ct-view picture tubes

T. E. I.
LAWRENCE
EXPERIMENTAL
type CH-22

FEATURES

FRINGE-FREE COLOR AND BLACK AND WHITE PICTURES
LARGE PICTURE . . . ONE ELECTRON GUN
SIMPLIFIED CIRCUITING . . . SHORT TUBE
WIDE ANGLE DEFLECTION . . . LOW RASTER SCANNING POWER
LOW COLOR DEFLECTING POWER . . . QUICK SET-UP
STANDARD DEFLECTION COMPONENTS
ALUMINIZED HIGH BRIGHTNESS AND HIGH CONTRAST TRICOLOR SCREEN

GENERAL DATA

Focusing method: Magnetic
Deflecting method: Magnetic
Deflection angle: 72°
Phosphors: Red, green and blue primaries
Faceplate: spherical, clear glass
Screen: flat
Type: Metal backed, tricolor, phosphor line
Plate: Filterglass

ELECTRICAL DATA

Heater voltage (AC or DC) ..... 6.3 volts
Heater current ..... 0.6 amperes

DIRECT INTERELECTRODE CAPACITANCES

Grid #1 to all other electrodes ..... 6 uuf
Cathode to all other electrodes ..... 5 uuf
Color grid wires to each other ..... 1400 uuf
Color grid wires to all other electrodes ..... 85 uuf

MECHANICAL DATA

Min. picture size ..... 10⅝" x 14¼"
Picture area ..... 153 square inches
Base ..... Small-shell duodecal 6 pin
Mounting position ..... Any

TUBE DIMENSIONS

Max. bulb diameter ..... 22⅝"
Max. length ..... 29½"

RATINGS

	Max. volts dc
Total accelerating voltage, Ek-p	18,000 volts dc
Electron gun voltage	5,000 volts dc
Color grid deflection voltage EG4-G5	1,000 volts dc
Seeker voltage EG-3-G4G5 (note #1)	600 volts dc
Voltage between color grid and phosphor plate, EG4, EG5-p	12,000 volts dc
Grid #2 voltage	3,000 volts dc
Grid #1 voltage — negative bias value	125 max. volts dc
positive bias value	0 max. volts dc
positive peak value	2 max. volts dc

Peak heater-cathode voltage:
Heater negative with respect to cathode
a. during experiment warm-up period not exceeding 11 seconds ..... 410 max. volts dc
b. after equipment warm up ..... 180 max. volts dc
Heater positive with respect to cathode ..... 180 max. volts dc

TYPICAL OPERATION

Total accelerating voltage, Ek-p	18,000 volts dc
Electron gun voltage EK-G3	3,500 to 6,000 volts dc
Focus current (Note #2)	55 ma to 70 ma
Color grid deflection voltage, EG4-G5	500 peak volts dc
Seeker voltage, EG3-G4G5	300 volts dc
Grid #2 voltage	300 to 1,000 volts dc
Grid #1 voltage	−33 to −77 volts dc

NOTES.

#1 Seeker voltage is defined as the DC potential between color grids and mesh cone. This voltage is such that the color grids are negative with respect to metal cone. This is an installation adjustment.

#2 With RCMA focus coil #109 oscillated so that the center of focus coil gap is located three inches behind the yoke reference line.

ADVANTAGES OF THE LAWRENCE TUBE — A SINGLE GUN TRI-COLOR TELEVISION TUBE

The type CH-22 single gun tube has WIDE DEFLECTION ANGLE—72°, which makes it a SHORT TUBE—its overall length for the 22½" picture tube is 29". It gives a LARGE PICTURE—over 40% larger than the three-gun shadow mask tube. It produces a BRIGHT PICTURE—at an anode voltage of 18 KV, the brightness measured through a 44% efficient filter face plate is above 20 ft. lambards in the highlights. It requires LOW RASTER SCANNING POWER—the deflected beam is only ½ the potential of the final accelerator, and LOW COLOR DEFLECTION POWER—for 2.38 mc switching with the NTSC system, 25 to 33 watts is power input. RESOLUTION—in the horizontal direction is equivalent to present black and white in the vertical direction better than 525 lines. LESS POWER THAN THREE-GUN TUBE—overall power is reduced in proportion to a three-gun tube, since there is but one filament, no regulated power supplies, no dynamic convergence or dynamic focus circuitry, etc. STANDARD DEFLECTION COMPONENTS—are standard, low cost black-and-white deflection yoke and focus coil. QUICK SET-UP—Set-up time is a matter of minutes, since there are no set problems of color registry or dynamic convergence. SIMPLIFIED CIRCUITRY—in a receiver designed for a single-gun tube. FRINGE-FREE COLOR PICTURES. FRINGE-FREE STANDARD BROADCAST BLACK-AND-WHITE PICTURES. INEXPENSIVE TO PRODUCE—low cost single-gun tube type of construction. Color control assembly a practical production item requiring only reasonable production tolerances. RELIABLE—Color control assembly not subject to damage even during extended periods of operation and high current density input in small areas.

Courtesy of Dave Corbitt