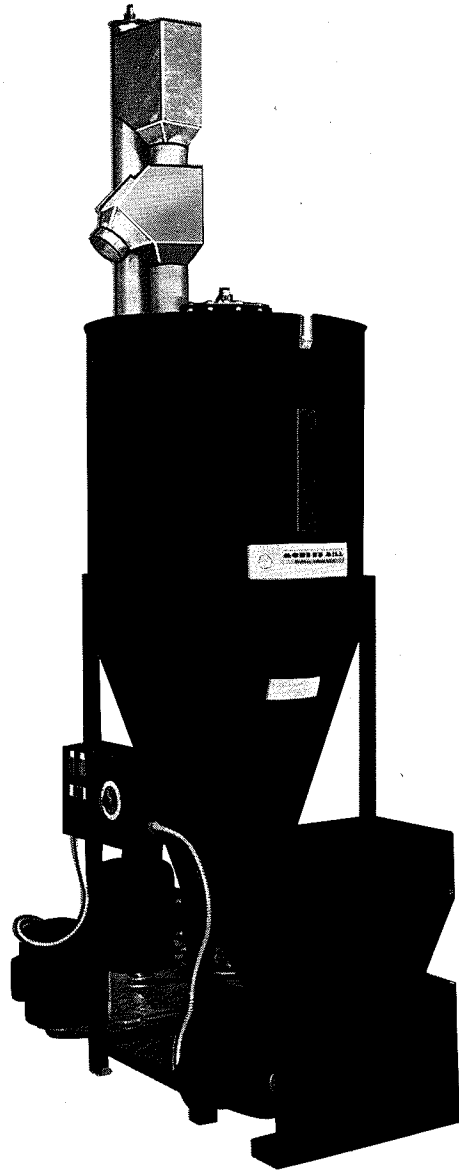


MODERN MILL



60A500 Series **VERTICAL PREMIXER**

Owner's Manual

INTRODUCTION

Thank you for choosing a Modern Mill premixer. Like all Modern Mill products, your premixer has been designed to provide long service life.

This manual provides information for installation, operation, and service of the unit. We urge you to familiarize yourself with its contents before attempting installation or operation.

Your Modern Mill dealer or distributor is equipped to provide repair service and replacement parts. Contact him first should a question or service problem arise. In the event your dealer or distributor is unable to provide the service or parts you require, the Modern Mill Field Services Department, Bluffton, Indiana is available for your assistance.

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SAFETY PRECAUTIONS

SECTION I

SAFETY PRECAUTIONS

Modern Mill, Inc. has made every effort to provide you with safe equipment; however, the following safety precautions must be observed:

- (1) Always disconnect the main electrical service switch before removing any electrical box covers.
- (2) Ground all equipment to a ground rod driven six (6) feet into moist soil.
- (3) Ground any augers or feeders that are powered or controlled by electrical equipment.
- (4) Never attempt to dislodge obstructions from any auger while electric power is connected.
- (5) Never attempt to adjust belt tensions while the unit is operating.

INSTALLATION

SECTION II

STEP 1 PLAN THE LOCATION

Your premixer should be positioned in a manner which will place the controls within easy reach of the operator. Be sure to allow adequate space for bagged ingredient storage and maintenance access. If the premixer is to be interconnected to a mill, it must be close enough to the mill to provide gravity flow of ingredients to the mill but not so close that it interferes with the normal operation or maintenance of the mill or other equipment.

CONTROL LOCATION

If the standard control panel location is not convenient, the panel may be easily relocated using the alternate mounting holes provided in the premixer legs.

Likewise, the "Y"-valve control lever(s) may be installed on either side of the valve in order to permit discharge from either side. In some installations, it may also be desirable to fabricate control cables and substitute them for the "Y"-valve control rod(s). This would only be necessary if the standard control rod location is not convenient for the operator.

STEP 2 VERTICAL AUGER INSTALLATION

- (A) Remove the eccentric locking collar from the discharge end of the vertical auger.
- (B) Remove the bearing, bearing flanges, and seal from the bottom of the transfer corner.
- (C) Insert the auger tube, with the shaft and flight inside, into the split tube of the transfer corner. Be certain that the auger tube is fully inserted into the split tube and that the discharge opening is facing the receiving tube of the mixing hopper.

(D) Make certain that the horizontal auger tube is level (The transfer corner tends to drop down when unsupported.) and tighten the clamps on the transfer corner and also the support clamps on the side of the mixing drum.

(E) Install the bearing, bearing flanges, and seal on the lower end of the vertical auger. After the bearing is in place, move the auger shaft as far toward the upper bearing as it will go in order to remove all pressure from the lower bearing. Next install and tighten the upper eccentric locking collar. Install the lower eccentric locking collar after the upper collar is locked in place.

(F) Install the vertical auger pulley and drive belt making certain that the auger pulley is aligned with the motor pulley. The drive belt only needs to be tight enough to prevent slippage under full load.

(G) Install the auger outlet, "Y"-valve, flared sleeve, and tube. The relationship of these parts is shown in Figure 1.

Also slide the control rod(s) through the guide(s) on the side of the mixing drum and attach the rod(s) to the "Y"-valve control lever(s) with plain washer(s) and cotter pin(s).

A unit equipped with an optional bagging attachment will have a 3-way valve and two control rods. A standard unit will have a 2-way valve and a single control rod.

INSTALLATION

Note: If it is necessary to increase the vertical auger height, contact Modern Mill, Inc. as special auger flight, added horsepower, and control rod changes are required.

STEP 3 FIELD INSTALLATION OF CONTROL HOPPER

(This step is only required if the premixer is is to be interconnected to a mill which does not already have a premixer control hopper installed.)

Premixer control hopper installation on Series 5 or Series 50 mills may be accomplished as follows:

(A) If not previously installed, attach the hopper support bracket to the metering chamber housing using $\frac{1}{4}$ "-20 x $\frac{1}{2}$ " cap screws and lockwashers. Four holes with weld nuts are provided to facilitate mounting a full-length hopper support

bracket. If a support bracket other than full-length is used, it will be necessary to drill additional $\frac{5}{16}$ " holes in line with the holes provided and use nuts and lockwashers on the cap screws.

(B) Place the control hopper over the metering chamber and fasten the hopper to the support bracket using $\frac{1}{4}$ " x $\frac{1}{2}$ " cap screws with nuts and lockwashers.

(C) Drill two (2) $\frac{7}{32}$ " holes in the front of the metering chamber and fasten the hopper to the metering chamber with $\frac{1}{4}$ "-20 x $\frac{1}{2}$ " self-tapping screws and lockwashers, Figure 2.

Electrical wiring of the premixer control hopper is covered in step 5.

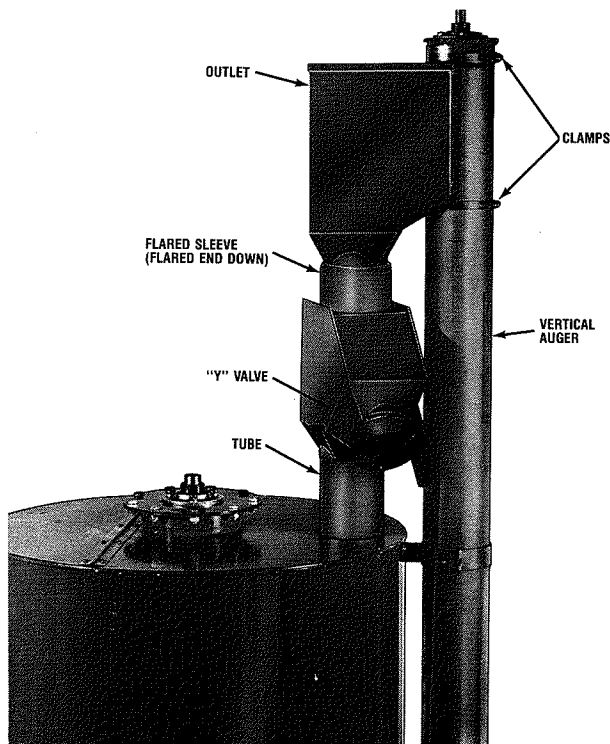


FIGURE 1
VERTICAL AUGER OUTLET DETAIL

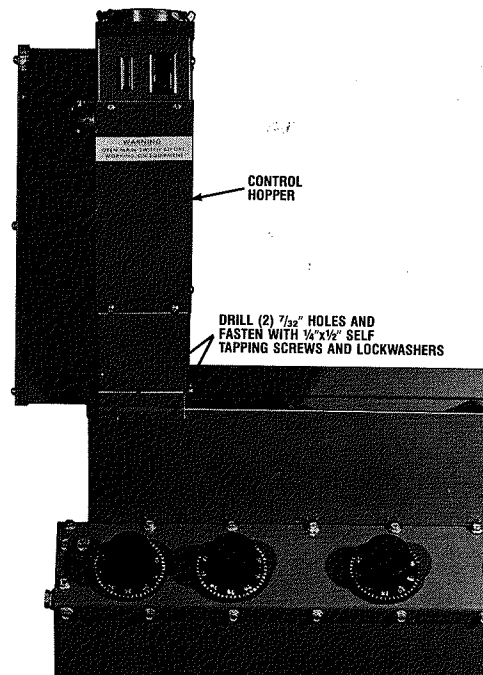


FIGURE 2
FIELD INSTALLATION OF CONTROL HOPPER

INSTALLATION

STEP 4

INSTALL OUTLET TUBING

If the premixer is interconnected to a mill, 4" tubing must be installed between the control hopper and the premixer "Y"-valve.

Rigid tubing is preferred for this purpose, but flexible tubing may also be used. In either case, the tube must be inclined a minimum of 30° from horizontal in order to provide adequate ingredient flow through the tube.

Note: Certain ingredients may require the tube to be inclined more than 30°.

Sheet metal screws may be used to secure all joints and the joints may be caulked with silicone sealant if desired.

STEP 5

ELECTRICAL WIRING

Your new premixer may be interconnected to a mill or it may be wired for completely separate operation.

SEPARATE OPERATION

To wire for separate operation:

- A. Consult the premixer wiring diagram, page 8. The diagram shows that two separate power supplies (115 volt and 230 volt) must be extended to the premixer from separate circuit breakers.

- B. Connect the 115 volt power to terminals TB1 and TB2 of the premixer.
- C. Connect the 230 volt power to the L1 and L2 terminals of the contactor in the premixer control panel.

INTERCONNECTION TO A MILL

To wire for operation in conjunction with a Series 5 or 50 mill:

- A. Consult the interconnection wiring diagram on page 9.
- B. Extend 115 volt power from the ITB1 and ITB2 terminals in the mill control panel to the TB1 and TB2 terminals of both the control hopper and the premixer.
- C. Remove the jumper wire between terminals TB1 and TB3 in the premixer panel. If a control hopper other than model 30A28 is used, it is also necessary to remove the jumper wire between terminals TB1 and TB4 in the control hopper.
- D. Connect a wire from terminal TB3 in the control hopper to TB3 in the premixer panel.
- E. Connect a wire from terminal ITB6 in the mill control panel to TB4 in the control hopper.
- F. Supply 230 volt power from a separate circuit breaker to the L1 and L2 terminals of the contactor in the premixer panel.

OPERATION

SECTION III

OPERATION

CONTROL PANEL

The control panel is mounted on the premixer support legs and contains 115 volt and 230 volt power monitors, a mix-unload rocker switch, and a 15 minute timer (optional).

POWER SUPPLY MONITORS

Both the 115 volt control circuit power supply and the 230 volt main power supply are monitored by the two amber lights on the control panel. These lights normally remain lighted at all times and will quickly indicate a loss of supply power or tripped circuit breaker.

MIX-UNLOAD SWITCH

A rocker switch, mounted on the control panel, is used to select the operational mode.

When the rocker switch is in the "mix" position, operation will either be continuous or for the amount of time set on the optional timer, if so equipped.

When the "unload" position is selected, operation will be controlled by a control hopper if the unit is interconnected to a mill and operation will be continuous if the unit is not interconnected to a mill.

The premixer will be "off" when the rocker switch is in the middle position between "mix" and "unload".

TIMER (OPTIONAL)

A premixer equipped with the optional 15 minute timer will operate in the "mix" position for the time period set on the timer and then stop automatically. Premixers equipped with timers will not operate in the "mix" position if the timer is not set. The timer does not control operation in the "unload" position.

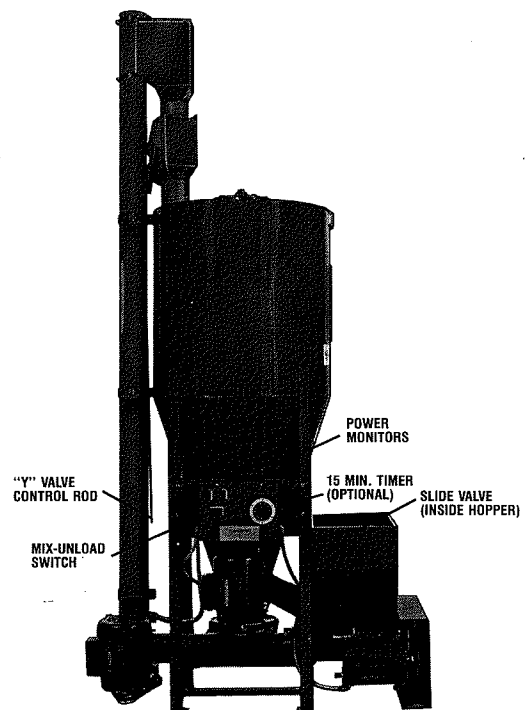


FIGURE 3
LOCATION OF CONTROLS

OPERATION

"Y"-VALVE CONTROL ROD(S) AND OPTIONAL BAGGING ATTACHMENT

"Y"-valve position is manually changed to direct material from the vertical auger to the mixing drum for mixing or to the mill for metering. A standard premixer has a single control rod to change the valve position. A premixer equipped with an optional bagging attachment has two control rods and the additional capability of directing material from the vertical auger through a flex tube for bagging.

A thumb screw on the side of the mixing drum is provided for each control rod to lock the "Y"-valve in the position(s) selected.

SLIDE VALVE

A slide valve is provided inside the dump hopper. When closed, the slide valve prevents material inside the mixing drum from being returned to the dump hopper. When open, material in the bottom of the mixing drum is returned to the dump hopper.

POLISHING THE DRUM (BEFORE USE)

Before initial use and whenever the unit has been idle for an extended period of time, the mixing drum must be polished in order to achieve maximum mixing action. To polish, pour approximately $\frac{1}{2}$ bushel of dry shelled corn or other dry grain such as wheat into the hinged opening at the top of the mixing drum. With the slide valve closed, run the unit until a polished appearance is noticed on the inner walls of the hopper. This may take several hours. It would then be advisable to add slightly more ingredient and open the slide valve. Run for an additional period to polish the very bottom of the drum and the entrance tube to the hopper.

MIXING OF INGREDIENTS

To mix ingredients:

- (1) Close the slide valve in the hopper.
- (2) Set the rocker switch on "MIX"
- (3) Fill the mixer with ingredients as follows:

Begin and end the filling process with a major ingredient, whenever possible. Example: To mix ingredients of 100#, 10#, and 100#, add the ingredients to

the mixer in that order. Example: To mix ingredients of 200# and 10#, divide the major ingredient into two parts so the small quantity is not added first or last. The mixing drum has a maximum ingredient capacity of 9 cu. ft. which is indicated by the top of the sight glass in the side of the drum. When filling, observe the ingredients through the glass and do not fill above the top of the sight glass. Improper mixing will result if the mixing drum is overfilled.

- (4) Open the slide valve to permit the ingredients to be returned to the dump hopper and circulated through the 4" auger simultaneously with the 6" auger in the mixing drum. This will permit more thorough and rapid mixing.

A mixing time of 10 minutes is normally adequate. Certain ingredients or combinations of ingredients may require a slightly longer mixing period.

- (5) To empty the mixer, change the "Y"-valve position and set the rocker switch on "unload" When connected to a mill, the mixer will operate each time the mill calls for a new supply of ingredient.

All motors operate during unloading and the mixing process continues until the last portion of ingredient is removed from the mixer.

CLEANING

Your premixer uses special auger flighting and has the mixing drum outlet located in a manner which permits nearly all material to be removed from the mixing drum. These features serve to reduce the quantity of residuals retained in the unit.

After use of certain antibiotics or medications, the following procedure may be employed as an aid in further removing residuals from the mixing drum and augers:

Install and circulate approximately fifteen (15) gallons of finely ground grain or soybean oil meal in the unit. The majority of the residuals will be picked up and contamination of other premixes will be minimized.

MAINTENANCE

SECTION IV MAINTENANCE

V-BELT MAINTENANCE AND REPLACEMENT

It is necessary to keep V-belts adjusted to the proper tension. Belts only need be tight enough to prevent slippage under full load. A V-belt adjusted too tightly may cause undue stress on bearings, pulleys, and motor mounts.

Contact your Modern Mill dealer or distributor for proper replacement belts which are as follows:

Belt	Type	Modern Mill Part #
Horizontal Auger	46" "A" Section	5A3G12
Mixing Auger	41" "A" Section	5A3G4
Vertical Auger	37" "A" Section	5A3G2

After installation of a new v-belt, the tension should be checked and re-adjusted, if necessary, after the first hour of operation.

Caution: If a belt guard has been removed, always replace before operating equipment.

ELECTRIC MOTOR SERVICE

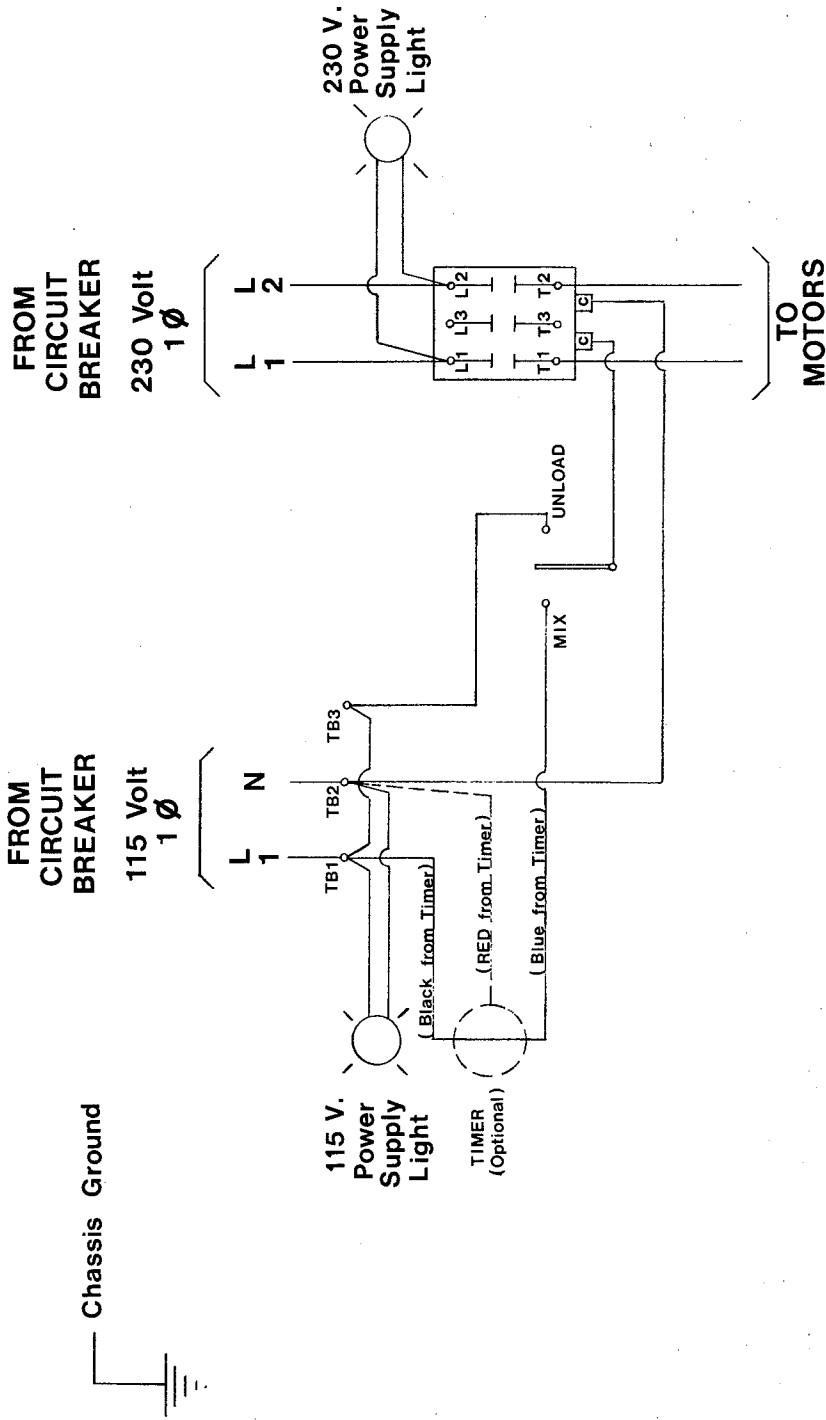
All A.C. electric motors used on Modern Mill equipment are protected by the motor manufacturers' warranties. If repair or replacement is required, contact your Modern Mill dealer or distributor so that he may recommend the service source best qualified to make the needed repair on your motor.

Never allow unauthorized personnel to attempt repairs, particularly, if the motor is eligible for warranty repair.

CLEANLINESS

Cleanliness is important for both safety and proper operation. Motors must be kept clean in order to provide proper cooling.

ELECTRICAL SCHEMATICS



NOTE:

When Premixer is installed in conjunction with a Control Hopper on Series 5 or 50 Mill:

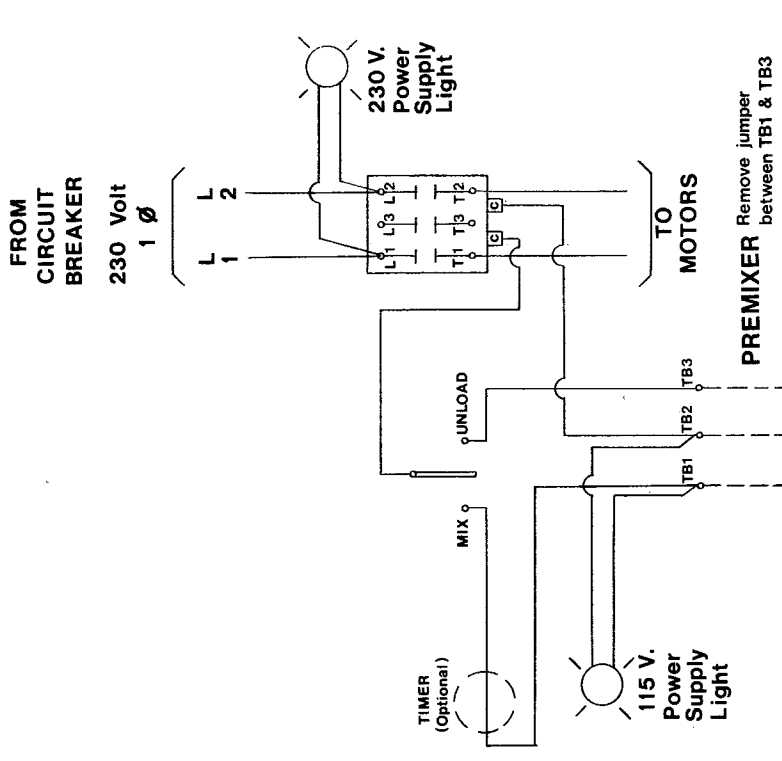
- 1- Remove jumper between TB1 & TB3.
- 2- Extend 115 Volt supply from Mill Panel, NOT from a separate breaker.

See Interconnection Diagram 11A120

**PREMIXER
WIRING DIAGRAM**

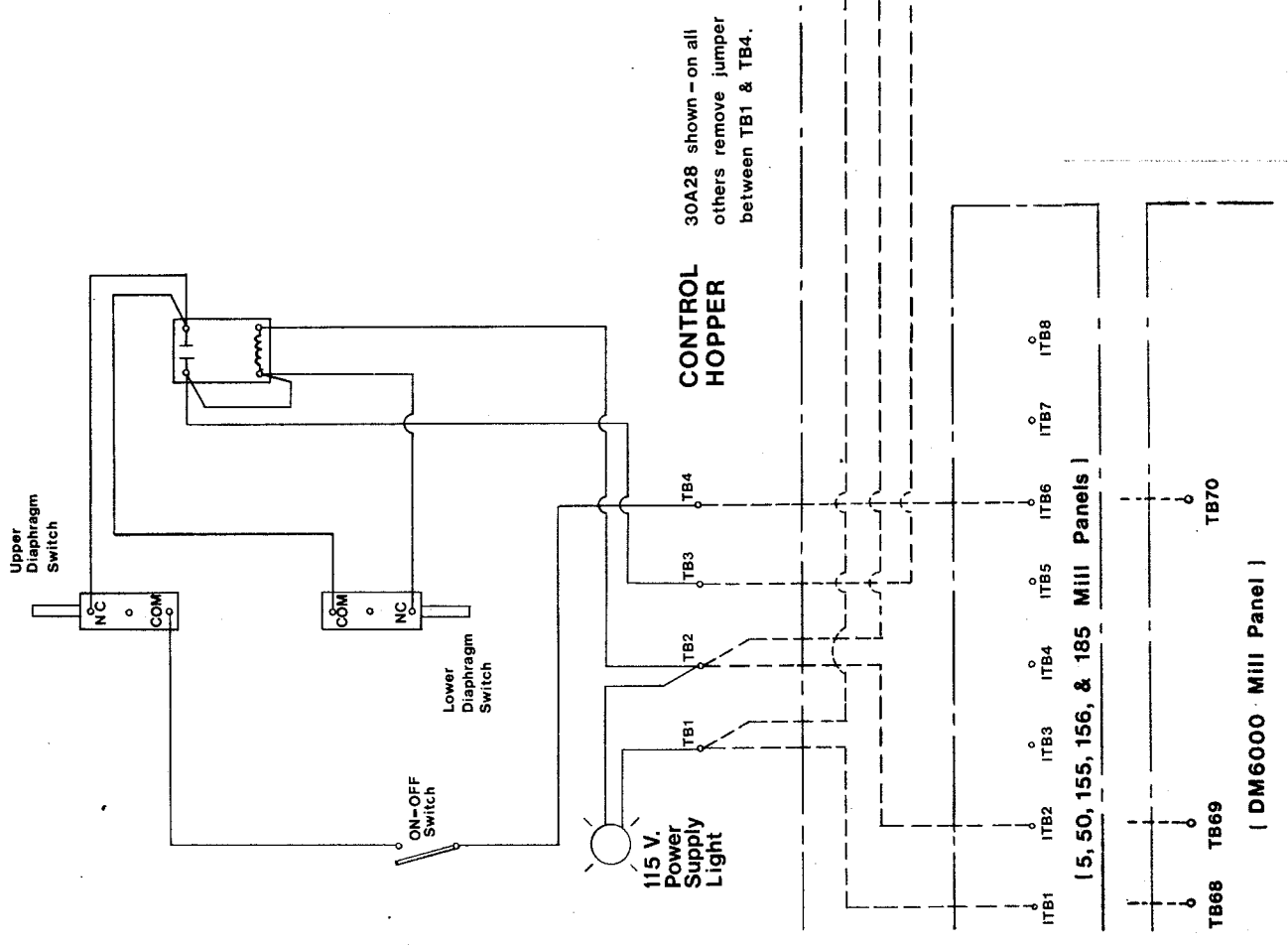
11A117

ELECTRICAL SCHEMATICS

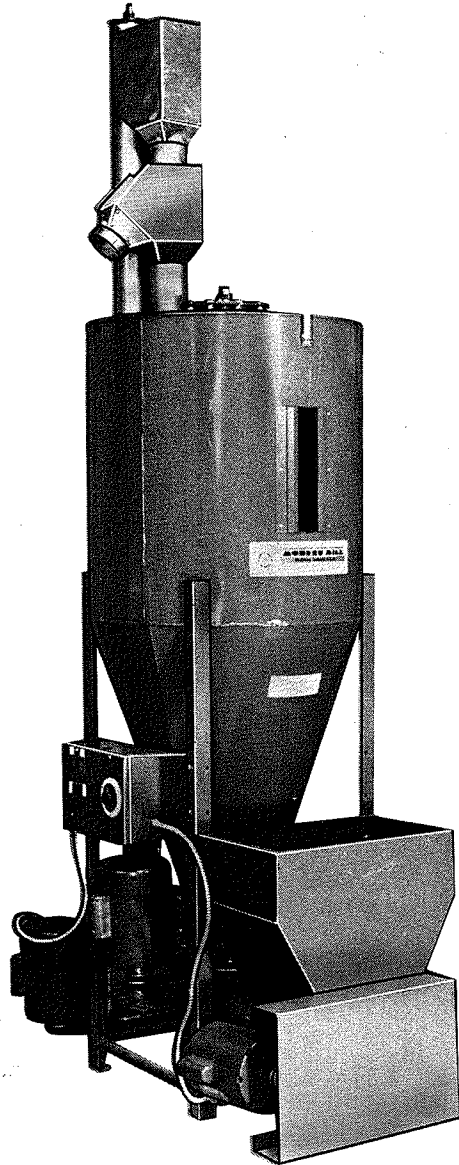


INTERCONNECTION DIAGRAM

11A120

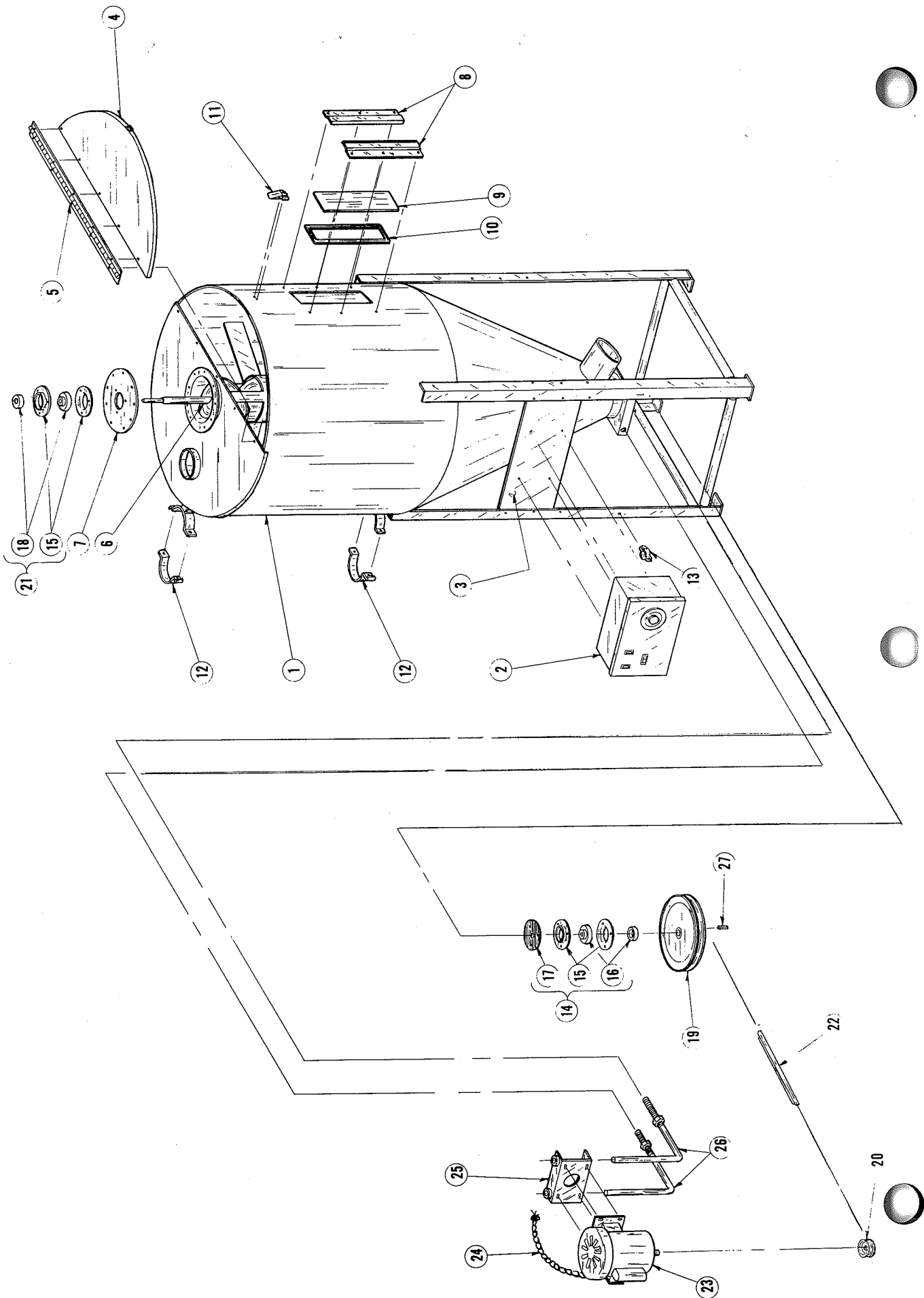


MODERN MILL



60A500 Series **VERTICAL PREMIXER**
Replacement Parts

MIXING DRUM COMPONENTS

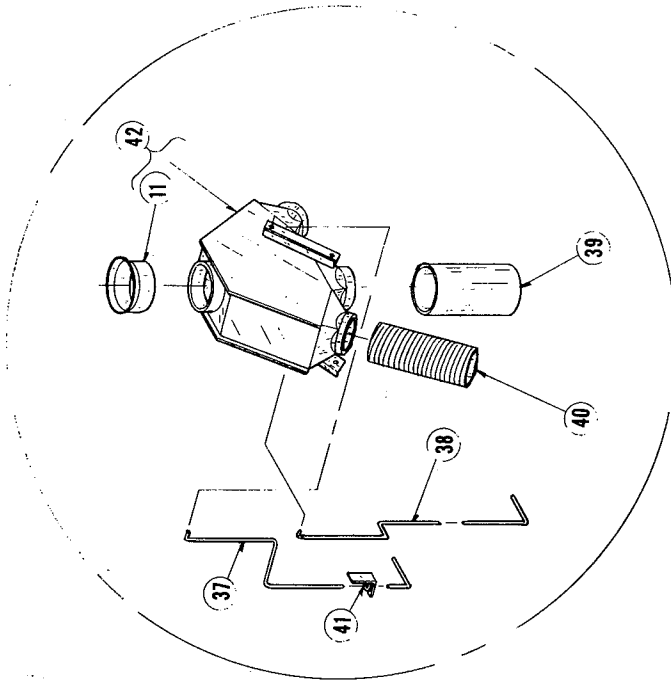


MIXING DRUM COMPONENTS

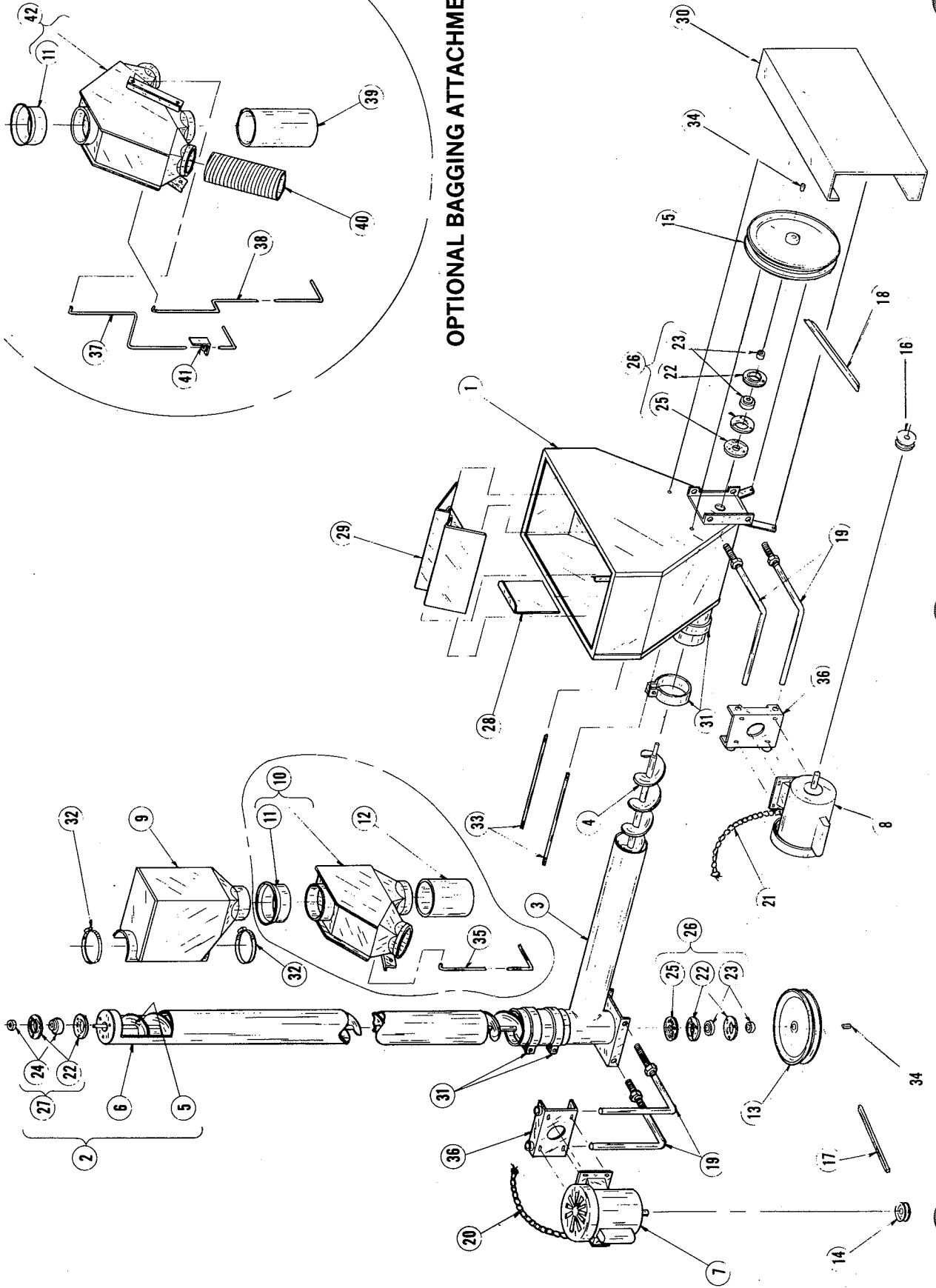
ITEM	PART#	DESCRIPTION	QTY.
1	2A130	Mixing Drum	1
2	10A86G1	Control Panel Assy. Std.-See Page 5	1
	10A86G2	Control Panel Assy. W/Timer-See Page 5	1
3	2A804	Mtg. Plate	1
4	1A193	Mixing Drum Cover	1
5	2A174	Hinge	1
6	2A151	6" Vert. Auger	1
7	2A123	Top Plate	1
8	2A124	Retaining Strip	2
9	9A65	Plexiglass, 3"x11"	1
10	9A53	Sealing Tape	14"
11	9A18	Latch	1
12	2B90	Half Clamp	2
13	4A68	Conduit Clamp	3

ITEM	PART#	DESCRIPTION	QTY.
14	10A28	Bearing Assy.	1
15	7A21	Stamping	4
16	7A23	1" Bearing & Collar	1
17	9A78	Bearing Seal	1
18	7A20	1" Bearing & Collar	1
19	6A24	Pulley, 10"x1"	1
20	6A5	Pulley, 2-1/2"O.D.x5/8" Bore	1
21	10A47	Bearing Assy.	1
22	5A3G4	Belt	1
23	3A2	Motor, 1/2 H.P. 1Ø	1
24	4A50	Wire Harness 12"	1
25	2A47G2	Motor Mtg. Plate	1
26	2A63G2	Motor Mtg. Rods W/Nuts	2
27	9A86G1	1/4" Sq.x1" Key	1

INLET HOPPER AND TRANSFER AUGER COMPONENTS



OPTIONAL BAGGING ATTACHMENT

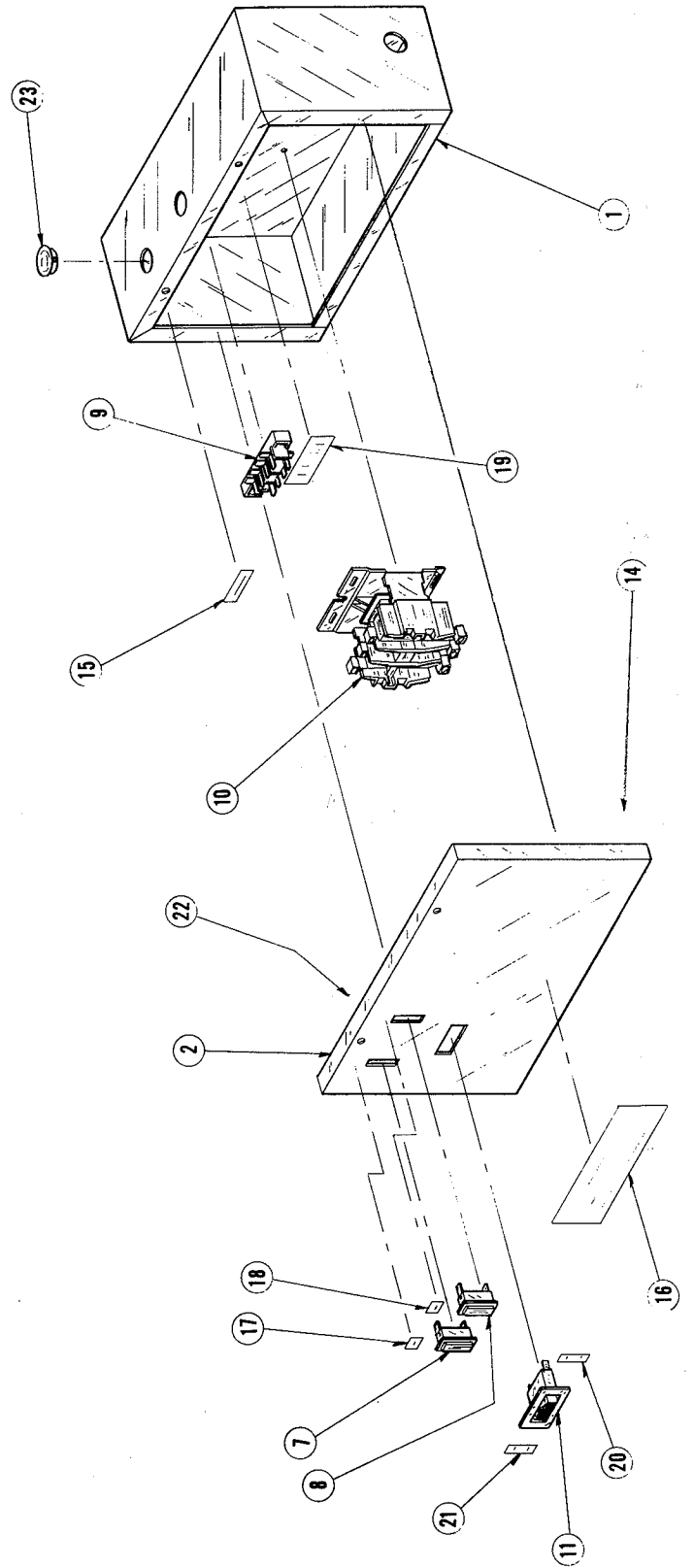
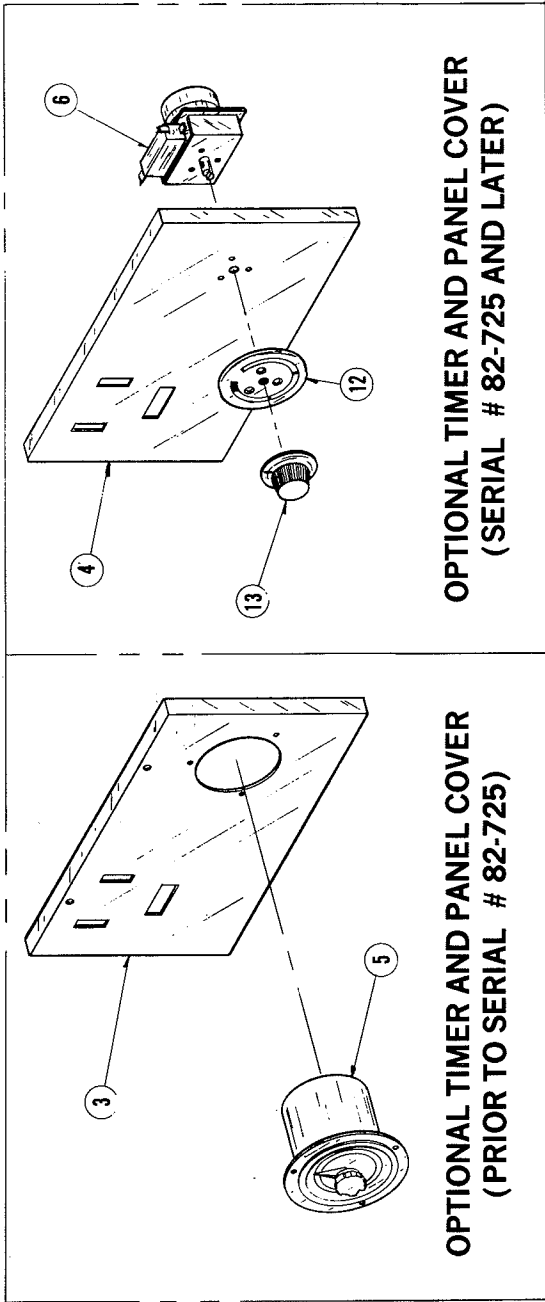


INLET HOPPER AND TRANSFER AUGER COMPONENTS

ITEM	PART#	DESCRIPTION	QTY.		Attachment	W/Bagging
			W/O Bagging	Attachment		
1	2B125	Inlet Hopper	1	1		1
2	20A192G1	4" Vertical Auger Assy. (7'6")	1			1
	20A192G2	4" Vertical Auger Assy. (8'0")				1
3	2A126	Tee Assy.	1	1		1
4	2A148	Horiz. Shaft & Flight	1	1		1
5	2A836G1	Shaft & Flight (7'6")	1			1
	2A836G2	Shaft & Flight (8'0")				1
	2A837G1	Tube & Plate (7'6")	1			1
6	2A837G2	Tube & Plate (8'0")				1
	3A2	Motor 1/2 H.P. 1Ø	1	1		1
8	3A1	Motor 1/3 H.P. 1Ø	1	1		1
9	2A683G1	0 Degree Outlet	1	1		1
10	20A183	Thru & Off 45 Degree Connection	1			1
11	2A195	Flared Sleeve	1	1		1
12	2A826G1	Inlet Tube (5"x4"O.D.)	1			1
13	6A8	Pulley (8"O.D.x5/8" Bore)	1	1		1
14	6A5	Pulley (2-1/2"O.D.x5/8" Bore)	1	1		1
15	6A26	Pulley (12"O.D.x5/8" Bore)	1	1		1
16	6A4	Pulley (2"O.D.x5/8" Bore)	1	1		1
17	5A3G2	Belt (4L370)	1	1		1
18	5A3G12	Belt (4L460)	1	1		1
19	2A63G2	Motor Mtg. Rods w/Nuts	6	6		6
20	4A51	Wire Harness (35')	1	1		1

ITEM	PART#	DESCRIPTION	QTY.		Attachment	W/Bagging
			W/O Bagging	Attachment		
21	4A52	Wire Harness (39")	1	1		1
22	7A11	Stamping				6
23	7A22	5/8" Bearing & Collar	2	2		2
24	7A13	5/8" Bearing & Collar	1	1		1
25	9A63	Bearing Seal (5/8")	2	2		2
26	10A20	Bearing Assy. (5/8")	2	2		2
27	10A9	Bearing Assy. (5/8")	1	1		1
28	1A234	Valve Plate, Inlet Hopper	1	1		1
29	2A623	Hopper Shield	1	1		1
30	2B275	Belt Guard	1	1		1
31	20A124	4" Clamp W/Bolt	4	4		4
32	20A127	4" Band Clamp	2	2		2
33	2A645	Hopper Shield Rod	2	2		2
34	9A87G1	3/16" Sq. Key x 1"	2	2		2
35	2A150	Control Rod	1	1		1
36	2A47G2	Motor Mtg. Plate w/Hardware	2	2		2
37	2A272	Control Rod				1
38	2A273	Control Rod				1
39	2A826G2	Inlet Tube (4" Dia. x 8-1/2")				1
40	20A140	Flex Tube				1
41	2A274	Bracket				1
42	20A184	Y-Valve 3 Way				1

CONTROL PANEL COMPONENTS



CONTROL PANEL COMPONENTS

ITEM	PART#	DESCRIPTION	QTY.	
			Panel W/O Timer	Panel W/Timer
1	2A802	Housing Assy.	1	1
2	2A803G2	Cover Assy.	1	
3	2A803G1	Cover Assy. (Before Ser. #82-725)		1
4	2A955	Cover Assy. (After Ser. #82-725)		1
5	4A221	Timer (Before Ser. #82-725)		1
6	4A254	Timer (After Ser. #82-725)		1
7	4A173	Light, Amber 115 V	1	1
8	4A174	Light, Amber 230 V	1	1
9	4A180	Terminal Block	1	1
10	4A181	Contact, 30 A	1	1
11	4A194	Rocker Switch, SPDT	1	1
12	4A256	Dial, Timer		1

ITEM	PART#	DESCRIPTION	QTY.	
			Panel W/O Timer	Panel W/Timer
13	4A258	Knob, Timer		1
14	9A53	Sealing Tape	32"	32"
15	9A69	Decal, Ground	2	2
16	9B141	Decal, Danger	1	1
17	9A211	Decal, 115 V Power	1	1
18	9A212	Decal, 230 V Power	1	1
19	9A213	Decal, Terminal Block	1	1
20	9A218	Decal, Mix	1	1
21	9A219	Decal, Unload	1	1
22	9A233	Decal, Premixer Wiring	1	1
23	4A169G1	Hole Plug (1/2" Conduit)	2	2