Built Slower...

RECEIVING... a Channel Master truck, carrying duds from all over the country, rolls up to the plant... truck bay doors close on the trailer... factory doors open automatically... the level-line platform moves into position, and the long, slow process begins...

NECK REMOVAL... the neck is scored... a bright blue flame pierces the neck, releasing the vacuum... old neck, base, and electron gun are removed.

Delaminating Room
Bake
Panel Removal

DELAMINATION... at this point, bonded duds are sent to the...
ROUGH INTERNAL WASH...two hydrofluoric acid washes remove the old screen, aluminum, and dag...followed by a water rinse...

NEW NECK...a unique machine automatically cuts glass tubing to the proper length...flares the neck end...a lathe equipped with flame jets heats the glass to a molten state...the new neck is carefully spliced to the bulb body...an annealer controls cooling and prevents cracking...

The Delamination Area to have the old face panels removed...

MANUFACTURE OF ELECTRON GUNS

GUN ROOM...the brand new...
INSIDE WASH...the bulb arrives at the carousel internal washer...a high velocity nozzle is automatically inserted into the bulb...after rotating through 14 powerful jet washes...with acid, caustic, and deionized water...chemical purity and physical properties are identical to brand new glass...

SCREEN...barium acetate is poured into the bulbs through stainless steel pipes...a precise amount of phosphor and potassium silicate is measured from a plexi glass tank on an overhead trolley...it takes exactly 11 minutes for chemicals to combine and form a gel on the face of the glass...the liquid is poured out...warm air, blown through rubber tubes, dries the screen...

SCREEN INSPECTION...each new screen is carefully examined under a brilliant light...even a pinhole as tiny as 1/20,000 of an inch is cause for rejection...rejected bulbs go all the way back to the start of the line...

LACQUER...to protect the new screen during the Aluminizing step which allows the inside of the bulb is sprayed with a smooth, even coat of lacquer...surplus lacquer is allowed to run to the bottom of the bulb...the screen is removed...
ALUMINIZING... a truly fine picture tube must have an interior aluminum coating for maximum brilliance and contrast... a measured amount of aluminum is placed in a coil... the bulb is set over it... a temporary vacuum is created inside the bulb... the coil is heated and the aluminum is completely vaporized... a film of aluminum three to five millionths of an inch thick is deposited over the entire interior of the bulb...

BAKE OUT... an aluminum cap is fitted over the neck to keep out impurities... the bulb is placed on a slowly moving conveyor for a trip through the huge 110 foot Lehr Oven... a series of controlled heat zones brings the temperature up to 410° Centigrade... the tube remains in the oven for 2½ hours... only sound bulbs can survive — structurally weak glass shatters... all moisture and organic material (including the lacquer) is vaporized...

Grid #1 Assembly
Mount Stems
Wire Weld
Heater Insertion and Welding
Top Disk Wire Weld

The atmosphere of the immaculate gun room...
GUN SEALING...the gun is placed on a peg...the bulb is lowered over it...centering and position must be perfect...five pre-heating positions raise the glass to sealing temperature...the glass wafer in the gun is fused to the neck...excess neck glass is removed...Channel Master is one of the few manufacturers who go to the extra trouble and expense of sealing guns in a nitrogen atmosphere to prevent premature cathode breakdown, and assure longer life...

EXHAUST...the tube is placed in an automated cart...a heating coil drives off air trapped inside the gun...as the cart travels through the exhaust oven the temperature is gradually raised to 410° C...the cathode is activated...high velocity diffusion pumps develop a vacuum of 14 lbs. per square inch within the tube...when the proper vacuum is established the tube is automatically sealed...
**RE TUBES**

**NEW BASE**
**GETTER FLASH**... a ring within the gun called the getter is heated by an induction heating coil... the barium in the getter is vaporized... the barium oxide which is produced remains in the tube to trap and absorb oxygen and other gas molecules...

**LEADS SOLDERED AND INSPECTED**
**HIGH VOLTAGE SPARKING**... 55,000 volts of direct current are pulsed through the tube to burn up any microscopic particles remaining in the gun or neck...

**AGING**... as the tube moves slowly down the aging line, it is subjected to voltages which automatically change at various intervals... the level of emission is stabilized... proper aging is vital for long, trouble-free tube life and top quality pictures...

**MANUFACTURE OF BONDED TUBE TYPES**

**BONDING ROOM**
**Clean and Inspect Face Panel**

**BONDING ROOM**... bonded tube types are conveyed
...an extra measure of care and skill in every step

Buff and Polish 17 Electrical Inspections Dag Box

Finally, after nine long hours...the end of the line...the tube is packed in the famous colorful Channel Master shipping carton...an outside label (with the same serial number as the tube) is attached to the carton...the face is given a final cleaning with Channel Master Pixsee...

ELECTRICAL TESTING...at the electrical testing station, a signal is fed to the tube for the first time...each and every Channel Master tube must pass a series of 17 separate tests...gas ratio, voltage breakdown, cut-off, warm-up, emission, aluminum breakthrough, focus, and many other points are checked...a visual check with test pattern is made...

Preheat Resin Spacing Set

Inspection

to the bonding room where a brand new face panel is laminated to the face of the tube...
...to last longer

The warranty card is placed in the carton — your assurance that this replacement picture tube has been through the most exacting, exhaustive process in the picture tube industry.... And passed every test with flying colors!

Barrier Coating  Tube Clean  Inspection and Face Clean

All materials and parts used in the manufacture of Channel Master's Black and White tubes are new except for the envelope which prior to re-use has been inspected and tested to the same standards as new envelopes.
Premium Picture Tubes are built in an ultra modern multi-million dollar plant!

Deliberately built without windows to reduce temperature variations, drafts, dampness, and dust — the plant interior is maintained under positive pressure with filtered air from the outside. Dirt and dust are kept at an absolute minimum. Air movement is under constant control.

When you set foot in it, your first impression is that of a strange new world—an automated world with glass faces slowly moving across a vast open space at various heights, only to disappear suddenly into heating or cleaning units.

Wherever you turn, overhead conveyors are gently moving bulbs from one station to another. Every machine is designed to handle tube types of every shape and size.

To produce a high quality screen, it is necessary to use water of the highest purity attainable. Although the plant location was selected for its pure water supply, the water is subjected to a series of elaborate filters and processes to remove every trace of impurity.

In order to maintain positive atmosphere within the plant, the outside doors leading to loading bays are automatically locked, and doors to the plant interior are opened.
Assembly of electron guns requires exacting precision. By assembling its own guns in dust-free temperature-controlled rooms, Channel Master assures top performance and greater reliability.

In this vast, modern plant, each tube is “babied” through a series of exacting operations on the most efficient automatic equipment available.
Unique in-line production...

Bulbs are conveyed into the screen room through a small opening in order to maintain the carefully controlled atmosphere essential for perfect screens.

moving from station to station on overhead monorail conveyors, moving belts, and specially designed carts, Channel Master CRT's are made in one continuous operation. Channel Master can easily control quantities of tube types—whereas new set tube manufacturers must make tubes in batches. This flexibility is essential to meet the demands of the Renewal Market.

After aluminizing, the bulbs are placed on a belt conveyor for a 2½ hour trip through 110 foot Lehr Bakeout oven.

Specially designed carts permit unique In-Line Aluminizing. As the bulb moves slowly around a long oval track, a temporary vacuum is created and a tungsten coil vaporizes the aluminum...the vacuum is released and the bulb is taken off the cart.
As the country's largest manufacturer of replacement CRT's, Channel Master specializes in anticipating market demands.

When the demand for a particular tube type increases, Channel Master's new multi-million dollar tube plant steps up production instantly!

Channel Master has the tube type you need—when you need it!

Because their three-part guns make them so much more complex, every Channel Master color tube is individually tested for at least ten minutes.

In an electron gun, the size of the aperture governs the sharpness of the picture. Channel Master guns are made to the same exacting specifications as guns used in new sets.

Designed to hold every size and type of picture tube, these cradles are part of the special equipment needed to manufacture various tube types simultaneously.
Faster Handling...

Incoming Picture Tube orders are processed with almost incredible speed by specially trained personnel operating a 1440 IBM computer.

The amazing IBM computer performs many operations simultaneously. In addition to the many accounting functions, it maintains an exact inventory control record—it permits rapid, market by market analysis of tube movement...allowing Channel Master to adjust production accordingly.

The IBM computer also helps Channel Master tube engineers survey new tube types and characteristics for replacement types which is made available to all dealers in the form of the Channel Master Substitution Guide.

1440 control console permits the programmer to keep a close check on the computer's various operations. The typewriter like device is a printer which types out required data from the computers.

Permanent Ramac programming is stored on disks and "played" like a phonograph record.
...Faster Delivery

A huge fleet of over 60 specially designed trailers constantly cross the length and breadth of the country—making regularly scheduled deliveries of Channel Master Picture Tubes.

Your local Channel Master Picture Tube Headquarters is part of this vast distribution network. They know that they can count on these regular deliveries to satisfy changing local market demands almost as soon as they arise.

Designed for light, bulky loads such as picture tubes, and antennas, Channel Master trailers have 5 doors to permit economical partial load deliveries.

In order to keep the fleet rolling at peak efficiency, every Channel Master trailer goes through a complete preventative maintenance check each time it returns to the plant.
Round or square large or small...

WE'VE GOT THEM ALL!

RADIO SPECIALTIES COMPANY, INC.
2953 Fort St. 12775 Lyndon 25351 - 5 Mile Rd.

CHANNEL MASTER
Picture Tube Headquarters
a long look

at the country’s most popular replacement CRT’s...

CHANNEL MASTER
Premium Picture Tubes

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