



SUBJECT CLEANING METAL BULB CONES  
Process Specification

SUPERSEDED DATE

This specification covers the continuous machine spraying process for emulsion and alkaline cleaning of spinning lubricants and soil from chrome-iron cones as received from the vendors. The soil to be removed consists mainly of carbon smut which is the result of decomposition during the spinning process. Soil also may include fine metal particles similar to filings. Initially for 16AP4.

1. EQUIPMENT

- a. Continuous Belt Degreaser (Niagara Washer, G.S. Blakeslee & Co.)
- b. Brushing Unit - to prepare cone for degreaser.

Description: The continuous belt degreaser occupies a floor space of approximately 50 ft. by 7 ft. and is approximately 10 ft. high. At a conveyor speed of 3.54 ft. per min., theoretical productive capacity is 300 cones per hour. The belt carries the cones through four separate washing positions. As the cone passes through each position it is sprayed both from above and below with the solution from the tank of the particular washing position, the solutions being re-circulated. After passing through the fourth position, which is a clean water rinse, the cones are intended to be free of all contamination. They then pass through an air-drying section and emerge at the unloading end dry and clean. The desired temperatures of the various spray solutions are maintained by steam regulators. Vapors are removed from the machine by an exhaust fan located above the machine entrance.

The brushing unit is necessary for pre-cleaning because the four-stage degreaser of itself will not sufficiently clean the cones. The brushing machine consists of a rotating head upon which are mounted six brushes. The cone is supported on the brushes, but kept from turning by clamps applied to the outside lower edge. Brush rotation speed is approximately 96 rpm. Brush material may be either Nylon or horsehair or a combination of both. The cleaning action may be improved by draping a rag over the brushes and keeping soaked with kerosene.

2. MATERIALS

- E62 Emulsifying Agent (International Compound #507).
- A629 Alkaline Cleaner (Terj).
- Kerosene.
- Tap Water.



ALKALI HANDLING PRECAUTIONS - See S.N. 33-2-8A.

3. PREPARATION OF SOLUTIONS

- a. Fill all tanks except No. 1 with water to just below (6") the overflow.  
Fill tank No. 1 to point where all steam coils are covered except the top one.
- b. Bring the tanks up to the temperatures specified in Part 5, Step a(6).
- c. Charge tanks:
  - (1) Emulsion Cleaner: (Tank No. 1 - capacity 640 gal.)
    - E62 Emulsifying Agent - - - - - 5 gal.
    - Kerosene - - - - - 25 gal.

Mix kerosene and emulsifying agent before adding to water. Mixture may be added in 5-gal. lots, consisting of 1 gal. of emulsifying agent and 4 gal. of kerosene.

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3. PREPARATION OF SOLUTIONS (Cont.)  
 (2) Water Rinse: (Tank No. 2 - capacity 640 gal.)  
 A629 Alkaline Cleaner - - - - - 2 lb.

This addition is mainly to soften the water and to prevent the formation of a gummy scum which is difficult to clean from the tanks.

- (3) Alkaline Cleaner: (Tank No. 3 - capacity 420 gal.)  
 A629 Alkaline Cleaner - - - - - 8 lb.

- (4) Water Rinse: (Tank No. 4 - capacity 360 gal.)  
 Adjust water inlet valve for moderate overflow.

4. MAINTENANCE OF SOLUTIONS

- a. Emulsion Cleaner - Tank No. 1: Keep a minimum of 3" foam and as little as possible in excess of 3" (3-6" is permissible). There should be approximately a 1/4" layer of kerosene between the foam and liquid. Keep liquid level well above pump intake. The tank should have a narrow vertical glass window in front in order to see the liquid level. If the foam is less than 3" there is, (1) a deficiency of emulsion, or (2) too much kerosene. Since the solution is heated the kerosene is constantly evaporating. Therefore, as a rule kerosene will have to be added, to compensate for the evaporation, over and above the regular proportions specified under "3. Preparation of Solutions". Drain, clean, and recharge every week or after washing 3000 cones.
- b. Water Rinse - Tank No. 2: Drain and clean tank daily and recharge as specified under "3. Preparation of Solutions".
- c. Alkaline Cleaner - Tank No. 3: When the scum on top becomes excessive the tank should be overflowed to let the scum flow off. Then re-add A629 Alkaline Cleaner, a pound or two at a time until some foam begins to appear. There is a limit as to how much alkaline cleaner will stay in solution, any excess of this amount merely settling to the bottom of the tank. Drain, clean, and recharge every week or after washing 3000 cones.
- d. Water Rinse - Tank No. 4: Water shall be constantly overflowing.

5. PROCEDURE

a. Starting Machine:

- (1) Throw switch on main switch box to "ON" position.
- (2) Open main water valve.
- (3) Make sure that switches on the four pumps, circulating fan, and belt drive are "OFF".
- (4) Press start button at either end of machine. This will energize the two exhaust fans.
- (5) Fill all tanks with water as specified under "3. Preparation of Solutions".
- (6) Open main steam valve - slowly to avoid excessive strain on steam lines and traps. Set regulators to get the following temperatures:  
 Tank 1 - - - - - 60-80°C. (140-175°F.)  
 Tank 2 - - - - - 82°C. (180°F.)  
 Tank 3 - - - - - 88°C. (190°F.)  
 Tank 4 - - - - - 71°C. (160°F.)  
 Air Chamber - - - - - 110°C. (230°F.)

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RADIO CORPORATION OF AMERICA

RCA VICTOR DIVISION  
TUBE DEPT. STANDARDIZING  
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5. PROCEDURE (Cont.)

- (7) Charge tanks with solutions as specified under "3. Preparation of Solutions".
- (8) Stop machine at either end.
- (9) Turn on pump, circulating fan, and belt drive switches.
- (10) Start machine at either end.
- (11) Check all pumps and motors to see if they are operating correctly.

b. Loading Cones:

- (1) The operator at the loading end of the machine must be supplied with:  
(a) plastic apron, (b) rubber gloves and elbow guards, (c) small 1/2-gal. aluminum pan, and (d) clean rags.
- (2) The cone shall be taken from the brushing machine and placed on the conveyer. Care must be taken to align cone with baffle openings. About 1" from either edge of belt is correct.

\*c. Unloading Cones:

- (1) The cones unload automatically to the conveyer which carries the cones to the operator at the Pangborn Blast Machine.
- (2) The cones shall be checked for soil by the set-up man every hour.

d. Stopping Machine:

- (1) Stop machine at either end.
- (2) Turn off pump and belt drive switches.
- (3) Press start button at either end of machine.
- (4) Leave exhaust fans on to carry off fumes from hot tanks.

ENGINEERING SECTION  
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