

Sunbeam

Original Service Manual, Radiant Control Toaster Models T20, T20A, T20B



Compiled by
Dave's Repair Service
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Sunbeam CORPORATION

Service Bulletin

No. 90-11 Toaster
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INSTRUCTIONS FOR SERVICING SUNBEAM RADIANT CONTROL TOASTER MODELS T20, T20A, & T20B



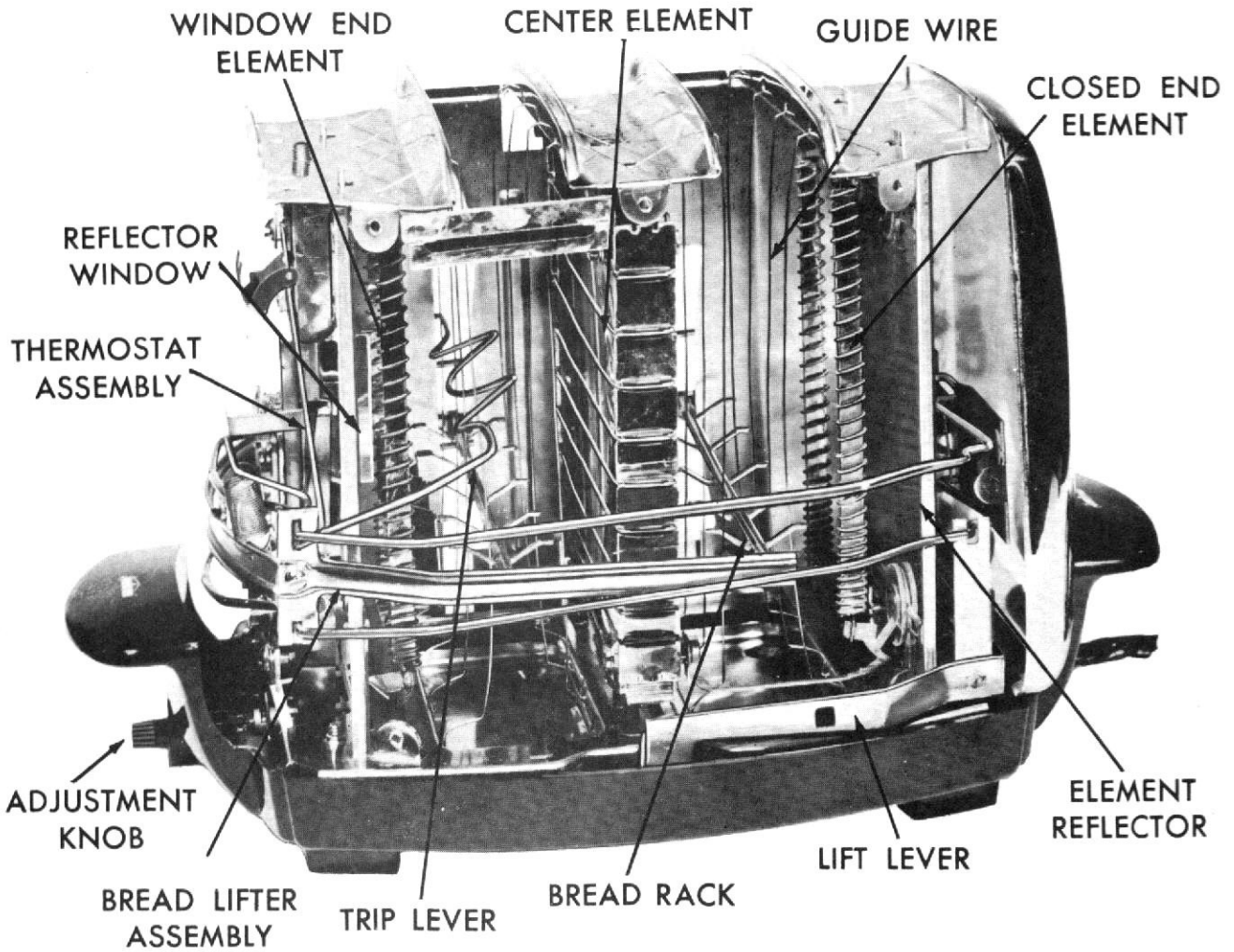
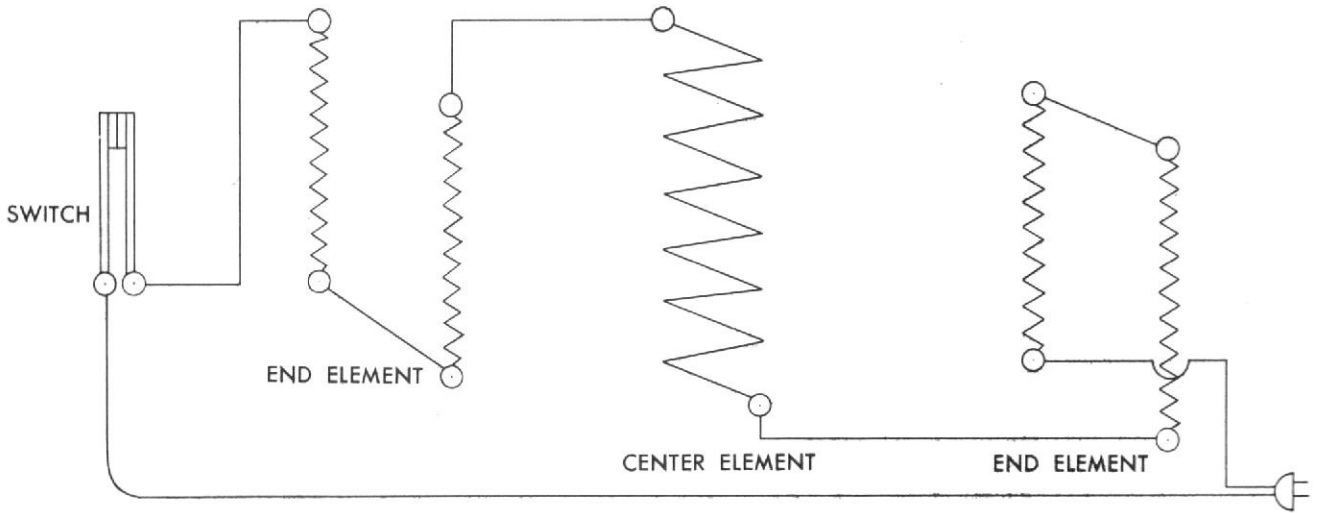
GENERAL

The New Sunbeam Radiant Control Toaster is a 1275 watt electric appliance with its elements in series and is to be used on ALTERNATING CURRENT ONLY. It differs from previous models and other toasters on the market in toasting control principle, in the method used in raising and lowering the bread, and in the design of the elements.

The Toaster is much less sensitive to differences in freshness or moisture content of the bread, or to variations in line voltage than previous Toasters, because the toasting cycle depends entirely upon the amount of heat radiated from the bread being toasted.

When toasting one slice, place it into the slot marked "ONE SLICE". When toasting two slices, they should be of uniform freshness to get uniform results.

Attached at the end of this bulletin is a complete descriptive list of parts and parts assemblies. These are shown in their relative positions on the detailed illustration on the back of the parts list. The tools used for servicing the Toaster are shown at the end of the bulletin.



HOW THE TOASTER OPERATES

Put two slices of bread in the Toaster. The slice in the slot marked "One Slice" will depress the Trip Lever, causing the Trigger Lever Assembly to close the contact points. The elements will then heat up, and the expansion of the Center Element wire will allow the Bread Lifter Assembly to go down slowly under its own weight.

When the bread is toasted, the heat radiated from the outer surface of the bread, in the slot marked "One Slice", will cause the Thermostatic Blade to snap to "off" position, causing the contact points to open. Then, as the elements cool, the wire in the Center Element will contract, and force the Lift Lever Depression Bar down, causing movement of the Lift Lever Assembly, which forces the Bread Lifter Assembly to slowly raise the toasted bread.

OPERATING PRINCIPLES

Uniformity of toasting, under varying conditions, such as bread size, moisture content of bread, voltage, and Toaster temperature, is obtained in this Toaster by having the Radiant Control Thermostat respond to only the surface temperature of the slice of bread being toasted. As the bread surface begins to toast, it will rise in temperature, and this temperature, at every instant, bears a close relationship to color at the same instant. In this particular mechanism this surface temperature is measured by the heat radiated (not conducted) from that surface to the Radiant Control Thermostat. The Thermostat Assembly is unavoidably affected by a temperature rise due to the heating up of its surroundings, but it is so designed as to properly compensate for this effect so as to have a net response to only the heat radiated from the bread surface. Consistent operation is assured because the Thermostat Blade operates with a snap action. Thus, it is absolutely free of the effects of friction, since, in its snap motion, it encounters no resistance, frictional or otherwise, until it moves freely for a sufficient distance to have many times more force available to do the work than is necessary.

Raising or lowering of the bread is obtained by making use of the energy of expansion and contraction of the Center Element wire. Of course, this movement is very small and is measured in thousandths of an inch, but more than adequate carriage movement is obtained by a simple linkage which multiplies this movement approximately 175 times. Only the movement in the lower range of temperature (below 1000 F.) is used for this purpose since it is undesirable to apply stress to this wire while at or near the operating temperature of approximately 1600 F.

The end elements are of unique design for the purpose of increasing the Toaster's efficiency. This design possesses much less heat capacity than an element of conventional type, and consequently permits much faster toasting when the Toaster is cold.

RULES OF GOOD REPAIR PRACTICES

The success of the repair depends upon the repairman's ability in following the rules of good repair practices. These rules can be summed up as follows:

1. Read the Service Bulletin thoroughly.
2. Know what you are looking for. Never guess. Always investigate the source of trouble. Ask, if you do not know.
3. Determine troubles by the process of elimination.
4. Every part, no matter how small, has a job to perform. Do not overlook the smallest detail.
5. Use the proper tool. Keep tools in efficient working order.
6. Carefully handle smooth, plated, or Bakelite parts to prevent damaging or scratching.
7. Make the repair like you would want it, if you were the customer.

A. DISASSEMBLY

1. Place Toaster onto Tool No. 1, bottom side up, protecting the Shell from being scratched. Pry off Adjusting Knob, Key No. (26). Remove Screws (28) and Washers (27) from Bottom Cover Assembly (29) along with Screws (30) from center of Hinge Plate of Bottom Cover Assembly. Lift Base (25) off of mechanism assembly and remove Hex Nuts (7) with Washers (8) from Mounting Plate Assembly (20). Separate Plug and Cord Assembly (24) from Base. Pry Cord Clip (23) from Mounting Plate Assembly (20). Remove Screws (2) releasing End Shells (5) and Center Shell (1), then lift mechanism assembly from Center Shell (1).
2. Set mechanism assembly on end so that Thermostat Assembly (12) is facing up. If Toaster is a model T20B, remove Carriage Counter Balance Spring (3A). Four turns of the Spring Hook over the End Top Plate (3) and the loop end hooks through the hole in the Bread Lifter Assembly (17) Remove Screws (13) with Washers (8) separating Switch Lead (21) and Upper Lead Bracket from Thermostat Assembly (12). Raise Thermostat Assembly until Reflector clears window in element, then slide it clear of mechanism. Remove Nut (7) and Washer (8) on Mounting Plate Assembly (20) disconnecting Switch Lead (21). Release Guide Wires (9) from Mounting Plate Assembly. Set mechanism back into upright position to remove Hex Nut (7) and Washer (8) from Center Element Assembly. Use offset screwdriver to hold stud when loosening or tightening Hex Nut (7). Then remove Screws (2) lifting End Top Plate (3) with Guide Wires and Window End Assembly (11) from mechanism, being careful so that the Guide Wires do not catch in the Element Wires and Rack. The Upper Bus Bar is part

of the Element Assembly; the Insulator (4) slides off of the Bus Bar. Now the Window End Assembly, End Top Plate, and Guide Wires can be separated. Follow the same procedure and precautions in removing the other End Top Plate (3) and Closed End Element Assembly (6), but first remove Hex Nut (7) and Washer (8), disconnecting Lower Bus Bar from Center Element.

3. Release Guide Wires, then remove Screws (2). Lift Center Element Assembly (10), with Center Top Plate attached, clear of the mechanism. Remove Screws (18), releasing Lifter Lever Assembly (19) from mechanism, then remove Screws (2) freeing Frame Cross Yoke (15). Remove Screws (2), and lift Side Frame (14) from Mounting Plate Assembly and clear of Bread Lifter Assembly (17). Follow the same procedure for other Side Frame. Now you can pick up Bread Lifter Assembly off of Mounting Plate Assembly. Unhook Lift Lever Depression Bar (22) from Lift Lever Assembly, separating Lift Lever Depression Bar from the Mounting Plate Assembly.

B. REASSEMBLY

1. Set Mounting Plate Assembly (20) on top of Lift Lever Depression Bar (22) and hook Lift Lever Assembly (19) onto Lift Lever Depression Bar. Connect Switch Lead (21) with Washer (8) and Hex Nut (7) onto Mounting Plate Assembly. Place Bread Lifter Assembly (17) on top of Mounting Plate Assembly. Set Side Frame Assemblies (14) and (16) into place with the Bread Lifter Assembly set in the slots and fasten with Screws (2). Now with the Bread Lifter Assembly set in slots of Side Frame Assemblies and Lift Lever Assembly, fasten Frame Cross Yoke (15) with Screws (2) onto Side Frame Assembly.
2. Set Window End Element Assembly (11) and Closed End Element Assembly (6) into place. Install Guide Wires (9) onto Center Top Plate of Center Element Assembly (10). Set Center Assembly into place with Upper and Lower Bus Bars of the End Element Assemblies on respective terminals, so that Adjustment Screw is in center hole of Lift Lever Depression Bar, and fasten Center Top Plate with Screws (2). Hook Guide Wires onto Mounting Plate Assembly. Replace Washer (8) and Nut (7) on Bus Bar terminals of Center Element. Slide Insulators (4) onto Bus Bar of Window End Element. Slide Thermostat Assembly (12) into place, and connect Upper Lead Bracket of Element Assembly and Switch Lead Wire (21) onto Thermostat Assembly with Washers (8) and Screws (13). Hook 3 to 4 turns of Carriage Counter Balance Spring (3A) over Top End Plate (3). Hook the looped end in hole in Bread Lifter Assembly (17). Fasten End Shells (5) and Center Shell (1) onto mechanism assembly with Screws (2). Use Tool No. 2 when fastening Center Shell to mechanism. After End Shells are fastened, set Center Shell in place, then holding Toaster by the Base, push down into Tool No. 2 until holes in Center Shell are lined up with holes on Mounting Plate Assembly. Insert Screws and tighten. Push Cord Clamp (23) into slot in Mounting Plate Assembly. Push terminal end of Plug and Cord Assembly (24) through hole provided in Base (25) and

connect onto Mounting Plate Assembly with Washers (8) and Nuts (7). Set Base on Mounting Plate and fasten with Washers (27) and Screws (28), then place Bottom Cover Assembly (29) on Base and fasten with Screw (28) and (30). Install Adjustment Knob (26) onto main Adjustment Screw at the end of the Base.

C. REPLACEMENT OF PARTS

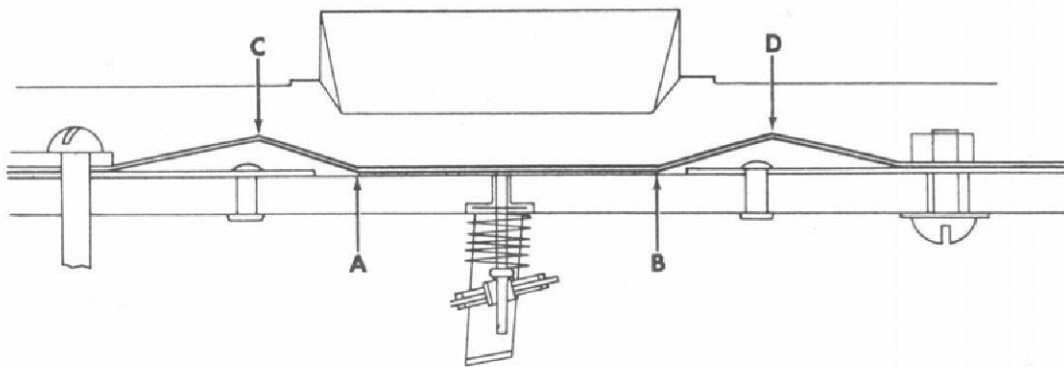
1. Base and Cord - Turn Toaster bottom side up, protecting Shell from being scratched. Pry off Adjusting Knob, Key No. 26. Remove Screws (28) and Washers (27) from Base (25) along with Screws (30) from center of Hinge Plate of Bottom Cover Assembly. Lift Base (25) off mechanism assembly and remove Hex Nuts (8) with Washers (7) from Mounting Plate Assembly (20). Separate Plug and Cord Assembly (24) from Base. Replace cord and reassemble.
2. Clip on the Bottom Cover Assembly - Remove the Bottom Cover Assembly (29) from Toaster. Drill out rivet (29B) with a 3/32-inch drill and remove old clip. Set new clip (29A) in place, insert rivet and swage with a punch.
3. Center and End Shells - Remove Screws (2) and lift Center Shell (1) from mechanism. Remove Screws (2) separating End Shells (5) from mechanism assembly. Replace Shells and reassemble.
4. Thermostat Bracket - Set mechanism assembly so that Thermostat Assembly (12) is facing up. Remove Screws (13) and Washers (8) separating Switch Lead (21) and Upper Lead Bracket from Thermostat Assembly (12). Raise Thermostat Assembly until Reflector clears window in element, slide clear of mechanism assembly and remove Nuts (12L) and Spring Clip (12Q) from Thermostat Assembly. All parts (12B to 12S inclusive) are free to be removed. Replace Thermostat Assembly (12A) and reassemble.

If the Thermostat Bracket on the model T20 Toaster requires changing will be necessary to modify this Toaster to a model T20B. To do this:

- A. Replace the Top End Plate (3) with the Top End Plate of the model T20B Toaster.
- B. Bend and shorten the Guide Wires (9) to same shape as the model T20B Guide Wires.
- C. Drill 2 holes in the hinge plate of the Bottom Cover (29) to fasten this assembly to the upright of the Thermostat. Use a model T20B Bottom Cover as a guide to locate the holes.
- D. Replace Screws (30) with Screws used on the Model T20A and T20B Toaster.
- E. Change model number to read T20B with stamping dies.

5. Thermostat Blade - Remove Thermostat Assembly (12) from Toaster and disassemble as described in section C4. Remove Screws (12X), Screw (12U) and Nut (12W) that fasten Thermostat Blade to Bracket. Locate new Blade (12V) and secure tightly to Upright with Screws (12X), (12U), Nut (12W) and lock Washer (12Z if Toaster is model T20B).

CAUTION: Snap the Blade flat against the Upright ("OFF" Position). THE ENTIRE CENTER PORTION OF THE BLADE, BETWEEN POINTS (A AND B), MUST LAY FLAT AGAINST THE UPRIGHT FOR THE BLADE TO BE STABILIZED PROPERLY. (SEE DIAGRAM) If it does not lay flat, adjust by tapping the bend C or D on the high side of the Blade. Test Blade to see that entire center portion of the Blade rises simultaneously and parallel to the Upright when snapped to "ON" Position. Reassemble the Thermostat Assembly, install in Toaster, and connect Leads.



TO STABILIZE BLADE, CLIP A JUMPER WIRE ACROSS THE TWO LEADS ON THE THERMOSTAT, THEN ADJUST BLADE TO "OFF" POSITION. Insert Plug of Toaster into 110 Volt A. C. Wall Receptacle and permit the current to flow through the circuit for five minutes. After stabilizing the Blade, make the adjustments as outlined in Section D. Reassemble Toaster and test with bread.

Test three consecutive sets of toast in rapid succession. Let Toaster cool and test another set of toast and compare the color of this set to the three sets. The color should be the same for all four sets of toast. If toast varies in color, stabilize blade again and check with bread. Repeat this process until uniform toast is obtained from tests.

6. Switch Leads - Remove Screw (13), Washer (8), Nut (7) and Washer (8) disconnecting Switch Lead (21). Replace Lead and reassemble.
7. End Elements - Turning mechanism assembly over, release Guide Wires (9) from Mounting Plate Assembly. Then turning the mechanism assembly back into position, remove Hex Nut (7) and Washer (8), then remove Screws (2) lifting End Top Plate (3) with Guide Wires and Window End Element Assembly (11) off of mechanism, being careful that the Guide Wires do not get caught in Element Wires and Bread Rack. The Upper

Bus Bar with Insulator (4) is attached to the Element Assembly. Follow the same procedure to remove Closed End Element Assembly (6). Be sure to remove Hex Nut (7) and Washer (8) from Center Element before removing End Top Plate with Guide Wires and Element Assembly. Be careful of Lower Bus Bar attached to the Element Assembly and watch that the Guide Wires do not catch into the Elements and Bread Rack. Replace Element and reassemble.

8. End Element Wires - To replace the Coiled Element Wire (6A) of the End Elements (6 & 11), first remove the burned out Element as described in Section A, disassembly, then make sure that the Terminal end of the Bus Bar is clean and free of any small pieces of wire. Straighten Terminal Strips, because the Mica Strip in the center of the Coiled Element must be perpendicular to the Reflector in order to obtain the proper heat radiation from the Element. Bend the extreme tip of the new Coiled Element around Terminal of Bus Bars to hold the Element in place while being Silver Soldered or Spot Welded. Always connect the end of the Element with the most turns to the bottom Terminal.

The Element Wires should be ordered by grade numbers as follows. Grade 2 can be used for Elements graded 1 through 3 and grade 5 for Elements grades 4 through 6. Check replaced Element for grade number stamped on the Reflector Plate.

9. Center Element - Release Guide Wires, then remove Screws (2) and lift Center Element Assembly (10) with Center Top Plate attached from the mechanism assembly. Replace Center Element and reassemble.
10. Center Element Wire - To replace the Element Wire (10J) on the Center Element Assembly (10) place a rubber band around the Frame to hold the Mica Strips (10B, 10C, & 10H) in place, then clip each Wire on one side of the Assembly with a pair of Cutting Pliers. Remove the Terminal Screws, Mica (10G) and Porcelain Insulators (10F).

To wind new Element Wire (10J) around Frame, locate Porcelain and Mica Insulator at top of Frame and insert Terminal Screw of one end of the new Element Wire through Insulators and secure tightly to Frame with Washer and Nut. To make the winding process easier, squeeze Frame until each side just barely touches the Reflector. Wind new Wire around Frame, locating each bend in its proper place. Note that one side strip has ten slots and the other nine. Locate Porcelain and Mica Insulators and insert Terminal Screw on other end of Wire -through these Insulators and secure tightly to Frame with Washer (10E) and Nut (10D). When tightening Terminal Screws, hold slotted side with an offset Screwdriver to keep it from turning and cutting the Wire.

Install Assembly into Toaster and reassemble Toaster. Make bread test and check Bread Lifter Assembly for proper tension after each cycle. The Bread Lifter Assembly with bread should take approximately 10 to 12 seconds to raise after Contacts have opened.

The Coiled Elements should be ordered by Grade Numbers as follows: Grade 2 can be used for Elements graded 1 through 3, and Grade 5 for Elements graded 4 through 6. Check replaced Element for grade number stamped on the Reflector Plate.

11. Bread Lifter Assembly and Side Frame Assemblies - Turn mechanism assembly bottom side up and remove Screws (18) releasing Lift Lever Assembly (19) from mechanism. Unhook Lift Lever Depression Bar (22) from Lift Lever Assembly by sliding Lift Lever back off to mechanism assembly. Remove Screws (2) releasing Mounting Plate Assembly (20), then remove Screws (2) freeing Frame Cross Yoke (15). Now lift Bread Lifter Assembly (17) from slots in Side Frame Assembly L. H. (14) and Side Frame Assembly R. H. (16), which will finish the complete disassembly of the mechanism assembly. Replace Bread Lifter Assembly and reassemble.
12. Carriage Counter Balance Spring - The Carriage Counter Balance Spring (3A) is used in the T20B Toaster to support the weight of the Bread Carriage. To replace this Spring, remove the old Spring from the End Top Plate (3) and Bread Lifter Assembly (17). Replace with new Spring. 3 to 4 turns of the flat end of the Spring hooks over the Top End Plate (3) and the looped end hooks in the hole in the Bread Lifter Assembly (17).

D. ADJUSTMENTS

In most cases it is only necessary to remove End Shell on Control Knob end. This is done by placing the Toaster bottom side up on a soft cloth, or on Tool No. 1, to prevent scratching the shell. Remove the screws (six in all), Key Nos. 28 and 30. Remove the Control Knob (26), lift off the Bottom Cover Assembly (29) and bakelite Base (25). Now remove only the four Screws (2) at the Control Knob end. Then insert a screwdriver between the End Shell and the frame to loosen the End Shell, being careful not to scratch it. This will expose the main parts of the mechanism.

1. Toast is Too Light Or Too Dark at "Medium" Setting - Set Toaster at Medium and test with two slices of bread from the same loaf. If complaint is that toast is too dark, remove Adjustment Knob (26) and turn Adjustment Screw (See Diagram II) in the proper direction until toast of desired color is obtained. Replace Control Knob with indicator at Medium. Reverse procedure if complaint is that toast is too light. The Control Knob has twelve points molded into it so that an adjustment to within 1/24 of a turn can be made.
2. Bread Lifter Assembly Does Not Lower When Bread is Inserted
 - (a) When toasting single slice make sure user puts bread in slot marked "One Slice."
 - (b) Check action of Trip Lever to see that it is not rubbing or binding anywhere, since excessive friction may prevent Trip Lever from

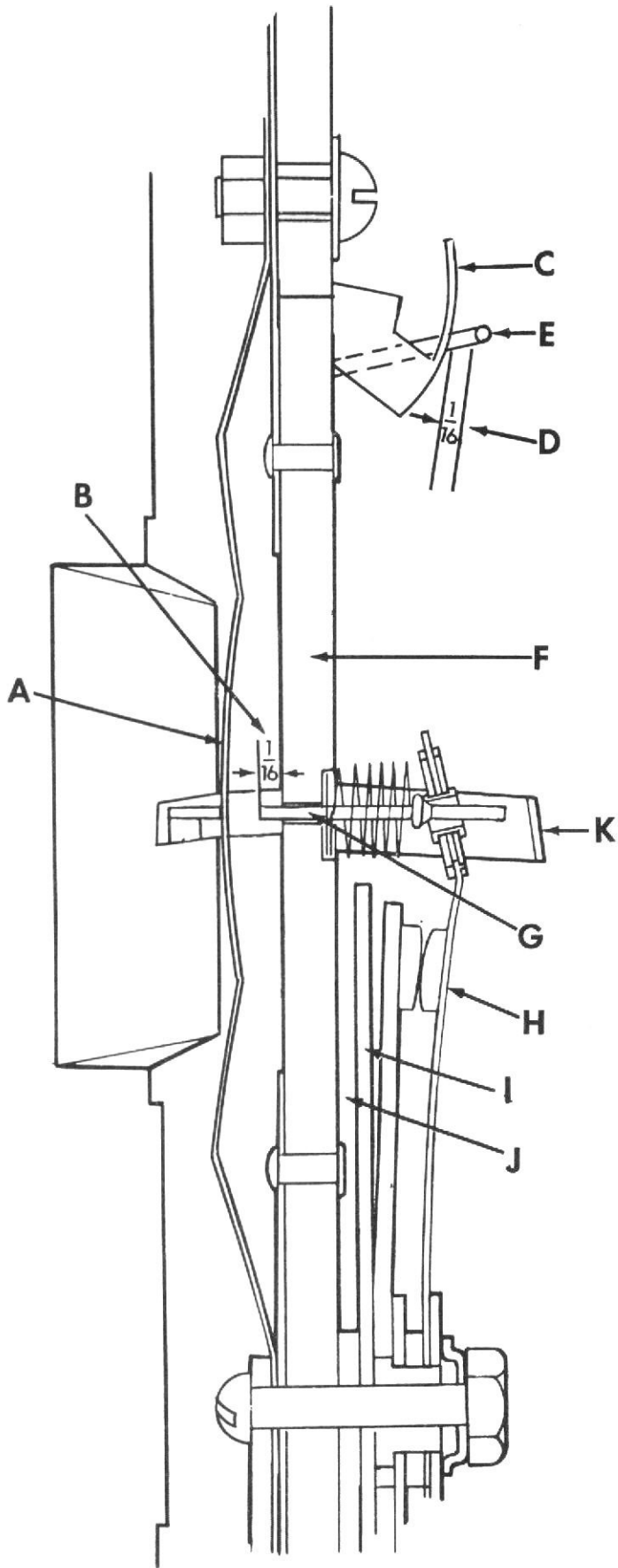


Diagram 1

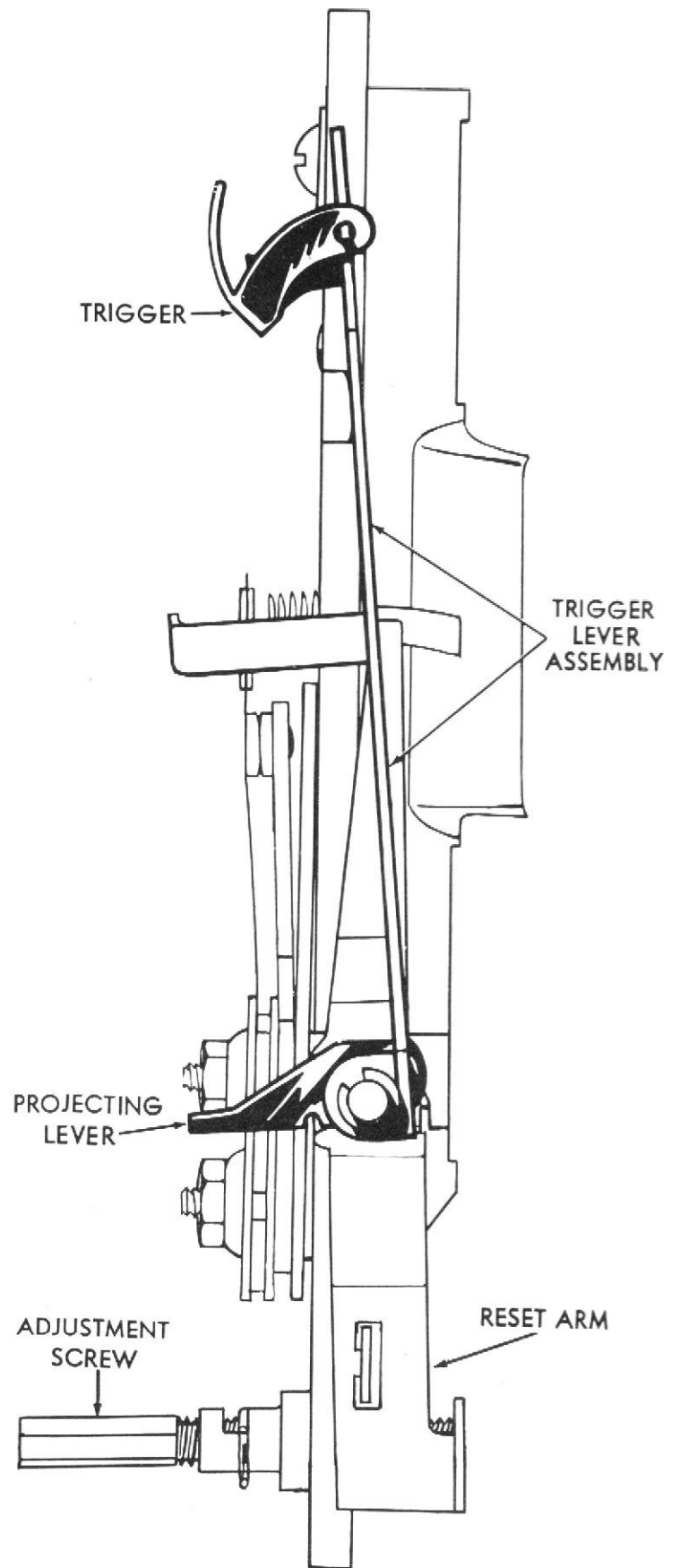


Diagram 2

rising sufficiently in bread slot when bread is removed. This in turn would keep the other end (E) (Diagram I) from moving out far enough to allow Trigger (C) to drop into position shown. The friction might be due to Trip Lever (E) rubbing guide wires, as there is not sufficient end play at the bearing points for free action; or the ends of the Trip Lever entering the bearings might not be straight, thus causing binding. If Trip Lever appears to be free of excessive friction, then it is likely that clearance indicated by dimension (D) (Diagram I) is insufficient. To check this clearance it will be necessary to remove End Shell from Toaster. Make sure Thermostat is in "off" position, and Contacts (H) are open, then with the Trip Lever up (no bread in Toaster) this clearance, as indicated by dimension (D), should be approximately 1/16". Adjust by bending Trip Lever. If this dimension is too small, then as Toaster heats up, it is likely that Trigger (C) will not fall down, when toasted slice is removed, to properly position it for next cycle. If, on the other hand, this dimension is too great, there is a possibility that the Thermostat Blade (A) will not be pushed forward sufficiently when next slice is inserted, causing the results indicated in paragraph, Section D-3

- (c) If the Bread Lifter Assembly (17) cannot be pushed down by hand, it is possible that the end of the Trip Lever (E) Diagram I, got caught over the top of the Trigger (C). This might happen in shipping if the stops on the Side Frame Assemblies (14 and 16) are bent out of position, allowing the Bread Lifter Assembly to pass the stops. Bend stop lugs in correct position so that Bread Lifter Assembly (17) cannot pass by when forced to one side or the other.
 - (d) The Reset Pin (G) might have come out of the hole in the Thermostat Bracket (F) preventing the Contacts (H) from closing. This can be caused by the Trigger Arm (K) being bent out of shape permitting the Pin (G) to pass by the Trigger Arm (K), or the Contact Spring (H) might be improperly assembled causing misalignment. Correct by bending Trigger Arm (K) in correct position or by adjusting Contact Spring (H). After this adjustment, care must be taken to make sure there is a clearance of a few thousandths (not over 1/64") between the Pin and Trigger Arm when the Thermostat Blade is in the "off" position. To make sure Thermostat is in the "off" position, push the Reset Arm (Diagram II) inward below the pivot.
 - (e) Any electrical interruption will prevent the Bread Lifter Assembly from lowering. Check all connections and cord.
3. Bread Moves Up and Down Continuously at Top of Slot - Dimension (D) (Diagram I), as explained above, is too large. When this occurs, Thermostatic Blade (A) cannot be moved forward sufficiently to snap it to its toasting position. However, the movement is usually sufficient to close Contacts (H). When this happens, the Bread Lifter Assembly will begin to move down, but as soon as it moves about 1/2 inch, the Contact Points (H) will open causing Bread Lifter Assembly to rise. This, in turn, will cause Contact (H) to again close and thus repeat above cycle. Adjust

Trip Lever (E) by bending so as to obtain approximately 1/16 inch clearance at Dimension (D)

4. Toaster Operates Erratically (Successive Toasting Not Uniform)

- (a) Thermostatic Blade may be rubbing against the aluminum-window reflector causing friction and erratic operation. This can be readily checked by simply dropping Bottom Cover Assembly and viewing from the bottom. If a portion of the reflector appears to be sufficiently close to the Thermostatic Blade to cause rubbing, it can be forced away with an ordinary screwdriver to permit proper clearance. The two side edges of the window reflector should practically touch the corresponding two sides of the opening provided for it in the reflector plate of the end element.
- (b) Minor adjustments can be made to correct inconsistent operation the Toaster, but only in accordance with these instructions. If the Toaster fails to shut off, remove Thermostat Assembly (12). Refer to Diagram I. With Contacts (H) in closed position, check to see Pin (G) actually protrudes from Bracket (F) about 1/16 inch (Dimension B). If Pin (G) does not protrude enough from Bracket (F), press on Spring at Contacts (H) until Pin is pushed forward so as to be 1/1 inch distance out from inside surface of Bracket (F) (Dimension B) Make sure you have contact clearance at Point (H) when Thermostat is in off position. If Pin (G) protrudes too far out from Bracket (F) and approaches Blade (A), this may cause inconsistent operation. To adjust, pry Mica Insulation (I) away from Bracket (F), at point (J), with a small screwdriver. This will move Contact Point Assembly out causing Pin (G) to move away from Blade (A). Pry open only enough to allow 1/16 inch projection of Pin (G) (Dimension B)
- (c) When Bread Lifter Assembly is all the way down, the inward protruding tongue on the Bread Lifter Assembly should push down the Projecting Lever on the bottom of the Trigger Lever Assembly (Diagram II) to make sure that the latter is all the way out, and thus will not restrain the switch action. Occasionally, the Baffle Plate, spot welded on the Bread Lifter assembly in the chamber marked "One Slice", may be bent out of position, and touch the guide wires when Bread Lifter Assembly is down. This will prevent the Bread Lifter Assembly from coming all the way down, as explained above. To adjust, straighten Baffle Plate.
- (d) If Toaster continues to operate erratically after all the above adjustments have been made, check the Thermostat Blade. The Thermostat Blade should snap sharply against the bracket when moved to the off position. If the blade has lost its spring action then change the blade and stabilize as described in Section C5.

5. Bread Rises Too Slowly

(a) This complaint may be due to the impatience of the user. Actually the toasting cycle from a cold start takes less time than any toaster previously manufactured. The toasting cycle will vary with voltage changes, dryness of bread, or if toaster is cold or warm. Under normal conditions (Which means testing with moderately fresh bread on 115 Volts A.C. with Toaster set at Medium) the total toasting cycle will vary from 1-1/2 minutes when starting with a cold Toaster to less than 1 minute as the Toaster warms up. When properly adjusted, it will lower or raise the bread in approximately 9 seconds

(b) If Toaster is out of adjustment and takes 8 to 12 seconds to raise the bread, observe motion of Bread Lifter Assembly. The Bread Lifter Assembly should move up and down smoothly without excessive jerking. Check to see that Bread Lifter Assembly moves free of frame and adjust by bending, if necessary. If Bread Lifter Assembly is free, then slightly turn the screw on the bottom of the Center Element (10) counter-clockwise. This will increase the stress on the wire of the Center Element causing its contraction to effect Bread Lifter Assembly motion sooner. Do not make this adjustment unless absolutely necessary, and then make only slight adjustment so as not to put too much stress on wire of Center Element. Always test Toaster first under normal conditions, to determine if customer's complaint is justifiable and warrants an adjustment of this assembly.

6. Toast Not of Uniform Color - The individual elements are measured for resistance, graded and matched at the factory, so as to obtain substantially uniform toasting on all of the four faces comprising the two slices of bread in the Toaster at any one time. It is clear that all four of these surfaces should be of uniform dryness. The Center Element has associated with itself slightly more heat capacity than the end elements, so that when Toaster is cold, the inside surfaces (those facing Center Element) will come out slightly lighter than other two surfaces. However, with perfectly matched elements and uniform condition of bread surface dryness, there should be no great difference in color as Toaster heats up. Because of all the variable factors, in addition to the two mentioned, do not assume that the elements are mismatched unless several sets of toast are made and judgment passed on the average result. If after such test, the inside surfaces consistently toast lighter or darker than outside surfaces, replace with a set of matched elements, but only on authorization by customer.

7. Single Slice Toasting - The two chambers are adequately baffled from each other so as to permit toasting of a single slice if desired. However if several single slices are toasted in a row, the empty slot becomes so hot that it cannot but unavoidably affect the other slot. As a result, the bread surface facing the Center Element will come out darker.

8. Outside Surfaces Have Dark Vertical Streaks - The end elements are wound

into a special elliptical shape. It is essential, for uniform toasting of the full area of the bread slice, that the long axis of this ellipse be at right angles to the supporting reflector. If this condition does not exist, correct by twisting with the fingers.

9. Toast is Lighter on Top

- (a) If bread slices are abnormally tall, this will cause top to be lighter. In any Toaster of conventional design, this will happen.
- (b) If outside surfaces are light at the top, correct this condition by crowding the turns of the end element coils toward the top and separating them at the bottom.

10. Toast Not Uniform in Color as Toaster Heats up. (Successive Slices Get Increasingly Darker or Lighter)

- (a) Proper compensation for Toaster temperature is inherent in the design and manufacture of the Radiant Control Thermostatic Switch, and consequently successive pairs of toast should be of the same color as the first pair with a cold Toaster. If this uniformity does not exist, check possibility of faults as outlined in Section D4.
- (b) If the above tests do not reveal anything, then it is likely that the Thermostat Assembly is defective. In such a case, remove the Thermostat Assembly and disassemble as described in section C-4 and replace the Thermostat Bracket Assembly (12A).

11. Thermostat Does Not Shut Off Current

- (a) Toaster might have been used on D. C. and the contact points are melted. Replace Contact Points (12G and 12J) if they are damaged.
- (b) Reset pin (G) might have fallen out due to reasons mentioned under. Paragraph D2d. (See Diagram I)
- (c) Thermostat might be rubbing against reflector, thus preventing it from shutting off. Correct as per paragraph 4A.

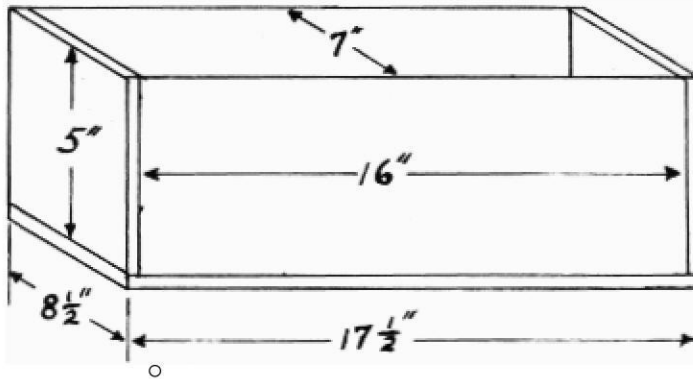
12. Bread Will Not Rise Even If Current Shuts Off.

Bread Lifter Assembly might be caught under the Projecting Lever (Diagram II) on the bottom of the Trigger Lever Assembly. Bend the Projecting Lever in such a position that this cannot happen.

The Tools referred to in this bulletin are listed on the next page.

*THE TOOLS REFERRED TO IN THIS BULLETIN ARE:

<u>Reference No.</u>	<u>Tool No.</u>	<u>Description</u>
Tool 1	T30235	Assembly Block, felt lined.
Tool 2	Standard	Assembly fixture to replace Center Shell (Make according to diagram)



Tool No. 2

1. Use 3/4" lumber
2. Line entire inside with 1/4" felt. Allow overlap to be tacked down on outside.

*Tools with T number - order from the factory. Standard tools - make or purchase locally.

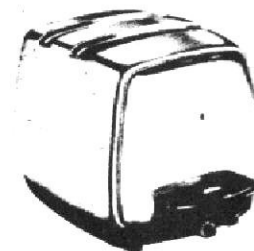
SUNBEAM CORPORATION
5600 W. ROOSEVELT RD.
CHICAGO 50, ILLINOIS

SUNBEAM APPLIANCE PARTS LIST

20-15
May 25, 1953

Date of Manufacture

Model T20 April, 1949
Model T20A Aug., 1950
Model T20B Aug., 1952



SUNBEAM TOASTER

IMPORTANT NOTICE: Order parts by STOCK NUMBER in second column below. That will help us supply the correct part and give you quick accurate service.

Key No.	Stock No.	Description of Part	Models			Retail Price
1	20-1363	Center Shell (61BW).....	T20	T20A	T20B	3.85
2	20-1290	Screw (20 Used) (92BZ).....	T20	T20A	T20B	.04 ea.
2	20-1382	Over-size Screw (same as 20-1290) (40CN).....	T20	T20A	T20B	.04 ea.
3	20-64BW	End Top Plate (2 Used).....	T20			.55 ea.
3	20-1240	End Top Plate (2 Used) (64BW-1)		T20A	T20B	.55 ea.
3A	20-2358	Carriage Counter Balance Spring.....			T20B	.20
4	20-1284	Insulator (77BY).....	T20	T20A	T20B	.10
5	20-1362	End Shell (2 Used) (62BW).....	T20	T20A	T20B	1.40 ea.
6		Closed End Element Assembly 110-120 Volts AC	T20	T20A	T20B	2.20
		20-1303 Grade 2 (C77BW-2) 20-1303 Grade 5 (C77BW-5)				
		NOTE: Toasters were made with elements graded 1 thru 6. Only grades 2 & 5 are available for replacement. Use grade 2 for elements graded 1 thru 3, and grade 5 for elements graded 4-6. State grade desired when ordering.				
6A	20-3786	Coiled Element with Mica Strip. 110-120 Volts AC (C28CR).....	T20	T20A	T20B	.60
		NOTE: Order grade 2 for elements graded 1 thru 3. Order grade 5 for elements graded 4 thru 6. See Note Key No. 6.				
7	20-1318	Hexagon Nut (8 Used) (P26)	T20	T20A	T20B	.03 ea.
8	20-1317	Washer (8 Used) (74BB).....	T20	T20A	T20B	.04 ea.
9	20-1361	Guide Wire (16 Used) (22BW-1).	T20	T20A	T20B	.10 ea.
10		Center Element Assembly, 110-120 Volts AC (See Note Key No. 6).....	T20	T20A	T20B	4.75
		20-1241 Grade 2 (C20BY-2) 20-1241 Grade 5 (C20BY-5)				
10A	20-1270	Adjustment Screw (44BW).....	T20	T20A	T20B	.07

All prices subject to change without notice.

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Key No.	Stock No.	Description of Part	Models	Retail Price
10B	20-1260	Insulator Strip with clips (L.H.) (C41BW).....	T20 T20A T20B	.50
		<u>NOTE:</u> Left hand side is side with terminal lugs. (9 clips)		
10C	20-1256	Insulator Strip (2 Used) (38BW)..	T20 T20A T20B	.20 ea.
10D	20-1267	Hexagon Nut (2 Used) (91BZ)...	T20 T20A T20B	.03 ea.
10E	20-1266	Washer (2 Used) (67BW).....	T20 T20A T20B	.03 ea.
10F	20-1265	Porcelain Insulator (4 Used) (30BW).....	T20 T20A T20B	.05 ea.
10G	20-1264	Mica Washer (4 Used) (21BY)...	T20 T20A T20B	.05 ea.
10H	20-1257	Insulator Strip with clips (R.H.) (C40BW).....	T20 T20A T20B	.50
		<u>NOTE:</u> Right hand side is side opposite terminal lugs. (10 clips)		
10J	20-3787	Preformed element with terminal lugs. 110-120 Volts AC (C29CR).	T20 T20A T20B	.50
		<u>NOTE:</u> Order grade 2 for elements graded 1 thru 3. Order grade 5 for element graded 4 thru 6. See Note Key No. 6.		
11		Window End Element Assembly, 110-120 Volts AC (See Note Key No. 6).....	T20 T20A T20B	2.20
		20-1271 Grade 2 (C78BW-2) 20-1271 Grade 5 (C78BW-5)		
12	20-G19CS	Thermostat Assembly (substitute 20-1856)	T20 T20A	
12A	20-1856	Thermostat Assembly. Includes Key Nos. 12B, 12C, 12R thru 12Z	T20 T20A T20B	2.50
		<u>NOTE:</u> When used on Model T20 Toaster, replace Top End Plate with Key 3, Stock No. 20-1240 and redrill Bottom Cover.		
12B	20-1350	Spring (78BY).....	T20 T20A	.06
12C	20-1351	Reset Arm Assembly (C17BY)...	T20 T20A	.20
12C	20-1720	Reset Arm Assembly.....		T20B .20
12D	20-1354	Trigger Arm (85BW).....	T20 T20A T20B	.20
12E	20-1356	Trigger (88BW).....	T20 T20A T20B	.15
12F	20-1333	Mica Insulator (84BW).....	T20 T20A T20B	.12
12G	20-1335	Contact & Arm Assembly (C2BY) .	T20 T20A T20B	.20
12H	20-1339	Reset Pin Spring (98BW).....	T20 T20A T20B	.07
12J	20-1341	Contact & Spring Assembly (C1BY)	T20 T20A T20B	.35
12K	20-1340	Reset Pin (99BW).....	T20 T20A T20B	.20
12L	20-1347	Hexagon Nut (2 Used) (62BD).....	T20 T20A T20B	.04 ea.
12M	20-1346	Cup Washer (2 Used) (91BW)....	T20 T20A T20B	.04 ea.
12N	20-1338	Mica Insulators (3 Used) (94BW)..	T20 T20A T20B	.08 ea.
12P	20-1334	Insulation Bushing (2 Used) (5 BY).....	T20 T20A T20B	.03 ea.

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Key No.	Stock No.	Description of Part	Models			Retail Price
12Q	20-1355	Retainer Washer (90P).....	T20	T20A	T20B	.04
12R	20-1357	Main Adjustment Screw (81BW)...	T20	T20A		.15
12R	20-1576	Main Adjustment Screw.....			T20B	.15
12S	20-1358	Spring Clip (86CC-1).....	T20	T20A	T20B	.04
12U	20-1348	Screw (62AP).....	T20	T20A	T20B	.04
12V	20-1327	Thermostat Blade (89BW).....	T20	T20A	T20B	.40
12W	20-1349	Square Nut (49CH).....	T20	T20A	T20B	.08
12X	20-1332	Screw (2 Used) (95BW).....	T20	T20A	T20B	.10 ea.
12Y	20-1328	Clamp Plate (3BY).....	T20	T20A	T20B	.02
12Z	20-3227	Lock Washer (2 Used).....			T20B	.04 ea.
13	20-1360	Lead Screw (2 Used) (P9381)...	T20	T20A	T20B	.04 ea.
14	20-1285	Side Frame Assembly (L.H.) (C27BY).....	T20	T20A	T20B	.75
15	20-1302	Frame Cross Yoke (52BW).....	T20	T20A	T20B	.30
16	20-1288	Side Frame Assembly (R.H.) (C28BY).....	T20	T20A	T20B	.75
17	20-1291	Bread Lifter Assembly (G48BW).	T20	T20A	T20B	2.55
17A	20-1294	Trip Lever (46BW-1).....	T20	T20A	T20B	.45
17B	20-1301	Spring (23BW).....	T20	T20A	T20B	.15
18	20-1099	Screw (2 Used) (P6024).....	T20	T20A	T20B	.04 ea.
19	20-1307	Lift Lever Assembly (C82BW)..	T20	T20A	T20B	.75
20	20-1311	Mounting Plate Assembly (C39BY)	T20	T20A	T20B	.95
20A	20-1316	Mica Washer (2 Used) (37BY) ..	T20	T20A	T20B	.04 ea.
20B	20-1314	Filler Washer (4 Used) (69BW).	T20	T20A	T20B	.03 ea.
20C	20-1313	Terminal Insulator (66BW).....	T20	T20A	T20B	.12
20D	20-1312	Terminal Stud (2 Used) (73BW)..	T20	T20A	T20B	.12 ea.
20E	20-2061	Cord Clip Bracket (94CK).....	T20	T20A	T20B	.10
21	20-1359	Switch Lead (10BY).....	T20	T20A	T20B	.20
22	20-1319	Lift Lever Depression Bar (57BW)	T20	T20A	T20B	.30
23	20-1367	Cord Clip (99BZ).....	T20	T20A	T20B	.07
24	20-1364	Cord Set (C19BY).....	T20	T20A	T20B	1.20
25	20-1368	Base (25BY).....	T20	T20A	T20B	1.25
26	20-1379	Adjusting Knob (90BZ).....	T20	T20A	T20B	.15
27	20-1376	Washer (2 Used) (43BY).....	T20	T20A	T20B	.04 ea.
28	20-1377	Screw for Base (4 Used) (P6035) .	T20	T20A	T20B	.04 ea.
29	20-C36BY	Bottom Cover Assembly.....	T20			1.20
29	20-1369	Bottom Cover Assembly (C36BY-1)		T20A		1.20
29	20-1798	Bottom Cover Assembly.....			T20B	1.20
29A	20-1372	Clip (31BY).....	T20	T20A	T20B	.20
29B	20-1373	Rivet (64CA).....	T20	T20A	T20B	.03
30	20-1360	Screw (2 Used) (P9381).....	T20			.04 ea.
30	20-1378	Screw (2 Used) (79CH).....		T20A	T20B	.04 ea.

SUNBEAM CORPORATION
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CHICAGO 50, ILLINOIS

PARTS DIAGRAM

Sunbeam Toaster

Models T20, T20A & T20B

CAUTION: Numbers shown are Diagram Numbers only. Order Parts by STOCK NUMBER shown on Parts List.

