



# Model AFMG-24 MINI AUTOMATIC MIXER GRINDER/CHOPPER



## OPERATING AND SERVICE MANUAL

### ☆ IMPORTANT NOTICE ☆

This Manual contains important safety instructions which must be strictly followed when using this equipment.

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# NOTICE TO OWNERS AND OPERATORS

BIRO's products are designed to process food products safely and efficiently. Unless the operator is properly trained and supervised, however, there is the possibility of a serious injury. It is the responsibility of the owner to assure that this machine is used properly and safely, strictly following the instructions contained in this Manual and any requirements of local law.

No one should use or service this machine without proper training and supervision. All operators should be thoroughly familiar with the procedures contained in this Manual. Even so, BIRO cannot anticipate every circumstance or environment in which its products will be used. You, the owner and operator, must remain alert to the hazards posed by the function of this equipment — particularly the ROTATING GRINDING AUGER and the ROTATING MIXING PADDLE, which can severely injure an inattentive operator amputating fingers and limbs. No one under eighteen (18) years of age should operate this equipment. If you are uncertain about a particular task, ask your supervisor.

This Manual contains a number of safe practices in the SAFETY TIPS section. Additional warnings are placed throughout the Manual. Warnings related to your personal safety are indicated by:



OR



Warnings related to possible damage to the equipment are indicated by:



BIRO also has provided warning labels on the equipment. If any warning label or Manual becomes misplaced, damaged, or illegible, please contact your nearest Distributor or BIRO directly for a replacement.

Remember, however, this Manual or the warning labels do not replace the need to be alert and to use your common sense when using this equipment.

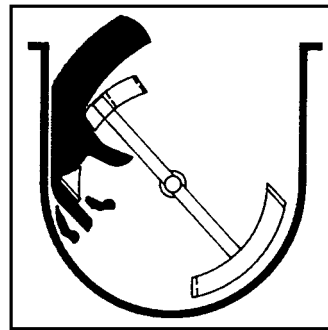
This Manual applies to machines with serial number 20200 and higher.

– NOTE –

**“A copy of this manual is included with each MODEL AFMG-24 MIXER GRINDER.”**

**“The descriptions and illustrations contained in this manual are not binding. The manufacturer reserves the right to introduce any modification without updating the manual.”**

## SAFETY TIPS



### ROTATING GRINDING AUGER & ROTATING MIXING PADDLE TO AVOID SERIOUS PERSONAL INJURY

- **NEVER** Touch This Machine without Training and Authorization by Your Supervisor.
- **NEVER** Place Hands into Machine Input or Output Openings.
- **NEVER** Open Machine During Operation.
- **ONLY** Use a Qualified Electrician to Install According to Local Building Codes: Machine **MUST** Be Properly Grounded.
- **ALWAYS** Connect to **Proper** Voltage & Phase.
- **ONLY** Install on Level, Non-Skid Surface in a Clean, Well-Lighted Work Area Away from Children and Visitors.
- **ALWAYS** Lock Machine Castors After Moving This Machine.
- **NEVER** Use This Machine For Non-Food Products.
- **NEVER** Operate Machine With Product Mixer Safety Cover Open or Removed or Magnetic Interlock Switch By-Passed.
- **ALWAYS** Turn Off, Unplug Machine From Power Source and Perform Lockout/Tagout Procedure to this Machine **BEFORE** Attempting to Unjam or Unclog, Cleaning or Servicing
- **NEVER** Leave Machine Unattended While Operating.
- **NEVER** Alter This Machine From its Original Form as Shipped From Factory. **DO NOT** Operate Machine With Missing Parts.
- **PROMPTLY REPLACE** Any Worn or Illegible Warning Labels.
- **ALWAYS** Read Operation and Service Manual **BEFORE** Operating, Cleaning, or Servicing.
- **USE ONLY** BIRO Parts and Accessories Properly Installed.

# INSTALLATION



## TO AVOID SERIOUS PERSONAL INJURY, PROPERLY INSTALL EQUIPMENT IN ADEQUATE WORK AREA

- **ALWAYS** Use Qualified Technician and Electrician for Installation.
- **ALWAYS** Connect to **Proper** Voltage & Phase.
- **ALWAYS** Install Equipment in Work Area with Adequate Light and Space Away From Children and Visitors.
- **ONLY** Operate on a Solid, Level, Non-Skid Surface.
- **ALWAYS** Lock Machine Castors After Moving Machine to Operating Location.
- **NEVER** Bypass, Alter, or Modify This Equipment in Any Way From Its Original Condition.
- **NEVER** Operate With Product Mixer Safety Cover Opened or Removed or Magnetic Interlock Switch By-Passed.
- **NEVER** Operate Without all Warning Labels Attached and Owner/Operator Manual Available to the Operator.

## UNCRATING AND SET UP

1. Read this Manual thoroughly before installation and operation. **Do not** proceed with installation and operation if you have any questions or do not understand anything in this Manual. Contact your local Distributor, or BIRO first.
2. Remove all banding, shipping carton, and all equipment from inside the tub. Then take machine off shipping pallet.
3. This machine is shipped with the adjustable legs fully retracted. The legs allow for a height adjustment from the floor to centerline of bowl 24½" minimum to 34" maximum.
4. This machine weighs approximately 600 pounds. To avoid accidents block up machine after raising to desired operating height.
5. The adjustable legs can now be unbolted and lowered to the floor. Replace bolts and tighten securely.
6. Install machine on a level, non-skid surface in a well-lighted work area away from children and visitors.
7. This machine is complete except for knife and plate. There is a bowl shipping plug (stamped steel) placed in the output end of the grinding bowl to retain the grinding auger during shipment. **REMOVE THE BOWL SHIPPING PLUG AND THE GRINDING AUGER.**



8. After checking and making sure the power supply is correct, plug in your machine. **NEVER OPERATE MACHINE PRODUCT MIXER SAFETY COVER OPEN.** (Machine will not run with cover open.)
9. Machine must be properly grounded. Use qualified electrician to install according to local building codes.

## MOTOR WIRING AND ELECTRICAL REQUIREMENTS

1. Interchange of current is made in motor outlet box. Leads are properly marked. Changing instructions are on the motor plate or motor outlet box.
2. All grinders are wired 220 volts unless otherwise specified. Be sure motor specifications (voltage, cycle, phase) match power supply line. Be sure line voltage is up to specification.
3. Electrical connections to be in accordance with safety codes and National Electrical Code.
4. Rated voltage of the unit shall be identical with full supply voltage.
5. Voltage drop on the supply line shall not exceed 10% of full supply voltage.
6. The feederline conductor size in the raceway from the branch circuit to the unit must be correct to assure adequate voltage under heavy starting and short overload conditions.
7. The feederline conductor shall only be used for the supply of one unit of the relevant horsepower. For connections of more than one unit on the same feederline, a local electrician will have to be consulted to determine the proper conductor size.
8. The size of the electrical wiring required from the power source to the mixer grinder is a **MINIMUM OF No. 10 WIRE.**
9. The BIRO Manufacturing Company is not responsible for permanent wiring, connection or installation



**NOTE TO OWNER AND ELECTRICIAN: IF THIS MACHINE IS NOT CORD AND PLUG CONNECTED TO THE ELECTRICAL SUPPLY SOURCE, THEN IT SHOULD BE EQUIPPED WITH, OR CONNECTED TO, A LOCKABLE, MANUALLY-OPERATED DISCONNECT SWITCH (OSHA 1010.147).**

### MOTOR SPECIFICATIONS

HP	KW	VOLTS	HZ	PH	AMPS
5	4	208/230	60	3	13.4/12.6
5	4	208/230	60	1	25/22.8
5	4	460	60	3	6.3
5	4	550	60	3	5.5
7.5	5.6	208/230	60	3	21.5/20
7.5	5.6	220	50	3	22
7.5	5.6	380/415	50	3	12.7/11.6
7.5	5.6	460	60	3	10
7.5	5.6	550	60	3	8.5

10. Located on the side of the machine are a green and red pushbutton for activating the internal motor control contactor. The magnetic interlock switch is mounted under the rear machine cover. It lines up with the magnet attached to the product mixer safety cover. When the safety cover is raised the machine will stop operation.
11. Push the green start button. **CHECK THE ROTATION OF THE MIXING PADDLE; ROTATION MUST BE COUNTER-CLOCKWISE** as indicated by the rotation decal affixed to the mixer paddle front mounting hub. Backwards operation will not allow mixing paddle to feed product to the grinding auger efficiently
12. Lift slightly the clutch arm and push to the rear of the machine. **CHECK ROTATION OF THE AUGER DRIVESHAFT; ROTATION MUST BE COUNTER-CLOCKWISE** as indicated by the rotation decal located on the grinding bowl. **ROTATION MUST ONLY BE CHECKED WITH THE GRINDING AUGER REMOVED**, otherwise serious irreparable damage may occur to grinding components.



13. If machine runs clockwise (backwards), it must be rewired to correct rotation, otherwise serious irreparable damage may occur to grinding components. Both the auger and the mixing paddle must operate in the same direction.
14. Check operation of optional footswitch if equipped. Plug footswitch cord into fitting on control panel. Turn selector lever to foot. The machine will operate with pressure on the footswitch treadle. Releasing the treadle stops the machine.
15. Insert auger assembly into grinding bowl, place knife (sharp edges out) onto the square end of the auger assembly. The breaker plate slides over the worm knife drive pin, and is held from rotating by pins in the grinding bowl. Install the retaining ring.



## **ONLY HAND TIGHTEN RETAINING RING**

For best results, use knife and plate as a set. Do not operate machine for any period of time without product in the grinding bowl. This will cause heating and dulling of the knife and plate.

16. Check placement of all warning labels and Manual. Machine is now ready for trained operators to process product.
17. Use meat deflector attached to grinding bowl to eliminate meat splatter.
18. Contact your local Distributor or BIRO directly if you have any questions or problems with the installation or operation of this machine.



# OPERATION



## **ROTATING GRINDING AUGER & ROTATING MIXING PADDLE TO AVOID SERIOUS PERSONAL INJURY**

- **ONLY** Properly Trained Personnel Should Use This Equipment.
- **NEVER** Place Hands Into Machine Input or Output Openings.
- **NEVER** Open Machine During Operation.
- **DO NOT** Wear Gloves While Operating.
- **DO NOT** Tamper With, Bypass, Alter, or Modify This Equipment in Any Way From Its Original Condition.
- **NEVER** Operate Machine With Product Mixer Safety Cover Opened or Removed or Magnetic Interlock Switch By-Passed.
- **ALWAYS** Turn Off and Unplug Machine from Power Source and Perform Lockout/Tagout Procedure to This Machine Before Unjamming, Unclogging, Cleaning or Servicing.
- **NEVER** Leave Unattended While Operating.
- **NEVER** Operate Without All Warning Labels Attached and Owner/Operator Manual Available to the Operator.

### **A. TO PROCESS PRODUCT**

1. Before starting mixer grinder, have a container for receiving ground product at the output end of the grinding bowl.
2. **FIRST GRIND**
  - a. Fill Product Hopper (Maximum 140 Pounds), close Product Mixer Safety Cover.
  - b. Push the green start button and shift the clutch arm into the grind position to feed first grind. It is recommended to use a breaker plate with 3/8" diameter or larger holes.
  - c. Push the red stop button and pull the clutch arm out of the grind position when all product has been ground out.
3. **SECOND GRIND**
  - a. Fill Product Hopper (Maximum 140 Pounds), close Product Mixer Safety Cover.
  - b. Push the green start button. During this mix operation seasonings may be added through the sight holes in the Product Mixer Safety Cover.
  - c. After the desired mix, shift the clutch arm into the grind position to operate grinding auger and grind out product.
  - d. Push the red stop button when all product has been ground out.
4. Unplug from power source and perform lockout/tagout procedures.

#### **DO's**

- Always keep knife & plate as matched set.
- Always keep the knife & plate sharp.
- Always check for levelness by laying the knife on the plate before inserting in machine.
- Always install the knife & plate in correct sequence, knife 1st, then plate.
- Always keep knives & plates lubricated in storage and when starting up machine.
- Always use coolant when sharpening plates.
- Always inspect the plates making sure all holes are clear – that there are no cracks.

#### **DON'Ts**

- Never, never mix different knives to different plates.
- Never, never over tighten the bowl retaining ring on the machine.
- Never, never run the grinder/mincer without product. Product is a natural lubricant. Heat can build up so fast that cold product could crack the plate.
- Never, never hit the plate against anything to clean the holes.
- Never, never throw the knives & plates.



## CLEANING



### ROTATING GRINDING AUGER & ROTATING MIXING PADDLE TO AVOID SERIOUS PERSONAL INJURY

**ALWAYS** Turn Off, Unplug From Power Source and Perform Lockout/Tagout Procedure to This Machine **Before** Cleaning or Servicing.

**ONLY** Use Recommended Cleaning Equipment, Materials, and Procedures.

**NEVER** Spray Water or Other Liquid Substances Directly at Motor, Power Switch or any Other Electrical Components.

**ALWAYS** Thoroughly Clean Equipment at Least Daily.

#### CLEANING THE BIRO MIXER GRINDER

1. Disconnect mixer grinder from power source and perform lockout/tagout procedures.
2. Remove grinding bowl end ring, breaker plate, knife and grinding auger.
3. Remove mixing paddle. Be sure front most paddle arm is pointing up. Loosen the thumb screw on the mixer paddle lock arm (Item No. 53853). While supporting the mixing paddle, remove the lock arm. Turn the mixing paddle counterclockwise, slide forward to disengage from drive shaft and lift from product hopper.



#### DO NOT POWER SPRAY DIRECTLY AT ELECTRICAL COMPONENTS

4. Machine is now ready to be cleaned using warm soapy water and rinsed with clean water. Machine may be cleaned by power spray washing, taking care to not spray directly at any electrical controls.
5. After machine has been cleaned and allowed to air dry, all exposed metal surfaces should be coated with a good food grade light oil or grease.

### CLEANING THE BOWL - RING AND WORM CARE OF TIN COATED PRODUCTS (DO'S AND DON'TS)

1. Do not use abrasive cleaning materials, such as brillo pads or metal scrapers. Tin is a soft metal and should be cleaned with a soft cloth and dried.
2. Do not use a cleaning agent containing a high percentage of free alkali or acid.
3. Do not use a detergent containing a high percentage of tri-sodium phosphate or meta-silicate. Tin is reactive to both.
4. Rinse well and dry thoroughly after washing to remove agents that may be reactive to tin.
5. If sterilizing agent containing chlorine is used, the tinned surface must be thoroughly rinsed. Chlorine is corrosive to tin.
6. Dry thoroughly after rinsing and store in a dry environment.
7. If water is exceptionally hard, drying will be necessary to prevent spotting.

## MAINTENANCE



### **ROTATING GRINDING AUGER & ROTATING MIXING PADDLE TO AVOID SERIOUS PERSONAL INJURY**

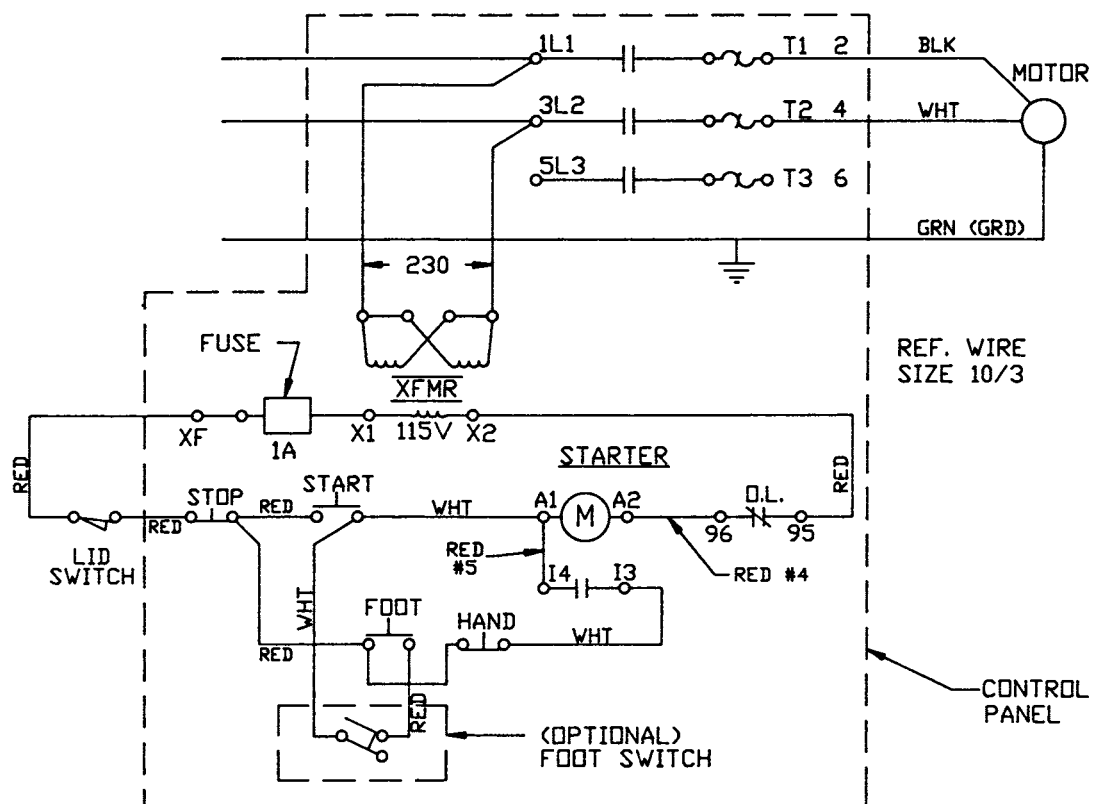
- **ALWAYS** Turn Off, Unplug from Power Source and Perform Lockout/Tagout Procedures to This Machine **BEFORE** Servicing.
- **NEVER** Touch This Machine Without Training and Authorization By Your Supervisor
- **NEVER** Place Hands Into Machine Input or Output Openings.
- **NEVER** Bypass, Alter or Modify This Equipment in Any Way From Its Original Condition.
- **PROMPTLY REPLACE** Any Worn or Illegible Warning Labels.
- **USE ONLY GENUINE BIRO** Parts and Accessories Properly Installed.

#### **A. MIXING PADDLE INSTALLATION**

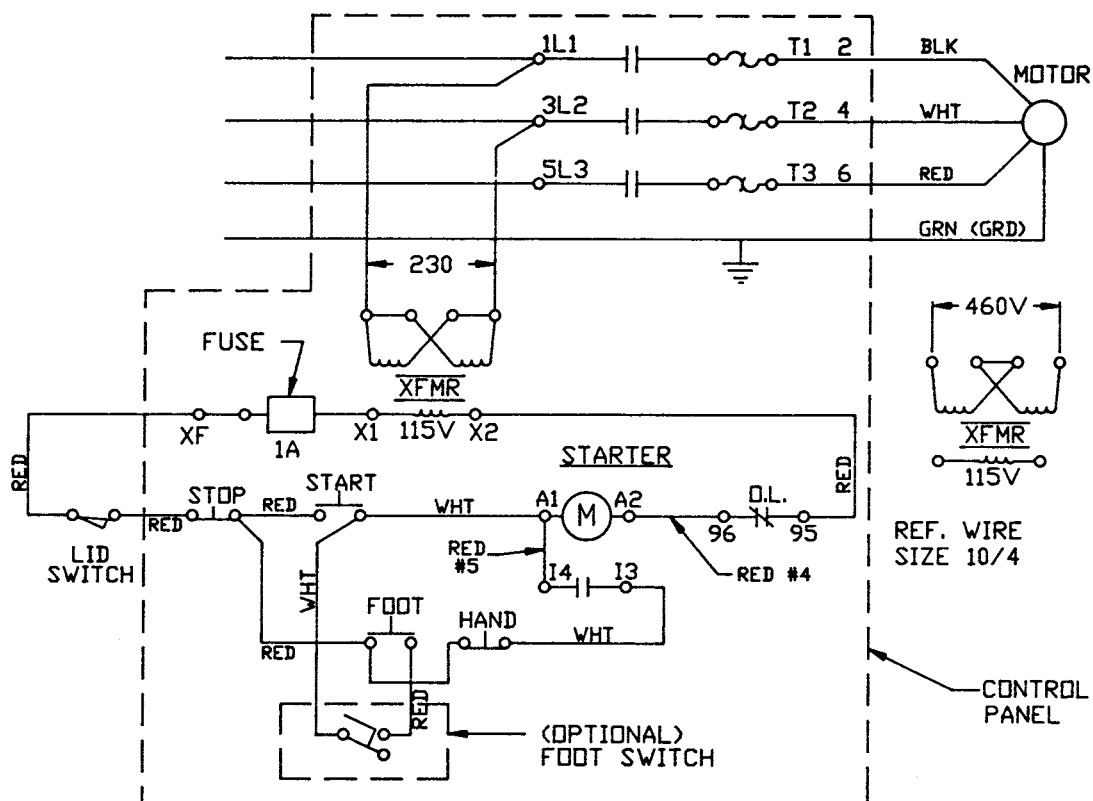
1. Check that mixer paddle drive pin (Item No. 53516) in the mixer paddle drive shaft (Item No. 53955) is positioned vertically.
2. Holding the mixing paddle by the center shaft and with the front blade up carefully fit drive receiving collar onto the end of the drive shaft. Insert paddle lock arm assembly (Item No. 53852) into the front of the mixing tub and onto the front of the mixing paddle.
3. When fully seated, turn the lock arm counterclockwise so the protruding arm is behind the lock set screw bracket. Tighten the mixer paddle lock set screw (Item No. 53568).

#### **B. LUBRICATION**

1. **MOTORS:** This machine utilized prelubricated motor bearings. These bearings should be relubricated annually with a good grade of bearing grease. Do not over-grease.
2. **MAIN BEARINGS:** The main bearings are housed in an enclosed and sealed journal box. Relubricate semi-annually with a good grade of bearing grease. Do not over-grease.
3. **TRANSMISSIONS:** This machine is equipped with two Euclid gear reducer transmissions – one for the mixer drive (No. 300V) and one for the auger drive (No. CH300V). The mixer drive (300V) and the auger drive (CH300V) hold 1¼ pints of oil. This amount brings the lubricant level up to the side "fill level" hole. Oil should be changed after six (6) weeks of operation initially and subsequently every six (6) months thereafter using Mobil Gear 630 oil or Mobil 600W Super cylinder oil.

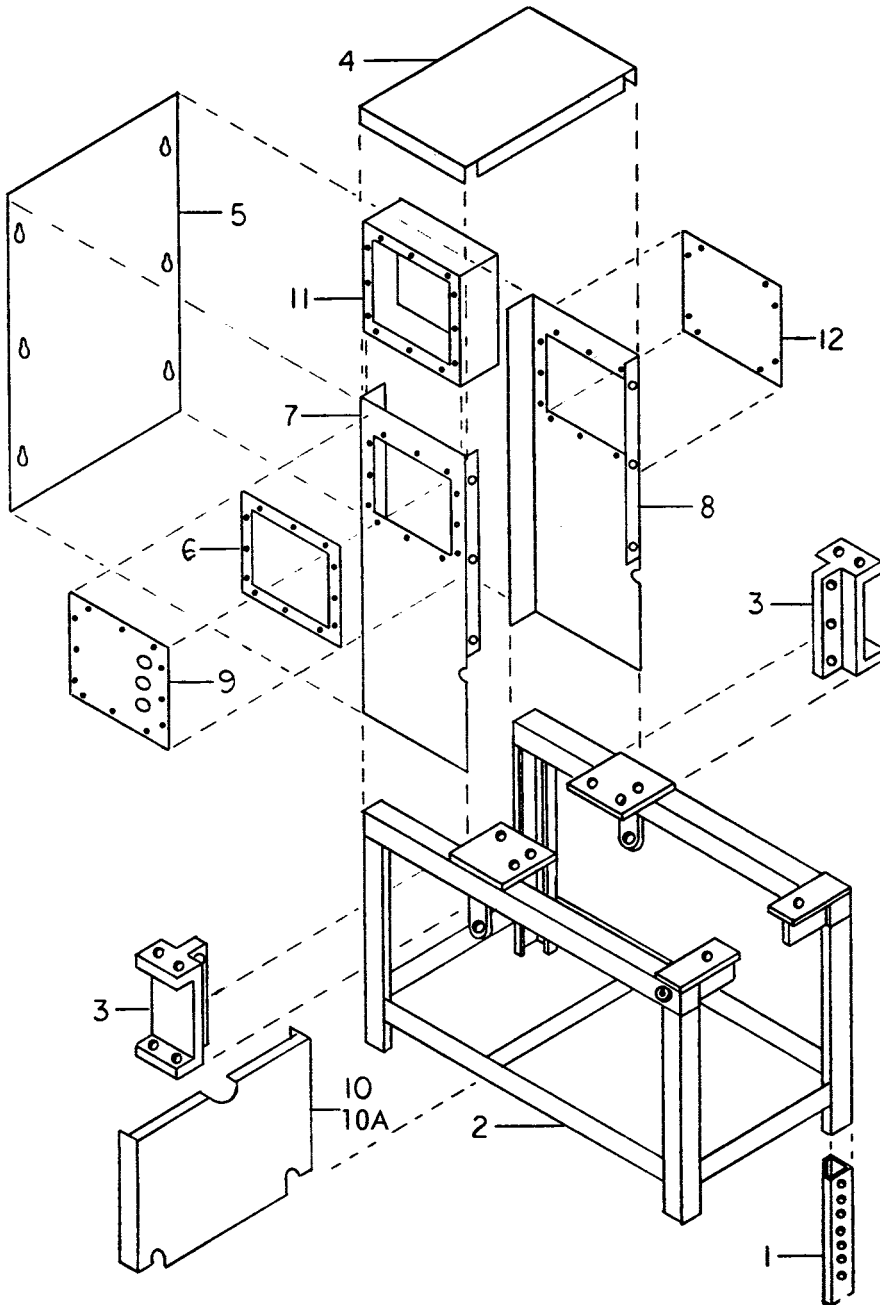


CONTROL SCHEMATIC AFGM-24  
SINGLE PHASE



CONTROL SCHEMATIC AFGM-24  
THREE PHASE

# FRAME & CASE



## FASTENERS FRAME & CASE

### ADJUSTABLE LEGS TO FRAME

Item #	
HHS067S	Hex head screw $\frac{3}{8}$ -16 $\times$ $\frac{3}{4}$ , SS, (8 ea.)
HN35S	Hex nut, $\frac{3}{8}$ -16, SS, (8 ea.)
LW25S	Lock washer, $\frac{3}{8}$ , SS, (8 ea.)

### TRANSMISSION MOUNTING PLATE SUPPORTS TO FRAME

Item #	
HHS075S	Hex head screw $\frac{3}{8}$ -16 $\times$ $1\frac{1}{4}$ , SS, (4 ea.)
LW25S	Lock washer, $\frac{3}{8}$ , SS, (4 ea.)
S217C	Dowel pin, $\frac{5}{16}$ $\times$ $\frac{3}{4}$ , (4 ea.)

### SIDE PANEL FILLER PLATE TO SIDE DRIVE COVER

Item #	
2563	Hex washerhead screw, 10-32 $\times$ $\frac{1}{2}$ , SS, (8 ea.)
LW05S	Lock washer, #10, SS, (8 ea.)
HN10S	Hex nut, 10-32, SS, (8 ea.)

### CONTROL BOX COVER TO CONTROL BOX THROUGH DRIVE COVER

Item #	
2563	Hex washerhead screw, 10-32 $\times$ $\frac{1}{2}$ , SS, (12 ea.)

### CONTROL BOX TO SIDE COVER

Item #	
2563	Hex washerhead screw, 10-32 $\times$ $\frac{1}{2}$ , SS, (2 ea.)
LW05S	Lock washer, #10, SS, (2 ea.)
HN10S	Hex nut, 10-32, SS, (2 ea.)

### DRIVE COVER BACK TO DRIVE COVER

Item #	
HHS025S	Hex head screw $\frac{1}{4}$ -20 $\times$ $\frac{1}{2}$ , SS, (6 ea.)
LW10S	Lock washer, $\frac{1}{4}$ , SS, (6 ea.)

### DRIVE COVER TOP TO DRIVE COVERS

Item #	
HHS025S	Hex head screw $\frac{1}{4}$ -20 $\times$ $\frac{1}{2}$ , SS, (4 ea.)
LW10S	Lock washer, $\frac{1}{4}$ , SS, (4 ea.)

### LOWER FRONT COVER TO SIDE DRIVE COVERS

Item #	
HHS025S	Hex head screw $\frac{1}{4}$ -20 $\times$ $\frac{1}{2}$ , SS, (4 ea.)
LW10S	Lock washer, $\frac{1}{4}$ , SS, (4 ea.)

### DRIVE COVER SIDES TO FRAME

Item #	
HHS025S	Hex head screw $\frac{1}{4}$ -20 $\times$ $\frac{1}{2}$ , SS, (4 ea.)
LW10S	Lock washer, $\frac{1}{4}$ , SS, (4 ea.)

### DRIVE COVER SIDES TO TUB

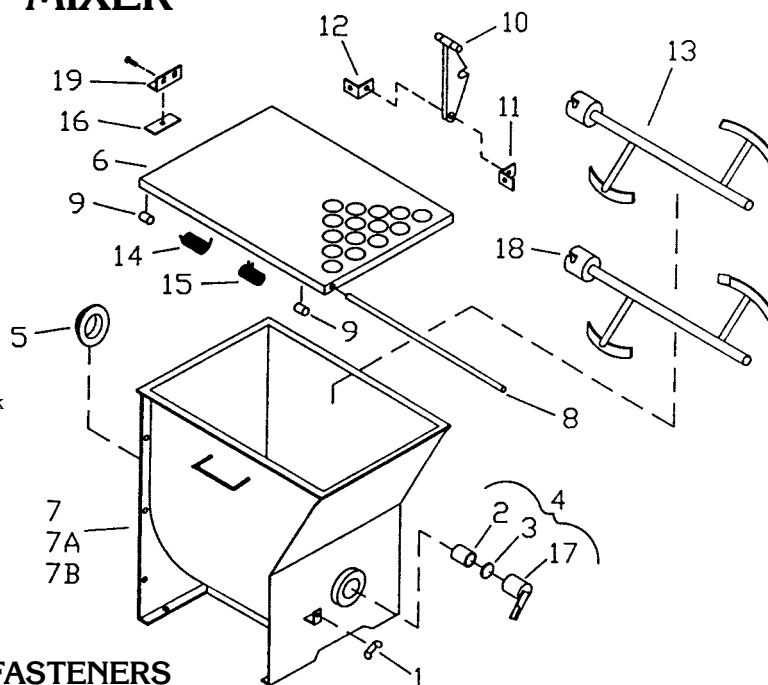
Item #	
HHS055S	Hex head screw, $\frac{5}{16}$ -18 $\times$ $\frac{3}{4}$ , SS, (6 ea.)
LW15S	Lock washer, $\frac{5}{16}$ , SS, (6 ea.)
FW10S	Flat washer, $\frac{5}{16}$ , SS, (6 ea.)

Fig.	Item No.	Description
1	56250	Adjustable leg assembly std., S/N 20200 on
2	56240	Frame fabricated stainless steel, S/N 20200 on
3	56062	Transmission mounting plate supports (2 req.)
4	56274	Drive cover top w/prox. switch mounting bracket, S/N 20200 on
5	56165	Rear drive cover, S/N 20026 on
6	56164	Seal for control box, S/N 20026 on
7	56239	Drive cover, left side, S/N 20200 on
8	56238	Drive cover, right side, S/N 20200 on
9	56155	Control box cover, S/N 20026 on
10	56089	Drive cover lower front, w/lug holder cutouts
10A	56338	Drive cover lower front
11	56161	Control box, S/N 20026 on
12	56144	Side panel filler plate S/N 20026 on

NOT SHOWN  
14572 Ring wrench hanger

Fig.	Item No.	Description
1	53568	Mixer paddle lock set screw
2	53594	Lock arm radial bearing
3	53517	Lock arm thrust bearing
4	53852	Mixer paddle lock arm assembly
5	53953	Seal, mixer drive shaft thru tub
6	56039	Product mixer safety cover
7	56040	Product mixer tub, no side inlet
7A	56121	Product mixer tub, RH side inlet
7B	56124	Product mixer tub, LH side inlet
8	56044	Safety cover hinge rod
9	56045	Safety cover hinge rod spacer (2)
10	56072	Safety cover latch
11	56073	Latch mounting bracket, LH
12	56074	Latch mounting bracket, RH
13	56284	Product mixer paddle, 1st grind, SS, less hook
14	56221	Safety cover torsion spring, RH
15	56222	Safety cover torsion spring, LH
16	52181	Safety cover magnet up to s/n 21700
17	53853	Mixer paddle lock arm assembly
18	56230	Product mixer paddle, 2nd grind, SS, w/hook
19	56273	Magnet mounting bracket up to s/n 21700
19A	56273-1	Magnetic switch bracket & magnet, s/n 21700 on
NOT SHOWN	14572	Ring hanger

## MIXER



## FASTENERS

### MIXER

#### HINGE ROD ENDS

Item #	
AN20S	Acorn nut, $\frac{3}{8}$ -16, SS, (2 ea.)
LID LATCH TO LID	
Item #	
RHS24S	Round head screw, $\frac{1}{4}$ -20 $\times$ $\frac{1}{2}$ , SS, (2 ea.)
RHS31S	Round head screw, $\frac{1}{4}$ -20 $\times$ 1, SS, (1 ea.)
HNNL15S	Hex nut, nylok, $\frac{1}{4}$ -20, SS, (3 ea.)

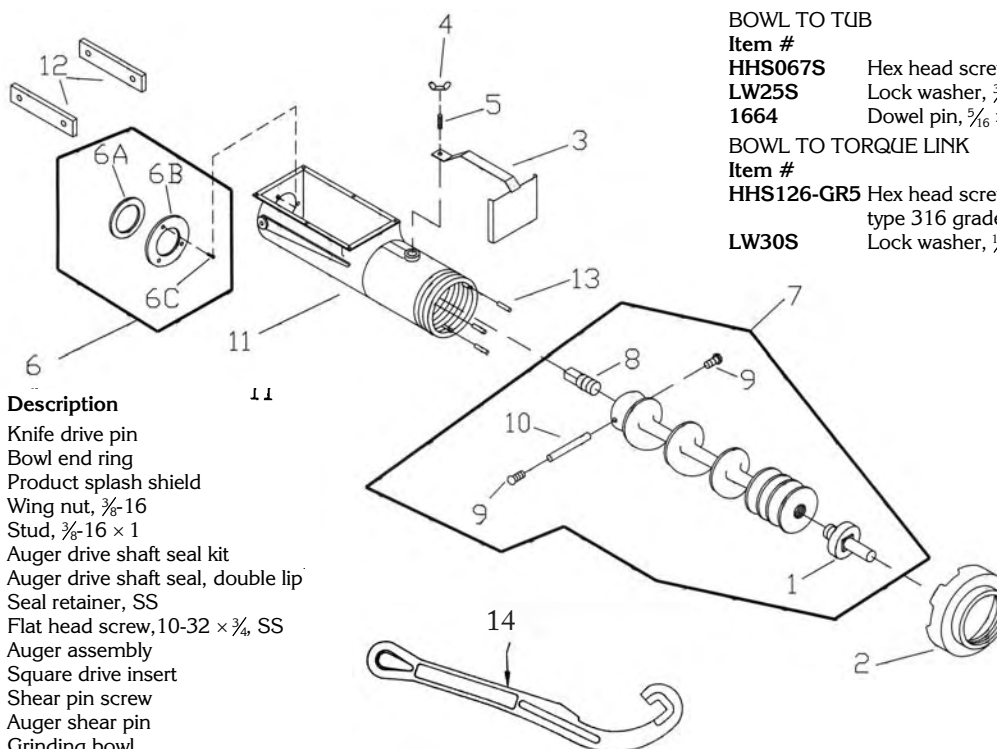
#### MAGNET TO MOUNTING BRACKET

Item #	
FHS24S	Flat head screw, 10-32 $\times$ $\frac{5}{8}$ , SS, (1 ea.)
LW05S	Lock washer, #10, SS, (1 ea.)
HN10S	Hex nut, 10-32, SS, (1 ea.)

#### TUB TO FRAME

Item #	
HHS067S	Hex head screw $\frac{3}{8}$ -16 $\times$ $\frac{3}{4}$ , SS, (4 ea.)
LW25S	Lock washer, $\frac{3}{8}$ , SS, (4 ea.)

## GRINDER



## FASTENERS

### GRINDER

#### BOWL TO TUB

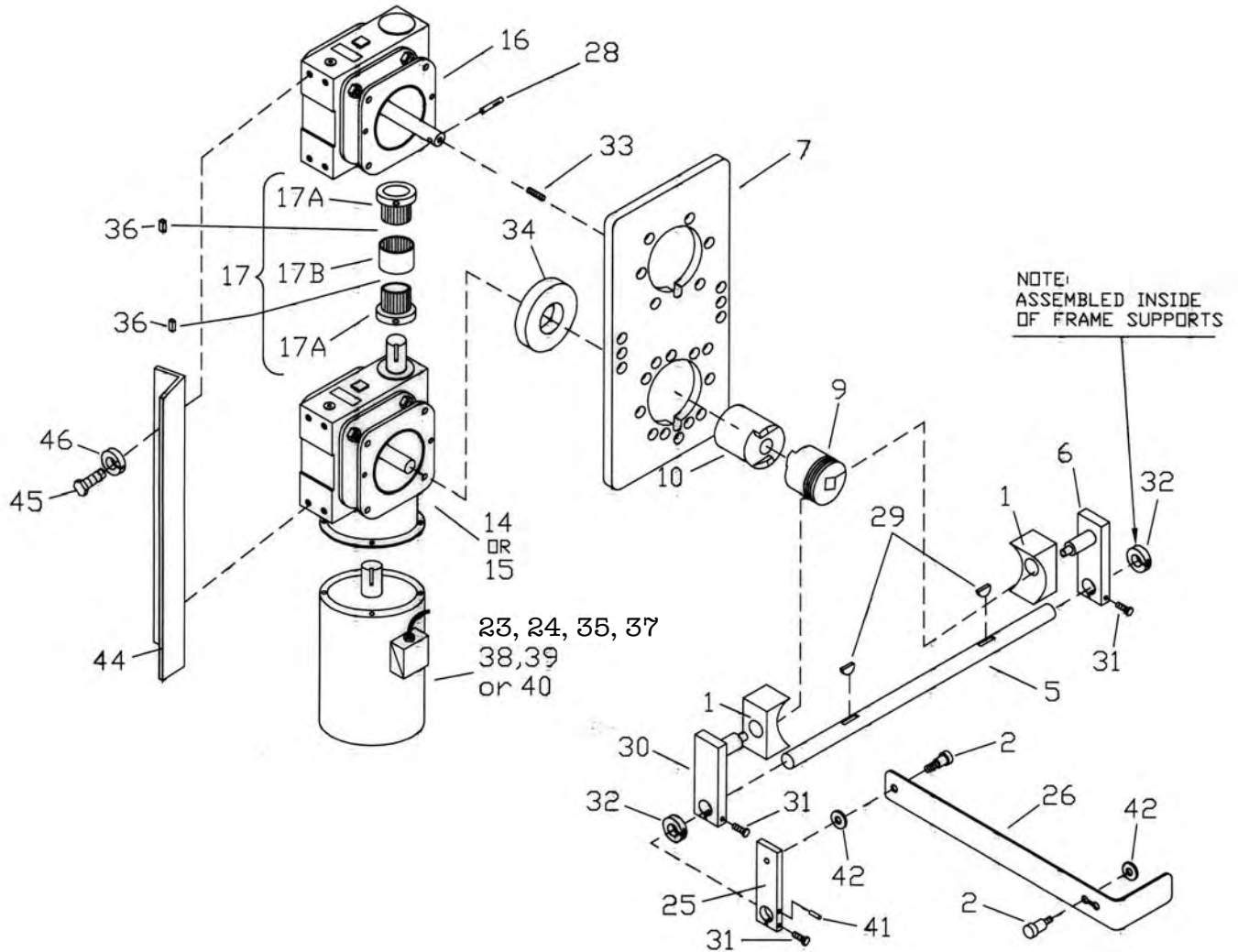
Item #	
HHS067S	Hex head screw $\frac{3}{8}$ -16 $\times$ $\frac{3}{4}$ , SS, (6 ea.)
LW25S	Lock washer, $\frac{3}{8}$ , SS, (6 ea.)
1664	Dowel pin, $\frac{5}{16}$ $\times$ $\frac{3}{4}$ , (2 ea.)

#### BOWL TO TORQUE LINK

Item #	
HHS126-GR5	Hex head screw, $\frac{1}{2}$ -13 $\times$ $\frac{3}{4}$ , type 316 grade 5 (2 ea.)
LW30S	Lock washer, $\frac{1}{2}$ , SS, (2 ea.)

Fig.	Item No.	Description
1	HK48	Knife drive pin
2	HR42/48	Bowl end ring
3	52392	Product splash shield
4	WN20S	Wing nut, $\frac{3}{8}$ -16
5	SSS45S	Stud, $\frac{3}{8}$ -16 $\times$ 1
6	57159K	Auger drive shaft seal kit
6A	57159	Auger drive shaft seal, double lip
6B	57160	Seal retainer, SS
6C	FHS26S	Flat head screw, 10-32 $\times$ $\frac{3}{4}$ , SS
7	54278-CTN	Auger assembly
8	54278B	Square drive insert
9	54278D	Shear pin screw
10	54278C	Auger shear pin
11	56049	Grinding bowl
12	56067	Torque link, (2 req.)
13	HP48	Bowl plate pins (3 req.)
14	H340	Ring wrench

# POWER TRANSMISSION



## FASTENERS POWER TRANSMISSION

### MIXER TRANSMISSION TO MOUNTING PLATE

<b>Item #</b>	
<b>HHS126-GR5</b>	Hex head screw $\frac{1}{2}$ -13 $\times$ $1\frac{1}{4}$ , SS, (4 ea.)
<b>LW30S</b>	Lock washer, $\frac{1}{2}$ , SS, (4 ea.)
<b>S217C</b>	Dowel pin, $\frac{5}{16} \times \frac{3}{4}$ , (2 ea.)

### GRINDER TRANSMISSION TO MOUNTING PLATE

<b>Item #</b>	
<b>HHS126-GR5</b>	Hex head screw $\frac{1}{2}$ -13 $\times$ $1\frac{1}{4}$ , SS, (4 ea.)
<b>LW30S</b>	Lock washer, $\frac{1}{2}$ , SS, (4 ea.)
<b>S217C</b>	Dowel pin, $\frac{5}{16} \times \frac{3}{4}$ , (2 ea.)

### TRANSMISSION MOUNTING PLATE TO MOUNTING PLATE SUPPORTS

<b>Item #</b>	
<b>HHS075S</b>	Hex head screw $\frac{3}{8}$ -16 $\times$ $1\frac{1}{4}$ , SS, (6 ea.)
<b>LW25S</b>	Lock washer, $\frac{3}{8}$ , SS, (6 ea.)
<b>S217C</b>	Dowel pin, $\frac{5}{16} \times \frac{3}{4}$ , (2 ea.)

### MOTOR TO TRANSMISSION

<b>Item #</b>	
<b>HHS126S</b>	Hex head screw, $\frac{1}{2}$ -13 $\times$ $1\frac{1}{4}$ , SS, (4 ea.)
<b>LW30S</b>	Lock washer, $\frac{1}{2}$ , SS, (4 ea.)

### LOVEJOY COUPLING TO TRANSMISSION SHAFTS

<b>Item #</b>	
<b>1673</b>	Set screw, $\frac{1}{4}$ -20 $\times$ $\frac{1}{2}$ , SS, (4 ea.)

### JOURNAL BOX TO MOUNTING PLATE

<b>Item #</b>	
<b>HHS070S</b>	Hex head screw $\frac{3}{8}$ -16 $\times$ 1, SS, (4 ea.)
<b>LW25S</b>	Lock washer, $\frac{3}{8}$ , SS, (4 ea.)
<b>S217C</b>	Dowel pin, $\frac{5}{16} \times \frac{3}{4}$ , (2 ea.)

### DRIVING CLUTCH MOTOR OUTPUT TO TRANSMISSION SHAFT

<b>Item #</b>	
<b>SSS17KL</b>	Set screw, knurled, $\frac{5}{16}$ -18 $\times$ $\frac{3}{8}$ , SS, (3 ea.)

### TORQUE LINK TO JOURNAL BOX

<b>Item #</b>	
<b>HHS126-GR5</b>	Hex head screw, $\frac{1}{2}$ -13 $\times$ $\frac{3}{4}$ , type 316, grade 5, (2 ea.)

<b>LW30S</b>	Lock washer, $\frac{1}{2}$ , SS, (2 ea.)
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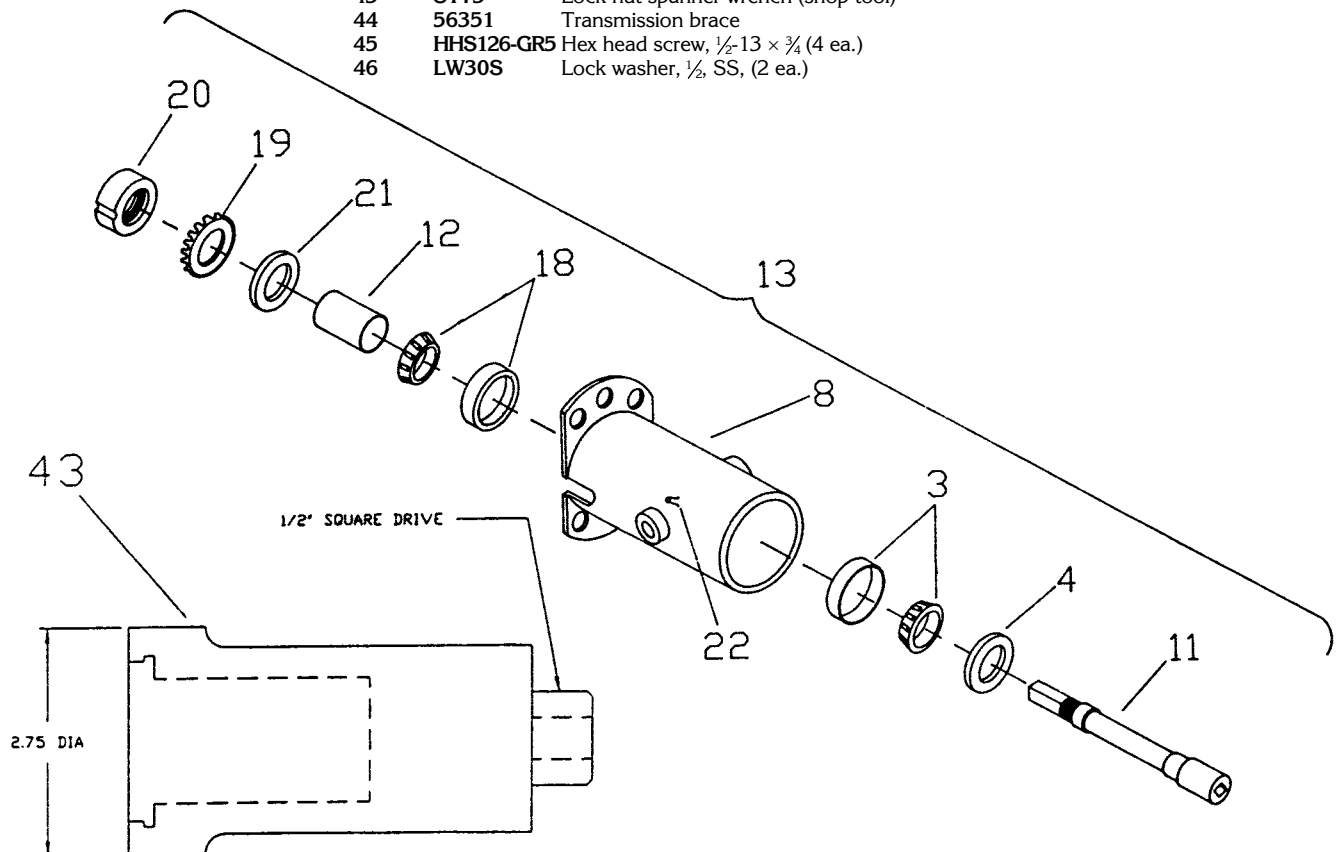
### CLUTCH ENGAGEMENT ARM TO CLUTCH ARM LOCK

<b>Item #</b>	
<b>SSB50P</b>	Shoulder bolt, $\frac{3}{8}$ -16 $\times$ $\frac{3}{8}$ , (2 ea.)

### TRANSMISSION BRACE

<b>Item #</b>	
<b>HHS126-GR5</b>	Hex head screw, $\frac{1}{2}$ -13 $\times$ $\frac{3}{4}$ , (4 ea.)
<b>LW30S</b>	Lock washer, $\frac{1}{2}$ , SS, (2 ea.)

Fig.	Item No.	Description
1	56211-1	Driven clutch engagement lever bushing
2	SSB50PS	Shoulder bolt, $\frac{1}{2}$ dia. $\times$ $\frac{3}{8}$ lg. S/N 20405 on
3	H310A	Bearing assembly (journal box front)
4	53785	Seal, journal box (front, auger drive)
5	56036	Driven clutch engagement shaft
6	56215	Driven clutch engagement lever, RH
7	56047	Mounting plate for transmission
8	56063	Journal box housing
9	56064	Driven clutch, square I.D.
10	56065	Driving clutch, motor output
11	56066	Auger drive shaft, SS
12	56068	Spacer (rear journal box)
13	56081	Journal box assembly complete
14	56095	Transmission, grinder, 60HZ
15	56096	Transmission, grinder, 50HZ
16	56097	Transmission, mixer
17	56276A	Coupling assembly complete
17A	56276	Coupling half
17B	56276B	Coupling sleeve
18	56100A	Bearing assembly (journal box rear)
19	56101	Castellated lockwasher
20	56102	Locknut
21	56103	Seal (rear journal box)
22	53993	Grease fitting, vented
23	56287	Motor 7 $\frac{1}{2}$ HP, 3PH, 208-230/460V, 60HZ
24	56286	Motor 5HP, 3PH, 208-230/460V, 60HZ
25	56270	Link engage handle
26	56288	Engage handle lock
28	53516	Mixer drive shaft pin
29	56127-1	Woodruff key
30	56214	Driven clutch engagement lever, LH
31	HHS061S	Hex head screw, $\frac{5}{16}$ -18 $\times$ $1\frac{1}{4}$ , SS
32	56169	Driven clutch engagement shaft collar
33	SSS10Z	Set screw, $\frac{1}{4}$ -20 $\times$ $\frac{1}{4}$
34	56258	Driving clutch Delrin back up spacer
35	56188	Motor 5HP, 1PH, 208-230V, 60HZ
36	56133	Key, $\frac{3}{16} \times \frac{3}{16} \times 1\frac{1}{8}$
37	56132	Key, $\frac{1}{4} \times \frac{1}{4} \times 1\frac{1}{2}$
38	56259	Motor 5HP, 3PH, 575V, 60HZ
39	56260	Motor 7 $\frac{1}{2}$ HP, 3PH, 575V, 60HZ
40	56283	Motor 7 $\frac{1}{2}$ HP, 3PH, 220/380-415V, 50HZ
41	MC-21R2	Groove pin, S/N 20389 on
42	53659	Flat washer, S/N 20405 on
43	ST73	Lock nut spanner wrench (shop tool)
44	56351	Transmission brace
45	HHS126-GR5	Hex head screw, $\frac{1}{2}$ -13 $\times$ $\frac{3}{4}$ (4 ea.)
46	LW30S	Lock washer, $\frac{1}{2}$ , SS, (2 ea.)



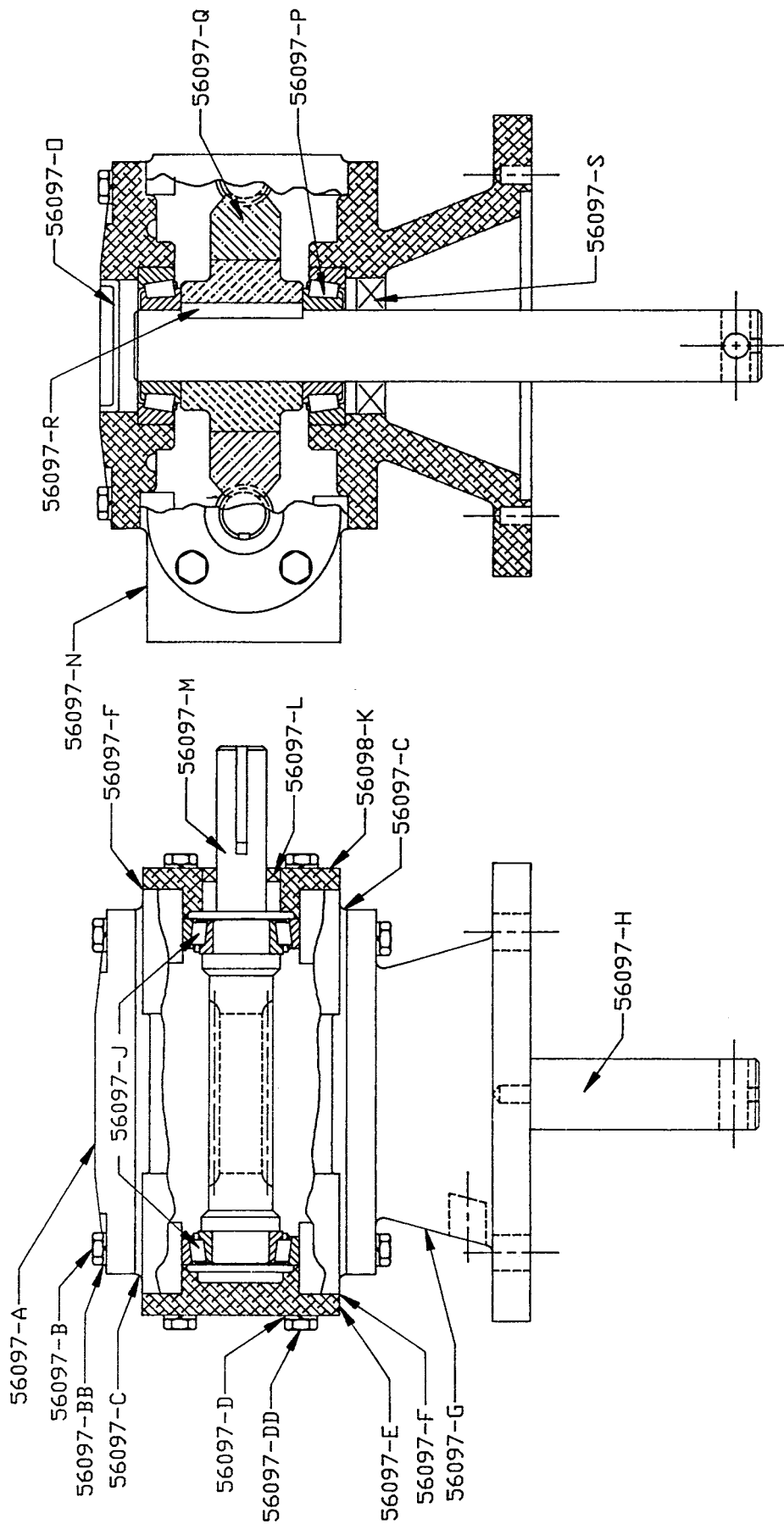


56097-A  
56097-B  
56097-BB  
56097-C  
56097-D  
56097-E  
56097-F  
56097-G  
56097-H  
56097-J

Output cap  
 $\frac{3}{8}$ -16 x  $1\frac{1}{4}$  hex head cap screws  
 $\frac{3}{8}$ -16 lock washers  
Output gasket  
 $\frac{5}{16}$ -18 x 1 hex head cap screw  
 $\frac{5}{16}$ -18 lock washers  
Dead input cap  
Input gasket  
Mounting base  
Output shaft  
Bearing assembly

56097-K  
56097-L  
56097-M  
56097-N  
56097-O  
56097-P  
56097-Q  
56097-Q  
56097-R  
56097-S

Live input cap  
Seal  
Input worm 60 Hz.  
Input worm 50 Hz.  
Housing  
Freeze plug  
Bearing assembly (14276/14125A)  
Worm gear - 60 Hz.  
Worm gear - 50 Hz.  
Key  $\frac{1}{4}$  x  $\frac{1}{4}$  x 2  
Seal

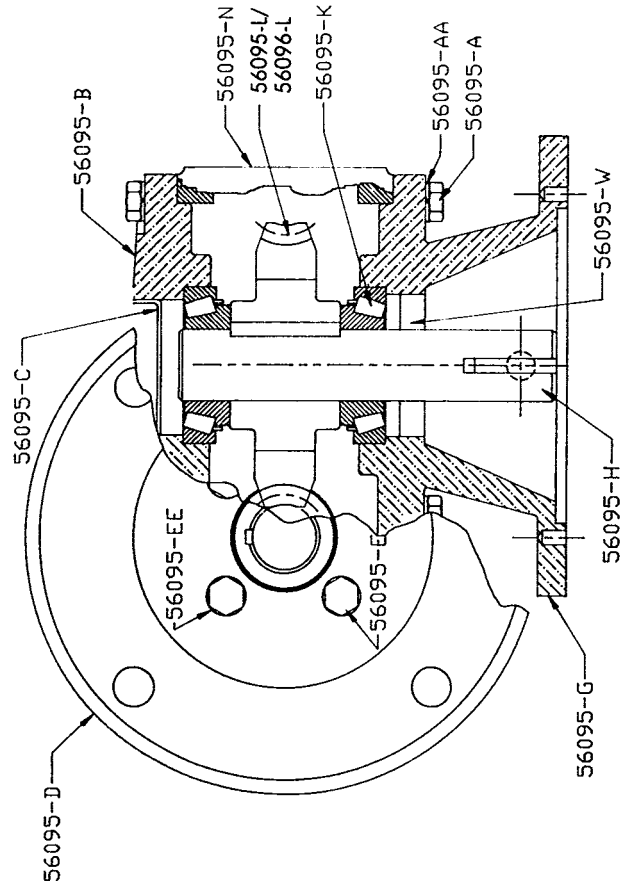
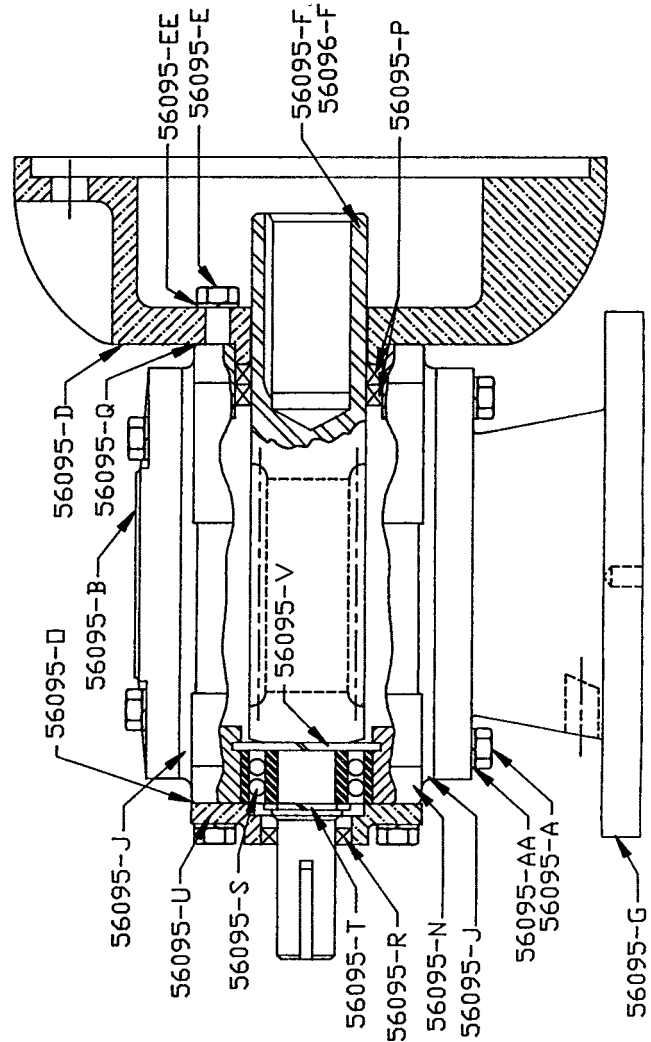


56095-A  
56095-AA  
56095-B  
56095-C  
56095-D  
56095-E  
56095-EE  
56095-F  
56096-F  
56095-G  
56095-H  
56095-J  
56095-K

$\frac{3}{8}$ -.16 x  $1\frac{1}{4}$  hex head cap screws  
 $\frac{3}{8}$ -.16 lock washer  
Output cap  
Freeze plug  
Motor flange  
 $\frac{5}{16}$ -.18 x 1 hex head cap screw  
 $\frac{5}{16}$ -.18 lock washer  
Input worm - 60 Hz  
Input worm - 50 Hz  
Mounting base flange  
Output shaft  
Gasket kit complete  
Bearing assembly (14276/14125A)

56095-L  
56096-L  
56095-M  
56095-N  
56095-O  
56095-P  
56095-Q  
56095-R  
56095-S  
56095-T  
56095-U  
56095-V  
56095-W

Worm gear 60 Hz.  
Worm gear 50 Hz  
Key -  $\frac{1}{4}$  x  $\frac{1}{4}$  x 2  
Housing  
Gaskets  
Seals  
Gasket  
Seal  
Bearing  
Snap ring  
Input cap  
Snap ring  
Output seal/journal box



# POWER CONTROLS

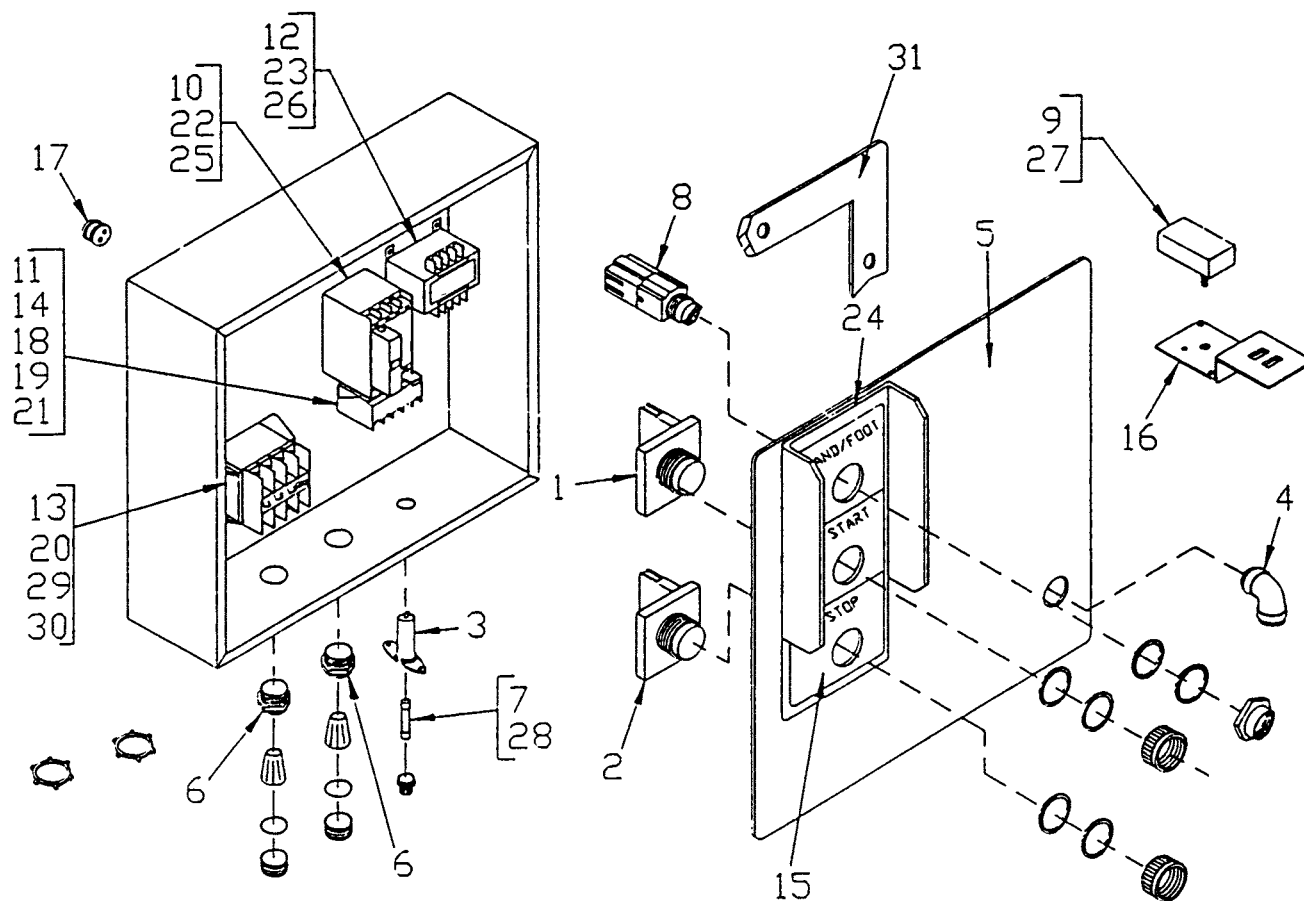
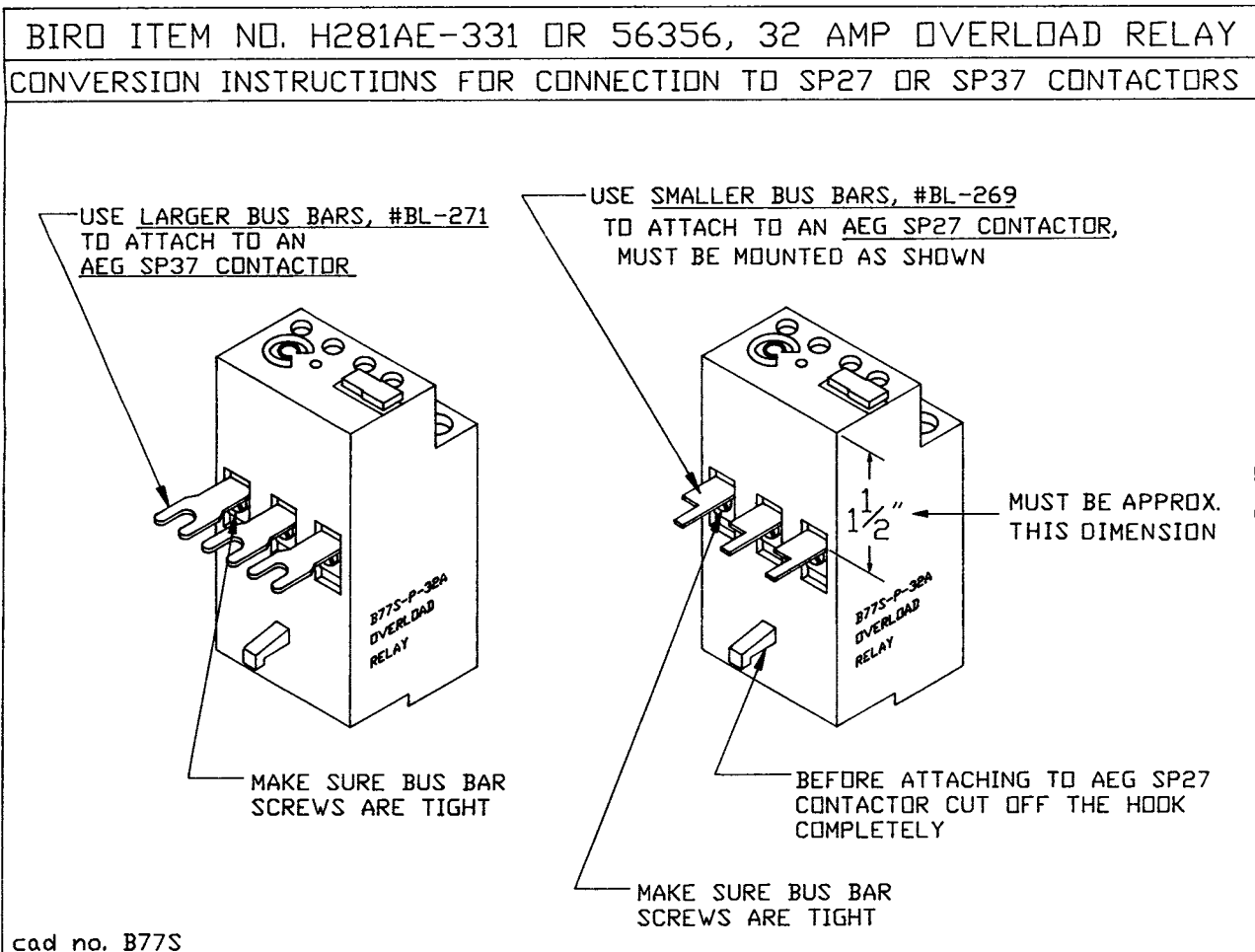
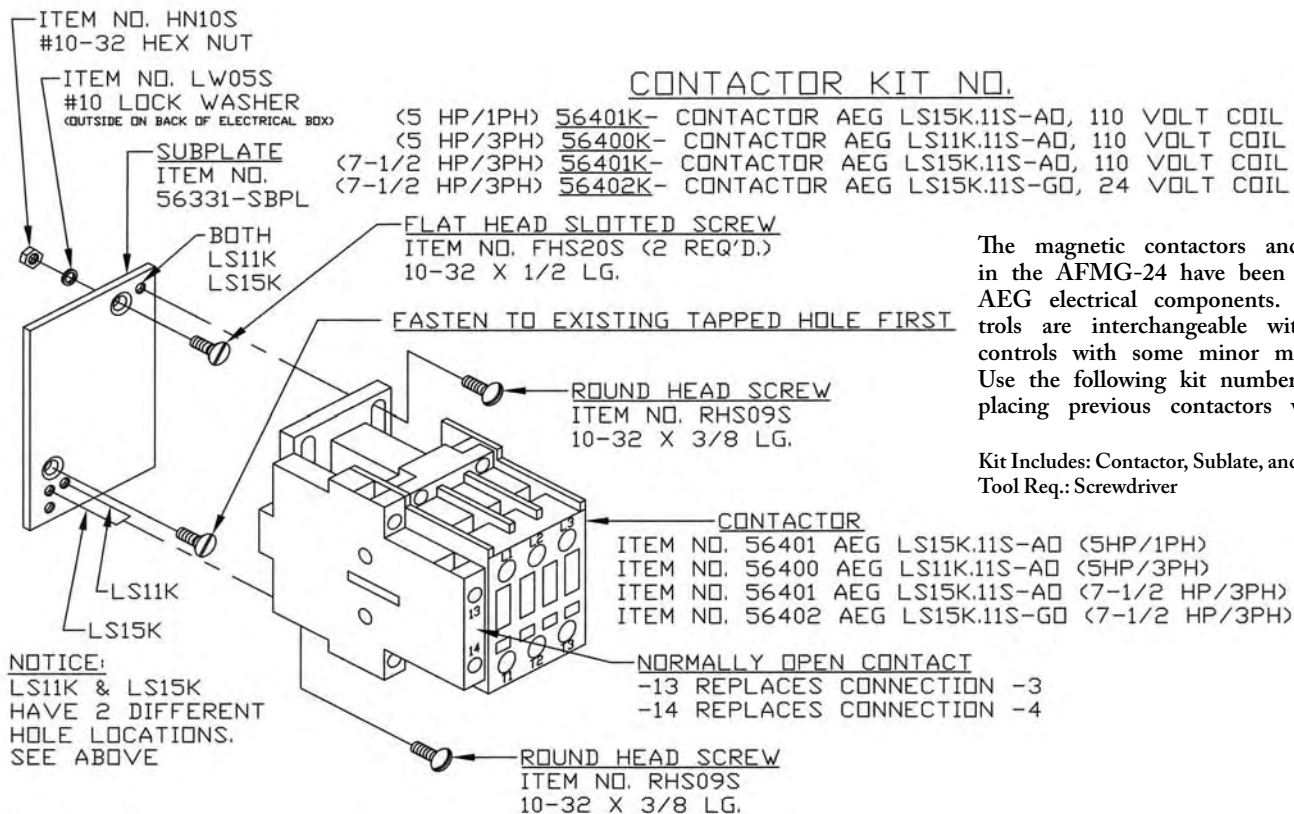


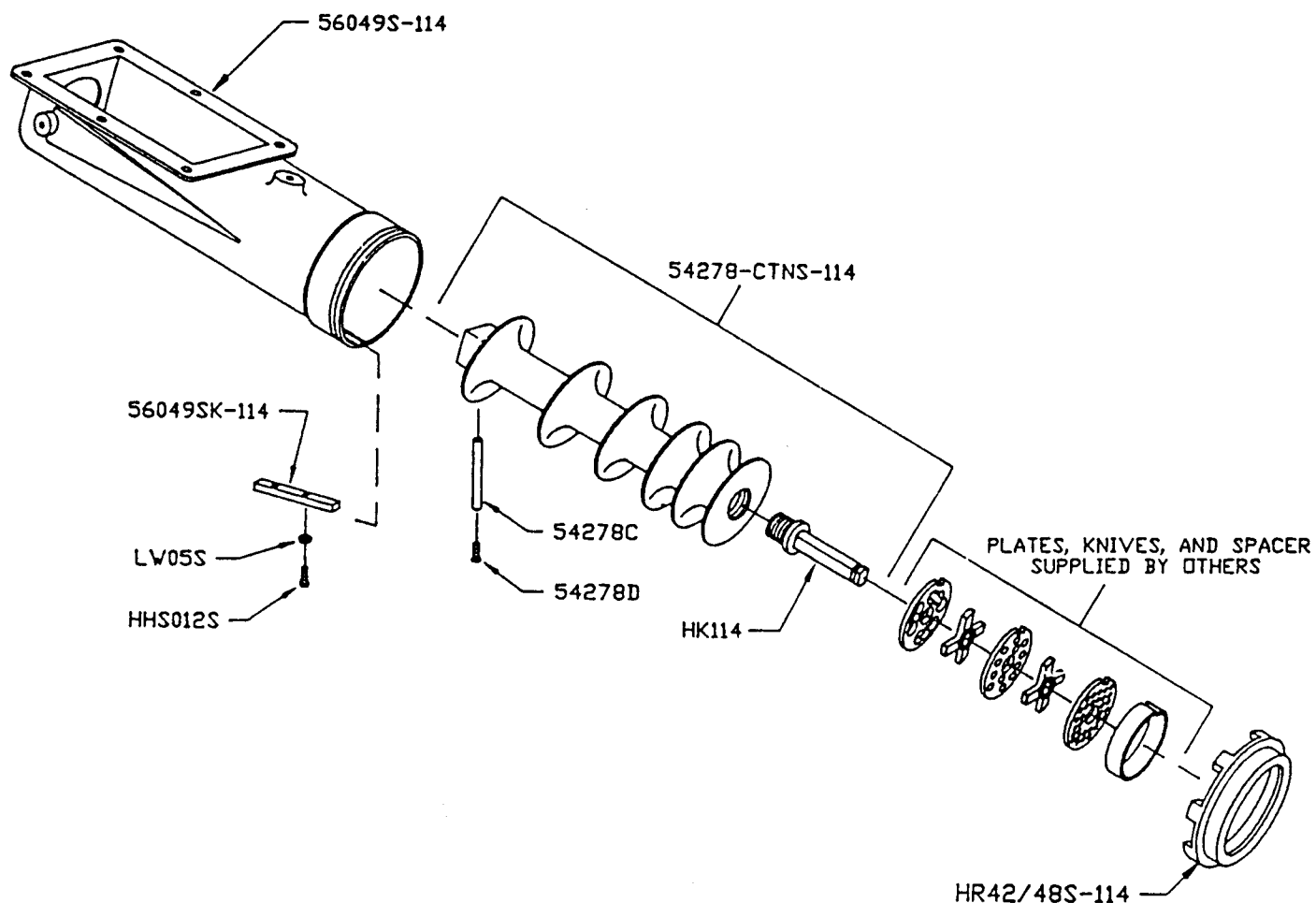
Fig.	Item #	Description
1	50768	Switch, start, pushbutton (order H482-1)
2	50769	Switch, stop, pushbutton (order H482-2)
3	51991	Fuseholder
4	56301G	Watertight 90° cord connector
5	56155	Cover control panel
6	53689	Cable connector assembly (2 req'd)
7	53851	Fuse, 1 amp, 250V
8	56105	Switch, selector, hand/foot
9	42MC-Y64	Magnetic safety interlock switch 240V
10	56331	Magnetic starter contactor AEG-SP37.10-A0; 5HP, 1 Ph, 208-230V, 60Hz; 7½HP, 3Ph, 208-230/460V, 60Hz, 7½HP, 3Ph, 220/380-415-50Hz
11	H281AE-31	Overload AEG-B27T-N, 5HP, 208-230V, 60Hz, 3Ph; 7.5HP, 380-415V, 50Hz, 3Ph; range 11-17 amps
12	56110	Transformer, 220-440/110
13	35374	Terminal block – 4 req. (#223)
14	H281AE-32	Overload AEG-B27T-O; 7½HP, 220V, 50Hz, 3Ph; Range 15-23 amps
15	56125	Legend plate (controls)
16	56294	Safety switch bracket S/N 20307 on (order 42MC-Y70)
17	35067	Grommet, wire to safety switch

Fig.	Item *	Description
18	H481AE-52	Overload; AEG-B27T-L; 5HP; 460-575V, 60Hz, 3Ph; range 5.6-8 amps
19	H481AE-53	Overload; AEG-B27T-M; 7½HP; 575V, 60Hz, 3Ph; 7½HP, 460V, 60Hz; range 8-12 amps
20	35375	Terminal block end cap (#230)
21	H281AE-331	Overload, AEG-B77S-P-32A; 5HP, 208-230V, 60Hz, 1Ph; 7½HP, 208-230V, 60Hz, 3Ph; range 22-32 amps
22	42MC-AE84	Magnetic starter contactor, AEG-SP27.10-A0; 5HP, 208-230/460V, 60Hz, 3Ph; 5HP, 575V, 60Hz, 3Ph
23	56261	Transformer 575V/115V
24	56337	Shroud, selector switch
25	56339	24 volt magnetic starter contactor AEG-SP37.10-G0; 7½HP, 3Ph, 380-415V, 50Hz
26	55048	Transformer 380V/24V (order BES-16257)
27	55053	Magnetic safety interlock switch 250-600V (order H442-1) (24 volt system)
28	56317	3 amp fuse for 24 volt system
29	35241	Mount rail, terminal block
30	35376	End anchor, terminal block
31	56164	Control box seal

# **RETOFIT FOR AEG CONTACTORS IN AFMG-24 CONTROL BOX SERIAL NO. 20001 ON**



# **OPTIONAL STAINLESS STEEL BOWLS, AUGERS & PINS**



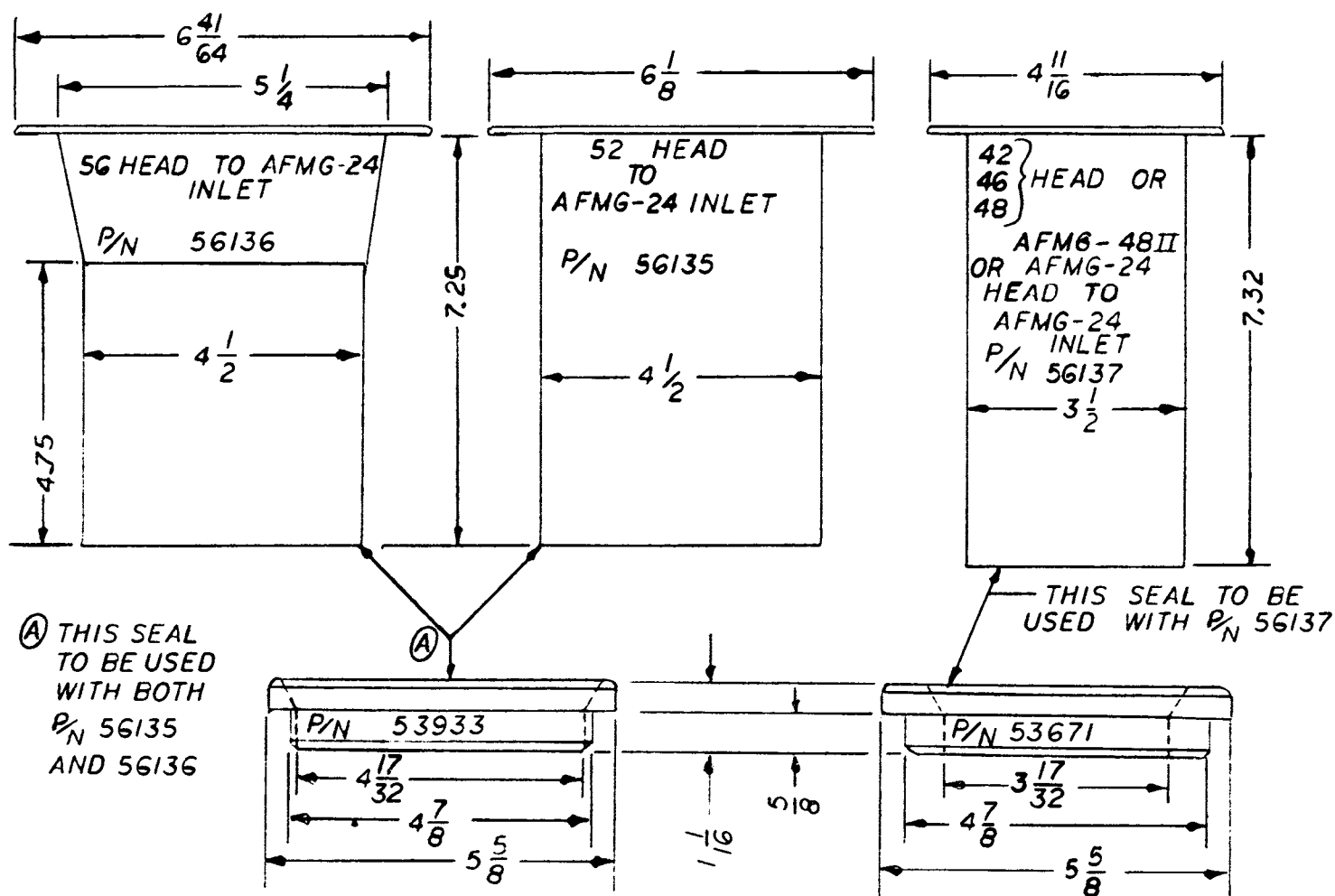
## **114mm UNGER SYSTEM**

Item No.	Description
HHS012S	Hex head screw, 10-32 $\times$ $\frac{1}{2}$ , SS
HK114	Knife drive pin, 114mm Unger
HR42/48S-114	End ring, SS, 114mm Unger
54278C	Auger shear pin
54278D	Shear pin fastener
54278-CTNS-114	Auger assembly, SS, 114mm Unger
56049SK-114	Key, 114mm Unger
56049S-114	Bowl, SS, 114mm Unger

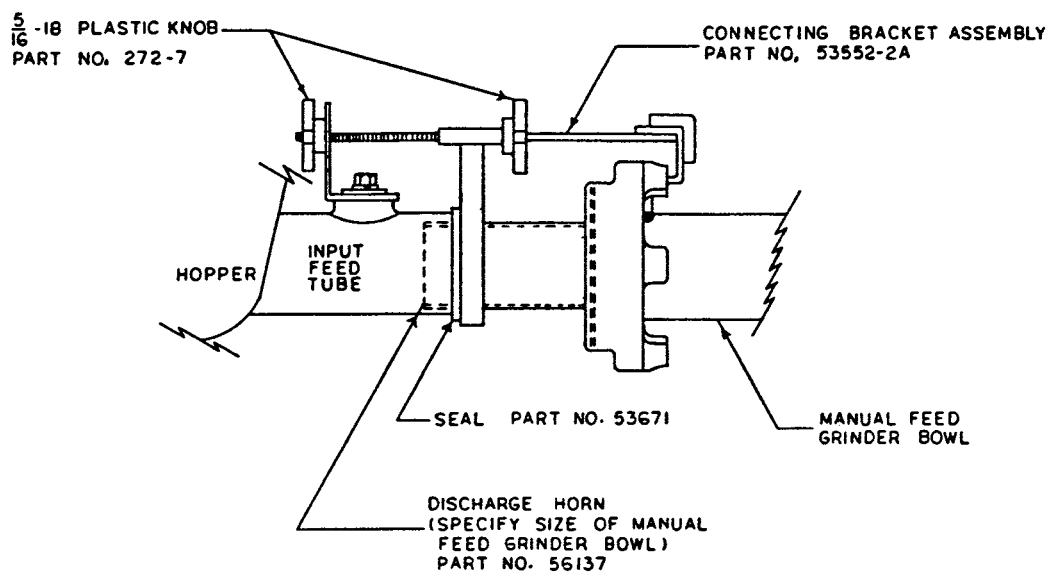
## **ENTERPRISE SYSTEM**

HR42/48S	End ring, SS
54278-CTNS	Auger assembly, SS
56049S	Bowl w/plate pins, SS

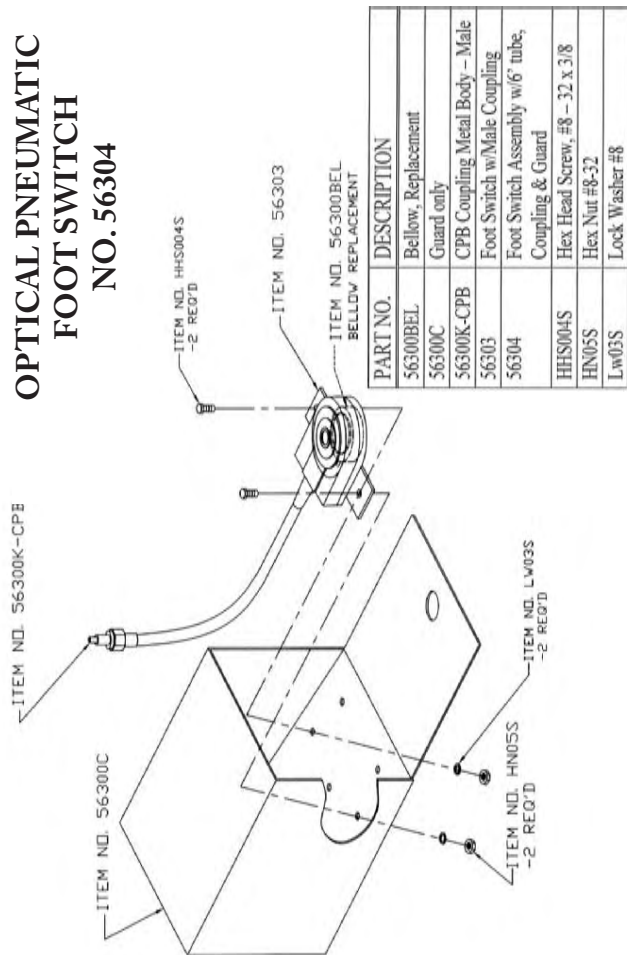
# ITEMS REQUIRED FOR TANDEM OPERATION



**NOTE: THESE ARE DESIGNED TO WORK ON BIRO EQUIPMENT OR OTHER MANUAL AND AUTO FEED GRINDERS OF COMPARABLE PLATE SIZE**

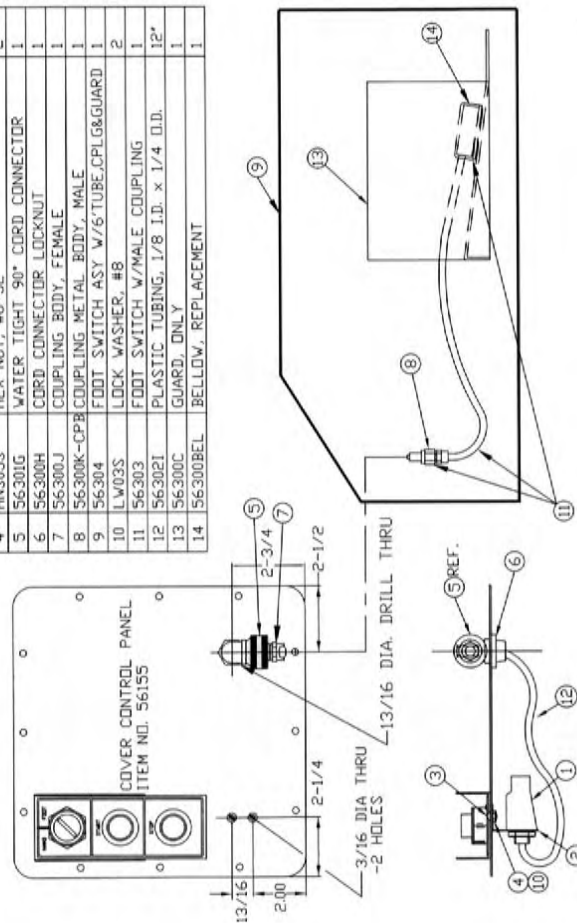


# OPTICAL PNEUMATIC FOOT SWITCH NO. 56304

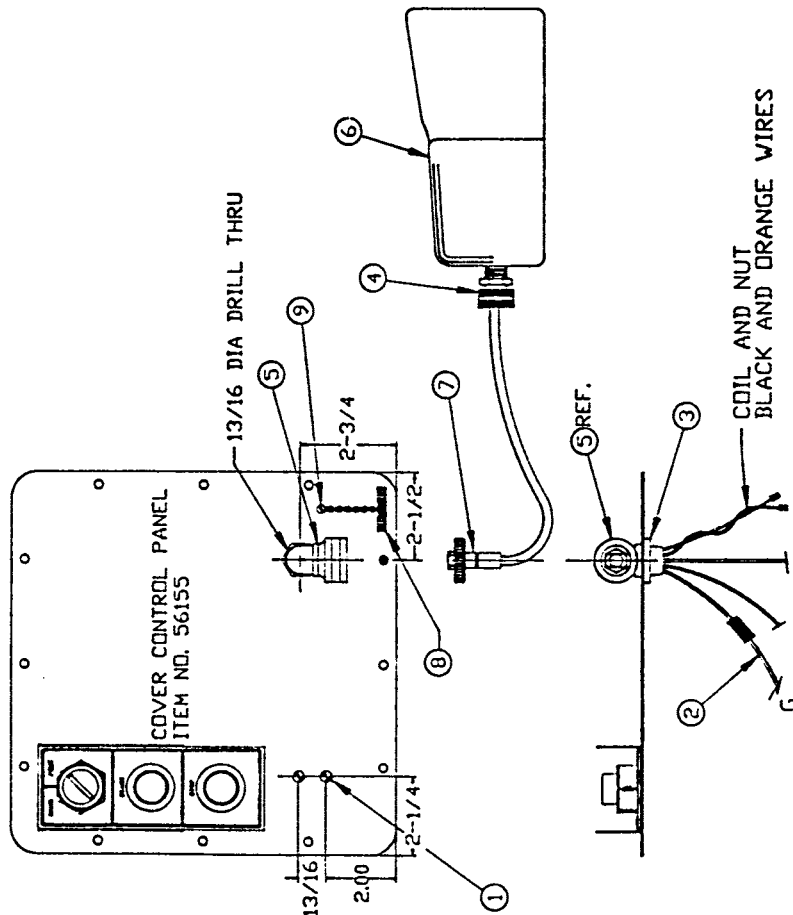


## PNEUMATIC FOOT SWITCH

ITEM NO.	PART NO.	PART NAME/DESCRIPTION	QTY
1	56300D	AIR SWITCH W/NUT	1
2	56301E	AIR SWITCH BRACKET	1
3	RHS05S	ROUND HEAD SCREW, #8-32 x 1/4 LG	2
4	HNS05S	HEX NUT, #8-32	2
5	56301G	WATER TIGHT 90° CORD CONNECTOR	1
6	56300H	CORD CONNECTOR LOCKNUT	1
7	56300J	COUPLING BODY, FEMALE	1
8	56300K-CPB	CPB COUPLING METAL BODY, MALE	1
9	56304	FOOT SWITCH ASSY W/6" TUBE, CPLG&GUARD	1
10	LW03S	LOCK WASHER, #8	2
11	56303	FOOT SWITCH W/MALE COUPLING	1
12	56302I	PLASTIC TUBING, 1/8" I.D. x 1/4" O.D.	12"
13	56300C	GUARD, ONLY	1
14	56300BEL	BELLOW, REPLACEMENT	1



# OPTIONAL ELECTRICAL FOOT SWITCH



ITEM NO.	PART NO.	PART NAME/DESCRIPTION	QTY
1	1056	#8-32 x 1/2 LG. ROUND HEAD CAP. SCREW	2
2		GREEN 16 GA. WIRE 8' LONG	1
3	56300H	LOCK NUT	1
4	224-2	WATER TIGHT STRAIGHT CORD CONNECTOR	1
5	56292	WATER TIGHT 90° CORD CONNECTOR	1
6	54213	FOOT SWITCH ASSY W/ 6' TUBE & GUARD	1
7	52654	MALE PLUG W/ 6' CORD, 5 WIRE	1
8	52662	PROTECTIVE CAP ASSEMBLY	1
9	H573	#6-32 x 3/8 LG. ROUND HEAD CAP. SCREW	1



Technical drawings of the 53693 engine assembly, showing various components and their part numbers:

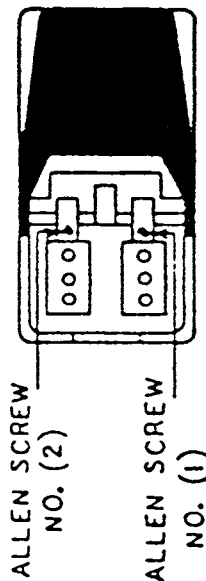
- Front View (Top):**
  - 53693-D (Top left corner)
  - 53693-Q (Top right corner)
  - 53693-H (Center top)
  - 53693-M (Bottom center)
- Side View (Middle):**
  - 53693-A (Left side)
  - 53693-F (Top right)
  - 53693-C (Center right)
  - 224-2 (Far right)
  - 53693-I (Bottom right)
  - 53693-U (Bottom right)
  - 53693-W (Bottom right)
  - 53693-T (Far right)
- Detail of Fuel System (Bottom):**
  - 56292 (Fuel filter)
  - 52654 (Fuel pump)
  - 52661 (Fuel pump)
  - 53979-I (Fuel pump)
  - 53693-G (Fuel line)

To change adjustment of the operating point of an interior switch, depress the treadle to the point where you want the switch to operate. With the treadle depressed to the desired operating point, turn the adjusting screw until the switch snaps. Turn clockwise to lower the operating point and counter clockwise to raise it.

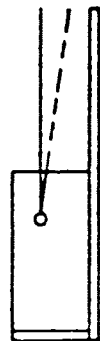


- |         |   |
|---------|---|
| 224-2   | Cord connector, wt, straight, 3/4"      |
| 52654   | Male plug w/6' cord, 5 wire             |
| 56292   | Female receptacle, 90°                  |
| 52661   | Male plug w/12' cord, 5 wire            |
| 52668   | Footswitch w/12' cord and plug          |
| 53693   | Footswitch                              |
| 53693-A | Cover guard                             |
| 53693-C | Cover gasket                            |
| 53693-D | Cover screw - short                     |
| 53693-E | Cover screw - long                      |
| 53693-F | Ground screw                            |
| 53693-G | Treadle spring                          |
| 53693-H | Internal assembly complete              |
| 53693-I | Actuator                                |
| 53693-M | Micro switch BA-2R62-A4                 |
| 53693-O | Washer                                  |
| 53693-T | Treadle w/actuator & return spring      |
| 53693-U | Auxiliary treadle return spring         |
| 53693-W | Treadle                                 |
| 53693-X | One actuator & actuator spring assembly |
| 53979-1 | Cord 8' w/o foot switch                 |
| 54213   | Foot switch w/6' cord & plug            |

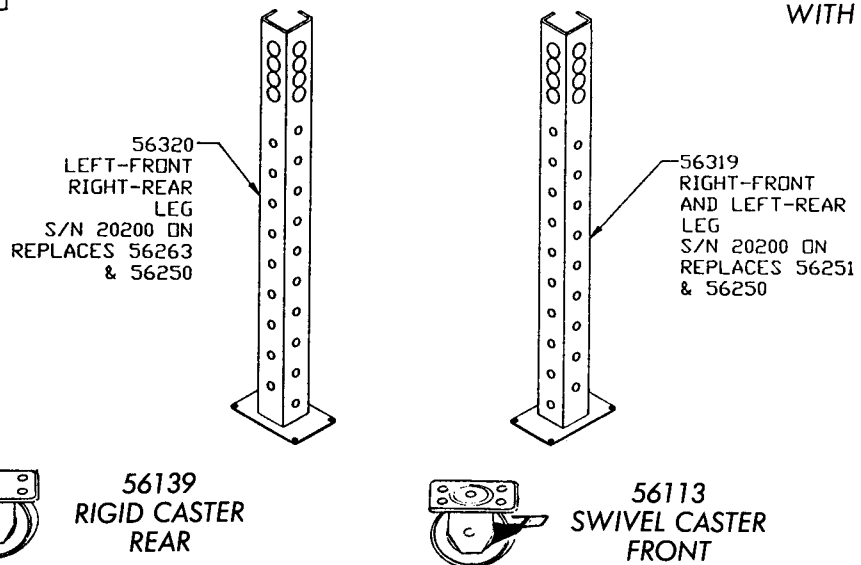
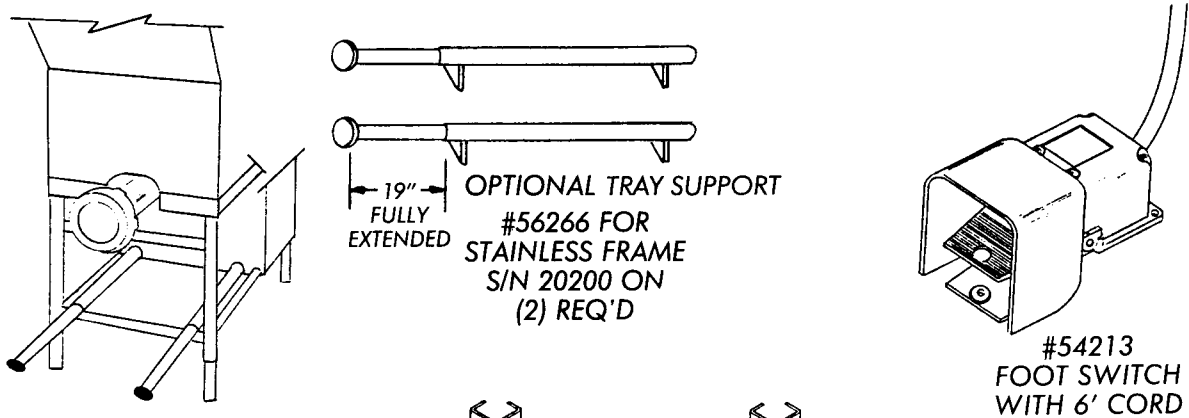
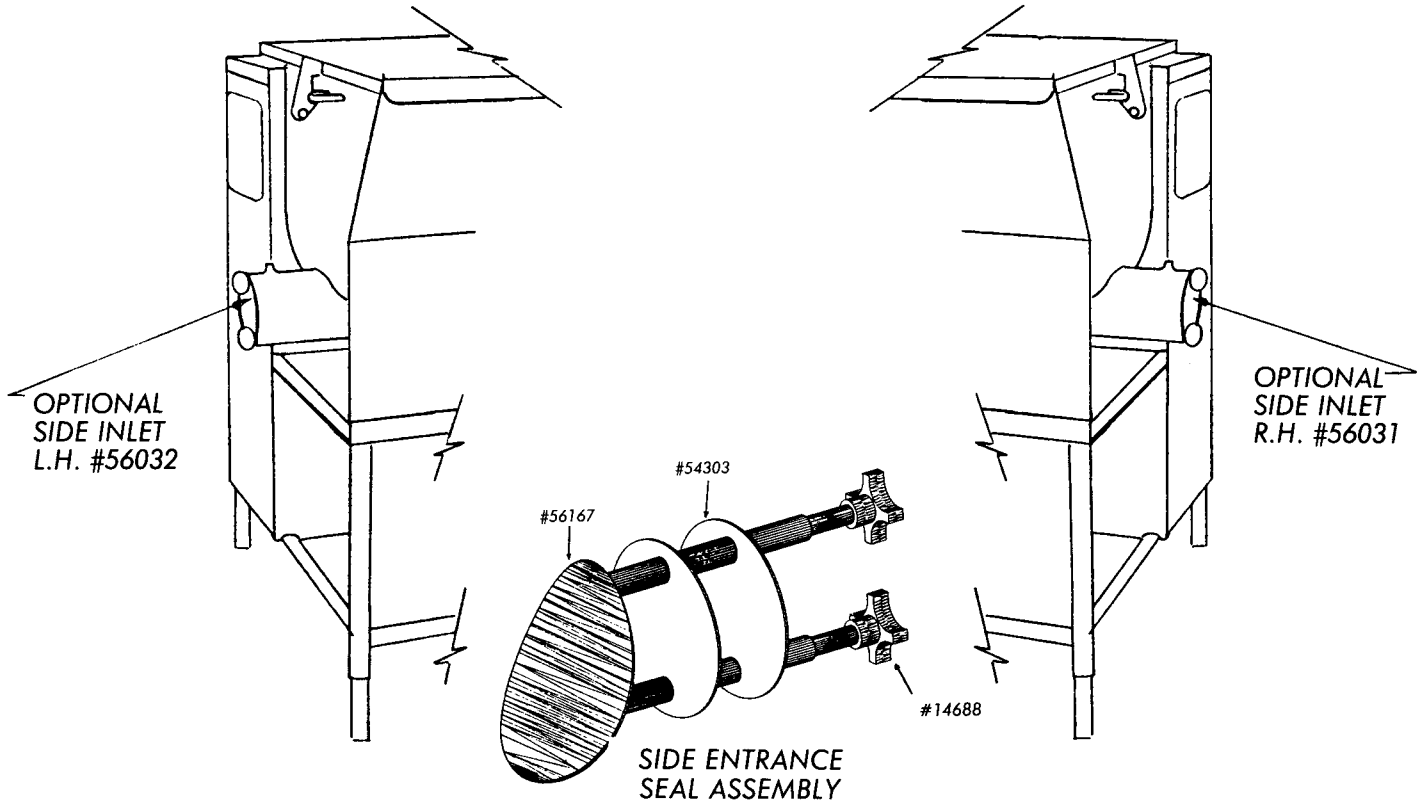
FOOT SWITCH WITHOUT COVER



Adjust both Allen Screws to activate Micro-Switches when the treadle is in the center position.

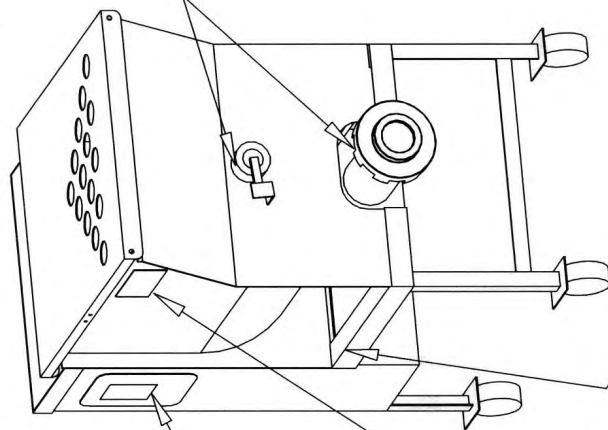
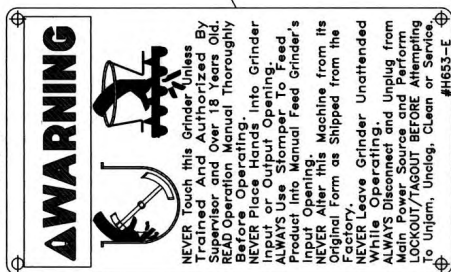


# OPTIONAL



# SAFETY LABEL LOCATIONS

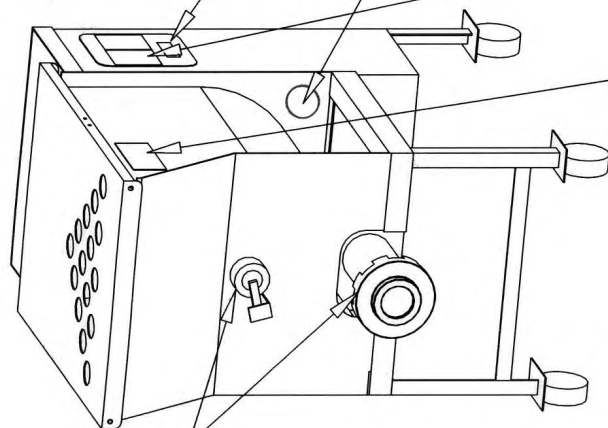
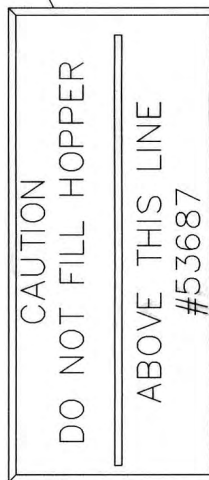
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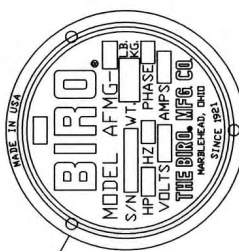
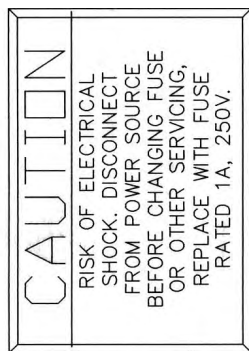
ROTATION

#53783

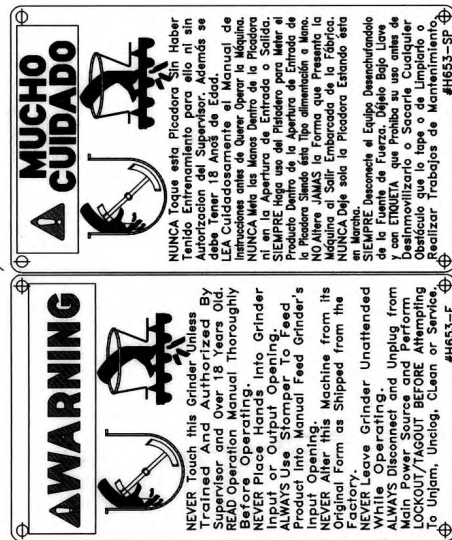
SERIAL NO.  
STAMP LOCATION



#56315



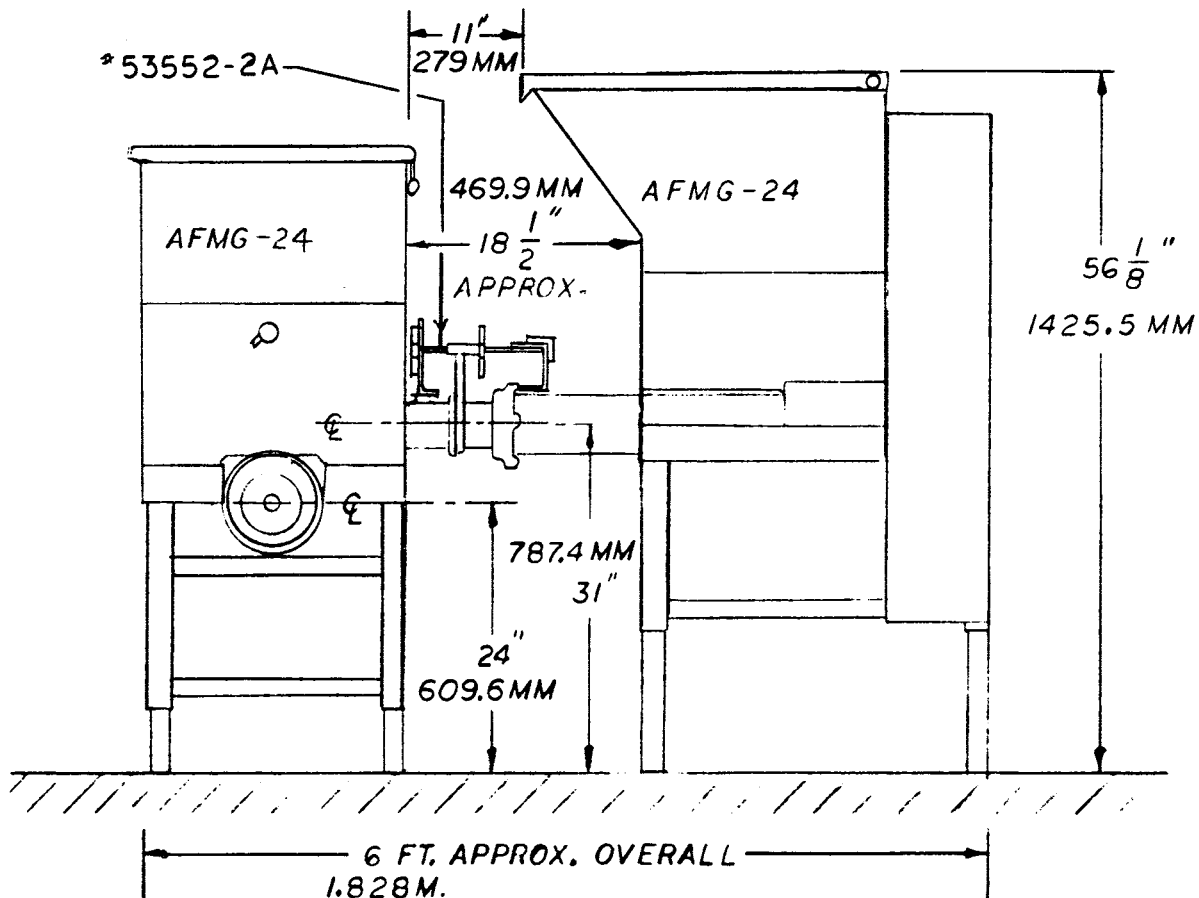
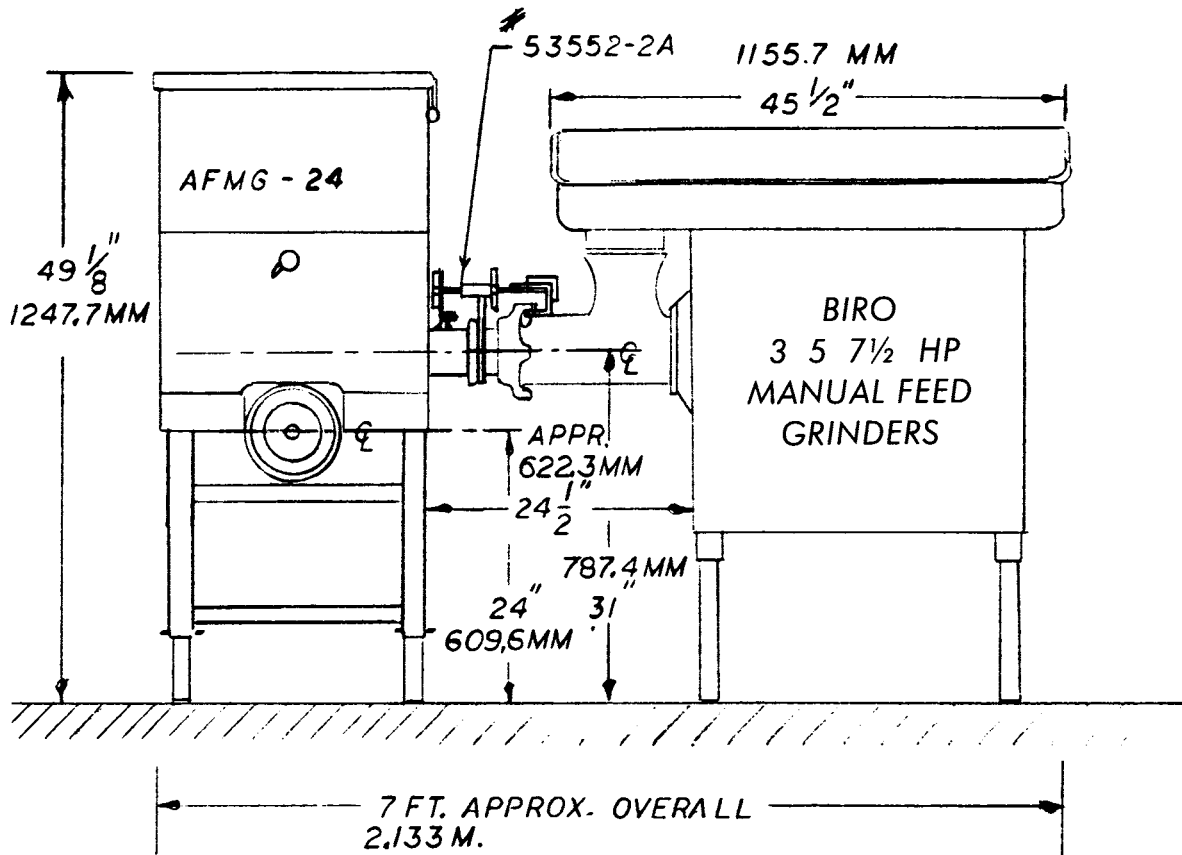
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#H653-SP

#H653-E

# TANDEM OPERATION ILLUSTRATION FOR 90° INLET



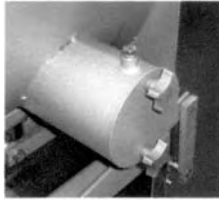
# CONNECTION INSTRUCTIONS

## TANDEM OPERATIONS

### BIRO AFMG-24 into BIRO AFMG-24

### BIRO Heavy Horsepower Grinder into BIRO AFMG-24

- Step 1.** Remove Side Entrance Seal, Item No. 56167; Outer Disc, Item No. 54303 and Lock Knobs, Item No. 14688 from the inlet tube of the Second Grind Machine. Clean out the tube if necessary.



- Step 2.** Install the Inlet Tube Seal Item No. 53671 or 53933 into the inlet tube of the Second Grind Machine until fully seated. Bolt the supplied connecting angle to the inlet tube.



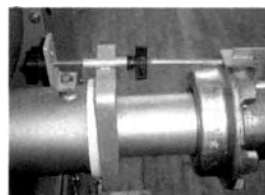
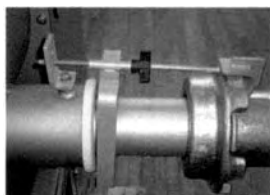
- Step 3.** Remove the Ring from the First Grind Machine, Item No. HR42/48, HR52 or HR56. Insert the Item No. 56137, 56135 or 56136 Discharge Horn into the Ring. Reinstall the ring on the machine.



- Step 4.** Insert the Discharge Horn into the inlet tube.



- Step 5.** With the seal clamp in place. Install the Connecting Bracket over the first grinders ring, slide the connecting bracket rod into the connecting angle. Install the lock knob and tighten. Tighten the seal bracket lock knob to tighten against the seal.



**OPERATOR'S SIGNATURE PAGE**

**WARNING**  
**READ AND UNDERSTAND THIS ENTIRE**  
**MANUAL BEFORE SIGNING BELOW**

**MY SIGNATURE ATTESTS THAT I HAVE COMPLETELY READ AND UNDERSTAND THIS MANUAL. I REALIZE THAT THIS MACHINE, IF OPERATED CARELESSLY, CAN CAUSE SERIOUS INJURY TO MYSELF AND OTHERS.**

NAME (PRINT)	SIGNATURE	SUPERVISOR'S INITIALS	DATE

## — NOTES —



## LIMITED WARRANTY

**WARRANTY:** The Biro Manufacturing Company warrants that the BIRO AFMG-24 Grinder will be free from defects in material and workmanship under normal use and with recommended service. BIRO will replace defective parts, which are covered by this limited warranty, provided that the defective parts are authorized for return, shipping charges prepaid, to a designated factory for inspection and/or testing.

**DURATION OF WARRANTY:** The warranty period for all parts covered by this limited warranty is one (1) year from date of inspection/demonstration as advised on the returned Warranty registration card, or eighteen (18) months from original factory shipping date, whichever date occurs first, except as noted below.

**PARTS NOT COVERED BY WARRANTY:** The following are **not** covered by this limited warranty: wearable parts in the grinding system such as bowl, bowl pin, ring, worm, drive shaft, knife drive pin, plate and knife. This limited warranty does not apply to machines sold as used, rebuilt, modified, or altered from the original construction in which the machine was shipped from the factory. Water contaminated electrical systems are not covered under this limited warranty. BIRO is not responsible for electrical connection of equipment, adjustments to the switch controls or any other electrical requirements, which must be performed only by a certified electrician. BIRO is not responsible for service charges or labor required to replace any part covered by this limited warranty or for any damages resulting from misuse, abuse, lack of proper or recommended service.

**EXCLUSION OF WARRANTIES AND LIMITATION OF REMEDIES:** BIRO gives no warranties other than those expressly stated in this limited warranty. THE IMPLIED WARRANTY OF MERCHANTABILITY, THE IMPLIED WARRANTY OF FITNESS FOR PROCESSING OF FOOD PRODUCTS, AND ALL OTHER IMPLIED WARRANTIES ARE SPECIFICALLY EXCLUDED. BIRO IS NOT LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, EXPENSES, OR LOSSES. THE REMEDIES PROVIDED IN THIS BIRO LIMITED WARRANTY ARE PURCHASER'S SOLE AND EXCLUSIVE REMEDIES AGAINST BIRO.

**REGISTRATION CARDS:** You must sign, date and complete warranty registration card supplied with each machine. The warranty card must be returned to The Biro Manufacturing Company for proper registration. If no warranty card is returned to BIRO, the warranty period will begin from the date the machine was originally shipped from the factory.

### HOW TO GET SERVICE:

1. Contact the entity from whom you purchased the machine; or
2. Consult the yellow pages of the phone directory for the nearest authorized dealer; or
3. Contact BIRO Mfg. Company for the authorized service entity (250 plus worldwide) in your area.

## THE BIRO MANUFACTURING COMPANY

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Fax 419-798-9106  
E-mail: [Service@birosaw.com](mailto:Service@birosaw.com)  
Web: <http://www.birosaw.com>