

# S6161-LQ-FSE-010

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[ *SGML Version See Change Record* ]

TECHNICAL MANUAL

## **TENDERIZER, MEAT ELECTRIC**

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21 APR 1987



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<b>CHANGE NO.</b>	<b>DATE</b>	<b>TITLE OR BRIEF DESCRIPTION</b>	<b>ENTERED BY</b>

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## SAFETY SUMMARY

**GENERAL SAFETY NOTICES** The following general safety notices supplement the specific warnings and cautions appearing elsewhere in this manual. They are recommended precautions that must be understood and applied during operation and maintenance of the equipment covered herein. Should situations arise that are not covered in the general or specific safety precautions, the commanding officer or other authority will issue orders as deemed necessary to cover the situation.

**DO NOT REPAIR OR ADJUST ALONE** Under no circumstances should repair or adjustment of energized equipment be attempted alone. The immediate presence of someone capable of rendering aid is required. Before making adjustments, be sure to protect against grounding. If possible, adjustments should be made with one hand, with the other hand free and clear of equipment. Even when power has been removed from equipment circuits, dangerous potentials may still exist due to retention of charges by capacitors. Circuits must be grounded and all capacitors discharged prior to attempting repairs.

**TEST EQUIPMENT** Make certain test equipment is in good condition. If a test meter must be held, ground the case of the meter before starting measurement; do not touch live equipment or personnel working on live equipment while holding a test meter. Some types of measuring devices should not be grounded; these devices should not be held when taking measurements.

**INTERLOCKS** Interlocks are provided for safety of personnel and equipment and should be used only for the purpose intended. They should not be battle shorted or otherwise modified except by authorized maintenance personnel. Do not depend solely upon interlocks for protection. Whenever possible, disconnect power at power distribution source.

### **WARNING**

**TO: MACHINE PURCHASERS, OPERATORS AND OPERATIONS SUPERVISORS**

**READ AND UNDERSTAND THIS LABEL BEFORE REMOVING THIS LABEL FROM THIS BIRO MACHINE**

**READ information manual supplied with this BIRO machine.**

**DO NOT electric wire machine, have only a qualified and certified electrician wire this machine, as required. Be sure machine is grounded. Failure to ground this machine could result in electric shock.**

**DO NOT use this machine for non-food products.**

**DO NOT attempt to operate machine until unit has been inspected and demonstrated by the seller-recognized BIRO Representative.**

**DO NOT attempt to operate this machine unless you have been properly trained. Improper use or operation of this machine could result in bodily injury.**



**SAFETY SUMMARY - Continued**

**DO NOT leave machine in operation - unattended.**

**DO NOT tamper, bypass, remove fixed guards, safety interlock electrical switches or other safety devices.**

**DO NOT at any time force feed machine.**

**DO NOT alter or modify machine in any way from its original form.**

**ALWAYS disconnect power supply before removing shrouds, removable guards, covers, doors, fences, panels for servicing, cleaning or any other reason.**

**USE only BIRO parts and accessories, properly installed.**

**MACHINE OPERATING MANUALS as supplied with this unit are available from BIRO.**

**FAILURE TO COMPLY WITH THIS NOTICE AND WARNING COULD RESULT IN BODILY INJURY. (Page 1-12)**

**CAUTION**

**- TO REPLACE BLADE ASSEMBLIES: Replace rollers with delrin bearing ends into cradle first. Keep flat portion of bearings up so they will fit in the bearing stop studs. (See tenderizer cradle diagram.) Then align the first blade on the bearing side of the front blade assembly, fitting between the first and second blades on the bearing side of the rear blade assembly. (Page 1-13)**



## CHAPTER 1

### MODELS PRO-9 SERIES

#### SPECIFICATIONS

MOTORS STANDARD: SD 1/2 HP-115V.. 60 cycle, 1 Ph.

MOTORS AVAILABLE - NET EXTRA: SD-HD 1/2 HP, 115/220 volts, 50 cycle, 1 phase.

CASE: Stainless steel side panels and case top.

HOPPER: Transparent standard on 1 Ph. units. Aluminum standard on 3 Ph. units.

"TRANSMISSION" DRIVE: On SD units, V belt, adjustable. On HD units, timing belt, adjustable.

CUTTING GROUP: Stainless steel blades and spacers. Stainless steel combs.

CUTTING GROUPS - AVAILABLE NET EXTRA:

Tenderizer/Knitting group (std. on PRO-9)

Scoring Group

Prick Punch Group

Stew Cutting Group

SAFETY:

Grounded cord and plug

Safety switch to shut off motor when hopper is raised. Special safety devices as required by state and/or localities.

STANDARD EQUIPMENT: Cord and plug, tenderizing/knitting group. **On HD units only:** same as above, plus heavy duty transmission with ball bearings and heavier gears.

APPROVALS: U.L. - N.S.F. - C.S.A. - U.S.D.A.

CHARACTERISTICS:

Hopper opening dimension 1 3/8" x 7 1/2"

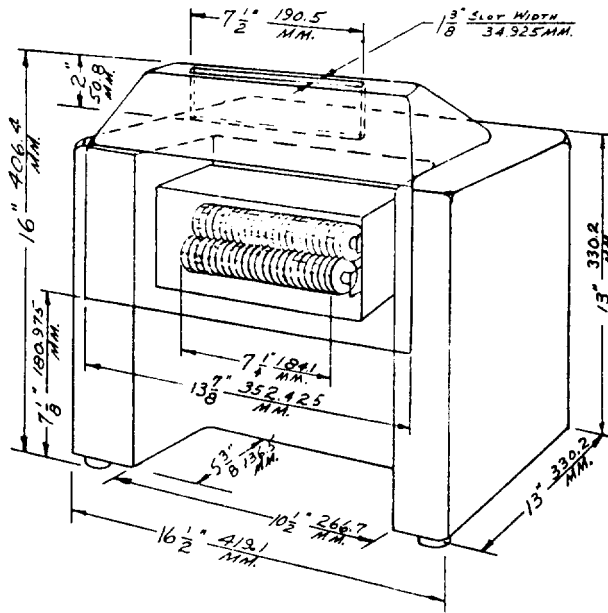
Overall dimension 13" x 16" x 16 1/2"

Roller lengths on all standard units - 8 3/16"

Roller speeds: 85 RPM on SD units

#### APPROX. WEIGHTS:

APPROX. WEIGHT	GROSS	NET
PRO-9	1/2 SD-65 lbs.	54 lbs.



Models Pro-9 Series, Specifications Diagram

All specifications contained herein are subject to change without notification.

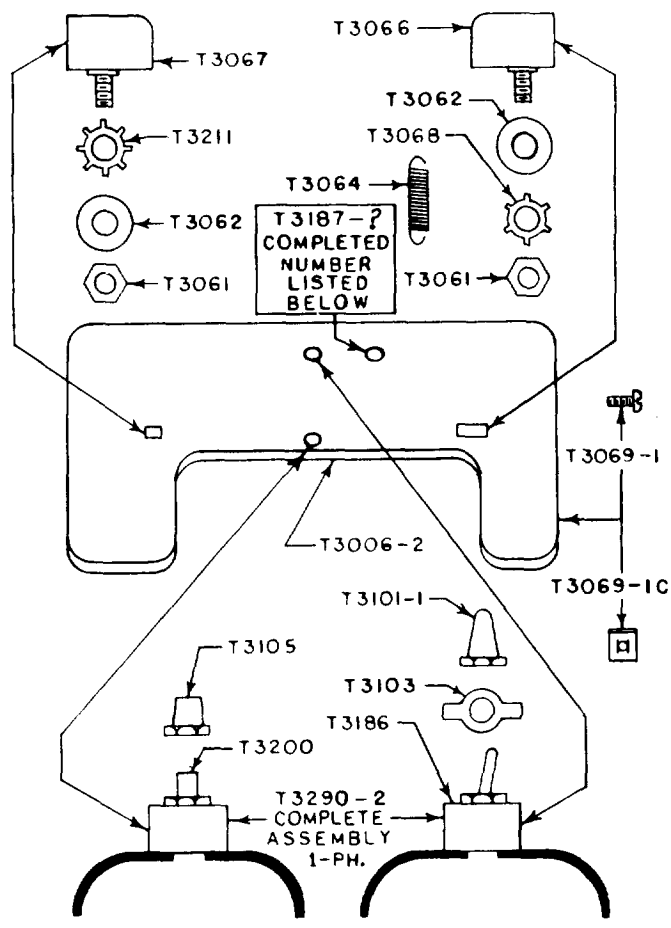


Figure 1 CASE PARTS

## CASE TOP PARTS

Figure Item Number	Description
T3006-2	Case Top Stainless
TA3006-2	Case Top Assy. w/o Switches
T3061	Hopper Hinge Nut
T3062	Hopper Hinge Washer
T3064	Hopper Hinge Spring
T3066	Hopper Hinge RH
T3067	Hopper Hinge LH
T3068	Hopper Hinge Lock Washer
T3069-1	Panhead Screw 10-24 x
T3069-1C	Cover Side Screw Clip
T3101-1	Waterproof Toggle Cap Nut
T3103	On and Off Plate
T3105	Waterproof Safety Switch Cap Nut
T3186	Toggle Switch. 1 Phase
T3186-1	Toggle Switch. 3 Phase
T3187	Thermal Circuit Breaker. 8 Amp
T3187-1	Thermal Circuit Breaker. 10 Amp
T3187-2	Thermal Circuit Breaker. 12 Amp

CASE TOP PARTS - Continued

Figure Item Number	Description
T3187-3	Thermal Circuit Breaker. 5 Amp
T3188	Waterproof Reset Button Seal
T3189	"Press to Reset" Plate
T3190	Circuit Breaker Lock Washer
T3200	Safety Switch. 1 Phase
T3200-1	Safety Switch. 3 Phase
T3211	Shakeproof Washer UL
T3290-2	Switches & Wiring Harness Assembly. (1PH) 115v (3 PH also available)

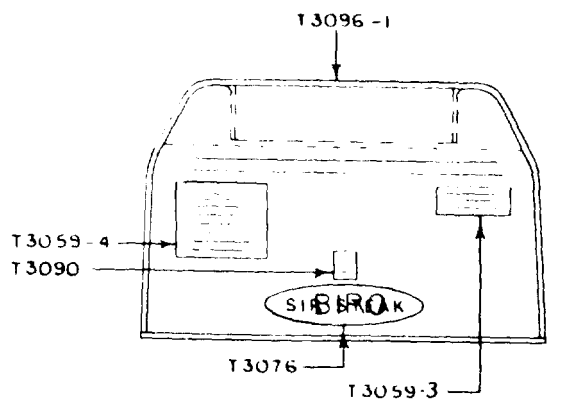


Figure 2 HOPPER

HOPPER PARTS

Figure Item Number	Description
T3059-3	Caution Decal
T3059-4	Warning Decal
T3076	BIRO SirSteak Decal
T3090	NSF Decal
T3096	Aluminum Hopper (3 PH only)
T3096-1	Transparent Hopper w/Decals

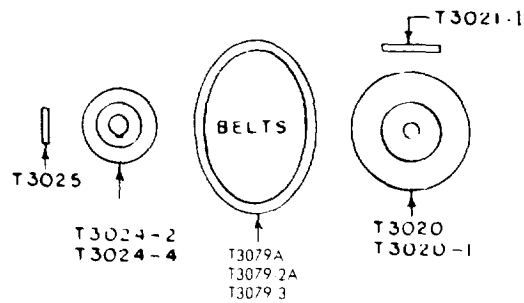


Figure 3 PULLEY AND BELT

## PULLEY AND BELT PARTS (See Parts List For Correct Motor)

<b>Figure Item Number</b>	<b>Description</b>
T3020	Driven Pulley (4 x ½)SD Only (85 RPM)
TA3020-6	Driven Timing Pulley w/Bushing (4 x ½)HD Only (115/140 RPM)
TA3020-6K	Timing Belt & Pulley Kit. (60 HZ) HD Only (115 RPM)
T3021-1	Driven Pulley Spring Pin SD & HD
T3024-1	Motor Pulley. 50 Cycle (3 x ) SD Only (85 RPM)
T3024-2	Motor Pulley. 60 Cycle (2½ x ) SD Only (85 RPM)
T3024-6A	Motor Timing Pulley. 60 Cycle (115 RPM)(2 x )HD Only
T3024-7A	Motor Timing Pulley Bushing(" I.D.)H.D. only
T3024-6-1A	Motor Timing Pulley. 50 Cycle (115 RPM)(2½ x )HD Only (Also Used on 60 Cycle - 140 RPM)
T3025	Motor Pulley Key
T3027	Motor Pulley Set Screw
T3045-1	Motor. ½ HP 115-60-1 (SD) Only
T3045-3	Motor. ¾ HP 230-60-1 (HD) Only
T3045-11	Motor. ½ HP 115/230-60-1 (HD) Only
T3079A	Motor Belt. 20" (50 Cycle. SD Only) (Cog.)
T3079-2A	Motor Belt. 19" (60 cycle) (SD Only) Cog.
T3079-3	Motor Belt. 18¼ Special Only
T3079-6	Motor Timing Belt. (60 Cycle)(115 RPM)(47 Teeth). HD only
T3079-6-1	Motor Timing Belt. (50 Cycle)(115 RPM)(50 Teeth). HD only (also used on 60 cycle - 140RPM)

**ITEM NO. TA3168-3  
STANDARD DUTY TRANSMISSION ASSEMBLY  
STARTING WITH SERIAL No. 52,902**

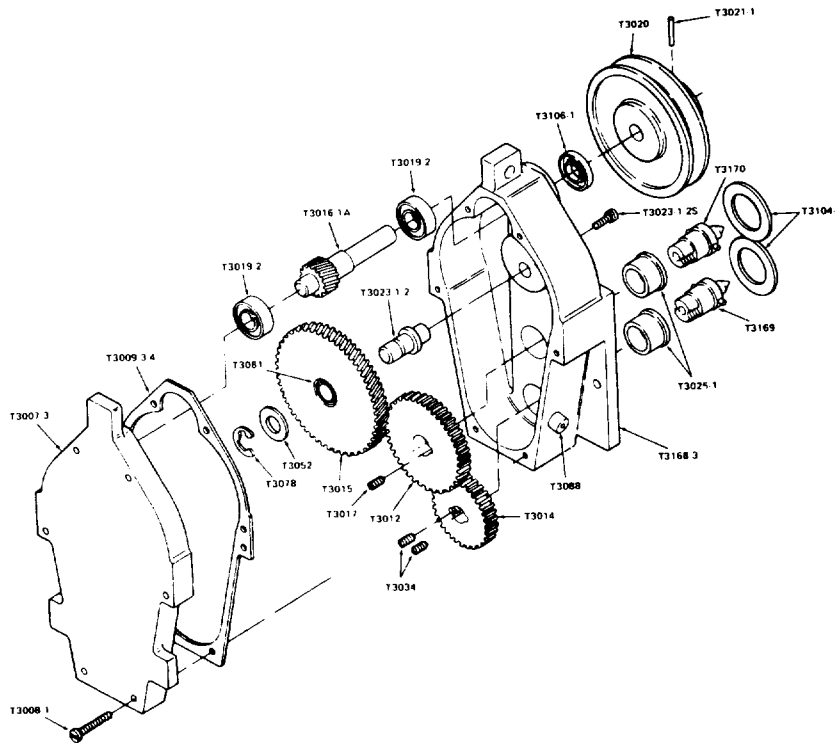


Figure 4 STANDARD DUTY TRANSMISSION ASSEMBLY

STANDARD DUTY TRANSMISSION ASSEMBLY PARTS LIST

Figure Item Number	Description
T3007-3	Gear Box Cover, SD (#52,902 on)
T3008-1	Gear Box Cover Screw SD, SN, 31,600 on
T3009-3-4	Gear Box Cover Gasket (#52,902 on)
* T3012	Knife Drive Gear & Pinion, SD
* T3014	Knife Drive Gear, Front, SD
T3015	Idler Gear & Pinion
T3016-1A	Driven Pulley Gear & Shaft, SD (#52,167 on)
T3017	Key Lock Screw, 1/2
T3019-2	Driven Pulley Shaft Ball Bearing
T3020	Driven Pulley (4 x 1/2) SD
T3021-1	Driven Pulley Roll Pin
T3023-1-2	Idler Gear Shaft, SD, (#52,902 on)
T3023-1-2S	Idler Gear Shaft Screw (#52,902 on)
T3026-1	Coupling Shaft Bearing (#43479 on)
T3034	Key Lock Screw, 1/4"
T3052	Idler Gear Shaft Washer
T3078	Idler Gear Retaining Ring
T3081	Idler Gear Bushing
T3088	Gear Box Vent



STANDARD DUTY TRANSMISSION ASSEMBLY PARTS LIST - Continued

Figure	Item Number	Description
	T3104-2	Silicon Washer (#43479 on)
	T3106-1	Pulley Shaft Oil Seal
	T3168-3	Frame Less Bearings, SD (#52,902 on)
	TA3168-3	Frame Assembly with pulley (#52,902 on)
	* T3169	Knife Drive Coupling, Front, w/Pin
	T3169-10	Knife Drive Coupling & Gear Assembly, Front
	* T3170	Knife Drive Coupling, Back, w/Pin
	T3170-10	Knife Drive Coupling & Gear Assembly, Back
	T3175	Knife Drive Coupling Pin (30,000 to 32,452 - 42,834 on)
	T3175-1	Knife Drive Coupling Pin (32,452 to 42,834)

\*Gear - Coupling are supplied less the threaded key lock screw hole when ordered separately due to thread mis-alignment.

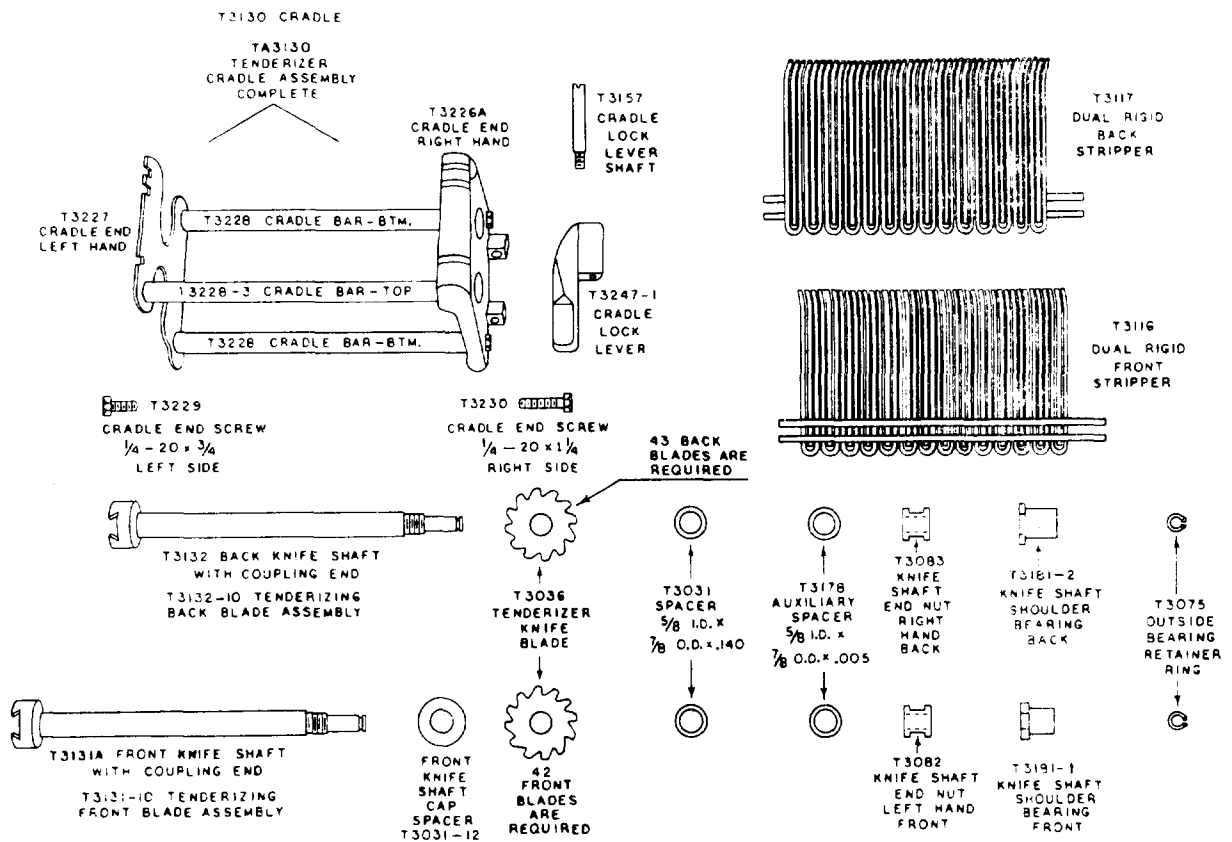


Figure 5 TENDERIZER CRADLE PARTS

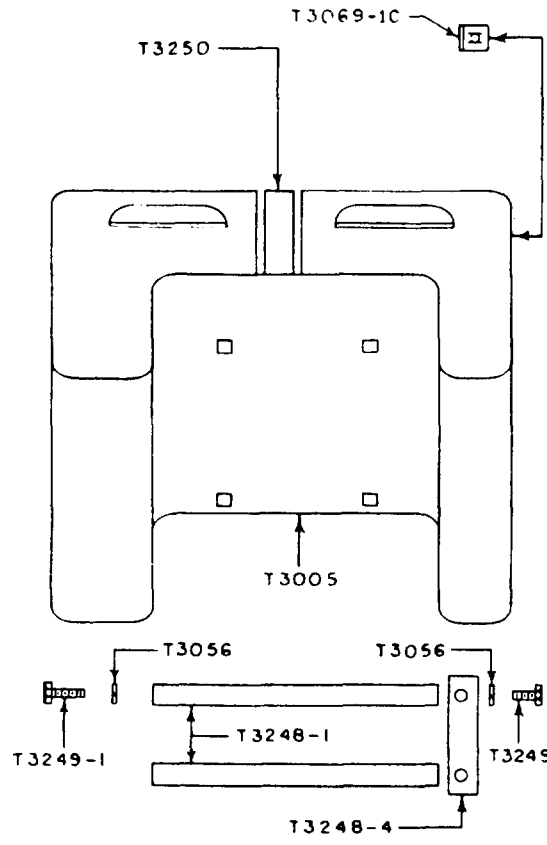


Figure 6 WRAPAROUND CASE

WRAPAROUND CASE PARTS

Figure Item Number	Description
T3005	Case, S.S.
T3056	Lock Washer 1/4
T3069-1C	Cover Side Screw Clip
T3248-1	Cradle Rest Bar
T3248-4	Cradle Rest Thrust Plate
T3249	Cradle Rest Bar Screw, RH
T3249-1	Cradle Rest Bar Screw, LH
T3250	Case Joining Strip

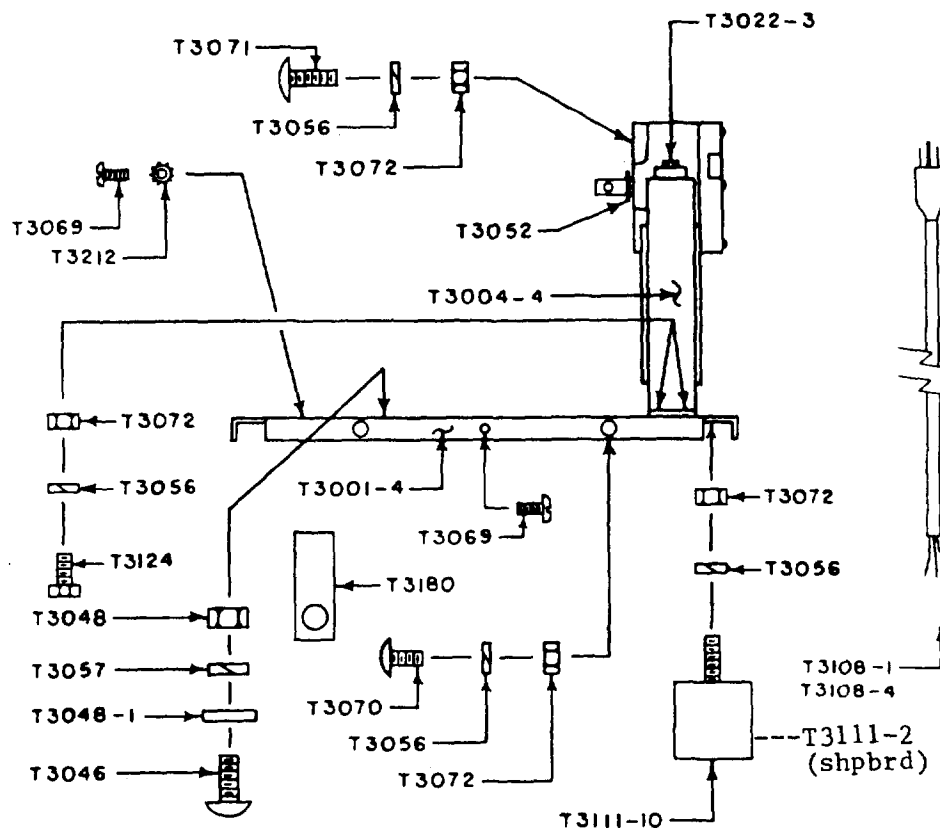


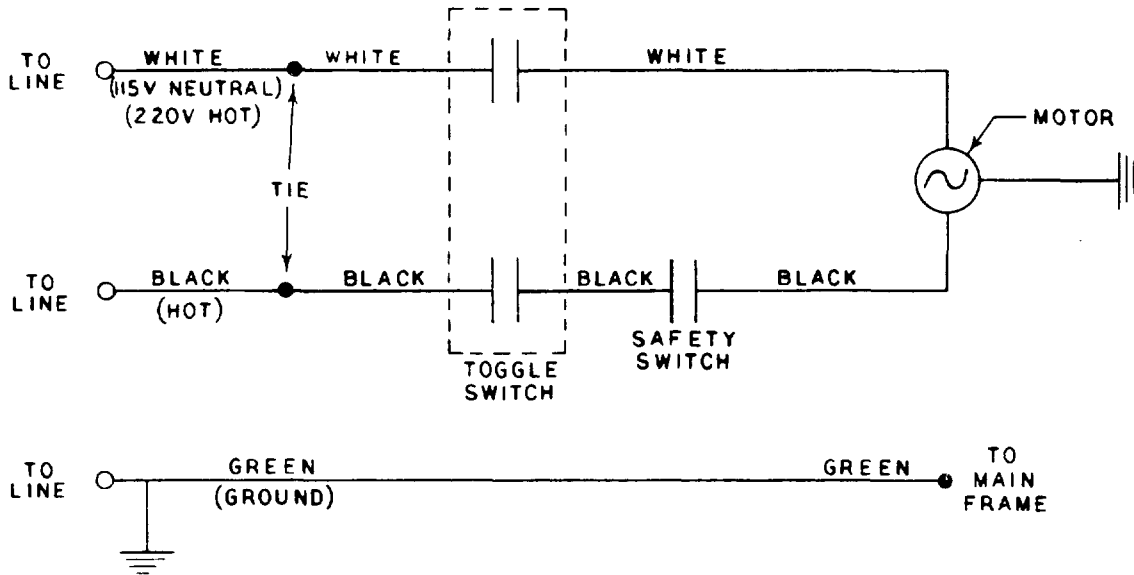
Figure 7 BASE FRAME (REAR VIEW)

## PRO-9 SD AND HD BASE FRAME PARTS LIST (REAR VIEW)

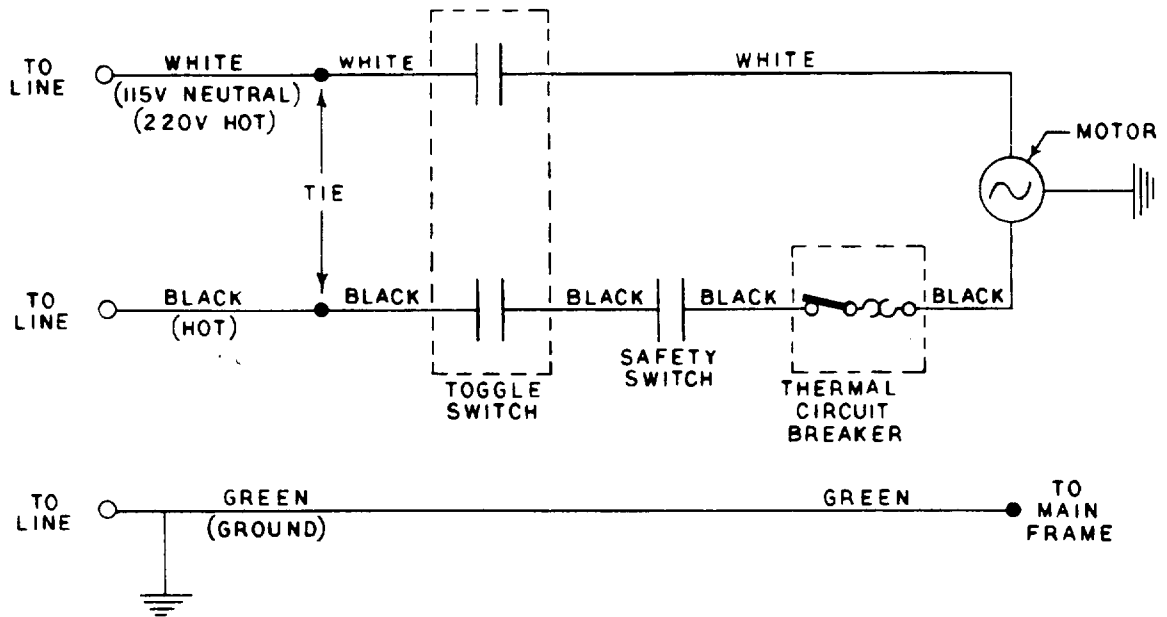
Figure Item Number	Description
T3001-4	Base Plate (#52884 on)
T3004-4	Gear Housing Bracket (#52884 on)
T3001/04-4	Base Plate & Gear Housing Bracket Assembly #52884 on
T3022-3	Frame Positioning Lock Screw (#040299 on)
T3046	Motor Screw (5/16 x 3/4 carr.)
T3048	Motor Screw Nut (5/16-18)
T3048-1	Motor Screw Washer (5/16)
T3052	Idler Gear Shaft Washer
T3056	Lock Washer (1/4)
T3111-2	Base Leg, 4" SS (shpbrd)
T3057	Lock Washer (5/16)
T3069	Cover Side Screw (8-32)
T3070	Case Screw (1/2)
T3071	Case Screw (3/4)
T3072	Case Screw Nut (1/4-20)
T3108-1	Motor Cord & Plug (115V) (3 PH also available)
T3108-4	Motor Cord & Plug (220V)
T3111-1	Base Foot
TA3111	Base Foot Assembly

PRO-9 SD AND HD BASE FRAME PARTS LIST (REAR VIEW) - Continued

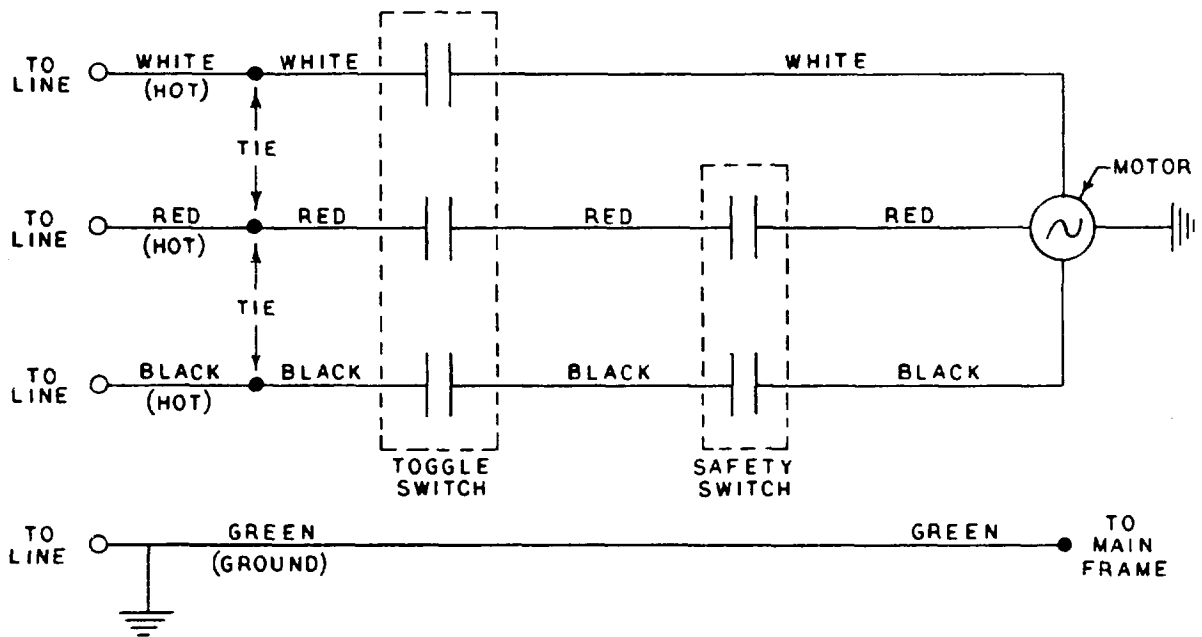
Figure Item Number	Description
T3180	Cord Clamp
T3197-2	Motor Shim
T3212	Grounding Shakeproof Washer



SCHEMATIC - 1 MODEL PRO-9 TENDERIZER WIRING DIAGRAM 115-220 VOLTS/1 PHASE 50-60 CYCLE



SCHEMATIC - 2 MODEL PRO-9 TENDERIZER WIRING DIAGRAM 115-220 VOLTS/1 PHASE 50-60 CYCLE WITH IN LINE CIRCUIT BREAKER



SCHEMATIC - 3 MODEL PRO-9 TENDERIZER WIRING DIAGRAM 220-380-440 VOLTS/3 PHASE 50-60 CYCLE

WARNING NOTICE

**WARNING**

**TO: MACHINE PURCHASERS, OPERATORS AND OPERATIONS SUPERVISORS**

**READ AND UNDERSTAND THIS LABEL BEFORE REMOVING THIS LABEL FROM THIS BIRO MACHINE**

**READ information manual supplied with this BIRO machine.**

**DO NOT electric wire machine, have only a qualified and certified electrician wire this machine, as required. Be sure machine is grounded. Failure to ground this machine could result in electric shock.**

**DO NOT use this machine for non-food products.**

**DO NOT attempt to operate machine until unit has been inspected and demonstrated by the seller-recognized BIRO Representative.**

**DO NOT attempt to operate this machine unless you have been properly trained. Improper use or operation of this machine could result in bodily injury.**

**DO NOT leave machine in operation - unattended.**

**DO NOT tamper, bypass, remove fixed guards, safety interlock electrical switches or other safety devices.**

**DO NOT at any time force feed machine.**

**DO NOT alter or modify machine in any way from its original form.**

**ALWAYS disconnect power supply before removing shrouds, removable guards, covers, doors, fences, panels for servicing, cleaning or any other reason.**

**USE only BIRO parts and accessories, properly installed.**

**MACHINE OPERATING MANUALS as supplied with this unit are available from BIRO.**

**FAILURE TO COMPLY WITH THIS NOTICE AND WARNING COULD RESULT IN BODILY INJURY.**

**INSTRUCTION SHEET FOR THE BIRO-SIR STEAK MODEL PRO-9 TENDERIZER**

Important: Must have Serial Number when ordering parts

**TO INSTALL OR REPLACE PORTABLE UNIT:** Hold cradle (portable unit) with left hand, preferably by means of the two strippers (back and front) in position. Place cradle onto the two cradle support bars with left end of cradle in first. Push cradle all the way back in the machine, then slide to the left so that both blade assemblies will line up with the coupling drive ends and cradle is resting on both cradle support bars. Then slide cradle to left so cradle lock lever will fall into position and cradle will be locked. Be sure lock lever is down.

**TO REMOVE PORTABLE UNIT:** Release cradle lock lever on right end of cradle and slide cradle to the right while holding cradle with left hand by the front and back strippers. Then bring cradle forward with the right end first while still resting on the two cradle support bars and remove cradle from machine.

**TO REMOVE STRIPPERS:** Front stripper - Simply raise stripper by both ends and roll out in a forward motion. Back stripper - Simply raise stripper by both ends and roll out in a backward motion.

**TO REMOVE BLADE ASSEMBLIES:** With cradle out of the machine, remove both front and back strippers. Spread both blade assemblies, or rollers from driver, or open end first and draw out of cradle. Notice that back roller has a larger diameter bearing than the bearing on the front roller, therefore you cannot get the rollers in improperly or reversed.

### CAUTION

**- TO REPLACE BLADE ASSEMBLIES: Replace rollers with delrin bearing ends into cradle first. Keep flat portion of bearings up so they will fit in the bearing stop studs. (See tenderizer cradle diagram.) Then align the first blade on the bearing side of the front blade assembly, fitting between the first and second blades on the bearing side of the rear blade assembly.**

**TO REPLACE STRIPPERS:** Back stripper - Place stripper evenly between blades with longer edge of horizontal top bar to the right and insert the bars into the forwardmost set of rear receiving slots.

For knitting - the back stripper should be placed in the backwardmost set of rear receiving slots.

Front stripper - place stripper evenly between blades with longer edge of horizontal top bar to the right and insert the bars into the forward set of receiving slots.

**TO TIGHTEN BELT:** Loosen 4 nuts that hold motor in. Slide motor back slightly and tighten nuts. Make no other adjustments to tighten belt.

**OILING: Motor** - Simply put a few drops of light oil in cups at both ends of motor every six months.

**Gear Box** - Use 2.0 oz. of #140 EP oil for standard unit. Use 2.5 oz. of #140 EP oil for heavy duty unit. Remove vent plug to fill.

### **LIMITED WARRANTY:**

**WARRANTY:** The BIRO Manufacturing Company warrants that Model Pro-9 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 year from the date of purchase, except as noted below.

**PARTS NOT COVERED BY WARRANTY:** The following are not covered by this limited warranty: wearable parts such as the Knife Blades in the Tenderizing or Stew Cutting groups; e.g., Item No. T3300, Stew Cutting Blade, Item No. T3036, Scoring Blade, and the Item No. T3336, Star Roller. 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 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 the warranty 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 agency from whom you purchased the machine.
2. Consult the yellow pages of the phone directory for the nearest authorized dealer.
3. Or call BIRO Service Department (419) 798-4451 who will put you in contact with the nearest service agency.

#### TROUBLE SHOOTING CHART

TROUBLE	POSSIBLE CAUSE	REMEDY
Motor fails to start	no power	plug power cord in
	fuse blown	replace fuses with new ones, check power source, <a href="#">Fig. #1</a>
	switch	replace with new switch see <a href="#">Schematic #2</a>
	thermal circuit breaker	check reset button, replace circuit breaker-see <a href="#">Schematic #2</a>
Machine loses power	loose belt	loosen motor bolts, slide motor back evenly, tighten motor bolts securely, <a href="#">Fig 5</a>
Cradle does not fit in machine readily	misaligned blade assemblies	back blade assembly has 43 blades, front has 42-both should mesh evenly when in cradle, if they don't, reverse the assemblies (back to front and front to back) so that the front has 42



## PARTS NOT MANUFACTURED BY BIRO

Item Number	Manufacturer's Identification
T3045-1	motor, BKOOD, 1/2hp, 115-60-1 General Electric, Fort Wayne, IN 46804
T3045-2A	motor, 5K112, 1/2hp, 220-50-1 Westinghouse Electric Corp. 2025 East 4th, Lima, Ohio 45802
T3186	toggle switch, #7561K6 Cutler Hammer Inc., Milwaukee, WI 53216
T3200	safety switch #T100S McGill Mfg., Valparaiso, IN
T3079A	motor belt #4L200 Goodyear Co., Akron, Ohio 44305
T3019-2	ball bearing #S5KDD Fafnir Bearing Co., New Britain, CT 06053
T3106-1	oil seal #471526 Federal Mogul, Southfield, MI 48076
T3187-3	thermal circuit breaker Circuit Breaker Co. ETA 7400 N Crounse, Chicago, IL 60648

