



Formerly 17-10-1

The standard procedure for punching tops of glass bulbs with a Model No. 730-G Automatic Bulb Punching Machine is given herein.

MAY 1955

1. EQUIPMENT

- a. Bulb punching machine Model No. 730-G is a turret type machine with 16 rotating heads. A hollow nichrome punchout pin seats in the upper end of each spindle and is held in place by a convex metal disc *(nichrome) which screws onto the end of the spindle. An asbestos composition bushing surrounding the spindle centers and supports the bulb until the punchout pin is raised and contacts the heated glass. One or more of the following burners are used at 11 of the 16 positions on the machine. These burners are referred to, in procedure by the letters preceding the burners listed.
 - * b. Selas Burner No. 22K201
 - * c. Single Hole Burner No. 1142

2. PROCEDURE

a. Punching bulbs.

- 1. One operator is required for loading bulbs onto and removing punched bulbs from the heads of the bulb punching machine. (Present approximate speed - 1200/hr. - 3 sec. index).
 - 2. The treatment of bulbs during the process of punching shall take place as here outlined, in the order of machine positions. Letters in parenthesis () indicate burners which are preceded by the same letters in list in equipment.
- Note: Clean canvas gloves should be worn by the operator to handle bulbs before and after punching.

3. Position

- 1. Load Bulb
- 2. Load Bulb
- 3. Load Bulb
- 4. Preheat bulb top with very fine fire from *selas burner (a) which is mounted vertically above the bulb so that the flame will play downward on the top of the bulb, striking the edge of the dome, the dome side, and the bulb shoulder. The burner is mounted with the plane of the *selas burner (a) normal to the bulb circumference, about 2" above the dome and 1-1/2" from dome center to *selas burner (a) center line.
- 5. Continue preheating of bulb with medium soft fire from *selas burner (a) mounted vertically with plane of *selas normal to bulb circumference, 3/4" above dome and 3/4" from dome center to *selas center line. This flame also strikes the edge of the dome, the dome side, and the shoulder of the bulb.
- 6. Continue heating bulb with medium fire from a *selas burner (a) which is mounted at an angle of 45° and with line of *selas burner in a horizontal plane. The fire should be directed downward so that the tip of flame would just touch the punchout pin if it were not covered by bulb.

- 7. 1. From a *selas burner (a) which is mounted vertically, direct a medium fire directly downward at the punchout pin. Dome center should show orange color before index. Burner about 2" above dome.
 - 2. From a *selas burner (a) which is mounted at an angle of 45°.
- ***
 Burner about 3" from bulb. The punchout pin rises 1/8" in this position to seat under the dome center.

SCALE—
 DIMENSIONS IN

UNLESS OTHERWISE SHOWN. DIMENSIONS SHOWN WITHOUT TOLERANCES ARE DESIGN CENTERS

18-528-27-60 PCL18633-126JM

• CHANGE
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2. PROCEDURE (Cont'd)

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a. Punching bulbs (Cont'd)

3. Position: (Cont'd)

- 8. Direct a medium hard fire vertically down from a single hole *No. 1142 burner (b) directly on the punchout pin. The punchout pin rises 1/4" and forms the glass tip. Fire must be vertical and centered to preserve uniformity of tip. Burner about 2-1/4" above dome.
Admit air to punchout pin in sufficient quantities to keep glass from sticking to pin and to blow out tip just before index. Due to the variations in glass thickness between bulbs, some are not blown out until the following position.
- 9. From a *selas burner (a) which is mounted vertically, direct a medium fire directly downward at the punchout pin. Admit air to the punchout pin in sufficient quantity to accomplish the blowout where it has not been done in position 8. Burner about 2-1/2" above dome.
A second burner - *selas (a) is directed downward at an angle of 30° at dome top, tangential to blowout area, in order to shape the tip. This is a medium flame, with the line of burner holes horizontal. Burner tip is located about 2-1/2" from dome center.
- 10. Continue to shape tip with medium fire from a *selas burner (a) mounted 30° from the horizontal, 2-1/2" from dome center. Line of burner holes is vertical and flame strikes dome just as in position 9.
- 11. Dome annealing begins with two horizontal *selas burners (a) located about 1-1/2" to 2" from dome center. Soft fires strike on either side of blowout and flames meet on far side of bulb, about 1/2" to 1" beyond tip.
- 12. Dome annealing continued with two horizontal *selas burners (a) located about 2" from dome center. Medium fires directed exactly as in position 11.
- 13. Dome fires exactly as in 11 and 12 except flames are slightly softer than 12 to permit gradual cooling of bulb.
- 14. Last dome annealing position - two burners (a) with *selas horizontal; burners tilted slightly downward such that very soft flames strike dome just horizontally. Burners about 1-1/4" from dome center.
- 15. Unload bulb) Operator must wear clean canvas gloves.
- 16. Unload bulb)

b. Cooling bulbs

- 1. As bulbs are removed from the machine they must be placed into a box at the side of the operator and be allowed to cool before being placed into tubs containing cold bulbs. Two of such boxes, each of a capacity of about 50 bulbs, used in rotation will allow one box of bulbs to cool while the second box is being loaded.

ENGINEERING SECTION
STANDARDIZING

SCALE—

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