

INSERTION OF P2 CONTACT BUTTONS IN CATHODE RAY TUBES BY R.F.

1. Equipment: One (1) 833A Oscillator, Model No. L-741-NN
Punch-out fixture
Punch-out tools
Hot Plate
Rotating annealing and preheating fire positions.
Water pan, tweezers, tool and button gauges.
2. Process: Initially used for type 5FP7

For chrome-iron, Allegheny Metal #55,
Part No. FM6079
 - a. This process consists of punching a hole in the side of the J39-1/2 bulb by heating a punch-out tool of proper size and material by R.F. which in turn melts the glass and cuts a hole in bulb cone, then inserting an FM6079 button assembly and making a glass to metal seal via heat induced in button by the same R.F. coil. This whole process will vary considerably according to operator speed, output of oscillator, punch-out tool material employed, and bulb shape and thickness. This write-up is based on use of nickel for punch-out tool material, oscillator output of 540 ma. plate current, trained operator and standard J39-1/2 G1 or F1 bulb.
 - b. Bulbs are placed neck down on rotating spindle of preheating position to right of oscillator and allowed to turn in fire for a period of 1-1/2 minutes at which they should have reached a temperature of approximately 275 - 300°C. Bulb is then removed and placed over punch-out jig on which punch-out tool has been loaded from hot plate (medium heat 300°C.) which heats it sufficiently to keep it from cracking the glass. The punch-out fixture rod should likewise be heated at start of operation by playing flame over it to prevent breakage when first hot bulb is loaded on it. With bulb in place and tool raised against glass; rotate fixture rod 180° which should bring tool just above center of oscillator work coil. Foot pedal controlling plate supply of oscillator is then stepped on, energizing coil and heating punch-out tool which goes through bulb side, coil and drops into shallow pan of water where glass is cracked off. Tool is then placed on hot plate for reuse.
 - c. After bulb is punched out it is quickly removed and held over sharp flame which is allowed to play over area around punch-out hole to relieve strain set up by punching. This must be done within 4 seconds or bulb will crack around hole. FM6079 beaded button is now placed in punch-out hole and bulb held under work coil while button is heated and sinks into glass. After button has thoroughly melted surrounding glass it should be brought from under coil and pulled directly out so that it extends above surface of bulb side a minimum of 1/16", maximum of 3/32". Bulb is then placed in first annealing fire for 1-1/2 minutes to attain a temperature of 375 - 400°C., moved to second fire position for similar length of time to drop to 300°C. and is then removed. After cooling down bulbs are placed in oven and given standard annealing schedule.

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★ CHANGE
★★ ADDITION
★★★ DELETION

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SUBJECT RF SEALING IN BUTTON CONTACT

SUPERSEDED DATE

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3. Quality Controls

- a. Punch-out tools should be checked in gauge at regular intervals to see that hole size does not exceed limits of $.490 \pm .020$ ".
- b. In punch-out operation care must be taken to see that bulbs do not rest on the work coil which is water cooled and hence may crack bulb if it is pressed on coil. This adjustment is controlled by Allen set screw at base of fixture.
- c. Checks should periodically be made with standard gauge to see if button location is proper distance from face plate of bulb.

4. H.F. Furnace Operation

- a. In starting and stopping oscillator the following routine should be observed:
 - 1. Turn on water inlet.
 - 2. Turn on main switch.
 - 3. Turn on filament switch and allow tubes to heat at least 2 minutes.
 - 4. Turn on plate switch and oscillator is ready to operate when foot switch is pressed.
- b. In closing down above procedure is reversed. Do not close outlet water valve at any time unless coil is to be removed.

ENGINEERING SECTION
STANDARDIZING

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