

MACHINE SERIAL # \_\_\_\_\_

SHIPPED TO: \_\_\_\_\_

SHIPMENT DATE \_\_\_\_\_

WARRANTED THROUGH \_\_\_\_\_

THERMOFORM BRAILON DUPLICATOR  
(U.S. PATENT NO. 3,317,960)

OWNER'S MANUAL

AMERICAN THERMOFORM CORPORATION  
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IMPORTANT - FOR UNPACKING, PACKING AND SHIPPING INSTRUCTIONS  
SEE PAGE 4.

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NOTE: THIS PRINTING WILL BE UPDATED FROM TIME TO TIME  
BY MAILING PERTINENT SUPPLEMENTARY INFORMATION  
TO ALL THERMOFORM BRAILON DUPLICATOR OWNERS,  
WITHOUT CHARGE.

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1. American Thermoform Corporation

A. POLICIES:

Our objective is to provide the best possible machinery, materials and services to all owners of our equipment, at all times.

The Thermoform Brailon Duplicator has been in production since 1962 -- it is the finest machine we know how to build, and is the end product of:

1. Fifteen years experience producing industrial Thermoforming and packaging machines.
2. Six years experience with a predecessor machine -- the Model BD Braille Former.
3. An extensive redesign and development program, encompassing component improvements, materials and processing improvements, lubricating research and intensive factory prototype testing.
4. Extensive testing in the field -- by users, under user's complete control. More than 10 million copies of Braille have been duplicated on the Thermoform Brailon Duplicator.

IN ORDER TO EXTEND OUR CAPABILITIES AND IMPROVE SERVICES TO  
THE BLIND, WE WELCOME ANY SUGGESTIONS YOU MAY WISH TO  
MAKE AT ANY TIME CONCERNING HOW THE MACHINE OR OUR SERVICES  
TO YOU CAN BE IMPROVED FURTHER.

In view of the reliability and durability of the Thermoform Brailon Duplicator, we are now able to offer an unprecedented warranty, and a clear and firm policy concerning post-warranty-period service at firm prices (see Sections 1B and 1C following).

B. WARRANTY:

1. Warranty Coverage

Thermoform Brailon Duplicator is fully warranted against defects in materials and workmanship for a period of fifteen (15) months in the possession of the original purchaser. This warranty covers all parts and labor required for repair.

To provide for this, the original warranty is operative for a period of Four Hundred Sixty Nine (469) days from the date of original shipment from American Thermoform Corporation to the purchaser. Any machine received by us within 469 days after the date of original shipment will be accepted as within its warranty period. Furthermore, any machines returned for warranty service will have the original warranty extended for a period equal to the transit time to the factory, plus the time the machine is in our hands, plus the time required for transportation back to the user (for transportation within the Continental United States or Canada).\*

All transportation charges for shipments of machines or parts to and from the factory are at customer's expense.

2. Warranty Invalidation

THE WARRANTY IS INVALIDATED IF THE MACHINE IS NOT USED IN ACCORDANCE WITH THE INSTRUCTIONS IN THIS MANUAL.

Your attention is directed to two important points in this regard:

THE LUBRICATION AND MAINTENANCE PROCEDURES OF PARAGRAPH E (Page 12) AND PAGE 20 MUST BE FOLLOWED.

DAMAGE FROM GROSS OVERHEATING INVALIDATES THE WARRANTY

Improper timer and heat settings may grossly overheat the machine.

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\* For transportation to and from other locations, a total transit time allowance may not exceed 40 days.

With proper timer and heat control settings, the machine cannot be damaged by overheating, when using BRAILON AT ANY RATE OF PRODUCTION.

Occasional use of materials other than BRAILON (up to one sheet per two minutes) will not grossly overheat the machine.

Continued use of materials other than BRAILON, at production rates, can damage the machine by gross overheating.

C. POST WARRANTY SERVICE:

Subsequent to expiration of the machine warranty, American Thermoform Corporation will supply parts and/or service and repair all Thermoform Brailon Duplicators. All labor at \$11.75 per hour plus parts . . . . .

2. PACKING AND SHIPPING INFORMATION

A. UNPACKING AND PREPARATION FOR USE

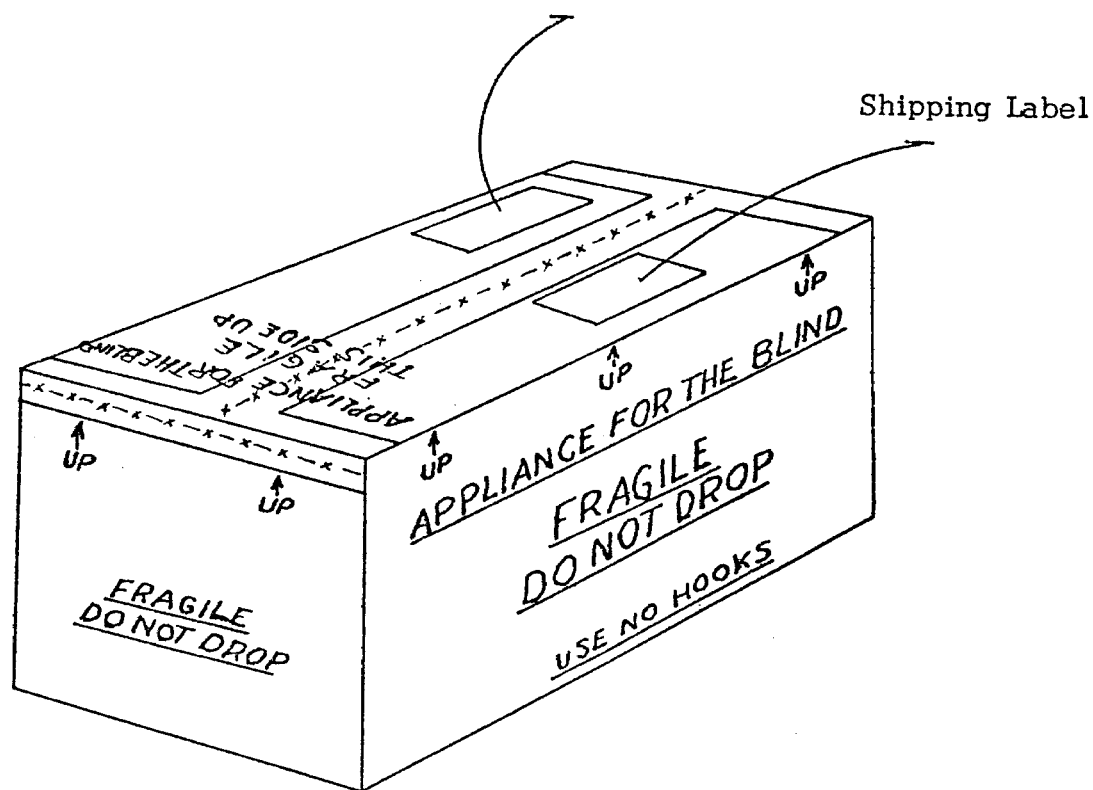
STEP 1.

PLACE CARTON ON CLEARED WORK TABLE OR FLOOR.

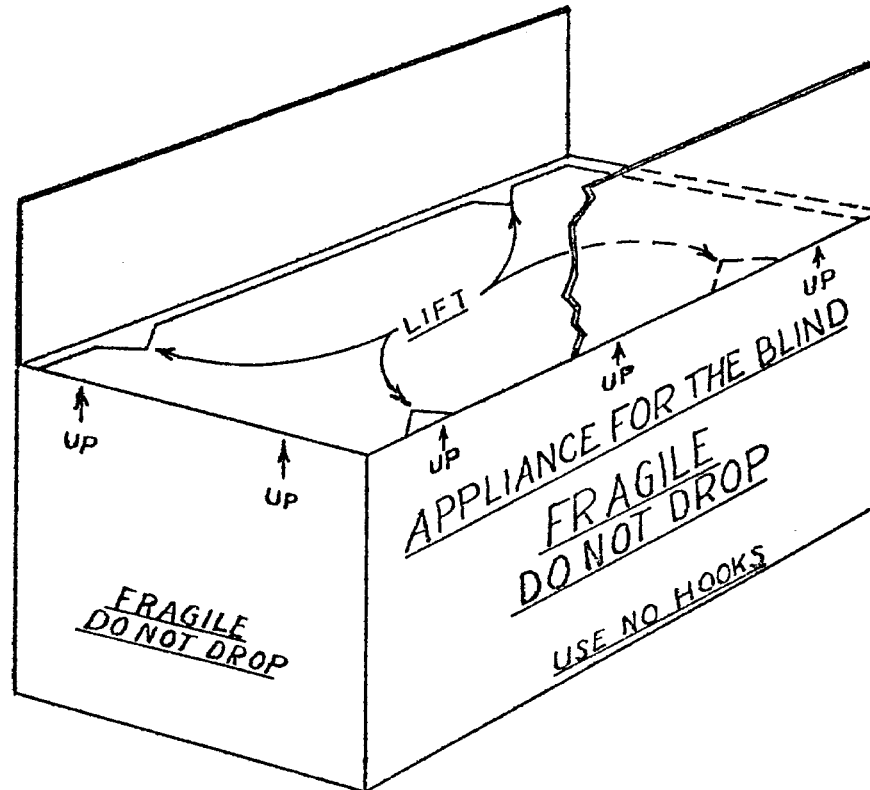
CUT LIGHTLY THROUGH GUMMED PAPER TAPE ON TOP CENTER SEAM AND TWO END SEAMS (ALONG X'S).  
CUT THROUGH GUMMED TAPE ONLY.

PRESERVE THE SHIPPING CARTON, SHIPPING WEDGES AND CORRUGATED DIVIDERS. THE SHIPPING CONTAINER AND ALL ITS COMPONENTS ARE ESSENTIAL SHOULD YOU WISH TO RETURN YOUR MACHINE TO THE FACTORY FOR SERVICE.

"Envelope with  
unpacking instructions  
and inspection report."

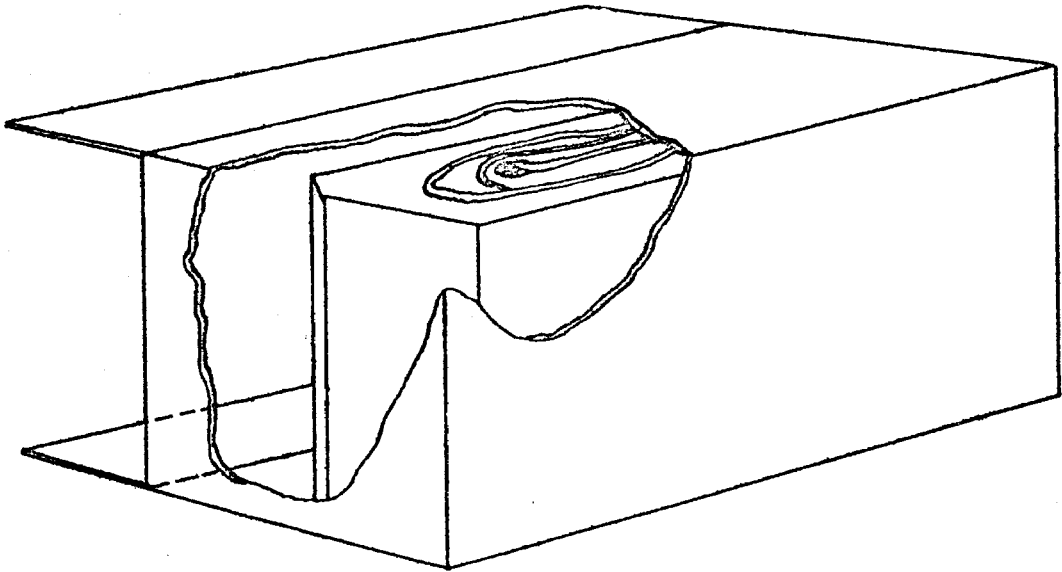


- STEP 2. - LIFT TOP FLAPS
- STEP 3. - LIFT AND PULL UP INNER LINER



- STEP 4 - REMOVE ALL INDIVIDUAL PACKAGES (EXTRA PLATENS, BRAILON, MARONITE HEAT SHIELD, LUBRICANTS, ETC.) AND SHIPPING WEDGES FROM CARTON, UNTIL ONLY THE MACHINE IS LEFT INSIDE. CAREFULLY EXAMINE INDIVIDUAL PACKAGES, SHIPPING WEDGES, AND CORRUGATED DIVIDERS, TO ASSURE THAT NO PARTS ARE THROWN AWAY.

- STEP 5 - TURN THE CARTON ON ITS SIDE SO THAT THE RIGHT SIDE OF MACHINE (SIDE WITH ELECTRIC CORD) IS UP.



- STEP 6. - SLIDE MACHINE OUT OF SHIPPING CARTON - DO NOT LIFT BY OR PULL ON OVEN HANDLE.
- STEP 7. - REPLACE SHIPPING WEDGES AND CORRUGATED DIVIDERS IN CARTON AND STORE CARTON FOR FUTURE RESHIPMENT.
- STEP 8. - TURN MACHINE RIGHT SIDE UP AND MOVE INTO APPROXIMATE POSITION WHERE IT WILL BE USED. DO NOT LIFT MACHINE BY HOLDING OVEN HANDLE. WE RECOMMEND THAT FRONT OF MACHINE BE CLOSE TO EDGE OF TABLE, WITH ROOM LIGHT COMING FROM LEFT SIDE OF MACHINE (FOR RIGHT HANDED OPERATORS).

- STEP 9 - AFTER REMOVING THE THERMOFORM BRAILON DUPLICATOR FROM THE SHIPPING CARTON, IT WILL BE NECESSARY TO RECONNECT THE FITTING ON THE LOWER END OF THE OVEN CORD. THIS COUPLING IS LOCATED ON THE RIGHT SIDE TOWARDS THE REAR OF THE MACHINE. TO RECONNECT, ALIGN THE FLEXIBLE CORD AND SCREW THE COUPLING CLOCKWISE UNTIL IT IS FINGER TIGHT. DO NOT USE TOOLS TO ASSIST IN THIS STEP.
- THIS FITTING WAS LEFT DISCONNECTED TO ASSURE SAFE SHIPMENT OF THE MACHINE. WE SUGGEST THAT IF YOU EVER NEED RETURN YOUR MACHINE TO THE FACTORY FOR REPAIR, THAT YOU DISCONNECT THE FITTING BEFORE BOXING THE MACHINE.
- STEP 10 - DO NOT PLUG IN ELECTRIC CORD AS YET. OPEN INSPECTION DOOR LOCATED ON LEFT HAND SIDE OF MACHINE, AND SCREW IN PLACE FIRMLY THE MUFFLER GLASS JAR ENCLOSED.
- STEP 11 - REMOVE TAPE HOLDING MANIFOLD CHANGE LOCKING PINS. LEAVE PINS IN PLACE.
- STEP 12 - UNPACK WHITE MARONITE HEAT REFLECTOR AND INSTALL ON REAR RAILS, USING SCREWS, NUTS AND WASHERS PROVIDED. MARONITE IS INSTALLED BELOW RAILS. SCREW HEADS ON TOP OF RAILS, WASHERS AND WING NUTS ON BOTTOM OF MARONITE, TIGHTEN MODERATELY.
- STEP 13 - TIGHTEN ELBOW NUTS ON EACH END OF OVEN-TO-BASE CONDUIT (SAME AS IN STEP 9).
- STEP 14 - PLUG IN MACHINE TO A GROUNDED 3 HOLE 110 VOLT 60 CYCLE ELECTRIC OUTLET. IF YOUR OUTLET HAS ONLY TWO HOLES, USE CORD ADAPTER SUPPLIED. SECURE PIGTAIL (LOOSE WIRE) ON CORD ADAPTER UNDER RETAINING SCREW OF OUTLET COVER PLATE. SEE THAT RETAINING SCREW IS FREE FROM DIRT OR PAINT. TO INSURE PROPER GROUNDING CONNECTIONS, FASTEN PIGTAIL SECURELY. CHECK WITH YOUR ELECTRICAL CONTRACTOR TO BE SURE THAT YOUR OUTLET BOX IS GROUNDED.

EXPORT MACHINES HAVE ELECTRICAL CHARACTERISTICS ADAPTED TO THOSE SPECIFIED BY THE COUNTRY IN WHICH THEY WILL BE USED. CHECK NAME PLATE FOR VERIFYING VOLTAGE AND CYCLES AGAINST POWER OUTLET IN THE BUILDING.

### 3. OPERATING INSTRUCTIONS

#### A. PREPARATION FOR OPERATION

1. Check for correct voltage and plug electric cord into your regular outlet - attach adapter if required.
2. Push oven all the way back to rear of machine.
3. Turn left hand switch up, to "ON" position. (Red indicator lamp will light).
4. Set temperature control (right hand knob) to "HI" position. Oven is now heating. Cold machines may require 10 to 15 minutes to warm up completely. The machine should produce good copies after said time with temperature control on "HI" and 4 to 6 seconds timer setting. Set temperature control to No. 4 or 5 and reduce timer setting to 3 to 4 seconds after 15 minutes warm up.

#### B. OPERATING THERMOFORM BRAILON DUPLICATOR

1. Unlock latch handle on the film clamp frame and swing frame all the way up. Oven should be all the way back.
2. Set electric timer to correct setting by rotating the control knob. The initial setting should be 3 to 4 seconds. Heat control should be turned to No. 6 or lower after warm-up.
3. Place page to be duplicated on manifold (metal screen with small holes) reading side (braille points) up.
4. Place plastic film (BRAILON) on top of braille page. Be sure that plastic film extends to the outside edges of frame around manifold. Brailon sheet size must be the same as manifold and and clamp size, or larger.
5. Swing frame down and latch clamp. This should assure that the Brailon sheet is sealed completely around.
6. Pull oven briskly all the way forward over film frame (this actuares the timer by microswitch in forward part of right rail) and hold handle in this position until timer runs out (amber light will light and you will hear the pump start running). Immediately push the oven back all the way to its rear position.
7. Unlock clamp on film frame and swing frame all the way up. Remove finished copy.
8. Lastly, push reset button front of machine below timer to shut off pump.

9. Machine is now ready for next copy which can be made immediately by repeating steps B-3 and B-8 above.

C. AFTER USING MACHINE:

1. Machine is shut off completely by turning left hand switch to "off" position (red indicator light will go off). Subsequent warm-up time will be reduced if machine is still warm when turned on again.

D. CHANGING FILM CLAMP FRAMES:

Changing film clamp frames and screen manifolds from one size to another takes approximately 30 seconds, as follows:

1. Unlock the latch handle.
2. Remove locking pins.
3. Move film clamp frame backward and push out of hinge posts.
4. Lift screen manifold by rear edge until it clears locating pins and remove.
5. Position other screen manifold on top of base plate, pushing down on rear of manifold to locate.
6. Take film clamp frame of proper size and install by positioning hingerod behind slots cut into hinge posts on rear of aluminum base plate. Pull film clamp frame forward.
7. Reinstall locking pins. Push down on top of pin until head of pin is firmly located in slot provided.
8. Clamp frame and manifold are now ready to use. Operate as indicated on Page 8 (B).

E. LUBRICATING AND MAINTENANCE PROCEDURE AND INFORMATION:

1. ALL THERMOFORM BRAILON DUPLICATORS WITH THE LETTER "D" FOLLOWING THE SERIAL NUMBER ARE EQUIPPED WITH NEW OILLESS DIAPHRAGM TYPE VACUUM PUMPS. THE MUFFLER ASSEMBLY SHOULD BE SERVICED AS SPECIFIED ON PAGE 14.
2. Lubricating Oven Slides

Oven slides are lubricated at the factory with Dow-Corning Slipicone. The factory lubrication will last in excess of six (6) months operation. Re-lubrication should be with Dow-Corning Slipicone which is approved for use with the machine. If this

compound is not available, "Lubri-Plate (SAE 105 viscosity) may be used without voiding warranty. Lubri-Plate is available at most hardware and automotive supply stores.

We consider the Dow-Corning Slipicone to be much superior to Lubri-Plate in that it is much more convenient to use and less subject to melting and dripping.

The lubricant can be wiped or brushed onto the inside of the oven slide assembly. A light coating is sufficient.

### 3. Other Maintenance

Wipe aluminum base plate clean daily or as necessary.

### F. PRECAUTIONS:

1. With continuous use, if plastic sheets appear to be overheating (curling, buckling, thinning in center), turn temperature control to lower number, and/or reduce timer setting. After warm-up, temperature control setting of 4 to 6 should be adequate.
2. Except with temperature control on "HI" setting, center heating element may appear less bright than outside element, and will show variations in color from time to time. This is perfectly normal and indicates proper operation of temperature control.

## 4. OPERATING DIFFICULTIES - CAUSES AND REMEDIES

### A. OVEN DOES NOT SLIDE SMOOTHLY.

Oven slides are checked for smooth operation before leaving factory. If the oven does not slide smoothly on receipt of machine, the only possible cause is slight bending of the slides due to rough handling in shipping. Repair can be made by straightening the slide assembly as required, until smooth operation results. Bend in place as required.

After the machine has once been put into proper operation, rough operation of the oven slide can only be caused by foreign matter in the slides or lack of lubrication. If there is no foreign matter in the slides and the slides are still rough, lubricate slides with Slipicone as indicated on Page 9 (E-2). If slides are still rough, recheck for bent slides.

### B. FAILURE OF OVEN TO HEAT.

The oven may fail to heat from the following three causes, which are easily remedied:

1. Blown fuse on supply line to machine. Replace fuse.
2. Power switch in "off" position.
3. Temperature controller in "off" position.
4. Unit unplugged.

The heater should last at least 5,000 hours of machine operation if the machine is used properly. A burned out heater can be replaced by the user or any local mechanic, or, if desired, the machine may be shipped back to the factory for replacement of heater.

C. TIMER INOPERATIVE.

1. This may be caused by lack of sufficient contact between the oven mounting assembly and timer micro-switch actuating lever. Microswitch actuator comes up through a hole in the machine base, at front end of right oven slide. Pull oven forward and observe whether or not actuator is depressed.
2. If insufficient contact occurs, the cause may be an obstruction which does not permit the oven to move forward the proper distance. If the oven moves forward the full distance, proper contact should be made. A slight "click" can be heard in the switch if the switch is closing properly. Check in particular for back oven jamming on improperly installed clamp frame lock pins.
3. If current is being supplied to the machine, power indicator light will come on and heater will operate. If the switch actuating lever is being depressed and timer still does not time out, either the switch or the timer is defective. Your electrician can determine which.

Replacement switch and/or timer can be obtained from American Thermoform Corporation.

D. EXCESSIVE HEAT.

Excessive timer settings or heat control settings will cause the plastic to warp on removal from machine. First reduce heat control setting by moving temperature controller to lower number setting. If this does not remedy trouble, reduce timer setting.

Extreme excessive heat exposure will melt or perforate the plastic sheet. Excessive heating may also cause wrinkles or pulling-in of the edges of the sheet. This can also be caused by improper clamping.

## E. IMPROPER CLAMPING.

As long as the plastic sheet is pushed into contact with the film locating stops (located on left hand slide and rear of screen manifold), proper clamping should result, using the correct size of BRAILON.

Improper clamping occurs when forming over relatively high objects, using excessively bulky or wrinkled masters, and sometimes when reusing plastic which has once been formed. Improper clamping is evidenced by the appearance of wrinkles on the plastic sheet when it is clamped, before oven actuation. If such wrinkles occur, the clamp should be loosened and the plastic smoothed by hand until the wrinkles are minimized or eliminated. If wrinkles exist before forming, they will be accentuated by the forming process.

When reusing plastic that has once been formed, we recommend that it be installed in the machine with the raised dots down. This insures complete removal of the original material and prevents errors in the reproduced copy.

## F. POOR DETAIL IN REPRODUCTION.

This may be caused by:

1. Heater not fully warmed up.
2. Insufficient heat exposure (timer setting too low).
3. Low voltage at supply plug (under 105 volts) on 120V units.
4. Setting temperature control to too low a number.
5. Shutting off pump before or too soon after returning oven to rear position.
6. Improper clamping.
7. Poor quality master.
8. Insufficient vacuum from pump.

## G. INSUFFICIENT VACUUM.

This may be caused by:

1. Foreign matter on aluminum plate or under platen seals.
2. Cuts, nicks, or dents in aluminum base plate under screen manifold.
3. Seals cut or broken.
4. Pump operating poorly.

5. Vacuum lines open or loose.
6. Excessive wear or deformation of latch handle assembly.

Items 1 through 3 above can be checked by taping perimeter of screen manifold (perforated plate) to aluminum base plate with drafting tape or vinyl plastic tape.

Items G5 and G6 can be checked by inspection. If none of these are at fault, the pump is operating poorly. The pump may be serviced by a local electrical repair man, the machine may be returned to the factory, or the pump assembly can be disconnected and returned to the factory.

#### H. NO VACUUM.

This may be caused by:

1. Pump cavity clogged or pump diaphragm defective.
2. Vacuum lines or exhaust silencer clogged.
3. Motor burned out.
4. No voltage to motor.

The first two items may be checked by operating the machine with the side door open and observing whether or not there is an outflow of air from the exhaust silencer outlet hole. When operating properly, with an open door, it is most difficult to keep the outlet port completely closed by finger pressure.

If the pump is pumping air and no vacuum is obtained, there is a leak in the system. Check all connections, the platen seals and the adequacy of clamping.

If no air is emitted from the exhaust silencer outlet hole or the motor is heard to "hum" rather than run, the motor or pump is jammed and should be returned to our factory. If there is no vacuum and no noise from the motor, the motor is burned out or there is no voltage being supplied to the motor terminals.

#### I. OVEN DOES NOT SLIDE ALL THE WAY BACK.

This is caused by one of the ball bearing slide retainers being out of its correct position. These retainers ride with the bearings and under certain conditions will require repositioning. To accomplish this run the oven to its back position and then firmly push the oven back against the stops. This may take a fairly substantial push. No damage can occur by exerting too much force in this operation. Now check the slides for dirt. The accumulation of foreign matter and improper lubrication in these areas are primary causes of this trouble.

SERVICING THE MUFFLER

SERVICING OF THIS UNIT IS NECESSARY WHEN IT IS NOTICED THAT DIRT STARTS TO ACCUMULATE ON THE INSIDE OF THE MUFFLER JAR.

PROCEDURE:

1. Remove the glass jar from the exhaust muffler.
2. Remove the felt support bracket by using the proper size wrench (3/4").
3. Wash the two felt pieces thoroughly in cleaning solvent. Allow to dry. The other alternative is to replace the old felts with new ones. \*
4. Clean muffler jar.
5. Reassemble and replace the jar, making sure that the cover gasket is in place.

\* Replacement muffler felts are available from American Thermoform Corporation at a nominal cost.

INSTRUCTIONS FOR REPLACING "ON-OFF" SWITCH

1. Disconnect from power source.
2. Turn machine on right hand side and remove three front screws and one bottom screw that hold on bottom panel.
3. Remove wires from switch (numbered 3 and 4).
4. Remove switch from cabinet using a wrench or pliers to loosen nut on switch.
5. Wires should be firmly affixed to the new switch and the procedure is reversed to assemble the switch to the cabinet and install the bottom panel.

INSTRUCTIONS FOR INSTALLING  
HEATER SWITCH

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(TEMPERATURE CONTROLLER)

1. Disconnect Thermoform Brailon Duplicator from power source.
2. While facing the machine, place it on its right side.
3. Remove the bottom cover plate. (4 screws)
4. Remove the heater switch knob by pulling straight out.
5. Carefully pull off the electrical leads to the switch. If they are soldered on, a soldering gun or iron will have to be used. Using an adjustable wrench or a 5/8" wrench, unscrew the nut on the front of the control panel holding the heater switch.
6. To install the switch look for the work "TOP" on the back of the switch. Place the switch into the hole with the word "TOP" positioned towards the top of the machine.
7. Reconnect the wires to the switch matching the numbers on the wire and the numbers on the back of the switch.
8. Follow steps 4 through 1 for reassembly of the machine.

INSTRUCTIONS FOR INSTALLING TIMER

1. Unplug the machine from power source.
2. Loosen the two knurled nuts which hold the oven to base conduit in position.
3. Turn the machine on the right side.
4. Remove the sheet metal panel which covers the front half of the bottom of the machine.
5. Disconnect octal socket by carefully pulling it straight backward with a slight rocking motion.
6. Remove the four nuts which hold the timer in the cabinet.
7. The timer may now be removed.
8. Install the new timer in the machine and fasten into position with the four lock washers and nuts. If any question arises consult the wiring diagram contained in this Manual.
9. Reinstall octal socket. Note that same will fit only in one position which is determined by a key on the large center post on the timer and a mating slot inside the center hole of the octal socket.
10. Assemble balance of machine.

PROCEDURE FOR REPLACEMENT OF MICRO-SWITCH

The following procedure is outlined to facilitate the replacement of the micro-switch on the Brailon Duplicator. The micro-switch is located on the front right hand corner of the machine, a portion of which is visible through the "actuator-arm" hole.

1. Disconnect the machine from power outlet.
2. Remove service panel located on front underside of machine cabinet. This panel is fastened by means of four screws. The micro-switch should now be visible.
3. Remove the two hold-down screws used to fasten the micro-switch to the machine side.
4. Remove wire terminals at bottom of micro-switch and note the respective terminals.

CAUTION: When replacing wiring on new micro-switch, care should be taken to return wires to the proper terminals.

5. Reverse steps 1 through 4 for final assembly.
6. Check to insure that actuator arm operates freely. (When depressed micro-switch should actuate with a "click" and arm should return to normal position when released).

INSTRUCTIONS FOR INSTALLING NEW  
CERAMIC STAND-OFFS

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1. Unplug machine from power source.
2. Remove two stop brackets in the front end of the tracks.
3. Unscrew the knurled fittings that couple the conduit to the elbows. (Located on outside of machine).
4. Slide oven forward and remove from machine.
5. Remove four screws on top of oven cover.
6. Reflector element can then be removed from bottom of oven cover.
7. Install the four (4) ceramic stand-offs to the reflector element using the screws and washers furnished as replacements. Extreme care must be used to tighten these screws so that the threads in the ceramic stand-offs are not damaged.  
DO NOT OVERTIGHTEN.
8. Reverse the procedure to reinstall the assembly.

INSTRUCTIONS FOR INSTALLING NEW HEATER  
ELEMENT

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1. Unplug machine from power source.
2. Remove two stop brackets in the front end of the tracks.
3. Unscrew the knurled fittings that couple the conduit to the elbows (located on the outside of the machine).
4. Slide oven forward and remove from machine.
5. Remove four screws on top of oven cover.
6. Reflector element can then be removed from bottom of oven cover.
7. Disconnect oven wires from heater element.
8. Remove brass bar from the terminals on the heater element.
9. Remove the single screw, washer and lock washer from the hole located on the opposite side of reflector from the four terminals.
10. Remove the heater element by sliding the four terminals out of their respective holes in the reflector.
11. Reverse the procedure to install the new element.

OVEN TRACK CLEANING  
OR  
REPLACEMENT OF BALL BEARING RETAINERS

The following steps are outlined as a guide to facilitate the removal and cleaning of the oven tracks on your Thermoform Brailon Duplicator:

1. Disconnect machine from power outlet.
  2. Remove stop brackets located on the front end of the tracks.
  3. Remove oven by sliding the whole oven assembly forward. Hold down microswitch arm manually.
  4. Clean tracks and ball race assembly with suitable solvent and lubricate all sliding surfaces thoroughly before assembly.
  5. To reassemble oven in tracks, locate ball races in outer tracks, about four inches from front of machine, and carefully push oven backwards inserting one set of balls at a time.
- NOTE: The oven might have to be forced back until the race "nestles" in its proper position.
6. Reverse steps 2 and 3 for final assembly.

NOTE: When replacement of ball bearing retainers is necessary, please specify sizes of retainers on your machine (either 4 ball or 6 ball).

INSTRUCTIONS FOR INSTALLING LATCH HANDLE

1. Remove the clamp frame from the machine placing it upside down on a table.
2. Insert a 9/32 Allen wrench into the set screw located in the right hand mounting bracket of the frame. Loosen the screw by rotating the wrench counter clockwise at least two (2) full turns.
3. Use a small punch and hammer to tap out the pin which holds the latch handle in place. The old latch handle can now be removed.
4. Lubricate the pin with the DC-4 lubricant supplied with the machine.
5. Insert the new latch handle, aligning the tube portion of the handle with the pin and slide the pin into position. Make sure that both ends of the pin are approximately flush with the outside edges of the frame.
6. Tighten the set screw firmly by rotating the Allen wrench clockwise.

INSTRUCTIONS FOR INSTALLING  
YOKE ASSEMBLY

1. Remove two screws holding yoke assembly to base plate.
2. Install new assembly using shims from old assembly.
3. Handle should clamp down with light pressure, just enough to hold the Brailon securely through the reproduction cycle. If clamping is too tight, add shims. If too loose, remove shims.

CLAMP FRAME ADJUSTMENT  
(See Page 26)

First check to determine whether the frame is loose in front or rear. This can be done by laying on a thin strip of paper at the back of the frame under the clamp area and one at the front of the frame. Pull the paper to test its tightness and tighten either front or rear as necessary.

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REAR ADJUSTMENT:

There are two socket head set screws on each side in the rear of the frame, one on the upper side of the hinge and one on the lower side of the hinge. To increase clamping pressure at the back of the frame, loosen very slightly the two screws in the top of the hinges and tighten the two screws in the bottom of the hinges.

To decrease clamping pressure, loosen the bottom screws and tighten the top screws.

FRONT ADJUSTMENT:

1. Remove the two flat head screws holding the roller portion of the latch yoke assembly to the base plate of the machine.
2. Remove one shim (select the thinnest one of the group).
3. Reassemble, replacing all of the other shims in the group and tighten both screws firmly.
4. Check the machine for proper operation.

NOTE: If the machine does not function properly, one more thin shim can be removed.

The latch handle, the roller portion of the yoke assembly, or both, should be replaced if the above minor adjustments are not sufficient for proper operation.

When two or more frames are fitted to a machine, it is best to replace the clamp frame handle or roller to maintain the original adjustments instead of removing an excessive amount of shims from the latch.

DIAPHRAGM VACUUM PUMP  
OPERATING AND MAINTENANCE INSTRUCTIONS

1. Do not at any time lubricate any of the parts with oil, grease or petroleum products nor clean with acids, caustics or chlorinated solvents. Be very careful to keep the diaphragm from contacting any petroleum product or hydrocarbons. It can affect the service life of the pump.
2. To clean or replace the filters and/or rubber gasket, remove the five (5) phillips screws in the top of the unit. The filters and gasket are located beneath this top plate. Remove the filters and wash them in a solvent and/or blow off with air and replace. The gasket may be cleaned with water. Replace the filters in proper position and replace the gasket. Note that the gasket and top plate will fit in one position only.
3. To replace the diaphragm, remove the four socket cap screws from the head of the pump. The diaphragm is held in place by two phillips head screws. Remove screws, retainer plate, and the diaphragm. The diaphragm will fit in any position on the connecting rod. Replace the plate and the two phillips head screws. Torque to 30 inch-pounds.

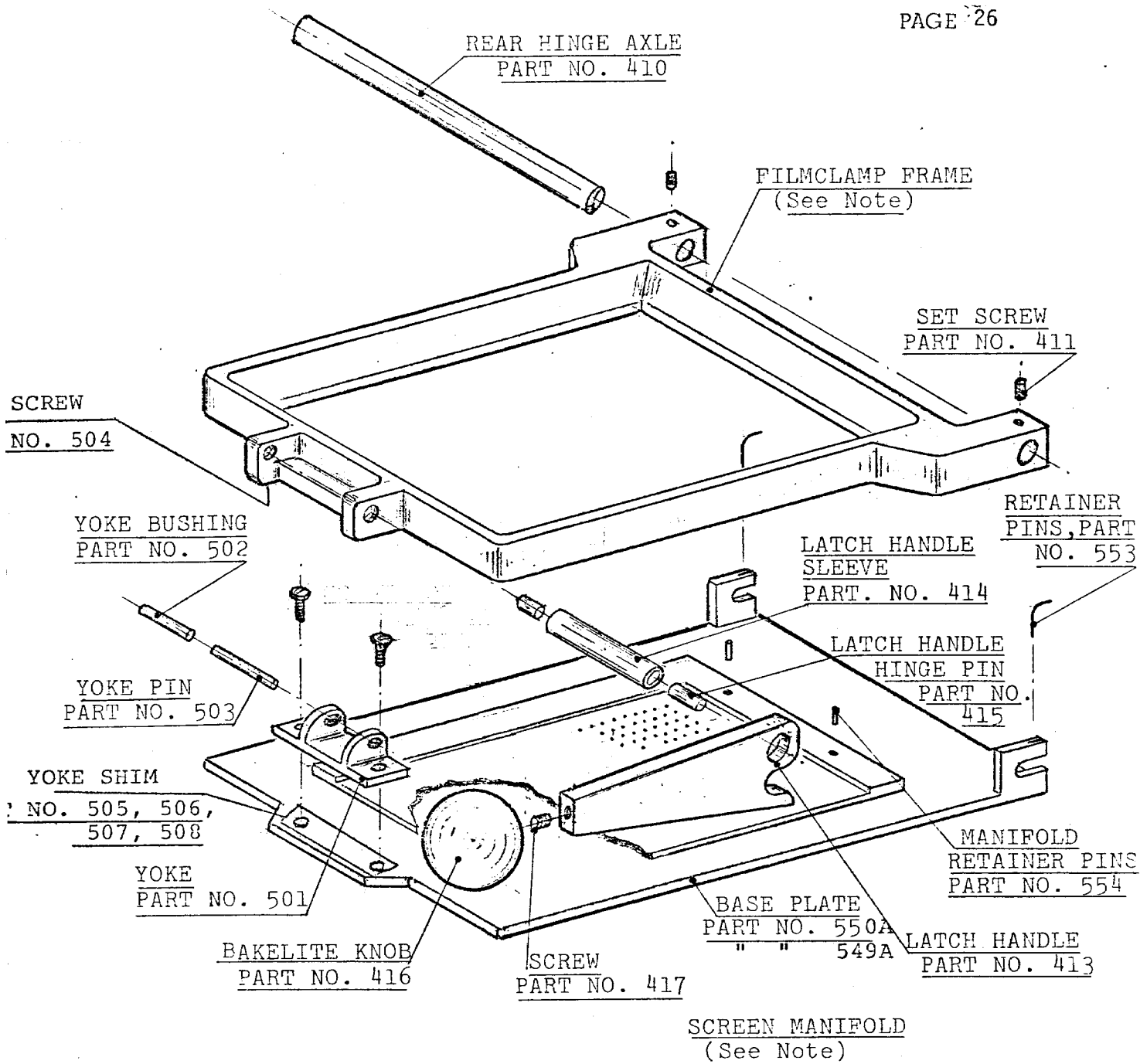
**CAUTION: DO NOT RAISE ANY BURRS OR NICKS ON THE HEADS OF THESE SCREWS. THESE BURRS COULD CAUSE DAMAGE TO THE INLET VALVE.**

4. For replacing the inlet and outlet valve, remove the slotted machine screw that holds each valve in place. The stainless steel inlet and outlet valves are interchangeable. Clean them with water. When replacing the outlet valve, place the new valve in location and note there is a retaining bar near the machine screw hole. This retaining bar holds the valve in position. When replacing the inlet valve, note that the valve holder is marked with an X in one corner. This X should be in the lower right hand corner toward the inlet of the air chamber. Replace the head and tighten the socket head screws to 90-100 inch-pounds of torque.
5. Do not attempt to replace the connecting rod or motor bearings. If, after cleaning the unit and/or installing a new Service Kit, the unit still does not operate properly, contact:

**American Thermoform Corp.  
1758 Brackett Street  
La Verne, CA 91750**

6. The wiring information for the permanent split capacitor motor which has four (4) leads is as follows:

Brown leads to capacitor.  
Black leads to Power Source.



F I L M C L A M P F R A M E

NOTE: Frames and manifolds are available in various sizes. In order to convert from one page size to another, it is necessary to order the appropriate film-clamp frame assembly and manifold.

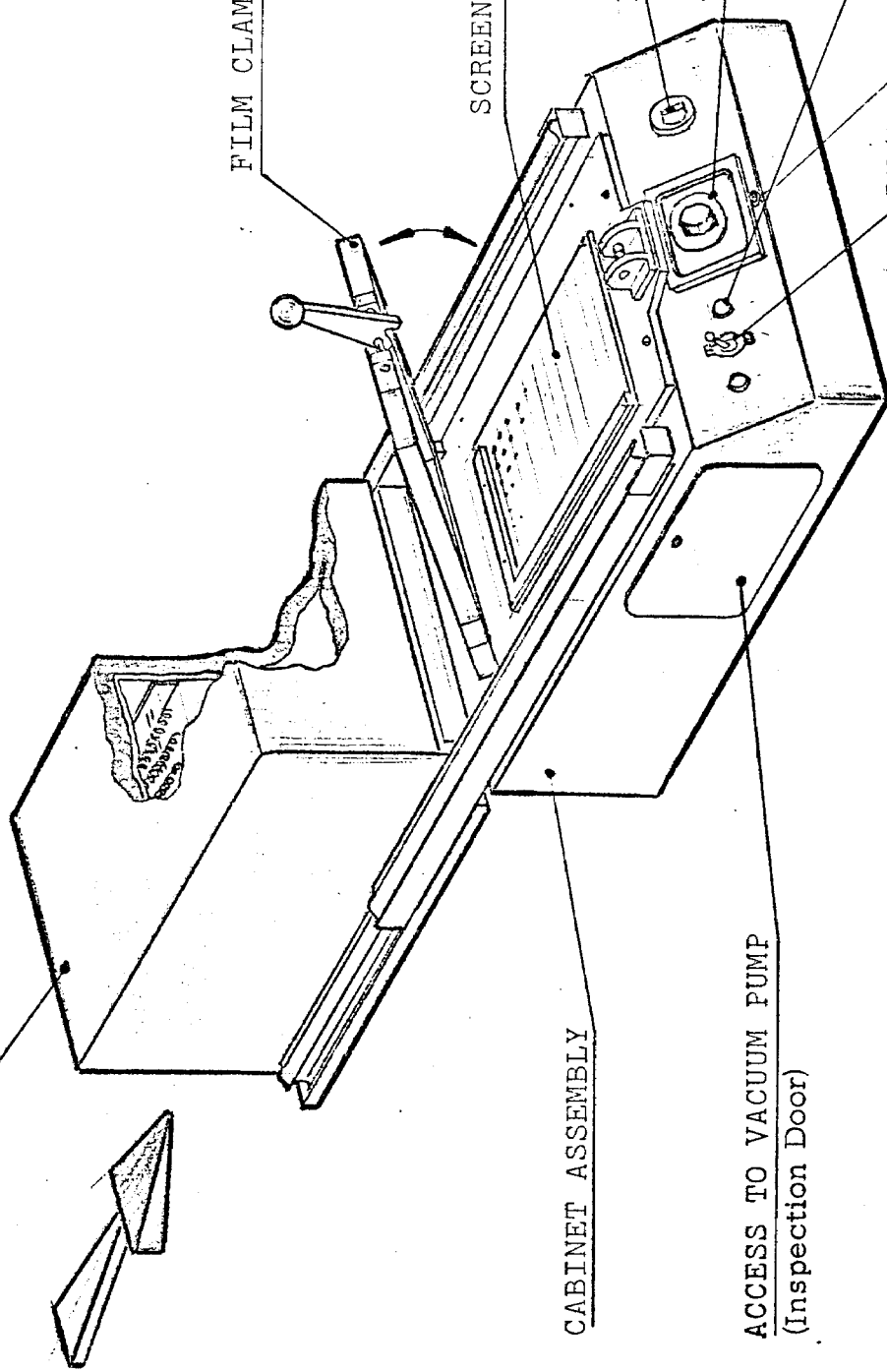
FILM CLAMP FRAME ASSEMBLY

<u>-Part No.</u>	<u>Size</u>
401 A	11 X 11-1/2"
402 A	9-3/4 X 11-1/2"
403 A	8-1/2 X 11"
404 A	10-1/4 X 13-3/4"
405 A	7 X 7"
406 A	11 X 11"

MANIFOLD

<u>Part No.</u>	<u>Size</u>
450	11 X 11-1/2"
451	9-3/4 X 11-1/2"
452	8-1/2 X 11"
453	10-1/4 X 13-3/4"
454	7 X 7"
455	11 X 11"

OVEN ENCLOSURE ASSEMBLY



FILM CLAMP FRAME

SCREEN MANIFOLD

HEATER CONTROL  
P/N: 217, 218, 219

TIMER  
P/N: 950

PILOT LIGHT  
P/N: 212, 213,

ON/OFF  
P/N: 216

PUMP STOP SWITCH  
P/N 951

CABINET ASSEMBLY

ACCESS TO VACUUM PUMP  
(Inspection Door)

T F 5 5 B R A I L L E D U P L I C A T O R

STEEL BALLS  
PART NO. 805

INNER OVENSIDE  
PART NO. 802

WO BALL RACE  
ART NO. 804

OR

HREE BALL RACE  
ART NO. 803

HEAT SHIELD  
PART NO. 204

OUTER OVENSIDE  
PART NO. 801

HEAT DEFLECTOR  
PART NO. 225

OVEN STOP BRACKETS  
PART NO. 203

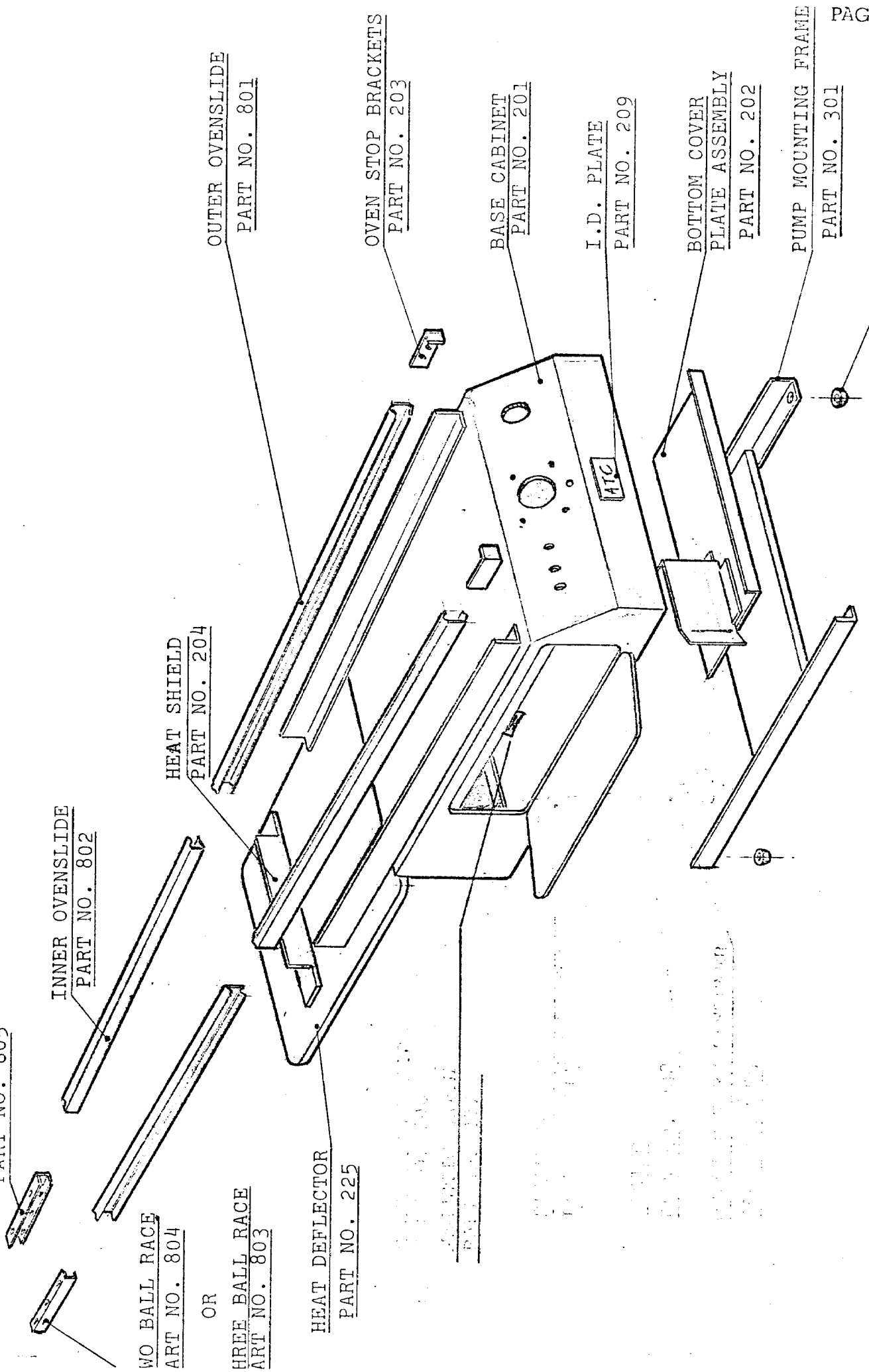
BASE CABINET  
PART NO. 201

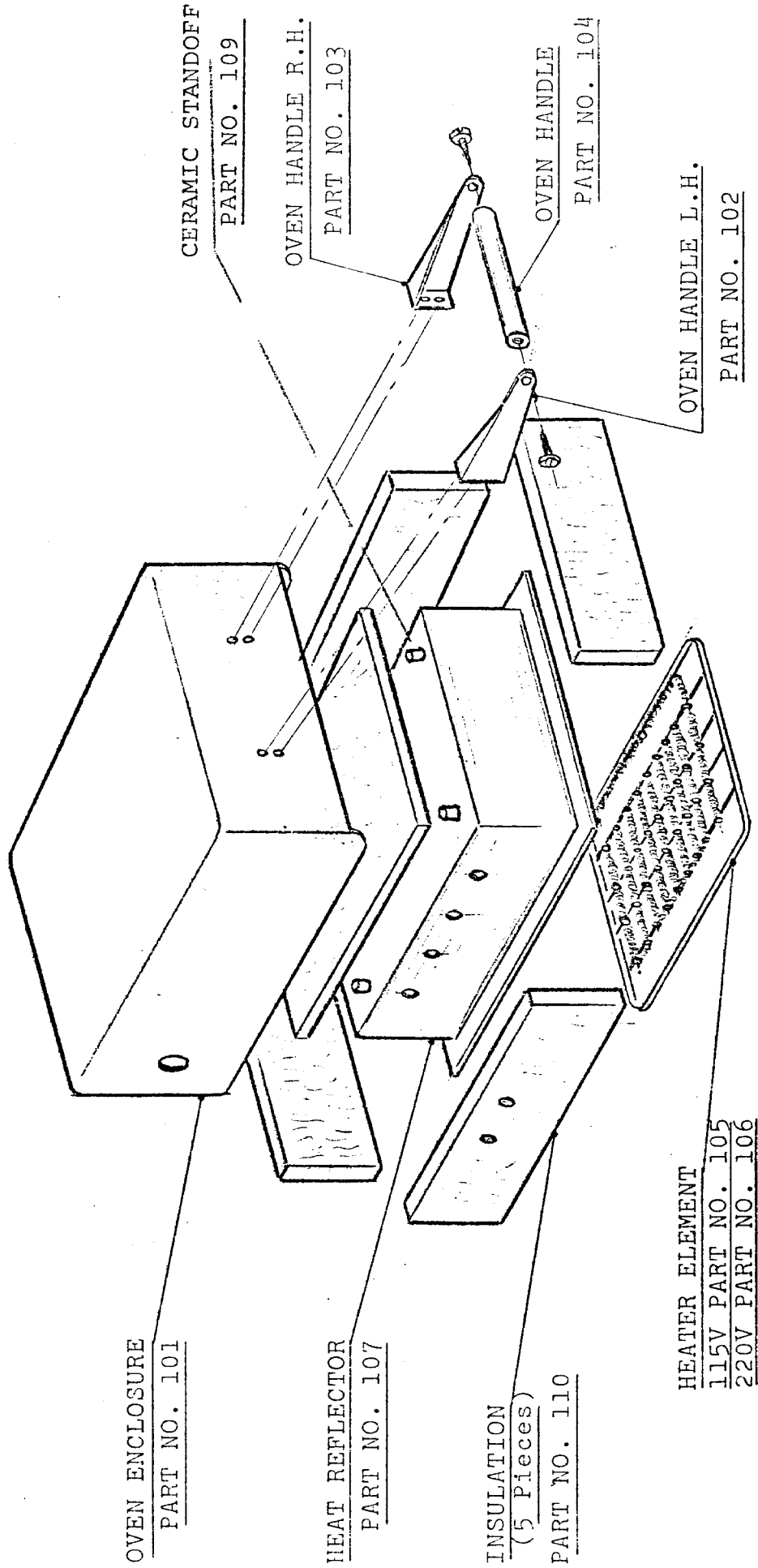
I.D. PLATE  
PART NO. 209

BOTTOM COVER  
PLATE ASSEMBLY  
PART NO. 202

PUMP MOUNTING FRAME  
PART NO. 301

RUBBER FEET  
PART NO. 302





OVEN ENCLOSURE ASSEMBLY

#### PACKING FOR RESHIPMENT.

1. Remove white Maronite heat shield from machine and save. Heat shield need not be shipped back to the factory with machine.
2. Remove all three jars. Do not return to factory.
3. Set timer to 15 seconds.
4. Loosen completely the elbow nuts on each end of oven-to-base metal sheath conduit.
5. Tape platen change locking pins securely in place to keep film clamp securely on platen. Lock locking handle. All platens and clamp frames are to be returned with the machine.
6. Place machine on its side with electric cord up. Coil power cord and tape coil to keep cord out of the way.
7. Place shipping container on its side and slide machine into shipping container, base first.
8. Turn carton and machine right side up. Be sure that base of machine is located in bottom cut-out of carton.
9. Lower carton liner into carton so that oven is located inside cut-out in liner. Push liner down until it is level with top of shipping container. Do not force - readjust oven location or ends of liner until liner can be located properly.
10. Tape ends and top seam of container securely.
11. Affix proper label and ship.

#### SHIPPING INFORMATION:

1. THERMOFORM BRAILON DUPLICATOR - The complete machine should be shipped in its original shipping container. Shipments to and from American Thermoform Corporation can best be made by TRUCK FREIGHT. To achieve the lowest possible shipping rates, be sure that the Bill of Lading is clearly marked "ICC Classification - Machinery NOI".
2. SPARE PARTS AND BRAILON - Shipments of spare parts and BRAILON, which weigh materially less than 100 pounds, can most advantageously be sent by Parcel Post. Shipments with total weight in excess of 30 to 50 pounds, depending on destination, may be more advantageously shipped by truck freight.

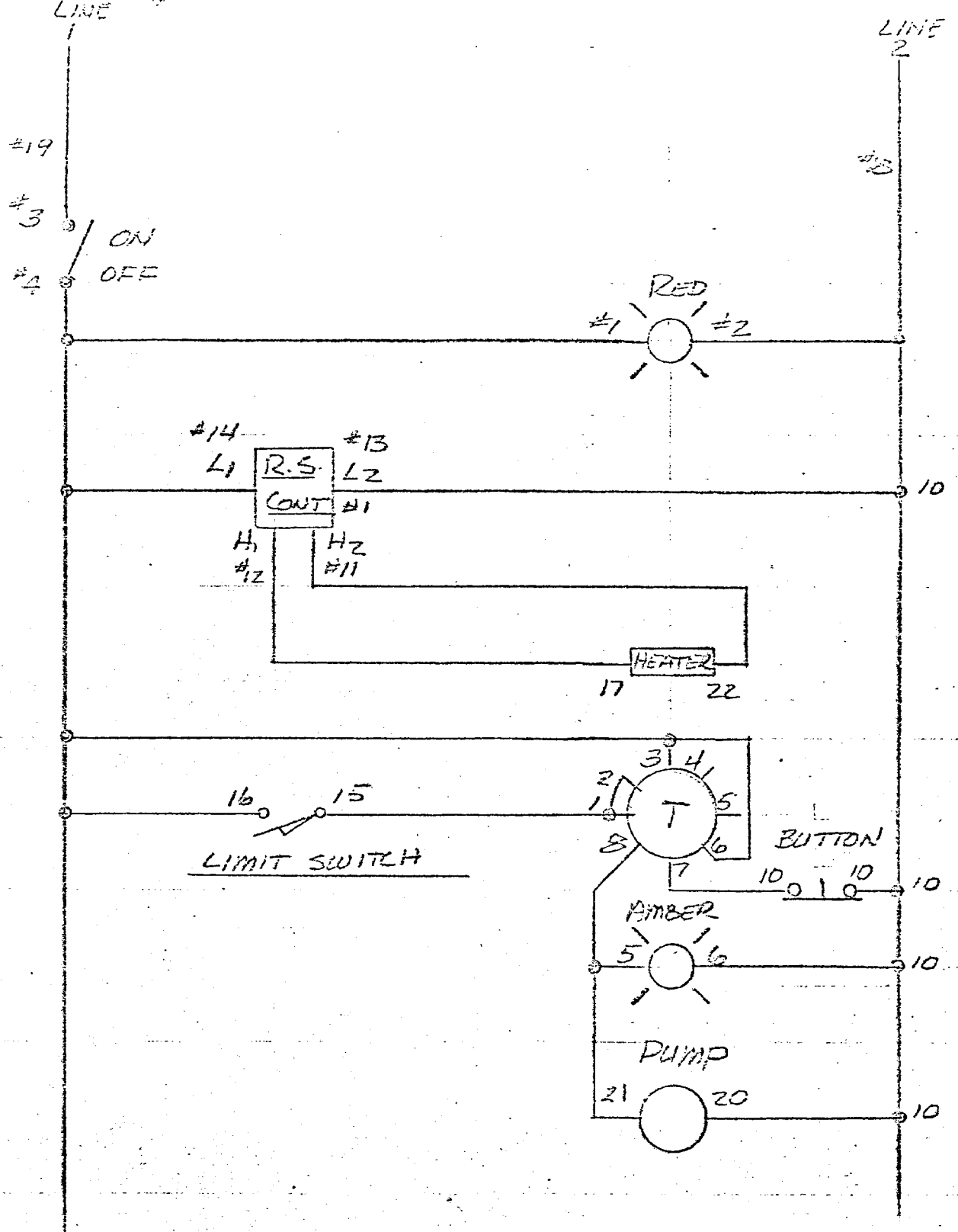
Truck freight rates are lower (per pound) than fourth class Parcel Post, but charges are based upon 100 pounds minimum weight. The general rule within the continental United States is that anything weighing less than three pounds will cost less to ship by Parcel Post. In case of doubt, check Parcel Post and truck freight rates to destination.

For information regarding "free" mailing privileges of material for the Blind, write to American Thermoform Corporation.

SPARE PARTS  
FOR  
THERMOFORM BRAILON DUPLICATOR

<u>PART NO.</u>	<u>DESCRIPTION</u>
101	Oven Enclosure (Not including slides P/N 800A)
104	Oven Handle with mounting brackets
105	Heater Element (115V)
106	Heater Element (230V)
107	Oven Reflector
109	Ceramic stand-off (4 required)
110	Oven Insulation, one set
201	Machine Enclosure (excludes outer oven slides P/N 800A)
203	Oven Stop Brackets (two required)
204	Heat Shield (Aluminum Angle Bracket)
210	Heyco Bushing
214	Pilot Light Bulb
215	Timer Actuating Micro-Switch
216	Toggle Switch (On-Off)
216-1	Toggle Plate
217	Heater Switch (115V)
218	Heater Switch (230V)
222	Lead-in Cord
223	Adapter Plug
225	White Maronite Heat Deflector
302	Rubber Feet (4 required)
401A	11" x 11½" Filmclamp Frame Assembly
402A	9-¾" x 11½" Filmclamp Frame Assembly
403A	8½" x 11" Filmclamp Frame Assembly
412A	Latch Handle Assembly (Includes P/N 416)
416	Knob for Latch Handle
450	11" x 11½" Screen Manifold
451	9-¾" x 11½" Screen Manifold
452	8½" x 11" Screen Manifold
500A	Yoke Assembly (Includes P/N 502 and P/N 503)
502	Yoke Roller Bushing
503	Yoke Bushing Pin
550A	Base Plate Assembly
553	Filmframe Retainer Pins (2 required)
650A	Oven-to-base Conduit Assembly (Includes P/N 651 thru P/N 656)
651	Replacement wire sets for conduit cord
653	Flex Conduit
654/655/656	Elbows, Nut and Lock Washer for Flex Conduit
759	Muffler Glass Jar
761	Muffler Felts (two required)
800A	Oven Slide Assembly (includes P/N 803 and P/N 805)
803	Ball Retainer per set
805	Ball Bearings (six required)
810	Slipicone - 2 ounce tube
920A	Vacuum Hose Assembly
940	Diaphragm Vacuum Pump (115V/60)
941	Diaphragm Vacuum Pump (230V 50/60)
942	Diaphragm Vacuum Pump (115V 50/60)
950	Solid State Timer (115V 50/60)
960A-115	SS Wiring Harness Assembly (115V)
960A-230	SS Wiring Harness Assembly (230V)

NOTE: PLEASE ORDER BY PART NUMBER



Electrical Schematic  
 for TF 55, Model S 115 Volts