Don Lee Broadcasting System  
Seventh & Bixel Streets  
Los Angeles, California  
L. P. Hawkinney - Publicity Director  

RECEPTION OF TELEVISION IMAGE NOT DIFFICULT,  
ENGINEER DECLARES; TELLS HOW TO MAKE EXPERIMENTAL  
SCANNING EQUIPMENT  

With the opening of the new Don Lee television transmitter W6XS,  
Los Angeles, many people are under the impression that reception of the images  
sent out by the station, is a highly involved and super-technical matter.  

Yet such is not actually the case, according to Harry R. Lubke,  
Director of Television for the Don Lee Broadcasting System, and in charge of the  
network's television transmissions.  

"Scanning equipment is to the television receiver what the loud-  
speaker is to the broadcast receiver", Lubke points out, in describing the me-  
chanical method for image reception. "Since the main requirements on the re-  
ceiver for tuning in W6XS or W5XO, are that it tune broadly, and that the audio  
amplifier be resistance coupled, it may be presumed that construction of the scan-  
ning equipment comprises the chief problem."

An eighty line single spiral image, repeated fifteen times per  
second, and scanned from left to right and top to bottom, is broadcast. An in-  
expensive scanning disc can be constructed to reproduce the image in the follow-  
ing manner:  

A disc of cardboard or aluminum two feet in diameter is required.  
A circle of exactly 11 3/4 inches radius is drawn on the disc, and divided around  
its circumference into eighty equal parts. Radial lines are drawn from each of  
these divisions to the center of the disc.
A small hole, fifteen thousandths of an inch in diameter, is punched or drilled at the intersection of the circle and any one of the radial lines. With cardboard, the hole can be made by pushing a common pin thru the disc until one sixteenth of an inch of the point projects on the further side. The next hole is punched on the next radial line in a counter-clockwise direction, and eleven thousandths of an inch away from the circle toward the center of the disc.

The next hole is punched on the next radial line in a counter-clockwise direction and twenty-two thousandths of an inch from the circle toward the center of disc, and so on around the disc, each hole being eleven thousandths of an inch nearer the center of the disc than the last one. A machinist's micrometer is useful in laying off these distances. The disc is provided with a suitable hub, or means to fasten it securely to the shaft of its driving motor.

The motor to drive the disc must revolve at 300 rpm. An eight pole synchronous motor operating on 60 cycles revolves at this speed. An induction or direct current motor of a higher normal speed than 300 rpm can be reduced to 300 rpm by inserting a reostat in series with it and the line and used where 60 cycle current or batteries must be the power supply.

A neon plate lamp, as can be secured from the larger radio supply houses, is mounted on a simple support on the motor. It is positioned above the motor and behind the spiral of the disc, in such a way that it can be seen through the holes of the disc when the disc is revolving. The neon lamp takes the place of the loudspeaker of a radio set, and is similarly connected, according to the instructions furnished by the manufacturer.

**ELECTRICAL SCANNING**: A cathode ray tube capable of being modulated on its anode or grid is required, and scanning sources of 1200 cycles per second and 18 cycles per second of sawtooth wave form are required. The output
LIST OF PARTS FOR WEXS TELEVISION RECEIVER

R1 10,000 ohm volume control
R2 75,000 ohm wire wound resistor
R3 1 Megohm carbon resistor
R4 50,000 ohm wirewound resistor
R5 1/2 Megohm carbon resistor
R6 Center-tapped filament resistor
R7 0-5,000 ohm w.w. variable resistor
R8 100,000 ohm carbon resistor
R9 50,000 ohm carbon resistor
R10 1,000 ohm carbon resistor
R11 250,000 ohm carbon resistor
R12 1,200 ohm wire wound resistor
R13 200,000 ohm carbon resistor
R14 25,000 ohm carbon resistor

C1 8 mfd. 450 volt electrolytic filter condenser
C2 .00025 or .00035 mfd. 4 gang variable condenser
C3 .1 mfd. 400 volt bakelite case paper condenser
C4 .1 mfd. 400 volt bakelite case paper condenser
C5 1 mfd. 200 volt paper bypass condenser
C6 6 mfd. 200 volt electrolytic filter condenser
C7 6 mfd. 450 volt electrolytic filter condenser
C8 8 mfd. 200 volt electrolytic filter condenser
C9 100 mfd. 50 volt electrolytic filter condenser
C10 1 mfd. 400 volt paper filter condenser
C11 1 mfd. 400 volt paper filter condenser
C12 8 mfd. 450 volt electrolytic filter condenser
C13 8 mfd. 450 volt electrolytic filter condenser

L1 25 turn primary, 1/32 inch separation from secondary, (same form)
L2 41 turn secondary, 1 1/4 inch diameter threaded form, #30 enameled wire
L3 Short wave radio frequency choke, 2 1/2 millihenries
L4 30 henry 100 m.a. or higher rating.
L5 2500 ohm dynamic speaker field

T1 Dynamic speaker transformer, 2A3 tube to voice coil
T2 110v. power transformer with secondaries:
  X 2.5 volt 10 amp.
  M 800 volt center-tapped, 100 m.a., (delivering 450 volts D.C. to rectifier
     filter)
  N 5.0 volt 2. amp for 80, or 2.5 volt 3 amp for 82

VT1 RCA 58 or 2A3 tube
VT2 RCA 57 or 2A3 tube
VT3 RCA 2A3 tube
VT4 Noon plate lamp (for halo disk), or Noon crater lamp (for lens disk)
VT5 RCA '80; or 82, shielded, and with r.f. choke unit

S1 S.P.S.T. snap switch
S2 S.P.S.T. 110v. ditto
D Dynamic loudspeaker

All tubes except 2A3 and 80 must be shielded.

Coils L1 - L2 must be shielded, 2 3/4 inch diameter aluminum cans.
Connections shown as must be run in a short and direct manner, and kept
away from the chassis.

Courtesy of Newcomb Weisenberger