



6.0 Troubleshooting

INTRODUCTION

Table 6-1 provides a logical sequence of tests that are designed to isolate problems with the Tray Box Former machines. This table includes a list of probable causes and remedies. Referring to Section 5.0 will aid in understanding the operation and functions of various components and systems of the Tray Box Former machines and help in diagnosing and repair of the machine.

SAFETY PROCEDURES

As with all machinery, injury can result if safety procedures are not adhered to. The following are some of the safety rules that should be incorporated into your plant safety program and put into practice by all of your maintenance and operating personnel:

1. Always lock out machine before doing maintenance or adjustments on equipment.
2. Never run the machine without the guards in place.
3. This machine is equipped with hot melt glue applicators, always wear protective equipment when working around hot melt units.
4. Always check machine for worn or loose parts and replace and tighten as needed before starting.
5. This machine operates on high voltage and only qualified electricians should work on electrical components.
6. Always be aware that this machine can start automatically when in the auto position and downstream control contact and/or time delay attachment is used.
7. Always wear proper clothing and protective equipment.
8. This machine should be operated by trained and qualified personnel only.

6.1 Troubleshooting Chart

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Table 6-1: Troubleshooting Chart

TROUBLE	PROBABLE CAUSE	POSSIBLE REMEDY
1. Machine stops suddenly.	A. Blanks jammed in hoppers.	A. Clear jam and reset blank pick safety by pulling down on the blank pick pawls.
	B. Weak spring tension on detent ball.	B. Tighten spring plug. If this doesn't remedy the situation, add no more than one (1) 1/4 inch lock washers to the spring for additional tension.
	C. Detent hole worn out in detent rod (0016000).	C. Replace rod.
	D. Safety micro switch not holding in "Normally Open" position.	D. Bend tang welded to blank pick safety rod (0016100), toward micro switch until button is held in "Normally Open" position. CAUTION: When blank pick safety breaks turn switch to off position before resetting blank pick.
2. Blanks will not feed out of hopper.	A. Dull pick needles.	A. Replace needles.
	B. Blanks too wide.	B. Adjust vertical guides to blank width plus 1/8 inch. If width varies check with corrugated supplier.
	C. Improper gate clearance.	C. Adjust hopper blades (See Figure 5-13).
	D. Warped blank.	D. If warp is more than 1/4 inch per foot, break blank opposite of warp or replace blanks.
	E. Pick pawls push blanks back in hopper when blank supply is low.	E. Spring tension is too tight on pick pawl. With pawl in down position, remove spring tension bolt. To adjust spring tension, reinstall bolt by turning approximately 3 revolutions. This is a good starting point. Do not try to run less than 2 inches of blanks in hopper.
3. Adhesive Misprogramming.	A. Blanks too wide or too narrow.	A. Adjust vertical guide bars. (See Figure 5-5)
	B. Blank pick cam has slipped.	B. Re-time cam. (See Figure 5-14)
	C. Feed roll drive chain is loose.	C. Tighten chain with chain idle take-up sprockets.
	D. Loose sprocket on feed roll shaft.	D. Tighten sprocket.
	E. Feed roll set screw loose.	E. Tighten set screw.
	F. Idle roller not tight enough to feed roller.	F. Adjust idle roller. (See Figure 5-15)
	G. Program wheel loose on shaft.	G. Adjust and tighten set screws.
	H. Print segments loose on program wheel.	H. Adjust and tighten set screws.
	I. Blanks not feeding out of hoppers correctly.	I. Check all points of adjustment on the hoppers. (See Figure 5-12 & 5-13)

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Table 6-1: Troubleshooting Chart (Continued)

TROUBLE	PROBABLE CAUSE	POSSIBLE REMEDY
4. Blanks will not feed straight down.	A. Vertical guide bars out of adjustment.	A. Adjust vertical guide bars. (See Figure 5-5) make sure mandrel is centered properly.
	B. Backup rollers too tight.	B. When adhesive pump backup rolls are used instead of program wheels it is possible to have one or both too tight. Readjust backup rolls until good teeth marks show on blank.
	C. Blank feed backup roller is not aligned.	C. Angle of roller may be changed by loosening the bolts holding the plates (0016400; See Figure 5-15), and rotating them until the roller lines up with feed roller.
5. Body Blanks hit box Forming Mandrel.	A. Blank pick timing too early.	A. Re-time cam (See Figure 5-14).
	B. Timing of blank feed too late.	B. Adjust blank guides on vertical guide bars as needed. If not enough to remedy problem, break blanks on score opposite of warp. In some cases special guides have to be designed.
6. Forming Mandrel hits Blank before Blank hits Bottom Stops.	A. Blank feed idle roller too loose.	A. Adjust roller (See Figure 5-15).
	B. Timing of blank feed too late.	B. Readjust blank pick cam (See Figure 5-14).
7. Minor Flaps are being torn off.	A. Blank guides positioned wrong.	A. Standard guides (0026100 R/L) should not be in area where the minor flaps fold out of vertical guide bars. reposition guides.
	B. Major flap scores are weaker than minor flap scores.	B. Add or adjust down existing top restraining finger if problem is at the top of compression. If problem is at bottom of compression, add or adjust restraining bottom stops toward rear of machine.
	C. Mandrel is not hitting center of blank.	C. Adjust blank vertical bar and adjust bottom stops. (See Figure 5-5). Check mandrel for adjustment and proper centering on transmission spreader bars.
	D. Inside flap plows not spaced correctly for caliper of blank.	D. Some very thin blanks require plows to be spaced out from top and bottom compression shoes (1/16 to 1/8 inch). Spacing added to inside of plow must be taken out from outside of plow.

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Table 6-1: Troubleshooting Chart (Continued)

TROUBLE	PROBABLE CAUSE	POSSIBLE REMEDY
8. Box has tear in bottom corners.	A. Restraining finger (0030902) holding too long.	A. Adjust (0030902) up on Bar 0020504 or 0020505. Bottom stops should be rotated toward front of machine.
	B. Mandrel too large for box.	B. Check blank to mandrel fit and correct one or the other. (Check fit: remove mandrel from machine, set mandrel on blank, hand fold around mandrel; should be a smooth fit.)
	C. Bottom stops no adjusted correctly.	C. Readjust bottom stops centering scores to mandrel.
	D. Vertical guide bars not centered to mandrel.	D. Adjust vertical guide bars (See Figure 5-5).
9. Bottom of box has round corners.	A. Wrong mandrel size.	A. Change mandrel size or change corrugated.
	B. Incorrect shims under mandrel guides.	B. Replace with correct shims; 0021101, 0021102 or 0021103.
	C. Top compression too tight.	C. Readjust (See Figure 5-8).
	D. Side compression rolls too tight.	D. Check blank thickness and readjust compression bars if necessary (See Figure 5-4). If blanks vary in thickness, set compression for thinnest blank.
	E. Adhesive bond breaks on one corner.	E. Glue too hot or too cold, check temperature. Incorrect compression, readjust per blank thickness.
	F. Mandrel stroke too short to push tray beyond box strippers.	F. Readjust stroke (See Figure 5-9).
	G. Box strippers not riding surface of teflon plates on mandrel.	G. Readjust box stripper (See Figure 5-10).
	H. Blank scores not centered on mandrel.	H. Adjust bottom stops. (See Figure 5-5)
	I. Variation in length of blank.	I. Check with corrugator. Note: Lids 2" or shallower, teflon should be all the way to rear edge of mandrel plate: Reposition.
10. Inside flaps not even with top of box. (Continued on the next page.)	A. Corrugated material not scored and cut correctly.	A. Check with corrugator.
	B. Mandrel stroke too short.	B. Readjust stroke (See Figure 5-9)
	C. Box stripper not touching teflon.	C. Readjust box stripper (See Figure 5-10).
	D. Flap pushers not adjusted correctly.	D. Jog machine so pusher cam roller is on high point of pusher cam. Measure from rear edge of mandrel to face of pusher pawl. This measurement should be the same as box depth.

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Table 6-1: Troubleshooting Chart (Continued)

TROUBLE	PROBABLE CAUSE	POSSIBLE REMEDY
10. Inside flaps not even with top of box. (Continued)	E. Inside flaps hit on pusher pawls.	E. In some cases, the pawl will have to be cut on an angle so the flap will come off without catching on top of pawl.
	F. Mandrel not centered.	F. Readjust mandrel (See Figure 5-2)
	G. Vertical guide bars not centered.	G. Readjust (See Figure 5-5).
	H. Misaligned bottom stops.	H. Readjust (See Figure 5-5).
	I. Side compression not centered on mandrel.	I. Readjust compression bars (See Figure 5-4).
	J. Top compression too loose or tight.	J. For too tight condition (See Figure 5-8), also for loose condition, but make sure the correct shims are under mandrel guides.
11. Mandrel does not stop at "Cycle Start" position.	A. Mandrel stop brake worn.	A. Machine "coasts" through the "Cycle Start" position. Adjust brake (See Figure 5-20).
	B. Stop micro switch cam out of adjustment.	B. Adjust cam (See Figure 10-19).
12. Blank Pick Cam slips on shaft.	A. Cam set screw not secure.	A. Tighten and re-time the cam (See Figure 5-14).
	B. Blank safety con rod dry or rusty inside slide area.	B. Clean and oil.
	C. Blank safety set too tight.	C. The spring in the detent housing should be set only tight enough to insure picking a blank under normal conditions. Back off spring adjustment if necessary.
13. Tray Box falls apart after compression.	A. No glue.	A. Fill pot. Keep glue level over the half way point.
	B. Improper clearance between program segments and pump drive gear.	B. Readjust to proper clearance (See Figure 5-16).
	C. Glue too hot.	C. Stringy look. Turn temperature down.
	D. Glue too cold.	D. Glue bead not spreading out in compression. Raise temperature.
	E. Improperly adjusted compression.	E. Readjust (See Figure 5-4).
	F. Corrugated to thin.	F. Check with corrugated supplier or readjust compression.

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Table 6-1: Troubleshooting Chart (Continued)

TROUBLE	PROBABLE CAUSE	POSSIBLE REMEDY
14. Adhesive will not feed. (Continued on the next page.)	A. No adhesive in pot.	A. Fill pot at least to half way mark.
	B. Improper clearance between program segments and pump drive gear.	B. Readjust to proper clearance (See Figure 5-16).
	C. Worn or broken teeth on drive gear.	C. Replace gear.
	D. Plugged applicator jet (0024500).	D. Use a paper clip or piano wire to clean the jets. (NOTE: The orifice diameter is 0.040). WARNING: Glue pumps and pots are extremely hot, use safety goggles, heat resistant gloves and protective clothing and take your time when performing any adjustments relating to the glue system.
	E. Volume control needle valve not adjusted correctly.	E. Using 1/16 inch allen wrench, adjust needle valve (clockwise) for more adhesive, and out (counter-clockwise) for less adhesive. Adhesive bead size should be approximately 3/32" wide. (Except on some wax boards which may need full flow.)
	F. Heating element burned out.	F. Replace element.
	G. Thermostat out of calibration.	G. Re-calibrate. Make sure glue is up to operating temperature before calibrating thermostat. (Give about 1/2 hour warm up time.) Using a surface probe pyrometer measure the temperature just above one of the glue jets (0024500). Remove thermostat knob. Using a small screwdriver, turn the screw inside knob shaft until light goes on. Then turn in opposite direction until the light goes off. Set both thermostats and recheck in an hour.
	H. Adhesive burned around drive wheel shaft. Pump wheel hard to turn.	H. Drain adhesive. Remove and cap from pump. Remove drive wheel from pump. Push out gear from pump housing being careful not to damage gear. Using #120 grit emery cloth polish gear shaft to bare metal. Using a "V" drill by hand, run through the shaft hole to remove burned adhesive. Lubricate with "Never Seize" or similar lubricant and reinstall. Make sure drive wheel set screw is in counter-bored hole in drive gear shaft, and is tight.



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Table 6-1: Troubleshooting Chart (Continued)

TROUBLE	PROBABLE CAUSE	POSSIBLE REMEDY
14. Adhesive will not feed. (Continued)	I. Air in adhesive.	I. Skippy adhesive pattern or no adhesive on leading edge of body blank, also drooling from nozzles. Moisture in adhesive, air in adhesive or temperature too hot. Take special care not to get water in the pots when washing down machine. Change glue manufacturer if air is found. The PMS adhesive system is gravity fed gear drive and will not run adhesive containing air.
	J. Debris in adhesive system or burned adhesive.	J. Clean glue system in accordance with maintenance (Section F).
15. Thermostat light on, but melt pot fails to heat glue to operating temperature.	A. Loose wires.	A. Check for loose terminal connections or broken wires.
	B. Defective thermostat.	B. Replace.
	C. Defective heating element.	C. Check element with an ohmmeter or an open circuit. If defective, replace. Warm melt pot assembly to about 250 F. Loosen the two bolts holding the pump assembly to the melt pot. Remove the thermostat cover (0016602). Disconnect wires from heater element and pull it out, (0020300). Slide new heater in. Check voltage and wattage requirements on new heaters.
16. Adhesive constantly running from nozzles.	A. Air in system.	A. See Trouble Shooting Guide (Glue System). NO. 14-1.
	B. Foreign matter under ball check valve.	B. Follow cleaning instruction in maintenance Section F. If this fails, pump will have to be removed and disassembled. Pump body may be cleaned with a torch or oven. All charred adhesive must be burned off body. Reinstall ball check valve using a piece of 1/4" round steel approximately 6 inches long, lightly tap on ball. Reassemble. (Always use new check ball and spring.)
	C. Jelly in pot.	C. Adhesive has been heated too long for life span of glue. Mixing glue types cause this condition. Clean adhesive system.

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