



SERVICE MANUAL

** Updated technical documentation is attached to the end of this manual.*



403 TENDERIZER

31500

- NOTICE -

This Manual is prepared for the use of trained Hobart Service Technicians and should not be used by those not properly qualified.

This manual is not intended to be all encompassing. If you have not attended a Hobart Service School for this product, you should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments and skills should be performed by a trained Hobart Service Technician.

The reproduction, transfer, sale or other use of this Manual, without the express written consent of Hobart, is prohibited.

This manual has been provided to you by ITW Food Equipment Group LLC ("ITW FEG") without charge and remains the property of ITW FEG, and by accepting this manual you agree that you will return it to ITW FEG promptly upon its request for such return at any time in the future.

TABLE OF CONTENTS

SAFETY	3
INTERLOCK SAFETY	3
SERVICE UPDATES	4
SERVICE UPDATES	4
GENERAL	5
INTRODUCTION	5
HOUSING	6
TRANSPARENT GUARD	6
MOTOR HOUSING	7
STUDS	7
TIE BARS AND SUPPORT ASSEMBLY	8
SUPPORT ASSEMBLY REPLACEMENT	8
TIE BAR REPLACEMENT	9
LEGS	9
ELECTRICAL AND GEAR CASE COVERS	10
REMOVAL OF GEAR CASE AND / OR ELECTRICAL COVERS	10
REPLACEMENT OF GASKET SET	11
LIFT-OUT UNIT	12
HANGER ASSEMBLIES	12
STRIPPERS	12
ROLLER ASSEMBLY	12
LIFT-OUT UNIT SERVICE	12
REMOVAL OF ROLLER ASSEMBLY FROM THE HANGER	12
CHANGING BLADES	13
DETERMINATION OF FRONT AND BACK ROLLER ASSEMBLY	13
ADJUSTMENT OF ROLLER ASSEMBLY	14
ELECTRICAL SYSTEM	15
"ON-OFF" SWITCH	17
RELAY	17
CAPACITOR	19
REED SWITCH ASSEMBLY	20
MOTOR	21
INTRODUCTION	21
DISASSEMBLY	21
TESTS AND CHECKS	23
REASSEMBLY	23
DRIVE UNIT	25
FRONT STUB SHAFT	25
BACK STUB SHAFT	25
SERVICE	27
REASSEMBLY	28
TROUBLESHOOTING	29
TROUBLESHOOTING CHART	29

SAFETY

INTERLOCK SAFETY

THE 403 TENDERIZER UTILIZES SAFETY INTERLOCKS ON THE TRANSPARENT GUARD AND MOTOR HOUSING. REMOTE ELECTRO-MAGNETIC SENSING SWITCHES DETECT IF GUARD OR MOTOR HOUSING ARE NOT IN PLACE AND WILL PREVENT OPERATION.

IF YOU ARE ON A CALL WHERE THE SAFETY INTERLOCKS ARE NOT WORKING OR IF YOU SUSPECT THAT THE INTERLOCKS HAVE BEEN TAMPERED WITH, IT IS IMPORTANT THAT YOU PROCEED AS FOLLOWS:

FIRST, TELL THE CUSTOMER THAT THE INTERLOCKS ARE NOT WORKING AND NOTE THE CONDITION OF THE INTERLOCKS ON THE SERVICE TICKET ALONG WITH THE FACT THAT YOU NOTIFIED THE CUSTOMER.

SECOND, DO NOT PERFORM ANY SERVICE UNTIL THE CUSTOMER AGREES TO HAVE THE INTERLOCKS REPAIRED AND, DO NOT PERFORM THE SERVICE FOR WHICH YOU WERE CALLED UNTIL YOU HAVE REPAIRED THE INTERLOCKS.

THIRD, IF THE CUSTOMER REFUSES TO LET YOU FIX THE INTERLOCKS, TELL THEM THAT HOBART WILL NOT ALLOW YOU TO SERVICE ANY EQUIPMENT IF THE SAFETY DEVICES ARE NOT OPERATING PROPERLY. MAKE SURE THAT YOU RECORD ON THE SERVICE TICKET THAT YOU HAVE SO INFORMED THE CUSTOMER.

FOURTH, IF YOU CANNOT FIX THE INTERLOCKS, MAKE A NOTE ON THE SERVICE TICKET TO THAT EFFECT. SECURE THE MODEL NUMBER AND SERIAL NUMBER OF THE UNIT. INFORM THE CUSTOMER THAT HOBART WILL NOT ALLOW YOU TO PERFORM ANY FURTHER SERVICE ON THE MACHINE AND CONTACT YOUR SUPERVISOR IMMEDIATELY. YOUR SUPERVISOR WILL TAKE IT FROM THERE.

SERVICE UPDATES

SERVICE UPDATES

October 2017

- Udated tools list in INTRODUCTION

September 2017

- Added schematic and wiring diagrams to "ON-OFF" SWITCH.
- Added replacement procedure to RELAY.
- Added replacement procedure to REED SWITCH ASSEMBLY.

GENERAL

INTRODUCTION

1. The Hobart Model 403 Tenderizer uses perfected draw cut, Knit-Knife stainless steel blades. The transparent knife guard and feed chute permits the user to observe the entire tenderizer process while providing operator protection.
2. Electrical Specifications.
115/60/1
115/50/1
220-240/50/1
Not available in 3 phase. The tenderizer is furnished with a three-wire cord and plug.
3. Lubrication.
Gear Case Gearep #140 Cylinder oil 28 Fl. oz.
Motor Bearing Pre-lubricated
4. Special Tools.
These special tools must be purchased locally.
 - A. Hammer Puller
Snap-on #CJ93B
 - B. Tool
Snap-on #CJ93-4
 - C. Locktite™ #263 "Studlock" (00-558218)

HOUSING

The 403 Tenderizer housing consists of a transparent plastic guard which covers the cutting area, providing protection for the operator, and an aluminum motor housing containing the motor and ventilating fan.

TRANSPARENT GUARD

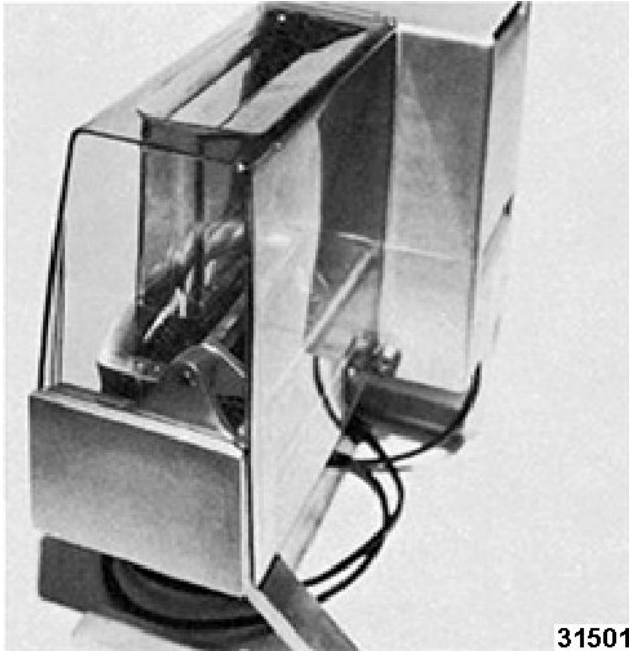


Fig. 1



⚠ WARNING

**TO AVOID ELECTRICAL SHOCK
UNPLUG UNIT BEFORE SERVICING.**

The transparent plastic guard covers the knife area of the tenderizer while affording full view of the tenderizing operation. The interior chute guides the food product directly to the knives. A magnet, mounted on the left rear of guard, is part of the safety interlock system.

1. Care.

The guard should be washed in warm water (not over 140°F) with mild soap suds.

Caution the operator against using water above this temperature or using abrasive cleaners which will mar the finish of the guard.

2. Magnet (Fig. 2).

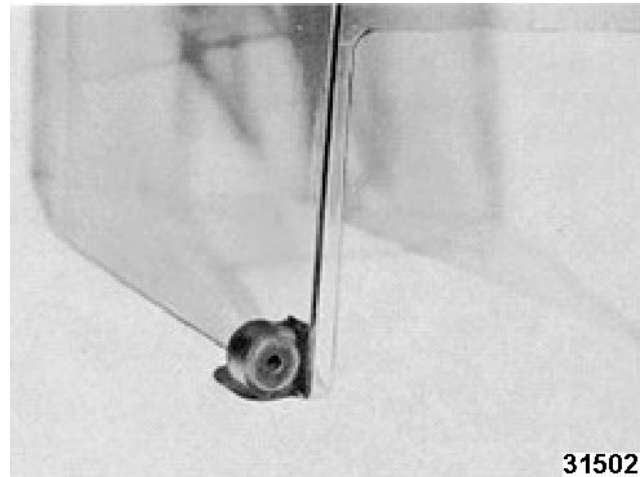


Fig. 2

The magnet, mounted in the left rear of the guard, actuates a reed switch located in the electrical section of the gear case.

⚠ WARNING

THE MAGNET MUST REMAIN MOUNTED IN THE TRANSPARENT GUARD. DO NOT USE ANY OTHER EXTERNAL MAGNET TO OPERATE THE SAFETY INTERLOCK SYSTEM.

3. Service.

A. Distortion of the transparent guard.

If the guard is distorted so the magnet no longer actuates the reed switch, the guard assembly must be replaced.

B. Magnet missing from guard.

The magnet is held into the guard by a lip molded around the recess. If the magnet is missing, the entire guard assembly must be replaced.

C. Scratches on the transparent guard.

The transparent guard may be refinished by polishing with a soft cloth wheel and jewelers rouge. Care must be taken not to apply excessive pressure since the area touching the wheel will melt if it becomes too hot.

MOTOR HOUSING

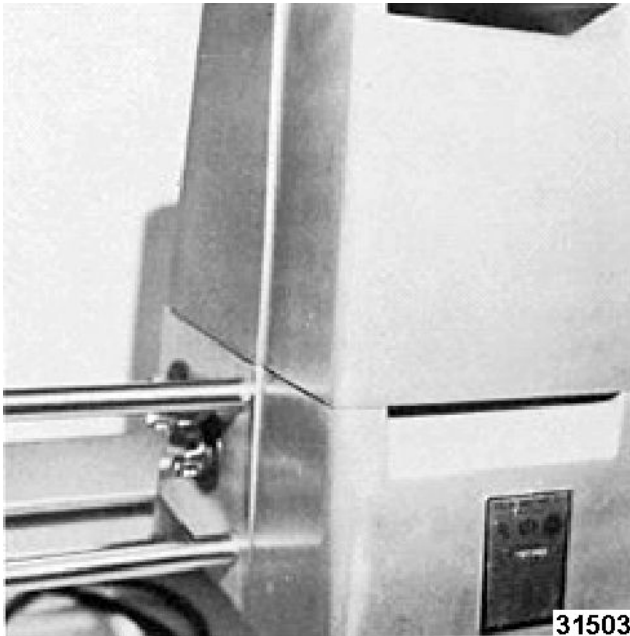


Fig. 3



⚠ WARNING

**TO AVOID ELECTRICAL SHOCK
UNPLUG UNIT BEFORE SERVICING.**

A removable aluminum housing with a permanently fixed magnet and an interior air channel covers the motor. Two press fit studs, located on the top of the gear case, position the housing so the magnet will operate the safety interlock reed switch.

1. Service.
 - A. Motor housing broken or cracked. There is no repair for the motor housing if it is broken or cracked. It must be replaced if the damage prevents the safety interlock system from operating or impairs the flow of air through the air intake.
 - B. Replacement of the magnet in the motor housing (1, Fig. 4). If the magnet has been broken or removed, press a new magnet into the recess in the motor housing using LOCTITE "Studlock".
 - C. Motor housing rattling against gear case. Rattle may be eliminated by renewing the strips of rubber tape (2, Fig. 4) on the inside of the motor housing where they contact the gear case. Adjustment of the split studs may also be needed (see step 3).

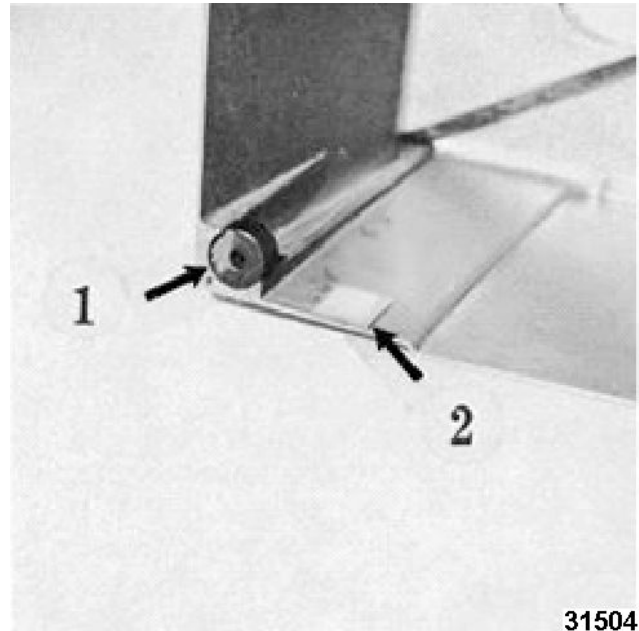


Fig. 4

STUDS



⚠ WARNING

**TO AVOID ELECTRICAL SHOCK
UNPLUG UNIT BEFORE SERVICING.**

The two studs mounted on top of the gear case are designed to locate and hold the motor housing in the proper position for operation. The front stud (1, Fig. 5) is a split stud. The stud located in the rear (over the reed switch) has a soft iron base as a part of the stud assembly (2, Fig. 5). This is necessary for the proper operation of the reed switch (safety interlock system).

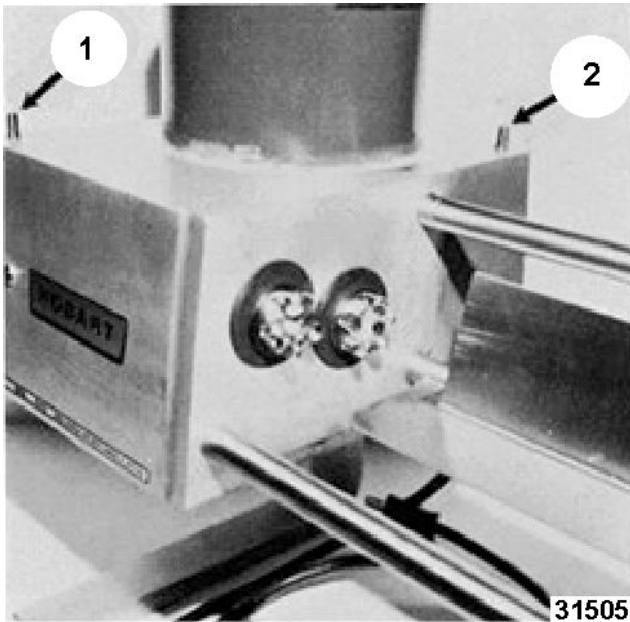


Fig. 5

1. Adjustment.

To provide a tighter fit on the motor housing, spread the split stud very slightly with the blade of a screwdriver. Use caution as the hardened stud may break if overstressed.

2. Replacement of a broken stud.

- A. Remove the transparent guard and motor housing.
- B. Remove lift out unit.
- C. Place a piece of tape over the vent hole of the gear case to prevent oil leakage.
- D. Invert the tenderizer. Support it so that the ventilating fan will not be damaged.

NOTE: Due to specification changes, some units may not have over covers. Remove the over cover, then the electrical cover. The covers are secured by Phillips head screws whose location can be easily seen through the over cover. The easiest removal method is to punch through the over cover with a Phillips screwdriver and back the screws out, then separate the covers with a pen knife and remove.

- E. Move any wiring out of the way which could be damaged during removal of the stud. Use special care handling the glass enclosed reed switches mounted under the rear stud.
- F. Drive out the broken stud (from the inside of the gear case) with a metal punch.
- G. Press fit the proper stud into the gear case using LOCTITE "Studlock".

- H. Reassemble in the reverse order of disassembly.

TIE BARS AND SUPPORT ASSEMBLY



⚠ WARNING

**TO AVOID ELECTRICAL SHOCK
UNPLUG UNIT BEFORE SERVICING.**

The tie bars and support assembly position and support the outer end of both roller assemblies. The support assembly (1, Fig. 6) is located at the end of the tie rods and holds the lift-out unit in the proper cutting position. The tie bars (2, Fig. 6) position the support assembly and anchor the right leg. The shield is positioned between the two bottom tie bars.

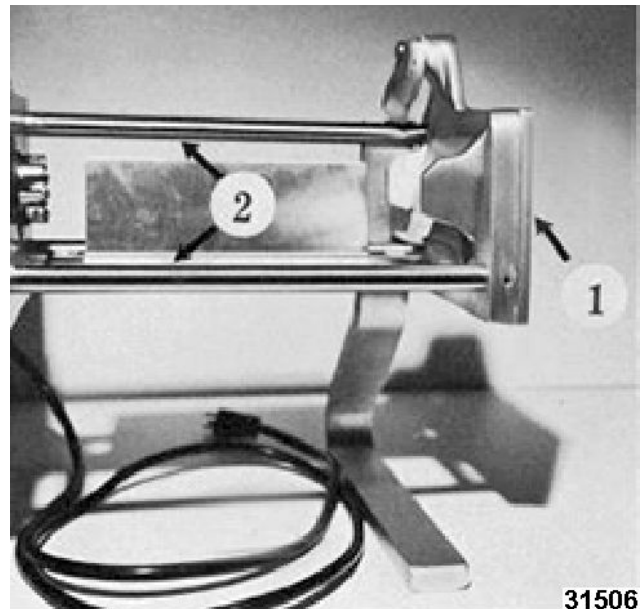


Fig. 6

SUPPORT ASSEMBLY REPLACEMENT

1. Remove the transparent guard.
2. Remove lift out unit.
3. Pick out the RTV (Aluminum Silastic) from the three set screw holes.
4. Remove the three set screws from the support assembly.
5. Tap the support assembly at the base of each tie rod to remove (Fig. 7). (Tap on the edges of the support assembly to avoid damaging the aluminum cover plate).

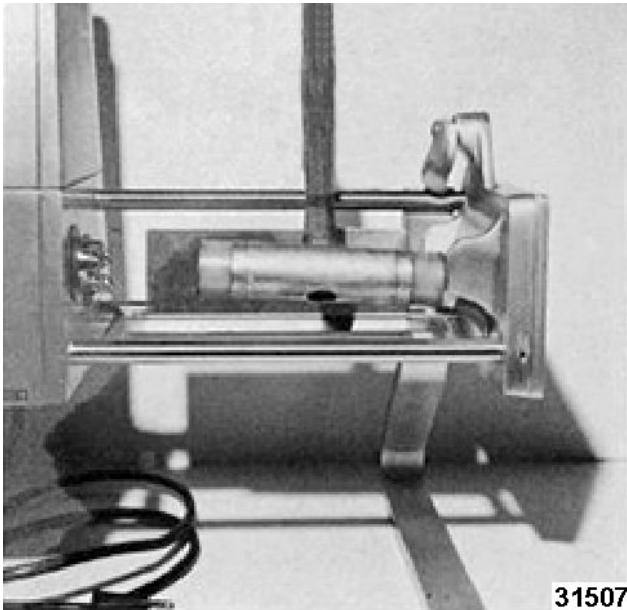


Fig. 7

6. Replace with a new support assembly.
7. Replace the three set screws.
8. Squeeze in fresh RTV.
9. Replace lift out unit.
10. Replace the transparent guard.

TIE BAR REPLACEMENT

1. Remove the transparent guard.
2. Remove lift out unit.
3. Place tape over the breather hole in the gear case to prevent oil leakage.
4. Invert the tenderizer and support it to prevent it from falling over. If the unit has an over cover, the joint line between the electrical and gear case covers will be readily visible. Cut the over cover along this line with a penknife.
5. The screws securing the cover may be either slotted head or Phillips head. The slot or recess may be readily seen and can be exposed by making an "X" cut over each screw.
6. Remove the screws and gear cover.
7. Tilt the machine and drain the oil.
8. Remove the set screws at the base of the two lower tie bars. They are located in the screw holes for the gear case cover.
9. Remove the set screw in the breather hole of the gear case.

10. Set the machine on end (Fig. 8) and by tapping the support assembly with a plastic mallet, remove the entire assembly.

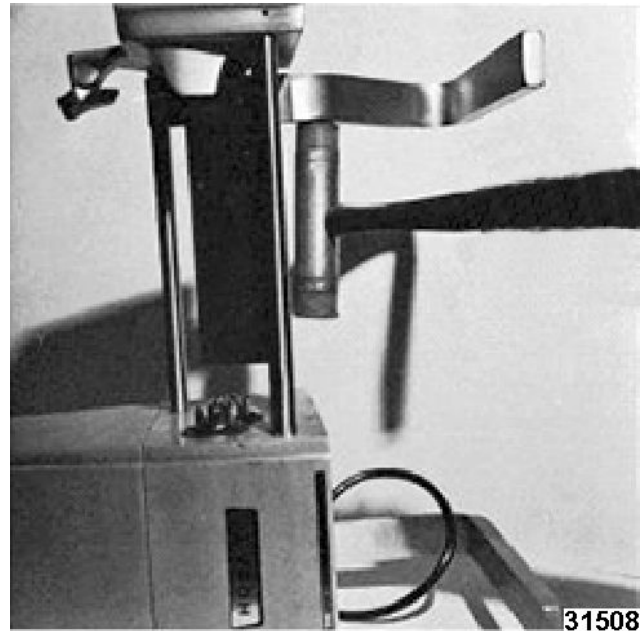


Fig. 8

11. Remove the screws holding the right leg and the set screws holding the support assembly. Remove the support assembly, shield and right leg.
12. When replacing the tie bars seat them in the recess of the gear case and reassemble in the reverse order of disassembly.
13. Use RTV on the ears of the shield where it joins the tie bars and at each end of the tie bars where they join the gear case and the support assembly. Use RTV to plug the set screw holes in the support assembly. The gear case and tie bars especially should be cleaned with an approved cleaner before applying RTV. Adhesion is important as the RTV serves as a gasket to prevent oil leakage past the tie bars.

LEGS



⚠ WARNING

**TO AVOID ELECTRICAL SHOCK
UNPLUG UNIT BEFORE SERVICING.**

There are two legs, the right leg (1, Fig. 9), located near the support assembly and the left leg, (2, Fig. 9), whose base is located under the electrical cover.

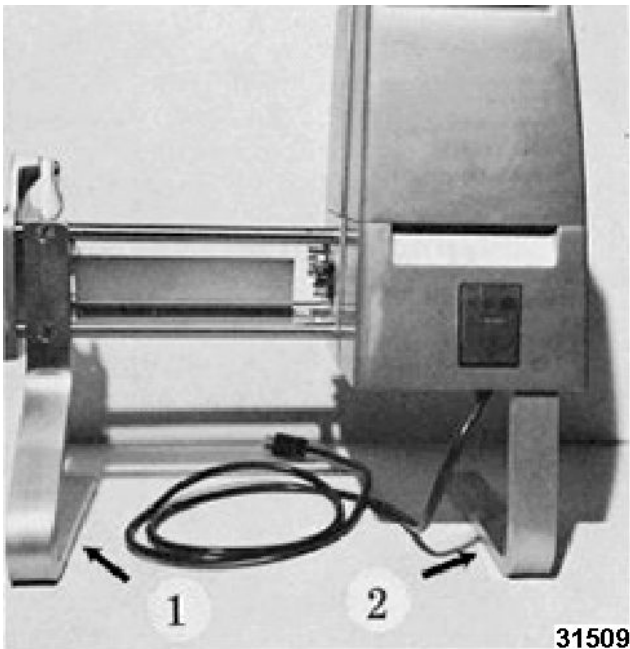


Fig. 9

1. Right leg replacement.
 - A. Remove the transparent guard.
 - B. Support the right side of the tenderizer.
 - C. Remove two screws and remove the leg.
 - D. Reassemble in the reverse order of disassembly.
2. Left leg replacement.
 - A. Remove the transparent guard and motor housing.
 - B. Remove the lift out unit.
 - C. Seal the air vent to prevent oil leakage. Early models; seal over set screw for upper tie bar. Later models; seal dip stick hole.
 - D. Replace the guard and motor housing (to serve as supports) and invert the machine on a rag or cushion (to protect the finish).
 - E. The joint line between the electrical and gear case covers will be readily visible. Cut the cover along this line with a penknife.
 - F. Remove the screws and remove the electrical case cover.
 - G. Remove two nuts and remove the leg.
 - H. Reassemble in the reverse order of disassembly.

NOTE: When replacing the left leg, use RTV to seal the space around the leg where it passes the side of the gear case and the electrical cover.

3. Straightening.
 - A. Set the leg in a vise and using a heavy hammer, straighten the leg.
 - B. If the leg still shows too much distortion and cannot be straightened successfully so it will support the machine properly, replace the leg with a new one.

ELECTRICAL AND GEAR CASE COVERS

It was a requirement by NSF to have the bottom covers sealed for sanitation purposes. This was accomplished by a pressure sensitive aluminum colored plastic sheeting, the over cover. This is no longer a requirement so machines will be found in use with and without over covers.

The bottom of the machine is covered by the electrical and gear case covers. They are lined with a pressure sensitive gasket set. This gasket material covers the inside of both covers and prevents the loss of oil from the gear case or the entry of water into either compartment. The addition of Permatex or other joint compound is not necessary when resealing the gear case.



⚠ WARNING

**TO AVOID ELECTRICAL SHOCK
UNPLUG UNIT BEFORE SERVICING.**

REMOVAL OF GEAR CASE AND / OR ELECTRICAL COVERS

1. Remove the transparent guard and motor housing.
2. Seal the air vent to prevent oil leakage.
3. Replace the guard and motor housing (to serve as supports) and invert the machine on a rag or cushion (to protect the finish).
4. On units with an over cover, the joint line between the electrical and gear case covers will be readily visible. Cut the over cover along this line with a penknife.
5. The screws securing the covers may be either slotted head or Phillips head. The slot or recess may be readily seen and can be exposed by making an "X" cut over each screw.
6. Remove the screws around the edges of the cover you wish to remove. It is not necessary to remove both covers.

7. Perform the service desired.
8. Replace the cover and screws. Press the cut edges of the old over cover down and wipe the surface clean with an approved cleaner.
9. If the unit you are working on had an over cover and a new over cover is not available, the cuts in the old cover may be resealed with RTV. If you have a new over cover, apply it directly over the old one. The new over cover will be slightly oversized. Press it down around the edges with a blunt tool and trim the excess with a sharp penknife or razor blade. Reseal the opening around the leg with RTV.

REPLACEMENT OF GASKET SET

1. If the gasket material becomes damaged and oil escapes from the gear case, replace all the gasket material.
 - A. Peel off all the old gasket material.
 - B. Clean the metal surface with an approved solvent.
 - C. Carefully split the paper backing down the middle of the pressure sensitive gasket.
 - D. Position the gasket on the metal cover.
 - E. Peel off half of the backing, holding the other half in place. Press onto the cover and repeat with the other half.

LIFT-OUT UNIT

The lift-out unit, (Fig. 10) consists of the front and back hanger assemblies, two sets of knives and two strippers.

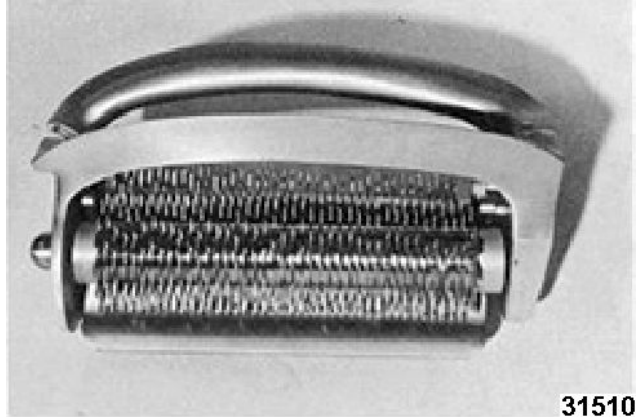


Fig. 10

HANGER ASSEMBLIES

There are two hanger assemblies, front (1, Fig. 11) and back (2, Fig. 11). They are identified by an F or B stamped on the joining surfaces. Each hanger supports one roller assembly. When both are joined, they hold the knives in the proper cutting position.

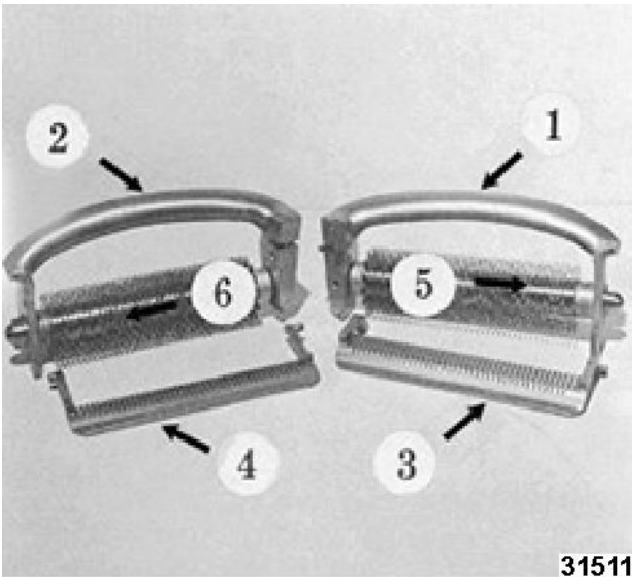


Fig. 11

STRIPPERS

See 3 & 4, Fig. 11.

One stripper is suspended from each hanger. The teeth of each stripper project between the knives of the roller assembly. They serve to pull particles of food product and bits of sinew off the knives as the machine is operating.

ROLLER ASSEMBLY

See 5 & 6, Fig. 11.

The roller assembly contains the shaft and a series of blades and spacers. The assembly rotates in the hanger and is supported by bearings on each end.

LIFT-OUT UNIT SERVICE



WARNING

TO AVOID ELECTRICAL SHOCK UNPLUG UNIT BEFORE SERVICING.

REMOVAL OF ROLLER ASSEMBLY FROM THE HANGER

1. Remove the stripper (5, Fig. 12) from the hanger (3, Fig. 12).

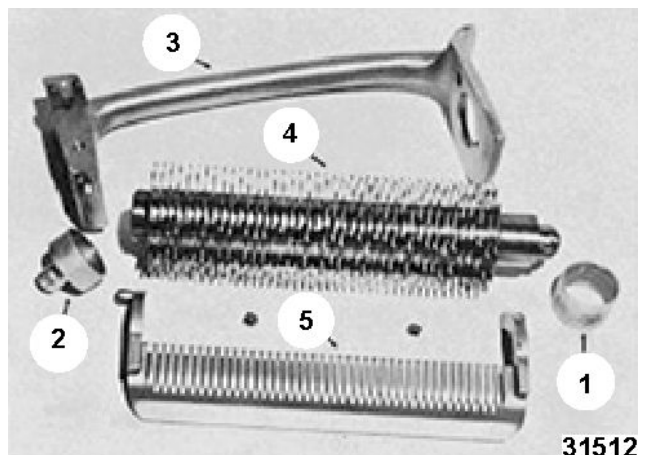


Fig. 12

2. Pick out the RTV plugging the set screws at each end of the hanger.
3. Remove both set screws.
4. By moving the roller assembly (4, [Fig. 12](#)) back and forth, the left bearing (1, [Fig. 12](#)) can be removed from the shaft.
5. Slide the roller assembly out of the hanger.
6. Remove the right bearing (2, [Fig. 12](#)) from the hanger.

CHANGING BLADES

1. Follow procedure in step 4 ([Lift-Out Unit Service](#)) for the removal of the roller assembly from the hanger.
2. Use an old stub shaft mounted in a vise as a base for the roller assembly. Use a spanner wrench (TL584) and remove the locknut from the end of the shaft ([Fig. 13](#)). The nut will remove clockwise on the front shaft and counterclockwise on the back shaft.

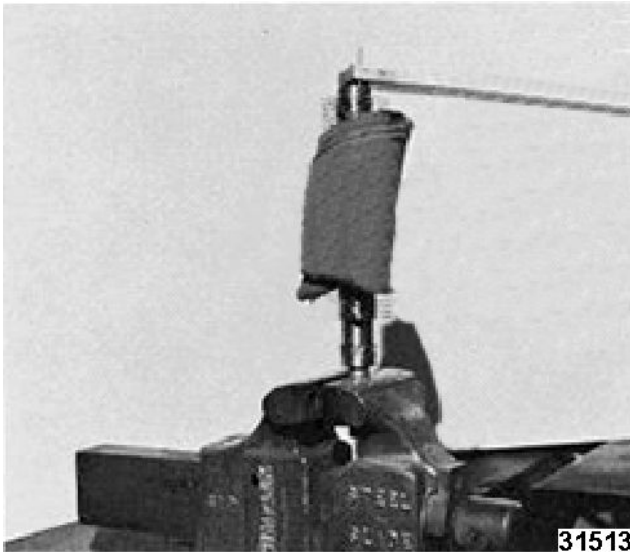


Fig. 13

NOTE: Do not use a pipe wrench unless you are prepared to replace the locknut. The finish of the O.D. is a bearing surface.

3. Using a narrow blade screwdriver, stack the blades and spacers ([Fig. 14](#)) in the same order as they are removed from the shaft. Continue removing the blades and spacers until the damaged blades and/or spacers are reached.

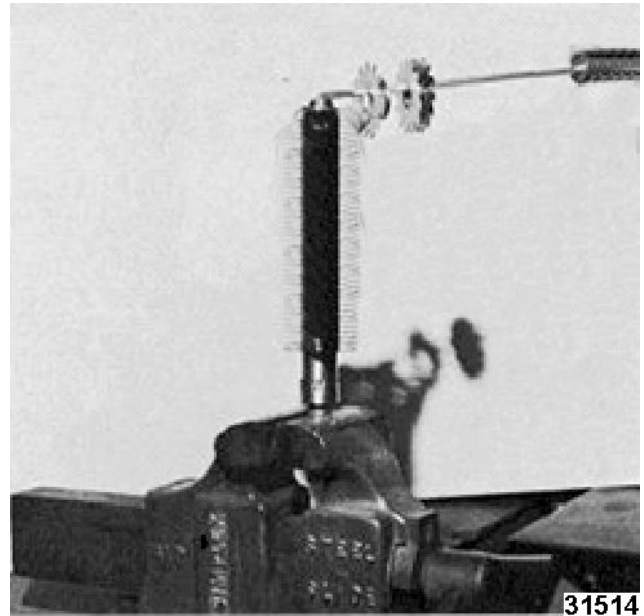


Fig. 14

4. Limit replacement to a combination of not more than six blades and/or spacers to maintain proper knife spacing.
5. Replace damaged blades and/or spacers.
6. Return all the blades and spacers to the blade shaft in the same order they were removed and in the same cutting edge direction.
7. Screw the locknut on the shaft and tighten with the spanner wrench.

DETERMINATION OF FRONT AND BACK ROLLER ASSEMBLY

1. The direction of the cutting edges of the blades is from the outside to the center ([Fig. 15](#)).
2. The front roller assembly (1, [Fig. 15](#)) has the cutting edges of the blades following a counterclockwise direction.

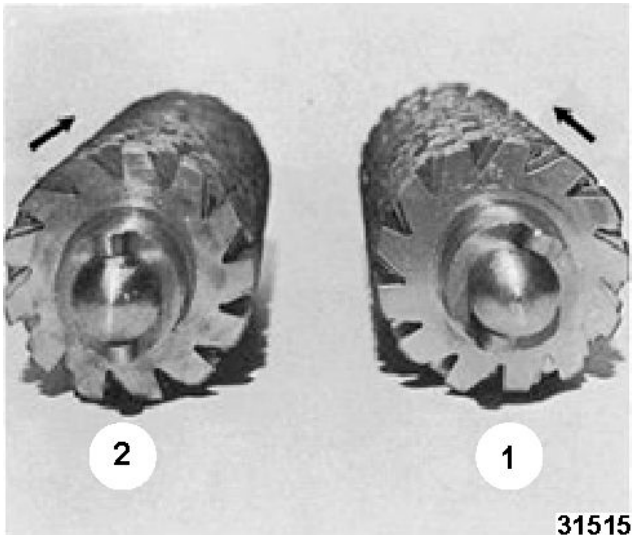


Fig. 15

3. The back roller assembly (2, Fig. 15) has the cutting edges of the blades following a clockwise direction.
 4. The front blade shaft has a left hand thread.
 5. The back blade shaft has a right hand thread.
10. Remove the hanger carefully from the machine and tighten the set screw on the right bearing. If a new right bearing is being used, spot it with a small bit through the set screw hole and replace the set screw. This will prevent the bearing from drifting.
 11. Push the left bearing toward the roller assembly. Insert and snug up the set screw. Do not tighten this set screw on the bearing so tight that the roller assembly will not turn freely in the bearings.
 12. If a new left front bearing is being used, retap the hole and the side of the bearing with a 1/4"-20 tap.
 13. Adjust the other roller assembly using the one previously adjusted as a reference, splitting the distance between the blades.
 14. Lubricate each of the four bearings with a few drops of an approved oil before returning to service. Reseal the set screws with RTV.

ADJUSTMENT OF ROLLER ASSEMBLY

1. Mount the right bearing in the hanger. Insert the set screw but do not tighten.
2. Insert the drive end of the correct roller shaft into the opposite side of the hanger.
3. Slide the locknut end of the roller shaft into the right bearing.
4. Slide the left bearing over the shaft and into the hanger.
5. If only one roller assembly has been changed, use the remaining roller assembly as a reference and split the distance between the blades.
6. If both roller assemblies have been changed, continue the procedure.
7. Mount the single unit (hanger and roller assembly) in the machine by itself.
8. Push the roller assembly into the stub shaft as far as possible. Pull the hanger away from the stub shaft.
9. Move the right bearing toward the gear case as far as it will go. Mark this position.

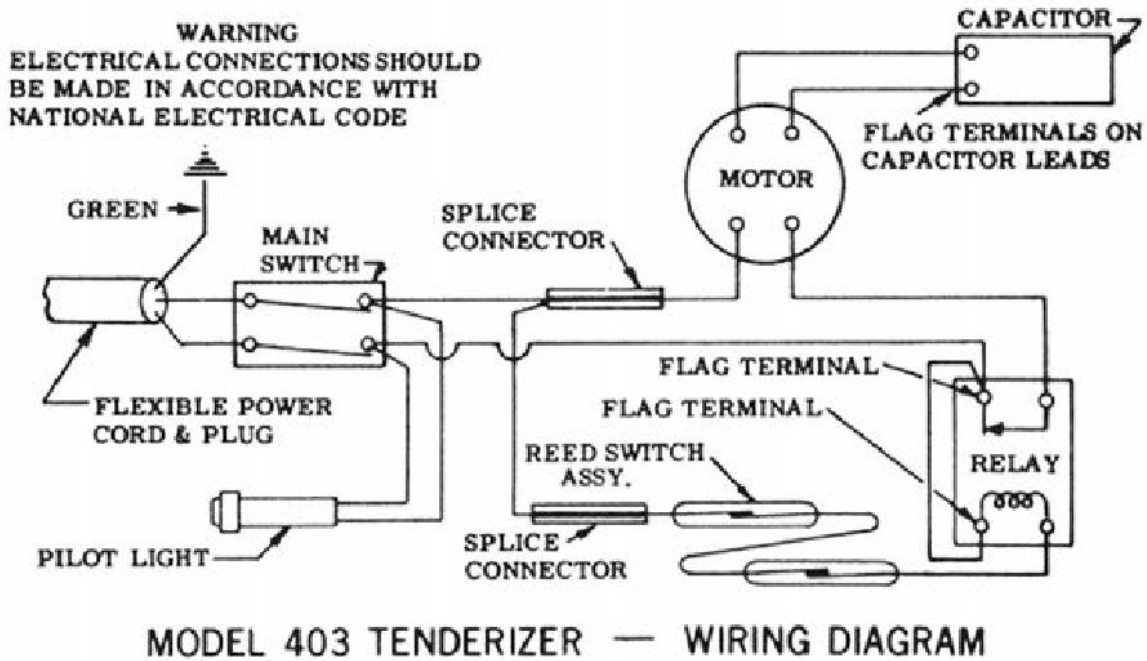
ELECTRICAL SYSTEM



WARNING

CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL TESTS OR MEASUREMENTS WHILE POWER IS APPLIED TO THE MACHINE. EXERCISE EXTREME CAUTION AT ALL TIMES. IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER, ATTACH TEST EQUIPMENT AND REAPPLY POWER TO TEST".

The electrical system of the 403 Tenderizer consists of an "On-Off" switch, relay, motor and capacitor, reed switch assembly and a pilot light, See .



31516

Fig. 16

"ON-OFF" SWITCH

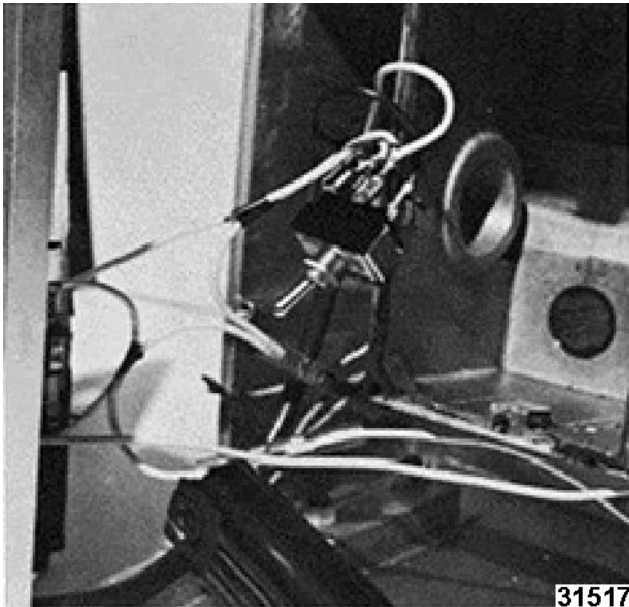


Fig. 18



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures. There may be multiple circuits. Be sure all circuits are disconnected.

The "On-Off" switch controls the flow of current to the machine. It is located on the under side of the gear case and is operated from the front of the machine.

1. No repair is possible with this switch. Test it with a probe light or ohmmeter. If it is not operating properly, replace it.

RELAY

See (Fig. 19 or Fig. 20).

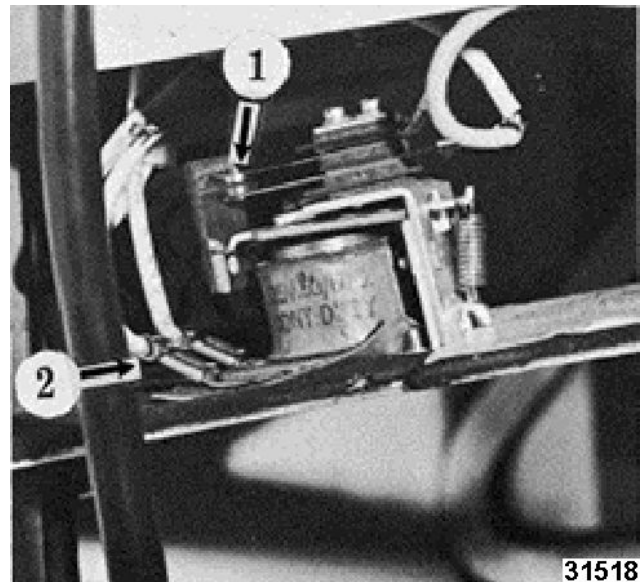
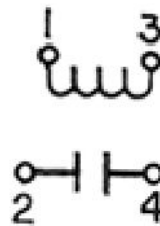


Fig. 19



31519

Fig. 20



⚠ WARNING

Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

This relay acts as a safety switch, breaking the circuit to the motor when the safety interlock system (reed switch) is opened. It is held by two screws to the bottom of the electrical cover.

1. Testing the relay.
 - A. Remove the transparent guard and lift-out unit.

- B. Tape the breather hole on the top of the gear case. With the motor housing in place, invert the machine.
 - C. Remove the screws holding the electrical cover to the bottom of the gear case and the screws holding the capacitor to the cover. Retighten the screws holding the gear cover in position to prevent loss of oil.
 - D. Test for contacts being closed all the time.
 - 1) Remove the wires from the contacts of the relay.
 - 2) Connect the ohmmeter across the contacts of the relay. The meter should indicate open. If the meter indicates other than open replace the relay.
 - E. Test for open contacts or open coil.
 - 1) Reconnect leads disconnected in step A.(5).
 - 2) Stand the machine right side up and replace the transparent guard.
 - 3) Insure the "On-Off" switch, splice connectors and reed switch assembly are functional.
 - 4) Set your meter on the appropriate range to read 200VAC and connect as shown in (Fig. 21). Connect one lead (1, Fig. 21) to "On-Off" switch terminal where splice wire connects and the other meter lead (2, Fig. 21) to the relay contacts where the motor lead connects.
- b. If meter did not read 110VAC, see step f.
 - 6) Turn the machine off. Reattach the meter leads to the coil of the relay. Turn the machine on. If 110VAC is present, replace the relay.
2. Replacing the relay.
 - A. Remove transparent guard.
 - B. Remove motor housing assembly.

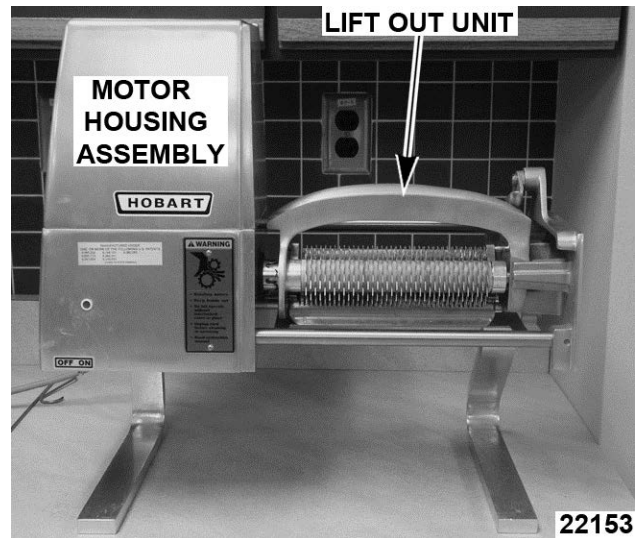


Fig. 22

- C. Remove lift-out unit.
- D. Remove oil dipstick, and tape over hole.
- E. Reinstall motor housing assembly.
- F. Lay unit on its back, and remove bottom cover.
 - 1) Remove RTV around leg.

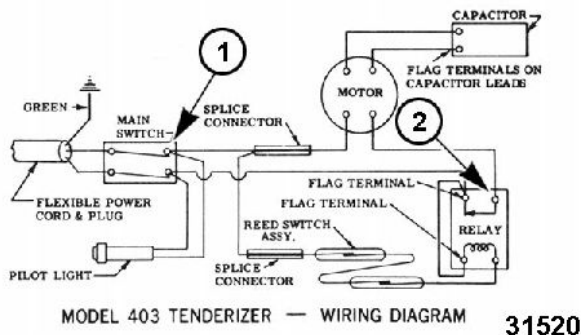


Fig. 21

- 5) Plug in the machine. Operate the "On-Off" switch. When the switch is in the "On" position your meter should read 110VAC.
 - a. If meter reads 110VAC, the relay is functioning properly.

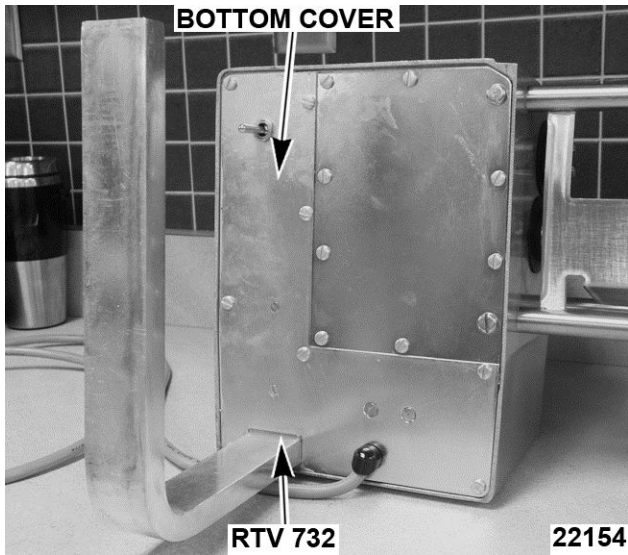


Fig. 23

- G. Remove screw securing ground wire from inside of gear case assembly.
- H. Disconnect pilot light wires from toggle switch.
- I. Remove capacitor from bracket.

NOTE: Dissipate capacitor charge before handling.

- J. Label relay wires by terminal number.
 - 1) Remove relay wires.
- K. Remove relay.
- L. Line up replacement sealed relay with previous holes, then rotate just enough to drill a new hole.
 - 1) Mark new hole position.

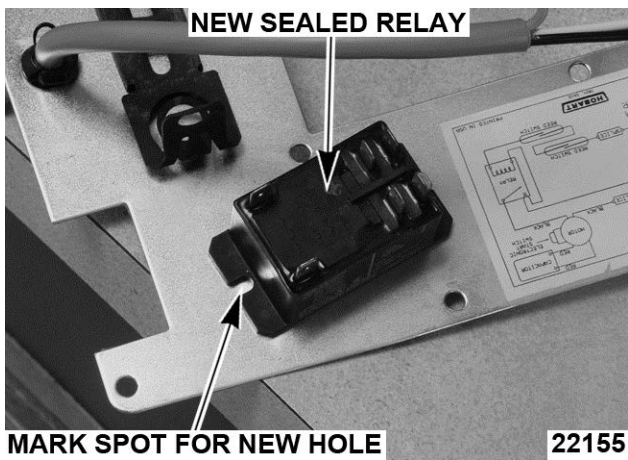


Fig. 24

CAUTION

Protect food preparation area from metal filings while drilling.

- M. Drill hole to 7/32".
- N. Countersink hole from outside of bottom cover with a larger diameter bit.

NOTE: 3/8" bit recommended; countersink allows screw heads to be flush with bottom cover. Be careful to not drill all the way through bottom cover.

- O. Connect wires to relay.

Old Relay Terminal Number	New Relay Terminal Number
1	1
3	0
2	2
4	4

- P. Reverse procedure to install.
- Q. Seal electrical cover around leg, and fill old screw hole with RTV 732.
- R. Remove tape and reinstall dipstick.
- S. Check for proper operation.

CAPACITOR



Fig. 25



⚠ WARNING

**TO AVOID ELECTRICAL SHOCK
UNPLUG UNIT BEFORE SERVICING.**

The motor capacitor is mounted in a metal bracket with spring clips. The metal bracket is mounted on the electrical cover by two screws.

⚠ WARNING

**ALWAYS DISCHARGE THE CAPACITOR BEFORE
DISCONNECTING THE LEADS.**

1. Check the capacitor by substituting a known good capacitor in its place or disconnect the leads and check with an ohmmeter as follows:
2. Analog. (Model 630H or 60H).
 - A. Set the ohmmeter on the RX1000 range.
 - B. While watching the meter, probe the two capacitor terminals with the meter leads.
 - C. If the capacitor is good, the meter indicator should deflect rapidly at first then slowly return.
 - D. If the capacitor is shorted, the meter indicator will deflect and remain in that position.
 - E. If the capacitor is open, the meter indicator will not deflect at all.
3. Digital. (Model 3400H or equivalent).
 - A. Set the meter on the RX1000 range. The meter will display the numerical value (1).
 - B. While watching the meter, probe the two capacitor terminals with the meter leads.
 - C. If the capacitor is good, the meter indicator will start at a low ohm reading and increase to the limit of the setting.
 - D. If the capacitor is shorted, the meter indicator will read all zero's.
 - E. If the capacitor is open, the meter indicator will not change, and display the numerical value (1).

REED SWITCH ASSEMBLY

The reed switch assembly, together with the two activating magnets (on the motor housing and the transparent guard) provide the safety interlock system.



⚠ WARNING

Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

Either reed switch is activated when a magnet is positioned near the loop of the switch. These are normally open switches which are closed by a magnetic field. Both switches must be activated to close the circuit.

1. Testing.
 - A. Remove the electrical cover by following the procedure in ELECTRICAL AND GEAR CASE COVERS.
 - B. Disconnect the lead of the reed switch assembly from the relay.
 - C. During testing, do not change the shape of the wires of the reed switch. This shape is necessary for proper activation by the magnets.

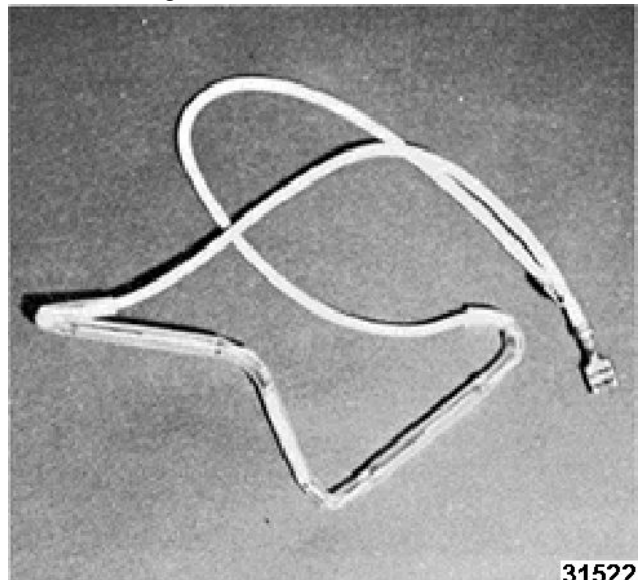


Fig. 26

First Generation Reed Switch Assembly

- D. Install the covers.
- E. Connect the ohmmeter in parallel with reed switch assembly leads.

- F. Meter should indicate continuity.
- 1) If no continuity, place known good magnets in position where switches should close. If switches close, replace inoperative magnet. If switches do not close, replace reed switch assembly.
- G. Lift the transparent guard. Meter should indicate infinity.
- 1) If it does not indicate infinity, replace reed switch assembly.

NOTE: When replacing this assembly, position the switch assembly and clips over their screws in the gear case. Be sure the loop of the upper switch (Fig. 26) is in contact with the base of the soft iron base of the housing mounting stud. Do not use force in positioning the switch assembly as the glass enclosures may break. Secure the clips with the nuts.

- H. Remove the motor housing and install the transparent guard. The meter should indicate infinity.
- 1) If it does not indicate infinity, replace the reed switch assembly.

NOTE: When replacing this assembly, position the switch assembly and clips over their screws in the gear case. Be sure the loop of the upper switch (Fig. 26) is in contact with the base of the soft iron base of the housing mounting stud. Do not use force in positioning the switch assembly as the glass enclosures may break. Secure the clips with the nuts.

2. Replacing.

- A. Install new reed switch assembly using one bracket (1, Fig. 27) and one p-clamp (2, Fig. 27) in the orientation shown. Connect switch wires in series as indicated on wire labels.

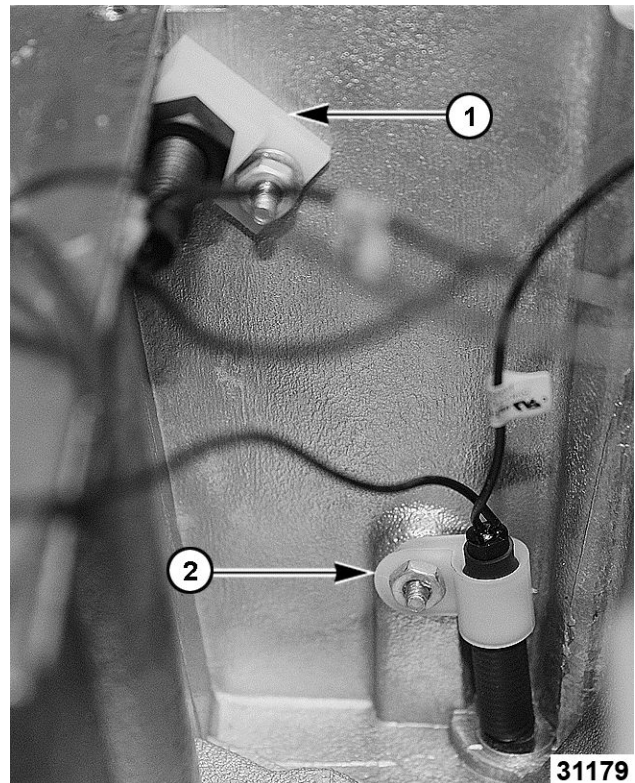


Fig. 27

Current Generation Reed Switch Assembly

MOTOR



⚠ WARNING

TO AVOID ELECTRICAL SHOCK UNPLUG UNIT BEFORE SERVICING.

INTRODUCTION

The 403 Tenderizer motor is 1/2 H.P., 1725 R.P.M., 115 volt, 60 cycle, single phase, continuous rating. It utilizes a capacitor and starting switch. The worm is cut on the rotor shaft.

This motor is insulated for hot running. It is perfectly normal for the motor shell to become too hot to hold your hand on in continuous operation. The gear case also may become quite uncomfortably warm around the area containing the gears under continuous service.

The following service procedures for disassembly, tests and reassembly should be followed only to the point necessary for the particular problem being worked on.

DISASSEMBLY

1. Remove the transparent guard.

- Remove the motor housing.

NOTE: Steps (3) and (4) are not necessary unless the stator is to be removed.

- Tape the breather hole on the gear case.
- Replace the motor housing, invert the machine, remove the gear cover and drain the oil.

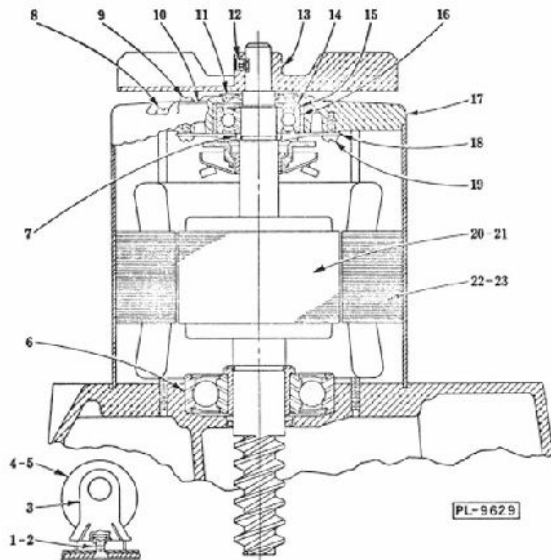


Fig. 28

- Stand the machine on its legs and remove the motor housing.
- Remove the retainer clip and loosen the set screw in the ventilating fan. On some machines, there may be no set screw. The fan is held in place by the retaining ring, key and a "tolerance ring". To remove the fan, use long screwdrivers to pry up under the fan to avoid excessively bending the edges of the fan. On these machines, it would be well to add a set screw on reassembly to avoid a loose rattling fan.
- Remove the fan and key.
- Mark the bearing bracket and stator for later reassembly.
- With a 1/4" socket, remove the four long screws holding the top bearing bracket.
- Loosen the top bearing bracket with a screwdriver in the slots provided and lift up the bearing bracket.
- Disconnect the two leads from the stationary part of the starting switch and remove the bracket. Note the manner of positioning the leads. Reassembly in the same manner will avoid deforming the start switch.

- Lay the machine on its back (Fig. 29).

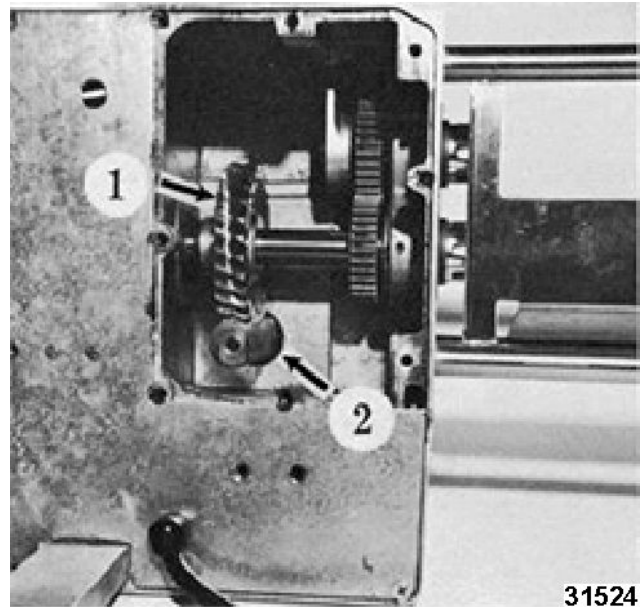


Fig. 29

- Draw the rotor and worm out of the top of the stator while rotating the large worm gear in the gear case. Care should be taken not to damage the rubber oil seal around the rotor shaft at the top of the gear case.

If removal is difficult, pull up on the rotor while rapping sharply down on successive corners of the gear case with a soft hammer, all the time twisting the rotor back and forth.

- Remove both ball bearings from the rotor shaft with a bearing puller.
- The rotating part of the starting switch may be removed with a bearing puller, but it will be damaged beyond use in the process of removal. Before removal, make a scratch mark on the rotor shaft at the base of the collar of the switch (side toward the rotor). This will indicate proper position for switch during reassembly.
- With pencil or chalk, mark the stator housing and gear case for later reassembly.
- Disconnect the motor leads.
- Scrape out the RTV seal around the base of the stator. Tapping the stator with a plastic mallet, lift the stator from the shallow recess in the gear case (Fig. 30).



Fig. 30

TESTS AND CHECKS

1. Starting switch.
 - A. Check the contacts on the stationary part of the switch. If they are burned, replace the stationary part of the switch.
 - B. The copper leaf spring with the contact button should be in place under the retainer (Fig. 31). If the retainer is missing, replace the stationary part of the switch.

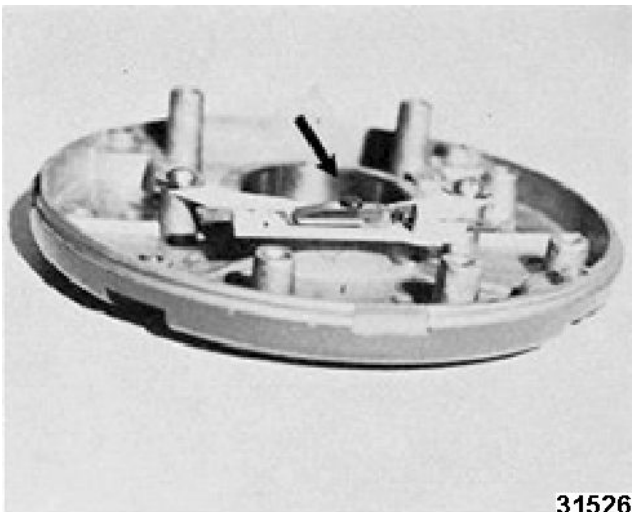


Fig. 31

- C. Check the springs and weights on the rotating part of the switch. If the springs are not located properly or any of the weights are missing, replace the rotating part of the switch.

2. Bearings.

Check both the large shielded and the small sealed bearings by rotating them. If they show any sign of roughness or corrosion, replace them.

3. Rotor.

A visual check of the rotor, shaft and worm should be made. If any of the components are damaged, the entire rotor assembly must be replaced.

4. Stator.

- A. Test the stator (while mounted in the machine) with an ohmmeter set on the RXI range.
- B. Connect one of the start winding leads to an ohmmeter lead.
- C. Touch the remaining meter lead to the other lead from the start winding.
- D. If the meter indicates a resistance, the start windings are good.
- E. With one meter lead still connected to the start winding, touch the other meter lead to a main coil lead. Continuity should be indicated. Check each lead in this manner.
- F. If there is continuity through all leads, the stator is good.
- G. If there is no continuity or "0" resistance (short) in any of the above tests, replace the stator.

REASSEMBLY

1. Set the stator in the recess of the gear case, align with the marks and seal the base with RTV.
2. If the rotating part of the starting switch has been removed, use a thin walled driving sleeve to set the switch on the shaft. The driving sleeve should be of such a size as to touch only the collar of the switch.
3. Drive the switch onto the shaft until the collar of the switch reaches the scratch mark on the rotor shaft.

NOTE: Care should be taken during this procedure so that the original location of the starting switch is maintained accurately.

4. Insert the rubber oil seal into the top of the gear case (snap fit) if it was damaged and is being replaced.

5. Insert the rotor (worm first) into the stator. Rotate the worm gear to engage the worm and seat the large bearing in the bearing recess. The bearing is a very snug fit in the gear case. Some light tapping may be necessary but no pounding should be used. If necessary, inspect the bearing seat for burrs or gall marks and polish them out. Care should be taken not to damage the rubber oil seal.
6. Place the spring and washer in the bearing recess of the upper bearing bracket.
7. Install the stationary part of the starting switch on the bracket. Be sure that the copper leaf spring is in place under the retainer.
8. Position the bearing bracket over the stator housing and connect the leads to the spade terminals on the starting switch.
9. Using the scratch marks for alignment, seat the bearing bracket in position.
10. Insert and tighten the four long screws that hold the bearing bracket in position.
11. Replace the ventilating fan, tighten the set screw and install the retaining ring.
12. Replace the motor housing and stand the machine upside down.
13. Add 28 oz. of Gearep #140 cylinder oil to the gear case and tighten down the gear case cover over the gear case. No sealant is necessary since the gasket adequately seals the gear case.
14. Stand the machine on its legs, remove the tape over the breather hole and install the motor housing and transparent guard.

DRIVE UNIT

The drive unit consists of the front and back stub shafts, two 32T gears, a worm gear, two bearings and two bearing assemblies. It is located in the gear case and is bathed in oil.

FRONT STUB SHAFT

See (1, Fig. 32).

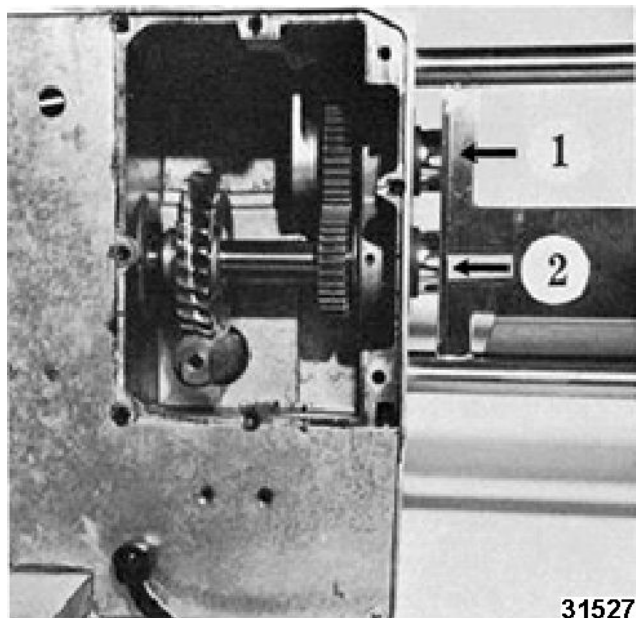


Fig. 32



WARNING

**TO AVOID ELECTRICAL SHOCK
UNPLUG UNIT BEFORE SERVICING.**

1. Disassembly.
 - A. Remove the transparent guard.
 - B. Remove the motor housing.
 - C. Tape the breather hole on the gear case.
 - D. Replace the motor housing, invert the machine, remove the gear cover and drain the oil.
 - E. Remove the rubber face seal.
 - F. Remove set screw from the bearing assembly bracket.
 - G. Position jack screw (Fig. 33) with metal plate against the gear case wall.

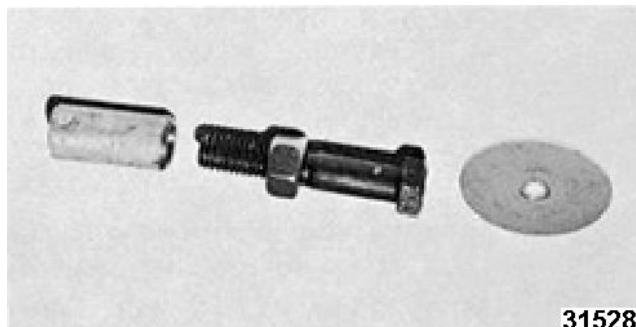


Fig. 33

- H. Use a wrench on the center nut (Fig. 34) and jack the shaft and bearing assembly out of the gear case, leaving the 32T gear to be removed directly from the gear case.

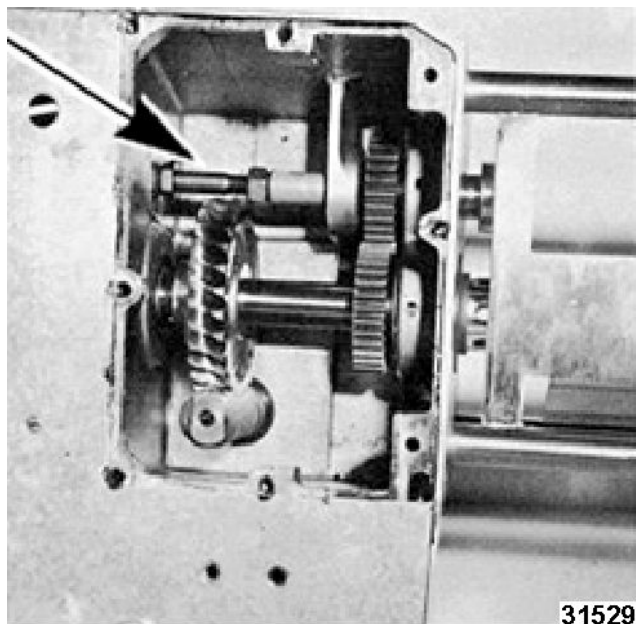


Fig. 34

- I. Remove the Woodruff key from the stub shaft and slide the bearing assembly and washer off the shaft.
- J. In reassembling, be sure to position one fiber washer on each side of the 32T gear.

BACK STUB SHAFT

See (2, Fig. 32).



WARNING

**TO AVOID ELECTRICAL SHOCK
UNPLUG UNIT BEFORE SERVICING.**

A worm gear (meshing with the worm of the motor) and a 32T gear (providing the drive to the front stub shaft) are mounted on the back stub shaft. It rides on a ball bearing and a large bearing assembly (knife end).

1. Disassembly.
 - A. Follow the procedure as outlined in the section "Electrical System" 5A. (1) to 5A. (13) for opening the gear case and removing the motor.
 - B. Remove the rubber face seal.
 - C. Remove the set screw from the bearing assembly bracket.
 - D. Remove the retaining ring from the stub shaft. (Snap off with a screwdriver).
 - E. With the blade of a screwdriver, move the 32T gear to the left until it is clear of the Woodruff key. Remove the key.
 - F. Remove the adjusting bolt and locknut from the rear bearing bracket and replace with a 1/4" -20 x 1-1/4" hex head bolt.
 - G. Use a wrench to tighten this bolt (Fig. 35), jacking the stub shaft to the right.

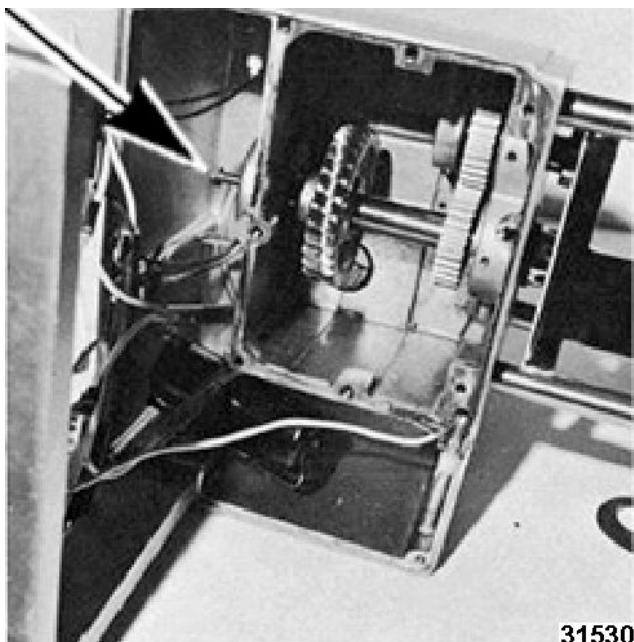


Fig. 35

- H. Remove the ball bearing and bearing pusher when they clear the rear bearing bracket.
- I. Use successively larger blocks between the 32T gear and the worm gear (Fig. 36) until the worm gear is clear of the Woodruff key. Remove the key and worm gear from the shaft. Remove the 32T gear.

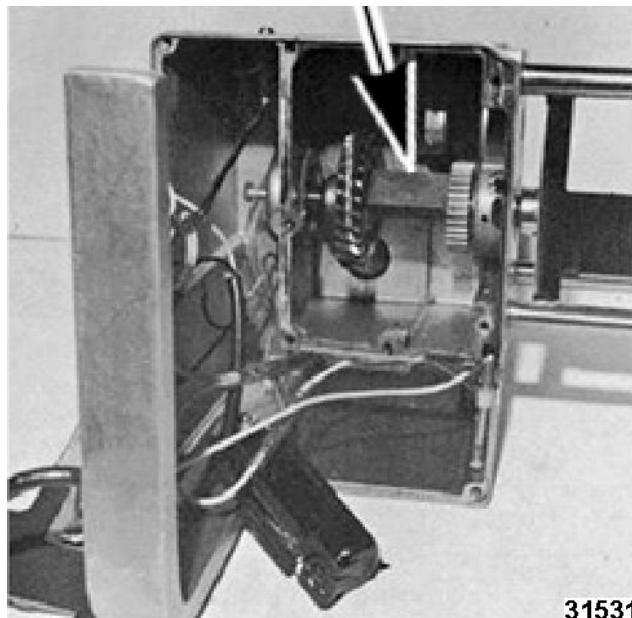


Fig. 36

- J. Alternate method of removing worm gear.
 - 1) Use a metal block between the end of the stub shaft and the bearing bracket as a bumper.
 - 2) Use a flat punch and tap the worm gear free of the Woodruff key (Fig. 37). Remove the key and worm gear from the shaft.

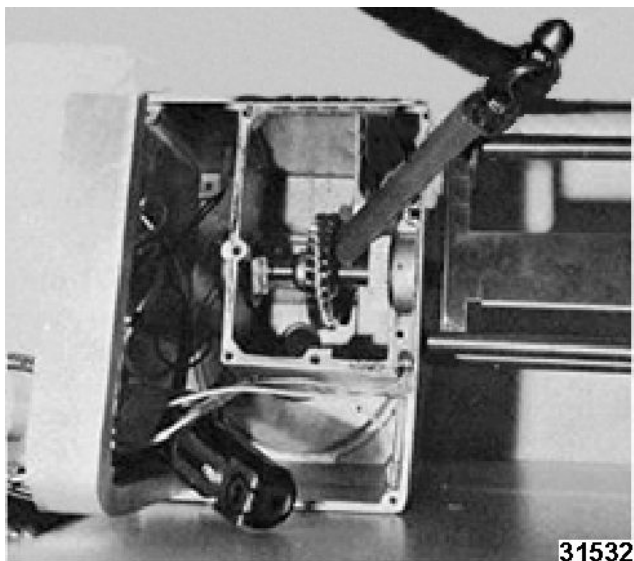


Fig. 37

- 3) Remove the 32T gear.
- K. Before sliding the shaft out of the bearing assembly, protect the oil seal (built into the bearing assembly) as follows:
- 1) Slide the shaft out of the bearing assembly until the recess for the retaining ring reaches the oil seal.
 - 2) Wrap the shaft with a piece of paper (Fig. 38) which slightly overlaps.

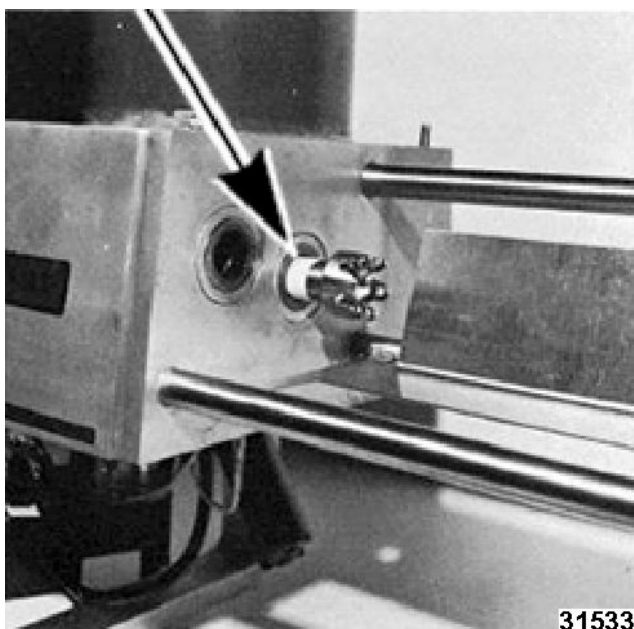


Fig. 38

- 3) Slide the shaft with the paper wrapping back through the bearing assembly until the paper wrap has gone in about 1/2" to 3/4".

- 4) Slide the shaft out through the paper wrap. Remove the paper from the bearing assembly.

- L. Use the jack screw (Fig. 33) and metal blocks to press the bearing assembly out of the bearing bracket.

SERVICE

1. Replacements.

To replace any component of the drive unit follow the disassembly procedure as far as necessary, make the replacement, then follow the procedure for reassembly.

2. Adjustments.

- A. Relative position of the worm gear and worm are critical for noise and wear. The worm gear is positioned by means of the adjusting bolt against the bearing pusher which, in turn, presses the ball bearing against the worm gear. Normal thrust keeps the worm gear pressed to the left (against the ball bearing). Back the adjusting bolt until there is no pressure against the worm gear. Push the worm gear to the left and to the right, observing the play available. Adjust the bolt until approximately 2/3 of this play is taken up in moving the worm gear to the right.
- B. Set screws holding the bearing assemblies must be tight so no movement is possible.

3. Repair.

- A. While pressing out the bearing and the bearing pusher or while pressing the worm gear from the stub shaft, the threads in the aluminum casting may be pulled out by the screw. If this happens, use the alternate method for removal of the worm gear and stub shaft.
 - 1) Remove 1/4" bolt.
 - 2) Clean the hole with a 17/64" bit or a small rat tail file.
 - 3) Thread the hole from the shaft side with a special HELI-COIL tap for a 1/4"-20 screw.
 - 4) Insert HELI-COIL insert from the shaft side until flush with the surface of the bearing recess.
 - 5) Replace adjusting bolt and locknut.

- B. While removing the bearing and bearing pusher the screw may break through the base of the bearing pusher.
- 1) Use alternate method for removal of the worm gear and stub shaft.
 - 2) With Snap-On hammer puller #CJ93B pull the bearing from the recess using Snap-On Tool #CJ93-4.
 - 3) Using the same tool, carefully pull the bearing pusher out of the recess by engaging the jaws in the hole pushed through its base.
 - 4) Using very fine emery paper, smooth the bore in the bearing bracket. Clean thoroughly.
- D. Replace Woodruff key in shaft.
- E. Use a thin film of oil to hold second fiber washer to 32T gear (on side toward needle bearing).
- F. Position 32T gear next to needle bearing.
- G. Insert bearing assembly and shaft through the bearing bracket. Slide the shaft through the 32T gear into the needle bearing, engaging the Woodruff key in the keyway of the gear.
- H. Replace set screw in bearing assembly bracket.
- I. Replace rubber face seal.
- J. Follow procedure in section, "Electrical System", 5.C. (6) to 5.C. (15), for reassembly of motor and refilling the gear case.

REASSEMBLY

1. Back stub shaft.
 - A. Lightly oil all metal parts for ease in reassembly.
 - B. Press (with the fingers) the bearing assembly, with the "O" ring in place, into the bearing bracket. The oil seal should be toward the knife side.
 - C. Slip the bearing pusher and ball bearing into the rear bearing bracket.
 - D. Slide the stub shaft through the bearing assembly into the gear case.
 - E. Slide a fiber washer and the 32T gear onto the shaft.
 - F. Insert the Woodruff key (for the worm gear) into the shaft, then slide on the worm gear with the flat side toward the 32T gear.
 - G. Seat the shaft in the roller bearing and replace the Woodruff key for the 32T gear.
 - H. Engage this gear on the key and replace the retaining ring.
 - I. Replace the set screw and lock the bearing assembly in position.
2. Front stub shaft.
 - A. Lightly oil all metal parts for ease in reassembly.
 - B. Slide the front stub shaft through the bearing assembly (oil seal toward knife side). "O" ring should be in place on bearing assembly.
 - C. Position fiber washer on stub shaft.

TROUBLESHOOTING

TROUBLESHOOTING CHART

TROUBLESHOOTING CHART		
Condition	Possible Cause	Remedy
Motor runs in start windings.	<ol style="list-style-type: none"> 1. Copper leaf spring on stationary part of starting switch not positioned under retainer. 2. If the rotating part of the starting switch has been replaced, it has not been placed far enough onto the shaft. This prevents contacts of stationary part from opening. 3. Contacts on stationary part of starting switch closed all the time. 	<ol style="list-style-type: none"> 1. Reposition copper leaf spring under retainer. 2. Reposition rotating part of starting switch closer to scribe mark on rotor shaft. Scribe mark should be made before removal of the old rotating part of starting switch. 3. Test and replace if necessary.
Meat product coming from machine mashed rather than cut clear.	Blades are dull.	Replace blades. Refer to Remedy 16.0.

TROUBLESHOOTING CHART		
Condition	Possible Cause	Remedy
Machine will not start.	<ol style="list-style-type: none"> 1. 3.0 Plug not in receptacle. 2. Magnet in motor housing is missing. 3. Magnet in motor housing not positioned properly around stud (Located too high in housing). Does not actuate reed switch. 4. Magnet chipped and reduced in size. Will not activate reed switch. 5. Motor housing does not remain in proper position on top of gear case. One or both studs are broken. 6. Transparent guard warped so that magnet does not actuate reed switch. 7. Magnet missing from transparent guard. 8. Reed switch inoperative. 9. "On-Off" switch inoperative. 10. Relay inoperative. 11. Capacitor is inoperative. 12. Stator of motor shorted or open. 13. Shorted wire or open connection. 14. Rotating part of starting switch inoperative. 	<ol style="list-style-type: none"> 1. Put plug in proper receptacle. 2. Replace magnet. 3. Reposition magnet in motor housing. 4. Replace magnet. 5. Replace studs as necessary. 6. Replace transparent guard. 7. Replace transparent guard. 8. Check each reed switch, then check the entire harness with both switches activated. Replace if necessary. 9. Test and replace if necessary. 10. Test and replace if necessary. 11. Test and replace if necessary. 12. Test and replace if necessary. 13. Test and replace wire or harness. Make proper connection. 14. Test and replace if necessary.
Noisy ventiating fan.	Loose set screw or, in older models, no set screw.	New models - lock set screw against the shaft. Older models - drill hole in fan, tap and install set screw.
Entire unit vibrating.	Legs bent.	Straighten or replace legs.
Motor housing vibrating against gear case.	<ol style="list-style-type: none"> 1. Rubber tape strips on inside of motor housing worn. 2. Motor housing sliding up and down on studs. 	<ol style="list-style-type: none"> 1. Replace rubber strips. 2. With the blade of a screwdriver, gently spread the studs.
Gear case leaking.	Gasket out of position or damaged.	Reposition or replace gasket. Refill with oil.
Oil leaking around tie bar.	No positive seal around tie bar where it enters gear case.	Use LOCTITE "Stud Lock" on tie bar gear case.

TROUBLESHOOTING CHART		
Condition	Possible Cause	Remedy
Machine runs with either cover off.	<ol style="list-style-type: none"> 1. Reed switch not operating properly. One or both reed switches are defective. 2. Contacts on relay defective. 	<ol style="list-style-type: none"> 1. Test and replace if necessary. 2. Test and replace if necessary.
Knives separating or blade shaft separating from stub shaft.	<ol style="list-style-type: none"> 1. Roller assembly not in proper adjust- ment. Positioned too far from stub shaft. 2. Set screws in support assembly have become loose allowing support assembly to drift. 	<ol style="list-style-type: none"> 1. Readjust both roller assemblies. <u>Follow roller adjustment procedure.</u> 2. Readjust assembly and tighten set screws.
Support assembly damaged.	Machine dropped or damaged in shipping.	Replace support assembly.
Tie bars bent or out of alignment.	Tie bars stressed by unusual pressure on right leg.	Remove and replace bent tie bar.
Leg is bent.	Machine dropped or damaged in shipping.	Remove leg from machine and straighten or replace.
Water in electrical section.	<ol style="list-style-type: none"> 1. Gasket material slipped or damaged. 2. Pilot Light not sealed to Gear Case. 	<ol style="list-style-type: none"> 1. Reposition or replace gasket. 2. Clean and apply bead of RTV around pilot light.
Roller assembly does not turn easily in bear- ings.	<ol style="list-style-type: none"> 1. Bearings have not been lubricated after each washing. 2. Set screw on left bearing set so tight that the blade shaft cannot turn in the bearing. 	<ol style="list-style-type: none"> 1. Lubricate with 3 drops of mineral oil in each bearing after each washing. 2. Loosen the set screw so that the bearing is held in the proper position without binding the blade shaft.
Knives bent or twisted.	Metal object or bone dropped into machine.	Remove object. Remove and replace up to a combination of 6 blades and/ or spacers. Readjust roller assembly in hanger. If more than 6 are damaged, replace the entire roller assembly.
Hanger lock not seating properly Strikes the transparent guard or hangs loosely.	Hanger lock positioned incorrectly.	Lock is mounted on eccentric stud. With two screwdrivers, loosen screw, rotate, moving lock in or away as required.
Blades touching.	Roller assembly out of adjustment.	<u>Readjust roller assemblies .</u>
Noise from motor.	Rough or corroded bearings.	Replace both bearings.
Excessive gear noise.	Worm gear set too tight or too loose against worm.	Open gear case, determine amount of wear on worm gear. If gear shows moderate or no wear, .
Oil leaking from around stub shaft in bearing assembly.	Worn or damaged oil seal in bearing assembly.	Replace bearing assembly.

TECHNICAL SERVICE BULLETIN

NATIONAL SERVICE DEPARTMENT

TROY, OHIO 45374

403 TENDERIZER SHAFT SEAL LEAKS

To reduce oil leaks on the front and rear stub shafts, the bearing and seal assemblies have been re-designed.

A Service Kit #292678 has been developed to be used on machines with ML 23054 or 23055. Anytime you order a bearing assembly or thrust washer for either the front or rear stub shaft, you will be sent a service kit to convert both shafts to the new configuration as shown in Fig. 1. After conversion, the unit will be serviceable with the individual parts listed below.

Service Kit #292678 consists of:

PART NO.	DESCRIPTION	QTY.
SC-117-83	Set Screw	2
292675	Thrust Bearing	2
292681	Seal Assembly	2
292680	Bearing Assembly	2
WS-30-9	Washer	2

Machine with ML's 38578 and 38579 will have the new configuration.

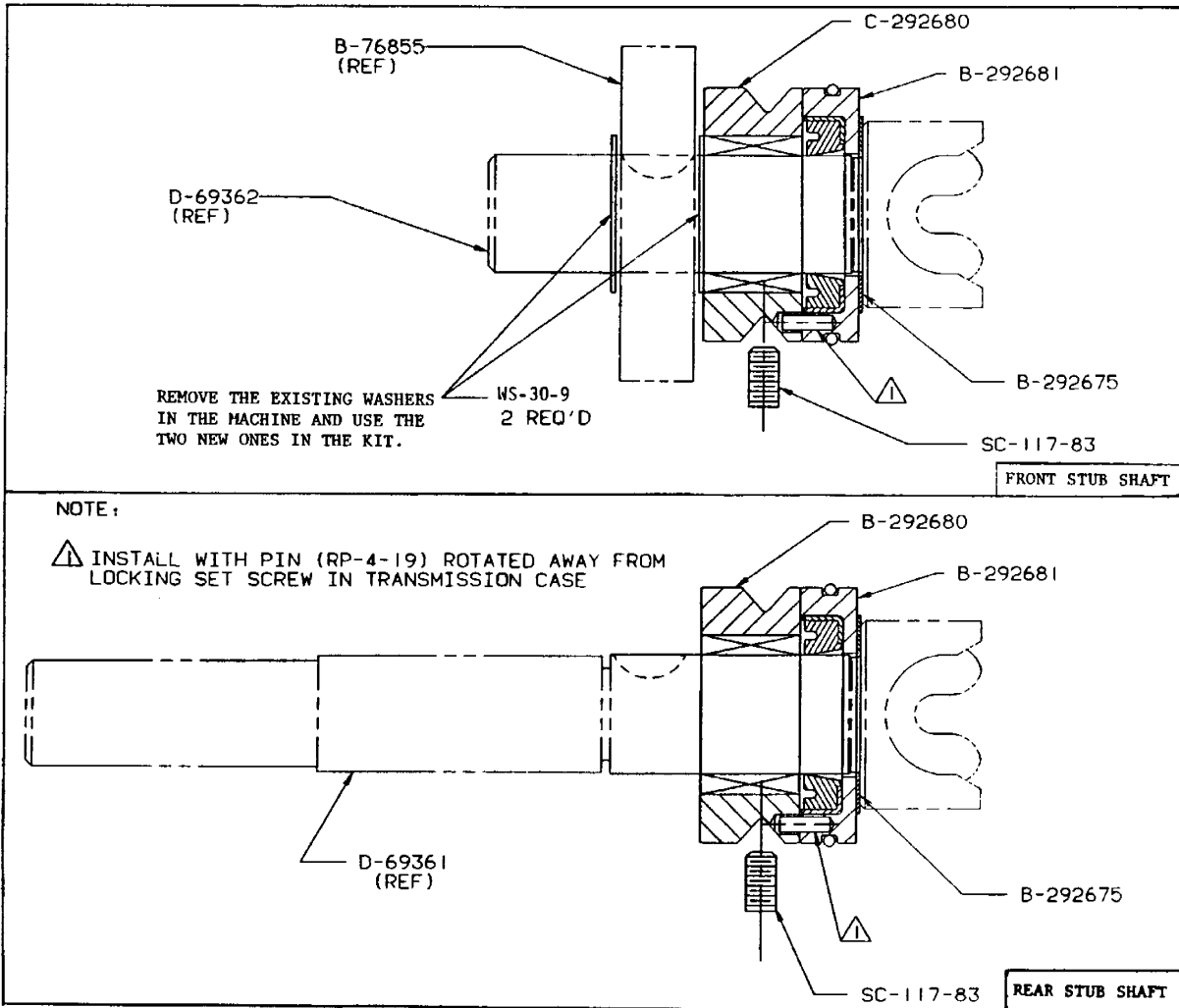


Fig. 1

TECHNICAL SERVICE BULLETIN

NATIONAL SERVICE DEPARTMENT

TROY, OHIO 45374

403 TENDERIZER LIFT-OUT UNITS INTERCHANGEABILITY

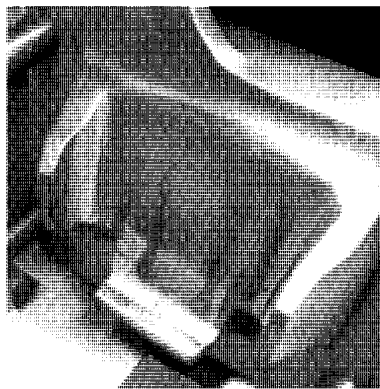
Purpose

Units produced before 1990 had problems with the complete interchangeability of lift-out assemblies. The following action will give you guide lines to follow if you have a lift-out unit not fitting properly.

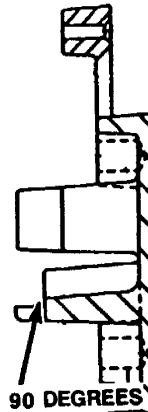
On units being produced today the tolerance on the lift out units and the support assembly are such; the lift-out units can be interchanged from unit to unit as an assembly. It is recommended you don't interchange front or rear hangers by themselves, they must be kept as a unit.

Action

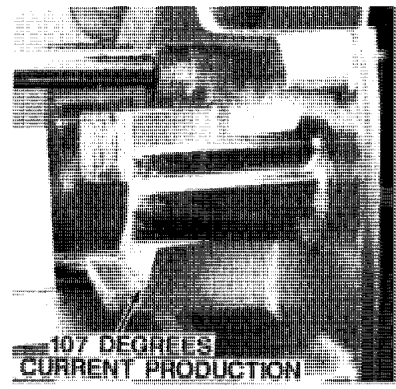
The following illustration shows the three styles of support assemblies and two styles of hangers you will find in the field. Picture (1) shows style with full support assembly. Picture (2) shows style with three arms with lower arm having a 90 degree angle. Picture (3) shows style with three arms with lower arm having a 107 degree angle. Picture (4) shows the two styles of hangers.



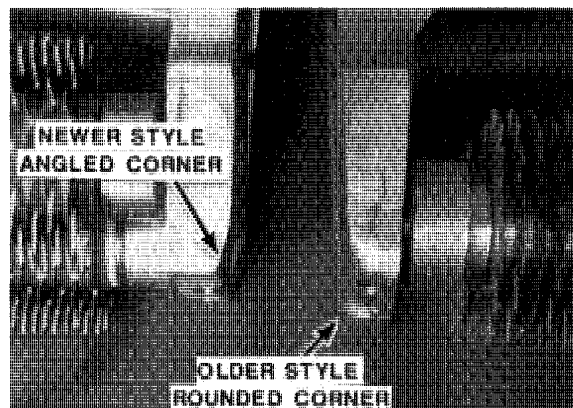
(1)



(2)

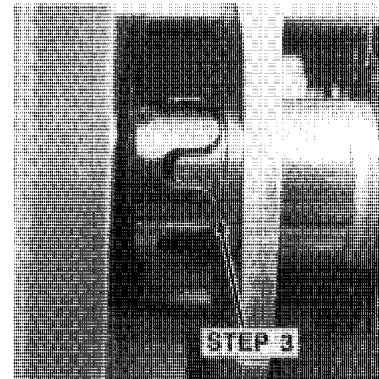
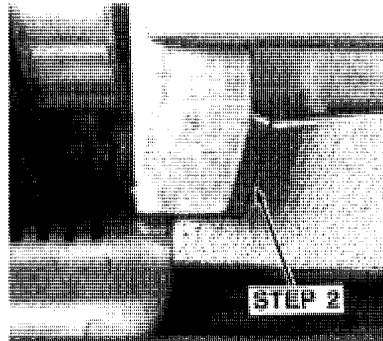
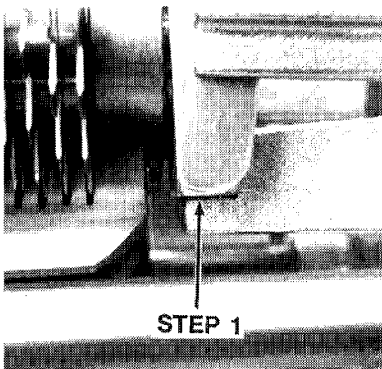


(3)



(4)

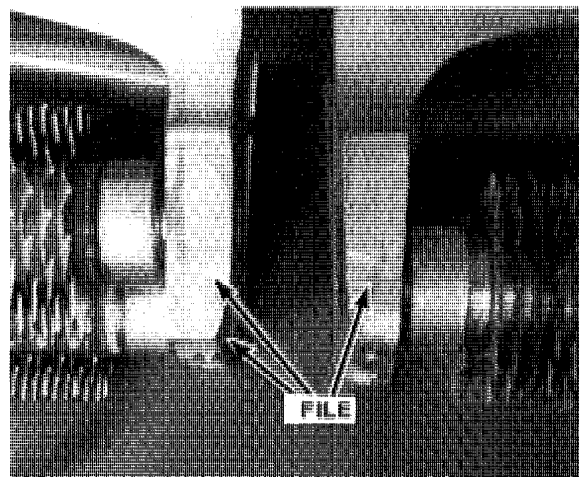
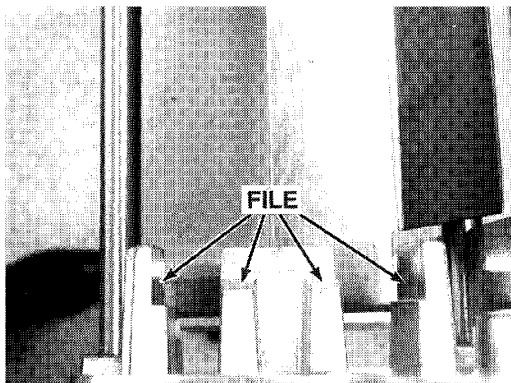
Check the following three steps to determine if lift-out assembly is correctly installed. (1) Lift out unit must sit on bottom flange. (2) Lift-out unit to be snug against the end. (3) Maximum clearance to be 30 thousand between hub and stub shaft.



If the lift-out unit does not fit as shown above check the following.

1. Be sure the Tie Bars are installed to the bottom of the recesses in the Gear Case and Support assembly. Check for tightness of Set Screws holding the Tie Bars.
2. If the Tie Bars and Support Assembly are installed correctly, adjust the hanger assemblies as outlined in the service manual.
3. If the hanger assembly still does not fit as shown in the above illustration, it may be necessary to file either the hanger assembly or the support assembly in one of the places shown below to have the hanger assembly fit correctly.

NOTE: Once you fit a hanger assembly to a unit, do not use the hanger assembly in another unit or try to use another hanger assembly in the unit you fitted the assembly to.



TECHNICAL SERVICE BULLETIN

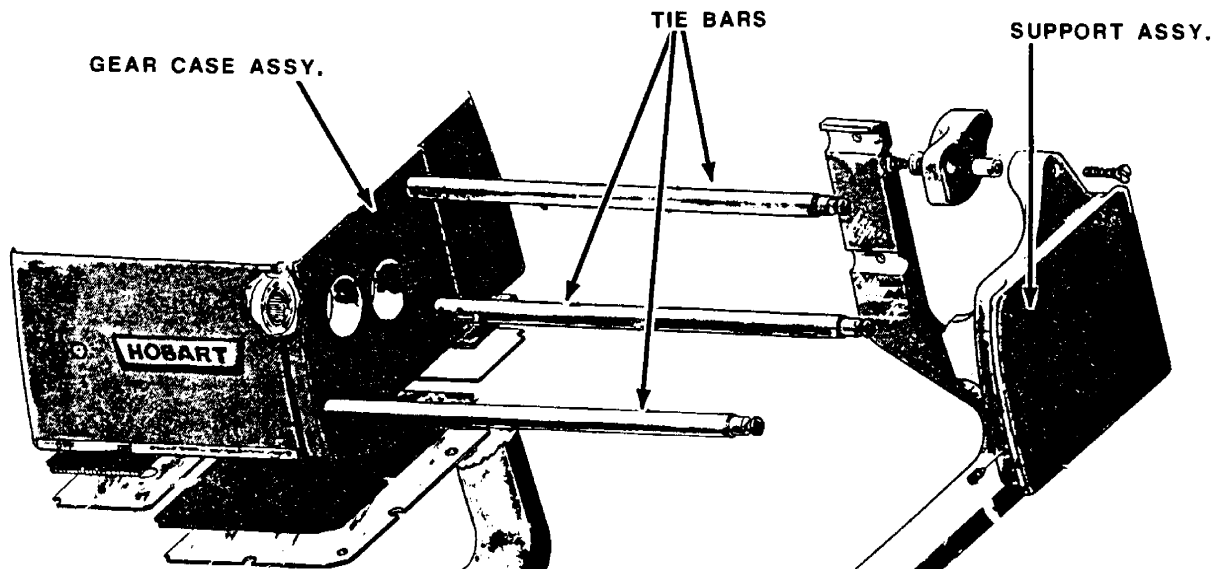
PRODUCT SERVICE DEPARTMENT

TROY, OH. 45374-0001

403 AND 403U - TIE BAR RETENTION ENHANCEMENT

Introduction

The gear case assembly and support assembly have been changed to accept larger tie bar retaining screws. This change provides better retention of the tie bars, reducing the potential for the bars to come loose. Model 403, Serial No. 56-1018-810 and above, and Model 403U Serial No. 56-1019-194 and above, are built using the larger set screws.



Parts Information

PART NO.	DESCRIPTION	REPLACEMENT PARTS THAT WILL BE SENT
435873-1 (old)	Gear Case Assembly (60 Hz.)	438584-1 Gear Case Assembly (60 Hz.) SC-116-87 qty. 3 Headless set screw 1/4-20 x 1/4" SC-119-57 qty. 2 Pan head machine screw 1/4-20 x 3/8"
292026-2 (old)	Support Assembly	438583-2 Support assembly SC-116-87 qty. 3 Headless set screw 1/4-20 x 1/4"

In order to enhance the tie bar retention on an older serial no. tenderizer, part no. SC-116-87, qty. 6 and part no. SC-119-57, qty. 2 should be ordered. The service instructions for the enhancement are on the next page.

Reference Material

Service Manual F-7285A (Rev. 7/84).

Special Tools

- Electric drill
 - No. 7 drill bit
 - 1/4-20 tap and wrench
 - Cutting oil
-

Service Instructions for Older Unit Enhancement

WARNING: UNPLUG UNIT BEFORE SERVICING.

1. Remove the tie bars.
 2. Remove the motor.
 3. Using a No. 7 drill bit, drill the three tapped holes for retaining the tie bars in the gear case assembly and the support assembly thru to the tie bar holes.
 - A. Remove the shavings from the holes.
 - B. Tap the holes using a 1/4-20 tap thru to the tie bar holes.
 - (1) Remove the shavings from the holes.
 - C. Check for any burrs in the tie bar holes and remove them.
 4. Reassemble the unit in reverse order using the 1/4-20 set screws in all the tie bar retaining holes and the pan head screws in the gear case cover retaining holes.
 5. Power unit and check for proper operation.
-

TECHNICAL SERVICE BULLETIN

PRODUCT SERVICE DEPARTMENT

TROY, OH. 45374-0001

403 TENDERIZER SEALED RELAY

Introduction

Moisture may get into the relay, shorting it out. A shorted relay will disable the tenderizer. To prevent this occurrence, a sealed relay is available. This watertight relay will be less susceptible to moisture damage.

Reference Material

- Model 403 Tenderizer Service Manual F7285A
- Tenderizers Parts Catalog F43057

Parts Information

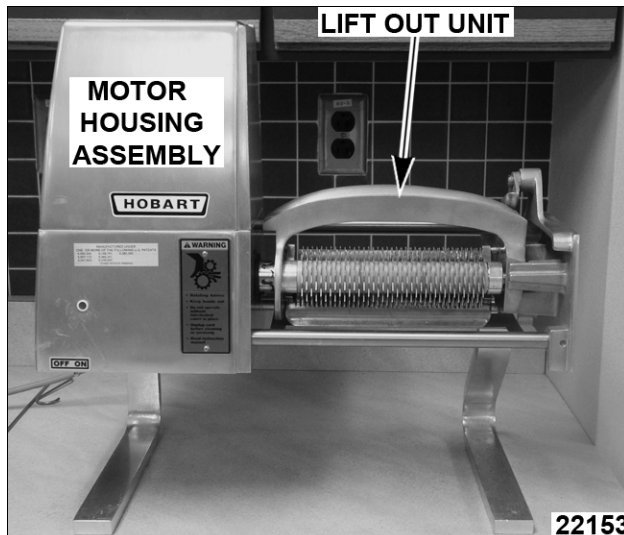
Relay, Part No. 087714-042-1 replaces Relay, Part No. 087714-035-1. Please make appropriate correction to parts catalog.

Service Procedure

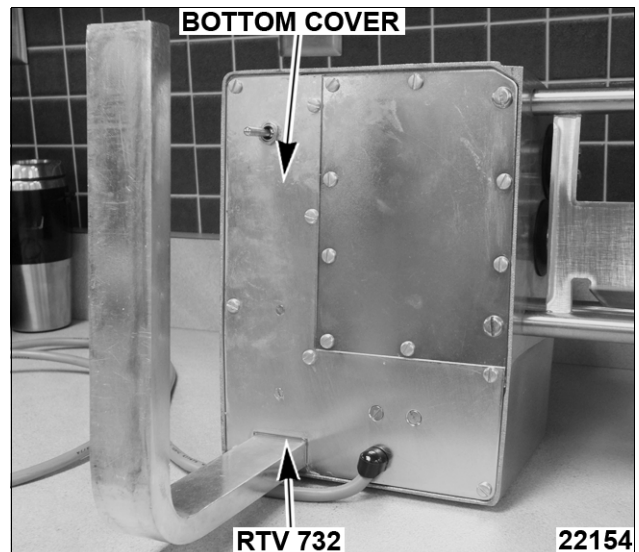


⚠ WARNING Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove transparent guard.
2. Remove motor housing assembly.



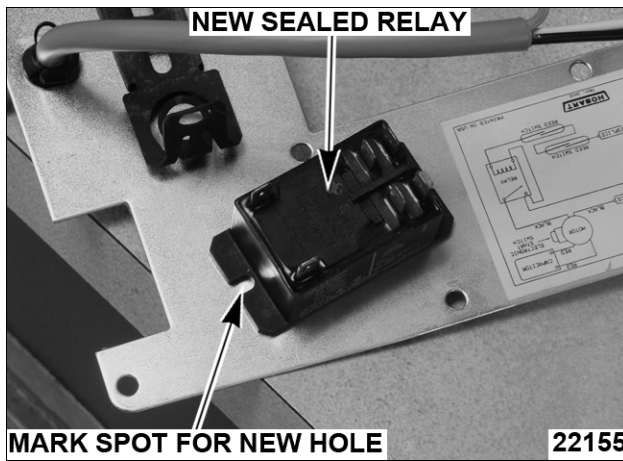
3. Remove lift out unit.
4. Remove oil dipstick and tape over hole.
5. Reinstall motor housing assembly.
6. Lay unit on its back, and remove bottom cover.
 - A. Remove RTV around leg.



7. Remove screw securing ground wire from inside of gear case assembly.
8. Disconnect pilot light wires from toggle switch.
9. Remove capacitor from bracket.

NOTE: Dissipate capacitor charge before handling.

10. Label relay wires by terminal number.
 - A. Remove relay wires.
11. Remove relay.
12. Line up replacement sealed relay with previous holes, then rotate just enough to drill a new hole.
 - A. Mark new hole position.



13. Drill hole to 7/32".
14. Countersink hole from outside of bottom cover with a larger diameter bit.

NOTE: 3/8" bit recommended; countersink allows screw heads to be flush with bottom cover. Be careful to not drill all the way thru bottom cover.

15. Connect wires to relay.

Old Relay Terminal Number	New Relay Terminal Number
1	1
3	0
2	2
4	4

16. Reverse procedure to install.
17. Seal electrical cover around leg and fill old screw hole with RTV 732.
18. Remove tape and re-install oil dipstick.
19. Check for proper operation.



S E R V I C E

TECHNICAL SERVICE BULLETIN

HOBART SERVICE

TROY, OHIO 45374-0001

Food Machines

VOL. NO. 1424

March 2012

403 TENDERIZER - LIFT OUT UNIT WILL NOT STAY DOWN DURING USE

INTRODUCTION

Some 403 tenderizers prior to serial no. 311445699 have end supports that were incorrectly machined. The lift out unit will fit very loosely in the holder resulting in lift out units not staying down during use, or the lock hanger not properly securing the lift out.

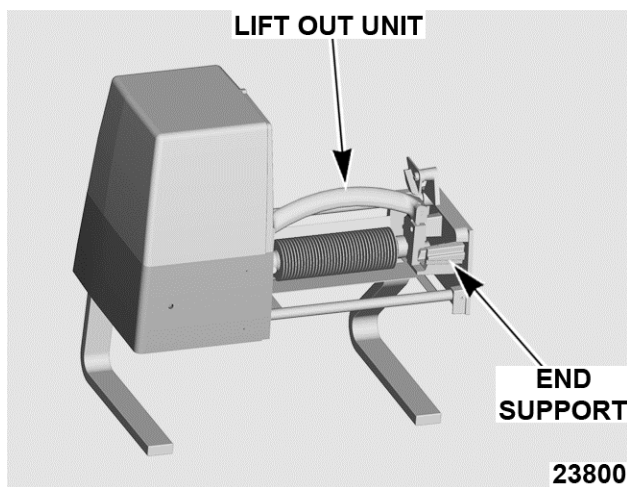


Fig. 1

SOLUTION

Order end support part no. 00-875454-00002.

Do not replace or attempt to adjust lift out roller assemblies or lock hanger to take up excess play.



S E R V I C E

TECHNICAL SERVICE BULLETIN

HOBART SERVICE

TROY, OHIO 45374-0001

TENDERIZER

VOL. NO. 1481

November 2013

403 TENDERIZER- APPLY MULTI-PURPOSE SEALANT AROUND START SWITCH

INTRODUCTION

Moisture can get into the start switch which may cause it to become inoperative. To prevent this occurrence, Dow Corning® 732 Multi-Purpose Sealant will need to be applied. When called to service, it is recommended to check for obvious moisture in switch area and use Dow Corning sealant as described below.

SPECIAL MATERIALS NEEDED

- 00-513886-00003 Dow Corning 732 Multi-Purpose Sealant.

REFERENCE MATERIAL

- Service Manual F7285 403 TENDERIZER.
- Tenderizers Parts Catalog F43057 Tenderizers ML-38761, ML-38762, ML-104603.

PART INFORMATION

Start Switch 00-271612-00002

SERVICE PROCEEDURE



WARNING Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Motor Housing to expose the start switch.
2. Apply Dow Corning 732 Multi-Purpose Sealant.
 - A. Around start switch and spacer.
 - B. Around spacer and motor housing.



Fig. 1



S E R V I C E

TECHNICAL SERVICE BULLETIN

MISCELLANEOUS

VOL. 1 NO. 550B

August 2016

HOBART SERVICE

TROY, OHIO 45374-0001

MACHINE DATA CODE INFORMATION

INTRODUCTION

Since January 1, 2002, all Hobart equipment, except microwave ovens, have been marked with a three-letter date code to eliminate duplication at the end of the two-letter date code numbering cycle (i.e. 23 assigned letters for a 23 year date code numbering cycle). Microwave ovens are marked with the month and year as outlined under Manufacture Date (item 2).

Between January 1985 and January 2001 all Hobart equipment, *except* microwave ovens, were marked with a two letter date code.

Refer to manufacturing date code tables.

MANUFACTURE DATE

- All Hobart equipment is marked with a manufacturing date code in the CODE or MD section on the machine data plate with the exception of microwave ovens. If the CODE or MD section is not available, the manufacturing date code should be marked in the far right of the serial number section. The manufacturing date code will not become part of the serial number.

Exception: Refrigeration equipment is marked with the manufacturing date code directly following the serial number; or with the two-digit numerical date (Month & Year) in the DATE section.

- Microwave ovens are marked with a manufacturing date code in the section designated on the machine data label per UL 923. The month and year of manufacture are both marked without abbreviation, with the year shown as a four-digit number on the machine data label. Example: January 2005.

MANUFACTURING DATE CODES AFTER JANUARY 1, 2002					
*First Letter = Month	*Second and Third Letters = Year				
A = JAN	AA = 2001	AN = 2013	BB = 2025	BP = 2037	CC = 2049
E = FEB	AB = 2002	AP = 2014	BC = 2026	BR = 2038	CD = 2050
R = MAR	AC = 2003	AR = 2015	BD = 2027	BS = 2039	CE = 2051
P = APR	AD = 2004	AS = 2016	BE = 2028	BT = 2040	CF = 2052
Y = MAY	AE = 2005	AT = 2017	BF = 2029	BU = 2041	CG = 2053
U = JUN	AF = 2006	AU = 2018	BG = 2030	BV = 2042	CH = 2054
L = JUL	AG = 2007	AV = 2019	BH = 2031	BW = 2043	
G = AUG	AH = 2008	AW = 2020	BJ = 2032	BX = 2044	
T = SEP	AJ = 2009	AX = 2021	BK = 2033	BY = 2045	
C = OCT	AK = 2010	AY = 2022	BL = 2034	BZ = 2046	
N = NOV	AL = 2011	AZ = 2023	BM = 2035	CA = 2047	
M = DEC	AM = 2012	BA = 2024	BN = 2036	CB = 2048	

* The letters I, O, and Q have been omitted for clarity.

SERIAL NUMBER CODING BEFORE 1962 FOR GE OR CHICAGO HEIGHTS EQUIPMENT ONLY								
	1954	1955	1956	1957	1958	1959	1960	1961
REFRIGERATION								
Water Coolers	24600000 to 24999999	55400000 to 55807000	70060000 to 70099999	70190000 to 70199999	70230000 to 70239999	70300000 to 70335000	70335700 to 70359100	70359101 to 70386665
SANITATION		Sanitation serial numbers will vary prior to 1968.						