Cent.	fohr.	Lb.	Instruments	Cotton	Rubbe
**1210	250°	15	13	20	.15
123°	253°	17	10	15	**
**1261/2°	260°	20+	6	8	鄉

## HOW TO LOAD THE SPEEDCLAVE

autoclave require less time for steam penetration, and heating.)

Always cover bottom of trays with linen or paper towel, or light weight muslin. Wrapped packs and instruments should be covered similarly.

INSTRUMENTS: For instruments, cover the bottom of each tray with a towel of cotton or tissue. Instruments should be wrapped or covered. Be sure to open all jointed instruments, such as scissors, forceps, etc. Use instruments at once. Do not store them in the wrapping in which they have been sterilized.

COTTON MATERIALS: Wrap cotton materials such as sponges, rolls, gauze, cotton, points, etc., in a muslin compress or paper tissue. An individual packet for each patient is recommended. Always cover bottom of tray, and cover packs. See Castle Manual of Sterilization. Don't pack them tightly. Place deep or cylindrical jars on side—not vertical—with cover off or loose.

DRYNESS: Cotton goods will be dry, if properly wrapped and covered top and bottom. If condensation appears on instruments, pressing them with their cotton or tissue covering will remove it, and their latent heat will complete the drying. Do not store instruments in a damp covering. Sterile technique is best maintained by carrying instruments in their covering to operating table for use as soon as cool.

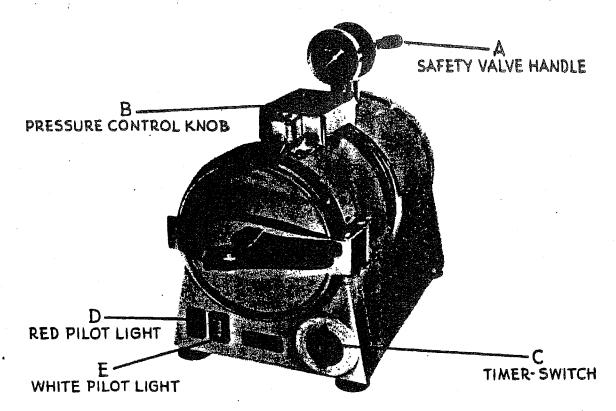
Do not alternately autoclave and boil instruments, as that will cause spotting.

NOTES: Neon bulb assemblies are Castle Nos. 3470 (Red) and 3471 (White), obtainable from your dealer or from Wilmot Castle Company. Their life is normally 3000 hours.

Air Vent (at rear). If the Air Vent at rear does not close at high altitudes, write for special instructions.

Castle lights and sterilizers

## STEP-BY-STEP OPERATING PROCEDURE



NOTE: Your SpeedClave uses alternating current (A.C.) only.

- 1. Open the door by throwing handle to the left, and then pushing door slightly to the right against spring tension. Swing door out and to the right. (Closing is the reverse of this procedure.)
- 2. Pour water directly into SpeedClave outer chamber before using. When empty this will take 12 ounces. After each cycle, add sufficient water (a small cupful) to bring the level one quarter of the way up the curved rim inside the door. DO NOT OVERFILL. Use distilled water if local water has high mineral content.
- 3. Load. See procedure on last page for handling instruments and dressings.
- 4. Push Safety Valve Handle (A) all the way down closing the valve.
- 5. For initial operation, turn bakelite Pressure Control Knob (B) on top of control box to left (counterclockwise) all the way. This knob controls the operating temperature in autoclave. (When once adjusted for desired temperature, it is not necessary to turn this knob except to change operating temperature.)
- 6. Set the Timer-Switch (C) between 15 and 30 minutes. This starts the heater, and the Red Pilot Light (D) will come on.

Steam will now begin to form in the autoclave. It will fill the inner and outer chambers and will expel all the air. You will notice the mixed air and steam escaping from the vent at the rear of the autoclave. When all the air is out, this vent will close automatically.

Steam pressure and temperature will now begin to show on the gauge, and will build up quickly. Total time from start, (i.e. activating of timer), is 7 to 8 minutes if autoclave is cold, 3 to 4 minutes if it's hot.

7. When the needle on the gauge reaches the desired sterilizing temperature, turn the Pressure Control Knob (B) very slowly to the right (clockwise) until the White Pilot Light (E) comes on.

Once you make this adjustment, you won't have to turn the knob again when you use the SpeedClave unless you want to change the sterilizing temperature. See Page 4 for a table of recommended sterilizing temperatures and time periods.

8. Re-set the timer-switch for the correct sterilizing time period (from table on Page 4).

While the autoclave is sterilizing, the red and white pilot lights will alternate. This shows that the temperature is being regulated automatically.

- 9. When the sterilizing period is completed, current turns off automatically, and no light will show.
- 10. You can let the steam pressure return to zero by waiting about 4 minutes, or you can release it immediately by raising the safety valve handle. By raising this handle about 1/4" steam will escape slowly.
- 11. When the needle on the pressure gauge is at zero, crack the door by swinging the handle 90° to the left. Let the vapor escape for 3 to 5 minutes. The longer this period the drier the contents. Then open the door by swinging handle fully to left, pushing door assembly slightly towards hinge and pulling outwards.

Do not leave door closed tightly when SpeedClave is not in use. Open, or "crack" door while SpeedClave is still warm.

## LITTLE THINGS THAT MAY BE HELPFUL IN RUNNING YOUR SPEED CLAVE

Read operating instructions carefully and make sure operating personnel follow them.

If red pilot light does not light, check electrical outlet, bulb and timer, and see that control knob is turned to left.

If needle on pressure gauge does not "zero," remove glass and adjust recalibration screw so that needle points to zero when sterilizer is cold.

If contents are damp on removal, allow longer wait after door is "cracked" when pressure is released.

Air vent in back will steam for 20 to 60 seconds to insure evacuation of all air. See that Safety Valve Handle (A) is down.

If door closes too stiffly, lubricate bearing edge of handle with vaseline. Wetting the bottom suction cups will prevent sliding.

If door should leak at rim, be sure door is centered when closing. Do not fill with water more than quarter way up curved rim.

Do not assume door gasket needs replacement unless it is visibly broken. Replacement by qualified service man only.

A steam "whisper" at safety valve is acceptable.

Never turn timer-switch to the left of zero.

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#### SERVICE MANUAL

#### Castle #777 SpeedClave

#### PROPER OPERATION IN NORMAL USE

Follow the directions printed on the instruction plate on the control box.

As stated, the RED PILOT LIGHT (heating indicator) should light when the timer is turned on. The WHITE PILOT light will come on when the unit reaches the pressure as selected by adjusting the "Hi-Lo" pressure control knob.

When desired pressure is reached, the red and white light will show alternately, red when the heater is on, white when the heater is off. A slight flicker may occur as the relay makes and breaks contact.

Air and steam will escape from the Air Exhaust, on rear (approximately 30 to 60 sec.) when heating up. Air Exhaust closes when all air is exhausted from chamber. However, this air vent may properly "whisper" until some pressure has been built up in the autoclave.

If there is a slight whisper of steam from the <u>Steam</u> <u>Vent</u> on top, it is permissible if not continuous.

If there is serious deviation from the above procedure, the following steps should be taken in checking.

#### CHECKING SPEEDCLAVE OPERATION

#### Step 1

Fill with water half way up lip. (Approx. 10 ounces). Do not overfill -- overfilling will cause initial bubbling at bottom of door and give false appearance of leak.

#### Step 2

Plug into electric source. (110 v A.C.only) Make sure there is current at wall outlet.

#### Step 3

Turn on Timer. Red (heater) light should show at once. If it does not:

- (a) Be sure bulb is not broken, or burned out. Check bulb contact at socket.
- (b) Check timer (WO 34551)
- (c) Check Heater to see that it is heating (See Page 8).
- (d) Check adjustment of Pressure Control Relay. (See Page 4)
- (e) Check all connections in Control Box for tightness.
- (f) Check Safety Cutout on bottom (WO-3085) to see that contacts are closed.

#### Step 4

After 2 to 5 minutes, Air Exhaust Valve should close and pressure should begin to build up. If not:

- (a) Check Air Exhaust Valve (WO-10017) at rear to see that it does close. (See Instructions Page 5) Air Exhaust is a bellows valve mounted on the liner just behind the partly open metal flap on rear of shell. (Do not close this flap)
- on rear of shell. (Do not close this flap)
  (b) Check Steam Vent Pipe (WO-3282) and Needle Valve.
  It can whisper, but if it really appears to leak, see instructions (Page 6).
- (c) Check door to see that it does not leak:

  If leak is at center of door, see instructions, page 7, for T-bolt washer.

  If leak is at outer door rim, see that door closes tightly all around when cam is thrown to right. Be sure door is centered when closing. Do not exert pressure up or down on cam when closing. If not tight, bridge in crossarm (on which cam eccentric bears) may be bent. Replace crossarm with new type.

  Or door may be sprung. Replace door.

  The last possibility is a worn door gasket. Never take out old gasket unless defect or break is clearly visible. (See page 7).

  NOTE: Do not overfill with water (See page 7)

  (d) Check liner screws and washers. (See page 8)

#### Step 5

After adjusted pressure is reached, white light should come on. If not: Check (a) and (d) of Step 3 above.

#### INSTALLATION OF PRESSURE CONTROL RELAY (WO-23983)

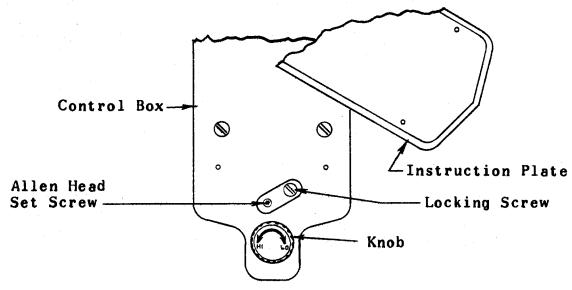
#### (Rarely Necessary)

- 1. Fasten relay in place.
- 2. Screw Control Knob Shaft in place slowly until top relay plate separates from bracket 1/32".
- 3. If a stop screw hole on knob is not directly in front, turn knob shaft clockwise until one appears.
- 4. Insert stop screw through knob into shaft.
- 5. Turn control knob clockwise until stop is reached.
  - (a) If points do not separate, turn Allen set screw until it is finger tight and touches relay top plate. Then tighten locking screw.
  - (b) If points do separate, tighten locking screw until relay points close, being careful that locking screw does not touch top leaf of relay, and then turn Allen set screw until it is finger tight and touches relay top plate.
- Connect relay to circuit. (See Wiring Diagram Page 14).
   Plug in.
- 7. See page 4 for final adjustment of relay assembly.

#### ADJUSTMENT OF PRESSURE CONTROL RELAY (WO-23983)

#### (Rarely Necessary)

- 1. Have the SpeedClave in operation at its top pressure, with knob turned fully counterclockwise.
- 2. Remove 2 front screws in instruction plate and push plate to one side, exposing locking screw and set screw.



To raise maximum operating pressure to 22 PSI ---

(a) Loosen Allen <u>Set</u> screw and tighten <u>locking</u> screw until <u>red light</u> goes on. Repeat Procedure until gauge shows 22 PSI and <u>white</u> light goes on.

#### CAUTION

Be sure not to force <u>locking</u> screw so that it touches relay spring.

To decrease maximum operating pressure to 22 PSI --

- (a) Loosen <u>locking</u> screw and tighten <u>set</u> screw until white light goes on. Repeat procedure until gauge shows 22 PSI and white light is on.
- (b) Tighten <u>locking</u> screw. (See above caution)
- 3. Replace screws in instruction plate.

#### INSTALLATION AND ADJUSTMENT

#### OF AIR EXHAUST BELLOWS

(No. WO-10017)

#### A. Removal of the Old Bellows

- 1. Remove the liner from the chamber.
  - a. Old Models: Remove the four (4) hex head screws from the back of the shell to release the liner.
  - b. Newer Models: Remove the 6-32 screw from the inside of the liner that secures it to the back of the chamber. Then, carefully remove the liner from the retaining guide, extending down from the shell in the rear of the chamber.
- 2. Remove the old bellows assembly from the liner.

#### B. <u>Installation of the New Bellows</u>

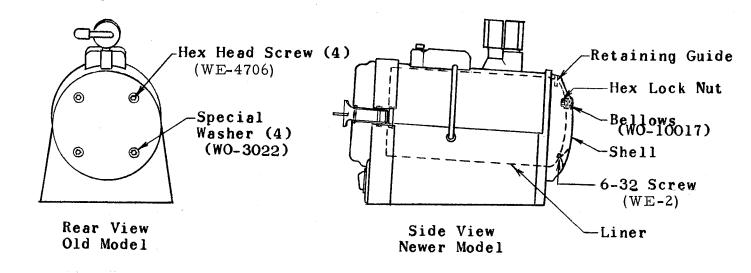
- 1. Remove the nut from the stem of the new assembly.
- 2. Screw the new bellows assembly stem completely into the liner from the outside, and hand tighten the nut on the inside.
- 3. Replace the Chamber Liner.
  - a. Old Models: Be sure to place the four (4) special washers under the heads of the four (4) hex head screws.

<u>CAUTION:</u> Tighten the four (4) screws snugly so that no leakage occurs around the washers. Overtightening the screws will strip the threads.

b. Newer Models: Place the liner in the chamber so that the retaining guide, extending down from the top of the chamber, enters the slot in the liner, Replace the 6-32 screw that holds the liner in place.

#### C. Adjustment of the Bellows

- 1. Reach into the back of the liner and loosen the hex head nut on the bellows stem.
- 2. Turn the bellows stem clockwise, with a screwdriver, until it touches the back of the shell.
- 3. Unscrew the bellows stem one (1) turn counterclockwise.
- Hold the bellows stem in this position with a screwdriver and tighten the hex lock nut.



#### INSTRUCTIONS FOR STEAM VENT ASSEMBLY (No. WO-3282)

Remove back louver disc. Unscrew needle valve from top. Hold weight off pipe when unscrewing. Lift out top of weight (with needle valve) and lift bar. Handle needle valve with caution. Do not drop. Remove bottom of weight.

Unscrew steam vent pipe.

Replace with new pipe having rubber insert on top of pipe. Use pipe dope on threads.

Inspect needle valve for smooth, round, conical surface. Reassemble, holding weight off pipe.

#### DIRECTIONS FOR DOOR GASKET REPLACEMENT (WO-3036)

- 1. Remove gasket.
- 2. Be sure channel is clear of any foreign matter and edge of lip does not appear dented or marred. Make certain door channel is clean.
- 3. Place new gasket in position by squeezing in as tight as possible with fingers.

GASKET MUST BE EVENLY DISTRIBUTED ALL AROUND OPENING

- 4. Prepare SpeedClave for regular operation, i.e. pour in water.
- 5. Close door carefully. Be sure gasket remains in place.
- 6. Turn on SpeedClave and run to 15 lbs. PSI. Gasket should squeeze into place at this pressure.
- 7. After SpeedClave is in operation for 15 minutes at 15 lbs. PSI, turn off and vent steam.
- 8. Inspect gasket to be sure it is equally inserted at all places. If the gasket can be rolled out by rubbing the thumb from front to back over the lip of the door, it is not properly placed.
- 9. If the implacement is not proper, repeat operation of the SpeedClave and if, after second cycle, door gasket still does not place properly, SpeedClave should be returned to the factory.
- NOTE: After new gasket is put in, door may leak at low pressure for several operations until it seats itself. If there is continued leaking, the gasket is not at fault and SpeedClave should be returned. Never use pliers to pull door gasket into place.

#### TIGHTENING DOOR "T" BOLT (WO-3058)

The door "T" bolt must be very tight. If there is any leak at the "U" bracket (WO-3060) or around the inside copper washer (WO-3059), take the door assembly apart at the hinge. Place "U" bracket in a vise and turn down cap nut (WO-3067) with wrench. In rare cases it may be necessary to unscrew cap nut and apply some pipe dope to screw, then replace cap nut and tighten. Be sure "T" bolt washer is of copper.

Be sure door remains in same relationship to cross arm while tightening cap nut.

#### TIGHTENING LINER SCREWS (No. WE-4706)

If liner screws on models that have them at rear show a leak, first check to see if the screws are tight. Remember that the copper encased washers (WO-3022) are soft and care should be taken not to completely crush them.

If the screw fails to tighten, threads have been stripped and a new screw should be used.

#### HEATER ASSEMBLY (No. WO-34261)

#### (Rarely Necessary)

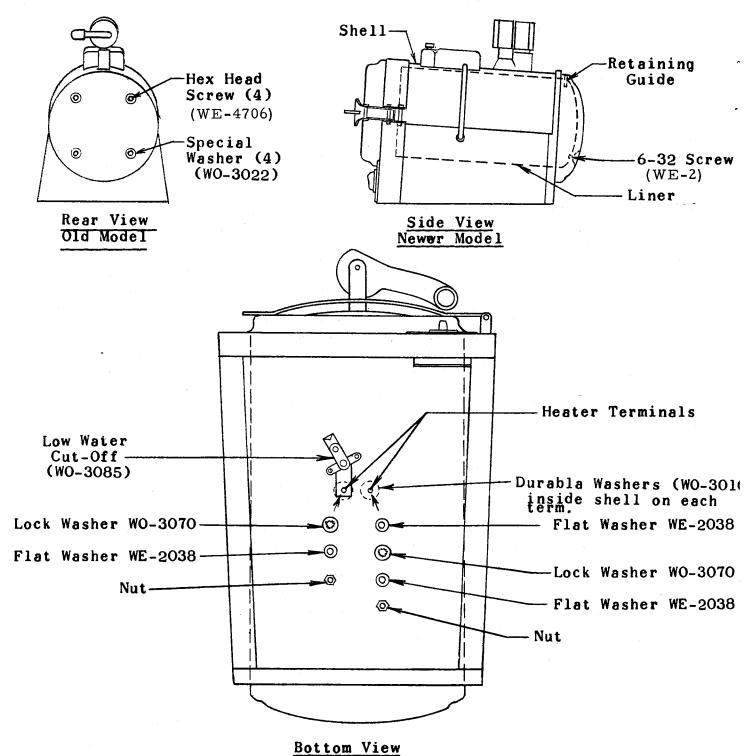
Before assuming heater needs to be replaced, check to be sure proper current reaches heater. Check wiring, timer, and outlet box.

Replace the heater and assemble the low-water cut-out in the following manner:

- 1. Before disassembling the heater, check the supply circuit to the heater terminals to be sure the heater needs replacing.
- 2. Remove the chamber liner. On older models, identified by the 4 hex head screws on the back of the shell, remove the 4 screws to release the liner. On newer models, with no hex head screws on the back of the shell, remove the 6-32 screw from the inside of the liner. Then, carefully remove the liner from the retaining guide extending down from the shell in the rear of the chamber.
- 3. Mark the location of the heater wiring, then remove the old heater.
- 4. Place two WO-3010 Durabla Washers on each heater terminal flange and mount inside the shell.
- 5. Place the low-water cut-out bracket onto the left terminal.
- 6. Add in sequence, over the bracket, a WO-3070 steel lockwasher, a WE-2038 flat washer and a nut.
- 7. On the other heater terminal, first place a WE-2038 flat washer. Then, add in sequence a WO-3070 steel lockwasher, a second WE-2038 flat washer and a nut.
- 8. Tighten the nuts securely to prevent leakage.
- 9. Reconnect the wires to the terminals.
- 10. Replace the liner in the chamber. If it is the old model, be sure to place the 4 special washers under the heads of the 4 hex head screws.

#### CAUTION

Tighten the 4 screws snugly so that no leakage occurs around the washers. Overtightening the screws will strip the threads. If it is a new model, place the liner so that retaining guide extending down from the top of the chamber, enters the slot in the liner. Replace the 6-32 screw that holds the liner in place.



#### REPLACEMENT OF PRESSURE REGULATOR BELLOWS ASSEMBLY

(WO-3161)

(Very Rarely Necessary)

#### A. Removal of the Old Bellows

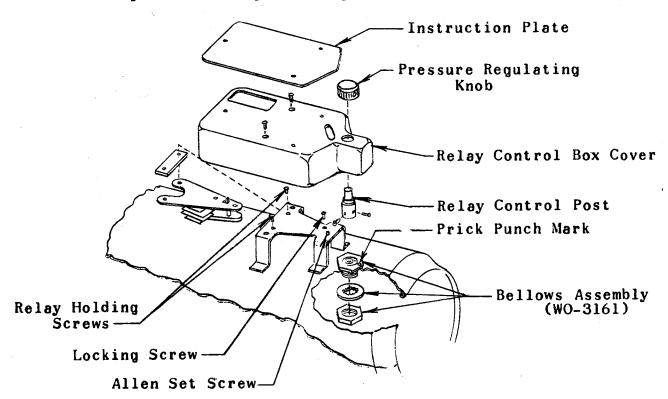
- 1. Remove the liner from the chamber.
  - a. Old Models: Remove the four (4) hex head screws from the back of the shell to release the liner.
  - b. Newer Models: Remove the 6-32 screw from the inside of the liner that secures it to the back of the chamber. Then, carefully remove the liner from the retaining guide, extending down from the shell in the rear of the chamber.
- 2. Remove the relay assembly located above the bellows.
  - a. Take out the three (3) screws that hold the instruction plate and remove it.
  - b. Loosen the set screw in the pressure regulating knob and remove it.
  - c. Take out the two (2) screws in the relay control box cover and remove it.
  - d. Remove the two (2) stop screws from the relay control post and unscrew the post.
  - e. Loosen the Allen set screw.
  - f. Remove the locking screw from the front of the relay and the two (2) screws that hold the back of the relay.
  - g. Shove the relay towards the back of the SpeedClave until there is sufficient clearance to remove the bellows.
- 3. Remove the old pressure regulating bellows. Some old models have a hard rubber plug for a bellows, which must be removed. Both the metallic bellows and the hard rubber plug bellows are replaced with the same replacement bellows WO-3161.

#### B. Installation of the New Bellows

- 1. Remove the hex nut and lockwasher from the replacement bellows assembly.
- 2. Assemble the bellows to the shell.

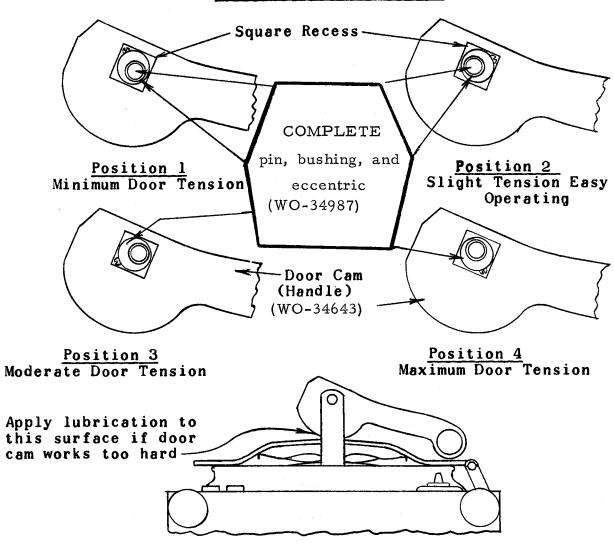
- a. Place the bellows into the shell from the outside of the shell and replace the lockwasher and nut on the inside.
- b. Place the prick punch mark, visible on the top of the hex bellows flange, towards the front of the SpeedClave and tighten the nut on the inside of the chamber. The punch mark on top of the bellows indicates the correct position of the concave hex flange so it will fit the curvature of the shell and form a good seal.
- 3. Replace the Chamber Liner
  - a. Old Models: Be sure to place the four (4) special washers under the heads of the four (4) hex head screws.
  - CAUTION: Tighten the four (4) screws snugly so that no leakage occurs around the washers.

    Overtightening the screws will strip the threads.
  - b. New Models: Place the liner in the chamber so that the retaining guide, extending down from the top of the chamber, enters the slot in the liner. Replace the 6-32 screw that holds the liner in place.
- 4. Replace the Relay Assembly
  - a. Adjust the relay assembly as outlined on Page 4.



#### TENSION ADJUSTMENT OF DOOR CAM

#### Bottom Views of Door Cam



Bottom View - Door Closed Position

Place Cam Pin Eccentric in cam recess with head engaged in one corner of square recess.

To adjust tension of door cam, place Cam Pin Eccentric in one of four positions:

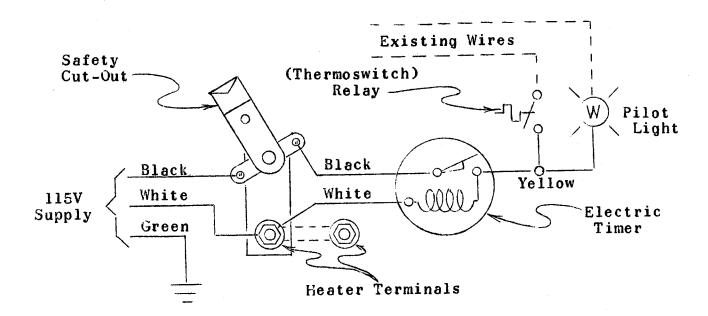
- 1. To obtain easy closure with minimum tension when door is closed.
- 2. To ease operation of door and still maintain good tension when door is closed.
- 3. To obtain more tension on door when closed.
- 4. To obtain maximum tension on door when closed.

BE SURE THAT DOOR CAM IS INSTALLED WITH SQUARE RECESS DOWN AND ECCENTRIC AND CAM BUSHING IN PLACE

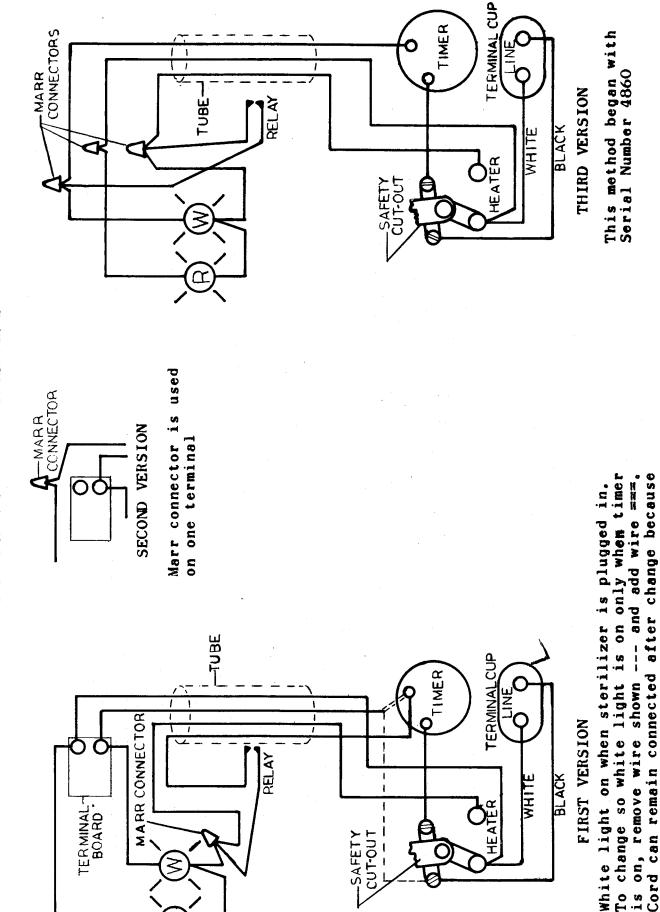
NOTE: When closing door always pull handle in complete horizontal arc from left to right, making certain not to apply upward or downward pressure on the Door Handle.

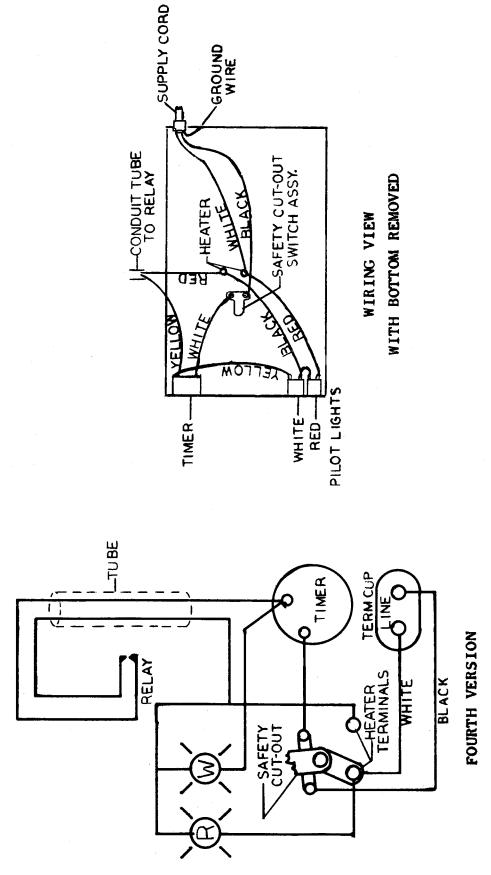
## INSTRUCTIONS FOR INSTALLING ELECTRIC TIMER (WO-34551)

- 1. Remove wires from manual timer.
- 2. Pull control knob from front of manual timer.
- 3. Take out the two mounting screws that secure the manual timer and remove the timer.
- 4. Remove the control knob from the new electric timer 34331 and insert it in the panel.
- 5. Place the old timer dial plate in position and secure the new timer with the screws supplied with the electric timer.
- 6. Secure the new control knob to the timer.
- 7. Rewire unit as illustrated.

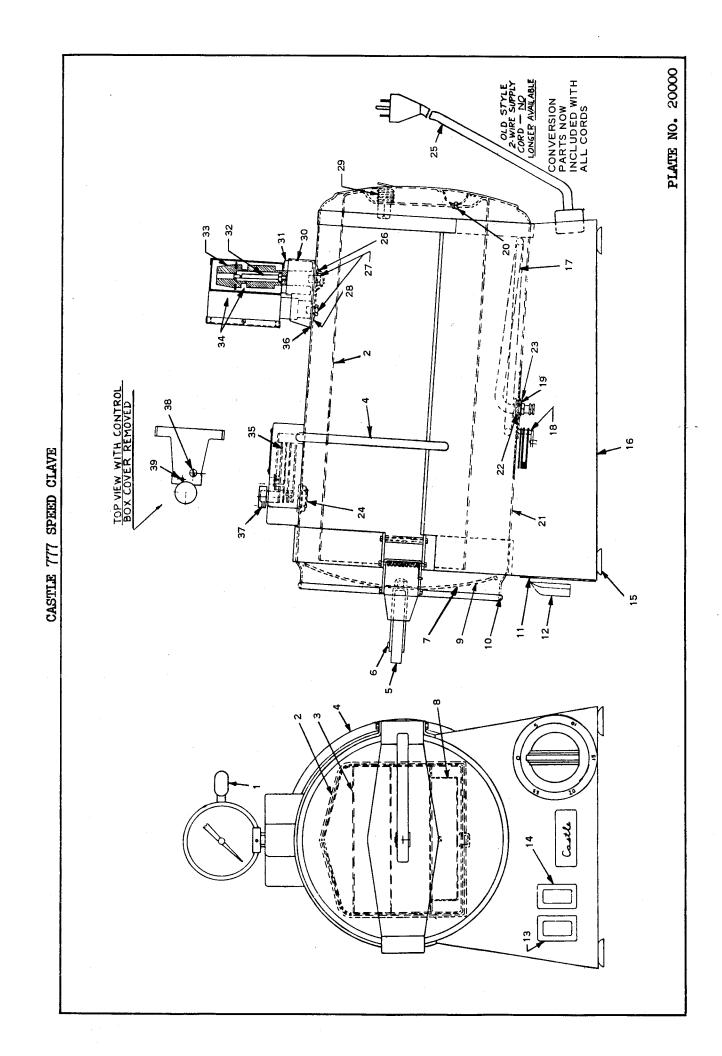


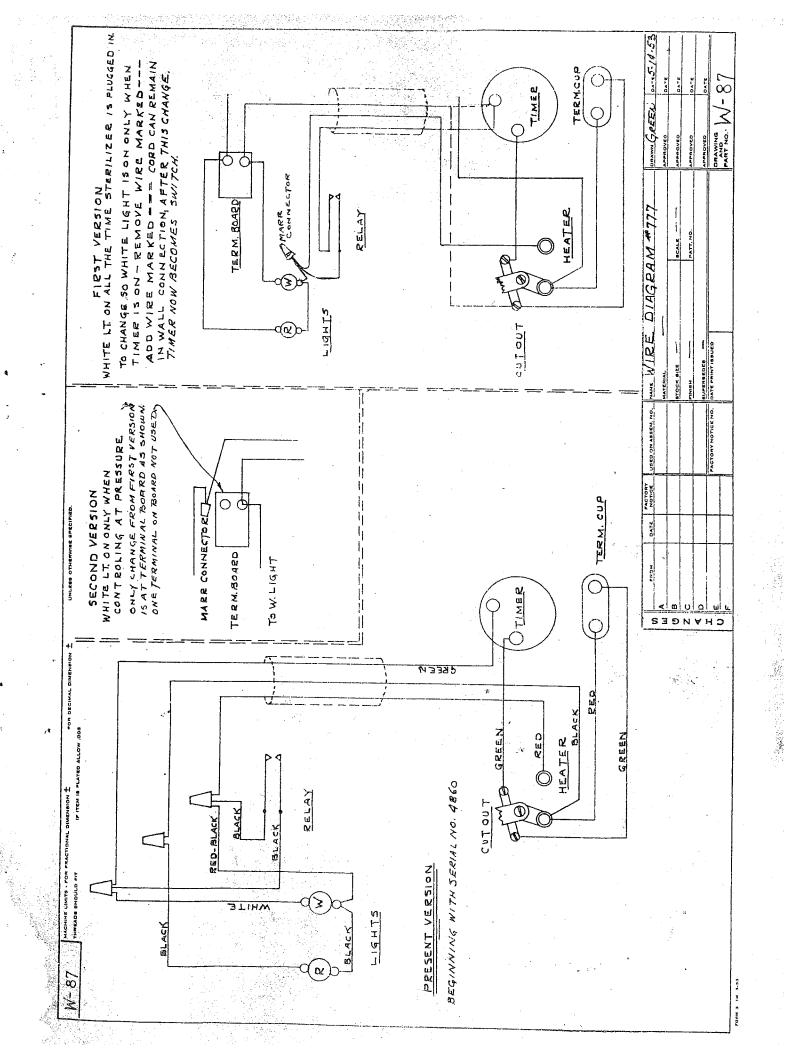
timer becomes a switch.





This method began Serial No. 16413 Three wire cord method began with Serial No. AA-36490







Complete Timer For Castle 777

Item #	Part #	Description
1	MZZA100712	Pressure Gauge Kit
2	MZZA100713	Door Handle
3	MZZA100714	Timer Dial
4	MZZA100715	Foot (Package of 4)
5	MZZA100716	Light Bulb, White
6	MZZA100717	Light Bulb, Red
7	MZZA100718	Pin Cam Plated



Item #	Part #	Description
1	MZZA100712	Pressure Gauge Kit
2	MZZA100719	Door Washer
3	MZZA100714	Timer Dial
4	MZZA100715	Foot (Package of 4)
5	MZZA100716	Light Bulb, White
6	MZZA100717	Light Bulb, Red
7	MZZA100720	Door Gasket

# Main Open FRONT Top Right Bottom Tray Specifications & Parts List



Item #	Part #	Description
1	MZZA100721	Diaphragm Cup Assembly
2	MZZA100722	Heater
3	MZZA100716	Light Bulb, White
4	MZZA100717	Light Bulb, Red
5	MZZA100723	Relay Switch Assembly

**Other Autoclave Parts** 

Main Open Front TOP Right Bottom Tray

Specifications & Parts List

Relay Switch Assembly



Item #	Part #	Description	
1	MZZA100723	Relay Switch Assembly	
2	MZZA100721	Diaphragm Cup Assembly	



Item #	Part #	Description
1	MZZA100721	Diaphragm Cup Assembly
2	MZZA100723	Relay Switch Assembly
3	MZZA100716	White Bulb
4	MZZA100717	Red Bulb
5	MZZA100724	Gasket Diaphragm

## Main Open Front Top Right BOTTOM Tray Specifications & Parts List



Item #	Part #	Description	
1	MZZA100725	Timer	



Item #	Part #	Description
1	MZZA100726	Bellows Assembly

## Castle SpeedClave 777 Specs & Parts List

SPECIFICATIONS		
Media: Steam		
Chamber Dimension: 7" x 14" (17.78 cm x 35.56 cm)		
Overall Dimensions: 16"d x 12"h x 7"w (40.64 cm x 30.48 cm x 17.78 cm)		
Weight: 30lbs (13.61 Kg)		
For more Information: Click here or contact us at 1-800-801-9934		
PARTS LIST		
Bellows Assembly	MZZA100726	
Diaphragm Cup Assembly	MZZA100721	
Door Gasket	MZZA100720	
Door Handle	MZZA100713	
Door Washer	MZZA100719	
Foot (Package of 4)	MZZA100715	
Gasket Diaphragm	MZZA100724	
Heater	MZZA100722	
Light Bulb, Red	MZZA100717	
Light Bulb, White	MZZA100716	
Pin Cam Plated	MZZA100718	
Pressure Gauge Kit	MZZA100712	
Relay Switch Assembly	MZZA100723	
Timer	MZZA100728	
Timer Dial	MZZA100714	

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