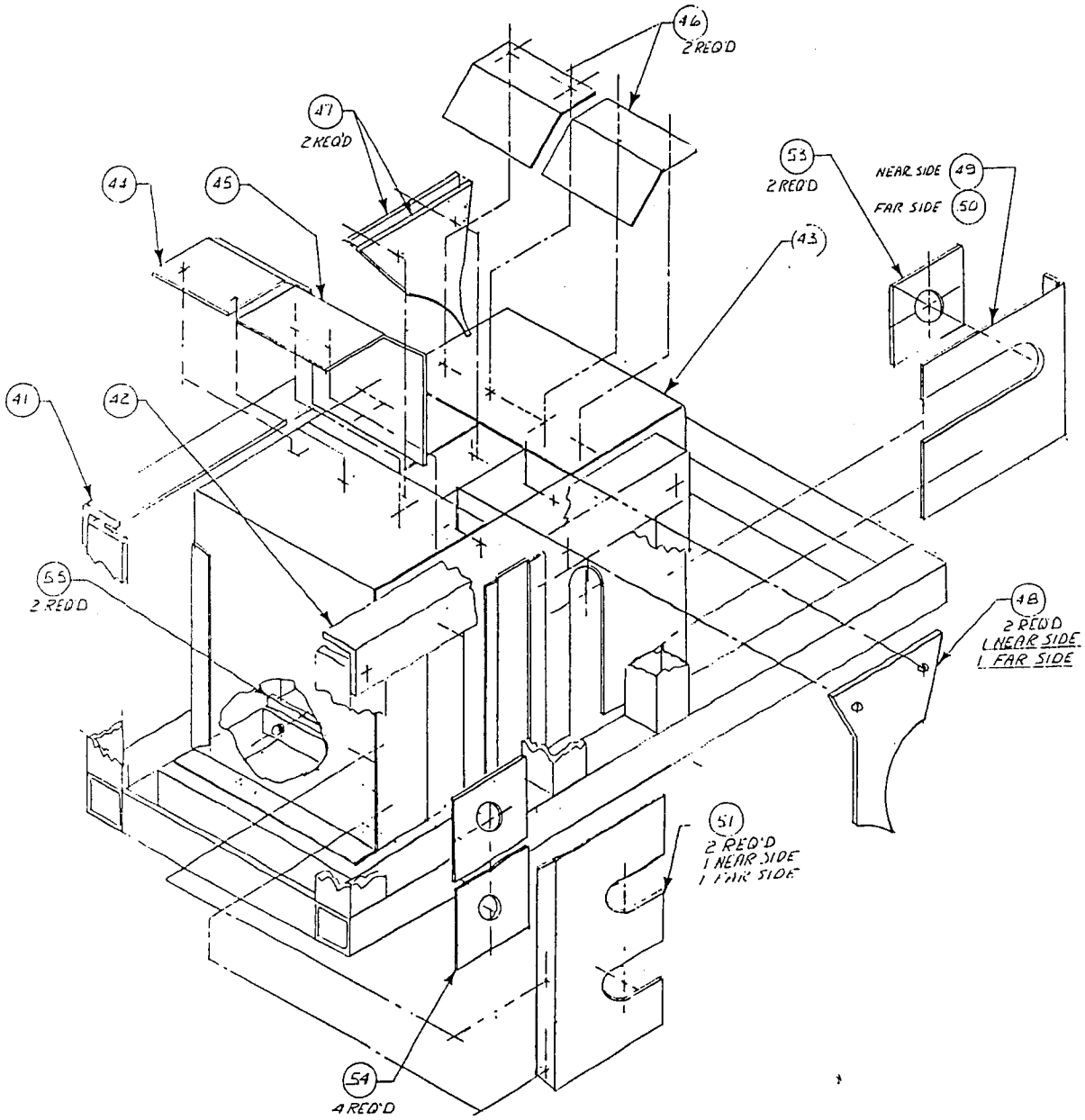
NOTE:

33000814	5 HP	575 Volts	3S18 0/6 TEFC
33000800	5 HP	3 Phase	3D18 0/6 TEFC
33000302	5 HP	1 Phase	1D18 0/6 TEFC

Roller assembly



Roller assembly continued

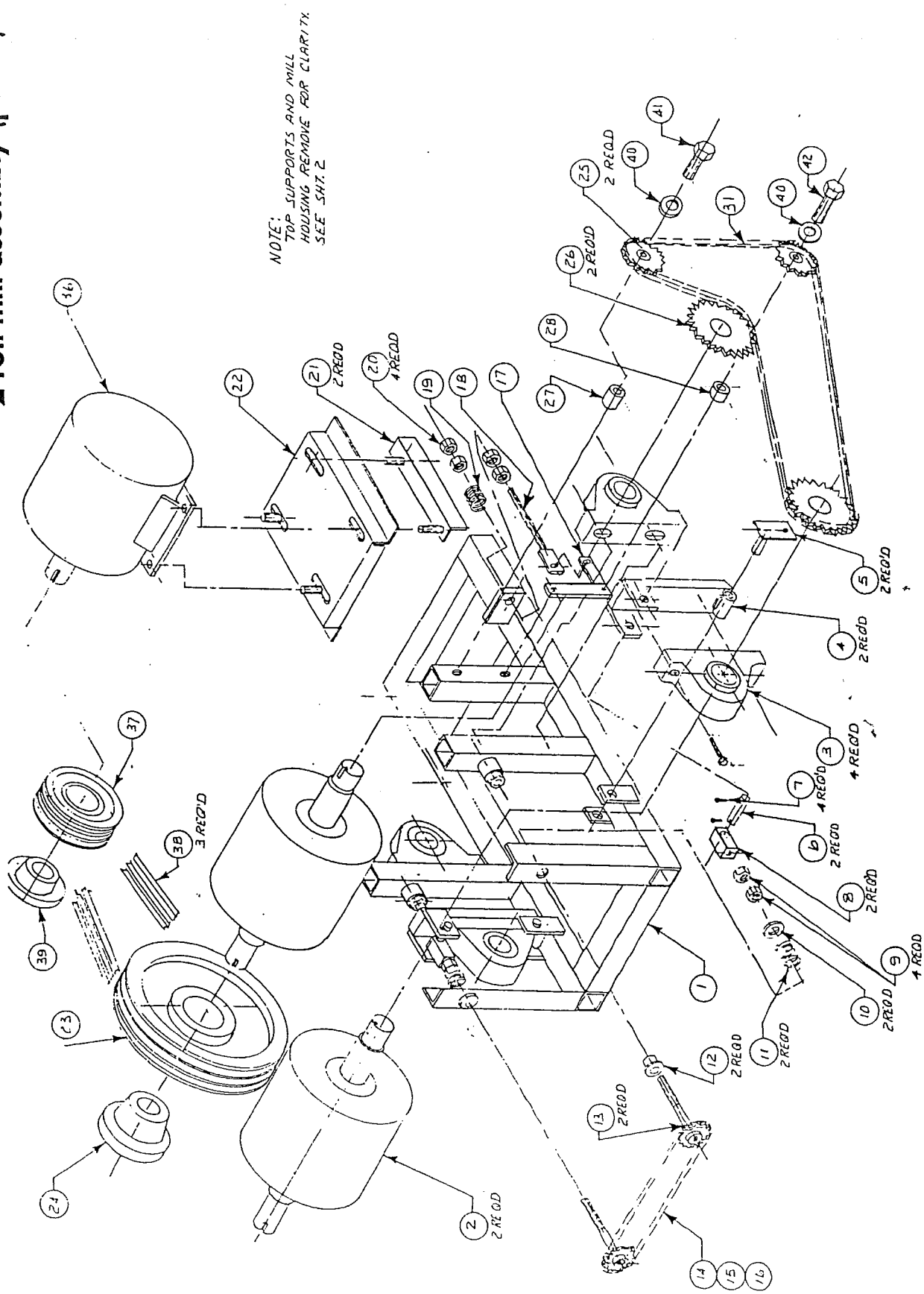


NOTE:
MACHINERY NOT SHOWN
IN THIS VIEW FOR CLARITY.
SEE SHEET 1.

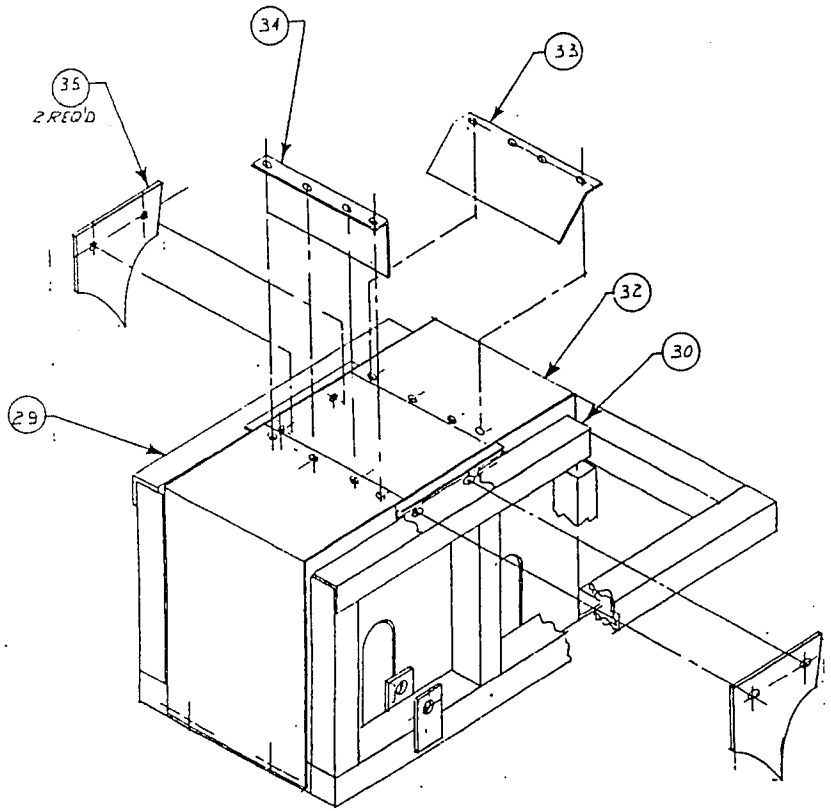
2 roll mill assembly

Item no.	Part number	Quantity	Description
1	90001067	1	Base Frame Weldment 2 Roll
2	11218710	2	10" Roll - Specify Corrugation
3	40000091	4	Bearing Block
4	90001066	2	Front Bearing Mount Weldment
5	90001061	2	Pivot Block & Pin Assembly
6	11219420	2	Pin Front Bearing Mount
7	F82800040	4	Pin-Cotter 3/32 x 1
8	11219450	2	Adjusting Block
9	66105800	4	5/8 11 Hex Jam Nut
10	66405800	2	5/8 - Flat Washer
11	70008023	2	Spring .813 x 1.438 x 2.750
12	11218490	2	Sprocket and Adjuster Bushing
13	90001018	2	Adjusting Sprocket Assembly
14	F93000005	1	Chain Link #41 Spring Lock
15	F93000008	1	Chain Link #41 Offset
16	F93041000	3 Ft.	Chain #41 Roller Riveted
17	90001026	1	Idler Arm Assembly
18	90001027	1	Tension Rod Weld
19	70008022	1	Spring .375 x .750 x .200
20	66084400	4	3/8 - 16 Hex Nut
21	90001006	2	Angle Assembly Motor Base
22	11218530	1	Motor Mounting Plate
23	43133280	1	Sheave 3/3V 14.0
24	44010918	1	Bushing QD SIC 1.500 Bore
25	92001347	2	Sprocket and Bearing Assembly
26	46142518	2	Sprocket, 50 BS25 1.500 Bore
27	11218290	1	Spacer Top
28	11218291	1	Spacer Bottom
29	11218300	1	Top Support (L.H.)
30	11218301	1	Top Support (R.H.)
31	F93049000	5 Ft.	Chain #50 Roller - Riveted - Lubed
32	90001062	1	Roll Housing Weldment
33	11219480	1	Chute - Back 2 Roll
34	11219490	1	Chute Front
35	11219470	2	Saddle 2 Roll
36		1	Motor
37		1	Sheave 3V - Motor
38		3	3V V-Belts
39		1	Bushing QD SK-Motor

2 roll mill assembly (part 1)



2 roll mill assembly (part 2)



NOTE:
MACHINERY NOT SHOWN FOR CLARITY.
SEE SHT 1

Sentry tri-roll assembly

Item no.	Part number	Quantity	Description
1	92001384	1	Prop Hopper Assembly - RH
2	90001072	1	Transition Assy - RH
3	11218760	1	Transition Divider
4	92001363	5	Bypass Sliding Plates
5	90001045	5	Weldment - Bypass Swivel Plate
6	90001044	1	Door, Prop & Trans - RH
7	80008001	6	Ceramic Magnet
8	90000131	5	Switch Paddle Assembly
9	11217530	1	Junction Box Cover
11	90001073	1	Midsection Weldment
12	92001379	1	Inlet Seal - RH Midsection ~
13	See Note	1	Roll Assy Tri Roll or Two Roll
14	11219540	1	Door Midsection Front Tri Roll
15	11218560	2	Angle Base Cover Stiffener
16	11218830	1	End Plate - Midsection Rear
17	11218550	1	Plate Mill Base Top - Basic RH
18	90001020	1	Base Housing - RM
19	11218540	2	End Plate - Mill Base
20	11218590	1	Side Plate - Mill Base w/ Hole
21	11218591	1	Side Plate - Mill Base w/o Hole
22	90001030	1	6" Tube & Plate Connector
23	90001022	1	3 1/2" Tube & Plate Connector
24	10148339	1	Bearing Plate (6 Auger)
25	93032230	1	Ball Bearing Assy (6 Augerl
26	10148338	1	Bearing Plate (3 1/2 Auger)
27	93022900	1	Ball Bearing Assy (3 1/2 Auger)
28	43425206	1	Sheave 2AK 104 Qt (6 Auger)
29	42108104	1	Sheave 1 Gru 1000 x 5/8 Bore (3 1/2 Auger)
30	44010011	1	Bushing 1 1/16 Bore Qt (6 Auger Only)
31	41351204	1	Sheave 2BK 2.8 (6 Auger)
32	41301304	1	Sheave 3.000R x .625 Bore (3 1/2 Auger)
33	45001044	*	V-Belt A-42
34	33001101	1	MTY .33 HP 1018 0/6 TEFC C-FAC
35	See Note 2	1	Motor
36	43133053	1	Sheave 3/3V 2.65
37	44010112	1	QD Bushing JA x 1.125
38	45406053	3	V-Belt 3V x 530
39	31008025	1	Micro Switch - Door

* 2 Belt Requlred for 6 Auger
1 Belt Requlred for 3 1/2 Auger

Items Shipped Loose, but not Shown on Drawing

92001380	1	Sample Door - RM
90001016	4	4" Test Can
90001017	1	6" Test can
91000237	1	Control Panel 5 HP 1 PH

Sentry tri-roll assembly continued

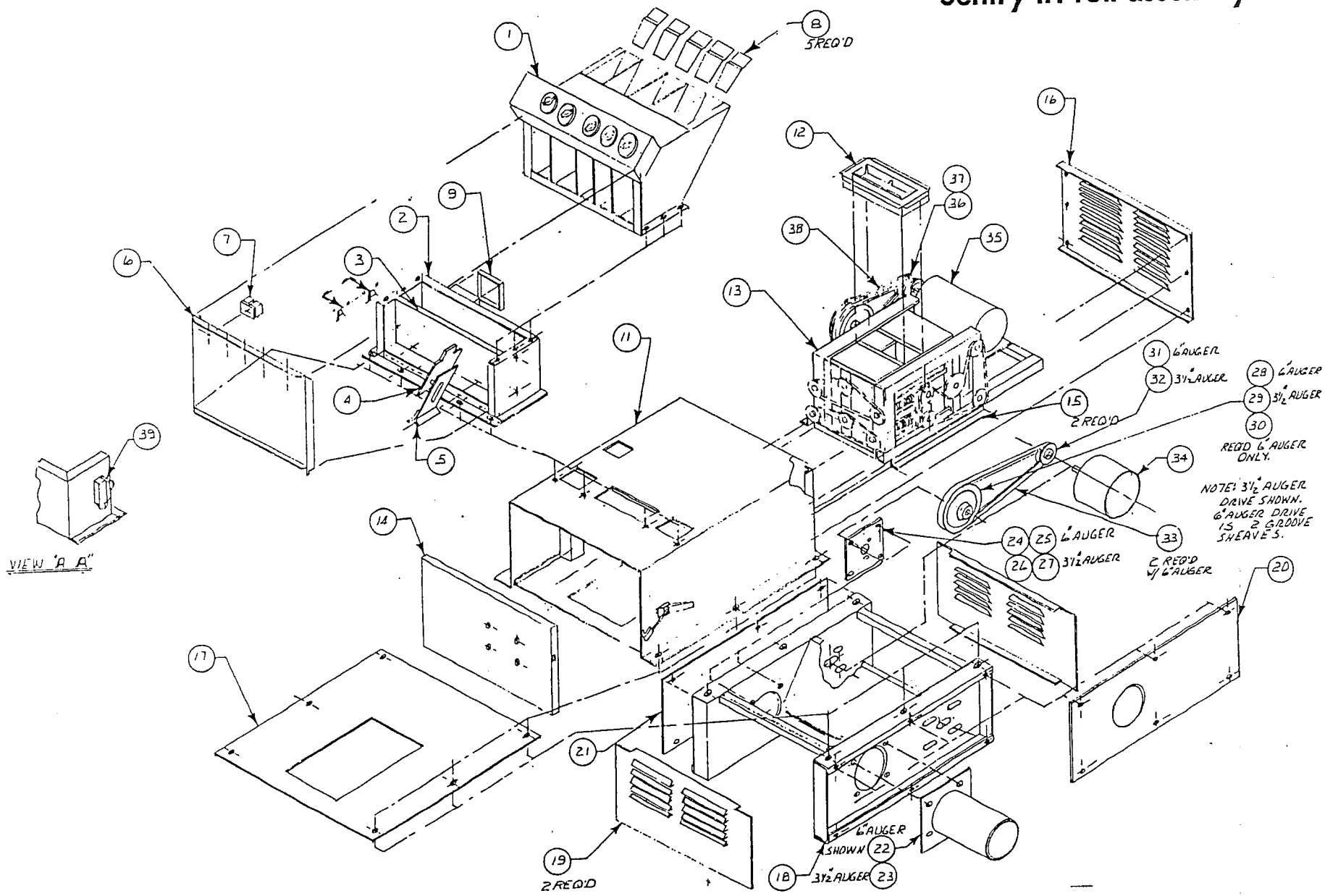
NOTES

1. Tri-Roll Part No. 92001347 or Two-Roll Part No. 92001378.

2.

33000302	5HP	1 Phase Motor
33000800	5HP	3 Phase Motor
33000814	5HP	3 Phase 575 Vac Motor

Sentry tri-roll assembly



Appendix A

Book value of common feed stuffs on "as fed" basis

Ingredient	% Protein	% Moisture	% Calcium	% Phosphorus
Corn	8.5	14	0.05	0.25
Corn, High Moisture	7.4	27	0.04	0.22
Oats	11.0	10	0.10	0.35
Barley	11.5	11	0.08	0.42
Wheat	13.5	12	0.05	0.41
Mixed Grain	11.3	12	0.09	0.39
Brewers Grains, Dried	27.0	7	0.30	0.60
Soybeans, Raw Full-fat	37.0	13	0.25	0.60
Soybeans, Roasted	38.0	10	0.25	0.60
Soybean Meal, Western	46.5	12	0.30	0.60
Soybean Meal, Lo Protein	44.0	12	0.25	0.60
Soybean Meal, Hi Protein	48.0	12	0.20	0.65
Corn Glutten Feed	21.0	12	0.20	0.90
Corn Glutten Meal	60.0	10	0.20	0.70
Corn Distillers	27.0	9	0.35	1.30
Limestone	0.0	2	38.00	0.00
Molasses, Dried	7.0	9	1.20	0.90

divisions of:
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