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HOPKINS / BWM
TECHNICAL/TROUBLE SHOOTING GUIDE



MANUAL AND AUTOMATIC SPOT DRYERS:

In trouble shooting a problem, it is our goal to find a solution. First, we must clearly define the problem and isolate it by removing all outside influences, so we can get to the heart of the matter.

NOTE: Before removing the cover of a spot dryer to check parts, **UNPLUG THE UNIT.**

1. CHECK LINE VOLTAGE

It is recommended that the line voltage be checked before tearing the spot dryer apart. This is done by using a voltmeter set to the proper range. Stick the probes right into the outlet slots and read the voltage between the two sides. It should read either 110 volts or 220 volts. If it does not meet the spot dryer's requirements, call your electrician!

If you operate the spot dryer on a circuit that is too small or use long, lightweight extension cords, the unit will not function as efficiently and components may actually be damaged in time. We strongly recommend a dedicated 30 amp circuit, for 110 volt units, 15 amp for 220 volt units.

If the line voltage is 10% lower than the spot dryer calls for, it is likely that the unit will run inconsistently. For example the motor may not rotate the head or there may be little heat or none at all. If the unit chatters when turned on, it indicates the line voltage is not high enough to actuate the heater relay. If a unit is operated this way regularly, the heater relay contacts will have a very short life.

2. INCONSISTENT CYCLING OF DRYER HEAD?

This may be due to the inner tube binding against the outer tube and the motor not being strong enough to overcome the friction. Or the inner tube spindle weld may have broken, but still engages intermittently. In either case, follow this procedure: disconnect drive chain at master link and remove. The dryer head should rotate without binding. If it does not, the inner tube needs to be removed. To do this follow the procedure outlined in Number 5. Once the inner

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tube is removed, inspect it for signs of wear, cause of binding, and check the condition of the inner tube spindle weld. If everything checks out, clean and lubricate the inner tube with a light grease - such as an anti-seize engine assembly lube. Re-assemble unit and check for binding.

3. SPOT DRYER HEAD DOES NOT CYCLE/ROTATE AT ALL?

Turn unit off. With release knob locked, manually, gradually push head over shirtboard position. You will feel resistance of gear motor. If you don't feel the resistance from the gear motor, then the problem is either: 1) the inner tube spindle weld is broken; or, 2) a roll pin in one of the sprockets has sheared, in either case, replacement of components is required. To do this, follow the procedure outlined in Number 5 of this guide.

If resistance of gear motor is felt, turn the unit "on", and the head should rotate back to the "start" position. If that works, trigger the unit again and it should cycle on its own.

If it does not, check the printer limit switch/foot switch and cord. Unplug and check for switch function with a continuity tester or ohmmeter. Replace if bad. If necessary check the internal limit switches. They may be stuck in the open position, or knocked out of adjustment, and need their arms readjusted. Checking the limit switches with a continuity tester will determine if they are stuck. Unplug dryer from power source. This continuity test should be done with the wire lead removed from the common switch terminal and switch off of operating pin. Hold the tester probes on the switch terminals and actuate the switch lever manually. The switch should click and the circuit should open and close. If it does not, replace the switch.

If the switches are okay, manually rotate dryer until pin trips switch. The switch should open (no continuity) when on pin. If the pin tripping of limit switch does not open the switch, readjust the arm so that it opens.

4. CHRONIC FAILURE OF THE SPINDLE WELD OR ROLL PIN?

If the dryer head inner tube weld or the drive gear roll pin breaks repeatedly, it indicates that the operator does not let the spot dryer head swing away fully before he has it swing back in, because the printing operation is faster than the flash dwell time.

If the operator does not want to wait for the unit he can shorten the swing away arc less than 90 degrees by bending the arms of the internal limit switches inward so they are triggered more quickly. (see Number 8 for adjustment procedure.)



5. HOW TO REMOVE INNER TUBE

Lift the spot dryer head off the stand by loosening the release knob on the outer tube collar. Set it on a clean flat work bench resting on the inner tube. If you let the unit sit on the work bench with the inner tube over the edge, the inner tube may fall on your foot! Disconnect the drive chain at master link and remove. Drive the roll pin out of the large sprocket and slide the sprocket off the spindle. (On older models, there may be a set screw instead of a roll pin.)

Next remove the roll pin that sticks through the slot and operates the limit switches. Do this by driving the pin to the inside. You may have to remove one of the limit switches to have free access to the operating pin. Now the inner tube should be free to slide out the bottom.

Re-install by reversing the order of removal. On models with a hollow inner tube apply a thin coating of anti-seize engine assembly lube to the inner tube.

6. NO AIR BUT EVERYTHING ELSE WORKS?

A) First, check the fan to see if it is stuck (not rotating). If it is and the cause is not readily apparent, the damper may be stuck in the open position allowing the heat from the element to chimney, melting the fan motor housing. If this is the case, the motor needs to be replaced. If you need to get at the damper to free it, you will have to remove the four mounting screws that hold the fan and remove it.

B) If the fan is not rotating, but it is not stuck, check voltage to fan. Depending on the setting of the fan speed control, the voltage should be between 90 and 110 volts AC. If it is not, the fan speed control may be bad, or set too low and need readjusting. Which is done by turning the small pot in the top of the control. Adjust for minimum voltage.

C) Check to see if the holes in the element surface are plugged. If they are, clear them. Remove and clean the air filter on a regular basis with an air hose.

7. RECONNECTING A BROKEN ELEMENT WIRE

On newer spot dryers the electrical terminals extend out the top of the heating section and are easily accessible once the white cover is lifted off, by following step "A" below.

However, on older units the terminals are inside the heating section. The following procedure will allow access to the terminals, so that the electrical leads can then be reconnected.

A) Remove the white cover of the unit in one piece by undoing the five phillips head screws on each side. Remove the black handle with a 9/16" open end wrench.

B) Carefully lift the insulation and locate the two leads coming out of the top of the heating section. Trace the wires to the control panel and disconnect them. Test the element circuit for continuity using an ohm meter. If the circuit tests negative, the leads need to be reconnected inside the heating section. Disconnect the two leads to the fan.

C) Heat the four allen head mounting bolts that fasten the corners of the heating section to the frame, one at a time, with a small torch or a lighter to soften the locktite and remove each one. Hold onto the heating section which may tip forward, as it is held by these four bolts only. Rotate the heating section to the side to guide the air channel through the frame. With care the heating section can be removed as a complete unit.

D) Place the heating section on a table, quartz cloth side down. Care must be taken not to damage this surface. Drill out the top two pop rivets only on each side, two on each of the four sides (the eight rivets in the slotted holes only) using a 9/64" drill bit. Lift the top of the heating section to expose the electrical connections to the heating element.

E) Strip the end of the element wire that is burned off and crimp on a stainless steel connector. Use a #12 wire size ring tongue crimp connector. Punch a hole through the rectangular metal strip that comes out of the element with a metal hole punch. Reconnect the element wire to the metal strip using a #8 x 1/2" stainless steel nut and bolt. Retest element for continuity before reassembling.

F) Rivet the heating section back together using 1/8" x 1/2" steel pop rivets.

G) Reverse procedure to reassemble.



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8. CHECKING FOR PROPER DRYER ROTATION

If properly adjusted the Dryer Head will rotate a full 90°, if not the limit switches will need to be adjusted.

A) ADJUSTMENT OF THE LIMIT SWITCHES

****CAUTION: THE SPOT DRYER MUST BE UNPLUGGED AND COOLED DOWN BEFORE STARTING THIS SECTION.**

1. Remove the lifting "T" handle, the cover screws and the Top Cover (white).
2. Looking in the top of the dryer find the roll pin in the slotted tube next to the red and black limit switches. The pin should be about 1/16 to 1/8 of an inch from the end of the slot.
3. If the pin is touching the end of the slot loosen the mounting screws on the limit switch and rotate the switch counter clockwise a few degrees. If the pin is more than an 1/8 of an inch from the slot the switch should be rotated clockwise a few degrees.

DO NOT TOUCH THE DRYER WHILE PLUGGED IN AND UNCOVERED.

4. CAREFULLY PLUG THE DRYER IN AND CYCLE THE HEAD WHILE WATCHING THE ROLL PIN IN THE SLOT. The Dryer should rotate 90° and the pin should not touch the either end of the slot.